00BREAK00

1) COUNTY: KENT

2) STUDY NAME: KENWOOD, CITY OF

3) WATERCOURSE: LITTLE PLASTER CREEK

4) DOCUMENT TYPE: 10, 50, 100, 500 YEAR SUMMARIES

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*****************************************************

C
T1      FIS  CITY OF KENTWOOD, KENT COUNTY, MICHIGAN.
T2       10-YEAR FLOOD
T3      LITTLE PLASTER CREEK
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.        2.        0.        0.  0.000000     0.00       0.0       0.   688.750    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   202.000    37.000   155.000     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
ET      0.000     0.000     0.000     0.000     0.000     1.400     0.000     0.000     0.000     0.000
QT      5.000   640.000   950.000  1080.000  1430.000  1080.000     0.000     0.000     0.000     0.000
NC       .085      .085      .045      .100      .300     0.000     0.000     0.000     0.000     0.000

X1      0.000     9.000  1014.000  1054.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    700.000   700.000   690.000   990.000   685.300  1014.000   682.400  1024.000   684.600  1028.000
GR    682.300  1044.000   687.800  1054.000   690.000  1070.000   700.000  1650.000     0.000     0.000

                VALLEY SECTION A

X1      1.000     8.000  1014.000  1054.000   400.000   600.000   700.000     0.000     0.000     0.000
GR    700.000   620.000   685.500  1014.000   682.600  1024.000   684.800  1028.000   682.500  1044.000
GR    688.000  1054.000   691.000  1200.000   700.000  1550.000     0.000     0.000     0.000     0.000

X1      1.500     6.000  1000.000  1034.000   850.000   600.000   950.000     0.000     0.000     0.000
GR    700.000   800.000   687.500  1000.000   683.000  1023.000   683.000  1026.000   689.500  1034.000
GR    700.000  1150.000     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
ET      0.000     9.100     9.100     9.100     9.100     9.100     0.000     0.000   348.000   396.000

X1      2.000    28.000   360.000   384.000   250.000   250.000   250.000     0.000     0.000     0.000
GR    712.100     0.000   708.900   116.000   703.700   132.000   702.200   150.000   689.000   221.000
GR    688.800   360.000   684.100   374.000   683.300   377.000   683.700   380.000   691.300   384.000
GR    694.300   390.000   695.700   404.000   695.100   512.000   702.200   532.000   709.100   546.000
GR    706.300   676.000   710.800   694.000   710.600   776.000   707.200   782.000   709.000   892.000
GR    707.100  1049.000   712.400  1212.000   710.800  1414.000   710.400  1473.000   713.600  1675.000
```

GR	713.700	1712.000	712.300	1724.000	706.100	1844.000	0.000	0.000	0.000	0.000
X1	2.600	21.000	360.000	382.500	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	697.000	697.000	0.000
GR	712.100	0.000	708.900	116.000	703.700	132.000	703.300	148.000	702.200	150.000
GR	690.100	176.000	689.000	221.000	688.800	360.000	684.900	361.000	684.700	371.000
GR	684.400	372.500	684.200	382.500	687.800	401.000	688.200	498.000	691.600	718.000
GR	697.700	785.000	697.700	794.000	702.700	1028.000	703.300	1102.000	705.300	1200.000
GR	716.000	1400.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.726	3.000	0.000	16.900	1.000	140.000	0.000	682.400	684.200

BRIDGE SECTION B M-37 BRIDGE U/S

X1	2.700	29.000	685.000	706.000	100.000	100.000	100.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	691.200	704.400	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	704.400	704.400	0.000
BT	34.000	0.000	720.000	0.000	146.000	717.000	0.000	365.000	714.200	0.000
BT	366.000	714.500	0.000	494.000	713.200	0.000	541.000	712.400	0.000	577.000
BT	709.800	0.000	585.000	709.800	0.000	585.000	709.800	0.000	616.000	709.800
BT	0.000	650.000	709.800	0.000	658.000	709.800	0.000	678.000	709.800	0.000
BT	685.000	709.800	0.000	685.000	709.800	684.000	685.000	709.800	691.200	695.000
BT	709.800	691.200	695.000	709.800	684.200	696.000	709.800	682.400	696.000	709.800
BT	691.200	705.500	709.800	691.200	706.000	709.800	691.200	706.000	709.800	684.800
BT	724.000	709.000	0.000	826.000	708.000	0.000	893.000	706.500	0.000	985.000
BT	706.000	0.000	994.000	705.800	0.000	1128.000	704.800	0.000	1202.000	704.400
BT	0.000	1300.000	705.300	0.000	1370.000	706.100	0.000	1374.000	706.400	0.000
BT	1500.000	716.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	720.400	0.000	717.000	146.000	714.200	365.000	714.500	366.000	713.200	494.000
GR	712.400	541.000	705.100	577.000	698.000	585.000	697.800	585.000	688.200	616.000
GR	688.200	650.000	689.500	658.000	688.400	678.000	684.000	685.000	684.200	695.000
GR	682.400	696.000	684.400	705.500	684.800	706.000	686.600	724.000	690.000	826.000
GR	690.900	893.000	697.700	985.000	697.700	994.000	702.700	1128.000	703.300	1202.000
GR	705.300	1300.000	706.100	1370.000	706.400	1374.000	716.000	1500.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	646.000	766.000
NC	0.000	0.000	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	3.000	37.000	688.000	724.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	720.400	0.000	717.200	146.000	714.200	365.000	714.500	366.000	713.200	494.000
GR	712.400	541.000	705.100	577.000	697.800	585.000	698.100	586.000	688.200	616.000
GR	688.200	650.000	689.500	658.000	688.400	678.000	686.700	688.000	684.900	694.000
GR	684.500	696.000	684.300	698.000	684.500	700.000	684.800	706.000	686.600	724.000
GR	690.000	826.000	690.900	893.000	698.200	985.000	697.700	994.000	702.700	1128.000
GR	703.300	1202.000	705.300	1300.000	706.100	1370.000	706.400	1374.000	704.100	1480.000
GR	702.400	1542.000	704.400	1596.000	703.800	1760.000	702.600	1794.000	702.300	1798.000
GR	702.100	1994.000	702.900	2204.000	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	0.000	0.000	598.000	878.000
X1	3.100	0.000	0.000	0.000	80.000	80.000	80.000	0.000	0.000	0.000
NC	.085	.085	.045	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	1.400	0.000	0.000	558.000	846.000
X1	3.900	24.000	679.000	724.000	470.000	550.000	475.000	0.000	-.600	0.000
GR	723.900	0.000	719.900	164.000	719.600	388.000	718.000	498.000	717.800	512.000
GR	715.600	562.000	697.300	633.000	696.100	652.000	688.100	679.000	685.800	700.000
GR	685.600	704.000	685.600	707.000	685.600	710.000	685.600	712.000	690.600	724.000

GR	693.300	798.000	705.400	842.000	708.400	978.000	707.100	1100.000	708.200	1292.000
GR	711.900	1414.000	708.400	1460.000	705.400	1643.000	702.900	1808.000	0.000	0.000
NC	0.000	0.000	.045	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	0.000	0.000	0.000	677.000	726.000
X1	4.000	0.000	0.000	0.000	450.000	550.000	450.000	0.000	.600	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	472.000	510.000
X1	4.200	0.000	0.000	0.000	10.000	10.000	10.000	.700	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	327.000	360.000
X1	4.400	0.000	0.000	0.000	20.000	20.000	20.000	.700	0.000	0.000
X1	4.600	30.000	700.000	719.200	30.000	30.000	30.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	699.000	699.000	0.000
GR	723.900	0.000	719.900	164.000	719.600	388.000	718.000	498.000	717.800	512.000
GR	715.600	562.000	699.800	633.000	699.800	652.000	696.100	679.000	690.400	700.000
GR	688.400	701.300	687.600	703.300	687.100	705.300	686.800	707.300	686.500	708.300
GR	686.900	711.300	687.200	713.300	687.700	715.300	688.400	717.300	690.700	719.200
GR	690.600	724.000	693.300	798.000	705.400	842.000	708.400	978.000	707.100	1100.000
GR	708.200	1292.000	711.900	1414.000	708.400	1460.000	705.400	1634.000	702.900	1808.000
NC	0.000	0.000	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.700	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	699.000	699.000	0.000
BT	29.000	0.000	723.900	0.000	164.000	719.900	0.000	388.000	719.600	0.000
BT	498.000	718.000	0.000	512.000	717.800	0.000	562.000	715.600	0.000	633.000
BT	699.800	0.000	652.000	699.800	0.000	700.000	699.800	690.400	701.300	699.800
BT	692.400	703.300	699.800	695.000	705.300	699.800	697.000	707.300	699.800	697.900
BT	708.300	699.800	698.300	711.300	699.800	697.900	713.300	699.800	696.800	715.300
BT	699.800	694.900	717.300	699.800	692.500	719.200	699.800	690.700	724.000	699.800
BT	0.000	798.000	699.800	0.000	842.000	705.400	0.000	978.000	708.400	0.000
BT	1100.000	707.100	0.000	1292.000	708.200	0.000	1414.000	711.900	0.000	1460.000
BT	708.400	0.000	1634.000	705.400	0.000	1808.000	702.900	0.000	0.000	0.000

BRIDGE SECTION C RR BRIDGE U/S

X1	4.800	28.000	602.000	621.200	120.000	120.000	120.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	700.700	700.700	0.000
BT	30.000	0.000	721.800	0.000	100.000	719.100	0.000	168.000	717.300	0.000
BT	168.000	717.000	0.000	246.000	716.200	0.000	366.000	714.900	0.000	410.000
BT	700.700	0.000	422.000	700.700	0.000	482.000	700.700	0.000	491.000	700.700
BT	0.000	602.000	700.700	691.500	602.000	700.700	691.500	602.000	700.700	691.500
BT	603.400	700.700	693.500	605.400	700.700	695.900	607.400	700.700	697.600	609.400
BT	700.700	698.700	611.400	700.700	699.200	613.400	700.700	698.800	615.400	700.700
BT	697.900	617.400	700.700	696.700	619.400	700.700	694.700	621.200	700.700	692.100
BT	666.000	700.700	0.000	716.000	700.700	0.000	748.000	705.300	0.000	835.000
BT	709.300	0.000	1025.000	714.500	0.000	1103.000	716.100	0.000	1449.000	720.400
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	721.800	0.000	719.100	100.000	717.300	168.000	717.000	168.000	716.200	246.000
GR	714.900	366.000	700.700	410.000	692.000	422.000	690.000	482.000	691.700	491.000
GR	691.500	602.000	689.500	603.400	688.500	605.400	688.100	607.400	687.900	609.400
GR	687.700	611.400	687.700	613.400	687.900	615.400	688.400	617.400	689.600	619.400
GR	692.100	621.200	692.900	666.000	696.600	716.000	705.300	748.000	709.300	835.000

GR	714.500	1025.000	716.100	1103.000	720.400	1449.000	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
X1	4.900	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	700.700	700.700	0.000
X1	5.000	28.000	600.000	650.000	10.000	10.000	10.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	600.000	0.000	650.000	0.000	0.000	0.000	0.000
GR	721.800	0.000	719.100	100.000	717.300	168.000	717.000	168.000	716.200	246.000
GR	714.900	366.000	696.800	410.000	692.000	422.000	690.000	482.000	691.700	491.000
GR	692.200	519.000	689.300	520.000	689.500	534.000	690.800	564.000	690.000	600.000
GR	687.900	602.000	687.300	606.000	687.500	610.000	687.500	614.000	687.700	618.000
GR	687.900	650.000	692.900	666.000	696.600	716.000	705.300	748.000	709.300	835.000
GR	714.500	1025.000	716.100	1103.000	720.400	1449.000	0.000	0.000	0.000	0.000
X1	5.100	0.000	0.000	0.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	525.000	0.000	715.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.040	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	0.000	725.000

VALLEY SECTION D CONFLUENCE WITH WHISKY CREEK

X1	8.000	27.000	632.000	651.000	1000.000	700.000	830.000	0.000	0.000	0.000
GR	707.900	0.000	708.800	184.000	706.200	406.000	696.500	486.000	695.000	602.000
GR	694.600	604.000	692.900	632.000	688.700	640.000	688.700	649.000	691.600	651.000
GR	693.800	712.000	693.300	756.000	691.100	776.000	688.200	782.000	687.800	786.000
GR	687.800	790.000	687.800	794.000	689.100	798.000	690.800	799.000	694.500	818.000
GR	692.800	865.000	694.900	959.000	708.400	997.000	711.800	1047.000	713.200	1143.000
GR	715.100	1249.000	719.600	1287.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	5.000	340.000	520.000	600.000	830.000	600.000	0.000	0.000	0.000	0.000
NC	.075	.075	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	40.700	7.000	2000.000	2023.000	700.000	850.000	850.000	0.000	0.000	0.000
GR	700.000	1900.000	695.000	2000.000	692.500	2008.000	691.500	2014.000	694.000	2019.000
GR	697.000	2023.000	700.000	2200.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	9.100	0.000	0.000	290.000	470.000

VALLEY SECTION E

X1	40.800	18.000	392.000	415.000	700.000	850.000	850.000	0.000	0.000	0.000
GR	716.600	100.000	716.600	100.000	714.000	148.000	712.600	198.000	707.100	248.000
GR	698.100	298.000	698.300	342.000	697.700	392.000	696.100	402.000	694.000	406.000
GR	696.100	410.000	697.700	415.000	699.200	465.000	701.200	495.000	709.800	560.000
GR	712.000	588.000	715.100	738.000	715.100	738.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	370.000	560.000

VALLEY SECTION F

X1	40.900	18.000	454.000	466.000	1200.000	900.000	1100.000	0.000	0.000	0.000
GR	720.000	100.000	714.800	142.000	710.500	174.000	704.200	224.000	702.100	274.000
GR	701.700	374.000	701.100	424.000	700.800	454.000	700.100	455.000	698.700	460.000
GR	700.100	465.000	700.800	466.000	700.900	4[illegible]2.000	700.900	586.000	706.600	636.000
GR	710.100	666.000	711.600	686.000	712.400	816.000	720.000	816.000	0.000	0.000

NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
NH	3.000	3.000	698.000	.060	712.000	2.000	1113.000	0.000	0.000	0.000
X1	40.980	29.000	698.000	712.000	250.000	150.000	220.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	703.000	703.000	0.000
GR	715.400	100.000	713.600	199.000	712.300	298.000	710.700	397.000	708.700	505.000
GR	706.200	605.000	698.000	698.000	697.900	698.500	698.100	699.000	698.000	699.700
GR	698.200	700.400	697.500	701.000	697.700	701.500	698.000	702.800	697.700	703.000
GR	697.900	703.500	697.700	704.000	698.000	704.500	697.500	705.000	698.500	706.500
GR	698.300	707.000	699.200	709.000	699.000	710.000	700.300	712.000	705.300	785.000
GR	705.700	805.000	706.900	911.000	712.200	1011.000	715.000	1113.000	0.000	0.000
SB	0.000	1.578	3.000	0.000	14.000	0.000	77.000	0.000	697.500	697.500

BRIDGE SECTION G EAST PARIS AVENUE BRIDGE U/S

X1	41.060	0.000	0.000	0.000	27.000	27.000	27.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	703.000	704.800	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	680.000	0.000	760.000	0.000	704.200	704.200	0.000
BT	8.000	505.000	708.700	0.000	605.000	706.200	0.000	698.000	705.000	698.000
BT	698.000	705.000	703.000	712.000	704.800	702.700	712.000	704.800	700.300	785.000
BT	705.300	0.000	805.000	705.700	0.000	0.000	0.000	0.000	0.000	0.000
NC	.075	.075	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	41.080	0.000	0.000	0.000	60.000	60.000	60.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	590.000	0.000	790.000	0.000	0.000	0.000	0.000
NC	.080	.080	.065	.100	.300	0.000	0.000	0.000	0.000	0.000

X1	41.100	15.000	172.000	196.000	500.000	200.000	393.000	0.000	0.000	0.000
GR	716.900	100.000	712.600	122.000	706.500	147.000	702.800	172.000	702.000	173.000
GR	700.800	178.000	699.300	184.000	700.800	190.000	702.000	196.000	701.700	228.000
GR	703.200	276.000	702.700	326.000	708.100	425.000	712.600	516.000	712.700	531.000
NC	.090	.090	.065	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	9.100	0.000	0.000	528.000	728.000

VALLEY SECTION H

X1	41.300	22.000	634.000	710.000	1150.000	1150.000	1150.000	0.000	0.000	0.000
GR	723.000	100.000	720.600	205.000	718.800	277.000	716.900	321.000	713.600	389.000
GR	709.400	491.000	705.700	549.000	706.100	599.000	705.800	634.000	703.800	684.000
GR	702.900	689.000	702.100	697.000	702.900	705.000	705.800	710.000	706.300	711.000
GR	709.100	779.000	712.100	911.000	714.500	981.000	715.900	999.000	718.400	1141.000
GR	720.400	1357.000	720.400	1367.000	723.000	1367.000	0.000	0.000	0.000	0.000
NC	.075	.075	.060	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	1.400	0.000	0.000	0.000	0.000

VALLEY SECTION I

X1	41.400	18.000	898.000	908.000	1100.000	2000.000	1550.000	0.000	0.000	0.000
GR	726.000	100.000	723.600	158.000	722.700	226.000	723.700	328.000	724.000	464.000
GR	723.300	530.000	721.400	626.000	718.600	732.000	715.700	788.000	709.600	848.000
GR	707.700	898.000	705.700	903.000	707.700	908.000	709.200	912.000	709.100	992.000
GR	720.900	1136.000	723.000	1166.000	724.600	1192.000	726.000	1192.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	9.100	0.000	0.000	372.000	542.000

VALLEY SECTION J

X1	41.600	19.000	409.000	431.000	1950.000	1950.000	1950.000	0.000	0.000	0.000
GR	727.100	100.000	727.100	100.000	719.000	214.000	723.100	274.000	715.500	349.000
GR	712.200	394.000	711.900	409.000	710.700	414.000	710.400	420.000	710.900	426.000
GR	711.900	431.000	712.000	432.000	712.000	492.000	713.000	542.000	720.000	640.000
GR	720.500	740.000	720.800	839.000	726.200	942.000	727.000	1042.000	728.000	604.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000

VALLEY SECTION K

X1	41.700	23.000	702.000	719.000	3200.000	4000.000	3200.000	0.000	0.000	0.000
GR	730.000	100.000	729.600	100.000	725.800	182.000	722.300	238.000	721.500	340.000
GR	718.500	490.000	716.400	588.000	715.500	687.000	715.400	702.000	713.300	703.000
GR	710.700	708.000	713.700	713.000	715.000	714.000	715.400	719.000	716.900	763.000
GR	717.700	903.000	719.000	1008.000	721.200	1131.000	722.300	1227.000	725.100	1329.000
GR	727.600	1431.000	728.700	1536.000	730.000	1584.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	9.100	0.000	0.000	740.000	1010.000

VALLEY SECTION L 28TH STREET BRIDGE D/S

X1	41.900	17.000	839.000	864.000	1850.000	1850.000	1850.000	0.000	0.000	0.000
GR	726.400	493.000	723.000	595.000	721.200	697.000	719.200	798.000	718.600	839.000
GR	717.900	849.000	716.800	855.000	717.800	860.000	718.600	864.000	719.200	865.000
GR	719.300	896.000	719.500	946.000	720.400	1044.000	722.600	1142.000	728.900	1243.000
GR	732.100	1298.000	732.100	1298.000	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

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

LITTLE PLASTER CREEK

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	682.30	640.00	688.75	0.00	688.90	12.54	3.19	225.47	180.72
0.000	0.00	0.00	0.00	682.30	950.00	690.20	0.00	690.37	10.55	3.49	333.54	292.54
0.000	0.00	0.00	0.00	682.30	1080.00	690.75	0.00	690.93	9.73	3.55	400.27	346.28
0.000	0.00	0.00	0.00	682.30	1430.00	692.00	0.00	692.16	7.98	3.59	649.80	506.20
1.000	700.00	0.00	0.00	682.50	640.00	689.39	0.00	689.46	5.92	2.33	462.92	262.98
1.000	700.00	0.00	0.00	682.50	950.00	690.74	0.00	690.80	4.32	2.31	820.55	457.32
1.000	700.00	0.00	0.00	682.50	1080.00	691.25	0.00	691.30	3.77	2.27	990.81	556.36
1.000	700.00	0.00	0.00	682.50	1430.00	692.42	0.00	692.46	2.87	2.19	1444.78	844.77
1.500	950.00	0.00	0.00	683.00	640.00	690.16	0.00	690.34	15.72	3.57	224.56	161.40
1.500	950.00	0.00	0.00	683.00	950.00	691.30	0.00	691.52	14.95	4.01	337.66	245.70
1.500	950.00	0.00	0.00	683.00	1080.00	691.73	0.00	691.95	14.45	4.13	389.57	284.12
1.500	950.00	0.00	0.00	683.00	1430.00	692.75	0.00	692.99	13.33	4.37	533.16	391.64
2.000	250.00	0.00	0.00	683.30	640.00	690.64	0.00	691.06	41.68	5.33	135.71	99.13
2.000	250.00	0.00	0.00	683.30	950.00	691.73	0.00	692.30	45.60	6.29	174.71	140.69
2.000	250.00	0.00	0.00	683.30	1080.00	692.12	0.00	692.76	46.68	6.64	189.41	158.07
2.000	250.00	0.00	0.00	683.30	1430.00	693.05	0.00	693.86	50.04	7.55	225.13	202.16
2.600	50.00	0.00	0.00	684.20	640.00	690.91	0.00	691.23	19.47	4.55	140.81	145.05
2.600	50.00	0.00	0.00	684.20	950.00	691.96	0.00	692.48	25.56	5.78	164.48	187.92
2.600	50.00	0.00	0.00	684.20	1080.00	692.34	0.00	692.94	27.98	6.25	172.87	204.18
2.600	50.00	0.00	0.00	684.20	1430.00	693.23	0.00	694.08	33.99	7.41	192.98	245.28
2.700	100.00	704.40	691.20	682.40	640.00	691.21	0.00	691.47	11.48	4.09	156.54	188.90
2.700	100.00	704.40	691.20	682.40	950.00	692.81	0.00	693.20	13.24	5.00	190.10	261.13
2.700	100.00	704.40	691.20	682.40	1080.00	693.50	0.00	693.93	13.39	5.28	204.58	295.10
2.700	100.00	704.40	691.20	682.40	1430.00	695.50	0.00	696.03	12.58	5.80	246.71	403.21
3.000	50.00	0.00	0.00	684.30	640.00	691.50	0.00	691.55	2.17	2.09	523.48	434.65
3.000	50.00	0.00	0.00	684.30	950.00	693.26	0.00	693.32	1.82	2.26	734.13	703.93
3.000	50.00	0.00	0.00	684.30	1080.00	694.00	0.00	694.06	1.68	2.30	823.51	833.55
3.000	50.00	0.00	0.00	684.30	1430.00	696.12	0.00	696.18	1.31	2.36	1077.57	1247.42
3.100	80.00	0.00	0.00	684.30	640.00	691.55	0.00	691.58	1.36	1.66	864.24	549.74
3.100	80.00	0.00	0.00	684.30	950.00	693.31	0.00	693.34	.92	1.61	1348.21	992.09
3.100	80.00	0.00	0.00	684.30	1080.00	694.06	0.00	694.08	.79	1.59	1555.78	1214.16
3.100	80.00	0.00	0.00	684.30	1430.00	696.18	0.00	696.20	.54	1.51	2147.26	1947.51

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
3.900	475.00	0.00	0.00	685.00	640.00	691.63	0.00	691.72	6.51	2.53	304.91	250.90
3.900	475.00	0.00	0.00	685.00	950.00	693.35	0.00	693.44	4.66	2.58	523.89	439.94
3.900	475.00	0.00	0.00	685.00	1080.00	694.09	0.00	694.17	3.93	2.53	630.09	544.61
3.900	475.00	0.00	0.00	685.00	1430.00	696.20	0.00	696.26	2.46	2.35	956.78	912.17
4.000	450.00	0.00	0.00	685.60	640.00	691.94	0.00	692.06	8.60	2.80	236.37	218.24
4.000	450.00	0.00	0.00	685.60	950.00	693.57	0.00	693.72	7.42	3.13	316.29	348.82
4.000	450.00	0.00	0.00	685.60	1080.00	694.27	0.00	694.43	6.88	3.23	350.44	411.77
4.000	450.00	0.00	0.00	685.60	1430.00	696.28	0.00	696.46	5.40	3.36	448.73	615.22
4.200	10.00	0.00	0.00	685.60	640.00	691.87	0.00	692.11	18.56	4.01	170.24	148.56
4.200	10.00	0.00	0.00	685.60	950.00	693.48	0.00	693.78	15.84	4.47	231.44	238.73
4.200	10.00	0.00	0.00	685.60	1080.00	694.17	0.00	694.49	14.63	4.59	257.70	282.36
4.200	10.00	0.00	0.00	685.60	1430.00	696.17	0.00	696.51	11.35	4.75	333.83	424.37
4.400	20.00	0.00	0.00	685.60	640.00	691.74	0.00	692.24	42.56	5.80	122.49	98.10
4.400	20.00	0.00	0.00	685.60	950.00	693.33	0.00	693.91	34.58	6.31	174.81	161.56
4.400	20.00	0.00	0.00	685.60	1080.00	694.01	0.00	694.62	31.44	6.44	197.41	192.62
4.400	20.00	0.00	0.00	685.60	1430.00	696.01	0.00	696.63	23.60	6.58	263.26	294.34
4.600	30.00	0.00	0.00	686.50	640.00	691.49	0.00	692.65	135.47	8.66	73.94	54.99
4.600	30.00	0.00	0.00	686.50	950.00	692.96	0.00	694.30	101.39	9.29	102.22	94.35
4.600	30.00	0.00	0.00	686.50	1080.00	693.62	0.00	694.99	88.83	9.40	114.87	114.59
4.600	30.00	0.00	0.00	686.50	1430.00	695.60	0.00	696.96	60.21	9.36	152.76	184.29
4.700	1.00	699.80	698.30	686.50	640.00	691.47	0.00	692.67	73.02	8.80	72.75	74.90
4.700	1.00	699.80	698.30	686.50	950.00	692.83	0.00	694.37	78.89	9.98	95.17	106.96
4.700	1.00	699.80	698.30	686.50	1080.00	693.42	0.00	695.09	81.36	10.38	104.03	119.74
4.700	1.00	699.80	698.30	686.50	1430.00	695.18	0.00	697.15	89.00	11.26	127.01	151.58
4.800	120.00	700.70	699.20	687.70	640.00	692.32	0.00	693.60	77.23	9.06	70.60	72.83
4.800	120.00	700.70	699.20	687.70	950.00	693.77	0.00	695.29	74.04	9.91	95.87	110.41
4.800	120.00	700.70	699.20	687.70	1080.00	694.43	0.00	696.02	73.13	10.15	106.45	126.30
4.800	120.00	700.70	699.20	687.70	1430.00	696.36	0.00	698.16	76.80	10.77	132.82	163.18
4.900	1.00	0.00	0.00	687.70	640.00	692.39	0.00	693.61	118.24	8.86	72.21	58.86
4.900	1.00	0.00	0.00	687.70	950.00	694.01	0.00	695.32	78.55	9.18	103.47	107.19
4.900	1.00	0.00	0.00	687.70	1080.00	694.75	0.00	696.06	66.68	9.20	117.38	132.26
4.900	1.00	0.00	0.00	687.70	1430.00	696.98	0.00	698.22	41.35	8.92	160.32	222.39
5.000	10.00	0.00	0.00	687.30	640.00	693.66	0.00	693.74	4.08	2.16	295.65	316.66
5.000	10.00	0.00	0.00	687.30	950.00	695.36	0.00	695.45	4.18	2.50	380.24	464.46
5.000	10.00	0.00	0.00	687.30	1080.00	696.09	0.00	696.19	4.11	2.59	416.73	533.01
5.000	10.00	0.00	0.00	687.30	1430.00	698.22	0.00	698.34	3.66	2.73	523.37	747.01
5.100	70.00	0.00	0.00	687.30	640.00	693.73	0.00	693.76	1.74	1.59	622.42	485.49
5.100	70.00	0.00	0.00	687.30	950.00	695.44	0.00	695.48	1.42	1.70	903.18	798.04
5.100	70.00	0.00	0.00	687.30	1080.00	696.18	0.00	696.21	1.28	1.72	1036.22	955.82
5.100	70.00	0.00	0.00	687.30	1430.00	698.33	0.00	698.36	.91	1.68	1443.47	1500.98
8.000	830.00	0.00	0.00	688.70	640.00	693.71	0.00	694.39	69.78	7.16	143.14	76.62
8.000	830.00	0.00	0.00	688.70	950.00	695.57	0.00	695.86	23.10	5.32	350.90	197.67
8.000	830.00	0.00	0.00	688.70	1080.00	696.32	0.00	696.53	15.83	4.77	487.56	271.42
8.000	830.00	0.00	0.00	688.70	1430.00	698.45	0.00	698.53	5.63	3.43	983.68	602.73

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
40.700	850.00	0.00	0.00	691.50	340.00	697.67	0.00	697.76	18.58	2.66	182.11	78.88
40.700	850.00	0.00	0.00	691.50	520.00	697.87	0.00	698.04	34.00	3.71	208.35	89.18
40.700	850.00	0.00	0.00	691.50	600.00	698.04	0.00	698.23	37.26	3.98	231.69	98.29
40.700	850.00	0.00	0.00	691.50	830.00	699.10	0.00	699.21	21.45	3.47	430.76	179.19
40.800	850.00	0.00	0.00	694.00	340.00	699.35	0.00	699.40	22.34	2.39	238.02	71.93
40.800	850.00	0.00	0.00	694.00	520.00	699.94	0.00	699.99	18.14	2.42	347.80	122.10
40.800	850.00	0.00	0.00	694.00	600.00	700.16	0.00	700.21	17.51	2.47	389.09	143.37
40.800	850.00	0.00	0.00	694.00	830.00	700.68	0.00	700.73	17.13	2.65	490.89	200.52
40.900	1100.00	0.00	0.00	698.70	340.00	702.22	0.00	702.26	32.42	2.58	236.46	59.71
40.900	1100.00	0.00	0.00	698.70	520.00	702.56	0.00	702.62	35.00	2.91	303.99	87.90
40.900	1100.00	0.00	0.00	698.70	600.00	702.72	0.00	702.78	35.01	3.01	333.01	101.41
40.900	1100.00	0.00	0.00	698.70	830.00	703.16	0.00	703.23	33.32	3.20	414.96	143.80
40.980	220.00	0.00	0.00	697.50	340.00	702.97	0.00	703.41	70.72	5.28	64.38	40.43
40.980	220.00	0.00	0.00	697.50	520.00	703.41	0.00	704.15	110.86	7.03	307.64	49.39
40.980	220.00	0.00	0.00	697.50	600.00	703.57	0.00	704.48	133.05	7.85	326.47	52.02
40.980	220.00	0.00	0.00	697.50	830.00	703.83	703.07	705.40	214.01	10.30	360.65	56.74
41.060	27.00	704.80	703.00	697.50	340.00	703.03	0.00	703.45	67.69	5.21	65.23	41.33
41.060	27.00	704.80	703.00	697.50	520.00	703.80	0.00	704.53	95.18	6.84	75.99	53.30
41.060	27.00	704.80	703.00	697.50	600.00	704.32	0.00	705.03	85.62	6.90	296.85	64.84
41.060	27.00	704.80	703.00	697.50	830.00	704.31	0.00	705.67	164.71	9.56	296.13	64.67
41.080	60.00	0.00	0.00	697.50	340.00	703.63	0.00	703.65	5.58	1.62	334.38	143.87
41.080	60.00	0.00	0.00	697.50	520.00	704.80	0.00	704.82	4.79	1.72	499.34	237.59
41.080	60.00	0.00	0.00	697.50	600.00	705.28	0.00	705.30	4.40	1.73	578.25	285.94
41.080	60.00	0.00	0.00	697.50	830.00	706.12	0.00	706.15	4.49	1.88	728.28	391.54
41.100	393.00	0.00	0.00	699.30	340.00	703.93	0.00	703.96	15.88	1.92	281.15	85.33
41.100	393.00	0.00	0.00	699.30	520.00	705.00	0.00	705.02	7.83	1.63	492.21	185.81
41.100	393.00	0.00	0.00	699.30	600.00	705.46	0.00	705.48	6.21	1.56	590.91	240.74
41.100	393.00	0.00	0.00	699.30	830.00	706.29	0.00	706.31	5.33	1.61	784.20	359.61
41.300	1150.00	0.00	0.00	702.10	340.00	706.31	0.00	706.37	28.68	2.00	197.61	63.49
41.300	1150.00	0.00	0.00	702.10	520.00	706.64	0.00	706.73	36.81	2.50	256.46	85.70
41.300	1150.00	0.00	0.00	702.10	600.00	706.83	0.00	706.92	35.83	2.59	291.98	100.24
41.300	1150.00	0.00	0.00	702.10	830.00	707.43	0.00	707.52	28.36	2.64	415.40	155.84
41.400	1550.00	0.00	0.00	705.70	340.00	710.34	0.00	710.39	23.81	2.73	237.27	69.67
41.400	1550.00	0.00	0.00	705.70	520.00	710.90	0.00	710.95	21.10	2.82	333.72	113.22
41.400	1550.00	0.00	0.00	705.70	600.00	711.08	0.00	711.14	21.55	2.93	365.78	129.23
41.400	1550.00	0.00	0.00	705.70	830.00	711.47	0.00	711.54	24.34	3.30	438.90	168.25
41.600	1950.00	0.00	0.00	710.40	340.00	713.82	0.00	713.85	13.70	1.84	290.72	91.85
41.600	1950.00	0.00	0.00	710.40	520.00	714.31	0.00	714.35	14.62	2.11	381.91	135.98
41.600	1950.00	0.00	0.00	710.40	600.00	714.52	0.00	714.56	14.53	2.19	422.74	157.39
41.600	1950.00	0.00	0.00	710.40	830.00	715.05	0.00	715.10	14.18	2.37	534.46	220.40
41.700	3200.00	0.00	0.00	710.70	340.00	717.54	0.00	717.56	8.51	1.68	387.40	116.53
41.700	3200.00	0.00	0.00	710.70	520.00	718.04	0.00	718.06	7.95	1.75	579.81	184.46
41.700	3200.00	0.00	0.00	710.70	600.00	718.22	0.00	718.24	7.82	1.78	656.55	214.51
41.700	3200.00	0.00	0.00	710.70	830.00	718.65	0.00	718.67	7.47	1.84	865.29	303.60

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
41.900	1850.00	0.00	0.00	716.80	340.00	720.25	0.00	720.30	31.70	2.49	247.53	60.39
41.900	1850.00	0.00	0.00	716.80	520.00	720.60	0.00	720.65	30.70	2.68	355.01	93.85
41.900	1850.00	0.00	0.00	716.80	600.00	720.73	0.00	720.79	30.09	2.74	399.68	109.38
41.900	1850.00	0.00	0.00	716.80	830.00	721.06	0.00	721.11	28.94	2.89	518.83	154.27

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: KENWOOD, THE CITY OF

3) WATERCOURSE: LITTLE PLASTER CREEK

4) DOCUMENT TYPE: 100-YEAR ENCROACHED

00BREAK00

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*****************************************************

T1      FIS CITY OF KENTWOOD, KENT COUNTY, MICHIGAN
T2      100-YEAR FLOOD ENCROACHED FLOODWAY
T3      LITTLE PLASTER CREEK

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
     -10.      6.        0.        0.  0.000000      0.00      0.0       0.     690.750    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
 2800 NAT Q1=     346.28  WSEL=     690.75  ENC Q1=     346.28  WSEL=     690.85  RATIO=  0.0000
 NAT Q1=     357.  RATIOS LOB,CH,ROB=    .0836    .8869    .0295  WSEL=     690.85
   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


3470 ENCROACHMENT STATIONS=     998.3    1061.3  TYPE=     4  TARGET=        .030
     0.00      8.45    690.75      0.00    690.75    690.94      .19      0.00      0.00    685.30
    1080.       77.      986.       15.      61.      272.       18.        0.        0.    687.80
      0.00      1.25      3.63      .86     .085      .045      .085     0.000    682.30    998.28
  .001022        0.        0.        0.        0         0         0      0.00     63.04   1061.32
  high

*SECNO 1.000
 2800 NAT Q1=     556.36  WSEL=     691.25  ENC Q1=     556.36  WSEL=     691.35  RATIO=  0.0000
 NAT Q1=     578.  RATIOS LOB,CH,ROB=    .2879    .5884    .1237  WSEL=     691.35

3470 ENCROACHMENT STATIONS=     938.2    1124.6  TYPE=     4  TARGET=        .038

                VALLEY SECTION A  only 0.03 in c

     1.00      8.78    691.28      0.00    691.25    691.34      .06       .38       .01    685.50
    1080.      301.      664.      115.      332.      285.      181.        8.        2.    688.00
      .10       .91      2.33      .64      .085      .045      .085      .049    682.56    938.22
  .000394      400.      700.      600.         2         0         0      0.00    186.42   1124.64

*SECNO 1.500
 2800 NAT Q1=     284.12  WSEL=     691.73  ENC Q1=     284.12  WSEL=     691.83  RATIO=  0.0000
 NAT Q1=     294.  RATIOS LOB,CH,ROB=    .1492    .8311    .0197  WSEL=     691.83
```

why was not WSEL ~~moved~~ raised .1 ft as this produces a high Sf

appears low

```
3470 ENCROACHMENT STATIONS=      968.7     1035.8  TYPE=  4  TARGET=          .032
     1.50      8.78    691.78      0.00    691.73    692.02      .24       .63       .06    687.50
    1080.      147.      930.        3.     103.      221.       4.        19.        4.    689.50
      .17      1.43      4.21       .68      .085      .045      .085      .048    683.00    968.68
  .001492      850.      950.      600.         2         0         0      0.00     67.12   1035.80

CCHV=     .300 CEHV=     .500
*SECNO 2.000

3470 ENCROACHMENT STATIONS=      348.0      396.0  TYPE=  1  TARGET=        48.000
     2.00      8.89    692.19      0.00    692.12    692.81      .62       .60       .19    688.80
    1080.       91.      989.        1.       41.      151.       1.        20.        4.    691.30
      .18      2.24      6.56       .63      .085      .045      .085      .047    683.30    348.00
  .004490      250.      250.      250.         2         0         0      0.00     37.78    385.78

*SECNO 2.600
   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        WIN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      697.00 ELREA=      697.00

     2.60      8.19    692.39      0.00    692.34    692.99      .60       .17       .01    688.80
    1080.        0.     1080.        0.        0.       174.       0.        20.        4.    684.20
      .18      0.00      6.20      0.00      .085      .045      .085      .047    684.20    360.00
  .002734       50.       50.       50.         2         0         0      0.00     22.50    382.50

SPECIAL BRIDGE
SB  XK      XKOR      COEQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.73      3.00      0.00     16.90      1.00    140.00      0.00    682.40    684.20
*SECNO 2.700
PRESSURE FLOW

 EGPRS      EGLWC      H3        QWEIR      QPR       BAREA     TRAPEZOID AREA     ELLC      ELTRD
  693.98    693.05      .12        0.      1080.      140.      140.      691.20    704.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      704.40 ELREA=      704.40

                BRIDGE SECTION B        M-37 BRIDGE U/S

     2.70     11.16    693.56      0.00    693.50    693.98      .43      1.00      0.00    684.00
    1080.        0.     1080.        0.        0.       206.       0.        21.        4.    684.80
      .19      0.00      5.25      0.00      .085      .045      .085      .047    682.40    685.00
  .001313      100.      100.      100.         2         0         0      0.00     21.00    706.00
```

```
*SECNO 3.000

3470 ENCROACHMENT STATIONS=      646.0      766.0  TYPE=      1  TARGET=      120.000
     3.00      9.76   694.06      0.00    694.00    694.11      .06       .02       .11    686.70
     1080.     155.     717.      208.      232.      314.     284.       21.        4.    686.60
      .19       .67     2.29       .73      .085      .035     .085      .047    684.30    646.00
  .000164       50.      50.       50.         2         0        0      0.00    120.00    766.00

*SECNO 3.100

3470 ENCROACHMENT STATIONS=      598.0      878.0  TYPE=      1  TARGET=      280.000
     3.10      9.81   694.11      0.00    694.06    694.13      .02       .01       .01    686.70
     1080.     219.     497.      364.      465.      316.     789.       24.        5.    686.60
      .22       .47     1.57       .46      .085      .035     .085      .046    684.30    598.07
  .000077       80.      80.       80.         0         0        0      0.00    279.93    878.00

CCHV=     .100 CEHV=     .300
*SECNO 3.900
 2800 NAT Q1=     544.61  WSEL=     694.09  ENC Q1=     544.61  WSEL=     694.19  RATIO=    .0000
 NAT Q1=     560.  RATIOS LOB,CH,ROB=    .0513    .8159    .1327  WSEL=     694.19

3470 ENCROACHMENT STATIONS=      669.6      782.8  TYPE=      4  TARGET=         .027
     3.90      9.14   694.14      0.00    694.09    694.23      .09       .07       .02    687.50
     1080.      41.     908.      131.       49.      353.     180.       36.        7.    690.00
      .28       .83     2.58       .73      .085      .045     .085      .046    685.00    669.63
  .000405      470.     475.      550.         2         0        0      0.00    113.17    782.80

*SECNO 4.000
 2800 NAT Q1=     411.77  WSEL=     694.27  ENC Q1=     416.80  WSEL=     694.37  RATIO=   -.0122
 NAT Q1=     498.  RATIOS LOB,CH,ROB=    .0486    .8376    .1139  WSEL=     694.37
    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=      679.0      724.0  TYPE=      4  TARGET=         .162
     4.00      8.75   694.35      0.00    694.27    694.51      .16       .26       .02    688.10
     1080.       0.     1080.       0.        0.      335.       0.       41.        8.    690.60
      .32      0.00     3.22      0.00      .085      .045     .085      .046    685.60    679.00
  .000880      450.     450.      550.         0         0        0      0.00     45.00    724.00

*SECNO 4.200

3470 ENCROACHMENT STATIONS=      472.0      510.0  TYPE=      1  TARGET=       38.000
     4.20      8.66   694.26      0.00    694.17    694.57      .31       .01       .04    688.10
     1080.      20.     1050.      11.       18.      232.      11.       41.        8.    690.60
      .32      1.09     4.53       .94      .085      .045     .085      .046    685.60    472.00
  .001406       10.      10.       10.         2         0        0      0.00     38.00    510.00

*SECNO 4.400

3470 ENCROACHMENT STATIONS=      327.0      360.0  TYPE=      1  TARGET=       33.000
     4.40      8.50   694.10      0.00    694.01    694.69      .59       .04       .08    688.10
```

```
   1080.      45.    1008.      27.      24.     159.      17.      41.       8.    690.60
     .32     1.83     6.35     1.56    .085     .045    .085     .046    685.60    327.00
 .003008      20.      20.      20.       2        0       0     0.00     33.00    360.00

*SECNO 4.600
3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      699.00 ELREA=      699.00

    4.60     7.23   693.73     0.00   693.62   695.05     1.33      .14      .22    690.40
   1080.       0.    1080.       0.       0.    117.       0.      41.       8.    690.70
     .32     0.00     9.24     0.00    .085     .045    .085     .046    686.50    700.00
 .008386      30.      30.      30.       2        0       0     0.00     19.20    719.20

*SECNO 4.700
3370 NORMAL BRIDGE,NRD= 29 MIN ELTRD=  699.80 MAX ELLC=  698.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      699.00 ELREA=      699.00

    4.70     7.02   693.52     0.00   693.42   695.15     1.63      .01      .09    690.40
   1080.       0.    1080.       0.       0.    106.       0.      41.       8.    690.70
     .32     0.00    10.23     0.00    .085     .030    .085     .045    686.50    700.00
 .007848       1.       1.       1.       2        0       0   -21.16     19.20    719.20

*SECNO 4.800
   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= 30 MIN ELTRD=  700.70 MAX ELLC=  699.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      700.70 ELREA=      700.70

                BRIDGE SECTION C        RR BRIDGE U/S

    4.80     6.78   694.48     0.00   694.43   696.06     1.57      .90      .01    691.50
   1080.       0.    1080.       0.       0.    107.       0.      42.       8.    692.10
     .32     0.00    10.06     0.00    .085     .030    .085     .045    687.70    602.00
 .007161      120.     120.     120.       1        0       0   -94.41     19.20    621.20

*SECNO 4.900
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      700.70 ELREA=      700.70

    4.90     7.10   694.80     0.00   694.75   696.09     1.29      .01      .03    691.50
   1080.       0.    1080.       0.       0.    118.       0.      42.       8.    692.10
     .32     0.00     9.12     0.00    .085     .040    .085     .045    687.70    602.00
```

```
 .006484      1.      1.      1.      3       0       0    0.00   19.20  621.20

*SECNO 5.000
3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     600.0     650.0  TYPE=     1  TARGET=     50.000
    5.00     8.82  696.12    0.00  696.09  696.22     .10     .01     .12  690.00
   1080.       0.   1080.      0.      0.    418.      0.     42.      8. 100000.00
     .32     0.00    2.58    0.00    .085    .040    .085    .045  687.30  600.00
 .000407      10.     10.     10.       2       0       0    0.00   50.00  650.00

*SECNO 5.100
3470 ENCROACHMENT STATIONS=     525.0     715.0  TYPE=     1  TARGET=    190.000
    5.10     8.91  696.21    0.00  696.18  696.24     .03     .01     .01  690.00
   1080.     281.    722.     77.    452.    423.    167.     43.      8.   687.90
     .34      .62    1.71     .46    .085    .040    .085    .045  687.30  525.00
 .000126      70.     70.     70.       2       0       0    0.00  185.71  710.71

CCHV=    .100 CEHV=    .300
*SECNO 8.000
                VALLEY SECTION D        CONFLUENCE WITH WHISKY CREEK
    8.00     7.64  696.34    0.00  696.32  696.55     .21     .26     .05  692.90
   1080.     134.    594.    352.    145.    126.    222.     58.     12.   691.60
     .41      .92    4.73    1.58    .085    .040    .085    .044  688.70  498.16
 .001550    1000.    830.    700.       2       0       0    0.00  213.85  712.00

*SECNO 40.700
  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

   40.70     6.54  698.04    0.00  698.04  698.22     .19    1.67     .00  695.00
    600.     148.    428.     25.     92.    107.     32.     65.     15.   697.00
     .48     1.60    3.99     .78    .075    .060    .075    .047  691.50 1939.25
 .003743     700.    850.    850.       3       0       0    0.00  144.95 2084.21

*SECNO 40.800
3470 ENCROACHMENT STATIONS=     290.0     470.0  TYPE=     1  TARGET=    180.000
                VALLEY SECTION E
   40.80     6.16  700.16    0.00  700.16  700.21     .05    1.97     .01  697.70
    600.     273.    222.    105.    205.     90.     90.     70.     18.   697.70
     .61     1.33    2.47    1.17    .075    .060    .075    .049  694.00  290.00
 .001755     700.    850.    850.       1       0       0    0.00  180.00  470.00
```

```
*SECNO 40.900
3470 ENCROACHMENT STATIONS=      370.0      560.0  TYPE=      1  TARGET=      190.000
                    VALLEY SECTION F

     40.90      4.03    702.73      0.00    702.72    702.79       .06      2.57       .00    700.80
      600.      189.      114.      297.      124.       38.      172.       79.       23.    700.80
       .76      1.53      3.01      1.73      .075      .060      .075      .051    698.70    370.00
   .003486     1200.     1100.      900.         3         0         0      0.00    190.00    560.00

CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 40.980
3301 HV CHANGED MORE THAN HVINS

     40.98      6.07    703.57      0.00    703.57    704.48       .91      1.27       .43    698.00
      600.       20.      571.        9.      176.       73.       78.       81.       24.    700.30
       .77       .11      7.86       .12     3.000      .060     2.000      .051    697.50    634.86
   .013316      250.      220.      150.         2         0         0      0.00    124.83    759.70

SPECIAL BRIDGE
SB   XK        XKOR      CUFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.58      3.00      0.00      14.00     0.00      77.00     0.00      697.50    697.50

*SECNO 41.060
PRESSURE AND WEIR FLOW

  EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID AREA    ELLC      ELTRD
  705.05    704.62    0.00      6.        595.      77.       77.               703.00    704.80

3470 ENCROACHMENT STATIONS=      680.0      760.0  TYPE=      1  TARGET=      80.000
                    BRIDGE SECTION G        EAST PARIS AVENUE BRIDGE U/S

     41.06      6.82    704.32      0.00    704.32    705.03       .71       .55      0.00    698.00
      600.       12.      574.       14.       99.       83.      114.       81.       24.    700.30
       .77       .12      6.90       .12     3.000      .060     2.000      .051    697.50    680.00
   .008568       27.       27.       27.         3         0         4      0.00     80.00    760.00

*SECNO 41.080
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
```

```
3470 ENCROACHMENT STATIONS=      590.0      790.0  TYPE=      1  TARGET=      200.000
    41.08      7.78    705.28      0.00    705.28    705.30       .02       .07       .21    698.00
     600.      295.      167.      138.      300.       97.      181.       81.       24.     700.30
      .79       .98      1.73       .76      .075      .060      .075      .052    697.50    615.44
  .000441       60.       60.       60.         2         0         0      0.00    169.26    784.70

CCHV=    .100 CEHV=    .300
*SECNO 41.100
    41.10      6.15    705.45      0.00    705.46    705.47       .02       .17       .00    702.80
     600.       13.      175.      412.       24.      113.      454.       86.       25.     702.00
      .87       .56      1.56       .91      .080      .065      .080      .053    699.30    154.06
  .000622      500.      393.      200.         3         0         0      0.00    222.45    376.51

*SECNO 41.300

3470 ENCROACHMENT STATIONS=      528.0      728.0  TYPE=      1  TARGET=      200.000
                VALLEY SECTION H

    41.30      4.73    706.83      0.00    706.83    706.92       .09      1.43       .02    705.80
     600.       78.      520.        2.       87.      201.        4.       97.       31.     705.80
     1.01       .90      2.59       .48      .090      .065      .090      .054    702.10    531.29
  .003583     1150.     1150.     1150.         3         0         0      0.00    192.56    723.86

*SECNO 41.400
 2800 NAT Q1=     129.23  WSEL=     711.08  ENC Q1=     129.23  WSEL=     711.18  RATIO=  0.0000
 NAT Q1=     138.  RATIOS LOB,CH,ROB=    .3514    .2074    .4412  WSEL=     711.18

3470 ENCROACHMENT STATIONS=      851.5      993.4  TYPE=      4  TARGET=        .066
                VALLEY SECTION I

    41.40      5.46    711.16      0.00    711.08    711.22       .06      4.30       .00    707.70
     600.      205.      134.      260.      120.       45.      174.      108.       36.     707.70
     1.23      1.72      3.01      1.49      .075      .060      .075      .055    705.70    851.51
  .002229     1100.     1550.     2000.         3         0         0      0.00    141.87    993.38

*SECNO 41.600

3470 ENCROACHMENT STATIONS=      372.0      542.0  TYPE=      1  TARGET=      170.000
                VALLEY SECTION J

    41.60      4.18    714.58      0.00    714.52    714.61       .04      3.39       .00    711.90
     600.       86.      173.      341.       72.       80.      261.      125.       43.     711.90
     1.58      1.18      2.17      1.31      .075      .060      .075      .056    710.40    372.00
  .001395     1950.     1950.     1950.         4         0         0      0.00    170.00    542.00

*SECNO 41.700
 2800 NAT Q1=     214.51  WSEL=     718.22  ENC Q1=     214.51  WSEL=     718.32  RATIO=  0.0000
 NAT Q1=     233.  RATIOS LOB,CH,ROB=    .4989    .2370    .2641  WSEL=     718.32
   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=     572.2     842.2  TYPE=     4  TARGET=        .078
                 VALLEY SECTION K
    41.70     7.59   718.29     0.00   718.22   718.31      .02     3.69      .00   715.40
     600.      299.     156.     145.     301.     85.     186.     166.      62.   715.40
     2.43      .99     1.83      .78     .075     .060     .075     .056   710.70   572.16
  .000816    3200.    3200.    4000.        3        0        0     0.00   270.00   842.15

*SECNO 41.900
3470 ENCROACHMENT STATIONS=     740.0    1010.0  TYPE=     1  TARGET=     270.000
                 VALLEY SECTION L        28TH STREET BRIDGE D/S
    41.90     3.99   720.79     0.00   720.73   720.84      .05     2.52      .01   718.60
     600.      183.     195.     222.     136.     74.     182.     186.      73.   718.60
     2.73     1.35     2.64     1.22     .075     .060     .075     .056   716.80   740.00
  .002725    1850.    1850.    1850.        3        0        0     0.00   270.00  1010.00
```

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: KENTWOOD, CITY OF

3) WATERCOURSE: LITTLE PLASTER CREEK

4) DOCUMENT TYPE: 100-YEAR NATURAL

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

C
T1      FIS CITY OF KENTWOOD, KENT COUNTY, MICHIGAN
T2      100-YEAR FLOOD
T3      LITTLE PLASTER CREEK

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.       4.       0.        0.   0.000000      0.00      0.0       0.    690.750    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
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

ET      0.000     0.000     0.000     0.000     0.000     1.400     0.000     0.000     0.000     0.000
QT      5.000   640.000   950.000  1080.000  1430.000  1080.000     0.000     0.000     0.000     0.000
NC       .085      .085      .045      .100      .300     0.000     0.000     0.000     0.000     0.000

X1      0.000     9.000  1014.000  1054.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    700.000   700.000   690.000   990.000   685.300  1014.000   682.400  1024.000   684.600  1028.000
GR    682.300  1044.000   687.800  1054.000   690.000  1070.000   700.000  1650.000     0.000     0.000

                VALLEY SECTION A

X1      1.000     8.000  1014.000  1054.000   400.000   600.000   700.000     0.000     0.000     0.000
GR    700.000   620.000   685.500  1014.000   682.600  1024.000   684.800  1028.000   682.500  1044.000
GR    688.000  1054.000   691.000  1200.000   700.000  1550.000     0.000     0.000     0.000     0.000

                                                                we suggest this be reduced or re run  It was not!
X1      1.500     6.000  1000.000  1034.000   850.000   600.000   950.000     0.000     0.000     0.000
GR    700.000   800.000   687.500  1000.000   683.000  1023.000   683.000  1026.000   689.500  1034.000
GR    700.000  1150.000     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
ET      0.000     9.100     9.100     9.100     9.100     9.100     0.000     0.000   348.000   396.000

X1      2.000    28.000   360.000   384.000   250.000   250.000   250.000     0.000     0.000     0.000
GR    712.100     0.000   708.900   116.000   703.700   132.000   702.200   150.000   689.000   221.000
GR    688.800   360.000   684.100   374.000   683.300   377.000   683.700   380.000   691.300   384.000
GR    694.300   390.000   695.700   404.000   695.100   512.000   702.200   532.000   709.100   546.000
GR    706.300   676.000   710.800   694.000   710.600   776.000   707.200   782.000   709.000   892.000
GR    707.100  1049.000   712.400  1212.000   710.800  1414.000   710.400  1473.000   713.600  1675.000
GR    713.700  1712.000   712.300  1724.000   706.100  1844.000     0.000     0.000     0.000     0.000
```

MOORE BUSINESS FORMS INC. 27

X1	2.600	21.000	360.000	382.500	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	697.000	697.000	0.000
GR	712.100	0.000	708.900	116.000	703.700	132.000	703.300	148.000	702.200	150.000
GR	690.100	176.000	689.000	221.000	688.800	360.000	684.900	361.000	684.700	371.000
GR	684.400	372.500	684.200	382.500	687.800	401.000	688.200	498.000	691.600	718.000
GR	697.700	785.000	697.700	794.000	702.700	1028.000	703.300	1102.000	705.300	1200.000
GR	716.000	1400.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	1.726	3.000	0.000	16.900	1.000	140.000	0.000	682.400	684.200

BRIDGE SECTION 8 M-37 BRIDGE U/S

ELIC 693.3 agree with highway plans

681 Highway plans

X1	2.700	29.000	685.000	706.000	100.000	100.000	100.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	691.200	704.400	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	704.400	704.400	0.000
BT	34.000	0.000	720.000	0.000	146.000	717.000	0.000	365.000	714.200	0.000
BT	366.000	714.500	0.000	494.000	713.200	0.000	541.000	712.400	0.000	577.000
BT	709.800	0.000	585.000	709.800	0.000	585.000	709.800	0.000	616.000	709.800
BT	0.000	650.000	709.800	0.000	658.000	709.800	0.000	678.000	709.800	0.000
BT	685.000	709.800	0.000	685.000	709.800	684.000	685.000	709.800	691.200	695.000
BT	709.800	691.200	695.000	709.800	684.200	696.000	709.800	682.400	696.000	709.800
BT	691.200	705.500	709.800	691.200	706.000	709.800	691.200	706.000	709.800	684.800
BT	724.000	709.000	0.000	826.000	708.000	0.000	893.000	706.500	0.000	985.000
BT	706.000	0.000	994.000	705.800	0.000	1128.000	704.800	0.000	1202.000	704.400
BT	0.000	1300.000	705.300	0.000	1370.000	706.100	0.000	1374.000	706.400	0.000
BT	1500.000	716.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	720.400	0.000	717.000	146.000	714.200	365.000	714.500	366.000	713.200	494.000
GR	712.400	541.000	705.100	577.000	698.000	585.000	697.800	585.000	688.200	616.000
GR	688.200	650.000	689.500	658.000	688.400	678.000	684.000	685.000	684.200	695.000
GR	682.400	696.000	684.400	705.500	684.800	706.000	686.600	724.000	690.000	826.000
GR	690.900	893.000	697.700	985.000	697.700	994.000	702.700	1128.000	703.300	1202.000
GR	705.300	1300.000	706.100	1370.000	706.400	1374.000	716.000	1500.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	646.000	766.000
NC	0.000	0.000	.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	3.000	37.000	688.000	724.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	720.400	0.000	717.200	146.000	714.200	365.000	714.500	366.000	713.200	494.000
GR	712.400	541.000	705.100	577.000	697.800	585.000	698.100	586.000	688.200	616.000
GR	688.200	650.000	689.500	658.000	688.400	678.000	686.700	688.000	684.900	694.000
GR	684.500	696.000	684.300	698.000	684.500	700.000	684.800	706.000	686.600	724.000
GR	690.000	826.000	690.900	893.000	698.200	985.000	697.700	994.000	702.700	1128.000
GR	703.300	1202.000	705.300	1300.000	706.100	1370.000	706.400	1374.000	704.100	1480.000
GR	702.400	1542.000	704.400	1596.000	703.800	1760.000	702.600	1794.000	702.300	1798.000
GR	702.100	1994.000	702.900	2204.000	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	0.000	0.000	598.000	878.000

X1	3.100	0.000	0.000	0.000	80.000	80.000	80.000	0.000	0.000	0.000
NC	.085	.085	.045	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	1.400	0.000	0.000	558.000	846.000

X1	3.900	24.000	679.000	724.000	470.000	550.000	475.000	0.000	-.600	0.000
GR	723.900	0.000	719.900	164.000	719.600	388.000	718.000	498.000	717.800	512.000
GR	715.600	562.000	697.300	633.000	696.100	652.000	688.100	679.000	685.800	700.000
GR	685.600	704.000	685.600	707.000	685.600	710.000	685.600	712.000	690.600	724.000
GR	693.300	798.000	705.400	842.000	708.400	978.000	707.100	1100.000	708.200	1292.000
GR	711.900	1414.000	708.400	1460.000	705.400	1643.000	702.900	1808.000	0.000	0.000
NC	0.000	0.000	.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000

are li
number 19
Transport 19

plan shows
683.3

this reflects
1.4 ft of silt
accept as
analyzed

ET	0.000	9.100	9.100	9.100	9.100	0.000	0.000	0.000	677.000	726.000
X1	4.000	0.000	0.000	0.000	450.000	550.000	450.000	0.000	.600	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	472.000	510.000
X1	4.200	0.000	0.000	0.000	10.000	10.000	10.000	.700	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	327.000	360.000
X1	4.400	0.000	0.000	0.000	20.000	20.000	20.000	.700	0.000	0.000
X1	4.600	30.000	[redacted]	719.200	30.000	30.000	30.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	699.000	699.000	0.000
GR	723.900	0.000	719.900	164.000	719.600	388.000	718.000	498.000	717.800	512.000
GR	715.600	562.000	699.800	633.000	699.800	652.000	696.100	679.000	[redacted]	[redacted] left limit
GR	688.400	701.300	687.600	703.300	687.100	705.300	686.800	707.300	686.500	708.300
GR	686.900	711.300	687.200	713.300	687.700	715.300	688.400	717.300	690.700	719.200 right limit
GR	690.600	724.000	693.300	798.000	705.400	842.000	708.400	978.000	707.100	1100.000
GR	708.200	1292.000	711.900	1414.000	708.400	1460.000	705.400	1634.000	702.900	1808.000
NC	0.000	0.000	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.700	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	699.000	699.000	0.000
BT	29.000	0.000	723.900	0.000	164.000	719.900	0.000	388.000	719.600	0.000
BT	498.000	718.000	0.000	512.000	717.800	0.000	562.000	715.600	0.000	633.000
BT	699.800	0.000	652.000	699.800	0.000	[redacted]	699.800	[redacted]	701.300	699.800
BT	[redacted]	703.300	699.800	[redacted]	705.300	699.800	[redacted]	707.300	699.800	[redacted]
BT	708.300	699.800	[redacted]	711.300	699.800	[redacted]	713.300	699.800	[redacted]	715.300
BT	699.800	694.900	717.300	699.800	692.500	[redacted]	699.800	690.700	724.000	699.800
BT	0.000	798.000	699.800	0.000	842.000	705.400	0.000	978.000	708.400	0.000
BT	1100.000	707.100	0.000	1292.000	708.200	0.000	1414.000	711.900	0.000	1460.000
BT	708.400	0.000	1634.000	705.400	0.000	1808.000	702.900	0.000	0.000	0.000

BRIDGE SECTION C RR BRIDGE U/S

X1	4.800	28.000	602.000	621.200	120.000	120.000	120.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	700.700	700.700	0.000
BT	30.000	0.000	721.800	0.000	100.000	719.100	0.000	168.000	717.300	0.000
BT	168.000	717.000	0.000	246.000	716.200	0.000	366.000	714.900	0.000	410.000
BT	700.700	0.000	422.000	700.700	0.000	482.000	700.700	0.000	491.000	700.700
BT	0.000	602.000	700.700	691.500	602.000	700.700	691.500	602.000	700.700	691.500
BT	603.400	700.700	693.500	605.400	700.700	695.900	607.400	700.700	697.600	609.400
BT	700.700	698.700	611.400	700.700	699.200	613.400	700.700	698.800	615.400	700.700
BT	697.900	617.400	700.700	696.700	619.400	700.700	694.700	621.200	700.700	692.100
BT	666.000	700.700	0.000	716.000	700.700	0.000	748.000	705.300	0.000	835.000
BT	709.300	0.000	1025.000	714.500	0.000	1103.000	716.100	0.000	1449.000	720.400
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	721.800	0.000	719.100	100.000	717.300	168.000	717.000	168.000	716.200	246.000
GR	714.900	366.000	700.700	410.000	692.000	422.000	690.000	482.000	691.700	491.000
GR	691.500	602.000	689.500	603.400	688.500	605.400	688.100	607.400	687.900	609.400
GR	687.700	611.400	687.700	613.400	687.900	615.400	688.400	617.400	689.600	619.400
GR	692.100	621.200	692.900	666.000	696.600	716.000	705.300	748.000	709.300	835.000
GR	714.500	1025.000	716.100	1103.000	720.400	1449.000	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

X1	4.900	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	700.700	700.700	0.000
X1	5.000	28.000	600.000	650.000	10.000	10.000	10.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	600.000	0.000	650.000	0.000	0.000	0.000	0.000
GR	721.800	0.000	719.100	100.000	717.300	168.000	717.000	168.000	716.200	246.000
GR	714.900	366.000	696.800	410.000	692.000	422.000	690.000	482.000	691.700	491.000
GR	692.200	519.000	689.300	520.000	689.500	534.000	690.800	564.000	690.000	600.000
GR	687.900	602.000	687.300	606.000	687.500	610.000	687.500	614.000	687.700	618.000
GR	687.900	650.000	692.900	666.000	696.600	716.000	705.300	748.000	709.300	835.000
GR	714.500	1025.000	716.100	1103.000	720.400	1449.000	0.000	0.000	0.000	0.000
X1	5.100	0.000	0.000	0.000	70.000	70.000	70.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	525.000	0.000	715.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.040	.100	.300	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	0.000	725.000

VALLEY SECTION D CONFLUENCE WITH WHISKY CREEK

X1	8.000	27.000	632.000	651.000	1000.000	700.000	830.000	0.000	0.000	0.000
GR	707.900	0.000	708.800	184.000	706.200	406.000	696.500	486.000	695.000	602.000
GR	694.600	604.000	692.900	632.000	688.700	640.000	688.700	649.000	691.600	651.000
GR	693.800	712.000	693.300	756.000	691.100	776.000	688.200	782.000	687.800	786.000
GR	687.800	790.000	687.800	794.000	689.100	798.000	690.800	799.000	694.500	818.000
GR	692.800	865.000	694.900	959.000	708.400	997.000	711.800	1047.000	713.200	1143.000
GR	715.100	1249.000	719.600	1287.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	5.000	340.000	520.000	600.000	830.000	600.000	0.000	0.000	0.000	0.000
NC	.075	.075	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	40.700	7.000	2000.000	2023.000	700.000	850.000	850.000	0.000	0.000	0.000
GR	700.000	1900.000	695.000	2000.000	692.500	2008.000	691.500	2014.000	694.000	2019.000
GR	697.000	2023.000	700.000	2200.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	9.100	0.000	0.000	290.000	470.000

VALLEY SECTION E

X1	40.800	18.000	392.000	415.000	700.000	850.000	850.000	0.000	0.000	0.000
GR	716.600	100.000	716.600	100.000	714.000	148.000	712.600	198.000	707.100	248.000
GR	698.100	298.000	698.300	342.000	697.700	392.000	696.100	402.000	694.000	406.000
GR	696.100	410.000	697.700	415.000	699.200	465.000	701.200	495.000	709.800	560.000
GR	712.000	588.000	715.100	738.000	715.100	738.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	370.000	560.000

VALLEY SECTION F

X1	40.900	18.000	454.000	466.000	1200.000	900.000	1100.000	0.000	0.000	0.000
GR	720.000	100.000	714.800	142.000	710.500	174.000	704.200	224.000	702.100	274.000
GR	701.700	374.000	701.100	424.000	700.800	454.000	700.100	455.000	698.700	460.000
GR	700.100	465.000	700.800	466.000	700.900	472.000	700.900	586.000	706.600	636.000
GR	710.100	666.000	711.600	686.000	712.400	816.000	720.000	816.000	0.000	0.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
NH	3.000	3.000	698.000	.060	712.000	2.000	1113.000	0.000	0.000	0.000

X1	40.980	29.000	698.000	712.000	250.000	150.000	220.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	703.000	703.000	0.000
GR	715.400	100.000	713.600	199.000	712.300	298.000	710.700	397.000	708.700	505.000
GR	706.200	605.000	698.000	698.000	697.900	698.500	698.100	699.000	698.000	699.700
GR	698.200	700.400	697.500	701.000	697.700	701.500	698.000	702.800	697.700	703.000
GR	697.900	703.500	697.700	704.000	698.000	704.500	697.500	705.000	698.500	706.500
GR	698.300	707.000	699.200	709.000	699.000	710.000	700.300	712.000	705.300	785.000
GR	705.700	805.000	706.900	911.000	712.200	1011.000	715.000	1113.000	0.000	0.000
SB	0.000	1.578	3.000	0.000	14.000	0.000	77.000	0.000	697.500	697.500

BRIDGE SECTION G EAST PARIS AVENUE BRIDGE U/S

X1	41.060	0.000	0.000	0.000	27.000	27.000	27.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	703.000	704.800	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	680.000	0.000	760.000	0.000	704.200	704.200	0.000
BT	8.000	505.000	708.700	0.000	605.000	706.200	0.000	698.000	705.000	698.000
BT	698.000	705.000	703.000	712.000	704.800	702.700	712.000	704.800	700.300	785.000
BT	705.300	0.000	805.000	705.700	0.000	0.000	0.000	0.000	0.000	0.000
NC	.075	.075	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	41.080	0.000	0.000	0.000	60.000	60.000	60.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	590.000	0.000	790.000	0.000	0.000	0.000	0.000
NC	.080	.080	.065	.100	.300	0.000	0.000	0.000	0.000	0.000

X1	41.100	15.000	172.000	196.000	500.000	200.000	393.000	0.000	0.000	0.000
GR	716.900	100.000	712.600	122.000	706.500	147.000	702.800	172.000	702.000	173.000
GR	700.800	178.000	699.300	184.000	700.800	190.000	702.000	196.000	701.700	228.000
GR	703.200	276.000	702.700	326.000	708.100	425.000	712.600	516.000	712.700	531.000
NC	.090	.090	.065	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	9.100	0.000	0.000	528.000	728.000

VALLEY SECTION H

X1	41.300	22.000	634.000	710.000	1150.000	1150.000	1150.000	0.000	0.000	0.000
GR	723.000	100.000	720.600	205.000	718.800	277.000	716.900	321.000	713.600	389.000
GR	709.400	491.000	705.700	549.000	706.100	599.000	705.800	634.000	703.800	684.000
GR	702.900	689.000	702.100	697.000	702.900	705.000	705.800	710.000	706.300	711.000
GR	709.100	779.000	712.100	911.000	714.500	981.000	715.900	999.000	718.400	1141.000
GR	720.400	1357.000	720.400	1367.000	723.000	1367.000	0.000	0.000	0.000	0.000
NC	.075	.075	.060	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	1.400	0.000	0.000	0.000	0.000

VALLEY SECTION I

X1	41.400	18.000	898.000	908.000	1100.000	2000.000	1550.000	0.000	0.000	0.000
GR	726.000	100.000	723.600	158.000	722.700	226.000	723.700	328.000	724.000	464.000
GR	723.300	530.000	721.400	626.000	718.600	732.000	715.700	788.000	709.600	848.000
GR	707.700	898.000	705.700	903.000	707.700	908.000	709.200	912.000	709.100	992.000
GR	720.900	1136.000	723.000	1166.000	724.600	1192.000	726.000	1192.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	9.100	0.000	0.000	372.000	542.000

VALLEY SECTION J

X1	41.600	19.000	409.000	431.000	1950.000	1950.000	1950.000	0.000	0.000	0.000
GR	727.100	100.000	727.100	100.000	719.000	214.000	723.100	274.000	715.500	349.000
GR	712.200	394.000	711.900	409.000	710.700	414.000	710.400	420.000	710.900	426.000
GR	711.900	431.000	712.000	432.000	712.000	492.000	713.000	542.000	720.000	640.000
GR	720.500	740.000	720.800	839.000	726.200	942.000	727.000	1042.000	728.000	604.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000

VALLEY SECTION K

X1	41.700	23.000	702.000	719.000	3200.000	4000.000	3200.000	0.000	0.000	0.000
GR	730.000	100.000	729.600	100.000	725.800	182.000	722.300	238.000	721.500	340.000
GR	718.500	490.000	716.400	588.000	715.500	687.000	715.400	702.000	713.300	703.000
GR	710.700	708.000	713.700	713.000	715.000	714.000	715.400	719.000	716.900	763.000
GR	717.700	903.000	719.000	1008.000	721.200	1131.000	722.300	1227.000	725.100	1329.000
GR	727.600	1431.000	728.700	1536.000	730.000	1584.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	9.100	0.000	0.000	740.000	1010.000

VALLEY SECTION L 28TH STREET BRIDGE D/S

X1	41.900	17.000	839.000	864.000	1850.000	1850.000	1850.000	0.000	0.000	0.000
GR	726.400	493.000	723.000	595.000	721.200	697.000	719.200	798.000	718.600	839.000
GR	717.900	849.000	716.800	855.000	717.800	860.000	718.600	864.000	719.200	865.000
GR	719.300	896.000	719.500	946.000	720.400	1044.000	722.600	1142.000	728.900	1243.000
GR	732.100	1298.000	732.100	1298.000	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

Hof be .5 low

```
*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

     0.00       8.45     690.75       0.00     690.75     690.93        .18       0.00       0.00     685.30
    1080.        87.       964.        29.       83.       272.        46.         0.         0.     687.80
     0.00       1.06       3.55        .63       .085       .045       .085      0.000     682.30     968.25
  .000973         0.         0.         0.          0          0          0       0.00     145.25    1113.50

FLOW DISTRIBUTION FOR SECNO=       0.00          CWSEL=     690.75

STA=      968.      990.     1014.     1054.     1070.     1114.
  PER Q=        .2       7.9      89.2       2.2        .4
   AREA=       8.2      74.4     271.8      29.6      16.3
    VEL=        .3       1.1       3.5        .8        .3

*SECNO 1.000

                VALLEY SECTION A

    1.00       8.75    691.25       0.00       0.00    691.30        .05        .37        .01     685.50
    1080.       309.      645.       126.       450.      284.       257.         9.         3.     688.00
     .11        .69      2.27        .49       .085       .045       .085       .049     682.50     857.67
  .000377       400.      700.       600.          2          0          0       0.00     352.17    1209.84

FLOW DISTRIBUTION FOR SECNO=       1.00          CWSEL=     691.25

STA=      858.     1014.     1054.     1200.     1210.
  PER Q=       28.6      59.7      11.7        .0
   AREA=      449.7     283.9     256.0       1.2
    VEL=         .7       2.3        .5        .1

*SECNO 1.500
    1.50       8.73    691.73       0.00       0.00    691.95        .22        .60        .05     687.50
    1080.       156.      904.        20.       143.      219.        27.        22.         7.     689.50
     .18       1.09      4.13        .71       .085       .045       .085       .048     683.00     932.33
  .001445       850.      950.       600.          2          0          0       0.00     126.29    1058.63

FLOW DISTRIBUTION FOR SECNO=       1.50          CWSEL=     691.73

STA=      932.     1000.     1034.     1059.
  PER Q=       14.5      83.7       1.8
   AREA=      143.1     219.0      27.4
    VEL=         1.1       4.1        .7

CCHV=     .300 CEHV=     .500
*SECNO 2.000

3470 ENCROACHMENT STATIONS=      348.0      396.0  TYPE=      1  TARGET=      48.000
    2.00       8.82    692.12       0.00       0.00    692.76        .63        .60        .21     688.80
```

high when section topwidth have been contracted & expanded.

```
   1080.      90.      990.       0.       40.      149.       1.       24.       8.    691.30
     .19     2.26      6.64      .61      .085      .045     .085      .048   683.30    348.00
 .004668     250.      250.     250.         2         0        0      0.00    37.64    385.64

FLOW DISTRIBUTION FOR SECNO=      2.00          CWSEL=    692.12

STA=      348.      360.      384.      386.
  PER Q=     8.3      91.7        .0
    AREA=   39.7     149.0        .7
     VEL=    2.3       6.6        .6

*SECNO 2.600
   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=      697.00 ELREA=      697.00

     2.60      8.14   692.34      0.00      0.00   692.94       .61       .18       .01   688.80
    1080.        0.    1080.        0.        0.     173.        0.       24.        8.   684.20
      .19      0.00     6.25      0.00      .085      .045     .085      .048   684.20    360.00
 .002798       50.      50.       50.         2         0        0      0.00    22.50    382.50

FLOW DISTRIBUTION FOR SECNO=      2.60          CWSEL=    692.34

STA=      360.      383.
  PER Q=   100.0
    AREA=  172.9
     VEL=    6.2

SPECIAL BRIDGE

SB   XK        XKOR      COFQ      RDLEN     HWC       HWP       BAREA     SS        ELCHU     ELCHD
      1.25      1.73      3.00      0.00     16.90      1.00    140.00      0.00    682.40    684.20

*SECNO 2.700
PRESSURE FLOW

 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID     ELLC      ELTRD
                                                              AREA
 693.93    693.00     .13        0.      1080.      140.      140.      691.20    704.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      704.40 ELREA=      704.40

                BRIDGE SECTION H        M-37 BRIDGE U/S

     2.70     11.10   693.50      0.00      0.00   693.93       .43       .99      0.00   684.00
    1080.        0.    1080.        0.        0.     205.        0.       25.        8.   684.80
      .20      0.00     5.28      0.00      .085      .045     .085      .047   682.40    685.00
 .001339      100.     100.      100.         2         0        0      0.00    21.00    706.00
```

```
FLOW DISTRIBUTION FOR SECNO=       2.70          CWSEL=     693.50

STA=      685.      706.
  PER Q=     100.0
    AREA=    204.6
     VEL=      5.3

*SECNO 3.000

3470 ENCROACHMENT STATIONS=      646.0      766.0  TYPE=      1  TARGET=      120.000
     3.00      9.70    694.00      0.00      0.00    694.06       .06       .02       .11    686.70
    1080.      155.      718.      207.      230.      312.      282.       25.        8.    686.60
      .21       .67      2.30       .74      .085      .035      .085      .047    684.30    646.00
  .000168       50.       50.       50.         2         0         0      0.00    120.00    766.00

FLOW DISTRIBUTION FOR SECNO=       3.00          CWSEL=     694.00

STA=      646.      650.      658.      678.      688.      724.      766.
  PER Q=       .9       2.6       6.2       4.6      66.5      19.2
    AREA=     23.2      41.2     101.1      64.5     311.9     281.6
     VEL=       .4        .7        .7        .8       2.3        .7

*SECNO 3.100

3470 ENCROACHMENT STATIONS=      598.0      878.0  TYPE=      1  TARGET=      280.000
     3.10      9.76    694.06      0.00      0.00    694.08       .02       .01       .01    686.70
    1080.      218.      499.      363.      461.      314.      781.       27.        8.    686.60
      .23       .47      1.59       .46      .085      .035      .085      .047    684.30    598.23
  .000079       80.       80.       80.         0         0         0      0.00    279.77    878.00

FLOW DISTRIBUTION FOR SECNO=       3.10          CWSEL=     694.06

STA=      598.      616.      650.      658.      678.      688.      724.      826.      878.
  PER Q=       1.5       9.3       1.8       4.4       3.2      46.2      27.2       6.4
    AREA=     52.1     199.4      41.7     102.3      65.1     314.0     588.0     193.2
     VEL=       .3        .5        .5        .5        .5       1.6        .5        .4

CCHV=     .100 CEHV=     .300
*SECNO 3.900

3470 ENCROACHMENT STATIONS=      558.0      846.0  TYPE=      1  TARGET=      288.000
     3.90      9.09    694.09      0.00      0.00    694.17       .08       .07       .02    687.50
    1080.       55.      887.      139.       73.      350.      206.       40.       11.    690.00
      .29       .75      2.53       .67      .085      .045      .085      .046    685.00    656.75
  .000393      470.      475.      550.         2         0         0      0.00    146.31    803.06

FLOW DISTRIBUTION FOR SECNO=       3.90          CWSEL=     694.09

STA=      657.      679.      724.      798.      803.
  PER Q=       5.1      82.1      12.8        .1
    AREA=     73.3     350.4     202.9       3.5
     VEL=       .7       2.5        .7        .3

*SECNO 4.000
   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      WIN      FLMIN      SSTA
    SLOPE     XLOBL     XLCH     XLOBR     ITRIAL   IDC       ICONT    CORAR    TOPWID     ENDST

3470 ENCROACHMENT STATIONS=      677.0      726.0  TYPE=      1  TARGET=      49.000
     4.00      8.67    694.27     0.00      0.00    694.43     .16       .23       .02     688.10
    1080.       7.     1069.      4.        12.      331.      7.        45.       12.      690.60
      .33      .61      3.23     .55       .085     .045     .085      .046    685.60     677.00
  .000688     450.      450.     550.        2        0        0      0.00     49.00     726.00

FLOW DISTRIBUTION FOR SECNO=      4.00          CWSEL=    694.27

STA=      677.      679.      724.      726.
  PER Q=      .7      99.0      .4
  AREA=     11.7     331.4     7.3
   VEL=      .6       3.2      .5

*SECNO 4.200

3470 ENCROACHMENT STATIONS=      472.0      510.0  TYPE=      1  TARGET=      38.000
     4.20      8.57    694.17     0.00      0.00    694.49     .32       .01       .05     688.10
    1080.      20.     1050.      11.       18.      229.     11.        45.       12.      690.60
      .33     1.11      4.59     .95       .085     .045     .085      .046    685.60     472.00
  .001463      10.       10.      10.        2        0        0      0.00     38.00     510.00

FLOW DISTRIBUTION FOR SECNO=      4.20          CWSEL=    694.17

STA=      472.      475.      507.      510.
  PER Q=     1.8      97.2      1.0
  AREA=     17.7     228.8     11.2
   VEL=      1.1       4.6      .9

*SECNO 4.400

3470 ENCROACHMENT STATIONS=      327.0      360.0  TYPE=      1  TARGET=      33.000
     4.40      8.41    694.01     0.00      0.00    694.62     .60       .04       .09     688.10
    1080.      44.     1009.      27.       24.      157.     17.        46.       12.      690.60
      .33     1.86      6.44     1.57      .085     .045     .085      .046    685.60     327.00
  .003144      20.       20.      20.        2        0        0      0.00     33.00     360.00

FLOW DISTRIBUTION FOR SECNO=      4.40          CWSEL=    694.01

STA=      327.      333.      355.      360.
  PER Q=     4.1      93.4      2.5
  AREA=     23.9     156.7     16.8
   VEL=      1.9       6.4      1.6

*SECNO 4.600
3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      699.00 ELREA=      699.00

     4.60      7.12    693.62     0.00      0.00    694.99     1.37      .15       .23     690.40
    1080.       0.     1080.      0.        0.       115.      0.        46.       12.      690.70
```

```
      .33      0.00      9.40      0.00      .085      .045      .085      .046    686.50    700.00
  .008883       30.       30.       30.         2         0         0      0.00     19.20    719.20

FLOW DISTRIBUTION FOR SECNO=      4.60          CWSEL=     693.62

STA=      700.      719.
  PER Q=     100.0
   AREA=     114.9
    VEL=       9.4

*SECNO 4.700
3370 NORMAL BRIDGE,NRD= 29 MIN ELTRD=  699.80 MAX ELLC=  698.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      699.00 ELREA=      699.00

     4.70      6.92    693.42      0.00      0.00    695.09      1.67       .01       .09    690.40
    1080.        0.     1080.        0.        0.     104.        0.       46.       12.    690.70
      .33      0.00     10.38      0.00      .085      .030      .085      .046    686.50    700.00
  .008136        1.        1.        1.         2         0         0    -20.14     19.20    719.20

FLOW DISTRIBUTION FOR SECNO=      4.70          CWSEL=     693.42

STA=      700.      719.
  PER Q=     100.0
   AREA=     104.0
    VEL=      10.4

*SECNO 4.800
   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= 30 MIN ELTRD=  700.70 MAX ELLC=  699.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      700.70 ELREA=      700.70

                BRIDGE SECTION C          RR BRIDGE U/S

     4.80      6.73    694.43      0.00      0.00    696.02      1.60       .92       .01    691.50
    1080.        0.     1080.        0.        0.     106.        0.       46.       12.    692.10
      .34      0.00     10.15      0.00      .085      .030      .085      .045    687.70    602.00
  .007313       120.      120.      120.         1         0         0    -91.61     19.20    621.20

FLOW DISTRIBUTION FOR SECNO=      4.80          CWSEL=     694.43

STA=      602.      621.
  PER Q=     100.0
   AREA=     106.4
    VEL=      10.1
```

OK

Still have large draw down

696.19
loss 694.62
1.57

658

```
*SECNO 4.900
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      700.70 ELREA=      700.70
     4.90      7.05    694.75      0.00      0.00    696.06      1.31       .01       .03    691.50
    1080.        0.    1080.        0.        0.      117.        0.       46.       12.    692.10
      .34      0.00      9.20      0.00      .085      .040      .085      .045    687.70    602.00
  .006668        1.        1.        1.         3         0         0      0.00     19.20    621.20

FLOW DISTRIBUTION FOR SECNO=      4.90          CWSEL=    694.75
STA=      602.      621.
  PER Q=    100.0
   AREA=    117.4
    VEL=      9.2
*SECNO 5.000
3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=      600.0      650.0  TYPE=      1  TARGET=      50.000
     5.00      8.79    696.09      0.00      0.00    696.19       .10       .01       .12    690.00
    1080.        0.    1080.        0.        0.      417.        0.       46.       12. 100000.00
      .34      0.00      2.59      0.00      .085      .040      .085      .045    687.30    600.00
  .000411       10.       10.       10.         2         0         0      0.00     50.00    650.00

FLOW DISTRIBUTION FOR SECNO=      5.00          CWSEL=    696.09
STA=      600.      650.
  PER Q=    100.0
   AREA=    416.7
    VEL=      2.6
*SECNO 5.100
3470 ENCROACHMENT STATIONS=      525.0      715.0  TYPE=      1  TARGET=     190.000
     5.10      8.88    696.18      0.00      0.00    696.21       .03       .01       .01    690.00
    1080.      280.      723.       77.      450.      421.      165.       47.       12.    687.90
      .35       .62      1.72       .47      .085      .040      .085      .045    687.30    525.00
  .000128       70.       70.       70.         2         0         0      0.00    185.34    710.34

FLOW DISTRIBUTION FOR SECNO=      5.10          CWSEL=    696.18
STA=      525.      534.      564.      600.      650.      666.      710.
  PER Q=      2.7      11.0      12.3      66.9       5.3       1.8
   AREA=     60.7     180.9     208.1     421.2      92.5      72.8
    VEL=       .5        .7        .6       1.7        .6        .3
CCHV=    .100 CEHV=    .300
*SECNO 8.000
                 VALLEY SECTION D        CONFLUENCE WITH WHISKY CREEK
     8.00      7.62    696.32      0.00      0.00    696.53       .21       .26       .05    692.90
    1080.      132.      597.      352.      142.      125.      221.       62.       16.    691.60
      .42       .93      4.77      1.59      .085      .040      .085      .044    688.70    500.18
```

```
 .001583    1000.     830.     700.        2        0        0     0.00   211.82   712.00

FLOW DISTRIBUTION FOR SECNO=      8.00          CWSEL=    696.32

STA=      500.     602.     604.     632.     651.     712.
  PER Q=     3.3       .3      8.7     55.2     32.6
   AREA=    67.0      3.0     71.9    125.0    220.6
    VEL=      .5       .9      1.3      4.8      1.6

*SECNO 40.700
   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

   40.70     6.54   698.04     0.00     0.00   698.23      .19     1.70     .00      695.00
    600.     148.     427.      25.      92.     107.      32.      69.     19.      697.00
     .49     1.60     3.98      .78     .075     .060     .075     .047  691.50     1939.17
 .003726     700.     850.     850.        3        0        0     0.00  145.27     2084.44

FLOW DISTRIBUTION FOR SECNO=     40.70          CWSEL=    698.04

STA=     1939.    2000.    2023.    2084.
  PER Q=    24.6     71.2      4.2
   AREA=    92.5    107.2     32.0
    VEL=     1.6      4.0       .8

*SECNO 40.800
                    VALLEY SECTION E

   40.80     6.16   700.16     0.00     0.00   700.21      .05     1.97     .01      697.70
    600.     273.     222.     105.     207.      90.      93.      74.     22.      697.70
     .62     1.32     2.47     1.14     .075     .060     .075     .049  694.00     286.53
 .001751     700.     850.     850.        0        0        0     0.00  192.94     479.47

FLOW DISTRIBUTION FOR SECNO=     40.80          CWSEL=    700.16

STA=      287.     298.     342.     392.     415.     465.     479.
  PER Q=     1.7     18.7     25.0     37.0     17.0       .6
   AREA=    11.8     86.4    108.2     89.9     85.7      7.0
    VEL=      .8      1.3      1.4      2.5      1.2       .5

*SECNO 40.900
3470 ENCROACHMENT STATIONS=     370.0     560.0  TYPE=     1  TARGET=     190.000
                    VALLEY SECTION F

   40.90     4.02   702.72     0.00     0.00   702.78      .06     2.57     .00      700.80
    600.     189.     114.     297.     123.      38.     172.      83.     27.      700.80
     .78     1.53     3.01     1.73     .075     .060     .075     .051  698.70     370.00
 .003501    1200.    1100.     900.        3        0        0     0.00  190.00     560.00

FLOW DISTRIBUTION FOR SECNO=     40.90          CWSEL=    702.72
```

```
STA=      370.      374.      424.      454.      466.      472.      560.
  PER Q=      .7     15.6      15.2      19.0       3.3      46.2
   AREA=     4.1     66.2      53.2      37.8      11.2     160.5
    VEL=     1.0      1.4       1.7       3.0       1.8       1.7

CCHV=     .300 CEHV=     .500
1490 NH CARD USED
*SECNO 40.980

3301 HV CHANGED MORE THAN HVINS

    40.98      6.07    703.57      0.00      0.00    704.48       .91      1.27       .43    698.00
     600.       20.      571.        9.      176.       73.       78.       85.       28.    700.30
      .79       .11      7.85       .12     3.000      .060     2.000      .051    697.50    634.85
  .013305      250.      220.      150.         2         0         0      0.00    124.86    759.71

FLOW DISTRIBUTION FOR SECNO=     40.98          CWSEL=    703.57

STA=      635.      698.      712.      760.
  PER Q=      3.3      95.2       1.5
   AREA=    175.8      72.7      78.0
    VEL=       .1       7.9        .1

SPECIAL BRIDGE

SB   XK        XKOR        COFQ        RDLEN       BWC         BWP         BAREA       SS          ELCHU       ELCHD
     0.00        1.58        3.00        0.00       14.00        0.00       77.00        0.00      697.50      697.50

*SECNO 41.060
PRESSURE AND WEIR FLOW

 EGPRS       EGLWC        H3        QWEIR       QPR         BAREA     TRAPEZOID AREA      ELLC        ELTRD
 705.05      704.63      0.00        6.        595.         77.         77.         703.00      704.80

3470 ENCROACHMENT STATIONS=     680.0     760.0  TYPE=     1  TARGET=     80.000
                BRIDGE SECTION G        EAST PARIS AVENUE BRIDGE U/S

    41.06      6.82    704.32      0.00      0.00    705.03       .71       .55      0.00    698.00
     600.       12.      574.       14.       99.       83.      114.       85.       28.    700.30
      .79       .12      6.90       .12     3.000      .060     2.000      .052    697.50    680.00
  .008562       27.       27.       27.         3         0         4      0.00     80.00    760.00

FLOW DISTRIBUTION FOR SECNO=     41.06          CWSEL=    704.32

STA=      680.      698.      712.      760.
  PER Q=      2.0      95.7       2.3
   AREA=     99.5      83.2     114.1
    VEL=       .1       6.9        .1

*SECNO 41.080
```

```
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

3470 ENCROACHMENT STATIONS=      590.0      790.0  TYPE=      1  TARGET=      200.000
     41.08      7.78    705.28      0.00      0.00    705.30       .02       .07       .21    698.00
      600.      295.      167.      138.      301.      97.      181.       86.       28.    700.30
       .80       .98      1.73       .76      .075      .060      .075      .052    697.50    615.43
   .000440       60.       60.       60.         2         0         0      0.00    169.28    784.71

FLOW DISTRIBUTION FOR SECNO=    41.08          CWSEL=    705.28

STA=      615.      698.      712.      785.
  PER Q=     49.2      27.8      23.0
   AREA=    300.5      96.7     181.0
    VEL=      1.0       1.7        .8

CCHV=     .100 CEHV=     .300
*SECNO 41.100
     41.10      6.16    705.46      0.00      0.00    705.48       .02       .17       .00    702.80
      600.       13.      175.      412.       24.      113.      455.       90.       29.    702.00
       .89       .56      1.56       .91      .080      .065      .080      .053    699.30    154.06
   .000621      500.      393.      200.         3         0         0      0.00    222.46    376.52

FLOW DISTRIBUTION FOR SECNO=     41.10          CWSEL=    705.46

STA=      154.      172.      196.      228.      276.      326.      377.
  PER Q=      2.2      29.2      20.9      23.2      17.8       6.6
   AREA=     23.8     112.5     115.4     144.3     125.3      69.6
    VEL=       .6       1.6       1.1       1.0        .9        .6

*SECNO 41.300
                    VALLEY SECTION H

     41.30      4.73    706.83      0.00      0.00    706.92       .09      1.42       .02    705.80
      600.       78.      520.        2.       87.      201.        4.      102.       35.    705.80
      1.02       .90      2.59       .48      .090      .065      .090      .054    702.10    531.29
   .003583     1150.     1150.     1150.         3         0         0      0.00    192.56    723.86

FLOW DISTRIBUTION FOR SECNO=     41.30          CWSEL=    706.83

STA=      531.      549.      599.      634.      710.      711.      724.
  PER Q=      1.1       7.3       4.7      86.6        .1        .2
   AREA=     10.0      46.5      30.8     200.5        .8       3.4
    VEL=       .7        .9        .9       2.6        .8        .4

*SECNO 41.400
                    VALLEY SECTION I

     41.40      5.38    711.08      0.00      0.00    711.14       .06      4.21       .00    707.70
```

```
   600.     211.     129.     261.     133.      44.     189.     113.      41.    707.70
  1.26     1.59     2.93     1.38     .075     .060     .075     .055    705.70   833.40
.002155    1100.    1550.    2000.        5        0        0     0.00    182.82  1016.22

FLOW DISTRIBUTION FOR SECNO=      41.40          CWSEL=     711.08

STA=      833.     848.     898.     908.     912.     992.    1016.
  PER Q=    1.4     33.8     21.4      3.0     36.8      3.7
   AREA=   10.8    121.7     43.8     10.5    154.8     24.0
    VEL=     .8      1.7      2.9      1.7      1.4       .9

*SECNO 41.600

                 VALLEY SECTION J

  41.60     4.12   714.52     0.00     0.00   714.56      .04     3.42      .00   711.90
   600.      81.    172.     346.      74.     79.     270.     131.      50.    711.90
   1.62     1.11     2.19     1.28     .075     .060     .075     .056    710.40   362.41
.001453    1950.    1950.    1950.        4        0        0     0.00    200.82   563.23

FLOW DISTRIBUTION FOR SECNO=      41.60          CWSEL=     714.52

STA=      362.     394.     409.     431.     432.     492.     542.     563.
  PER Q=    5.1      8.5     28.7       .6     35.2     20.3      1.7
   AREA=   36.6     37.0     78.7      2.6    151.0    100.8     16.1
    VEL=     .8      1.4      2.2      1.4      1.4      1.2       .6

*SECNO 41.700
   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

                 VALLEY SECTION K

  41.70     7.52   718.22     0.00     0.00   718.24      .02     3.68      .00   715.40
   600.     300.    149.     151.     343.     84.     230.     175.      77.    715.40
   2.56      .87     1.78      .66     .075     .060     .075     .056    710.70   503.26
.000782    3200.    3200.    4000.        5        0        0     0.00    441.40   944.66

FLOW DISTRIBUTION FOR SECNO=      41.70          CWSEL=     718.22

STA=      503.     588.     687.     702.     719.     763.     903.     945.
  PER Q=    6.7     35.7      7.6     24.9     13.6     11.2      .4
   AREA=   76.9    224.3     41.5     84.0     90.9    128.2     10.7
    VEL=     .5      1.0      1.1      1.8      .9       .5       .2

*SECNO 41.900

                 VALLEY SECTION L        28TH STREET BRIDGE D/S

  41.90     3.93   720.73     0.00     0.00   720.79      .05     2.54      .01   718.60
   600.     176.    198.     226.     134.     72.     193.     197.      93.    718.60
   2.85     1.31     2.74     1.17     .075     .060     .075     .056    716.80   720.72
.003009    1850.    1850.    1850.        3        0        0     0.00    338.00  1058.71
```

FLOW DISTRIBUTION FOR SECNO= 41.90 CWSEL= 720.73

STA=	721.	798.	839.	864.	865.	896.	946.	1044.	1059.
PER Q=	9.0	20.3	33.0	.4	10.8	14.6	11.7	.1	
AREA=	59.1	75.0	72.4	1.8	45.9	66.5	76.5	2.4	
VEL=	.9	1.6	2.7	1.5	1.4	1.3	.9	.3	

1) COUNTY: KENT

2) STUDY NAME: KENTWOOD, CITY OF

3) WATERCOURSE: LITTLE PLASTER CREEK

4) DOCUMENT TYPE: REPORT

HYDRAULIC ANALYSIS REPORT

LITTLE PLASTER CREEK AT CITY OF KENTWOOD
KENT COUNTY, MICHIGAN

Prepared by

COMMONWEALTH ASSOCIATES INC.
209 EAST WASHINGTON AVENUE
JACKSON, MICHIGAN 49201

September, 1979

Introduction

Hydraulic calculations were performed for the Little Plaster Creek from the mouth to downstream of the 28th Street Bridge in the City of Kentwood. Field cross section data for the Little Plaster Creek above Whiskey Creek were obtained from the Soil Conservation office in East Lansing. The Soil Conservation Service surveyed data was obtained in 1970 and 1971. Cross sections for the channelized portion of Little Plaster Creek were surveyed by Commonwealth Associates Inc. in 1978. The flood flows for 10, 50, 100, and 500-year recurrence intervals were approved by the Michigan Department of Natural Resources. This study was performed by Commonwealth Associates Inc., Jackson, Michigan, and the Project Manager was E. A. Meyer, P.E.

Method of Analysis

The HEC-2 computer program was utilized for the entire hydraulic analysis.

Variables and Coefficients

Manning's roughness coefficients for the surveyed sections in the channelized portion of the Little Plaster Creek were estimated from pictures and aerial photographs given in the SCS Flood Hazard Analysis report. Manning's "n" values for the Little Plaster Creek above Whiskey Creek were estimated by SCS for the Flood Hazard Analysis Study of the Little Plaster Creek.(1)

"n" values

for channel	0.030-0.065
for overbanks	0.075-0.090

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

The bridge loss and weir coefficients were computed and presented in the Bridge Notes Section.

High Water Marks

There were no recorded high water marks within the study limits.

Starting Conditions

The synthetic hydrographs for the Little Plaster Creek and Plaster Creek generated by SCS were not readily available for use. Based on the small size of the watershed, it was assumed that the peak flows for Plaster Creek and Little Plaster Creek occurred simultaneously. Therefore, the flood levels of the Plaster Creek at the confluence with Little Plaster Creek were used as the starting conditions.

No Jon said a 10 hr lag

Special Problems

There were no special problems in the study.

References

1. U.S. Department of Agriculture, Soil Conservation Service, Flood Hazard Analysis - Plaster Creek, Kent County, Michigan, 1971.

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE) DVD 9-12-79	SUBJECT	SHEET 1 OF 1
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Little Plaster Creek – Estimated "n" values

From Section	To Section	Left Overbank	Right Overbank	Channel
0.0 –	2.7	0.085	0.085	0.045
3.0 –	3.1	0.085	0.085	0.035
3.9 –	4.6	0.085	0.085	0.045
4.7 –	4.8	0.085	0.085	0.030
4.9 –	5.1	0.085	0.085	0.040
8.0 –		0.085	0.085	0.040
40.8 –	41.08	0.075	0.075	0.060
41.1 –		0.080	0.080	0.065
41.3		0.090	0.090	0.065
41.4 –	41.9	0.075	0.075	0.060

n values for sections 40.8 thru 41.9 were taken from WSP2 data sheets prepared by SCS.

n values for sections 0.0 thru 8.0 were estimated.

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE) DVD 9-12-79	SUBJECT	SHEET 1 OF 3
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Little Plaster Creek – Cross Sections

SECNO	Description
0.0	Made up section (Channel from section 1; overbanks measured from USGS topomap)
1.0	Surveyed Valley Section SCS
1.5	Interpolated section from 1 and 2
2.0	Surveyed Valley Section SCS
2.6	M-37 Bridge D/S } Two 10'x8' Box Culverts 100' long city of Kentwood show this to be 10'x10' concrete box
2.7	M-37 Bridge U/S }
3.0	Surveyed Valley Section
3.1	Repeated Valley Section (Same as 3.0)
3.9	Repeated Valley Section (Same as 4.0 lowered 0.6 ft)
4.0	Surveyed Valley Section
4.2	Repeated Section (Same as 4.0 multiplied by 0.7)
4.4	Repeated Section (Same as 4.0 multiplied by 0.49)
4.6+ 4.7	RR Bridge D/S face – One 18'x11'3" CMP Arch Culvert 120' long

L98 8
6 8 6.5
12.3

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER			FILING CODE
			JOB NO.
CALC. BY/DATE (SIGNATURE)		SUBJECT	SHEET 2 OF 3
CHECKED BY/DATE (SIGNATURE)			BOOK NO.

SECNO	Description
4.8 & 4.9	RR Bridge U/S 17' dia ϕ CMP drain flow shown 10' but drawn as
5.0	Valley Section (Surveyed) SCS # 40.6
5.1	Repeated Section (Same as 5)
8.0	Surveyed Valley Section at the confluence of Whisky Creek

Sections 40.8 thru 41.9 were taken from SCS Flood Hazard Analysis Report of Plaster Creek by SCS.

40.8	Valley Section
40.9	Valley Section
40.98	East Paris Avenue Bridge D/S } one 14'x5' Box culvert
41.06	East Paris Avenue Bridge U/S } one 14'x5' Box culvert
41.08	Repeated Section
41.3	Valley Section
41.4	Valley Section

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 3 OF 3
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

SECNO	Description
41.6	Valley Section
41.7	Valley Section
41.9	28th Street Bridge D/S

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE) DVD 9-11-79	SUBJECT	SHEET 1 OF 2
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Bridge Notes

Little Plaster Creek crossing M-37

Two 10' X 8' Boxes 100' Long

where are sketches High [illegible] Co. & City of Ketwood 1972 drawing! Can't find [illegible] 10 X 10'

XKOR

$$\frac{29.1 n^2 L}{R^{4/3}} = 0.226$$

$n = 0.015$
$L = 100$
$R = \frac{80}{36} = 2.22$

XKOR = 1.0 + 0.5 + 0.226 = 1.726

C for Weir Flow over Roadway

No weir Flow use C = 3.0

Area [illegible] to have been reduced for silt!

691.2
- 594.2

EL CHD

7.0 X 10 X 2 = 140 sq ft This was used on the SB Canal.

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE) DVD 9-11-79	SUBJECT	SHEET 2 OF 2
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Little Plaster Creek @ East Paris ~~Road~~ Avenue

Box 14' x 5'

$n = .015$
$L = 27$
$R = \frac{70}{38} = 1.84$

$$\frac{29.1\, n^2 L}{R^{4/3}} = 0.078$$

$$XKoR = 1.0 + 0.5 + 0.078 = 1.578$$

C for weir flow over Roadway

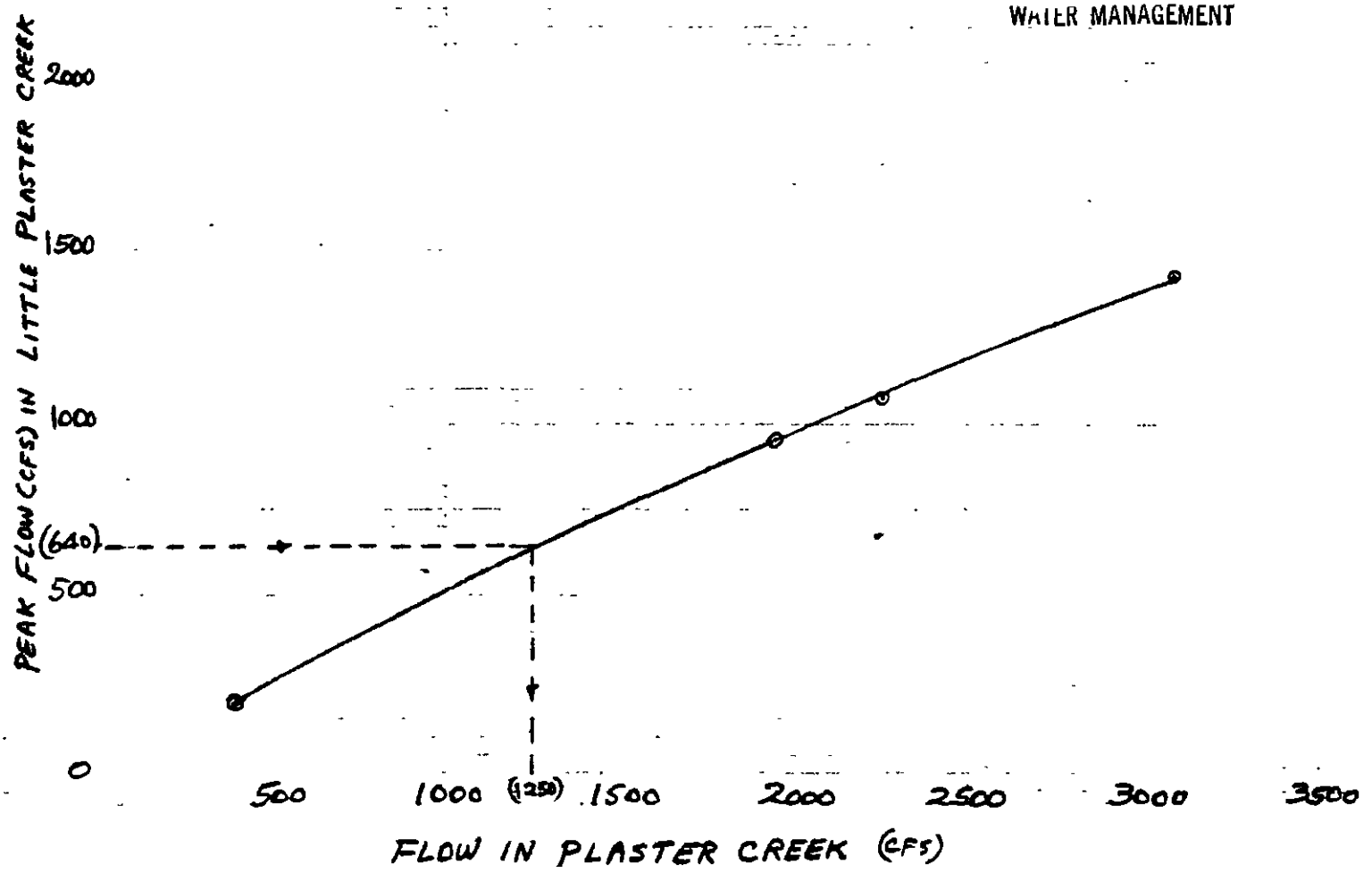
$H \approx 0.5$ ft
Paved Surface

$C = 3$

FORM CAI/DCP 112 (9/78)

Gilbert Commonwealth Companies	Commonwealth Associates Inc. engineers/consultants/architects	OHIO EDISON COMPANY ERIE NUCLEAR PLANT	FILING CODE / JOB NO.
	ESTIMATED BY/DATE / DWG NO/REV	SUBJECT	SHEET 2 OF 4 / BOOK NO. / REV.

RECEIVED
MAY 29 1980
WATER MANAGEMENT



Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE) DVZ 5-21-80	SUBJECT	SHEET 3 OF 4
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Stage-Discharge Relationship for Plaster Creek at the Confluence of Little Plaster Creek

(100' d/s of Sec 24.4)

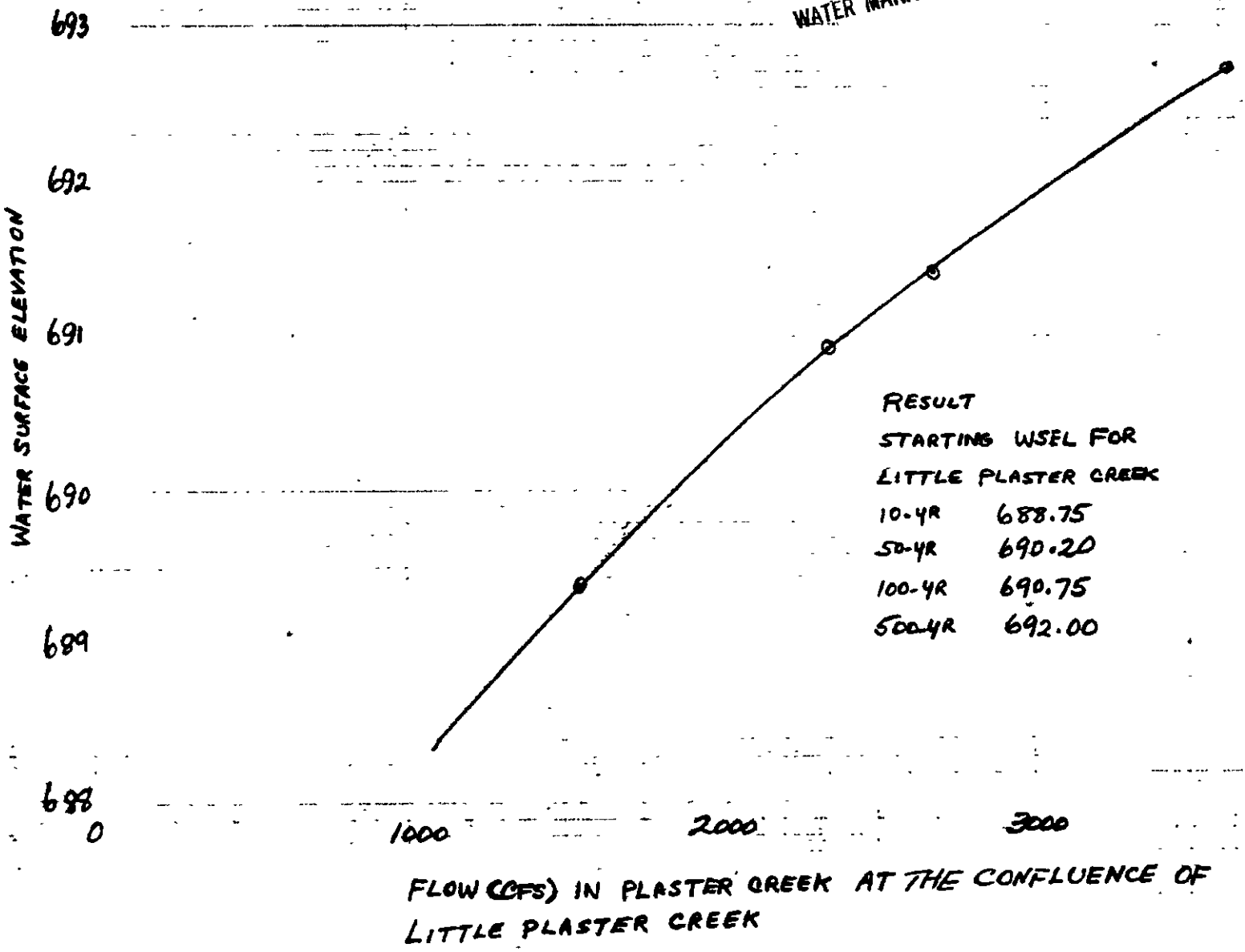
RECEIVED
MAY 29 1980
WATER MANAGEMENT

Rec. Int	Elev @ 24.4	Elev @ 24.3	Elev @ Confluence	Flow cfs
10-yr	689.54	688.71	689.4	1550
50-yr	691.04	690.53	690.9	2350
100-yr	691.53	691.07	691.4	2690
500-yr	692.80	692.48	692.7	3630

FORM CAI/DCP 112 (9/78)

Gilbert Commonwealth Companies	Commonwealth Associates Inc. engineers/consultants/architects	OHIO EDISON COMPANY ERIE NUCLEAR PLANT	FILING CODE / JOB NO.
	ESTIMATED BY/DATE / DWG NO/REV	SUBJECT	SHEET 4 OF 4 / BOOK NO. / REV.

RECEIVED
MAY 2 9 1980
WATER MANAGEMENT



Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER			FILING CODE
FIS- Kentwood			JOB NO.
CALC. BY/DATE	(SIGNATURE) 5-21-80	SUBJECT	SHEET 1 OF 4
CHECKED BY/DATE	(SIGNATURE)		BOOK NO.

Little Plaster Creek – Starting WS Elevations

Rec. Int	Peak Flow in Little Plaster Creek cfs.	Time	Flows in Plaster Creek when peak at Little Plaster Creek (cfs)
2 yr	209	14.67	393
50 yr	948	14.7	1949
100 yr	1083	14.73	2257
500 yr	1427	14.82	3091
	Interpolated from Graph		
10 yr	640		1250

RECEIVED
MAY 29 1980
WATER MANAGEMENT

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: KENTWOOD, CITY OF

3) WATERCOURSE: PLASTER CREEK

4) DOCUMENT TYPE: 10, 50, 100, 500 SUMMARIES

00BREAK00

```
*****************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*****************************************

C
T1      FLOOD INSURANCE STUDY   CITY OF KENTWOOD KENT COUNTY MICHIGAN
T2       10 YEAR FLOOD
T3      PLASTER CREEK, KENTWOOD

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

     0.        2.        0.        0.   0.000000     0.00      0.0       0.    674.800    0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150.000   201.000   202.000   140.000   331.000   0.000     0.000     0.000     0.000     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

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
JT      5.000  1550.000  2350.000  2690.000  3630.000  2690.000     0.000     0.000     0.000     0.000
ET      0.000     0.000     0.000     0.000     0.000     7.100   152.300   502.300     0.000     0.000
NC       .080      .080      .055      .100      .300     0.000     0.000     0.000     0.000     0.000

        VALLEY SECTION 44094 FT FROM MOUTH(FIS CITY OF GRAND RAPIDS)
                        1620 FT DOWNSTREAM OF KENTWOOD CITY CORPORATE BOUNDARY

X1     22.700    20.000   166.000   204.000 44094.000 44094.000 44094.000     0.000     0.000     0.000
GR    695.000   100.000   692.700   116.000   685.200   134.000   671.900   164.000   670.400   166.000
GR    665.700   174.000   662.700   177.000   662.700   185.000   664.100   193.000   665.700   196.000
GR    670.400   204.000   670.900   300.000   671.300   316.000   672.700   414.000   677.500   520.000
GR    679.100   694.000   680.200   796.000   682.000   898.000   682.700   998.000   682.700   998.000
ET      0.000     0.000     0.000     0.000     0.000     1.400     0.000     0.000     0.000     0.000

X1     22.750     0.000     0.000     0.000  1360.000  1535.000  2075.000     0.000     1.650     0.000
X3      0.000     0.000     0.000   150.000     0.000   410.000     0.000     0.000     0.000     0.000

        VALLEY SECTION A

X1     22.800    37.000   380.500   427.000  1360.000  1535.000  2075.000     0.000     0.000     0.000
GR    690.000     0.000   678.300    45.000   679.000   120.000   679.000   220.000   679.000   302.000
GR    679.000   320.000   677.700   342.000   679.000   343.000   679.000   346.000   677.500   346.500
GR    676.000   356.000   675.200   363.000   672.800   368.000   666.300   379.500   666.300   379.600
GR    666.300   380.500   666.300   380.600   666.000   399.500   666.000   399.600   666.000   400.500
GR    666.000   400.600   666.000   410.000   666.800   411.000   669.700   412.000   672.800   420.000
GR    675.200   427.000   676.100   438.000   679.000   439.000   679.000   442.000   676.300   442.500
```

GR	679.000	452.000	680.000	500.000	680.000	510.000	680.000	520.000	680.000	530.000
GR	683.500	537.500	690.000	540.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	22.810	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
BT	15.000	346.500	677.500	0.000	356.000	676.000	0.000	363.000	675.200	0.000
BT	365.000	675.200	672.800	379.500	675.200	672.800	379.600	675.200	666.300	380.500
BT	675.200	666.300	380.600	675.200	672.800	399.500	675.200	672.800	399.600	675.200
BT	666.000	400.500	675.200	666.000	400.600	675.200	672.800	420.000	675.200	672.800
BT	427.000	675.200	0.000	438.000	676.100	0.000	0.000	0.000	0.000	0.000
X1	22.820	0.000	0.000	0.000	2.500	2.500	2.500	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	22.830	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
NC	.090	.100	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	22.900	27.000	1288.000	1335.000	695.000	695.000	695.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	967.000	0.000	1339.000	0.000	0.000	0.000	0.000
GR	689.300	100.000	689.300	100.000	686.200	268.000	681.700	505.000	674.500	676.000
GR	674.400	766.000	673.400	860.000	674.200	954.000	678.300	980.000	677.800	983.000
GR	673.900	997.000	673.200	1054.000	672.000	1176.000	674.700	1196.000	672.400	1202.000
GR	675.200	1240.000	675.200	1288.000	669.800	1304.000	668.000	1307.000	666.300	1316.000
GR	667.800	1325.000	669.800	1328.000	675.200	1335.000	677.000	1336.000	687.700	1346.000
GR	687.600	1378.000	689.900	1494.000	692.000	1494.000	0.000	0.000	0.000	0.000
BT	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	604.000	851.000
X1	22.980	25.000	777.500	851.000	250.000	250.000	250.000	0.000	0.000	0.000
GR	685.100	100.000	681.900	260.000	680.500	378.000	679.100	490.000	678.100	602.000
GR	678.400	710.000	679.100	777.500	667.400	789.000	667.000	790.500	667.900	793.000
GR	667.400	802.800	666.800	805.100	665.800	808.000	666.700	812.500	666.300	814.000
GR	666.800	822.900	666.900	825.200	667.500	828.000	666.600	834.000	667.900	839.000
GR	680.300	851.000	680.400	884.000	683.200	996.000	684.200	1020.000	686.700	1064.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	23.000	23.000	770.000	830.000	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	679.500	679.500	0.000
GR	682.000	300.000	681.000	400.000	680.000	500.000	679.500	600.000	679.500	700.000
GR	680.500	750.000	680.500	750.000	680.500	770.000	667.800	775.000	667.700	780.000
GR	667.300	784.000	667.200	788.900	667.100	791.100	666.800	800.000	667.000	805.000
GR	667.200	808.900	667.300	811.200	667.500	814.000	668.500	825.000	675.000	828.000
GR	680.000	830.000	680.000	850.000	682.000	900.000	0.000	0.000	0.000	0.000
SP	1.250	1.550	3.030	0.000	47.800	12.500	413.190	0.000	666.800	666.800

SECTION 6 BRETON AVENUE U/S

X1	23.090	0.000	0.000	0.000	32.000	32.000	32.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	678.500	680.000	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	679.500	680.000	0.000
BT	20.000	300.000	682.000	0.000	500.000	680.000	0.000	700.000	679.500	0.000
BT	770.000	680.500	0.000	775.000	680.700	667.800	775.000	680.700	677.800	788.900
BT	660.800	678.000	788.900	680.800	667.200	791.100	680.900	667.100	791.100	680.900
BT	678.000	800.000	681.000	678.000	808.900	680.700	678.100	808.900	680.700	667.200
BT	811.200	680.500	667.300	811.200	680.500	678.200	825.000	680.200	678.500	825.000

BT	660.200	668.500	830.000	660.000	0.000	850.000	680.000	0.000	900.000	682.000
ET	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.095	.095	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	23.100	21.000	852.000	952.000	48.000	48.000	48.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	647.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	692.200	100.000	692.200	100.000	687.600	282.000	678.300	340.000	680.700	456.000
GR	679.200	564.000	678.600	674.000	679.000	768.000	678.200	846.000	674.600	852.000
GR	672.400	856.000	669.400	888.000	668.900	891.000	667.000	914.000	667.000	937.000
GR	669.200	940.000	674.600	952.000	677.900	1092.000	685.300	1114.000	687.600	1162.000
GR	693.300	1189.000	694.000	1189.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	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	23.120	0.000	0.000	0.000	200.000	200.000	200.000	0.000	0.000	0.000
NC	.110	.110	.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	23.170	19.000	722.000	748.000	2780.000	3780.000	3600.000	0.000	0.000	0.000
GR	685.000	100.000	681.000	100.000	680.200	550.000	679.800	600.000	680.300	650.000
GR	680.300	680.000	678.200	710.000	678.000	722.000	671.600	725.000	670.100	735.000
GR	671.200	745.000	678.000	748.000	678.000	755.000	681.200	763.000	684.800	783.000
GR	687.800	808.000	689.700	826.000	692.700	860.000	696.000	910.000	0.000	0.000
NC	.110	.110	.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION C

X1	23.200	22.000	711.000	756.000	30.000	30.000	30.000	0.000	0.000	0.000
GR	685.000	100.000	679.300	100.000	678.000	276.000	677.300	350.000	677.700	458.000
GR	677.800	542.000	677.700	602.000	677.300	642.000	677.000	681.000	677.000	711.000
GR	673.000	723.000	671.500	726.000	670.100	736.000	671.200	746.000	672.900	749.000
GR	677.000	756.000	677.000	761.000	681.200	763.000	684.800	784.000	687.900	810.000
GR	688.800	826.000	692.500	911.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.110	.110	.075	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	277.000	662.000	0.000	0.000

VALLEY SECTION D

X1	23.500	19.000	286.000	322.000	3093.000	3535.000	4220.000	0.000	0.000	0.000
GR	693.500	100.000	693.500	100.000	691.000	172.000	687.900	271.000	679.300	286.000
GR	675.600	293.000	674.000	296.000	672.500	304.000	674.400	313.000	675.600	315.000
GR	679.300	322.000	679.400	404.000	680.500	484.000	679.900	534.000	680.000	584.000
GR	682.400	634.000	687.100	694.000	689.200	843.000	690.800	1043.000	698.000	1043.000
X1	23.600	0.000	0.000	0.000	1865.000	1536.000	1825.000	0.000	1.100	0.000
X3	0.000	0.000	0.000	271.000	0.000	400.000	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	.110	.110	.075	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	300.000	471.000	0.000	0.000

VALLEY SECTION E

X1	23.700	16.000	307.000	353.000	1865.000	1536.000	1825.000	0.000	0.000	0.000
GR	697.500	100.000	697.500	100.000	694.300	182.000	694.100	234.000	688.800	300.000

GR	682.400	307.000	677.800	314.000	677.200	318.000	674.700	327.000	677.000	335.000
GR	677.700	349.000	682.400	353.000	681.600	438.000	690.700	546.000	692.300	652.000
GR	697.500	786.000	700.000	786.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.110	.110	.075	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	121.000	387.000	0.000	0.000
X1	23.800	16.000	177.000	222.000	1300.000	1300.000	1300.000	0.000	0.000	0.000
GR	700.000	100.000	682.400	136.000	681.300	177.000	678.200	183.000	676.200	186.000
GR	674.400	196.000	675.100	206.000	678.200	208.000	681.300	222.000	682.200	227.000
GR	683.400	243.000	681.400	278.000	682.500	314.000	684.900	334.000	686.100	384.000
GR	700.000	394.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.110	.110	.075	.300	.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	600.000	864.000
X1	23.900	20.000	687.000	776.000	500.000	500.000	500.000	0.000	0.000	0.000
GR	700.800	100.000	700.800	100.000	699.100	214.000	699.500	269.000	698.800	406.000
GR	698.200	427.000	698.200	506.000	694.600	593.000	681.300	687.000	681.300	687.000
GR	679.400	702.000	677.800	704.000	677.400	727.000	678.200	749.000	679.400	752.000
GR	681.300	776.000	684.300	912.000	688.200	936.000	686.600	1002.000	701.400	1012.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	540.000
X1	24.000	90.000	300.000	435.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	699.600	100.000	698.400	150.000	695.300	200.000	692.700	250.000	691.000	300.000
GR	674.300	308.200	674.300	314.200	674.300	314.700	674.300	315.200	674.300	316.200
GR	674.300	317.200	674.300	318.200	674.300	319.200	674.300	320.200	674.300	320.600
GR	674.300	321.200	674.300	322.200	674.300	323.200	674.300	324.200	674.300	325.200
GR	674.300	326.200	674.300	327.000	674.300	330.000	674.300	330.500	674.300	331.000
GR	674.300	332.000	674.300	333.000	674.300	334.000	674.300	335.000	674.300	336.000
GR	674.300	336.400	674.300	337.000	674.300	338.000	674.300	339.000	674.300	340.000
GR	674.300	341.000	674.300	342.000	674.300	342.800	674.300	345.800	674.300	348.000
GR	674.300	348.000	674.300	358.000	674.300	358.000	674.300	358.000	674.300	358.000
GR	674.300	359.100	674.300	361.100	674.300	364.000	674.300	364.000	674.300	374.000
GR	674.300	374.000	674.300	374.400	674.300	377.400	674.300	377.900	674.300	378.400
GR	674.300	379.400	674.300	380.400	674.300	381.400	674.300	382.400	674.300	383.400
GR	674.300	383.800	674.300	384.400	674.300	385.400	674.300	386.400	674.300	387.400
GR	674.300	388.400	674.300	389.400	674.300	390.200	674.300	393.200	674.300	394.200
GR	674.300	394.200	674.300	394.200	674.300	395.200	674.300	396.200	674.300	397.200
GR	674.300	398.200	674.300	399.200	674.300	399.600	674.300	400.200	674.300	401.200
GR	674.300	402.200	674.300	403.200	674.300	404.200	674.300	405.200	674.300	405.800
GR	674.300	411.800	689.100	435.000	689.300	450.000	689.000	540.000	700.000	540.000
SH	1.250	2.570	3.040	0.000	115.400	10.940	508.000	0.000	674.340	674.340
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	540.000

SECTION F SHAFFER AVENUE NORTH U/S

X1	24.100	0.000	0.000	0.000	104.000	104.000	104.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	679.200	689.200	0.000	0.000	0.000	0.000	0.000
BT	89.000	300.000	691.000	691.000	308.200	690.600	674.300	314.200	690.300	674.300
BT	314.200	690.300	675.100	314.700	690.280	676.400	315.200	690.260	679.200	316.200
BT	690.200	680.400	317.200	690.160	681.100	318.200	690.130	681.600	319.200	690.100
BT	682.000	320.200	690.060	682.100	320.600	690.300	682.200	321.200	690.000	682.100
BT	322.200	689.960	682.000	323.200	689.930	681.700	324.200	689.900	681.100	325.200
BT	689.860	680.300	326.200	689.830	679.100	327.000	689.800	674.300	330.000	689.700
BT	674.300	330.000	689.700	675.100	330.500	689.680	676.400	331.000	689.660	679.200
BT	332.000	689.630	680.400	333.000	689.660	681.100	334.000	689.560	681.600	335.000
BT	689.530	682.000	336.000	689.500	682.100	336.400	689.460	682.200	337.000	689.430

RI	682.100	338.000	689.400	682.000	339.000	689.360	681.700	340.000	689.330	681.100
RT	341.000	689.360	680.300	342.000	689.260	679.100	342.800	689.230	674.300	345.800
RT	689.200	674.300	348.000	689.100	674.300	348.000	689.100	681.300	358.000	689.100
RT	681.300	358.000	689.100	681.300	359.100	689.000	674.300	361.100	689.010	674.300
RT	364.000	689.010	681.300	364.000	689.010	681.300	374.000	689.020	681.300	374.000
RT	689.020	674.300	374.000	689.020	674.300	374.000	689.020	674.300	374.400	689.020
RT	674.300	377.400	689.030	674.300	377.400	689.040	675.100	377.900	689.050	676.400
RT	378.400	689.060	679.200	379.400	689.070	680.400	380.400	689.080	681.100	381.400
RT	689.090	681.600	382.400	689.100	682.000	383.400	689.110	682.100	383.800	689.120
RT	682.200	384.400	689.130	682.100	385.400	689.140	682.000	386.400	689.150	681.700
RT	387.400	689.160	681.100	388.400	689.160	680.300	389.400	689.170	679.100	390.200
RT	689.180	674.300	393.200	689.190	674.300	393.200	689.200	675.100	393.700	689.210
RT	676.400	394.200	689.220	679.200	395.200	689.230	680.400	396.200	689.240	681.100
RT	397.200	689.250	681.600	398.200	689.260	682.000	399.200	689.270	682.100	399.600
RT	689.280	682.200	400.200	689.290	682.100	401.200	689.300	682.000	402.200	689.300
RT	681.700	403.200	689.300	681.100	404.200	689.300	680.300	405.200	689.300	679.100
RT	405.800	689.300	674.300	411.800	689.300	674.300	435.000	689.300	689.300	450.000
RT	689.300	0.000	540.000	689.000	0.000	540.000	700.000	0.000	0.000	0.000
NC	.090	.090	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000
XI	24.110	20.000	687.000	776.000	150.000	150.000	150.000	0.000	0.000	0.000
GR	700.600	100.000	700.800	100.000	699.100	214.000	699.500	269.000	698.800	406.000
GR	698.200	427.000	696.200	506.000	694.600	593.000	681.300	687.000	681.300	687.000
GR	679.400	702.000	677.800	704.000	677.400	727.000	678.200	749.000	679.400	752.000
GR	681.300	776.000	684.300	912.000	688.200	936.000	686.600	1002.000	701.400	1062.000
RT	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000
NC	.070	.070	.050	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 G

XI	24.200	16.000	292.000	340.000	1519.000	1643.000	1961.000	0.000	0.000	0.000
GR	697.900	100.000	697.900	100.000	688.500	123.000	687.600	196.000	684.300	292.000
GR	681.000	300.000	678.500	303.000	677.300	315.000	674.600	327.000	681.000	330.000
GR	681.000	330.000	684.300	340.000	684.500	439.000	687.600	535.000	691.500	635.000
GR	698.000	680.000	700.000	680.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.085	.085	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
XI	24.300	16.000	105.000	145.000	750.000	750.000	750.000	0.000	0.000	0.000
GR	696.900	100.000	698.900	100.000	690.200	105.000	682.000	114.000	677.000	125.000
GR	682.000	136.000	690.200	145.000	691.900	234.000	691.800	336.000	690.800	453.000
GR	688.800	557.000	688.000	668.000	688.900	764.000	684.900	779.000	691.500	847.000
GR	698.100	899.000	702.000	899.000	0.000	0.000	0.000	0.000	0.000	0.000
WT	5.000	1180.000	1800.000	2050.000	2750.000	2050.000	0.000	0.000	0.000	0.000
NC	.095	.095	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION H

XI	24.400	20.000	634.000	661.000	500.000	500.000	500.000	0.000	0.000	0.000
GR	699.900	100.000	697.500	192.000	686.400	240.000	686.500	321.000	687.500	400.000
GR	687.200	495.000	667.800	562.000	686.600	623.000	686.500	632.000	684.400	634.000
GR	682.400	635.000	679.400	636.000	678.300	643.000	679.400	650.000	682.300	652.000
GR	684.400	661.000	684.000	661.000	683.400	707.000	688.100	742.000	694.400	773.000
NC	.090	.090	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	24.430	17.000	491.000	562.000	900.000	750.000	1550.000	0.000	0.000	0.000
GR	700.800	100.000	699.000	200.000	694.600	379.000	688.900	491.000	688.200	494.000
GR	683.800	500.000	682.300	505.000	680.800	524.000	682.000	549.000	683.800	552.000
GR	688.200	562.000	688.100	613.000	689.100	662.000	690.400	761.000	691.800	883.000
GR	693.600	949.000	694.100	1049.000	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
FT	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	450.000

X1	24.440	72.000	318.000	410.800	450.000	600.000	600.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	318.000	0.000	450.000	0.000	0.000	0.000	0.000
GR	699.290	100.000	698.120	150.000	696.470	200.000	695.000	250.000	693.550	300.000
GR	693.300	318.000	683.300	329.790	683.300	335.340	683.300	335.340	683.300	336.250
GR	683.300	337.250	683.300	338.250	683.300	339.250	683.300	340.250	683.300	340.790
GR	683.300	341.250	683.300	342.250	683.300	343.250	683.300	344.250	683.300	345.250
GR	683.300	346.250	683.300	346.250	683.300	350.000	683.300	350.000	683.300	350.920
GR	683.300	351.920	683.300	352.920	683.300	353.920	683.300	354.920	683.300	355.460
GR	683.300	355.920	683.300	356.920	683.300	357.920	683.300	358.920	683.300	359.920
GR	683.300	360.920	683.300	360.920	683.300	364.670	683.300	364.670	683.300	365.590
GR	683.300	366.590	683.300	367.590	683.300	368.590	683.300	369.590	683.300	370.130
GR	683.300	370.590	683.300	371.590	683.300	372.590	683.300	373.590	683.300	374.590
GR	683.300	375.410	683.300	375.590	683.300	379.340	683.300	379.340	683.300	380.260
GR	683.300	381.260	683.300	382.260	683.300	383.260	683.300	384.260	683.300	384.800
GR	683.300	385.260	683.300	386.260	683.300	387.260	683.300	388.260	683.300	389.260
GR	683.300	390.260	683.300	390.260	683.300	395.800	691.400	410.800	691.400	410.800
GR	691.060	450.000	700.000	450.000	0.000	0.000	0.000	0.000	0.000	0.000
SR	1.250	2.792	3.040	0.000	55.200	18.300	240.000	0.000	683.300	683.300
FT	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	450.000

SECTION I SHAFFER AVENUE MIDDLE U/S

X1	24.450	0.000	0.000	0.000	103.000	103.000	103.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	689.800	691.060	0.000	0.000	0.000	0.000	0.000
RT	67.000	318.000	693.300	693.300	329.790	692.980	683.300	335.340	692.840	683.300
RT	335.340	692.840	684.800	336.250	692.830	687.400	337.250	692.810	688.500	338.250
RT	692.800	689.200	339.250	692.770	689.600	340.250	692.760	689.750	340.790	692.750
RT	689.800	341.250	692.740	689.750	342.250	692.710	689.600	343.250	692.700	689.200
RT	344.250	692.680	688.500	345.250	692.650	687.400	346.250	692.640	684.800	346.250
RT	692.640	683.300	350.000	692.550	683.300	350.000	692.550	684.800	350.920	692.540
RT	687.400	351.920	692.530	688.500	352.920	692.500	689.200	353.920	692.490	689.600
RT	353.920	692.490	689.600	354.920	692.460	689.750	355.460	692.450	689.800	355.920
RT	692.440	689.750	356.920	692.410	689.600	357.920	692.400	689.200	358.920	692.380
RT	688.500	359.920	692.360	687.400	360.920	692.330	684.800	360.920	692.300	683.300
RT	364.670	692.270	683.300	364.670	692.270	684.800	365.590	692.230	687.400	366.590
RT	692.220	688.500	367.590	692.200	689.200	368.590	692.180	689.600	369.590	692.170
RT	689.750	370.130	692.160	689.800	370.590	692.140	689.750	371.590	692.110	689.600
RT	372.590	692.100	689.200	373.590	692.080	688.500	374.590	692.060	687.400	375.590
RT	692.040	684.800	375.590	692.040	683.300	379.340	691.970	683.300	379.340	691.970
RT	684.800	380.260	691.950	687.400	381.260	691.940	688.500	382.260	691.900	689.200
RT	383.260	691.880	689.600	384.260	691.860	689.750	384.800	691.850	689.800	385.260
RT	691.840	689.750	386.260	691.830	689.600	387.260	691.820	689.200	388.260	691.800
RT	688.500	389.260	691.780	687.400	390.260	691.700	684.800	390.260	691.700	683.300
RT	395.800	691.640	683.300	410.800	691.400	691.400	450.000	691.060	0.000	450.000
RT	700.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000
NC	.070	.070	.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	24.460	17.000	494.000	562.000	150.000	150.000	150.000	0.000	0.000	0.000

X3	0.000	0.000	0.000	335.000	0.000	770.000	0.000	0.000	0.000	0.000
GR	700.800	100.000	699.000	265.000	694.600	379.000	688.900	491.000	688.200	494.000
GR	683.800	500.000	682.300	505.000	680.800	524.000	682.000	549.000	683.000	552.000
GR	688.200	562.000	688.100	613.000	689.100	662.000	690.400	761.000	691.800	883.000
GR	693.600	949.000	694.100	1049.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.050	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	24.490	16.000	137.000	189.000	1810.000	1450.000	1867.000	0.000	0.000	0.000
GR	698.200	100.000	698.200	100.000	690.100	120.000	690.000	137.000	686.000	145.000
GR	683.800	149.000	681.700	154.000	684.500	160.000	686.000	163.000	690.000	189.000
GR	690.400	193.000	690.300	293.000	689.800	393.000	693.500	433.000	693.600	442.000
GR	698.000	450.000	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
RT	0.000	0.000	0.000	0.000	0.000	7.100	122.000	406.000	0.000	0.000

VALLEY SECTION J

X1	24.500	0.000	0.000	0.000	330.000	330.000	330.000	0.000	0.000	0.000
X1	24.540	51.000	1031.500	1099.000	290.000	290.000	282.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	693.100	693.100	0.000
GR	696.000	840.000	695.000	850.000	694.900	860.000	694.800	870.000	694.700	880.000
GR	694.500	900.000	694.300	920.000	694.000	940.000	694.000	960.000	693.800	980.000
GR	693.800	1000.000	685.200	1000.000	685.200	1031.500	685.200	1032.500	685.200	1035.500
GR	685.000	1037.000	685.200	1038.500	685.200	1041.500	685.200	1042.500	685.200	1045.500
GR	685.200	1046.500	685.200	1049.500	685.000	1051.000	685.200	1052.500	685.200	1055.500
GR	685.200	1056.500	685.200	1059.500	685.200	1060.500	685.200	1063.500	685.000	1065.000
GR	685.200	1066.500	685.200	1069.500	685.200	1070.500	685.200	1073.500	685.200	1074.500
GR	685.200	1077.500	685.000	1079.000	685.200	1080.500	685.200	1083.500	685.200	1084.500
GR	685.200	1088.000	685.200	1089.000	685.200	1092.000	685.000	1093.500	685.200	1095.000
GR	685.200	1098.000	685.200	1099.000	685.200	1130.000	693.800	1130.000	693.800	1260.000
GR	696.000	1260.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SR	1.256	3.000	3.020	0.000	56.400	14.000	300.000	0.000	685.200	685.200

SECTION K SHAFFER AVENUE SOUTH U/S

X1	24.550	0.000	0.000	0.000	118.000	118.000	118.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	692.300	693.800	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	693.800	693.800	0.000
RT	51.000	840.000	696.000	0.000	850.000	695.000	0.000	860.000	694.900	0.000
RT	870.000	694.800	0.000	880.000	694.700	0.000	900.000	694.500	0.000	920.000
RT	694.300	0.000	940.000	694.000	0.000	960.000	694.000	0.000	980.000	693.800
RT	0.000	1000.000	693.800	0.000	1000.000	693.800	685.200	1031.500	693.800	685.200
RT	1032.500	693.800	689.000	1035.500	693.800	692.000	1037.000	693.800	692.300	1038.500
RT	693.800	692.000	1041.500	693.800	689.000	1042.500	693.800	685.200	1045.500	693.800
RT	685.200	1046.500	693.800	689.000	1049.500	693.800	692.000	1051.000	693.800	692.300
RT	1052.500	693.800	692.000	1055.500	693.800	689.000	1056.500	693.800	685.200	1059.500
RT	693.800	685.200	1060.500	693.800	689.000	1063.500	693.800	692.000	1065.000	693.800
RT	692.300	1066.500	693.800	692.000	1069.500	693.800	689.000	1070.500	693.800	685.200
RT	1073.500	693.800	685.200	1074.500	693.800	689.000	1077.500	693.800	692.000	1079.000
RT	693.800	692.300	1080.500	693.800	692.000	1083.500	693.800	689.000	1084.500	693.800
RT	685.200	1088.000	693.800	685.200	1089.000	693.800	689.000	1092.000	693.800	692.000
RT	1093.500	693.800	692.300	1095.000	693.800	692.000	1098.000	693.800	689.000	1099.000
RT	693.800	685.200	1130.000	693.800	685.200	1130.000	693.800	0.000	1260.000	693.800
RT	0.000	1260.000	696.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.090	.090	.065	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	1.400	0.000	0.000	0.000	0.000
X1	24.590	17.000	1983.000	2035.000	170.000	170.000	170.000	0.000	0.000	0.000
GR	707.000	1946.000	698.200	1946.000	690.100	1966.000	690.000	1983.000	686.000	1991.000
GR	683.800	1995.000	681.700	2000.000	684.500	2006.000	686.000	2009.000	690.000	2035.000
GR	690.000	2035.000	690.400	2039.000	690.300	2139.000	689.800	2239.000	693.500	2279.000
GR	693.600	2288.000	707.000	2288.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.045	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	24.600	17.000	1472.000	1516.000	90.000	90.000	90.000	0.000	0.000	0.000
GR	713.000	1005.000	699.400	1015.000	692.100	1040.000	690.600	1141.000	690.900	1336.000
GR	691.100	1421.000	690.800	1472.000	686.400	1490.000	683.600	1495.000	683.300	1500.000
GR	683.900	1567.000	686.400	1509.000	690.800	1516.000	698.800	1571.000	698.500	1675.000
GR	698.800	1831.000	697.900	2019.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.045	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	1475.000	1800.000	0.000	0.000

VALLEY SECTION L

X1	24.700	16.000	1481.000	1520.000	2040.000	2200.000	3950.000	0.000	0.000	0.000
GR	707.800	1055.000	702.500	1295.000	700.500	1419.000	699.500	1470.000	692.000	1481.000
GR	686.700	1490.000	685.400	1500.000	688.200	1510.000	689.800	1513.000	692.000	1520.000
GR	693.000	1618.000	693.200	1707.000	692.800	1790.000	701.900	1820.000	705.200	1823.000
GR	707.000	1862.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.045	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	2390.000	0.000	0.000
X1	24.800	21.000	2244.000	2278.000	2320.000	2480.000	3690.000	0.000	0.000	0.000
GR	709.800	1000.000	705.900	1160.000	706.000	1249.000	701.500	1449.000	700.900	1795.000
GR	697.500	1905.000	694.500	1913.000	695.100	2015.000	696.400	2213.000	693.900	2229.000
GR	695.500	2244.000	692.400	2257.000	689.500	2261.000	687.500	2266.000	690.300	2272.000
GR	692.400	2278.000	695.600	2287.000	695.000	2362.000	695.800	2389.000	710.100	2440.000
GR	711.600	2460.000	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	1910.000	2350.000	0.000	0.000
X1	24.880	0.000	0.000	0.000	760.000	600.000	918.000	0.000	0.000	0.000
NC	.090	.090	.065	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	24.890	0.000	0.000	0.000	411.000	411.000	411.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2132.000	0.000	2402.000	0.000	0.000	0.000	0.000
X1	24.899	0.000	0.000	0.000	361.000	361.000	361.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2235.000	0.000	2299.000	0.000	0.000	0.000	0.000
X1	24.900	24.000	1705.000	1756.000	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	702.000	702.000	0.000
GR	712.500	1000.000	697.900	1128.000	702.500	1228.000	708.000	1279.000	708.200	1370.000
GR	704.800	1500.000	705.800	1600.000	699.300	1650.000	700.800	1700.000	698.000	1705.000
GR	694.500	1715.000	689.100	1717.000	689.800	1724.000	690.800	1732.000	694.300	1738.000
GR	695.800	1744.000	698.000	1756.000	698.000	1850.000	697.300	1950.000	698.600	2046.000
GR	698.000	2176.000	699.600	2276.000	708.000	2510.000	709.200	2651.000	0.000	0.000
SE	1.250	1.530	3.000	0.000	39.000	0.000	331.500	0.000	691.000	691.000

NC	0.000	0.000	.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECTION N 44TH STREET U/S

X1	25.000	17.000	1480.500	1519.500	45.000	45.000	45.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	699.500	702.000	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	702.000	702.000	0.000
ET	19.000	1030.000	706.500	0.000	1140.000	705.000	0.000	1240.000	704.000	0.000
ET	1335.000	702.500	0.000	1375.000	702.500	0.000	1425.000	702.200	0.000	1480.500
ET	702.200	0.000	1480.500	702.200	699.500	1490.000	702.200	699.500	1500.000	702.200
ET	699.500	1510.000	702.200	699.500	1519.500	702.200	699.500	1519.500	702.200	0.000
ET	1620.000	702.000	0.000	1800.000	702.500	0.000	1900.000	702.500	0.000	2000.000
ET	702.200	0.000	2105.000	702.500	0.000	2230.000	703.500	0.000	0.000	0.000
GR	706.500	1030.000	705.000	1140.000	704.000	1240.000	702.500	1335.000	702.500	1375.000
GR	698.200	1425.000	691.200	1480.500	691.200	1490.000	690.800	1500.000	690.500	1510.000
GR	691.200	1519.500	702.000	1620.000	702.500	1800.000	702.500	1900.000	702.200	2000.000
GR	702.500	2105.000	703.500	2230.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.090	.090	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	25.100	24.000	1705.000	1756.000	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	702.000	702.000	0.000
GR	712.500	1000.000	697.900	1128.000	702.500	1228.000	708.000	1279.000	708.200	1370.000
GR	704.200	1500.000	705.800	1600.000	699.300	1650.000	700.800	1700.000	698.000	1705.000
GR	694.500	1715.000	689.100	1717.000	689.800	1724.000	690.800	1732.000	694.300	1738.000
GR	695.800	1744.000	698.000	1756.000	698.000	1850.000	697.300	1950.000	698.600	2046.000
GR	698.000	2176.000	699.600	2276.000	708.000	2510.000	709.200	2651.000	0.000	0.000
NC	.070	.070	.060	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	9.100	0.000	0.000	629.000	946.000

X1	25.110	21.000	705.000	748.000	111.000	111.000	111.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	554.000	0.000	859.000	0.000	0.000	0.000	0.000
GR	714.000	370.000	708.200	370.000	704.800	500.000	705.800	600.000	699.300	650.000
GR	700.800	700.000	698.000	705.000	694.500	715.000	689.100	717.000	689.800	724.000
GR	690.800	732.000	694.300	738.000	695.800	748.000	698.000	756.000	698.000	850.000
GR	697.000	950.000	698.600	1046.000	698.000	1176.000	699.600	1276.000	708.000	1510.000
GR	714.000	1510.000	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	9.100	0.000	0.000	483.000	970.000

X1	25.120	0.000	0.000	0.000	111.000	111.000	111.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000
NC	.070	.070	.060	.100	.300	0.000	0.000	0.000	0.000	0.000

X1	25.200	19.000	1065.000	1130.000	560.000	280.000	393.000	0.000	0.000	0.000
GR	710.600	998.000	702.600	1030.000	698.300	1065.000	696.100	1075.000	694.600	1095.000
GR	692.100	1097.000	689.700	1105.000	691.900	1111.000	694.600	1115.000	698.100	1130.000
GR	698.900	1247.000	696.600	1258.000	695.000	1265.000	696.600	1272.000	699.000	1285.000
GR	699.400	1365.000	699.500	1460.000	704.200	1485.000	704.700	1500.000	0.000	0.000
→QT	5.000	1170.000	1770.000	2000.000	2650.000	2000.000	0.000	0.000	0.000	0.000
NC	.085	.085	.060	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	9.100	0.000	0.000	1270.000	1777.000

VALLEY SECTION N

X1	25.300	18.000	1271.000	1322.000	2000.000	2640.000	3610.000	0.000	0.000	0.000

GR	713.500	1030.000	711.200	1129.000	714.800	1241.000	713.200	1269.000	700.500	1271.000
GR	695.200	1288.000	694.200	1300.000	695.200	1312.000	697.900	1315.000	700.500	1322.000
GR	701.200	1388.000	699.800	1470.000	705.000	1502.000	699.000	1522.000	699.300	1630.000
GR	700.100	1722.000	700.500	1770.000	710.500	1795.000	0.000	0.000	0.000	0.000
NC	.085	.085	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	9.100	0.000	0.000	1561.000	2129.000
X1	25.400	20.000	2075.000	2119.000	1600.000	1080.000	1450.000	0.000	0.000	0.000
GR	711.500	975.000	709.900	1130.000	710.800	1225.000	709.500	1325.000	708.500	1425.000
GR	709.100	1545.000	700.000	1575.000	699.500	1632.000	700.300	1707.000	701.400	1805.000
GR	700.900	1987.000	701.500	2075.000	699.500	2087.000	698.500	2090.000	695.800	2092.000
GR	695.000	2100.000	695.800	2109.000	698.500	2110.000	701.500	2119.000	713.000	2159.000
NC	.085	.085	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	7.100	1700.000	2146.000	0.000	0.000

VALLEY SECTION O

X1	25.500	16.000	1964.000	2146.000	2280.000	3360.000	4050.000	0.000	0.000	0.000
GR	718.400	1000.000	714.600	1250.000	714.200	1350.000	711.400	1470.000	707.000	1520.000
GR	706.200	1673.000	706.200	1964.000	701.900	2070.000	700.800	2072.000	700.100	2076.000
GR	698.900	2081.000	701.900	2085.000	704.000	2096.000	708.100	2146.000	717.700	2292.000
GR	720.300	2390.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.085	.085	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	25.510	13.000	250.000	320.000	1120.000	905.000	1717.000	0.000	0.000	0.000
GR	720.000	0.000	710.000	200.000	707.100	200.000	705.000	250.000	702.800	280.000
GR	700.100	300.000	705.700	320.000	707.500	350.000	708.700	370.000	710.000	380.000
GR	710.000	550.000	710.000	780.000	720.000	850.000	0.000	0.000	0.000	0.000
X1	25.520	10.000	200.000	270.000	1120.000	905.000	1717.000	0.000	0.000	0.000
GR	720.000	0.000	710.000	80.000	710.000	200.000	704.600	210.000	703.600	220.000
GR	701.300	230.000	703.600	250.000	707.200	270.000	710.000	270.000	720.000	400.000
X1	25.530	9.000	120.000	190.000	1120.000	905.000	1717.000	0.000	0.000	0.000
GR	720.000	0.000	710.000	110.000	707.300	120.000	705.300	130.000	702.500	150.000
GR	705.700	170.000	708.700	190.000	710.000	200.000	720.000	380.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000

VALLEY SECTION P

X1	25.700	15.000	1587.000	1680.000	1120.000	905.000	1600.000	0.000	0.000	0.000
GR	720.300	1090.000	719.600	1245.000	717.700	1345.000	711.000	1467.000	711.200	1538.000
GR	710.200	1587.000	707.300	1619.000	703.700	1640.000	705.000	1660.000	707.400	1662.000
GR	710.200	1680.000	710.800	1832.000	717.200	1895.000	720.800	2088.000	727.600	2305.000
NC	.085	.085	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	25.800	18.000	1344.000	1426.000	1400.000	1200.000	2000.000	0.000	0.000	0.000
GR	727.200	1012.000	723.400	1185.000	723.700	1285.000	720.500	1308.000	711.500	1344.000
GR	707.400	1354.000	709.500	1375.000	709.200	1388.000	706.200	1400.000	706.700	1407.000
GR	709.200	1412.000	710.500	1426.000	710.800	1452.000	711.000	1557.000	712.300	1658.000
GR	711.300	1751.000	710.500	1895.000	727.600	1952.000	0.000	0.000	0.000	0.000
FT	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	1188.000	1895.000

X1	25.890	0.000	0.000	0.000	533.000	453.000	730.000	0.000	0.000	0.000
NC	.075	.075	.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	25.900	17.000	1380.000	1422.000	720.000	720.000	720.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	715.500	716.100	0.000
GR	724.800	1030.000	720.200	1117.000	711.800	1235.000	713.000	1241.000	713.800	1338.000
GR	712.200	1348.000	713.000	1365.000	709.800	1378.000	707.300	1380.000	705.500	1400.000
GR	706.700	1420.000	709.800	1422.000	712.500	1426.000	712.500	1475.000	713.400	1605.000
GR	724.000	1640.000	724.900	1651.000	0.000	0.000	0.000	0.000	0.000	0.000
SR	1.250	2.038	3.000	0.000	32.800	10.000	228.000	0.000	705.000	705.000
NC	0.000	0.000	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECTION @ 52ND STREET U/S

X1	26.000	25.000	2000.000	2040.000	44.000	44.000	44.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	715.000	717.200	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	717.200	718.000	0.000
ET	25.000	1479.000	726.900	0.000	1580.000	725.000	0.000	1800.000	718.000	0.000
ET	1860.000	717.200	0.000	2000.000	718.000	0.000	2000.000	718.000	705.000	2002.500
ET	718.000	705.000	2002.600	718.000	710.000	2006.000	718.000	714.000	2009.500	718.000
ET	715.000	2013.000	718.000	714.000	2016.100	718.000	710.000	2016.200	718.000	705.000
ET	2023.500	718.100	705.000	2023.600	718.100	710.000	2027.000	718.100	714.000	2030.500
ET	718.100	715.000	2035.000	718.100	714.000	2037.500	718.100	710.000	2037.600	718.100
ET	705.000	2040.000	718.100	705.000	2040.000	718.100	0.000	2130.000	719.500	0.000
ET	2350.000	728.900	0.000	2400.000	733.000	0.000	0.000	0.000	0.000	0.000
GR	726.900	1479.000	725.000	1580.000	718.000	1800.000	717.200	1860.000	718.000	2000.000
GR	705.000	2000.000	705.000	2002.500	705.000	2002.600	705.000	2006.000	705.000	2009.500
GR	705.000	2013.000	705.000	2016.100	705.000	2016.200	705.000	2023.500	705.000	2023.600
GR	705.000	2027.000	705.000	2030.500	705.000	2035.000	705.000	2037.500	705.000	2037.600
GR	705.000	2040.000	718.100	2040.000	719.500	2130.000	728.900	2350.000	733.000	2400.000
NC	.085	.085	.060	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	9.100	0.000	0.000	1300.000	1700.000
X1	26.110	16.000	1470.000	1525.000	180.000	180.000	180.000	0.000	0.000	0.000
GR	726.400	1018.000	724.000	1045.000	722.000	1085.000	713.500	1095.000	712.800	1220.000
GR	712.700	1318.000	713.800	1420.000	714.000	1470.000	709.800	1482.000	707.800	1484.000
GR	707.800	1500.000	708.900	1515.000	713.500	1525.000	710.000	1607.000	715.000	1742.000
GR	721.000	1794.000	725.000	1845.000	727.200	1860.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000
NC	.085	.085	.060	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	26.300	19.000	1727.000	1753.000	916.000	916.000	916.000	0.000	0.000	0.000
GR	724.100	1000.000	723.400	1056.000	726.600	1167.000	725.300	1266.000	715.300	1445.000
GR	715.500	1550.000	718.100	1663.000	715.600	1676.000	715.000	1727.000	712.600	1740.000
GR	715.000	1753.000	715.000	1806.000	720.800	1832.000	724.500	1958.000	723.700	2060.000
GR	725.200	2160.000	723.800	2287.000	723.900	2387.000	728.300	2515.000	0.000	0.000
NC	.095	.095	.065	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	9.100	0.000	0.000	1536.000	2185.000

VALLEY SECTION F

X1	26.400	24.000	1978.000	2023.000	4000.000	3000.000	4290.000	0.000	0.000	0.000
GR	730.100	1009.000	729.200	1090.000	736.800	1112.000	734.200	1223.000	724.200	1358.000
GR	720.600	1536.000	718.900	1657.000	718.500	1760.000	719.000	1938.000	717.600	1965.000

GR	716.200	1976.000	712.300	1979.000	711.700	1999.000	712.300	2016.000	716.200	2019.000
GR	717.600	2023.000	718.800	2185.000	726.100	2221.000	725.600	2312.000	725.600	2412.000
GR	727.300	2590.000	726.800	2760.000	728.300	3036.000	731.600	3355.000	0.000	0.000
NC	.095	.095	.065	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	9.100	0.000	0.000	1765.000	2665.000
X1	26.500	30.000	2205.000	2232.000	1400.000	1000.000	1650.000	0.000	0.000	0.000
GR	733.000	1095.000	725.800	1372.000	726.600	1460.000	724.500	1653.000	722.200	1720.000
GR	721.100	1892.000	721.300	1942.000	721.000	2060.000	722.000	2160.000	721.200	2192.000
GR	720.300	2205.000	717.500	2210.000	715.300	2211.000	713.300	2220.000	716.500	2229.000
GR	719.000	2232.000	720.000	2298.000	719.000	2342.000	720.000	2460.000	720.200	2564.000
GR	719.000	2665.000	730.300	2700.000	733.000	2800.000	730.500	2850.000	730.000	3000.000
GR	731.000	3100.000	730.500	3125.000	730.100	3200.000	732.500	3300.000	732.000	3400.000
NC	.095	.095	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION S

X1	26.700	28.000	2178.000	2215.000	3600.000	2480.000	3300.000	0.000	0.000	0.000
GR	736.000	1000.000	732.600	1082.000	730.200	1205.000	732.600	1268.000	733.000	1302.000
GR	731.500	1372.000	731.700	1482.000	732.600	1566.000	732.800	1663.000	732.100	1733.000
GR	729.800	1810.000	728.200	1902.000	727.300	1972.000	724.800	2006.000	723.000	2012.000
GR	720.500	2019.000	721.000	2050.000	723.000	2061.000	723.600	2178.000	722.500	2186.000
GR	721.400	2189.000	720.400	2199.000	722.000	2210.000	723.600	2215.000	723.600	2404.000
GR	725.600	2462.000	741.400	2498.000	743.300	2553.000	0.000	0.000	0.000	0.000
GT	5.000	770.000	1120.000	1260.000	1660.000	1260.000	0.000	0.000	0.000	0.000
NC	.120	.120	.065	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	9.100	0.000	0.000	1400.000	1825.000
X1	26.890	25.000	1575.000	1625.000	1640.000	1800.000	2150.000	0.000	0.000	0.000
GR	745.100	960.000	741.000	1010.000	736.400	1105.000	731.100	1240.000	728.800	1340.000
GR	727.500	1455.000	728.000	1525.000	726.300	1575.000	722.800	1584.000	722.600	1600.000
GR	725.500	1615.000	723.500	1620.000	728.200	1625.000	728.200	1685.000	729.600	1695.000
GR	729.800	1746.000	727.300	1750.000	727.900	1800.000	731.200	1889.000	738.500	2005.000
GR	738.200	2135.000	741.100	2251.000	741.500	2383.000	739.300	2485.000	742.500	2740.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	26.900	0.000	0.000	0.000	750.000	750.000	750.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	735.000	735.000	0.000

SECTION I 6UTH STREET L/S

X1	26.910	8.000	386.500	413.000	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	735.000	735.000	0.000
GR	743.000	0.000	742.500	386.500	721.500	386.500	721.500	399.000	721.500	401.000
GR	721.500	413.000	742.500	413.000	741.500	1160.000	0.000	0.000	0.000	0.000
SR	1.250	1.565	3.000	0.000	26.500	2.000	228.000	0.000	721.500	721.500
X1	27.000	0.000	0.000	0.000	35.000	35.000	35.000	0.000	0.000	0.000
X6	0.000	0.000	1.000	730.800	742.500	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	742.500	742.500	0.000
ET	10.000	0.000	743.000	0.000	386.500	742.500	0.000	386.500	742.500	730.800
ET	399.000	742.500	730.800	399.000	742.500	721.500	401.000	742.500	721.500	401.000
ET	742.500	730.800	413.000	742.500	730.800	413.000	742.500	0.000	1160.000	741.500
ET	0.000	0.000	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

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

PLASTER CREEK, KENTWOOD

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
22.700	44094.00	0.00	0.00	662.70	1550.00	674.80	0.00	674.85	4.46	2.37	1154.98	733.56
22.700	44094.00	0.00	0.00	662.70	2350.00	676.30	0.00	676.36	4.28	2.56	1636.73	1136.36
22.700	44094.00	0.00	0.00	662.70	2690.00	677.10	0.00	677.15	3.73	2.50	1916.06	1392.84
22.700	44094.00	0.00	0.00	662.70	3630.00	678.80	0.00	678.85	3.10	2.50	2634.59	2063.20
22.750	2075.00	0.00	0.00	664.35	1550.00	675.80	0.00	675.88	7.03	2.83	933.97	584.77
22.750	2075.00	0.00	0.00	664.35	2350.00	677.23	0.00	677.32	6.79	3.08	1295.57	901.57
22.750	2075.00	0.00	0.00	664.35	2690.00	677.92	0.00	678.00	6.24	3.08	1470.73	1077.03
22.750	2075.00	0.00	0.00	664.35	3630.00	679.48	0.00	679.57	5.64	3.21	1873.78	1529.10
22.800	2075.00	0.00	0.00	666.00	1550.00	677.20	0.00	677.34	8.05	3.16	566.53	546.43
22.800	2075.00	0.00	0.00	666.00	2350.00	678.70	0.00	678.91	10.26	3.96	731.30	733.71
22.800	2075.00	0.00	0.00	666.00	2690.00	679.30	0.00	679.52	10.42	4.14	915.13	833.38
22.800	2075.00	0.00	0.00	666.00	3630.00	680.69	0.00	680.88	9.17	4.20	1561.53	1198.44
22.810	1.00	675.20	672.80	666.00	1550.00	677.12	0.00	677.37	95.13	4.28	406.86	158.91
22.810	1.00	675.20	672.80	666.00	2350.00	678.64	0.00	678.94	88.24	4.74	569.41	250.17
22.810	1.00	675.20	672.80	666.00	2690.00	679.27	0.00	679.53	75.87	4.62	748.04	308.82
22.810	1.00	675.20	672.80	666.00	3630.00	680.76	0.00	680.89	36.53	3.57	1445.96	600.56
22.820	2.50	675.20	672.80	666.00	1550.00	677.15	0.00	677.40	93.99	4.26	408.62	159.88
22.820	2.50	675.20	672.80	666.00	2350.00	678.66	0.00	678.96	87.31	4.72	572.25	251.49
22.820	2.50	675.20	672.80	666.00	2690.00	679.30	0.00	679.55	74.87	4.60	754.88	310.88
22.820	2.50	675.20	672.80	666.00	3630.00	680.77	0.00	680.90	36.36	3.56	1448.70	602.00
22.830	1.00	0.00	0.00	666.00	1550.00	677.28	0.00	677.41	7.79	3.13	573.88	555.33
22.830	1.00	0.00	0.00	666.00	2350.00	678.76	0.00	678.97	10.00	3.92	742.58	743.25
22.830	1.00	0.00	0.00	666.00	2690.00	679.34	0.00	679.56	10.24	4.11	930.86	840.77
22.830	1.00	0.00	0.00	666.00	3630.00	680.73	0.00	680.92	8.97	4.16	1582.24	1212.19
22.900	695.00	0.00	0.00	666.30	1550.00	677.71	0.00	677.73	2.82	1.68	1639.61	923.40
22.900	695.00	0.00	0.00	666.30	2350.00	679.28	0.00	679.31	2.66	1.84	2220.89	1441.70
22.900	695.00	0.00	0.00	666.30	2690.00	679.87	0.00	679.90	2.62	1.91	2439.16	1661.26
22.900	695.00	0.00	0.00	666.30	3630.00	681.21	0.00	681.24	2.70	2.11	2935.96	2208.97
22.980	250.00	0.00	0.00	665.80	1550.00	677.75	0.00	677.84	5.02	2.43	637.44	692.08
22.980	250.00	0.00	0.00	665.80	2350.00	679.30	0.00	679.44	6.87	3.06	896.44	896.80
22.980	250.00	0.00	0.00	665.80	2690.00	679.88	0.00	680.04	7.17	3.22	1039.82	1004.63
22.980	250.00	0.00	0.00	665.80	3630.00	681.22	0.00	681.39	7.82	3.60	1368.83	1297.77

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSFL	CRIWS	EG	10K*S	VCH	AREA	.01K
23.000	50.00	0.00	0.00	666.80	1550.00	677.76	0.00	677.88	6.75	2.78	558.18	596.59
23.000	50.00	0.00	0.00	666.80	2350.00	679.31	0.00	679.52	9.98	3.62	649.06	743.99
23.000	50.00	0.00	0.00	666.80	2690.00	679.89	0.00	680.12	11.16	3.92	740.08	805.24
23.000	50.00	0.00	0.00	666.80	3630.00	681.22	0.00	681.48	11.70	4.29	1281.28	1061.25
23.090	32.00	680.00	678.50	666.80	1550.00	677.84	0.00	677.96	6.61	2.76	562.29	603.06
23.090	32.00	680.00	678.50	666.80	2350.00	679.85	0.00	680.03	8.62	3.44	730.06	800.37
23.090	32.00	680.00	678.50	666.80	2690.00	680.32	0.00	680.52	9.61	3.71	875.72	867.66
23.090	32.00	680.00	678.50	666.80	3630.00	681.29	0.00	681.55	11.36	4.24	1312.64	1077.16
23.100	48.00	0.00	0.00	667.00	1550.00	677.96	0.00	678.00	2.39	1.71	1102.41	1002.82
23.100	48.00	0.00	0.00	667.00	2350.00	680.04	0.00	680.09	2.09	1.86	1889.26	1625.25
23.100	48.00	0.00	0.00	667.00	2690.00	680.54	0.00	680.59	2.19	1.96	2114.79	1817.31
23.100	48.00	0.00	0.00	667.00	3630.00	681.56	0.00	681.63	2.59	2.26	2579.13	2254.69
23.120	200.00	0.00	0.00	667.00	1550.00	678.00	0.00	678.05	2.34	1.70	1114.24	1014.33
23.120	200.00	0.00	0.00	667.00	2350.00	680.09	0.00	680.13	1.97	1.81	2117.01	1672.46
23.120	200.00	0.00	0.00	667.00	2690.00	680.59	0.00	680.63	2.01	1.88	2483.23	1898.80
23.120	200.00	0.00	0.00	667.00	3630.00	681.63	0.00	681.67	2.17	2.08	3289.64	2461.79
23.170	3600.00	0.00	0.00	670.10	1550.00	680.10	0.00	680.71	92.14	6.51	299.11	161.48
23.170	3600.00	0.00	0.00	670.10	2350.00	681.78	0.00	681.99	40.47	4.87	1179.13	369.39
23.170	3600.00	0.00	0.00	670.10	2690.00	682.24	0.00	682.40	31.88	4.45	1485.45	476.42
23.170	3600.00	0.00	0.00	670.10	3630.00	683.25	0.00	683.35	22.16	3.94	2165.27	771.19
23.200	30.00	0.00	0.00	670.10	1550.00	680.78	0.00	680.80	3.88	1.51	2169.92	786.42
23.200	30.00	0.00	0.00	670.10	2350.00	682.02	0.00	682.04	3.49	1.57	2992.88	1258.42
23.200	30.00	0.00	0.00	670.10	2690.00	682.42	0.00	682.43	3.54	1.63	3257.85	1430.06
23.200	30.00	0.00	0.00	670.10	3630.00	683.36	0.00	683.38	3.74	1.78	3892.29	1876.69
23.500	4220.00	0.00	0.00	672.50	1550.00	682.98	0.00	683.03	10.76	2.43	1215.60	472.47
23.500	4220.00	0.00	0.00	672.50	2350.00	684.06	0.00	684.12	11.24	2.71	1615.74	701.09
23.500	4220.00	0.00	0.00	672.50	2690.00	684.47	0.00	684.53	11.32	2.80	1771.96	799.39
23.500	4220.00	0.00	0.00	672.50	3630.00	685.49	0.00	685.55	11.54	3.03	2168.03	1068.59
23.600	1825.00	0.00	0.00	673.60	1550.00	685.12	0.00	685.23	15.60	3.18	701.33	392.43
23.600	1825.00	0.00	0.00	673.60	2350.00	686.44	0.00	686.60	19.66	3.92	865.20	529.99
23.600	1825.00	0.00	0.00	673.60	2690.00	686.92	0.00	687.11	21.20	4.20	925.40	584.21
23.600	1825.00	0.00	0.00	673.60	3630.00	688.09	0.00	688.34	25.11	4.89	1072.59	724.34
23.700	1825.00	0.00	0.00	674.70	1550.00	686.95	0.00	687.01	7.27	2.25	1036.85	574.96
23.700	1825.00	0.00	0.00	674.70	2350.00	688.58	0.00	688.65	7.96	2.62	1377.87	832.69
23.700	1825.00	0.00	0.00	674.70	2690.00	689.17	0.00	689.24	8.19	2.75	1511.38	939.77
23.700	1825.00	0.00	0.00	674.70	3630.00	690.61	0.00	690.70	8.67	3.06	1871.17	1232.52
23.800	1300.00	0.00	0.00	674.40	1550.00	687.66	0.00	687.69	3.93	1.77	1413.63	781.41
23.800	1300.00	0.00	0.00	674.40	2350.00	689.35	0.00	689.39	4.23	2.03	1856.36	1142.49
23.800	1300.00	0.00	0.00	674.40	2690.00	689.96	0.00	690.00	4.35	2.13	2019.59	1290.19
23.800	1300.00	0.00	0.00	674.40	3630.00	691.46	0.00	691.51	4.64	2.37	2422.54	1685.29
23.900	500.00	0.00	0.00	677.40	1550.00	687.83	0.00	687.86	2.86	1.43	1433.33	915.77
23.900	500.00	0.00	0.00	677.40	2350.00	689.54	0.00	689.57	3.32	1.73	1824.35	1290.20
23.900	500.00	0.00	0.00	677.40	2690.00	690.16	0.00	690.20	3.48	1.84	1971.88	1440.99
23.900	500.00	0.00	0.00	677.40	3630.00	691.67	0.00	691.72	3.90	2.12	2341.54	1838.73

SECNO	XLCH	ELTRD	ELLC	FLMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
24.000	50.00	0.00	0.00	674.30	1550.00	687.85	0.00	687.87	.98	.97	1592.49	1567.15
24.000	50.00	0.00	0.00	674.30	2350.00	689.56	0.00	689.59	1.49	1.29	1861.77	1923.25
24.000	50.00	0.00	0.00	674.30	2690.00	690.18	0.00	690.21	1.68	1.40	2010.74	2077.66
24.000	50.00	0.00	0.00	674.30	3630.00	691.69	0.00	691.74	2.11	1.68	2380.18	2500.32
24.100	104.00	689.20	679.20	674.30	1550.00	688.21	0.00	688.22	.89	.94	1641.14	1639.43
24.100	104.00	689.20	679.20	674.30	2350.00	690.06	0.00	690.08	1.32	1.24	1982.62	2047.72
24.100	104.00	689.20	679.20	674.30	2690.00	690.59	0.00	690.61	1.52	1.36	2108.41	2184.24
24.100	104.00	689.20	679.20	674.30	3630.00	691.98	0.00	692.02	1.97	1.64	2456.34	2589.10
24.110	150.00	0.00	0.00	677.40	1550.00	688.23	0.00	688.24	1.44	1.20	1842.45	1292.00
24.110	150.00	0.00	0.00	677.40	2350.00	690.09	0.00	690.11	1.44	1.36	2549.98	1959.43
24.110	150.00	0.00	0.00	677.40	2690.00	690.62	0.00	690.64	1.53	1.44	2757.97	2176.88
24.110	150.00	0.00	0.00	677.40	3630.00	692.02	0.00	692.05	1.66	1.63	3327.00	2813.88
24.200	1961.00	0.00	0.00	674.60	1550.00	688.56	0.00	688.59	2.60	1.94	1395.24	961.67
24.200	1961.00	0.00	0.00	674.60	2350.00	690.37	0.00	690.40	1.91	1.87	2235.62	1701.23
24.200	1961.00	0.00	0.00	674.60	2690.00	690.91	0.00	690.94	1.87	1.91	2501.43	1968.21
24.200	1961.00	0.00	0.00	674.60	3630.00	692.32	0.00	692.35	1.70	1.97	3233.46	2784.30
24.300	750.00	0.00	0.00	677.00	1550.00	688.71	0.00	689.14	21.83	5.55	415.35	331.74
24.300	750.00	0.00	0.00	677.00	2350.00	690.53	0.00	690.77	13.53	4.83	1054.99	638.77
24.300	750.00	0.00	0.00	677.00	2690.00	691.07	0.00	691.28	11.78	4.70	1306.13	783.91
24.300	750.00	0.00	0.00	677.00	3630.00	692.48	0.00	692.61	7.60	4.18	2226.81	1316.65
24.400	500.00	0.00	0.00	678.30	1180.00	689.54	0.00	689.55	3.06	1.50	1636.77	674.53
24.400	500.00	0.00	0.00	678.30	1800.00	691.04	0.00	691.05	2.31	1.45	2433.78	1183.32
24.400	500.00	0.00	0.00	678.30	2050.00	691.53	0.00	691.54	2.21	1.46	2697.41	1377.88
24.400	500.00	0.00	0.00	678.30	2750.00	692.80	0.00	692.82	2.00	1.49	3393.19	1946.77
24.430	1550.00	0.00	0.00	680.80	1180.00	690.05	0.00	690.12	6.66	2.11	719.47	457.28
24.430	1550.00	0.00	0.00	680.80	1800.00	691.43	0.00	691.50	6.29	2.31	1183.19	717.47
24.430	1550.00	0.00	0.00	680.80	2050.00	691.90	0.00	691.96	6.06	2.35	1384.85	832.65
24.430	1550.00	0.00	0.00	680.80	2750.00	693.11	0.00	693.17	5.17	2.36	1978.26	1209.79
24.440	600.00	0.00	0.00	683.30	1180.00	690.49	0.00	690.56	8.02	2.14	552.63	416.77
24.440	600.00	0.00	0.00	683.30	1800.00	691.88	0.00	691.98	9.92	2.64	702.77	571.63
24.440	600.00	0.00	0.00	683.30	2050.00	692.34	0.00	692.46	10.49	2.82	762.68	632.82
24.440	600.00	0.00	0.00	683.30	2750.00	693.51	0.00	693.66	11.67	3.22	916.60	804.99
24.450	103.00	691.06	689.80	683.30	1180.00	691.44	0.00	691.50	5.20	1.85	646.49	517.50
24.450	103.00	691.06	689.80	683.30	1800.00	693.00	0.00	693.08	6.11	2.25	850.37	728.19
24.450	103.00	691.06	689.80	683.30	2050.00	693.42	0.00	693.50	6.71	2.43	905.13	791.34
24.450	103.00	691.06	689.80	683.30	2750.00	694.40	0.00	694.52	8.16	2.88	1064.80	962.67
24.460	150.00	0.00	0.00	680.80	1180.00	691.51	0.00	691.54	1.49	1.51	1178.41	966.95
24.460	150.00	0.00	0.00	680.80	1800.00	693.10	0.00	693.13	1.43	1.65	1732.06	1503.99
24.460	150.00	0.00	0.00	680.80	2050.00	693.53	0.00	693.56	1.51	1.74	1887.09	1670.41
24.460	150.00	0.00	0.00	680.80	2750.00	694.56	0.00	694.60	1.70	1.96	2271.67	2108.39
24.490	1867.00	0.00	0.00	681.70	1180.00	692.01	0.00	692.09	9.25	2.70	718.83	387.88
24.490	1867.00	0.00	0.00	681.70	1800.00	693.52	0.00	693.58	5.67	2.48	1188.27	755.92
24.490	1867.00	0.00	0.00	681.70	2050.00	693.95	0.00	694.01	5.35	2.51	1331.03	886.20
24.490	1867.00	0.00	0.00	681.70	2750.00	695.00	0.00	695.06	4.90	2.62	1680.65	1242.63

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
24.500	330.00	0.00	0.00	681.70	1180.00	692.30	0.00	692.36	6.93	2.42	805.77	448.11
24.500	330.00	0.00	0.00	681.70	1800.00	693.70	0.00	693.75	4.94	2.36	1248.36	809.72
24.500	330.00	0.00	0.00	681.70	2050.00	694.12	0.00	694.17	4.74	2.40	1388.62	941.30
24.500	330.00	0.00	0.00	681.70	2750.00	695.16	0.00	695.21	4.46	2.54	1734.55	1302.06
24.540	282.00	0.00	0.00	685.00	1180.00	692.44	0.00	692.53	4.67	2.41	490.42	546.08
24.540	282.00	0.00	0.00	685.00	1800.00	693.80	0.00	693.85	2.52	1.98	1120.55	1134.56
24.540	282.00	0.00	0.00	685.00	2050.00	694.22	0.00	694.28	2.75	2.14	1250.81	1236.92
24.540	282.00	0.00	0.00	685.00	2750.00	695.26	0.00	695.32	3.13	2.45	1644.80	1555.54
24.550	118.00	693.80	692.30	685.00	1180.00	693.09	0.00	693.16	3.52	2.21	533.95	629.24
24.550	118.00	693.80	692.30	685.00	1800.00	694.50	0.00	694.54	1.88	1.80	1347.97	1314.08
24.550	118.00	693.80	692.30	685.00	2050.00	694.77	0.00	694.81	2.17	1.97	1445.62	1392.22
24.550	118.00	693.80	692.30	685.00	2750.00	695.50	0.00	695.56	2.80	2.35	1744.85	1643.26
24.590	170.00	0.00	0.00	681.70	1180.00	693.22	0.00	693.25	5.14	1.77	1092.96	520.57
24.590	170.00	0.00	0.00	681.70	1800.00	694.56	0.00	694.59	4.61	1.89	1530.22	838.71
24.590	170.00	0.00	0.00	681.70	2050.00	694.83	0.00	694.86	5.02	2.02	1623.27	914.77
24.590	170.00	0.00	0.00	681.70	2750.00	695.58	0.00	695.63	5.88	2.31	1875.14	1134.52
24.600	90.00	0.00	0.00	683.30	1180.00	693.26	0.00	693.28	2.89	1.87	1305.54	693.87
24.600	90.00	0.00	0.00	683.30	1800.00	694.59	0.00	694.62	2.11	1.81	1974.83	1238.85
24.600	90.00	0.00	0.00	683.30	2050.00	694.87	0.00	694.89	2.24	1.90	2115.00	1369.35
24.600	90.00	0.00	0.00	683.30	2750.00	695.63	0.00	695.66	2.43	2.10	2510.74	1765.28
24.700	3950.00	0.00	0.00	685.40	1180.00	694.59	0.00	694.69	7.63	3.04	733.89	427.15
24.700	3950.00	0.00	0.00	685.40	1800.00	695.58	0.00	695.68	7.29	3.26	1052.06	666.73
24.700	3950.00	0.00	0.00	685.40	2050.00	695.89	0.00	695.99	7.42	3.38	1151.72	752.41
24.700	3950.00	0.00	0.00	685.40	2750.00	696.69	0.00	696.80	7.61	3.66	1411.02	996.90
24.800	3690.00	0.00	0.00	687.50	1180.00	697.03	0.00	697.09	7.77	2.76	949.04	423.43
24.800	3690.00	0.00	0.00	687.50	1800.00	697.80	0.00	697.86	7.32	2.91	1325.65	665.31
24.800	3690.00	0.00	0.00	687.50	2050.00	698.08	0.00	698.14	7.13	2.96	1467.61	767.48
24.800	3690.00	0.00	0.00	687.50	2750.00	698.80	0.00	698.85	6.72	3.08	1843.21	1061.07
24.880	918.00	0.00	0.00	687.50	1180.00	697.51	0.00	697.55	4.31	2.17	1183.63	568.43
24.880	918.00	0.00	0.00	687.50	1800.00	698.27	0.00	698.31	4.58	2.42	1565.39	840.78
24.880	918.00	0.00	0.00	687.50	2050.00	698.54	0.00	698.58	4.64	2.50	1708.27	951.93
24.880	918.00	0.00	0.00	687.50	2750.00	699.24	0.00	699.29	4.71	2.68	2086.71	1267.56
24.890	411.00	0.00	0.00	687.50	1180.00	697.79	0.00	697.86	14.45	2.83	730.48	310.38
24.890	411.00	0.00	0.00	687.50	1800.00	698.57	0.00	698.66	17.00	3.32	937.35	436.58
24.890	411.00	0.00	0.00	687.50	2050.00	698.85	0.00	698.95	17.75	3.48	1011.65	486.56
24.890	411.00	0.00	0.00	687.50	2750.00	699.55	0.00	699.67	19.37	3.86	1201.67	624.83
24.899	361.00	0.00	0.00	687.50	1180.00	698.41	0.00	698.65	27.85	4.18	341.41	223.59
24.899	361.00	0.00	0.00	687.50	1800.00	699.32	0.00	699.72	40.94	5.51	399.59	281.32
24.899	361.00	0.00	0.00	687.50	2050.00	699.63	0.00	700.11	45.96	5.99	419.63	302.40
24.899	361.00	0.00	0.00	687.50	2750.00	700.40	0.00	701.09	59.46	7.23	468.89	356.64
24.900	50.00	0.00	0.00	689.10	1180.00	698.55	0.00	698.92	64.89	4.86	243.04	146.49
24.900	50.00	0.00	0.00	689.10	1800.00	699.51	0.00	700.10	82.01	6.17	291.88	198.76
24.900	50.00	0.00	0.00	689.10	2050.00	699.84	0.00	700.52	88.21	6.64	308.74	218.27
24.900	50.00	0.00	0.00	689.10	2750.00	700.65	0.00	701.61	104.22	7.85	350.28	269.37

SECND	XLCH	ELTRD	ELLC	FLMIN	G	CWSFL	CRIWS	FG	IOK#S	VCH	AREA	.01R
25.000	45.00	702.00	699.50	690.50	1180.00	698.75	0.00	698.98	1.52	3.87	305.10	957.32
25.000	45.00	702.00	699.50	690.50	1800.00	699.75	0.00	700.20	5.48	5.38	334.52	769.04
25.000	45.00	702.00	699.50	690.50	2050.00	700.05	0.00	700.63	7.11	6.13	334.52	769.04
25.000	45.00	702.00	699.50	690.50	2750.00	700.73	0.00	701.78	12.79	8.22	334.52	769.04
25.100	1.00	0.00	0.00	689.10	1180.00	698.69	0.00	699.03	58.99	4.72	250.09	153.64
25.100	1.00	0.00	0.00	689.10	1800.00	699.70	0.00	700.26	73.32	5.96	301.86	210.21
25.100	1.00	0.00	0.00	689.10	2050.00	700.02	0.00	700.66	80.01	6.45	317.92	229.18
25.100	1.00	0.00	0.00	689.10	2750.00	700.96	0.00	701.84	89.95	7.51	366.11	289.96
25.110	111.00	0.00	0.00	689.10	1180.00	699.29	0.00	699.47	22.44	3.67	422.49	249.10
25.110	111.00	0.00	0.00	689.10	1800.00	700.57	0.00	700.74	19.28	3.86	657.62	409.99
25.110	111.00	0.00	0.00	689.10	2050.00	701.01	0.00	701.18	18.28	3.90	753.05	479.52
25.110	111.00	0.00	0.00	689.10	2750.00	702.23	0.00	702.39	14.81	3.86	1030.64	714.68
25.120	111.00	0.00	0.00	689.10	1180.00	699.59	0.00	699.66	10.27	2.57	714.82	368.15
25.120	111.00	0.00	0.00	689.10	1800.00	700.85	0.00	700.91	8.01	2.55	1100.09	636.19
25.120	111.00	0.00	0.00	689.10	2050.00	701.28	0.00	701.34	7.49	2.55	1242.73	748.93
25.120	111.00	0.00	0.00	689.10	2750.00	702.46	0.00	702.52	6.12	2.52	1645.18	1111.62
25.200	393.00	0.00	0.00	689.70	1180.00	699.97	0.00	700.03	10.50	2.34	746.59	364.24
25.200	393.00	0.00	0.00	689.70	1800.00	701.12	0.00	701.17	7.41	2.25	1230.76	661.30
25.200	393.00	0.00	0.00	689.70	2050.00	701.53	0.00	701.58	6.72	2.23	1405.34	790.78
25.200	393.00	0.00	0.00	689.70	2750.00	702.66	0.00	702.71	5.12	2.16	1903.90	1214.96
25.300	3610.00	0.00	0.00	694.20	1170.00	702.25	0.00	702.28	5.06	1.74	1235.17	520.17
25.300	3610.00	0.00	0.00	694.20	1770.00	703.07	0.00	703.10	5.36	1.95	1627.96	764.73
25.300	3610.00	0.00	0.00	694.20	2000.00	703.37	0.00	703.40	5.34	2.01	1773.70	865.49
25.300	3610.00	0.00	0.00	694.20	2650.00	704.19	0.00	704.23	5.06	2.11	2186.80	1177.68
25.400	1450.00	0.00	0.00	695.00	1170.00	703.00	0.00	703.02	5.54	1.58	1357.06	497.12
25.400	1450.00	0.00	0.00	695.00	1770.00	703.82	0.00	703.84	5.27	1.71	1816.77	771.14
25.400	1450.00	0.00	0.00	695.00	2000.00	704.10	0.00	704.13	5.16	1.75	1979.78	880.18
25.400	1450.00	0.00	0.00	695.00	2650.00	704.88	0.00	704.91	4.79	1.83	2428.92	1210.22
25.500	4050.00	0.00	0.00	698.90	1170.00	706.56	0.00	706.65	28.45	2.54	556.11	219.36
25.500	4050.00	0.00	0.00	698.90	1770.00	707.10	0.00	707.21	28.62	2.81	871.63	330.86
25.500	4050.00	0.00	0.00	698.90	2000.00	707.29	0.00	707.39	28.15	2.87	983.53	376.99
25.500	4050.00	0.00	0.00	698.90	2650.00	707.76	0.00	707.86	26.47	2.99	1278.37	515.09
25.510	1717.00	0.00	0.00	700.10	1170.00	708.88	0.00	708.95	8.24	2.31	642.57	407.71
25.510	1717.00	0.00	0.00	700.10	1770.00	709.74	0.00	709.85	10.73	2.89	793.94	540.24
25.510	1717.00	0.00	0.00	700.10	2000.00	710.01	0.00	710.13	11.69	3.10	846.14	585.02
25.510	1717.00	0.00	0.00	700.10	2650.00	710.58	0.00	710.73	13.74	3.53	1180.35	715.03
25.520	1717.00	0.00	0.00	701.30	1170.00	710.42	0.00	710.53	11.09	2.66	485.64	351.32
25.520	1717.00	0.00	0.00	701.30	1770.00	711.56	0.00	711.70	12.21	3.12	725.80	506.50
25.520	1717.00	0.00	0.00	701.30	2000.00	711.93	0.00	712.07	12.49	3.26	807.66	565.86
25.520	1717.00	0.00	0.00	701.30	2650.00	712.71	0.00	712.89	13.83	3.66	997.00	712.62
25.530	1717.00	0.00	0.00	702.50	1170.00	711.94	0.00	712.01	7.11	2.33	581.37	438.72
25.530	1717.00	0.00	0.00	702.50	1770.00	713.22	0.00	713.33	8.11	2.79	792.75	621.42
25.530	1717.00	0.00	0.00	702.50	2000.00	713.62	0.00	713.74	8.47	2.95	868.40	687.32
25.530	1717.00	0.00	0.00	702.50	2650.00	714.56	0.00	714.71	9.48	3.35	1064.83	860.70

SECNO	XLCH	ELTPD	ELLC	FLMIN	Q	CWSFL	CRIWS	FG	10K*S	VCH	AREA	.01K
25.700	1600.00	0.00	0.00	703.70	1170.00	712.77	0.00	712.80	3.96	1.56	1144.68	587.68
25.700	1600.00	0.00	0.00	703.70	1770.00	714.02	0.00	714.05	3.35	1.64	1689.56	966.81
25.700	1600.00	0.00	0.00	703.70	2000.00	714.43	0.00	714.46	3.25	1.67	1873.52	1109.52
25.700	1600.00	0.00	0.00	703.70	2650.00	715.40	0.00	715.43	3.14	1.79	2335.86	1495.50
25.800	2000.00	0.00	0.00	706.20	1170.00	713.44	0.00	713.46	3.91	1.37	1453.58	591.88
25.800	2000.00	0.00	0.00	706.20	1770.00	714.55	0.00	714.57	3.07	1.40	2089.79	1010.50
25.800	2000.00	0.00	0.00	706.20	2000.00	714.93	0.00	714.95	2.90	1.41	2306.93	1174.20
25.800	2000.00	0.00	0.00	706.20	2650.00	715.86	0.00	715.88	2.65	1.48	2851.17	1626.68
25.890	730.00	0.00	0.00	706.20	1170.00	713.65	0.00	713.66	3.15	1.27	1559.78	659.39
25.890	730.00	0.00	0.00	706.20	1770.00	714.72	0.00	714.73	2.74	1.34	2155.71	1068.56
25.890	730.00	0.00	0.00	706.20	2000.00	715.08	0.00	715.10	2.65	1.37	2362.89	1229.73
25.890	730.00	0.00	0.00	706.20	2650.00	716.00	0.00	716.02	2.50	1.46	2885.00	1675.66
25.900	720.00	0.00	0.00	705.50	1170.00	713.89	0.00	714.10	10.98	3.69	317.31	353.07
25.900	720.00	0.00	0.00	705.50	1770.00	714.86	0.00	715.24	16.86	4.95	357.70	431.12
25.900	720.00	0.00	0.00	705.50	2000.00	715.18	0.00	715.63	19.03	5.39	371.18	458.53
25.900	720.00	0.00	0.00	705.50	2650.00	716.22	0.00	716.31	5.94	3.24	1659.69	1087.64
26.000	44.00	717.20	715.00	705.00	1170.00	714.10	0.00	714.26	3.91	3.22	363.85	591.98
26.000	44.00	717.20	715.00	705.00	1770.00	716.54	0.00	716.77	4.50	3.83	461.64	834.17
26.000	44.00	717.20	715.00	705.00	2000.00	717.29	0.00	717.54	4.81	4.07	492.32	911.68
26.000	44.00	717.20	715.00	705.00	2650.00	718.25	0.00	718.61	6.53	4.91	661.00	1036.75
26.110	180.00	0.00	0.00	707.80	1170.00	714.33	0.00	714.38	10.51	2.23	880.71	360.81
26.110	180.00	0.00	0.00	707.80	1770.00	716.83	0.00	716.85	2.82	1.52	1882.37	1053.37
26.110	180.00	0.00	0.00	707.80	2000.00	717.61	0.00	717.62	2.26	1.46	2191.27	1330.36
26.110	180.00	0.00	0.00	707.80	2650.00	718.69	0.00	718.71	2.26	1.58	2625.97	1764.53
26.300	916.00	0.00	0.00	712.60	1170.00	716.58	716.25	716.82	142.56	5.78	391.99	97.99
26.300	916.00	0.00	0.00	712.60	1770.00	717.46	0.00	717.60	66.50	4.75	701.04	217.06
26.300	916.00	0.00	0.00	712.60	2000.00	718.08	0.00	718.18	36.70	3.91	950.60	330.14
26.300	916.00	0.00	0.00	712.60	2650.00	719.12	0.00	719.19	20.54	3.38	1404.65	584.74
26.400	4290.00	0.00	0.00	711.70	1170.00	720.76	0.00	720.79	3.34	1.57	1604.65	639.74
26.400	4290.00	0.00	0.00	711.70	1770.00	721.50	0.00	721.53	3.88	1.79	2111.00	898.83
26.400	4290.00	0.00	0.00	711.70	2000.00	721.73	0.00	721.75	4.09	1.87	2273.45	989.16
26.400	4290.00	0.00	0.00	711.70	2650.00	722.36	0.00	722.39	4.41	2.03	2735.05	1262.49
26.500	1650.00	0.00	0.00	713.30	1170.00	721.56	0.00	721.60	14.04	2.52	1092.02	312.24
26.500	1650.00	0.00	0.00	713.30	1770.00	722.30	0.00	722.33	10.97	2.41	1752.14	534.40
26.500	1650.00	0.00	0.00	713.30	2000.00	722.53	0.00	722.56	10.28	2.39	1977.10	623.77
26.500	1650.00	0.00	0.00	713.30	2650.00	723.14	0.00	723.17	8.80	2.34	2572.88	893.44
26.700	3300.00	0.00	0.00	720.40	1170.00	725.52	0.00	725.55	12.38	1.91	1043.23	332.48
26.700	3300.00	0.00	0.00	720.40	1770.00	726.08	0.00	726.12	14.80	2.29	1303.27	460.15
26.700	3300.00	0.00	0.00	720.40	2000.00	726.26	0.00	726.30	15.57	2.42	1390.62	506.88
26.700	3300.00	0.00	0.00	720.40	2650.00	726.73	0.00	726.78	17.41	2.73	1615.35	635.12
26.890	2150.00	0.00	0.00	722.60	770.00	728.47	0.00	728.58	23.05	2.89	443.80	160.40
26.890	2150.00	0.00	0.00	722.60	1120.00	729.21	0.00	729.31	20.32	3.00	715.10	248.44
26.890	2150.00	0.00	0.00	722.60	1260.00	729.45	0.00	729.55	19.74	3.05	806.75	283.62
26.890	2150.00	0.00	0.00	722.60	1660.00	730.07	0.00	730.16	18.78	3.19	1052.74	383.01

SECNO	XLCH	ELTRD	ELLC	FLMIN	Q	CWSEL	CRIWS	EG	IOK*S	VCH	AREA	.01K
26.900	750.00	0.00	0.00	722.60	770.00	729.78	0.00	729.89	13.63	2.63	292.66	208.55
26.900	750.00	0.00	0.00	722.60	1120.00	730.62	0.00	730.80	18.49	3.35	334.43	260.49
26.900	750.00	0.00	0.00	722.60	1260.00	730.90	0.00	731.11	20.40	3.62	348.44	278.94
26.900	750.00	0.00	0.00	722.60	1660.00	731.61	0.00	731.90	25.69	4.33	383.69	327.53
26.910	50.00	0.00	0.00	721.50	770.00	729.83	0.00	730.02	26.41	3.49	220.77	149.84
26.910	50.00	0.00	0.00	721.50	1120.00	730.68	0.00	731.01	42.58	4.60	243.23	171.64
26.910	50.00	0.00	0.00	721.50	1260.00	730.96	0.00	731.35	49.56	5.03	250.66	178.97
26.910	50.00	0.00	0.00	721.50	1660.00	731.66	0.00	732.25	70.64	6.17	269.16	197.50
27.000	35.00	742.50	730.80	721.50	770.00	729.86	0.00	730.05	26.13	3.47	221.60	150.64
27.000	35.00	742.50	730.80	721.50	1120.00	730.95	0.00	731.26	39.20	4.47	250.56	178.88
27.000	35.00	742.50	730.80	721.50	1260.00	731.34	0.00	731.70	44.43	4.83	260.74	189.02
27.000	35.00	742.50	730.80	721.50	1660.00	732.44	0.00	732.95	57.66	5.73	289.85	218.60

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: KENTWOOD, CITY OF

3) WATERCOURSE: PLASTER CREEK

4) DOCUMENT TYPE: 100-YEAR ENCROACHED

00BREAK00

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

T1
T2       ENCRACHED 100-YEAR FLOODWAY
T3

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
    -10.        6.        0.        0.  0.000000     0.00      0.0       0.   677.200    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 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      FNDST

3470 ENCROACHMENT STATIONS=      152.3      502.3  TYPE=      1  TARGET=      350.000
        VALLEY SECTION 44094 FT FROM MOUTH(FIS CITY OF GRAND RAPIDS)

                         1620 FT DOWNSTREAM OF KENTWOOD CITY CORPORATE BOUNDARY
    22.70     14.50    677.20      0.00    677.10    677.25       .05      0.00      0.00    670.40
    2690.      32.     1100.     1558.       44.      449.     1457.        0.        0.    670.40
     0.00       .74      2.45      1.07      .080      .055      .080     0.000    662.70    152.30
  .000353   44094.    44094.    44094.         0         0         0      0.00    350.00    502.30

*SECNO 22.750

3470 ENCROACHMENT STATIONS=      150.0      410.0  TYPE=      1  TARGET=      260.000
    22.75     13.63    677.98      0.00    677.92    678.06       .08       .80       .01    672.05
    2690.      28.     1267.     1395.       32.      416.     1039.       66.       11.    672.05
      .23       .87      3.05      1.34      .080      .055      .080      .064    664.35    154.01
  .000605    1360.     2075.     1535.         2         0         0      0.00    255.99    410.00

*SECNO 22.800
 2800 NAT Q1=     833.38  WSEL=     679.30  ENC Q1=     833.38  WSEL=     679.40  RATIO=  0.0000
 NAT Q1=     852.  RATIOS LOB,CH,ROB=    .1862    .7862    .0276  WSEL=     679.40

3470 ENCROACHMENT STATIONS=      132.7      437.1  TYPE=      4  TARGET=        .022
```

[redacted]

```
VALLEY SECTION A

    22.80     13.34    679.34      0.00    679.30    679.57       .23      1.47       .04    666.30
    2690.      475.     2170.       45.      292.      517.       38.      112.       21.    675.20
      .37      1.62      4.20      1.21      .080      .055      .080      .063    666.00    132.67
 .001066     1360.     2075.     1535.         2         0         0      0.00    304.44    437.11

*SECNO 22.810
 2800 NAT Q1=     308.82  WSEL=     679.27  ENC Q1=     308.82  WSEL=     679.37  RATIO=  0.0000
 NAT Q1=     322.  RATIOS LOB,CH,ROB=    .2504    .6779    .0718  WSEL=     679.37

3370 NORMAL BRIDGE.NRD= 15 MIN ELTRD=  675.20 MAX ELLC=  672.80

3470 ENCROACHMENT STATIONS=       90.0      438.7  TYPE=      4  TARGET=        .041
    22.81     13.31    679.31      0.00    679.27    679.59       .28       .00       .02    666.30
    2690.      621.     1911.      159.      259.      405.       42.      112.       21.    675.20
      .37      2.39      4.72      3.79      .080      .055      .080      .063    666.00     89.97
 .007843        1.        1.        1.         2         0         0   -152.50    348.77    438.74

*SECNO 22.820
 2800 NAT Q1=     310.88  WSEL=     679.30  ENC Q1=     310.88  WSEL=     679.40  RATIO=  0.0000
 NAT Q1=     325.  RATIOS LOB,CH,ROB=    .2537    .6742    .0721  WSEL=     679.40
   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= 15 MIN ELTRD=  675.20 MAX ELLC=  672.80

3470 ENCROACHMENT STATIONS=       92.4      438.5  TYPE=      4  TARGET=        .044
    22.82     13.33    679.33      0.00    679.30    679.61       .28       .02       .00    666.30
    2690.      626.     1906.      159.      263.      406.       42.      112.       21.    675.20
      .37      2.38      4.69      3.80      .080      .055      .080      .063    666.00     92.44
 .007750        3.        3.        3.         0         0         0   -152.50    346.07    438.52

*SECNO 22.830
 2800 NAT Q1=     840.77  WSEL=     679.34  ENC Q1=     840.77  WSEL=     679.44  RATIO=  0.0000
 NAT Q1=     862.  RATIOS LOB,CH,ROB=    .1890    .7829    .0281  WSEL=     679.44

3470 ENCROACHMENT STATIONS=      131.5      436.8  TYPE=      4  TARGET=        .024
    22.83     13.39    679.39      0.00    679.34    679.62       .22       .00       .01    666.30
    2690.      481.     2164.       44.      305.      519.       37.      112.       21.    675.20
      .37      1.58      4.17      1.20      .080      .055      .080      .063    666.00    131.49
 .001045        1.        1.        1.         2         0         0      0.00    305.29    436.79

*SECNO 22.900

3470 ENCROACHMENT STATIONS=      967.0     1339.0  TYPE=      1  TARGET=     372.000
    22.90     13.63    679.93      0.00    679.87    679.96       .03       .32       .02    675.20
    2690.     1803.      885.        2.     1985.      468.        8.      139.       26.    675.20
      .53       .91      1.89       .30      .090      .055      .100      .061    666.30    967.00
```

```
 .000255      695.      695.      695.        3        0        0     0.00   371.74  1338.74

*SECNO 22.980

3470 ENCROACHMENT STATIONS=      604.0     851.0  TYPE=      1  TARGET=      247.000
    22.98     14.14    679.94     0.00    679.88    680.09      .15      .10      .04    679.10
    2690.      149.     2541.      0.      259.      795.       0.      149.      28. 100000.00
      .55       .58      3.20     0.00     .090      .055     .100      .061   665.80    604.00
  .000701      250.      250.     250.        2         0        0      0.00   246.65    850.65

CCHV=     .300 CEHV=     .500
*SECNO 23.000

3265 DIVIDED FLOW

    23.00     13.14    679.94     0.00    679.89    680.18      .23      .04      .04    680.50
    2690.       19.     2671.      0.       69.      686.       0.      150.      28.    680.00
      .55       .28      3.89     0.00     .090      .055     .100      .061   666.80    511.39
  .001097      50.       50.      50.        2         0        0      0.00   270.52    829.98

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     HWC       BWP       BAREA     SS        FLCHU     FLCHD
     1.25      1.56      3.03      0.00     47.80     12.50    413.19     0.00    666.80    666.80

*SECNO 23.090

3265 DIVIDED FLOW

   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

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA    TRAPEZOID     ELLC      ELTRD
                                                               AREA
  680.97    680.34      .16      590.      2083.     413.      413.      678.50    680.00

              SECTION B BRETON AVENUE U/S

    23.09     13.55    680.35     0.00    680.32    680.56      .21      .38      0.00    680.50
    2690.      67.     2621.      2.      170.      711.       9.      150.      29.    680.00
      .56       .39      3.69     .21     .090      .055     .100      .061   666.80    464.88
  .000948      32.       32.      32.        2         0        2      0.00   366.40    858.78

*SECNO 23.100

3470 ENCROACHMENT STATIONS=      647.0    1189.0  TYPE=      1  TARGET=     -647.000
    23.10     13.57    680.57     0.00    680.54    680.62      .05      .02      .05    674.60
```

```
    2690.      143.     2175.      372.      397.     1116.      616.      152.       29.    674.60
     .56       .36      1.95       .60      .095      .055      .095      .061   667.00    647.00
  .000216      48.       48.       48.         2         0         0      0.00   452.95   1099.95

CCHV=     .100 CEHV=     .300
*SECNO 23.120
 2800 NAT Q1=    1898.80  WSEL=     680.59  ENC Q1=    1898.80  WSEL=     680.69  RATIO=  0.0000
 NAT Q1=    1947.  RATIOS LOB,CH,ROB=    .0908    .7732    .1360  WSEL=     680.69

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=      400.3     1072.0  TYPE=      4  TARGET=          .025
    23.12     13.62    680.62     0.00    680.59    680.67      .05       .04       .00    674.60
    2690.      205.     2146.     338.      642.     1120.     552.      162.       32.    674.60
     .60       .32      1.92      .61      .095      .055     .095      .061   667.00    400.33
  .000208     200.      200.      200.         0         0        0      0.00   661.47   1071.95

*SECNO 23.170
 2800 NAT Q1=     476.42  WSEL=     682.24  ENC Q1=     476.42  WSEL=     682.34  RATIO=  0.0000
 NAT Q1=     503.  RATIOS LOB,CH,ROB=    .5287    .4379    .0334  WSEL=     682.34

3470 ENCROACHMENT STATIONS=      159.0      751.8  TYPE=      4  TARGET=          .053
    23.17     12.22    682.32     0.00    682.24    682.48      .16      1.78       .03    678.00
    2690.     1416.     1254.      20.     1126.      277.      16.      301.       74.    678.00
     .93      1.26      4.52     1.23      .110      .075     .110      .069   670.10    159.03
  .003262    2780.     3600.    3780.         3         0        0      0.00   592.74    751.77

*SECNO 23.200
 2800 NAT Q1=    1430.06  WSEL=     682.42  ENC Q1=    1430.06  WSEL=     682.52  RATIO=  0.0000
 NAT Q1=    1475.  RATIOS LOB,CH,ROB=    .7299    .2611    .0090  WSEL=     682.52

3470 ENCROACHMENT STATIONS=      131.2      756.0  TYPE=      4  TARGET=          .030

        VALLEY SECTION C

    23.20     12.41    682.51     0.00    682.42    682.52      .02       .02       .01    677.00
    2690.     2003.      687.       0.     2735.      441.       0.      303.       75.    677.00
     .94       .73      1.56     0.00      .110      .075     .110      .069   670.10    131.21
  .000369      30.       30.       30.         2         0        0      0.00   624.79    756.00

*SECNO 23.500
   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=      277.0      662.0  TYPE=      1  TARGET=      385.000

        VALLEY SECTION D

    23.50     12.07    684.57     0.00    684.47    684.63      .05      2.09       .01    679.30
    2690.       19.      928.    1743.       24.      339.    1447.      497.      113.    679.30
     1.52       .77      2.74     1.21      .110      .075     .110      .075   672.50    277.00
```

```
 .001066   3093.   4220.   3535.      4       0       0    0.00   384.74   661.74

*SECNO 23.600

3470 ENCROACHMENT STATIONS=     271.0     400.0  TYPE=     1  TARGET=     129.000
    23.60    13.33   686.93     0.00   686.92   687.12     .19     2.45      .04   680.40
    2690.      46.    1610.    1034.      37.     384.    505.     548.     123.   680.40
     1.66     1.24     4.20     2.05     .110     .075    .110     .075   673.60   274.63
  .002121    1865.    1825.    1536.        2        0       0     0.00   125.37   400.00

CCHV=    .100 CEHV=    .300
*SECNO 23.700

3470 ENCROACHMENT STATIONS=     300.0     471.0  TYPE=     1  TARGET=     171.000

        VALLEY SECTION E

    23.70    14.52   689.22     0.00   689.17   689.30     .08     2.18      .01   682.40
    2690.      19.    1519.    1153.      25.     540.    819.     592.     128.   682.40
     1.87      .74     2.81     1.41     .110     .075    .110     .076   674.70   300.00
  .000851    1865.    1825.    1536.        2        0       0     0.00   171.00   471.00

*SECNO 23.800

3470 ENCROACHMENT STATIONS=     121.0     387.0  TYPE=     1  TARGET=     266.000
    23.80    15.63   690.03     0.00   689.96   690.07     .04      .76      .00   681.30
    2690.     416.    1203.    1071.     394.     570.   1072.     643.     135.   681.30
     2.11     1.06     2.11     1.00     .110     .075    .110     .076   674.40   121.00
  .000424    1300.    1300.    1300.        2        0       0     0.00   265.82   386.82

CCHV=    .300 CEHV=    .500
*SECNO 23.900

3470 ENCROACHMENT STATIONS=     600.0     864.0  TYPE=     1  TARGET=     264.000
    23.90    12.82   690.22     0.00   690.16   690.26     .04      .19      .00   681.30
    2690.     189.    1841.     661.     281.    1006.    699.     666.     138.   681.30
     2.20      .67     1.83      .94     .110     .075    .110     .076   677.40   623.98
  .000342     500.     500.     500.        2        0       0     0.00   240.02   864.00

*SECNO 24.000
   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      FNDST

3470 ENCROACHMENT STATIONS=     100.0     540.0  TYPE=     1  TARGET=     440.000
    24.00    15.94   690.24     0.00   690.18   690.27     .03      .01      .00   691.00
    2690.       0.    2669.      21.       0.    1911.    113.     668.     138.   689.10
     2.21     0.00     1.40      .18     .110     .075    .110     .076   674.30   300.38
  .000165      50.      50.      50.        0        0       0     0.00   239.62   540.00
```

```
SPECIAL BRIDGE
SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.25      2.57      3.04      0.00    115.40     10.94    508.00      0.00    674.34    674.34

*SECNO 24.100
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                              AREA
  691.36    690.28      .00      1066.     1635.      508.      508.      679.20    689.20


3470 ENCROACHMENT STATIONS=      100.0      540.0  TYPE=      1  TARGET=      440.000
                SECTION F SHAFFER AVENUE NORTH U/S
    24.10     16.33    690.63      0.00    690.59    690.65      .03       .38      0.00    691.00
    2690.       0.     2657.       33.       0.      1964.     154.      673.      139.     689.10
     2.24      0.00      1.35      .21      .110      .075     .110      .076    674.30    300.18
  .000150      104.      104.      104.        2         0        3      0.00    239.82    540.00

*SECNO 24.110
    24.11     13.26    690.66      0.00    690.62    690.68      .02       .02       .00    681.30
    2690.      174.     1500.     1016.     309.      1044.    1421.      682.      140.     681.30
     2.27       .56      1.44      .72      .090      .065     .090      .076    677.40    620.92
  .000150      150.      150.      150.        0         0        0      0.00    397.50   1018.42

CCHV=     .100 CEHV=     .300
*SECNO 24.200
 2800 NAT Q1=    1968.21  WSEL=     690.91  ENC Q1=    1968.21  WSEL=     691.01  RATIO=  0.0000
 NAT Q1=    2020.  RATIOS LOB,CH,ROB=    .1982    .3916    .4102  WSEL=     691.01

3470 ENCROACHMENT STATIONS=      143.3      549.6  TYPE=      4  TARGET=         .026
        VALLEY SECTION G
    24.20     16.35    690.95      0.00    690.91    690.98      .03       .30       .00    684.30
    2690.      508.     1089.     1093.     639.      559.     1163.      783.      155.     684.30
     2.65       .80      1.95      .94      .070      .050     .070      .074    674.60    143.33
  .000193     1519.     1961.     1643.        1         0        0      0.00    406.32    549.65

*SECNO 24.300
 2800 NAT Q1=     783.91  WSEL=     691.07  ENC Q1=     783.91  WSEL=     691.17  RATIO=  0.0000
 NAT Q1=      814.  RATIOS LOB,CH,ROB=    .0000    .5908    .4091  WSEL=     691.17

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=      105.0      796.5  TYPE=      4  TARGET=         .037
    24.30     14.11    691.11      0.00    691.07    691.34      .23       .30       .06    690.20
    2690.       0.     1661.     1029.       0.      346.     879.      814.      163.     690.20
     2.71      0.00      4.80      1.17      .085      .040     .085      .073    677.00    105.00
  .001250      750.      750.      750.        2         0        0      0.00    468.18    796.53
```

```
*SECNO 24.400
 2800 NAT Q1=    1377.88  WSEL=     691.53  ENC Q1=    1377.88  WSEL=     691.63  RATIO=  0.0000
 NAT Q1=    1419.  RATIOS LOB,CH,ROB=    .5581    .2046    .2373  WSEL=     691.63
   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

3470 ENCROACHMENT STATIONS=      238.2      738.0  TYPE=      4  TARGET=          .029

        VALLEY SECTION H

    24.40     13.30    691.60      0.00    691.53    691.61       .01       .25       .02    684.40
    2050.     1147.      432.      471.     1793.      293.      553.      836.      168.    684.00
     2.87       .64      1.47       .85      .095      .065      .095      .072    678.30    238.21
  .000224      500.      500.      500.         2         0         0      0.00    499.77    737.98

*SECNO 24.430
 2800 NAT Q1=     832.65  WSEL=     691.90  ENC Q1=     832.65  WSEL=     692.00  RATIO=  0.0000
 NAT Q1=     860.  RATIOS LOB,CH,ROB=    .0242    .7185    .2574  WSEL=     692.00

3470 ENCROACHMENT STATIONS=      482.8      771.1  TYPE=      4  TARGET=          .032
    24.43     11.17    691.97      0.00    691.90    692.04       .07       .41       .02    688.90
    2050.       16.     1526.      508.       24.      640.      594.      881.      176.    688.20
     3.03       .69      2.39       .85      .090      .065      .090      .073    680.80    482.77
  .000617      900.     1550.      750.         2         0         0      0.00    288.28    771.05

CCHV=     .300 CEHV=     .500
*SECNO 24.440

3470 ENCROACHMENT STATIONS=      318.0      450.0  TYPE=      1  TARGET=      132.000
    24.44      9.11    692.41      0.00    692.34    692.53       .12       .47       .03    693.30
    2050.        0.     2023.       27.        0.      726.       46.      895.      179.    691.40
     3.09      0.00      2.79       .57      .090      .065      .090      .073    683.30    319.05
  .001016      450.      600.      600.         2         0         0      0.00    130.95    450.00

SPECIAL BRIDGE

SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     FLCHD
      1.25      2.79      3.04      0.00     55.20     18.30    240.00      0.00    683.30    683.30

*SECNO 24.450
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA.   TRAPEZOID      ELLC      FLTRD
                                                              AREA
   695.57    692.65      .12      827.     1224.      240.      240.       689.80    691.06

3470 ENCROACHMENT STATIONS=      100.0      450.0  TYPE=      1  TARGET=      350.000
```

```
                SECTION 1 SHAFFER AVENUE MIDDLE U/S

    24.45     10.15    693.45      0.00    693.42    693.54       .09      1.01      0.00    693.30
    2050.        0.     1989.       60.       1.      822.       87.      897.      180.    691.40
     3.11       .08      2.42       .69      .090      .065      .090      .073    683.30    307.24
  .000662      103.      103.      103.         2         0         3      0.00    142.76    450.00

*SECNO 24.460

3470 ENCROACHMENT STATIONS=      335.0      770.0  TYPE=      1  TARGET=      435.000
    24.46     12.76    693.56      0.00    693.53    693.60       .03       .04       .02    688.20
    2050.      109.     1266.     655.      229.      744.      926.      902.      181.    688.20
     3.14       .47      1.73       .71      .070      .050      .070      .073    680.80    399.25
  .000148      150.      150.      150.         1         0         0      0.00    370.75    770.00

CCHV=     .100 CEHV=     .300
*SECNO 24.490
 2800 NAT Q1=     886.20  WSEL=     693.95  ENC Q1=     886.20  WSEL=     694.05  RATIO=  0.0000
 NAT Q1=     918.  RATIOS LOB,CH,ROB=    .0463    .4667    .4870  WSEL=     694.05
   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=      122.3      405.8  TYPE=      4  TARGET=         .035
    24.49     12.28    693.98      0.00    693.95    694.04       .06       .44       .01    690.00
    2050.       62.     999.     989.       58.      387.      818.      961.      192.    690.00
     3.39      1.07      2.58      1.21      .070      .050      .070      .071    681.70    122.27
  .000560     1810.     1867.    1450.         2         0         0      0.00    283.57    405.84

CCHV=     .300 CEHV=     .500
*SECNO 24.500

3470 ENCROACHMENT STATIONS=      122.0      406.0  TYPE=      1  TARGET=      284.000
        VALLEY SECTION J

    24.50     12.46    694.16      0.00    694.12    694.22       .06       .17       .00    690.00
    2050.       64.     979.    1007.       62.      397.      857.      971.      195.    690.00
     3.44      1.04      2.47      1.17      .070      .050      .070      .071    681.70    122.00
  .000497      330.      330.      330.         2         0         0      0.00    284.00    406.00

*SECNO 24.540
    24.54      9.27    694.27      0.00    694.22    694.32       .05       .10       .00    685.20
    2050.      373.     1302.     375.      310.      614.      342.      979.      197.    685.20
     3.48      1.20      2.12      1.09      .070      .050      .070      .071    685.00    921.94
  .000269      290.      282.      290.         2         0         0      0.00    338.06   1260.00

SPECIAL BRIDGE

SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      3.00      3.02      0.00      56.40     14.00     300.00    0.00      685.20    685.20
```

```
*SECNO 24.550
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      FLTPD
                                                              AREA
  696.45    694.35      .03      1013.     1037.      300.      301.       692.30    693.80


                SECTION K SHAFFER AVENUE SOUTH U/S

    24.55      9.78   694.78      0.00   694.77   694.83       .04       .50      0.00   685.20
    2050.      381.    1275.      394.     379.     648.      425.      983.      198.   685.20
     3.50      1.00     1.97       .93     .070     .050      .070      .071    685.00   871.56
  .000215      118.     118.      118.        2        0         4      0.00    388.44  1260.00

*SECNO 24.590
 2800 NAT Q1=     914.77  WSEL=     694.83  ENC Q1=     914.77  WSEL=     694.93  RATIO=  0.0000
 NAT Q1=     943.  RATIOS LOB,CH,ROB=    .0504    .4203    .5293  WSEL=     694.93

3470 ENCROACHMENT STATIONS=     1965.9     2262.1  TYPE=      4  TARGET=          .030
    24.59     13.15   694.85      0.00   694.83   694.88       .04       .05       .00   690.00
    2050.      87.     889.     1074.       82.     432.     1039.      989.      199.   690.00
     3.54      1.07     2.06      1.03     .090     .065      .090      .071    681.70  1965.92
  .000521      170.     170.      170.        0        0         0      0.00    296.19  2262.11

CCHV=     .100 CEHV=     .300
*SECNO 24.600
 2800 NAT Q1=    1369.35  WSEL=     694.87  ENC Q1=    1369.35  WSEL=     694.97  RATIO=  0.0000
 NAT Q1=    1423.  RATIOS LOB,CH,ROB=    .6554    .3301    .0145  WSEL=     694.97
   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=     1058.8     1516.0  TYPE=      4  TARGET=          .037
    24.60     11.59   694.89      0.00   694.87   694.92       .03       .03       .00   690.80
    2050.     1364.     686.        0.     1639.     362.        0.      993.      200.   690.80
     3.56       .83     1.89      0.00     .070     .045      .070      .071    683.30  1058.84
  .000246       90.      90.       90.        1        0         0      0.00    457.16  1516.00

*SECNO 24.700

3470 ENCROACHMENT STATIONS=     1475.0     1800.0  TYPE=      1  TARGET=      325.000
        VALLEY SECTION L

    24.70     10.56   695.96      0.00   695.89   696.06       .10      1.12       .02   692.00
    2050.        9.    1017.     1024.       11.     306.      856.     1083.      220.   692.00
     3.91       .78     3.32      1.20     .070     .045      .070      .070    685.40  1475.19
  .000705     2040.    3950.     2200.        2        0         0      0.00    324.81  1800.00
```

```
*SECNO 24.800

3470 ENCROACHMENT STATIONS=     1900.0     2390.0  TYPE=      1  TARGET=      490.000
    24.80     10.58    698.08     0.00    698.08    698.14      .06      2.08      .00    695.50
    2050.     1015.      669.     366.      914.      226.     320.     1164.     244.    692.40
     4.39      1.11      2.96     1.14      .070      .045     .070      .068   687.50   1900.00
  .000713     2320.     3690.    2480.         3         0        0      0.00   490.00   2390.00

*SECNO 24.880

3470 ENCROACHMENT STATIONS=     1910.0     2350.0  TYPE=      1  TARGET=      440.000
    24.88     11.08    698.58     0.00    698.54    698.62      .05       .48      .00    695.50
    2050.     1139.      648.     262.     1068.      242.     245.     1190.     252.    692.40
     4.53      1.07      2.67     1.07      .070      .045     .070      .068   687.50   1910.00
  .000528      760.      918.     600.         2         0        0      0.00   440.00   2350.00

CCHV=     .300 CEHV=     .500
*SECNO 24.890

3470 ENCROACHMENT STATIONS=     2132.0     2402.0  TYPE=      1  TARGET=      270.000
    24.89     11.41    698.91     0.00    698.85    699.01      .10       .36      .03    695.50
    2050.      503.      867.     680.      348.      254.     427.     1202.     255.    692.40
     4.57      1.45      3.42     1.59      .090      .065     .090      .068   687.50   2132.00
  .001693      411.      411.     411.         2         0        0      0.00   268.09   2400.09

*SECNO 24.899
   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=     2235.0     2299.0  TYPE=      1  TARGET=       64.000
    24.90     12.16    699.66     0.00    699.63    700.13      .47       .94      .19    695.50
    2050.       96.     1666.     289.       42.      279.     100.     1208.     257.    692.40
     4.59      2.29      5.96     2.88      .090      .065     .090      .068   687.50   2235.00
  .004534      361.      361.     361.         2         0        0      0.00    64.00   2299.00

*SECNO 24.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      702.00 ELREA=      702.00

    24.90     10.77    699.87     0.00    699.84    700.54      .68       .31      .10    698.00
    2050.        0.     2050.       0.        0.      310.       0.     1209.     257.    698.00
     4.60      0.00      6.61     0.00      .090      .065     .090      .068   689.10   1705.00
  .008693       50.       50.      50.         2         0        0      0.00    51.00   1756.00

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.53      3.00      0.00     39.00      0.00    331.50      0.00    691.00    691.00
*SECNO 25.000
```

```
6070,LOW FLOW BY NORMAL BRIDGE
EGPRS=    700.774  EGLWC=    702.131  ELLC=    699.500  PCWSE=    699.866  ELTRD=    702.000
3370 NORMAL BRIDGE,NRD= 19 MIN ELTRD=  702.00 MAX ELLC=  699.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      702.00 ELREA=      702.00

                SECTION M 44TH STREET U/S

    25.00      9.57    700.07      0.00    700.05    700.65       .58       .08       .03    691.20
    2050.        0.     2050.        0.       0.      335.        0.     1209.      257.    691.20
     4.60      0.00      6.13      0.00      .090      .015      .090      .068    690.50   1480.50
  .000711       45.       45.       45.         2         0         0   -387.95     39.00   1519.50

*SECNO 25.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      702.00 ELREA=      702.00

    25.10     10.94    700.04      0.00    700.02    700.68       .64       .00       .03    698.00
    2050.        0.     2050.        0.       0.      319.        0.     1209.      257.    698.00
     4.60      0.00      6.43      0.00      .090      .065      .090      .068    689.10   1705.00
  .007913        1.        1.        1.         2         0         0      0.00     51.00   1756.00

*SECNO 25.110

3470 ENCROACHMENT STATIONS=      594.0      859.0  TYPE=      1  TARGET=      265.000
    25.11     11.92    701.02      0.00    701.01    701.19       .17       .37       .14    698.00
    2050.       61.     1335.      654.       68.      343.      345.     1210.      257.    695.80
     4.61       .90      3.89      1.90      .070      .060      .070      .068    689.10    636.76
  .001811      111.      111.      111.         2         0         0      0.00    222.24    859.00

*SECNO 25.120
   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=      483.0      970.0  TYPE=      1  TARGET=      487.000
    25.12     12.19    701.29      0.00    701.28    701.35       .06       .12       .03    698.00
    2050.       58.      903.     1089.       86.      355.      805.     1213.      258.    695.80
     4.62       .67      2.54      1.35      .070      .060      .070      .068    689.10    634.72
  .000743      111.      111.      111.         2         0         0      0.00    335.28    970.00

CCHV=     .100 CEHV=     .300
*SECNO 25.200
 2800 NAT Q1=     790.78  WSEL=     701.53  ENC Q1=     790.78  WSEL=     701.63  RATIO=  0.0000
 NAT Q1=     825.  RATIOS LOB,CH,ROB=    .0162    .4742    .5096  WSEL=     701.63

3470 ENCROACHMENT STATIONS=     1065.0     1438.1  TYPE=      4  TARGET=         .041
    25.20     11.85    701.55      0.00    701.53    701.60       .05       .25       .00    698.30
```

```
    2050.       0.     1011.     1039.       0.      445.      869.     1222.      260.     698.10
     4.68      0.00     2.27      1.20     .070      .060      .070      .068    689.70   1065.00
  .000740      560.     393.      280.        2         0         0      0.00    373.08   1438.08

*SECNO 25.300
3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     1270.0     1777.0  TYPE=      1  TARGET=      507.000
        VALLEY SECTION N

    25.30      9.23   703.43      0.00   703.37   703.46      .03      1.86      .00    700.50
    2000.        0.     699.     1301.       1.     354.    1449.     1326.     288.    700.50
     5.34       .15     1.97       .90     .085      .060      .085      .068    694.20   1270.54
  .000508     2000.    3610.     2640.        2         0         0      0.00    491.54   1777.00

*SECNO 25.400
3470 ENCROACHMENT STATIONS=     1561.0     2129.0  TYPE=      1  TARGET=      568.000
    25.40      9.14   704.14      0.00   704.10   704.16      .02       .70      .00    701.50
    2000.     1534.     461.        6.    1720.     266.      12.     1386.     304.    701.50
     5.70       .89     1.73       .46     .085      .060      .085      .068    695.00   1561.36
  .000502     1600.    1450.     1080.        2         0         0      0.00    566.81   2128.17

*SECNO 25.500
3470 ENCROACHMENT STATIONS=     1700.0     2146.0  TYPE=      1  TARGET=      446.000
        VALLEY SECTION O

    25.50      8.43   707.33      0.00   707.29   707.44      .12      3.26      .03    706.20
    2000.      308.    1692.        0.     299.     570.       0.     1478.     335. 100000.00
     6.04      1.03     2.97      0.00     .085      .060      .085      .069    698.90   1700.00
  .002962     2280.    4050.     3360.        2         0         0      0.00    436.63   2136.63

*SECNO 25.510
   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

    25.51      9.97   710.07      0.00   710.01   710.19      .12      2.74      .00    705.00
    2000.      287.    1531.      182.     201.     501.     179.     1507.     349.    705.70
     6.20      1.43     3.06      1.02     .085      .060      .085      .068    700.10    198.59
  .001126     1120.    1717.      905.        2         0         0      0.00    581.90    780.49

*SECNO 25.520
    25.52     10.64   711.94      0.00   711.93   712.08      .15      1.89      .01    710.00
    2000.      230.    1756.       15.     246.     540.      24.     1536.     359.    710.00
     6.35       .93     3.25       .60     .085      .060      .085      .068    701.30     64.56
  .001241     1120.    1717.      905.        2         0         0      0.00    230.52    295.09
```

```
*SECNO 25.530
    25.53     11.12    713.62      0.00    713.62    713.74       .12      1.65       .00    707.30
    2000.      126.     1728.      146.      122.      587.      161.     1565.      365.    708.70
     6.52      1.04      2.95       .91      .085      .060      .085      .068    702.50     70.14
  .000844     1120.     1717.      905.         2         0         0      0.00    195.07    265.22

*SECNO 25.700
 2800 NAT Q1=    1109.52  WSEL=     714.43  ENC Q1=    1109.52  WSEL=     714.53  RATIO=  -.0000
 NAT Q1=    1148.  RATIOS LOB,CH,ROB=    .1792    .5693    .2516  WSEL=     714.53

3470 ENCROACHMENT STATIONS=     1458.8     1833.9  TYPE=      4  TARGET=          .034

        VALLEY SECTION P

    25.70     10.75    714.45      0.00    714.43    714.48       .03       .73       .01    710.20
    2000.      330.     1184.      486.      448.      691.      607.     1603.      373.    710.20
     6.82       .74      1.72       .80      .085      .060      .085      .068    703.70   1458.79
  .000340     1120.     1600.      905.         2         0         0      0.00    375.08   1833.87

*SECNO 25.800
 2800 NAT Q1=    1174.20  WSEL=     714.93  ENC Q1=    1174.20  WSEL=     715.03  RATIO=   0.0000
 NAT Q1=    1221.  RATIOS LOB,CH,ROB=    .0051    .3601    .6348  WSEL=     715.03

3470 ENCROACHMENT STATIONS=     1344.0     1883.4  TYPE=      4  TARGET=          .038
    25.80      8.78    714.98      0.00    714.93    715.00       .02       .52       .00    711.50
    2000.        0.      740.     1260.        0.      520.     1710.     1670.      387.    710.50
     7.27      0.00      1.42       .74      .085      .060      .085      .068    706.20   1344.00
  .000306     1400.     2000.     1200.         2         0         0      0.00    539.40   1883.40

*SECNO 25.890
   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=     1188.0     1895.0  TYPE=      1  TARGET=      707.000
    25.89      8.94    715.14      0.00    715.08    715.15       .01       .15       .00    711.50
    2000.       11.      721.     1269.       26.      533.     1835.  *  1698.      394.    710.50
     7.44       .41      1.35       .69      .085      .060      .085      .068    706.20   1329.45
  .000254      533.      730.      453.         2         0         0      0.00    565.55   1895.00

*SECNO 25.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      715.50 ELREA=      716.10

    25.90      9.73    715.23      0.00    715.18    715.67       .45       .39       .13    707.30
    2000.        0.     2000.        0.        0.      373.        0.     1721.      399.    709.80
     7.47      0.00      5.36      0.00      .075      .050      .075      .068    705.50   1380.00
  .001871      720.      720.      720.         2         0         0      0.00     42.00   1422.00

SPECIAL BRIDGE
```

```
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      2.04      3.00      0.00     32.80     10.00    228.00      0.00    705.00    705.00
*SECNO 26.000
3265 DIVIDED FLOW
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
   717.66    716.09      .53       23.      1963.      228.      228.      715.00    717.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      717.20 ELREA=      718.00

                SECTION Q 52ND STREET U/S

    26.00     12.32    717.32      0.00    717.29    717.57      .26      1.90      0.00    718.00
    2000.       0.      2000.       0.        2.       493.       0.     1721.      399.     718.10
     7.48      .07       4.06      0.00      .075      .031      .075      .068    705.00   1851.16
  .000478      44.       44.       44.        2         0         3      0.00     69.47   2040.00

*SECNO 26.110
3470 ENCROACHMENT STATIONS=     1300.0     1700.0  TYPE=      1  TARGET=      400.000
    26.11      9.84    717.64      0.00    717.61    717.65      .02       .06       .02    714.00
    2000.      487.      648.      865.      723.      448.     1033.     1727.      400.     713.50
     7.53      .67       1.45      .84       .085      .060      .085      .068    707.80   1300.00
  .000222     180.      180.      180.        2         0         0      0.00    400.00   1700.00

CCHV=     .100 CEHV=     .300
*SECNO 26.300
 2800 NAT Q1=     330.14  WSEL=     718.08  ENC Q1=     330.14  WSEL=     718.18  RATIO=  -.0000
 NAT Q1=     351.  RATIOS LOB,CH,ROB=    .5903    .2128    .1969  WSEL=     718.18

3470 ENCROACHMENT STATIONS=     1437.7     1803.7  TYPE=      4  TARGET=        .060
    26.30      5.51    718.11      0.00    718.08    718.22      .11       .53       .03    715.00
    2000.     1181.      461.      358.      613.      112.      158.     1759.      408.     715.00
     7.63      1.93       4.11     2.27      .085      .060      .085      .068    712.60   1437.65
  .004005     916.      916.      916.        2         0         0      0.00    366.06   1803.71

*SECNO 26.400
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROR      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      FNDST

3470 ENCROACHMENT STATIONS=     1536.0     2185.0  TYPE=      1  TARGET=      649.000
        VALLEY SECTION R
```

```
    26.40      10.09    721.79      0.00    721.73    721.81       .02      3.59       .01    716.20
    2000.       814.      765.      421.     1264.      412.      581.     1897.      452.    717.60
     8.59        .64      1.86       .72      .095      .065      .095      .068    711.70   1536.00
  .000399      4000.     4290.     3000.         5         0         0      0.00    649.00   2185.00

*SECNO 26.500

3470 ENCROACHMENT STATIONS=     1765.0     2665.0  TYPE=      1  TARGET=      900.000
    26.50       9.27    722.57      0.00    722.53    722.60       .03       .78       .00    720.30
    2000.       303.      432.     1265.      532.      183.     1259.     1958.      475.    719.00
     8.88        .57      2.37      1.01      .095      .065      .095      .068    713.30   1765.00
  .000999      1400.     1650.     1000.         3         0         0      0.00    900.00   2665.00

*SECNO 26.700

        VALLEY SECTION S

    26.70       5.86    726.26      0.00    726.26    726.30       .04      3.70       .00    723.60
    2000.       920.      400.      680.      624.      165.      599.     2072.      522.    723.60
     9.42       1.47      2.42      1.14      .095      .065      .095      .069    720.40   1986.17
  .001566      3600.     3300.     2480.         4         0         0      0.00    477.33   2463.50

*SECNO 26.890

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     1400.0     1825.0  TYPE=      1  TARGET=      425.000
    26.89       6.85    729.45      0.00    729.45    729.55       .10      3.23       .02    726.30
    1260.       273.      841.      146.      326.      276.      206.     2117.      540.    728.20
     9.65        .84      3.04       .71      .120      .065      .120      .069    722.60   1400.00
  .001967      1640.     2150.     1800.         2         0         0      0.00    372.46   1825.00

CCHV=     .300 CEHV=     .500
*SECNO 26.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      735.00 ELREA=      735.00

    26.90       8.30    730.90      0.00    730.90    731.10       .20      1.50       .05    726.30
    1260.         0.     1260.        0.        0.      348.        0.     2127.      543.    728.20
     9.71       0.00      3.62      0.00      .120      .065      .120      .069    722.60   1575.00
  .002041       750.      750.      750.         2         0         0      0.00     50.00   1625.00

*SECNO 26.910
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS     BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROR       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=      735.00 ELREA=      735.00
```

SECTION T 60TH STREET D/S

26.91	9.46	730.96	0.00	730.96	731.35	.39	.15	.09	742.50
1260.	0.	1260.	0.	0.	251.	0.	2127.	543.	742.50
9.71	0.00	5.03	0.00	.120	.065	.120	.069	721.50	386.50
.004957	50.	50.	50.	2	0	0	0.00	26.50	413.00

SPECIAL BRIDGE

SH	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	FLCHU	ELCHD
	1.25	1.57	3.00	0.00	26.50	2.00	228.00	0.00	721.50	721.50

*SECNO 27.000
PRESSURE FLOW

EGPRS	EGLWC	H3	QWFIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
731.70	731.42	.08	0.	1260.	228.	228.	730.80	742.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 742.50 ELREA= 742.50

27.00	9.84	731.34	0.00	731.34	731.70	.36	.35	0.00	742.50
1260.	0.	1260.	0.	0.	261.	0.	2127.	543.	742.50
9.71	0.00	4.83	0.00	.120	.065	.120	.069	721.50	386.50
.004444	35.	35.	35.	2	0	0	0.00	26.50	413.00

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: KENWOOD, CITY OF

3) WATERCOURSE: PLASTER CREEK

4) DOCUMENT TYPE: 100 YEAR NATURAL

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*****************************************************

C
T1      FLOOD INSURANCE STUDY   CITY OF KENTWOOD KENT COUNTY MICHIGAN
T2      100 YEAR FLOOD
T3      PLASTER CREEK. KENTWOOD

J1  ICHECK    INQ       NINV      IDIR      STRT.     METRIC    HVINS     Q         WSFL      FQ
      0.       4.        0.        0.   0.000000     0.00      0.0       0.    677.100    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
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
   38.000     1.000    42.000    41.000    40.000    53.000    21.000    22.000    54.000     4.000

   39.000     0.000   110.000   150.000   200.000     0.000     0.000     0.000     0.000     0.000

WT    5.000  1550.000  2350.000  2690.000  3630.000  2690.000     0.000     0.000     0.000     0.000
ET    0.000     0.000     0.000     0.000     0.000     7.100   152.300   502.300     0.000     0.000
NC     .080      .080      .055      .100      .300     0.000     0.000     0.000     0.000     0.000

      VALLEY SECTION 44094 FT FROM MOUTH(FIS CITY OF GRAND RAPIDS)
                     1620 FT DOWNSTREAM OF KENTWOOD CITY CORPORATE BOUNDARY
X1   22.700    20.000   166.000   204.000 44094.000 44094.000 44094.000     0.000     0.000     0.000
GR  695.000   100.000   692.700   116.000   685.200   134.000   671.900   164.000   670.400   166.000
GR  665.700   174.000   662.700   177.000   662.700   185.000   664.100   193.000   665.700   196.000
GR  670.400   204.000   670.900   300.000   671.300   316.000   672.700   414.000   677.500   520.000
GR  679.100   694.000   680.200   796.000   682.000   898.000   682.700   998.000   682.700   998.000
ET    0.000     0.000     0.000     0.000     0.000     1.400     0.000     0.000     0.000     0.000

X1   22.750     0.000     0.000     0.000  1360.000  1535.000  2075.000     0.000     1.650     0.000
X3    0.000     0.000     0.000   150.000     0.000   410.000     0.000     0.000     0.000     0.000

      VALLEY SECTION A

X1   22.800    37.000   380.500   427.000  1360.000  1535.000  2075.000     0.000     0.000     0.000
GR  690.000     0.000   678.300    45.000   679.000   120.000   679.000   220.000   679.000   302.000
GR  679.000   320.000   677.700   342.000   679.000   343.000   679.000   346.000   677.500   346.500
GR  676.000   356.000   675.200   363.000   672.800   368.000   666.300   379.500   666.300   379.600
GR  666.300   380.500   666.300   380.600   666.000   399.500   666.000   399.600   666.000   400.500
GR  666.000   400.600   666.000   410.000   666.800   411.000   669.700   412.000   672.800   420.000
GR  675.200   427.000   676.100   438.000   679.000   439.000   679.000   442.000   676.300   442.500
```

GR	679.000	452.000	680.000	500.000	680.000	510.000	680.000	520.000	680.000	530.000
GR	683.500	537.500	690.000	540.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	22.810	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
BT	15.000	346.500	677.500	0.000	356.000	676.000	0.000	363.000	675.200	0.000
BT	368.000	675.200	672.800	379.500	675.200	672.800	379.600	675.200	666.300	380.500
BT	675.200	666.300	380.600	675.200	672.800	399.500	675.200	672.800	399.600	675.200
BT	666.000	400.500	675.200	666.000	400.600	675.200	672.800	420.000	675.200	672.800
BT	427.000	675.200	0.000	438.000	676.100	0.000	0.000	0.000	0.000	0.000
X1	22.820	0.000	0.000	0.000	2.500	2.500	2.500	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	22.830	0.000	0.000	0.000	1.000	1.000	1.000	0.000	0.000	0.000
NC	.090	.100	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	22.900	27.000	1288.000	1335.000	695.000	695.000	695.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	967.000	0.000	1339.000	0.000	0.000	0.000	0.000
GR	689.300	100.000	689.300	100.000	686.200	268.000	681.700	505.000	674.500	676.000
GR	674.400	766.000	673.400	860.000	674.200	954.000	678.300	980.000	677.800	983.000
GR	673.900	997.000	673.200	1054.000	672.000	1176.000	674.700	1196.000	672.400	1202.000
GR	675.200	1240.000	675.200	1288.000	669.800	1304.000	668.000	1307.000	666.300	1316.000
GR	667.800	1325.000	669.800	1328.000	675.200	1335.000	677.000	1336.000	687.700	1346.000
GR	687.600	1378.000	689.900	1494.000	692.000	1494.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	604.000	851.000
X1	22.980	25.000	777.500	851.000	250.000	250.000	250.000	0.000	0.000	0.000
GR	685.100	100.000	681.900	260.000	680.500	378.000	679.100	490.000	678.100	602.000
GR	678.400	710.000	679.100	777.500	667.400	789.000	667.000	790.500	667.900	793.000
GR	667.400	802.800	666.800	805.100	665.800	808.000	666.700	812.500	666.300	814.000
GR	666.800	822.900	666.900	825.200	667.500	828.000	666.600	834.000	667.900	839.000
GR	680.300	851.000	680.400	884.000	683.200	996.000	684.200	1020.000	686.700	1064.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	23.000	23.000	770.000	830.000	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	679.500	679.500	0.000
GR	682.000	300.000	681.000	400.000	680.000	500.000	679.500	600.000	679.500	700.000
GR	680.500	750.000	680.500	750.000	680.500	770.000	667.800	775.000	667.700	780.000
GR	667.300	784.000	667.200	788.900	667.100	791.100	666.800	800.000	667.000	805.000
GR	667.200	808.900	667.300	811.200	667.500	814.000	668.500	825.000	675.000	828.000
GR	680.000	830.000	680.000	850.000	682.000	900.000	0.000	0.000	0.000	0.000
SB	1.250	1.556	3.030	0.000	47.800	12.500	413.190	0.000	666.800	666.800

SECTION B BRETON AVENUE U/S

X1	23.090	0.000	0.000	0.000	32.000	32.000	32.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	678.500	680.000	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	679.500	680.000	0.000
BT	20.000	300.000	682.000	0.000	500.000	680.000	0.000	700.000	679.500	0.000
BT	770.000	680.500	0.000	775.000	680.700	667.800	775.000	680.700	677.800	788.900
BT	680.800	678.000	788.900	680.800	667.200	791.100	680.900	667.100	791.100	680.900
BT	678.000	800.000	681.000	678.000	808.900	680.700	678.100	808.900	680.700	667.200
BT	811.200	680.500	667.300	811.200	680.500	678.200	825.000	680.200	678.500	825.000

HT	680.200	668.500	830.000	680.000	0.000	850.000	680.000	0.000	900.000	682.000
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.095	.095	.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	23.100	21.000	852.000	952.000	48.000	48.000	48.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	647.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	692.200	100.000	692.200	100.000	687.600	282.000	678.300	340.000	680.700	456.000
GR	679.200	564.000	678.600	674.000	679.000	768.000	678.200	846.000	674.600	852.000
GR	672.400	856.000	669.400	888.000	668.900	891.000	667.000	914.000	667.000	937.000
GR	669.200	940.000	674.600	952.000	677.900	1092.000	685.300	1114.000	687.600	1162.000
GR	693.300	1189.000	694.000	1189.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	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	23.120	0.000	0.000	0.000	200.000	200.000	200.000	0.000	0.000	0.000
NC	.110	.110	.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	23.170	19.000	722.000	748.000	2780.000	3780.000	3600.000	0.000	0.000	0.000
GR	685.000	100.000	681.000	100.000	680.200	550.000	679.800	600.000	680.300	650.000
GR	680.300	680.000	678.200	710.000	678.000	722.000	671.600	725.000	670.100	735.000
GR	671.200	745.000	678.000	748.000	678.000	755.000	681.200	763.000	684.800	783.000
GR	687.800	808.000	689.700	826.000	692.700	860.000	696.000	910.000	0.000	0.000
NC	.110	.110	.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION C

X1	23.200	22.000	711.000	756.000	30.000	30.000	30.000	0.000	0.000	0.000
GR	685.000	100.000	679.300	100.000	678.000	276.000	677.300	350.000	677.700	458.000
GR	677.800	542.000	677.700	602.000	677.300	642.000	677.000	681.000	677.000	711.000
GR	673.000	723.000	671.500	726.000	670.100	736.000	671.200	746.000	672.900	749.000
GR	677.000	756.000	677.000	761.000	681.200	763.000	684.800	784.000	687.900	810.000
GR	688.800	826.000	692.500	911.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.110	.110	.075	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	277.000	662.000	0.000	0.000

VALLEY SECTION D

X1	23.500	19.000	286.000	322.000	3093.000	3535.000	4220.000	0.000	0.000	0.000
GR	693.500	100.000	693.500	100.000	691.000	172.000	687.900	271.000	679.300	286.000
GR	675.600	293.000	674.000	296.000	672.500	304.000	674.400	313.000	675.600	315.000
GR	679.300	322.000	679.400	404.000	680.500	484.000	679.900	534.000	680.000	584.000
GR	682.400	634.000	687.100	694.000	689.200	843.000	690.800	1043.000	698.000	1043.000
X1	23.600	0.000	0.000	0.000	1865.000	1536.000	1825.000	0.000	1.100	0.000
X3	0.000	0.000	0.000	271.000	0.000	400.000	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	.110	.110	.075	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	300.000	471.000	0.000	0.000

VALLEY SECTION E

X1	23.700	16.000	307.000	353.000	1865.000	1536.000	1825.000	0.000	0.000	0.000
GR	697.500	100.000	697.500	100.000	694.300	182.000	694.100	234.000	688.800	300.000

GR	682.400	307.000	677.800	314.000	677.200	318.000	674.700	327.000	677.000	335.000
GR	677.700	349.000	682.400	353.000	681.600	438.000	690.700	546.000	692.300	652.000
GR	697.500	786.000	700.000	786.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.110	.110	.075	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	121.000	387.000	0.000	0.000
X1	23.800	16.000	177.000	222.000	1300.000	1300.000	1300.000	0.000	0.000	0.000
GR	700.000	100.000	682.400	136.000	681.300	177.000	678.200	183.000	676.200	186.000
GR	674.400	196.000	675.100	206.000	678.200	208.000	681.300	222.000	682.200	227.000
GR	683.400	243.000	681.400	278.000	682.500	314.000	684.900	334.000	686.100	384.000
GR	700.000	394.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.110	.110	.075	.300	.500	0.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	600.000	864.000
X1	23.900	20.000	687.000	776.000	500.000	500.000	500.000	0.000	0.000	0.000
GR	700.800	100.000	700.800	100.000	699.100	214.000	699.500	269.000	698.800	406.000
GR	698.200	427.000	698.200	506.000	694.600	593.000	681.300	687.000	681.300	687.000
GR	679.400	702.000	677.800	704.000	677.400	727.000	678.200	749.000	679.400	752.000
GR	681.300	776.000	684.300	912.000	688.200	936.000	686.600	1002.000	701.400	1012.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	540.000
X1	24.000	90.000	300.000	435.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	699.600	100.000	698.400	150.000	695.300	200.000	692.700	250.000	691.000	300.000
GR	674.300	308.200	674.300	314.200	674.300	314.700	674.300	315.200	674.300	316.200
GR	674.300	317.200	674.300	318.200	674.300	319.200	674.300	320.200	674.300	320.600
GR	674.300	321.200	674.300	322.200	674.300	323.200	674.300	324.200	674.300	325.200
GR	674.300	326.200	674.300	327.000	674.300	330.000	674.300	330.500	674.300	331.000
GR	674.300	332.000	674.300	333.000	674.300	334.000	674.300	335.000	674.300	336.000
GR	674.300	336.400	674.300	337.000	674.300	338.000	674.300	339.000	674.300	340.000
GR	674.300	341.000	674.300	342.000	674.300	342.800	674.300	345.800	674.300	348.000
GR	674.300	348.000	674.300	358.000	674.300	358.000	674.300	358.000	674.300	358.000
GR	674.300	359.100	674.300	361.100	674.300	364.000	674.300	364.000	674.300	374.000
GR	674.300	374.000	674.300	374.400	674.300	377.400	674.300	377.900	674.300	378.400
GR	674.300	379.400	674.300	380.400	674.300	381.400	674.300	382.400	674.300	383.400
GR	674.300	383.800	674.300	384.400	674.300	385.400	674.300	386.400	674.300	387.400
GR	674.300	388.400	674.300	389.400	674.300	390.200	674.300	393.200	674.300	394.200
GR	674.300	394.200	674.300	394.200	674.300	395.200	674.300	396.200	674.300	397.200
GR	674.300	398.200	674.300	399.200	674.300	399.600	674.300	400.200	674.300	401.200
GR	674.300	402.200	674.300	403.200	674.300	404.200	674.300	405.200	674.300	405.800
GR	674.300	411.800	689.100	435.000	689.300	450.000	689.000	540.000	700.000	540.000
SB	1.250	2.570	3.040	0.000	115.400	10.940	508.000	0.000	674.340	674.340
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	540.000

SECTION F SHAFFER AVENUE NORTH U/S

X1	24.100	0.000	0.000	0.000	104.000	104.000	104.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	679.200	689.200	0.000	0.000	0.000	0.000	0.000
BT	89.000	300.000	691.000	691.000	308.200	690.600	674.300	314.200	690.300	674.300
BT	314.200	690.300	675.100	314.700	690.280	676.400	315.200	690.260	679.200	316.200
BT	690.200	680.400	317.200	690.160	681.100	318.200	690.130	681.600	319.200	690.100
BT	682.000	320.200	690.060	682.100	320.600	690.300	682.200	321.200	690.000	682.100
BT	322.200	689.960	682.000	323.200	689.930	681.700	324.200	689.900	681.100	325.200
BT	689.860	680.300	326.200	689.830	679.100	327.000	689.800	674.300	330.000	689.700
BT	674.300	330.000	689.700	675.100	330.500	689.680	676.400	331.000	689.660	679.200
BT	332.000	689.630	680.400	333.000	689.660	681.100	334.000	689.560	681.600	335.000
BT	689.530	682.000	336.000	689.500	682.100	336.400	689.460	682.200	337.000	689.430

BT	682.100	338.000	689.400	682.000	339.000	689.360	681.700	340.000	689.330	681.100
BT	341.000	689.360	680.300	342.000	689.260	679.100	342.800	689.230	674.300	345.800
BT	689.200	674.300	348.000	689.100	674.300	348.000	689.100	681.300	358.000	689.100
BT	681.300	358.000	689.100	681.300	359.100	689.000	674.300	361.100	689.010	674.300
BT	364.000	689.010	681.300	364.000	689.010	681.300	374.000	689.020	681.300	374.000
BT	689.020	674.300	374.000	689.020	674.300	374.000	689.020	674.300	374.400	689.020
BT	674.300	377.400	689.030	674.300	377.400	689.040	675.100	377.900	689.050	676.400
BT	378.400	689.060	679.200	379.400	689.070	680.400	380.400	689.080	681.100	381.400
BT	689.090	681.600	382.400	689.100	682.000	383.400	689.110	682.100	383.800	689.120
BT	682.200	384.400	689.130	682.100	385.400	689.140	682.000	386.400	689.150	681.700
BT	387.400	689.160	681.100	388.400	689.160	680.300	389.400	689.170	679.100	390.200
BT	689.180	674.300	393.200	689.190	674.300	393.200	689.200	675.100	393.700	689.210
BT	676.400	394.200	689.220	679.200	395.200	689.230	680.400	396.200	689.240	681.100
BT	397.200	689.250	681.600	398.200	689.260	682.000	399.200	689.270	682.100	399.600
BT	689.280	682.200	400.200	689.290	682.100	401.200	689.300	682.000	402.200	689.300
BT	681.700	403.200	689.300	681.100	404.200	689.300	680.300	405.200	689.300	679.100
BT	405.800	689.300	674.300	411.800	689.300	674.300	435.000	689.300	689.300	450.000
BT	689.300	0.000	540.000	689.000	0.000	540.000	700.000	0.000	0.000	0.000
NC	.090	.090	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	24.110	20.000	687.000	776.000	150.000	150.000	150.000	0.000	0.000	0.000
GR	700.800	100.000	700.800	100.000	699.100	214.000	699.500	269.000	698.800	406.000
GR	698.200	427.000	698.200	506.000	694.600	593.000	681.300	687.000	681.300	687.000
GR	679.400	702.000	677.800	704.000	677.400	727.000	678.200	749.000	679.400	752.000
GR	681.300	776.000	684.300	912.000	688.200	936.000	686.600	1002.000	701.400	1062.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000
NC	.070	.070	.050	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 G

X1	24.200	16.000	292.000	340.000	1519.000	1643.000	1961.000	0.000	0.000	0.000
GR	697.900	100.000	697.900	100.000	688.500	123.000	687.600	196.000	684.300	292.000
GR	681.000	300.000	678.500	303.000	677.300	315.000	674.600	327.000	681.000	330.000
GR	681.000	330.000	684.300	340.000	684.500	439.000	687.600	535.000	691.500	635.000
GR	698.000	680.000	700.000	680.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.085	.085	.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	24.300	16.000	105.000	145.000	750.000	750.000	750.000	0.000	0.000	0.000
GR	698.900	100.000	698.900	100.000	690.200	105.000	682.000	114.000	677.000	125.000
GR	682.000	136.000	690.200	145.000	691.900	234.000	691.800	336.000	690.800	453.000
GR	688.800	557.000	688.000	668.000	688.900	764.000	684.900	779.000	691.500	847.000
GR	698.100	899.000	702.000	899.000	0.000	0.000	0.000	0.000	0.000	0.000
QT	5.000	1180.000	1800.000	2050.000	2750.000	2050.000	0.000	0.000	0.000	0.000
NC	.095	.095	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION H

X1	24.400	20.000	634.000	661.000	500.000	500.000	500.000	0.000	0.000	0.000
GR	699.900	100.000	697.500	192.000	686.400	240.000	686.500	321.000	687.500	400.000
GR	687.200	495.000	687.800	562.000	686.600	623.000	686.500	632.000	684.400	634.000
GR	682.400	635.000	679.400	636.000	678.300	643.000	679.400	650.000	682.300	652.000
GR	684.400	661.000	684.000	661.000	683.400	707.000	688.100	742.000	694.400	773.000
NC	.090	.090	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	24.430	17.000	491.000	562.000	900.000	750.000	1550.000	0.000	0.000	0.000
GR	700.800	100.000	699.000	200.000	694.600	379.000	688.900	491.000	688.200	494.000
GR	683.800	500.000	682.300	505.000	680.800	524.000	682.000	549.000	683.800	552.000
GR	688.200	562.000	688.100	613.000	689.100	662.000	690.400	761.000	691.800	883.000
GR	693.600	949.000	694.100	1049.000	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
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	450.000

X1	24.440	72.000	318.000	410.800	450.000	600.000	600.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	318.000	0.000	450.000	0.000	0.000	0.000	0.000
GR	699.290	100.000	698.120	150.000	696.470	200.000	695.000	250.000	693.550	300.000
GR	693.300	318.000	683.300	329.790	683.300	335.340	683.300	335.340	683.300	336.250
GR	683.300	337.250	683.300	338.250	683.300	339.250	683.300	340.250	683.300	340.790
GR	683.300	341.250	683.300	342.250	683.300	343.250	683.300	344.250	683.300	345.250
GR	683.300	346.250	683.300	346.250	683.300	350.000	683.300	350.000	683.300	350.920
GR	683.300	351.920	683.300	352.920	683.300	353.920	683.300	354.920	683.300	355.460
GR	683.300	355.920	683.300	356.920	683.300	357.920	683.300	358.920	683.300	359.920
GR	683.300	360.920	683.300	360.920	683.300	364.670	683.300	364.670	683.300	365.590
GR	683.300	366.590	683.300	367.590	683.300	368.590	683.300	369.590	683.300	370.130
GR	683.300	370.590	683.300	371.590	683.300	372.590	683.300	373.590	683.300	374.590
GR	683.300	375.410	683.300	375.590	683.300	379.340	683.300	379.340	683.300	380.260
GR	683.300	381.260	683.300	382.260	683.300	383.260	683.300	384.260	683.300	384.800
GR	683.300	385.260	683.300	386.260	683.300	387.260	683.300	388.260	683.300	389.260
GR	683.300	390.260	683.300	390.260	683.300	395.800	691.400	410.800	691.400	410.800
GR	691.060	450.000	700.000	450.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	2.792	3.040	0.000	55.200	18.300	240.000	0.000	683.300	683.300
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	100.000	450.000

SECTION I SHAFFER AVENUE MIDDLE U/S

X1	24.450	0.000	0.000	0.000	103.000	103.000	103.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	689.800	691.060	0.000	0.000	0.000	0.000	0.000
BT	67.000	318.000	693.300	693.300	329.790	692.980	683.300	335.340	692.840	683.300
BT	335.340	692.840	684.800	336.250	692.830	687.400	337.250	692.810	688.500	338.250
BT	692.800	689.200	339.250	692.770	689.600	340.250	692.760	689.750	340.790	692.750
BT	689.800	341.250	692.740	689.750	342.250	692.710	689.600	343.250	692.700	689.200
BT	344.250	692.680	688.500	345.250	692.650	687.400	346.250	692.640	684.800	346.250
BT	692.640	683.300	350.000	692.550	683.300	350.000	692.550	684.800	350.920	692.540
BT	687.400	351.920	692.530	688.500	352.920	692.500	689.200	353.920	692.490	689.600
BT	353.920	692.490	689.600	354.920	692.460	689.750	355.460	692.450	689.800	355.920
BT	692.440	689.750	356.920	692.410	689.600	357.920	692.400	689.200	358.920	692.380
BT	688.500	359.920	692.360	687.400	360.920	692.330	684.800	360.920	692.300	683.300
BT	364.670	692.270	683.300	364.670	692.270	684.800	365.590	692.230	687.400	366.590
BT	692.220	688.500	367.590	692.200	689.200	368.590	692.180	689.600	369.590	692.170
BT	689.750	370.130	692.160	689.800	370.590	692.140	689.750	371.590	692.110	689.600
BT	372.590	692.100	689.200	373.590	692.080	688.500	374.590	692.060	687.400	375.590
BT	692.040	684.800	375.590	692.040	683.300	379.340	691.970	683.300	379.340	691.970
BT	684.800	380.260	691.950	687.400	381.260	691.940	688.500	382.260	691.900	689.200
BT	383.260	691.880	689.600	384.260	691.860	689.750	384.800	691.850	689.800	385.260
BT	691.840	689.750	386.260	691.830	689.600	387.260	691.820	689.200	388.260	691.800
BT	688.500	389.260	691.780	687.400	390.260	691.700	684.800	390.260	691.700	683.300
BT	395.800	691.640	683.300	410.800	691.400	691.400	450.000	691.060	0.000	450.000
BT	700.000	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	1.400	0.000	0.000	0.000	0.000
NC	.070	.070	.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	24.460	17.000	494.000	562.000	150.000	150.000	150.000	0.000	0.000	0.000

X3	0.000	0.000	0.000	335.000	0.000	770.000	0.000	0.000	0.000	0.000
GR	700.800	100.000	699.000	265.000	694.600	379.000	688.900	491.000	688.200	494.000
GR	683.800	500.000	682.300	505.000	680.800	524.000	682.000	549.000	683.000	552.000
GR	688.200	562.000	688.100	613.000	689.100	662.000	690.400	761.000	691.800	883.000
GR	693.600	949.000	694.100	1049.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.050	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	24.490	16.000	137.000	189.000	1810.000	1450.000	1867.000	0.000	0.000	0.000
GR	698.200	100.000	698.200	100.000	690.100	120.000	690.000	137.000	686.000	145.000
GR	683.800	149.000	681.700	154.000	684.500	160.000	686.000	163.000	690.000	189.000
GR	690.400	193.000	690.300	293.000	689.800	393.000	693.500	433.000	693.600	442.000
GR	698.000	450.000	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
ET	0.000	0.000	0.000	0.000	0.000	7.100	122.000	406.000	0.000	0.000

VALLEY SECTION J

X1	24.500	0.000	0.000	0.000	330.000	330.000	330.000	0.000	0.000	0.000
X1	24.540	51.000	1031.500	1099.000	290.000	290.000	282.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	693.100	693.100	0.000
GR	696.000	840.000	695.000	850.000	694.900	860.000	694.800	870.000	694.700	880.000
GR	694.500	900.000	694.300	920.000	694.000	940.000	694.000	960.000	693.800	980.000
GR	693.800	1000.000	685.200	1000.000	685.200	1031.500	685.200	1032.500	685.200	1035.500
GR	685.000	1037.000	685.200	1038.500	685.200	1041.500	685.200	1042.500	685.200	1045.500
GR	685.200	1046.500	685.200	1049.500	685.000	1051.000	685.200	1052.500	685.200	1055.500
GR	685.200	1056.500	685.200	1059.500	685.200	1060.500	685.200	1063.500	685.000	1065.000
GR	685.200	1066.500	685.200	1069.500	685.200	1070.500	685.200	1073.500	685.200	1074.500
GR	685.200	1077.500	685.000	1079.000	685.200	1080.500	685.200	1083.500	685.200	1084.500
GR	685.200	1088.000	685.200	1089.000	685.200	1092.000	685.000	1093.500	685.200	1095.000
GR	685.200	1098.000	685.200	1099.000	685.200	1130.000	693.800	1130.000	693.800	1260.000
GR	696.000	1260.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	3.000	3.020	0.000	56.400	14.000	300.000	0.000	685.200	685.200

SECTION K SHAFFER AVENUE SOUTH U/S

X1	24.550	0.000	0.000	0.000	118.000	118.000	118.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	692.300	693.800	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	693.800	693.800	0.000
BT	51.000	840.000	696.000	0.000	850.000	695.000	0.000	860.000	694.900	0.000
BT	870.000	694.800	0.000	880.000	694.700	0.000	900.000	694.500	0.000	920.000
BT	694.300	0.000	940.000	694.000	0.000	960.000	694.000	0.000	980.000	693.800
BT	0.000	1000.000	693.800	0.000	1000.000	693.800	685.200	1031.500	693.800	685.200
BT	1032.500	693.800	689.000	1035.500	693.800	692.000	1037.000	693.800	692.300	1038.500
BT	693.800	692.000	1041.500	693.800	689.000	1042.500	693.800	685.200	1045.500	693.800
BT	685.200	1046.500	693.800	689.000	1049.500	693.800	692.000	1051.000	693.800	692.300
BT	1052.500	693.800	692.000	1055.500	693.800	689.000	1056.500	693.800	685.200	1059.500
BT	693.800	685.200	1060.500	693.800	689.000	1063.500	693.800	692.000	1065.000	693.800
BT	692.300	1066.500	693.800	692.000	1069.500	693.800	689.000	1070.500	693.800	685.200
BT	1073.500	693.800	685.200	1074.500	693.800	689.000	1077.500	693.800	692.000	1079.000
BT	693.800	692.300	1080.500	693.800	692.000	1083.500	693.800	689.000	1084.500	693.800
BT	685.200	1088.000	693.800	685.200	1089.000	693.800	689.000	1092.000	693.800	692.000
BT	1093.500	693.800	692.300	1095.000	693.800	692.000	1098.000	693.800	689.000	1099.000
BT	693.800	685.200	1130.000	693.800	685.200	1130.000	693.800	0.000	1260.000	693.800
BT	0.000	1260.000	696.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.090	.090	.065	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	1.400	0.000	0.000	0.000	0.000
X1	24.590	17.000	1983.000	2035.000	170.000	170.000	170.000	0.000	0.000	0.000
GR	707.000	1946.000	698.200	1946.000	690.100	1966.000	690.000	1983.000	686.000	1991.000
GR	683.800	1995.000	681.700	2000.000	684.500	2006.000	686.000	2009.000	690.000	2035.000
GR	690.000	2035.000	690.400	2039.000	690.300	2139.000	689.800	2239.000	693.500	2279.000
GR	693.600	2288.000	707.000	2288.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.045	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	24.600	17.000	1472.000	1516.000	90.000	90.000	90.000	0.000	0.000	0.000
GR	703.000	1005.000	699.400	1015.000	692.100	1040.000	690.600	1141.000	690.900	1336.000
GR	691.100	1421.000	690.800	1472.000	686.400	1490.000	683.600	1495.000	683.300	1500.000
GR	683.900	1507.000	686.400	1509.000	690.800	1516.000	698.800	1571.000	698.500	1675.000
GR	698.800	1831.000	697.900	2019.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.045	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	1475.000	1800.000	0.000	0.000

VALLEY SECTION L

X1	24.700	16.000	1481.000	1520.000	2040.000	2200.000	3950.000	0.000	0.000	0.000
GR	707.800	1055.000	702.500	1295.000	700.500	1419.000	699.500	1470.000	692.000	1481.000
GR	686.700	1490.000	685.400	1500.000	688.200	1510.000	689.800	1513.000	692.000	1520.000
GR	693.000	1618.000	693.200	1707.000	692.800	1790.000	701.900	1820.000	705.200	1823.000
GR	707.000	1862.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.070	.070	.045	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	2390.000	0.000	0.000
X1	24.800	21.000	2244.000	2278.000	2320.000	2480.000	3690.000	0.000	0.000	0.000
GR	709.800	1000.000	705.900	1160.000	706.000	1249.000	701.500	1449.000	700.900	1795.000
GR	697.500	1905.000	694.500	1913.000	695.100	2015.000	696.400	2213.000	693.900	2229.000
GR	695.500	2244.000	692.400	2257.000	689.500	2261.000	687.500	2266.000	690.300	2272.000
GR	692.400	2278.000	695.600	2287.000	695.000	2362.000	695.800	2389.000	710.100	2440.000
GR	711.600	2460.000	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	1910.000	2350.000	0.000	0.000
X1	24.880	0.000	0.000	0.000	760.000	600.000	918.000	0.000	0.000	0.000
NC	.090	.090	.065	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	24.890	0.000	0.000	0.000	411.000	411.000	411.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2132.000	0.000	2402.000	0.000	0.000	0.000	0.000
X1	24.899	0.000	0.000	0.000	361.000	361.000	361.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	2235.000	0.000	2299.000	0.000	0.000	0.000	0.000
X1	24.900	24.000	1705.000	1756.000	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	702.000	702.000	0.000
GR	712.500	1000.000	697.900	1128.000	702.500	1228.000	708.000	1279.000	708.200	1370.000
GR	704.800	1500.000	705.800	1600.000	699.300	1650.000	700.800	1700.000	698.000	1705.000
GR	694.500	1715.000	689.100	1717.000	689.800	1724.000	690.800	1732.000	694.300	1738.000
GR	695.800	1744.000	698.000	1756.000	698.000	1850.000	697.300	1950.000	698.600	2046.000
GR	698.000	2176.000	699.600	2276.000	708.000	2510.000	709.200	2651.000	0.000	0.000
SB	1.250	1.530	3.000	0.000	39.000	0.000	331.500	0.000	691.000	691.000

NC	0.000	0.000	.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECTION M 44TH STREET U/S

X1	25.000	17.000	1480.500	1519.500	45.000	45.000	45.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	699.500	702.000	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	702.000	702.000	0.000
RT	19.000	1030.000	706.500	0.000	1140.000	705.000	0.000	1240.000	704.000	0.000
BT	1335.000	702.500	0.000	1375.000	702.500	0.000	1425.000	702.200	0.000	1480.500
BT	702.200	0.000	1480.500	702.200	699.500	1490.000	702.200	699.500	1500.000	702.200
BT	699.500	1510.000	702.200	699.500	1519.500	702.200	699.500	1519.500	702.200	0.000
BT	1620.000	702.000	0.000	1800.000	702.500	0.000	1900.000	702.500	0.000	2000.000
BT	702.200	0.000	2105.000	702.500	0.000	2230.000	703.500	0.000	0.000	0.000
GR	706.500	1030.000	705.000	1140.000	704.000	1240.000	702.500	1335.000	702.500	1375.000
GR	698.200	1425.000	691.200	1480.500	691.200	1490.000	690.800	1500.000	690.500	1510.000
GR	691.200	1519.500	702.000	1620.000	702.500	1800.000	702.500	1900.000	702.200	2000.000
GR	702.500	2105.000	703.500	2230.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.090	.090	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	25.100	24.000	1705.000	1756.000	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	702.000	702.000	0.000
GR	712.500	1000.000	697.900	1128.000	702.500	1228.000	708.000	1279.000	708.200	1370.000
GR	704.800	1500.000	705.800	1600.000	699.300	1650.000	700.800	1700.000	698.000	1705.000
GR	694.500	1715.000	689.100	1717.000	689.800	1724.000	690.800	1732.000	694.300	1738.000
GR	695.800	1744.000	698.000	1756.000	698.000	1850.000	697.300	1950.000	698.600	2046.000
GR	698.000	2176.000	699.600	2276.000	708.000	2510.000	709.200	2651.000	0.000	0.000
NC	.070	.070	.060	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	9.100	0.000	0.000	629.000	946.000

X1	25.110	21.000	705.000	748.000	111.000	111.000	111.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	594.000	0.000	859.000	0.000	0.000	0.000	0.000
GR	714.000	370.000	708.200	370.000	704.800	500.000	705.800	600.000	699.300	650.000
GR	700.800	700.000	698.000	705.000	694.500	715.000	689.100	717.000	689.800	724.000
GR	690.800	732.000	694.300	738.000	695.800	748.000	698.000	756.000	698.000	850.000
GR	697.000	950.000	698.600	1046.000	698.000	1176.000	699.600	1276.000	708.000	1510.000
GR	714.000	1510.000	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	9.100	0.000	0.000	483.000	970.000

X1	25.120	0.000	0.000	0.000	111.000	111.000	111.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000
NC	.070	.070	.060	.100	.300	0.000	0.000	0.000	0.000	0.000

X1	25.200	19.000	1065.000	1130.000	560.000	280.000	393.000	0.000	0.000	0.000
GR	710.600	998.000	702.600	1030.000	698.300	1065.000	696.100	1075.000	694.600	1095.000
GR	692.100	1097.000	689.700	1105.000	691.900	1111.000	694.600	1115.000	698.100	1130.000
GR	698.900	1247.000	696.600	1258.000	695.000	1265.000	696.600	1272.000	699.000	1285.000
GR	699.400	1365.000	699.500	1460.000	704.200	1485.000	704.700	1500.000	0.000	0.000
QT	5.000	1670.000	1770.000	2000.000	2650.000	2000.000	0.000	0.000	0.000	0.000
NC	.085	.085	.060	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	9.100	0.000	0.000	1270.000	1777.000

VALLEY SECTION N

X1	25.300	18.000	1271.000	1322.000	2000.000	2640.000	3610.000	0.000	0.000	0.000

GR	713.500	1030.000	711.200	1129.000	714.800	1241.000	713.200	1269.000	700.500	1271.000
GR	695.200	1288.000	694.200	1300.000	695.200	1312.000	697.900	1315.000	700.500	1322.000
GR	701.200	1388.000	699.800	1470.000	705.000	1502.000	699.000	1522.000	699.300	1630.000
GR	700.100	1722.000	700.500	1770.000	710.500	1795.000	0.000	0.000	0.000	0.000
NC	.085	.085	.060	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	9.100	0.000	0.000	1561.000	2129.000
X1	25.400	20.000	2075.000	2119.000	1600.000	1080.000	1450.000	0.000	0.000	0.000
GR	711.500	975.000	709.900	1130.000	710.800	1225.000	709.500	1325.000	708.500	1425.000
GR	709.100	1545.000	700.000	1575.000	699.500	1632.000	700.300	1707.000	701.400	1805.000
GR	700.900	1987.000	701.500	2075.000	699.500	2087.000	698.500	2090.000	695.800	2092.000
GR	695.000	2100.000	695.800	2109.000	698.500	2110.000	701.500	2119.000	713.000	2159.000
NC	.085	.085	.060	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	1700.000	2146.000	0.000	0.000

VALLEY SECTION O

X1	25.500	16.000	1964.000	2146.000	2280.000	3360.000	4050.000	0.000	0.000	0.000
GR	718.400	1000.000	714.600	1250.000	714.200	1350.000	711.400	1470.000	707.000	1520.000
GR	706.200	1673.000	706.200	1964.000	701.900	2070.000	700.800	2072.000	700.100	2076.000
GR	698.900	2081.000	701.900	2085.000	704.000	2096.000	708.100	2146.000	717.700	2292.000
GR	720.300	2390.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.085	.085	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	25.510	13.000	250.000	320.000	1120.000	905.000	1717.000	0.000	0.000	0.000
GR	720.000	0.000	710.000	200.000	707.100	200.000	705.000	250.000	702.800	280.000
GR	700.100	300.000	705.700	320.000	707.500	350.000	708.700	370.000	710.000	380.000
GR	710.000	550.000	710.000	780.000	720.000	850.000	0.000	0.000	0.000	0.000
X1	25.520	10.000	200.000	270.000	1120.000	905.000	1717.000	0.000	0.000	0.000
GR	720.000	0.000	710.000	80.000	710.000	200.000	704.600	210.000	703.600	220.000
GR	701.300	230.000	703.600	250.000	707.200	270.000	710.000	270.000	720.000	400.000
X1	25.530	9.000	120.000	190.000	1120.000	905.000	1717.000	0.000	0.000	0.000
GR	720.000	0.000	710.000	110.000	707.300	120.000	705.300	130.000	702.500	150.000
GR	705.700	170.000	708.700	190.000	710.000	200.000	720.000	380.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000

VALLEY SECTION P

X1	25.700	15.000	1587.000	1680.000	1120.000	905.000	1600.000	0.000	0.000	0.000
GR	720.300	1090.000	719.600	1245.000	717.700	1345.000	711.000	1467.000	711.200	1538.000
GR	710.200	1587.000	707.300	1619.000	703.700	1640.000	705.000	1660.000	707.400	1662.000
GR	710.200	1680.000	710.800	1832.000	717.200	1895.000	720.800	2088.000	727.600	2305.000
NC	.085	.085	.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	25.800	18.000	1344.000	1426.000	1400.000	1200.000	2000.000	0.000	0.000	0.000
GR	727.200	1012.000	723.400	1185.000	723.700	1285.000	720.500	1308.000	711.500	1344.000
GR	707.400	1354.000	709.500	1375.000	709.200	1388.000	706.200	1400.000	706.700	1407.000
GR	709.200	1412.000	710.500	1426.000	710.800	1452.000	711.000	1557.000	712.300	1658.000
GR	711.300	1751.000	710.500	1895.000	727.600	1952.000	0.000	0.000	0.000	0.000
ET	0.000	9.100	9.100	9.100	9.100	9.100	0.000	0.000	1188.000	1895.000

X1	25.890	0.000	0.000	0.000	533.000	453.000	730.000	0.000	0.000	0.000
NC	.075	.075	.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	25.900	17.000	1380.000	1422.000	720.000	720.000	720.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	715.500	716.100	0.000
GR	724.800	1030.000	720.200	1117.000	711.800	1235.000	713.000	1241.000	713.800	1338.000
GR	712.200	1348.000	713.000	1365.000	709.800	1378.000	707.300	1380.000	705.500	1400.000
GR	706.700	1420.000	709.800	1422.000	712.500	1426.000	712.500	1475.000	713.400	1605.000
GR	724.000	1640.000	724.900	1651.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	2.038	3.000	0.000	32.800	10.000	228.000	0.000	705.000	705.000
NC	0.000	0.000	.031	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SECTION @ 52ND STREET U/S

X1	26.000	25.000	2000.000	2040.000	44.000	44.000	44.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	715.000	717.200	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	717.200	718.000	0.000
BT	25.000	1479.000	726.900	0.000	1580.000	725.000	0.000	1800.000	718.000	0.000
BT	1860.000	717.200	0.000	2000.000	718.000	0.000	2000.000	718.000	705.000	2002.500
BT	718.000	705.000	2002.600	718.000	710.000	2006.000	718.000	714.000	2009.500	718.000
BT	715.000	2013.000	718.000	714.000	2016.100	718.000	710.000	2016.200	718.000	705.000
BT	2023.500	718.100	705.000	2023.600	718.100	710.000	2027.000	718.100	714.000	2030.500
BT	718.100	715.000	2035.000	718.100	714.000	2037.500	718.100	710.000	2037.600	718.100
BT	705.000	2040.000	718.100	705.000	2040.000	718.100	0.000	2130.000	719.500	0.000
BT	2350.000	728.900	0.000	2400.000	733.000	0.000	0.000	0.000	0.000	0.000
GR	726.900	1479.000	725.000	1580.000	718.000	1800.000	717.200	1860.000	718.000	2000.000
GR	705.000	2000.000	705.000	2002.500	705.000	2002.600	705.000	2006.000	705.000	2009.500
GR	705.000	2013.000	705.000	2016.100	705.000	2016.200	705.000	2023.500	705.000	2023.600
GR	705.000	2027.000	705.000	2030.500	705.000	2035.000	705.000	2037.500	705.000	2037.600
GR	705.000	2040.000	718.100	2040.000	719.500	2130.000	728.900	2350.000	733.000	2400.000
NC	.085	.085	.060	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	9.100	0.000	0.000	1300.000	1700.000
X1	26.110	18.000	1470.000	1525.000	180.000	180.000	180.000	0.000	0.000	0.000
GR	726.400	1018.000	724.000	1045.000	722.000	1085.000	713.500	1095.000	712.800	1220.000
GR	712.700	1318.000	713.800	1420.000	714.000	1470.000	709.800	1482.000	707.800	1484.000
GR	707.800	1500.000	708.900	1515.000	713.500	1525.000	710.000	1607.000	715.000	1742.000
GR	721.000	1794.000	725.000	1845.000	727.200	1860.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	0.000	1.400	0.000	0.000	0.000	0.000
NC	.085	.085	.060	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	26.300	19.000	1727.000	1753.000	916.000	916.000	916.000	0.000	0.000	0.000
GR	724.100	1000.000	723.400	1056.000	726.600	1167.000	725.300	1266.000	715.300	1445.000
GR	715.500	1550.000	718.100	1663.000	715.600	1676.000	715.000	1727.000	712.600	1740.000
GR	715.000	1753.000	715.000	1806.000	720.800	1832.000	724.500	1958.000	723.700	2060.000
GR	725.200	2160.000	723.800	2287.000	723.900	2387.000	728.300	2515.000	0.000	0.000
NC	.095	.095	.065	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	9.100	0.000	0.000	1536.000	2185.000

VALLEY SECTION K

X1	26.400	24.000	1978.000	2023.000	4000.000	3000.000	4290.000	0.000	0.000	0.000
GR	730.100	1009.000	729.200	1090.000	736.800	1112.000	734.200	1223.000	724.200	1358.000
GR	720.600	1536.000	718.900	1657.000	718.500	1760.000	719.000	1936.000	717.600	1965.000

GR	716.200	1978.000	712.300	1979.000	711.700	1999.000	712.300	2016.000	716.200	2019.000
GR	717.600	2023.000	718.800	2185.000	726.100	2221.000	725.600	2312.000	725.600	2412.000
GR	727.300	2590.000	726.800	2760.000	728.300	3036.000	731.600	3355.000	0.000	0.000
NC	.095	.095	.065	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	9.100	0.000	0.000	1765.000	2665.000
X1	26.500	30.000	2205.000	2232.000	1400.000	1000.000	1650.000	0.000	0.000	0.000
GR	733.000	1095.000	725.800	1372.000	726.600	1460.000	724.500	1653.000	722.200	1720.000
GR	721.100	1892.000	721.300	1992.000	721.000	2060.000	722.000	2160.000	721.200	2192.000
GR	720.300	2205.000	717.500	2210.000	715.300	2211.000	713.300	2220.000	716.500	2229.000
GR	719.000	2232.000	720.000	2298.000	719.000	2342.000	720.000	2460.000	720.200	2564.000
GR	719.000	2665.000	730.300	2700.000	733.000	2800.000	730.500	2850.000	730.000	3000.000
GR	731.000	3100.000	730.500	3125.000	730.100	3200.000	732.500	3300.000	732.000	3400.000
NC	.095	.095	.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000

VALLEY SECTION S

X1	26.700	28.000	2178.000	2215.000	3600.000	2480.000	3300.000	0.000	0.000	0.000
GR	736.000	1000.000	732.600	1082.000	730.200	1205.000	732.600	1268.000	733.000	1302.000
GR	731.500	1372.000	731.700	1482.000	732.600	1566.000	732.800	1663.000	732.100	1733.000
GR	729.800	1810.000	728.200	1902.000	727.300	1972.000	724.800	2006.000	723.000	2012.000
GR	720.500	2019.000	721.000	2050.000	723.000	2061.000	723.600	2178.000	722.500	2186.000
GR	721.400	2189.000	720.400	2199.000	722.000	2210.000	723.600	2215.000	723.600	2404.000
GR	725.600	2462.000	741.400	2498.000	743.300	2553.000	0.000	0.000	0.000	0.000
QT	5.000	770.000	1120.000	1260.000	1660.000	1260.000	0.000	0.000	0.000	0.000
NC	.120	.120	.065	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	9.100	0.000	0.000	1400.000	1825.000
X1	26.890	25.000	1575.000	1625.000	1640.000	1800.000	2150.000	0.000	0.000	0.000
GR	745.100	960.000	741.000	1010.000	736.400	1105.000	731.100	1240.000	728.800	1340.000
GR	727.500	1455.000	728.000	1525.000	726.300	1575.000	722.800	1584.000	722.600	1600.000
GR	725.500	1615.000	723.500	1620.000	728.200	1625.000	728.200	1685.000	729.600	1695.000
GR	729.800	1746.000	727.300	1750.000	727.900	1800.000	731.200	1889.000	738.500	2005.000
GR	738.200	2135.000	741.100	2251.000	741.500	2383.000	739.300	2485.000	742.500	2740.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	26.900	0.000	0.000	0.000	750.000	750.000	750.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	735.000	735.000	0.000

SECTION T 60TH STREET D/S

X1	26.910	8.000	386.500	413.000	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	735.000	735.000	0.000
GR	743.000	0.000	742.500	386.500	721.500	386.500	721.500	399.000	721.500	401.000
GR	721.500	413.000	742.500	413.000	741.500	1160.000	0.000	0.000	0.000	0.000
SB	1.250	1.565	3.000	0.000	26.500	2.000	228.000	0.000	721.500	721.500
X1	27.000	0.000	0.000	0.000	35.000	35.000	35.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	730.800	742.500	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	742.500	742.500	0.000
BT	10.000	0.000	743.000	0.000	386.500	742.500	0.000	386.500	742.500	730.800
BT	399.000	742.500	730.800	399.000	742.500	721.500	401.000	742.500	721.500	401.000
BT	742.500	730.800	413.000	742.500	730.800	413.000	742.500	0.000	1160.000	741.500
BT	0.000	0.000	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

```
*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 22.700
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    RANK 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 44094 FT FROM MOUTH(FIS CITY OF GRAND RAPIDS)

                          1620 FT DOWNSTREAM OF KENTWOOD CITY CORPORATE BOUNDARY

    22.70     14.40    677.10      0.00    677.10    677.15       .05      0.00      0.00    670.40
    2690.       32.     1114.     1544.       42.      445.     1429.        0.        0.    670.40
     0.00       .74      2.50      1.08      .080      .055      .080     0.000    662.70    152.27
  .000373    44094.    44094.    44094.         0         0         0      0.00    358.90    511.17

FLOW DISTRIBUTION FOR SECNO=      22.70          CWSEL=     677.10

STA=      152.      164.      166.      204.      300.      316.      414.      511.
  PER Q=      .7        .4      41.4      28.6       4.2      19.7       4.8
   AREA=    30.5      11.9     444.9     619.2      96.0     499.8     213.8
    VEL=      .6       1.0       2.5       1.2       1.2       1.1        .6

*SECNO 22.750

3470 ENCROACHMENT STATIONS=      150.0      410.0  TYPE=      1  TARGET=      260.000
    22.75     13.57    677.92      0.00      0.00    678.00       .08       .84       .01    672.05
    2690.       28.     1274.     1388.       32.      413.     1026.       65.       11.    672.05
      .23       .88      3.08      1.35      .080      .055      .080      .064    664.35    154.15
  .000624     1360.     2075.     1535.         2         0         0      0.00    255.85    410.00

FLOW DISTRIBUTION FOR SECNO=      22.75          CWSEL=     677.92

STA=      154.      164.      166.      204.      300.      316.      410.
  PER Q=      .6        .5      47.4      29.4       4.3      17.9
   AREA=    21.5      10.2     413.3     539.3      82.7     403.8
    VEL=      .7       1.2       3.1       1.5       1.4       1.2

*SECNO 22.800

        VALLEY SECTION A.
```

Elev = 679.18

```
    22.80     13.30    679.30      0.00      0.00    679.52       .22      1.48       .04    666.30
    2690.      485.     2133.       72.      338.      515.       62.       112.       23.    675.20
      .37      1.44      4.14      1.16      .080      .055      .080      .063    666.00     41.13
  .001042     1360.     2075.     1535.         2         0         0      0.00    425.62    466.74

FLOW DISTRIBUTION FOR SECNO=      22.80          CWSEL=     679.30

STA=       41.      363.      380.      381.      427.      467.
  PER Q=      4.3      12.1       1.6      79.3       2.7
```

Based upon unchecked USGS study

New

```
   AREA=     186.4     138.7      13.0     515.3      61.7
    VEL=        .6       2.3       3.3       4.1       1.2

*SECNO 22.810

3370 NORMAL BRIDGE,NRD= 15 MIN ELTRD=  675.20 MAX ELLC=  672.80

    22.81     13.27    679.27      0.00      0.00    679.53       .26       .00       .01    666.30
    2690.      636.     1865.      189.      284.      403.       60.      112.       23.    675.20
      .37      2.24      4.62      3.13      .080      .055      .080      .063    666.00     41.26
  .007587        1.        1.        1.         2         0         0   -152.50    423.83    465.09

FLOW DISTRIBUTION FOR SECNO=     22.81          CWSEL=    679.27

STA=       41.      302.      356.      363.      368.      380.      381.      427.      438.      465.
  PER Q=      3.4       4.0       3.7       3.1       8.9       .6      69.3       5.6       1.4
   AREA=     98.2      51.4      25.7      20.4      84.2      4.4     403.3      39.9      20.6
    VEL=       .9       2.1       3.8       4.1       2.8      3.5       4.6       3.8       1.8

*SECNO 22.820
   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= 15 MIN ELTRD=  675.20 MAX ELLC=  672.80

    22.82     13.30    679.30      0.00      0.00    679.55       .26       .02       .00    666.30
    2690.      642.     1859.      190.      290.      404.       61.      112.       23.    675.20
      .37      2.21      4.60      3.11      .080      .055      .080      .063    666.00     41.20
  .007487        3.        3.        3.         1         0         0   -152.50    424.67    465.87

FLOW DISTRIBUTION FOR SECNO=     22.82          CWSEL=    679.30

STA=       41.      302.      356.      363.      368.      380.      381.      427.      438.      466.
  PER Q=      3.6       4.1       3.7       3.1       8.9       .6      69.1       5.6       1.4
   AREA=    102.4      52.3      25.8      20.4      84.4      4.4     404.1      40.0      21.0
    VEL=       .9       2.1       3.8       4.1       2.8      3.5       4.6       3.8       1.8

*SECNO 22.830
    22.83     13.34    679.34      0.00      0.00    679.56       .21       .00       .00    666.30
    2690.      491.     2126.       73.      351.      517.       63.      112.       23.    675.20
      .37      1.40      4.11      1.15      .080      .055      .080      .063    666.00     40.98
  .001024        1.        1.        1.         2         0         0      0.00    427.53    468.51

FLOW DISTRIBUTION FOR SECNO=     22.83          CWSEL=    679.34

STA=       41.      356.      368.      380.      381.      427.      469.
  PER Q=      3.2       3.1      10.4       1.6      79.0       2.7
   AREA=    172.0      52.9     112.6      13.0     517.0      63.2
    VEL=       .5       1.6       2.5       3.3       4.1       1.1

*SECNO 22.900

3470 ENCROACHMENT STATIONS=     967.0    1339.0  TYPE=     1  TARGET=     372.000
```

```
    22.90     13.57    679.87      0.00      0.00    679.90       .03       .32       .02    675.20
    2690.     1799.     888.        2.      1966.     466.        8.       139.       29.    675.20
      .53       .92      1.91      .30       .090      .055      .100      .061    666.30    967.00
  .000262     695.      695.      695.         3         0         0      0.00    371.68   1338.68

FLOW DISTRIBUTION FOR SECNO=      22.90          CWSEL=     679.87

STA=      967.     1054.     1176.     1196.     1240.     1288.     1335.     1339.
  PER Q=     14.2      33.1       4.5       8.8       6.2      33.0       .1
   AREA=    455.8     887.0     130.4     268.6     224.2     465.5      7.6
    VEL=       .8       1.0       .9        .9        .7       1.9       .3

*SECNO 22.980

3470 ENCROACHMENT STATIONS=      604.0      851.0  TYPE=      1  TARGET=      247.000
    22.98     14.08    679.88      0.00      0.00    680.04       .15       .10       .04    679.10
    2690.      142.    2548.        0.       249.      790.        0.       149.       31. 100000.00
      .55       .57      3.22      0.00      .090      .055      .100      .061    665.80    604.00
  .000717     250.      250.      250.         2         0         0      0.00    246.60    850.60

FLOW DISTRIBUTION FOR SECNO=      22.98          CWSEL=     679.88

STA=      604.      710.      778.      851.
  PER Q=      3.9       1.4      94.7
   AREA=    172.9      76.5     790.4
    VEL=       .6        .5       3.2

CCHV=     .300 CEHV=     .500
*SECNO 23.000

3265 DIVIDED FLOW

    23.00     13.09    679.89      0.00      0.00    680.12       .24       .04       .04    680.50
    2690.       15.    2675.        0.        57.     683.        0.       150.       32.    680.00
      .55       .26      3.92      0.00      .090      .055      .100      .061    666.80    522.75
  .001116      50.       50.       50.         2         0         0      0.00    256.28    829.95

FLOW DISTRIBUTION FOR SECNO=      23.00          CWSEL=     679.89

STA=      523.      600.      700.      719.      830.
  PER Q=       .1        .4        .0      99.5
   AREA=     14.9      38.6       3.7     682.8
    VEL=       .2        .3        .2       3.9

SPECIAL BRIDGE

SH  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.56      3.03      0.00     47.80     12.50    413.19      0.00    666.80    666.80

*SECNO 23.090

3265 DIVIDED FLOW

   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      ELLC      ELTRD
                                                                AREA
  680.91    680.29      .16       549.      2123.      413.      413.      678.50    680.00

                 SECTION B BRETON AVENUE U/S

   23.09     13.52    680.32     0.00      0.00     680.52      .21       .40       0.00    680.50
   2690.      62.      2627.      2.       160.      708.       8.       150.       32.     680.00
     .56      .39      3.71      .20      .090      .055      .100      .061     666.80    468.46
 .000961     32.       32.       32.        2         0         2      0.00     360.13    857.89

FLOW DISTRIBUTION FOR SECNO=     23.09          CWSEL=    680.32

STA=      468.      500.      600.      700.      741.      830.      850.      858.
  PER Q=      .0       .7      1.4       .2      97.7       .1       .0
   AREA=     5.0      56.5     81.5     16.6     708.5      6.3      1.2
    VEL=      .1       .4       .4       .3       3.7       .2       .1

*SECNO 23.100

3470 ENCROACHMENT STATIONS=     647.0     1189.0  TYPE=     1  TARGET=     -647.000
   23.10     13.54    680.54    0.00      0.00     680.59     .05       .02       .05     674.60
   2690.     140.      2180.    370.      391.      1113.    611.       152.      32.      674.60
     .56      .36      1.96      .61      .095      .055     .095      .061     667.00    647.00
 .000219     48.       48.       48.        2         0        0      0.00     452.85   1099.85

FLOW DISTRIBUTION FOR SECNO=     23.10          CWSEL=    680.54

STA=      647.      674.      768.      846.      852.      952.     1092.     1100.
  PER Q=      .6      2.0       2.0       .5      81.0     13.7       .1
   AREA=    50.4     163.8    151.5     24.9    1113.0    600.9     10.4
    VEL=      .3       .3       .4       .5       2.0       .6       .3

CCHV=     .100 CEHV=     .300
*SECNO 23.120

3265 DIVIDED FLOW

   23.12     13.59    680.59    0.00      0.00     680.63     .04       .04       .00     674.60
   2690.     228.      2101.    361.      747.      1118.    618.       163.      35.      674.60
     .60      .30      1.88      .58      .095      .055     .095      .061     667.00    325.72
 .000201     200.      200.      200.       2         0        0      0.00     761.03   1100.00

FLOW DISTRIBUTION FOR SECNO=     23.12          CWSEL=    680.59

STA=      326.      340.      451.      564.      674.      768.      846.      852.      952.     1092.     1100.
  PER Q=      .1      1.1       .4       2.2       2.0       2.0       .5      78.1      13.3       .1
   AREA=    16.4     126.7     69.5    185.9     168.2     155.2     25.1    1117.8     607.6     10.8
    VEL=      .2       .2       .2       .3        .3        .4       .5       1.9        .6       .3
```

```
*SECNO 23.170
    23.17     12.14    682.24      0.00      0.00    682.40       .15      1.73       .03    678.00
    2690.     1376.     1224.       90.     1157.     275.        54.      310.       84.     678.00
      .95      1.19      4.45      1.67      .110      .075      .110      .069    670.10     100.00
  .003188     2780.     3600.     3780.         3         0         0      0.00    668.77     768.77
```

max 300 ft

```
FLOW DISTRIBUTION FOR SECNO=      23.17          CWSEL=     682.24

STA=      100.      550.      600.      650.      680.      710.      722.      748.      755.      763.      769.
  PER Q=    29.0       5.4       5.2       2.6       5.3       3.6      45.5       2.2       1.1       .1
   AREA=   737.7     112.0     109.5      58.2      89.7      49.7     275.0      29.7      21.1       3.0
    VEL=     1.1       1.3       1.3       1.2       1.6       2.0       4.4       2.0       1.4        .5
```

Positive Q, not analyzed

```
*SECNO 23.200

        VALLEY SECTION C

    23.20     12.32    682.42      0.00      0.00    682.43       .02       .02       .01    677.00
    2690.     1954.     712.       24.     2783.     437.        38.      312.       84.     677.00
      .96       .70      1.63      .63      .110      .075      .110      .069    670.10     100.00
  .000354      30.       30.       30.         2         0         0      0.00    670.10     770.10
```

30 ft

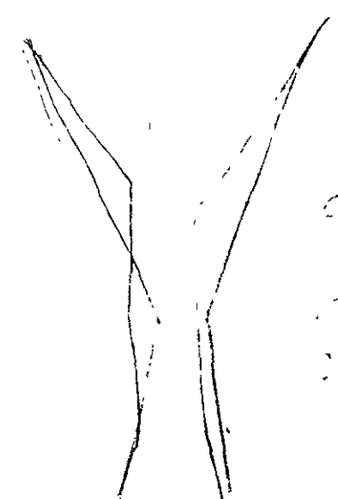
```
FLOW DISTRIBUTION FOR SECNO=      23.20          CWSEL=     682.42

STA=      100.      276.      350.      458.      542.      602.      642.      681.      711.      756.      761.      763.      770.
  PER Q=    15.0       9.4      14.5      10.3       7.4       5.4       5.9       4.7      26.5       .8        .1        .0
   AREA=   662.9     352.7     531.0     392.0     280.0     196.7     205.4     162.5     436.7     27.1       6.6       4.3
    VEL=      .6        .7        .7        .7        .7        .7        .8        .8       1.6        .8        .3        .2

*SECNO 23.500
    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


        VALLEY SECTION D

    23.50     11.97    684.47      0.00      0.00    684.53       .06      2.09       .01    679.30
    2690.       18.      940.     1732.       23.      335.     1413.      508.      124.     679.30
     1.52       .78      2.80     1.23      .110      .075      .110      .075    672.50     276.97
  .001132     3093.     4220.     3535.         4         0         0      0.00    383.51     660.48
```



```
FLOW DISTRIBUTION FOR SECNO=      23.50          CWSEL=     684.47

STA=      277.      286.      322.      404.      484.      534.      584.      634.      660.
  PER Q=     .7      34.9      21.1      16.7       9.5      10.5       6.1        .5
   AREA=    23.3     335.3     420.2     362.0     213.7     226.2     163.7      27.5
    VEL=     .8       2.8       1.4       1.2       1.2       1.2       1.0        .5
*SECNO 23.600

3470 ENCROACHMENT STATIONS=      271.0      400.0  TYPE=      1  TARGET=      129.000
    23.60     13.32    686.92      0.00      0.00    687.11       .19      2.54       .04    680.40
    2690.       46.     1610.     1034.       37.      384.      505.      558.      134.     680.40
```

New sect.

natural model

```
   1.66      1.24      4.20      2.05      .110      .075      .110      .075    673.60    274.63
 .002120    1865.     1825.     1536.         3         0         0      0.00    125.37    400.00

FLOW DISTRIBUTION FOR SECNO=      23.60          CWSEL=     686.92

STA=      275.      286.      322.      400.
  PER Q=      1.7      59.8      38.4
   AREA=     37.0     383.7     504.7
    VEL=      1.2       4.2       2.0

CCHV=     .100 CEHV=     .300
*SECNO 23.700

        VALLEY SECTION E

   23.70     14.47    689.17      0.00      0.00    689.24       .08      2.13       .01    682.40
   2690.       18.     1479.     1193.       26.       537.      948.      604.      140.    682.40
    1.89       .72      2.75      1.26      .110      .075      .110      .076    674.70    295.48
 .000819     1865.     1825.     1536.         2         0         0      0.00    232.28    527.76

FLOW DISTRIBUTION FOR SECNO=      23.70          CWSEL=     689.17

STA=      295.      307.      353.      438.      528.
  PER Q=       .7      55.0      32.5      11.8
   AREA=     25.8     537.3     608.9     339.4
    VEL=       .7       2.8       1.4        .9

*SECNO 23.800
   23.80     15.56    689.96      0.00      0.00    690.00       .04       .76       .00    681.30
   2690.      415.     1207.     1068.      391.       568.     1061.      657.      148.    681.30
    2.12      1.06      2.13      1.01      .110      .075      .110      .076    674.40    120.55
 .000435     1300.     1300.     1300.         2         0         0      0.00    266.23    386.77

FLOW DISTRIBUTION FOR SECNO=      23.80          CWSEL=     689.96

STA=      121.      136.      177.      222.      227.      243.      278.      314.      334.      384.      387.
  PER Q=      1.4      14.0      44.9       1.7       4.4      10.6      12.1       4.4       6.3        .1
   AREA=     58.4     332.3     567.6      41.0     114.5     264.4     288.2     125.1     222.8       5.3
    VEL=       .6       1.1       2.1       1.1       1.0       1.1       1.1       1.0        .8        .3

CCHV=     .300 CEHV=     .500
*SECNO 23.900

3470 ENCROACHMENT STATIONS=      600.0      864.0  TYPE=      1  TARGET=     264.000
   23.90     12.76    690.16      0.00      0.00    690.20       .04       .19       .00    681.30
   2690.      187.     1843.      659.      277.     1000.      694.      680.      151.    681.30
    2.21       .68      1.84       .95      .110      .075      .110      .076    677.40    624.39
 .000348      500.      500.      500.         2         0         0      0.00    239.61    864.00

FLOW DISTRIBUTION FOR SECNO=      23.90          CWSEL=     690.16

STA=      624.      687.      776.      864.
  PER Q=      7.0      68.5      24.5
   AREA=    277.3    1000.5     694.1
    VEL=       .7       1.8       1.0
```

(0.002)(800 ft) = 1.6 ft.

```
*SECNO 24.000
   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=      100.0      540.0  TYPE=      1  TARGET=      440.000
    24.00     15.88    690.18      0.00      0.00    690.21       .03        .01        .00    691.00
    2690.        0.     2671.       19.        0.     1904.      107.      682.       151.    689.10
     2.22      0.00      1.40       .18      .110      .075      .110      .076     674.30    300.40
  .000168       50.       50.       50.         0         0         0      0.00     239.60    540.00

FLOW DISTRIBUTION FOR SECNO=      24.00          CWSEL=     690.18

STA=      300.      435.      450.      540.
  PER Q=     99.3        .1        .6
   AREA=   1903.5      14.7      92.5
    VEL=      1.4        .2        .2

SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25      2.57       3.04       0.00     115.40      10.94     508.00      0.00     674.34     674.34
*SECNO 24.100
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                    AREA
  691.30    690.22      .00       1029.      1670.      508.       508.       679.20     689.20

3470 ENCROACHMENT STATIONS=      100.0      540.0  TYPE=      1  TARGET=      440.000
                SECTION F SHAFFER AVENUE NORTH U/S
    24.10     16.29    690.59      0.00      0.00    690.61       .03        .40        0.00    691.00
    2690.        0.     2659.       31.        0.     1958.      150.      687.       152.    689.10
     2.25      0.00      1.36       .21      .110      .075      .110      .076     674.30    300.20
  .000152      104.      104.      104.         2         0         3      0.00     239.80    540.00

FLOW DISTRIBUTION FOR SECNO=      24.10          CWSEL=     690.59

STA=      300.      435.      450.      540.
  PER Q=     98.8        .2       1.0
   AREA=   1958.4      20.8     129.2
    VEL=      1.4        .2        .2

*SECNO 24.110
    24.11     13.22    690.62      0.00      0.00    690.64       .02        .02        .00    681.30
    2690.      173.     1503.     1014.      306.     1041.     1411.      695.       153.    681.30
     2.28       .57      1.44       .72      .090      .065      .090      .076     677.40    621.20
  .000153      150.      150.      150.         0         0         0      0.00     397.05   1018.25
```

very high

```
FLOW DISTRIBUTION FOR SECNO=      24.11          CWSEL=     690.62

STA=      621.      687.      776.      912.      936.     1002.     1018.
  PER Q=      6.4      55.9      31.7       2.1       3.5       .4
   AREA=    306.3    1040.6    1062.1     104.6     211.8     32.6
    VEL=       .6       1.4       .8        .5        .4       .3

CCHV=     .100 CEHV=     .300
*SECNO 24.200
```

SCS ≈ 690.3

```
        VALLEY SECTION G

    24.20     16.31    690.91      0.00      0.00    690.94       .03       .30       .00    684.30
    2690.      526.     1066.     1098.      692.      557.     1252.      799.      170.    684.30
     2.67       .76      1.91       .88      .070      .050      .070      .074    674.60    117.10
  .000187     1519.     1961.     1643.         2         0         0      0.00    502.81    619.91

FLOW DISTRIBUTION FOR SECNO=      24.20          CWSEL=     690.91

STA=      117.      123.      196.      292.      340.      439.      535.      620.
  PER Q=       .1      4.5      14.9      39.6      24.2      14.4       2.1
   AREA=      7.1    208.9     476.3     557.2     644.6     466.7     140.6
    VEL=       .3       .6       .8       1.9       1.0       .8        .4

*SECNO 24.300
3265 DIVIDED FLOW
```

SCS 691.1

```
    24.30     14.07    691.07      0.00      0.00    691.28       .21       .29       .06    690.20
    2690.        0.     1618.     1072.        0.      344.      962.      832.      179.    690.20
     2.74       .22      4.70      1.11      .085      .040      .085      .073    677.00    104.50
  .001178      750.      750.      750.         2         0         0      0.00    506.92    842.55

FLOW DISTRIBUTION FOR SECNO=      24.30          CWSEL=     691.07

STA=      105.      105.      145.      190.      453.      557.      668.      764.      779.      843.
  PER Q=       .0     60.2       .3        .0      3.4      12.7      10.6       3.5       9.2
   AREA=       .2    343.9      19.7       4.2     131.9     296.2     251.4      62.5     196.0
    VEL=       .2      4.7       .3        .2        .7       1.2       1.1       1.5       1.3

*SECNO 24.400
   SECNO     DEPTH     CWSEL     CRIWS     WSELK        EG        HV        HL     OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     FNDST
```

VALLEY SECTION H SCS = 691.4

```
    24.40     13.23    691.53      0.00      0.00    691.54       .01       .24       .02    684.40
    2050.     1136.      425.      489.     1815.      291.      591.      855.      185.    684.00
     2.90       .63      1.46       .83      .095      .065      .095      .072    678.30    217.81
  .000221      500.      500.      500.         2         0         0      0.00    541.07    758.88

FLOW DISTRIBUTION FOR SECNO=      24.40          CWSEL=     691.53
```

Telephone Call with Russ B of SCS May 30, 1980 indicates that since this cut was made between the time their field work was done and the completion of the hydraulics they estimated the loss through this reach by hand computations. The profile sheet 7 of 12 of FHA G/G analysis of this field data only shows 691.28 − 690.94 or 0.34' as opposed to 691.1 − 690.3 = .8

effective length if cut channel bypass ≈ 100 ft or less

36% of flow area is ineffective as valley is blocked by road fill

```
STA=      218.     240.     321.     400.     495.     562.     623.     632.     634.     661.     707.     742.     759.
  PER Q=    1.2     13.8     11.1     11.7      7.8      8.0      1.5       .4     20.8     16.0      7.4       .5
   AREA=   56.9    411.5    357.9    397.1    270.0    264.2     44.8     12.2    291.3    360.2    202.3     29.0
    VEL=     .4       .7       .6       .6       .6       .6       .7       .6      1.5       .9       .7       .3

*SECNO 24.430
    24.43    11.10   691.90     0.00     0.00   691.96      .06      .40      .02   688.90
    2050.      47.    1493.     510.      88.     635.     662.     902.     195.   688.20
     3.07      .53     2.35      .77     .090     .065     .090     .073   680.80   432.14
  .000606     900.    1550.     750.        2        0        0     0.00   454.37   886.50

FLOW DISTRIBUTION FOR SECNO=     24.43          CWSEL=    691.90

STA=      432.     491.     562.     613.     662.     761.     883.     887.
  PER Q=    2.3     72.8      9.1      7.1      7.0      1.7       .0
   AREA=   88.2    634.5    191.0    161.5    212.4     97.1       .2
    VEL=     .5      2.4      1.0       .9       .7       .3       .1

CCHV=    .300 CEHV=    .500
*SECNO 24.440

3470 ENCROACHMENT STATIONS=     318.0     450.0  TYPE=     1  TARGET=     132.000
    24.44     9.04   692.34     0.00     0.00   692.46      .12      .47      .03   693.30
    2050.       0.    2026.      24.       0.     719.      43.     916.     199.   691.40
     3.13     0.00     2.82      .56     .090     .065     .090     .073   683.30   319.14
  .001049     450.     600.     600.        2        0        0     0.00   130.86   450.00

FLOW DISTRIBUTION FOR SECNO=     24.44          CWSEL=    692.34

STA=      319.     411.     450.
  PER Q=   98.8      1.2
   AREA=  719.3     43.3
    VEL=    2.8       .6

SPECIAL BRIDGE

SB   XK      XKOR     COFQ     RDLEN    RWC      RWP      BAREA    SS       ELCHU    ELCHD
     1.25     2.79     3.04     0.00     55.20    18.30    240.00   0.00     683.30   683.30

*SECNO 24.450
PRESSURE AND WEIR FLOW

 EGPRS    EGLWC    H3       QWEIR    QPR      BAREA    TRAPEZOID AREA    ELLC     ELTRD
 695.50   692.58   .12      805.     1246.    240.     240.              689.80   691.06

3470 ENCROACHMENT STATIONS=     100.0     450.0  TYPE=     1  TARGET=     350.000
                SECTION 1 SHAFFER AVENUE MIDDLE U/S
    24.45    10.12   693.42     0.00     0.00   693.50      .09     1.05     0.00   693.30
    2050.       0.    1991.      59.       0.     819.      86.     918.     199.   691.40
     3.14      .06     2.43      .69     .090     .065     .090     .073   683.30   309.70
```

683.3

```
  .000671      103.      103.      103.         2         0         3      0.00    140.30    450.00

FLOW DISTRIBUTION FOR SECNO=      24.45          CWSEL=     693.42

STA=      310.      318.      411.      450.
  PER Q=        .0      97.1       2.9
   AREA=        .5     819.0      85.7
    VEL=        .1       2.4        .7

*SECNO 24.460

3470 ENCROACHMENT STATIONS=      335.0      770.0  TYPE=      1  TARGET=      435.000
    24.46     12.73    693.53      0.00      0.00    693.56       .03       .04       .02    688.20
    2050.      108.     1290.      653.      226.      741.      919.      923.      200.    688.20
     3.17       .48      1.74       .71      .070      .050      .070      .073    680.80    399.87
  .000151      150.      150.      150.         1         0         0      0.00    370.12    770.00

FLOW DISTRIBUTION FOR SECNO=      24.46          CWSEL=     693.53

STA=      400.      491.      494.      562.      613.      662.      761.      770.
  PER Q=        4.7        .5      62.9      10.7       8.9      11.6        .6
   AREA=      211.3      15.0     741.4     274.8     241.9     375.0      27.8
    VEL=         .5        .7       1.7        .8        .8        .6        .5

CCHV=     .100 CEHV=     .300
*SECNO 24.490
   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

    24.49     12.25    693.95      0.00      0.00    694.01       .06       .44       .01    690.00
    2050.      94.      969.      987.       85.      386.      861.      983.      213.    690.00
     3.44      1.11      2.51      1.15      .070      .050      .070      .071    681.70    110.49
  .000535     1810.     1867.     1450.         2         0         0      0.00    332.14    442.64

FLOW DISTRIBUTION FOR SECNO=      24.49          CWSEL=     693.95

STA=      110.      120.      137.      189.      193.      293.      393.      433.      442.      443.
  PER Q=        .6       3.9      47.3        .9      20.3      23.1       3.8        .0        .0
   AREA=       18.3      66.3     385.7      15.0     360.0     390.0      92.0       3.6        .1
    VEL=         .7       1.2       2.5       1.2       1.2       1.2        .9        .3        .1

CCHV=     .300 CEHV=     .500
*SECNO 24.500

        VALLEY SECTION J

    24.50     12.42    694.12      0.00      0.00    694.17       .05       .17       .00    690.00
    2050.      96.      948.     1006.       89.      395.      905.      994.      215.    690.00
     3.49      1.07      2.40      1.11      .070      .050      .070      .071    681.70    110.07
  .000474      330.      330.      330.         2         0         0      0.00    332.89    442.95

FLOW DISTRIBUTION FOR SECNO=      24.50          CWSEL=     694.12
```

```
STA=      110.      120.      137.      189.      193.      293.      393.      433.      442.      443.
  PER Q=    .7       4.0      46.2       .9      20.6      23.4       4.1       .1        .0
   AREA=  20.0      69.2     394.7     15.7     377.3     407.3      98.9      5.2        .2
    VEL=    .7       1.2       2.4      1.1       1.1       1.2        .8       .3        .2

*SECNO 24.540
    24.54     9.22   694.22      0.00      0.00   694.28       .05       .10       .00   685.20
    2050.     373.    1304.     373.      305.     611.      335.      1002.      217.   685.20
     3.53     1.22     2.14     1.11      .070     .050      .070       .071   685.00   925.07
  .000275     290.     282.     290.         2        0         0       0.00   334.93  1260.00

FLOW DISTRIBUTION FOR SECNO=     24.54          CWSEL=    694.22

STA=      925.      960.      980.     1000.     1032.     1099.     1130.     1260.
  PER Q=    .0       .1       .1      18.0      63.6      17.7       .5
   AREA=   6.1       6.5      8.5     284.3     610.6     279.7      55.1
    VEL=    .1       .2       .2       1.3       2.1       1.3        .2

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      3.00      3.02      0.00     56.40     14.00    300.00     0.00    685.20    685.20

*SECNO 24.550
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
  696.40    694.31      .03       987.     1063.      300.      301.      692.30    693.80


              SECTION K SHAFFER AVENUE SOUTH U/S

    24.55     9.77   694.77      0.00      0.00   694.81       .04       .53       0.00   685.20
    2050.     380.    1277.     393.      376.     647.      422.      1006.      218.   685.20
     3.55     1.01     1.97      .93      .070     .050      .070       .071   685.00   873.44
  .000217     118.     118.     118.         2        0         4       0.00   386.56  1260.00

FLOW DISTRIBUTION FOR SECNO=     24.55          CWSEL=    694.77

STA=      873.      900.      920.      940.      960.      980.     1000.     1032.     1099.     1130.     1260.
  PER Q=    .0       .1       .1       .2        .2        .3      17.6      62.3      17.3       1.9
   AREA=   3.5       7.3     12.3     15.3      17.3      19.3     301.3     647.2     296.5     125.5
    VEL=    .1       .2       .2       .3        .3        .3       1.2       2.0       1.2        .3

*SECNO 24.590
    24.59    13.13   694.83      0.00      0.00   694.86       .04       .05       .00   690.00
    2050.     103.     870.    1077.      109.     431.     1083.      1012.      220.   690.00
     3.59      .94     2.02      .99      .090     .065      .090       .071   681.70  1954.32
  .000502     170.     170.     170.         2        0         0       0.00   333.68  2288.00

FLOW DISTRIBUTION FOR SECNO=     24.59          CWSEL=    694.83

STA=     1954.     1966.     1983.     2035.     2039.     2139.     2239.     2279.     2288.
```

```
  PER Q=        .8       4.2      42.5        .9      22.0      24.5       4.9        .2
   AREA=      27.6      81.2     431.4      18.5     447.9     477.9     127.2      11.5
    VEL=        .6       1.0       2.0       1.0       1.0       1.0        .8        .4

CCHV=     .100 CEHV=     .300
*SECNO 24.600
   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

    24.60     11.57    694.87      0.00      0.00    694.89       .03       .03       .00    690.80
    2050.     1333.     688.       29.      1697.     361.       57.      1016.     221.     690.80
     3.61       .79      1.90      .51       .070      .045      .070      .071    683.30   1030.54
  .000224     90.       90.       90.         0         0         0      0.00    513.38   1543.92

FLOW DISTRIBUTION FOR SECNO=      24.60          CWSEL=     694.87

STA=     1031.     1040.     1141.     1336.     1421.     1472.     1516.     1544.
  PER Q=        .2      12.7      31.9      12.5       7.7      33.6       1.4
   AREA=      13.1     354.7     801.7     328.2     199.5     361.2      56.7
    VEL=        .4        .7        .8        .8        .8       1.9        .5

*SECNO 24.700

        VALLEY SECTION L

    24.70     10.49    695.89      0.00      0.00    695.99       .10      1.08       .02    692.00
    2050.       9.     1028.     1013.       11.      304.      837.     1108.     243.     692.00
     3.96       .79      3.38     1.21      .070      .045      .070      .070    685.40   1475.29
  .000742    2040.     3950.     2200.         2         0         0      0.00    324.90   1800.19

FLOW DISTRIBUTION FOR SECNO=      24.70          CWSEL=     695.89

STA=     1475.     1481.     1520.     1618.     1707.     1790.     1800.
  PER Q=        .4      50.2      21.2      13.9      13.7       .6
   AREA=      11.1     303.8     332.4     248.5     240.1      15.8
    VEL=        .8       3.4       1.3       1.1       1.2        .8

*SECNO 24.800
    24.80     10.58    698.08      0.00      0.00    698.14       .06      2.14       .00    695.50
    2050.     1013.     668.      369.       915.      226.      327.     1189.     267.     692.40
     4.43      1.11      2.96     1.13      .070      .045      .070      .068    687.50   1886.26
  .000713    2320.     3690.     2480.         3         0         0      0.00    510.87   2397.13

FLOW DISTRIBUTION FOR SECNO=      24.80          CWSEL=     698.08

STA=     1886.     1905.     1913.     2015.     2213.     2229.     2244.     2278.     2287.     2362.     2389.     2397.
  PER Q=        .1        .7      20.4      22.4       2.6       3.1      32.6       2.5      11.4       3.9        .3
   AREA=       5.4      16.6     334.5     461.2      46.9      50.7     225.5      36.7     208.4      72.3       9.3
    VEL=        .2        .9       1.3       1.0       1.2       1.3       3.0       1.4       1.1       1.1        .6

*SECNO 24.880
    24.88     11.04    698.54      0.00      0.00    698.58       .04       .44       .00    695.50
    2050.     1064.     603.      383.      1085.     241.      382.     1216.     276.     692.40
     4.59       .98      2.50     1.00      .070      .045      .070      .068    687.50   1871.26
```

```
 .000464      760.      918.      600.        2        0        0     0.00   527.52  2398.78

FLOW DISTRIBUTION FOR SECNO=      24.88          CWSEL=     698.54

STA=     1871.     1905.     1913.     2015.     2213.     2229.     2244.     2278.     2287.     2362.     2389.     2399.
  PER Q=      .3       .8     20.5     24.5       2.7       3.1      29.4       2.4      11.9       4.1        .4
   AREA=    17.6      20.3    381.8    553.0      54.3      57.6     241.3      40.9     243.2      84.9      13.4
    VEL=      .3       .8      1.1       .9       1.0       1.1       2.5       1.2       1.0       1.0        .6

CCHV=     .300 CEHV=     .500
*SECNO 24.890

3470 ENCROACHMENT STATIONS=     2132.0     2402.0  TYPE=      1  TARGET=      270.000
    24.89     11.35    698.85      0.00      0.00    698.95       .10       .33       .03    695.50
    2050.      499.      875.      676.      341.      252.      419.     1229.      279.    692.40
     4.63      1.46      3.48      1.61      .090      .065      .090      .068    687.50   2132.00
  .001775      411.      411.      411.         2         0         0      0.00    267.86   2399.86

FLOW DISTRIBUTION FOR SECNO=      24.89          CWSEL=     698.85

STA=     2132.     2213.     2229.     2244.     2278.     2287.     2362.     2389.     2400.
  PER Q=     14.1       4.8       5.4      42.7       4.1      21.0       7.2        .7
   AREA=    219.6      59.1      62.2     251.6      43.6     265.9      93.0      16.5
    VEL=      1.3       1.6       1.8       3.5       1.9       1.6       1.6        .9

*SECNO 24.899
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      FNDST


3470 ENCROACHMENT STATIONS=     2235.0     2299.0  TYPE=      1  TARGET=       64.000
    24.90     12.13    699.63      0.00      0.00    700.11       .47       .97       .19    695.50
    2050.       95.     1667.      288.       42.      278.      100.     1235.      281.    692.40
     4.65      2.30      5.99      2.89      .090      .065      .090      .068    687.50   2235.00
  .004596      361.      361.      361.         2         0         0      0.00     64.00   2299.00

FLOW DISTRIBUTION FOR SECNO=      24.90          CWSEL=     699.63

STA=     2235.     2244.     2278.     2287.     2299.
  PER Q=      4.6      81.3       8.4       5.6
   AREA=     41.5     278.4      50.7      49.0
    VEL=      2.3       6.0       3.4       2.3

*SECNO 24.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      702.00 ELREA=      702.00

    24.90     10.74    699.84      0.00      0.00    700.52       .68       .31       .10    698.00
    2050.        0.     2050.        0.        0.      309.        0.     1235.      281.    698.00
     4.65      0.00      6.64      0.00      .090      .065      .090      .068    689.10   1705.00
  .008821       50.       50.       50.         2         0         0      0.00     51.00   1756.00

FLOW DISTRIBUTION FOR SECNO=      24.90          CWSEL=     699.84
```

typo shows max 80 to 100 ft BJ width

```
STA=     1705.     1756.
  PER Q=     100.0
   AREA=     308.7
    VEL=       6.6

SPECIAL BRIDGE

SB   XK      XKOK      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25     1.53      3.00      0.00      39.00     0.00      331.50    0.00      691.00    691.00
*SECNO 25.000
6070,LOW FLOW BY NORMAL BRIDGE
EGPRS=   700.748  EGLWC=   702.106  ELLC=   699.500  PCWSE=   699.839  ELTRD=   702.000
3370 NORMAL BRIDGE,NRD= 19 MIN ELTRD=  702.00 MAX ELLC=  699.50

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      702.00 ELREA=      702.00

                SECTION, M 44TH STREET U/S

    25.00      9.55    700.05      0.00      0.00    700.63      .58       .08       .03    691.20
    2050.        0.     2050.        0.        0.     335.        0.     1235.      281.    691.20
     4.66      0.00      6.13      0.00      .090      .015      .090      .068    690.50   1480.50
  .000711       45.       45.       45.         2         0         0   -385.69     39.00   1519.50

FLOW DISTRIBUTION FOR SECNO=      25.00          CWSEL=     700.05
STA=     1481.     1520.
  PER Q=     100.0
   AREA=     334.5
    VEL=       6.1
*SECNO 25.100
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      702.00 ELREA=      702.00
    25.10     10.92    700.02      0.00      0.00    700.66      .65       .00       .03    698.00
    2050.        0.     2050.        0.        0.     318.        0.     1235.      281.    698.00
     4.66      0.00      6.45      0.00      .090      .065      .090      .068    689.10   1705.00
  .008001        1.        1.        1.         2         0         0      0.00     51.00   1756.00

FLOW DISTRIBUTION FOR SECNO=      25.10          CWSEL=     700.02
STA=     1705.     1756.
  PER Q=     100.0
   AREA=     317.9
    VEL=       6.4
*SECNO 25.110
3470 ENCROACHMENT STATIONS=      594.0      859.0  TYPE=      1  TARGET=      265.000
    25.11     11.91    701.01      0.00      0.00    701.18      .17       .37       .14    698.00
```

No piers at 44th St

no big error as pressure = 700.75

looks low — concrete or mud bottom?

```
  2050.      60.     1337.     652.      67.     343.     343.    1237.     281.    695.80
   4.67      .90      3.90     1.90     .070     .060     .070     .068   689.10    636.86
 .001828    111.      111.     111.        2        0        0     0.00   222.13    859.00

FLOW DISTRIBUTION FOR SECNO=     25.11          CWSEL=    701.01

STA=     637.     650.     700.     705.     748.     756.     850.     859.
  PER Q=      .4      2.1       .4     65.2      3.6     26.1      2.1
   AREA=    11.2     47.9      8.0    342.9     32.9    282.7     27.5
    VEL=      .8       .9      1.1      3.9      2.3      1.9      1.6

*SECNO 25.120
   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=     483.0     970.0  TYPE=     1  TARGET=     487.000
   25.12    12.18   701.28      0.00      0.00   701.34      .06       .12       .03    698.00
   2050.      57.     905.     1088.       86.     354.     803.     1239.      282.    695.80
    4.68      .66     2.55     1.36      .070     .060     .070     .068   689.10    634.80
 .000749    111.      111.     111.        2        0        0     0.00   335.20    970.00

FLOW DISTRIBUTION FOR SECNO=     25.12          CWSEL=    701.28

STA=     635.     650.     700.     705.     748.     756.     850.     950.     970.
  PER Q=      .4      2.0       .4     44.1      2.6     19.3     25.9      5.3
   AREA=    15.0     61.3      9.4    354.4     35.0    307.9    377.6     82.2
    VEL=      .6       .7       .8      2.6      1.5      1.3      1.4      1.3

CCHV=    .100 CEHV=    .300
*SECNO 25.200
   25.20    11.83   701.53      0.00      0.00   701.58      .05       .24       .00    698.30
   2050.      32.     989.     1029.       42.     443.     919.     1249.      285.    698.10
    4.74      .75     2.23     1.12      .070     .060     .070     .068   689.70   1038.72
 .000672    560.      393.     280.        2        0        0     0.00   432.08   1470.79

FLOW DISTRIBUTION FOR SECNO=     25.20          CWSEL=    701.53

STA=    1039.    1065.    1130.    1247.    1258.    1265.    1272.    1285.    1365.    1460.    1471.
  PER Q=     1.6     48.3     19.9      2.7      3.4      3.4      3.1      8.8      8.6       .3
   AREA=    42.4    443.4    354.4     41.6     40.1     40.1     48.5    186.3    197.5     11.0
    VEL=      .8      2.2      1.2      1.3      1.7      1.7      1.3      1.0       .9       .5

*SECNO 25.300

3265 DIVIDED FLOW

        VALLEY SECTION N

   25.30     9.17   703.37      0.00      0.00   703.40      .03      1.82       .00    700.50
   2000.       0.     706.     1294.        1.     351.    1422.     1354.      314.    700.50
    5.39      .15     2.01      .91      .085     .060     .085     .068   694.20   1270.55
 .000534    2000.    3610.    2640.        2        0        0     0.00   491.11   1777.16
```

```
FLOW DISTRIBUTION FOR SECNO=      25.30            CWSEL=     703.37

STA=     1271.     1271.     1322.     1388.     1470.     1492.     1522.     1630.     1722.     1770.     1777.
  PER Q=      .0      35.3       6.2       9.6       1.2       1.0      24.0      16.2       6.3        .3
   AREA=      .6     351.3     166.0     235.0      39.1      31.8     455.3     337.2     147.1      10.3
    VEL=      .1       2.0        .7        .8        .6        .7       1.1       1.0        .9        .5

*SECNO 25.400
    25.40      9.10    704.10      0.00      0.00    704.13       .02       .73       .00    701.50
    2000.     1531.      463.        5.     1704.      264.       12.     1413.      330.    701.50
     5.74       .90      1.75       .46      .085      .060      .085      .068    695.00   1561.47
  .000516     1600.     1450.     1080.         2         0         0      0.00    566.59   2128.06

FLOW DISTRIBUTION FOR SECNO=      25.40            CWSEL=     704.10

STA=     1561.     1575.     1632.     1707.     1805.     1987.     2075.     2119.     2128.
  PER Q=       .9      13.1      16.3      13.9      22.0      10.3      23.2        .3
   AREA=     27.8     248.2     315.3     319.0     537.7     255.6     264.4      11.8
    VEL=       .6       1.1       1.0        .9        .8        .8       1.8        .5

*SECNO 25.500
        VALLEY SECTION 0
    25.50      8.39    707.29      0.00      0.00    707.39       .11      3.24       .03    706.20
    2000.      385.     1615.        0.      421.      562.        0.     1508.      366.    708.10
     6.10       .91      2.87      0.00      .085      .060      .085      .069    698.90   1516.75
  .002815     2280.     4050.     3360.         3         0         0      0.00    619.32   2136.07

FLOW DISTRIBUTION FOR SECNO=      25.50            CWSEL=     707.29

STA=     1517.     1673.     1964.     2146.
  PER Q=      3.8      15.5      80.7
   AREA=    105.4     316.0     562.2
    VEL=       .7       1.0       2.9

*SECNO 25.510
   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

    25.51      9.91    710.01      0.00      0.00    710.13       .12      2.73       .00    705.00
    2000.      285.     1538.      177.      198.      497.      151.     1538.      382.    705.70
     6.26      1.44      3.10      1.17      .085      .060      .085      .068    700.10    199.79
  .001169     1120.     1717.      905.         2         0         0      0.00    580.29    780.07

FLOW DISTRIBUTION FOR SECNO=      25.51            CWSEL=     710.01

STA=      200.      250.      320.      350.      370.      380.      780.
  PER Q=     14.3      76.9       6.9       1.8        .1        .0
   AREA=    198.0     496.7     102.3      38.2       6.6       4.2
    VEL=      1.4       3.1       1.4        .9        .5        .0

*SECNO 25.520
```

Left blank No sec for the sm Q

Interpolate Sect

```
  25.52     10.63    711.93      0.00      0.00    712.07       .15      1.93       .01    710.00
  2000.      228.     1757.       14.      245.      539.       24.     1566.      392.    710.00
   6.41       .93      3.26       .60      .085      .060      .085      .068    701.30     64.65
 .001249    1120.     1717.      905.         2         0         0      0.00    230.29    294.94

FLOW DISTRIBUTION FOR SECNO=     25.52          CWSEL=    711.93

STA=      65.      80.     200.     270.     295.
  PER Q=      .4     11.0     87.9       .7
   AREA=    14.7    230.2    538.8     23.9
    VEL=      .6      1.0      3.3       .6

*SECNO 25.530
  25.53     11.12    713.62      0.00      0.00    713.74       .12      1.66       .00    707.30
  2000.      126.     1728.      146.      122.      586.      160.     1595.      398.    708.70
   6.58      1.04      2.95       .91      .085      .060      .085      .068    702.50     70.20
 .000847    1120.     1717.      905.         2         0         0      0.00    194.92    265.12

FLOW DISTRIBUTION FOR SECNO=     25.53          CWSEL=    713.62

STA=      70.     110.     120.     190.     200.     265.
  PER Q=     2.7      3.6     86.4      2.8      4.4
   AREA=    72.0     49.7    586.3     42.7    117.8
    VEL=      .8      1.4      2.9      1.3       .8

*SECNO 25.700
        VALLEY SECTION P
  25.70     10.73    714.43      0.00      0.00    714.46       .03       .71       .01    710.20
  2000.      352.     1151.      497.      525.      688.      661.     1635.      407.    710.20
   6.89       .67      1.67       .75      .085      .060      .085      .068    703.70   1404.69
 .000325    1120.     1600.      905.         2         0         0      0.00    462.97   1867.65

FLOW DISTRIBUTION FOR SECNO=     25.70          CWSEL=    714.43

STA=    1405.    1467.    1538.    1587.    1680.    1832.    1868.
  PER Q=     2.4      8.3      6.9     57.6     23.4      1.5
   AREA=   106.6    235.9    182.4    687.9    596.1     64.6
    VEL=      .5       .7       .8      1.7       .8       .5

*SECNO 25.800
  25.80      8.73    714.93      0.00      0.00    714.95       .02       .49       .00    711.50
  2000.       10.     729.     1261.       23.      515.     1768.     1705.      423.    710.50
   7.35       .42      1.41       .71      .085      .060      .085      .068    706.20   1330.29
 .000290    1400.     2000.     1200.         2         0         0      0.00    579.46   1909.76

FLOW DISTRIBUTION FOR SECNO=     25.80          CWSEL=    714.93

STA=    1330.    1344.    1426.    1452.    1557.    1658.    1751.    1895.    1910.
  PER Q=      .5     36.4      4.4     15.9     10.9      9.3     21.9       .8
   AREA=    23.5    515.3    111.2    422.8    330.9    290.8    579.8     32.7
    VEL=      .4      1.4       .8       .8       .7       .6       .8       .5

*SECNO 25.890
   SECNO    DEPTH    CWSEL    CRIWS    WSELK     EG       HV       HL       OLOSS   BANK ELEV
```

invalid!

2 ft higher than SCS for same Q

```
   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=     1188.0     1895.0  TYPE=      1  TARGET=      707.000
    25.89      8.88    715.08      0.00       0.00    715.10       .02        .15        .00     711.50
    2000.       11.      725.     1264.       26.      528.     1809.      1733.       430.     710.50
     7.51       .41      1.37       .70       .085      .060      .085       .068     706.20    1329.67
  .000265     533.      730.      453.         2         0         0       0.00     565.33    1895.00

FLOW DISTRIBUTION FOR SECNO=      25.89          CWSEL=     715.08

STA=     1330.     1344.     1426.     1452.     1557.     1658.     1751.     1895.
  PER Q=        .5      36.3       4.4      16.2      11.2       9.6      21.8
   AREA=      25.7     528.1     115.3     439.3     346.8     305.4     602.4
    VEL=        .4       1.4        .8        .7        .6        .6        .7

*SECNO 25.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      715.50 ELREA=      716.10

    25.90      9.68    715.18      0.00       0.00    715.63       .45        .40        .13     707.30
    2000.        0.     2000.        0.         0.      371.        0.      1755.       435.     709.80
     7.55      0.00      5.39      0.00       .075      .050      .075       .068     705.50    1380.00
  .001903     720.      720.      720.         2         0         0       0.00      42.00    1422.00

FLOW DISTRIBUTION FOR SECNO=      25.90          CWSEL=     715.18

STA=     1380.     1422.
  PER Q=     100.0
   AREA=     371.2
    VEL=       5.4

SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       2.04       3.00       0.00      32.80      10.00     228.00      0.00     705.00     705.00

*SECNO 26.000

3265 DIVIDED FLOW

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3        QWEIR      QPR        BAREA    TRAPEZOID      ELLC       ELTRD
                                                                    AREA
   717.62     716.06      .54        18.      1969.      228.       228.      715.00     717.20


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      717.20 ELREA=      718.00

                SECTION Q 52ND STREET U/S
```

```
    26.00     12.29    717.29      0.00      0.00    717.54       .26      1.91      0.00    718.00
    2000.        0.     2000.        0.        1.      491.        0.     1756.      435.     718.10
     7.55       .05      4.07      0.00      .075      .031      .075      .068    705.00   1853.61
  .000481       44.       44.       44.         2         0         3      0.00     61.30   2040.00

FLOW DISTRIBUTION FOR SECNO=      26.00            CWSEL=     717.29

STA=     1854.     1875.     2040.
  PER Q=        .0     100.0
   AREA=        .9     491.4
    VEL=        .1       4.1

*SECNO 26.110

3470 ENCROACHMENT STATIONS=     1300.0     1700.0  TYPE=      1  TARGET=      400.000
    26.11      9.81    717.61      0.00      0.00    717.62       .02       .06       .02    714.00
    2000.      485.      650.      865.      718.      446.     1027.     1761.      436.    713.50
     7.60       .68      1.46       .84      .085      .060      .085      .068    707.80   1300.00
  .000226      180.      180.      180.         2         0         0      0.00    400.00   1700.00

FLOW DISTRIBUTION FOR SECNO=      26.11            CWSEL=     717.61

STA=     1300.     1318.     1420.     1470.     1525.     1607.     1700.
  PER Q=        2.8      15.6       5.8      32.5      20.5      22.8
   AREA=       88.2     444.4     185.3     445.9     480.2     547.2
    VEL=         .6        .7        .6       1.5        .9        .8

CCHV=     .100 CEHV=     .300
*SECNO 26.300

3265 DIVIDED FLOW

    26.30      5.48    718.08      0.00      0.00    718.18       .09       .53       .02    715.00
    2000.     1167.      436.      397.      654.      111.      185.     1794.      445.    715.00
     7.71      1.78      3.91      2.15      .085      .060      .085      .068    712.60   1395.16
  .003670      916.      916.      916.         2         0         0      0.00    423.90   1819.83

FLOW DISTRIBUTION FOR SECNO=      26.30            CWSEL=     718.08

STA=     1395.     1445.     1550.     1662.     1676.     1727.     1753.     1806.     1820.
  PER Q=        4.6      28.8       9.1       1.0      14.9      21.8      18.3       1.5
   AREA=       69.4     281.9     145.1      16.0     142.0     111.4     163.5      21.3
    VEL=        1.3       2.0       1.3       1.2       2.1       3.9       2.2       1.4

*SECNO 26.400
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        QLOSS    RANK 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 R

    26.40     10.03    721.73      0.00      0.00    721.75       .03      3.57       .01    716.20
    2000.      805.      767.      428.     1271.      409.      593.     1935.      495.    717.60
```

```
    8.67       .63      1.87       .72      .095      .065      .095      .068    711.70   1480.05
 .000409     4000.     4290.     3000.         4         0         0      0.00    719.41   2199.46

FLOW DISTRIBUTION FOR SECNO=      26.40          CWSEL=     721.73

STA=     1480.     1536.     1657.     1760.     1936.     1965.     1978.     2023.     2185.     2199.
  PER Q=      .3       6.0      10.3      17.2       3.6       2.8      38.3      21.0        .4
   AREA=    31.7     239.8     312.3     524.8      99.5      62.8     409.3     572.1      21.2
    VEL=      .2        .5        .7        .7        .7        .9       1.9        .7        .4

*SECNO 26.500
    26.50      9.23    722.53      0.00      0.00    722.56       .03       .80       .00    720.30
    2000.      293.      433.     1273.      536.      181.     1259.     1997.      519.    719.00
     8.96       .55      2.39      1.01      .095      .065      .095      .069    713.30   1710.35
 .001028     1400.     1650.     1000.         3         0         0      0.00    965.59   2675.94

FLOW DISTRIBUTION FOR SECNO=      26.50          CWSEL=     722.53

STA=     1710.     1892.     1992.     2160.     2205.     2232.     2298.     2342.     2460.     2564.     2665.     2676.
  PER Q=      3.5       4.0       5.6       1.6      21.7      10.5       7.0      18.8      11.5      15.2        .7
   AREA=    153.2     133.1     197.1      53.0     181.4     200.1     133.4     357.7     252.9     296.1      19.3
    VEL=      .5        .6        .6        .6       2.4       1.1       1.1       1.1        .9       1.0        .7

*SECNO 26.700

        VALLEY SECTION S

    26.70      5.86    726.26      0.00      0.00    726.30       .04      3.74       .00    723.60
    2000.      920.      400.      681.      625.      165.      600.     2111.      570.    723.60
     9.50      1.47      2.42      1.13      .095      .065      .095      .069    720.40   1986.09
 .001557     3600.     3300.     2480.         4         0         0      0.00    477.42   2463.51

FLOW DISTRIBUTION FOR SECNO=      26.70          CWSEL=     726.26

STA=     1986.     2006.     2012.     2019.     2050.     2061.     2178.     2215.     2404.     2462.     2464.
  PER Q=       .4        .8       2.6      16.5       3.8      22.1      20.0      29.9       4.2        .0
   AREA=    14.6      14.2      31.6     170.9      46.9     346.7     165.3     503.4      96.5        .5
    VEL=      .5       1.1       1.6       1.9       1.6       1.3       2.4       1.2        .9        .3

*SECNO 26.890
3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=     1400.0     1825.0  TYPE=      1  TARGET=      425.000
    26.89      6.85    729.45      0.00      0.00    729.55       .10      3.23       .02    726.30
    1260.      273.      841.      145.      325.      276.      205.     2156.      587.    728.20
     9.73       .84      3.05       .71      .120      .065      .120      .069    722.60   1400.00
 .001974     1640.     2150.     1800.         2         0         0      0.00    372.43   1825.00

FLOW DISTRIBUTION FOR SECNO=      26.89          CWSEL=     729.45

STA=     1400.     1455.     1525.     1575.     1625.     1685.     1694.     1750.     1800.     1825.
  PER Q=      5.4       7.5       8.8      66.8       3.8       .2        .2       6.1       1.2
   AREA=    90.6     119.5     115.4     276.2      75.5       5.6       3.7      92.9      27.4
    VEL=      .8        .8       1.0       3.0        .6        .4        .5        .8        .6
```

```
CCHV=     .300 CEHV=     .500
*SECNO 26.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      735.00 ELREA=      735.00

    26.90      8.30    730.90      0.00      0.00    731.11       .20      1.50       .05    726.30
    1260.        0.     1260.        0.        0.      348.        0.     2166.      590.    728.20
     9.79      0.00      3.62      0.00      .120      .065      .120      .069    722.60   1575.00
  .002040      750.      750.      750.         2         0         0      0.00     50.00   1625.00

FLOW DISTRIBUTION FOR SECNO=     26.90          CWSEL=    730.90

STA=     1575.     1625.
  PER Q=     100.0
   AREA=     348.4
    VEL=       3.6

*SECNO 26.910
   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      FNDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      735.00 ELREA=      735.00

                SECTION T 60TH STREET D/S

    26.91      9.46    730.96      0.00      0.00    731.35       .39       .15       .09    742.50
    1260.        0.     1260.        0.        0.      251.        0.     2167.      590.    742.50
     9.79      0.00      5.03      0.00      .120      .065      .120      .069    721.50    386.50
  .004956       50.       50.       50.         2         0         0      0.00     26.50    413.00

FLOW DISTRIBUTION FOR SECNO=     26.91          CWSEL=    730.96

STA=      387.      413.
  PER Q=     100.0
   AREA=     250.7
    VEL=       5.0

SPECIAL BRIDGE
SB   XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         FLCHU      FLCHD
      1.25      1.57       3.00       0.00      26.50       2.00     228.00       0.00     721.50     721.50

*SECNO 27.000
PRESSURE FLOW

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA      TRAPEZOID      ELLC       ELTRD
                                                                      AREA
   731.70     731.42       .08         0.     1260.       228.       228.       730.80     742.50
```

```
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      742.50 ELREA=      742.50

    27.00      9.84    731.34      0.00      0.00    731.70       .36       .35      0.00    742.50
    1260.        0.     1260.        0.        0.     261.        0.     2167.      590.    742.50
     9.79      0.00      4.83      0.00      .120      .065      .120      .069    721.50    386.50
  .004443       35.       35.       35.         2         0         0      0.00     26.50    413.00

FLOW DISTRIBUTION FOR SECNO=     27.00          CWSEL=     731.34

STA=      387.      413.
  PER Q=     100.0
   AREA=     260.7
    VEL=       4.8
```

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: KENWOOD, CITY OF

3) WATERCOURSE: PLASTER CREEK

4) DOCUMENT TYPE: REPORT

00BREAK00

HYDRAULIC ANALYSIS REPORT

PLASTER CREEK AT CITY OF KENTWOOD
KENT COUNTY, MICHIGAN

Prepared by

COMMONWEALTH ASSOCIATES INC.
209 EAST WASHINGTON AVENUE
JACKSON, MICHIGAN 49201

September, 1979

Introduction

Hydraulic calculations were performed for the Plaster Creek within the entire corporate boundaries of the City of Kentwood. Field cross section data, surveyed in 1970 and 1971, were obtained from the Soil Conservation Service office in East Lansing. Drawings for three proposed bridges on Shaffer Avenue were obtained from Moore & Bruggink, Consulting Engineers, Grand Rapids. This study was matched with the City of Grand Rapids FIS at the downstream limit. The flood flows for 10, 50, 100, and 500-year recurrence intervals were approved by the Michigan Department of Natural Resources. This study was performed by Commonwealth Associates Inc., Jackson, Michigan, and the Project Manager was E. A. Meyer, P.E.

Method of Analysis

The HEC-2 computer program was utilized for the entire hydraulic analysis.

Variables and Coefficients

Manning's roughness coefficients were estimated by SCS for the Flood Hazard Analysis Study of the Plaster Creek[2] and the same values were used in this study.

Manning's roughness coefficient

For channel	0.040-0.075
For overbanks	0.070-0.120

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

The bridge loss and weir coefficients were computed and included in the Bridge Notes Section.

March 1979 Flood washed out Shaffer Rd crossing all three bridges experienced weir flow

High Water Marks

There were no recorded high water marks* within the study limit.

Starting Conditions

Starting elevations were based on the FIS of the City of Grand Rapids.[2]

Special Problems

There were no special problems in the study.

References

1. U.S. Department of Agriculture, Soil Conservation Service, Flood Hazard Analysis - Plaster Creek, Kent County, Michigan, 1971.

2. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, City of Grand Rapids, Michigan, 1977.

Gilbert/Commonwealth
208 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC BY/DATE (SIGNATURE) DVD	SUBJECT	SHEET 1 OF 1
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Plaster Creek – "n" values

The following n values were based on WSPZ Data input sheets obtained from SCS for Plaster Creek:

From Section	To Section	Left Overbank	Right Overbank	Channel
22.7	22.83	0.080	0.080	0.055
22.9	23.09	0.090	0.100	0.055
23.1	23.12	0.095	0.095	0.055
23.17	23.5	0.110	0.110	0.075
23.7	24.1	0.110	0.110	0.075
24.11		0.090	0.090	0.065
24.20		0.070	0.070	0.050
24.3		0.085	0.085	0.040
24.4		0.095	0.095	0.065
24.43	24.45	0.090	0.090	0.065
24.46	24.55	0.070	0.070	0.050
24.59		0.090	0.090	0.065
24.60	24.88	0.070	0.070	0.045
24.89	25.1	0.090	0.090	0.065
25.11		0.070	0.070	0.060
25.2	25.89	0.085	0.085	0.060
25.9	26.0	0.075	0.075	0.050
26.11	26.3	0.085	0.085	0.060
26.4	26.7	0.095	0.095	0.065
26.89	27.0	0.120	0.120	0.065

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE) DVD	SUBJECT	SHEET 1 OF 5
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Plaster Creek — Cross Sections (Survey Data obtained from SCS)

SECNo	Description
22.7	Valley Section 44094 ft from mouth and 1620 ft D/S of Corporate limits
22.8	Valley Section — interpolated
22.81, 22.82	Sewer line — Repeated from 22.8
22.83	" —1' U/S— "
22.9	Valley Section
22.98	Valley Section — interpolated
23	Breton Avenue Bridge — D/S } Three Box Culverts Middle Box 18'x8.5' Side Boxes
23.09	Breton Avenue Bridge — U/S }
23.1	Valley Section
23.12	Valley Section — Repeated from 23.1
23.17	Valley Section at Sewer line
23.2	Valley Section
23.5	Valley Section

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 48201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 2 OF 5
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

SECNO	Description
23.7	Valley Section
23.8	Valley Section
23.9	Valley Section 50' D/S of Shaffer Ave Bridge (N)
24.0	D/S face of Bridge — Same as 24.1
24.1	Shaffer Avenue Bridge (North) — Two Boxes 12'x7' & Four 12'10"x8'4" CMP Steel and 104' long each.
24.11	Interpolated Valley Section 150' U/S of Bridge
24.2	Valley Section
24.3	Valley Section SCS
24.4	Valley Section just upstream of Little Plaster Creek Confluence
24.43	Interpolated Valley Section
24.44	Shaffer Avenue Bridge (N) D/S — Four 10'11"x7'1" CMP Arches 103' long
24.45	Shaffer Ave Bridge Middle U/S
24.46	Interpolated Valley Section 150' U/S of Bridge
24.49	Interpolated Valley Section — Same as 24.5
24.5	Valley Section

Gilbert/Commonwealth
208 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 3 OF 5
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

SECNO	Description
24.54	Shaffer Avenue Bridge South D/S } Five 10'11"x7'1" CMP Arches
24.55	Shaffer Avenue Bridge South U/S } 118' long.
24.59	Valley Section 170' U/S of Bridge – interpolated
24.6	Valley Section
24.7	Valley Section
24.8	Valley Section
24.88	Repeated Valley Section – Same as 24.8
24.89	" " " " "
24.899	" " " " "
24.9	44th Street Bridge D/S: Box 39'x8.5'
25.0	" " U/S
25.1	Valley Section 1' U/S of Bridge – Same as 24.9
25.11	interpolated Valley section
25.11	Repeated valley Section – same as 25.11
25.2	Valley Section
25.3	Valley Section

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 4 OF 5
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

SECNO	Description
25.4	Valley Section
25.5	Valley Section
25.51, 25.52, 25.53	Interpolated Valley Sections section 25.6 of SCS was not used
25.7	Valley Section
25.8	Valley Section
25.89	Repeated Valley Section – Same as 25.8
25.9	Valley Section – 52nd st Bridge D/S
26.0	52nd st Bridge U/S – Two 14'5" x 10'0" CMP Arches.
26.11	Interpolated valley section 180' U/S
26.3	Valley Section
26.4	Valley Section
26.5	Valley Section
26.7	Valley Section
26.89	Valley Section – Repeated – Same as 24.9

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE JOB NO.
CALC BY/DATE (SIGNATURE)	SUBJECT	SHEET 5 OF 5
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

SECNO	Description
26.9	Valley Section 50' D/S of RR Bridge
26.91	RR Bridge D/S } Two 12' x 9' Boxes.
27	RR Bridge U/S } Two 12' x 9' Boxes.

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 48201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE DVD (SIGNATURE)	SUBJECT	SHEET 1 OF 8
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Plaster Creek — Bridge Notes

Breton Rd Bridge (Secno 23)

Box Culverts with 2 Piers 2.3' each

Left and Right boxes 14'×8' each

Middle ~~span~~ Box 18'×8.5'

XKOR

Area = 377 ft²

P = 2(18+8.5) + 2(14+8)2

= 141 ft

R = 2.67 ft

$$\frac{29.1\, n^2 L}{R^{4/3}} = \frac{29.1 \times .015^2 \times 32}{2.67^{4/3}} = 0.056$$

XKOR = 1.0 + 0.5 + 0.056 = 1.556

C for weir flow

How about effect of Rd Embankment?

H for 100 yr flood ≈ 1.2 ft

Paved Surface

C = 3.03

but when is flow over bank show only 55 cfs

Qweir = 496 cfs

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 2 OF 8
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Schaffer Ave North Bridge (SECNO 24.1)
(Ref: Moore & Bruggink drawing for Schaffer Ave improvement — March 1974)

Two Boxes 7'×12' each and
Four CMP structural steel Pipe Arches
12'10" × 8'4" each (10 gauge Plates)
Each 104 ft long
Note: A 36" ϕ sewer pipe crosses at the middle of the bridge.

XKOR

Total area = $4 \times 85 + 2 \times 84 = 508\ ft^2$

Wetted Perimeter = $4 \times \frac{85}{2.44} + 2 \times 38 = 215.3\ ft$

$R = 2.36\ ft$

n for Boxes 0.015
n for CMP Structural steel arches 0.031
n equivalent : $\frac{4 \times .031 + 2 \times .015}{6}$
$= 0.0257$

$$\frac{29.1\, n^2 L}{R^{4/3}} = \frac{29.1 \times .0257^2 \times 104}{2.36^{4/3}} = 0.636$$

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 3 OF 8
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

XKOR = 1.0 + 0.7 (mitered) + 0.636

= 2.336

There is additional obstruction to flow within the bridge caused by a 36" ø sewer. The obstruction is only local. There will be expansion and contraction losses caused by the sewer pipe. It is assumed that the additional losses can be handled by increasing the XKOR value by 10%.

∴ XKOR = 2.570

C value for weir flow:

H for 100-yr flood ≈ 1.5 ft
Paved surface

C = 3.04 Very high guard rail and fence caused water to flow over the road in 1979

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE / JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 4 OF 8
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

Shaffer Avenue Middle Bridge (Sec N024-45)
(Ref: Moore + Bruggink drawing March 1974)

4 CMP 10 gauge multiplate arches
10'11" x 7'1"

103 ft long each

XKOR : A (for each pipe) = 60 ft²
R = 2.07 ft

$$\frac{29.1 n^2 L}{R^{4/3}} = \frac{29.1 \times .031^2 \times 103}{2.07^{4/3}} = 1.092$$

(mitered)

XKOR = 1.0 + 0.7 + 1.092 = 2.792

C for Weir flow

H for 100 yr flood 2.4 ft
Paved Road C = 3.04

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 48201

CALCULATION SHEET

REV.

CLIENT/OWNER			FILING CODE
			JOB NO.
CALC. BY/DATE Dan	(SIGNATURE) 7-6-79	SUBJECT Plaster Creek Hydraulics	SHEET 5 OF 8
CHECKED BY/DATE	(SIGNATURE)		BOOK NO.

"XKOR" Calculations

$$XKOR = \left\{1.0 + Ke + \frac{29.1\, n^2 L}{R^{4/3}}\right\} \frac{v^2}{2g}$$

Bridge on Shaffer Road (South Bridge)

Bridge Section ~~24.55~~ 24.5

5 CMP Arch Pipes 10'11" X 7'1", 118' long
(Multiplate 10 Gauge)

For each pipe, Area = 60 ft^2 ; R = 2.07' ; n = .0316

Ke = ~~0.5~~ 0.7 (mitered)

$$XKOR = 1 + \overset{0.7}{\cancel{0.5}} + 1.30 = \underline{\underline{\overset{3.0}{\cancel{2.80}}}}$$

Length : 56'5" + 10'11" = 67'4" or 67.3 ft

Pier length : 4 X 3'6" : 14 ft

Total area : 5 x 60 : 300 ft^2

Equivalent Bridge width Calculations:
area 300 ft^2 5 CMP Arches Height 7.08'
width = $\frac{300}{7.08}$ = 8.47' Piers 14' 42.40'
∴ Equivalent width ~~22.47~~

FORM CAI/DCP 112 (9/78) C: Paved Surface h/L < 0.15 Hx0.9ft Use C = ~~2.9~~ 3.02

Gilbert/Commonwealth
208 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER			FILING CODE / JOB NO.
CALC. BY/DATE Dan	(SIGNATURE) 7-8-79	SUBJECT Plaster Creek - Hydraulics	SHEET 6 OF 8
CHECKED BY/DATE	(SIGNATURE)		BOOK NO.

"XKOR" value for Bridge Section 25.0
@ 44th Street

What are the details

Box Culvert

$K_e = .5$ assume headwalls parallel to embankment

Length, W = 39 ft
Low chord Elev = 699.5
Av. ground Elev = 691
8.5'

for pressure
$W = 39 + 39 + 8.5 + 8.5$
not $39 + 17$ $R = \frac{39 \times 8.5}{39 + 17} = 5.92'$

Rif $39 + 39 + 17 = 3.49$

$A = \frac{331.5}{95}$
$R = 3.49$

$$XKOR = 1 + K_e + \frac{29.1 n^2 L}{R^{4/3}}$$

$R^{4/3} = 0.189$

$L = 50'$
$n = .015$
$K_e = 0.5$

$= 1.5 + 0.03 = 1.53$
1.72

Width of bridge = 39'
width of Piers = 0

Area of Bridge = 331.5 ft^2

No weir flow for 100-year flood
use C = 3.0
High

yes but do the guard rails effect the 500 yr profile?

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER			FILING CODE
			JOB NO.
CALC. BY/DATE Dan	(SIGNATURE) 7-8-79	SUBJECT Plaster Creek-Hydraulics	SHEET 7 OF 8
CHECKED BY/DATE	(SIGNATURE)		BOOK NO.

"XKOR" ~~value~~ for Bridge Section 26.0
@ 52nd Street

Corrugated Steel Pipe Arches
2 Nos. 14'5" X 10'0"
Area of each culvert = 114 ft²
R = 2.90'

$$XKOR = 1 + K_e + \frac{29.1\, n^2 L}{R^{4/3}}$$

n = .031
L = 50 ft
K_e = ~~0.5~~ 0.7

$$= 1 + \cancel{0.5}\ 0.7 + 0.338$$

$$H = \cancel{1.838}\ 2.038 \frac{\left(\frac{2000}{114}\right)^2}{64.4} = 9.74'$$ weir flow will occur

C value: H = ~~0.55~~ 9.74' for 100-yr. $\frac{h}{L} < 0.15$ Paved C = 3.0

No

width of bridge opening 40'
width of Piers 10'

Area of bridge = 2 x 114 = 228 ft²

Equivalent width calculations:
area 228 ft² 2 culverts height 10'
width = $\frac{228}{2 \times 10}$ = 11.4' Pier 10'

Equivalent width = 21.4'

FORM CAI/DCP 112 (9/78)

Gilbert/Commonwealth
209 E. Washington Avenue, Jackson, MI 49201

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
		JOB NO.
CALC. BY/DATE (SIGNATURE)	SUBJECT	SHEET 8 OF 8
CHECKED BY/DATE (SIGNATURE)		BOOK NO.

60th Street RR Bridge

Two Boxes $\approx 12' \times 9'$

$L = 35$
$n = .015$
$R = 2.57$

$$\frac{29.1\, n^2 L}{R^{4/3}} = \frac{29.1 \times .015^2 \times 35}{2.57^{4/3}}$$

$$= 0.065$$

$$XKOR = 1.0 + 0.5 + 0.065 = 1.565$$

No weir flow for 100-yr flood use $C = 3.0$

FORM CAI/DCP 112 (9/78)

1) COUNTY: KENT

2) STUDY NAME: KENTWOOD, CITY OF

3) WATERCOURSE: WHISKEY CREEK

4) DOCUMENT TYPE: 10, 50, 100, 500 YR SUMMARY

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*****************************************************

C
T1 THE CITY OF KENTWOOD
T2 THE 10 YEAR FLOOD
T3 THE WHISKEY CREEK
J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.       2.        0.        0.  0.000000      0.00       0.0       0.   693.710    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   203.000    18.000    62.000    73.000     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   350.000   530.000   610.000   810.000   610.000     0.000     0.000     0.000     0.000
NC       .085      .085      .033      .100      .300     0.000     0.000     0.000     0.000     0.000

         CONFLUENCE WITH LITTLE PLASTER CREEK  (A)

X1      8.000    27.000   776.000   798.000     0.000     0.000     0.000     0.000     0.000     0.000
X3      0.000     0.000     0.000   712.000   695.000  1287.000     0.000     0.000     0.000     0.000
GR    707.900     0.000   708.800   184.000   706.200   406.000   696.500   486.000   695.000   602.000
GR    694.600   604.000   692.900   632.000   688.700   640.000   688.700   649.000   691.600   651.000
GR    693.800   712.000   693.300   756.000   691.100   776.000   688.200   782.000   687.800   786.000
GR    687.800   790.000   687.800   794.000   689.100   798.000   690.800   799.000   694.500   818.000
GR    692.800   865.000   694.900   959.000   708.400   997.000   711.800  1047.000   713.200  1143.000
GR    715.100  1249.000   719.600  1287.000     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

X1      9.000    19.000  1276.000  1324.000   400.000   300.000   325.000     0.000     0.000     0.000
GR    727.400  1000.000   725.600  1096.000   712.060  1142.000   707.000  1158.000   705.800  1178.000
GR    703.960  1234.000   698.800  1276.000   689.400  1304.000   688.000  1305.000   688.000  1307.000
GR    688.000  1309.000   688.500  1324.000   693.640  1324.000   696.400  1336.000   698.800  1384.000
GR    697.220  1430.000   710.700  1494.000   712.700  1718.000   714.310  1896.000     0.000     0.000

         INTERPOLATED VALLEY SECTION 50 FT D/S OF BRIDGE

X1      9.500    18.000   580.000   640.000   140.000    95.000   125.000     0.000     0.000     0.000
GR    723.400     0.000   721.200   100.000   710.000   300.000   705.600   350.000   699.800   450.000
```

GR	700.200	500.000	698.200	580.000	692.600	598.000	690.100	600.000	689.460	604.000
GR	689.200	609.000	689.500	611.000	690.000	614.000	690.400	618.000	691.300	622.000
GR	692.800	624.000	698.400	640.000	713.600	695.000	0.000	0.000	0.000	0.000
NC	.045	.045	.030	.300	.500	0.000	0.000	0.000	0.000	0.000

D/S FACE OF DRIVEWAY CULVERT 2 CMP (B)

X1	10.000	27.000	580.000	640.000	50.000	50.000	50.000	0.000	-.750	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	696.400	696.400	0.000
GR	723.400	0.000	720.800	73.000	718.000	147.000	713.370	271.000	709.600	333.000
GR	698.900	397.000	698.300	401.000	697.900	513.000	699.800	548.000	698.200	580.000
GR	692.600	598.000	691.300	598.700	690.600	600.700	690.250	603.600	690.600	606.700
GR	691.300	608.700	692.600	609.400	692.600	611.400	691.300	612.100	690.600	614.100
GR	690.250	617.100	690.600	620.100	691.300	622.100	692.600	622.800	693.100	623.000
GR	698.300	640.000	713.600	695.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.030	.030	.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	10.100	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	696.400	696.400	0.000
BT	26.000	73.000	720.800	0.000	147.000	718.000	0.000	271.000	713.370	0.000
BT	333.000	709.600	0.000	397.000	698.900	0.000	401.000	698.300	0.000	513.000
BT	697.900	0.000	548.000	699.800	0.000	580.000	699.800	0.000	598.000	699.800
BT	0.000	598.000	699.800	692.600	598.700	699.900	695.500	600.700	700.300	697.500
BT	603.600	700.900	698.300	606.700	701.500	697.500	608.700	701.910	695.300	609.400
BT	702.050	692.600	611.400	702.000	692.600	612.100	702.000	695.500	614.100	702.000
BT	697.500	617.100	703.200	698.300	620.100	702.150	697.500	622.100	702.500	695.300
BT	622.800	702.620	692.600	622.800	702.800	0.000	695.000	713.600	0.000	0.000

X1	10.200	0.000	0.000	0.000	15.000	15.000	15.000	0.000	.050	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	699.800	699.800	0.000

X1	10.300	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	699.800	699.800	0.000

INTERPOLATED CROSS-SECTION 50 FT U/S OF CULVERTS

X1	10.400	20.000	580.000	640.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	723.380	0.000	720.760	73.000	718.040	147.000	713.370	271.000	709.560	333.000
GR	698.880	397.000	698.260	401.000	696.890	513.000	699.820	548.000	698.230	580.000
GR	692.410	598.000	690.610	600.000	689.720	604.000	689.890	608.000	689.900	612.000
GR	689.910	616.000	690.700	620.000	693.140	620.000	699.000	640.000	713.630	695.000
NC	.050	.050	.032	.100	.300	0.000	0.000	0.000	0.000	0.000

X1	10.700	10.000	429.000	460.000	600.000	700.000	675.000	0.000	0.000	0.000
GR	711.700	100.000	710.200	200.000	700.810	400.000	693.500	429.000	691.500	437.000
GR	691.500	452.000	693.500	460.000	698.800	480.000	708.600	520.000	717.600	580.000

SURVEYED VALLEY SECTION D/S OF WEIR

X1	7.000	16.000	370.000	422.000	500.000	550.000	525.000	0.000	0.000	0.000
GR	701.350	100.000	702.250	152.000	701.840	214.000	701.090	318.000	697.870	370.000
GR	696.120	378.000	690.500	385.000	689.370	387.000	689.600	389.000	689.800	394.000

GR	690.530	399.000	699.200	422.000	700.980	440.000	700.350	528.000	722.370	530.000
GR	729.970	578.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.050	.050	.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	7.200	15.000	572.000	614.500	25.000	25.000	25.000	0.000	0.000	0.000
GR	710.400	0.000	700.700	225.000	699.800	275.000	700.400	350.000	701.800	414.000
GR	701.100	518.000	698.970	572.000	695.400	580.000	689.500	586.000	689.500	600.500
GR	696.010	606.500	699.290	614.500	700.900	640.000	700.300	728.000	722.400	736.000
SB	0.000	2.100	3.300	0.000	.500	0.000	.250	0.000	695.500	689.370

SURVEYED SECTION SHEET PILE WEIR (C)

X1	7.300	20.000	572.000	614.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	696.000	696.300	0.000	0.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	570.000	705.000	616.000	705.000	0.000	0.000	0.000
X4	4.000	696.300	592.500	695.500	592.500	695.500	593.000	696.300	593.000	0.000
BT	23.000	0.000	710.400	0.000	225.000	700.700	0.000	275.000	699.800	0.000
BT	350.000	700.400	0.000	572.000	700.400	0.000	572.000	704.000	0.000	572.000
BT	700.400	0.000	580.000	700.100	0.000	580.000	698.400	0.000	586.000	698.200
BT	0.000	586.000	696.300	0.000	592.500	696.300	0.000	592.500	696.300	696.000
BT	593.000	696.300	696.000	593.000	696.300	0.000	600.000	696.200	0.000	600.000
BT	698.000	0.000	606.000	697.900	0.000	606.000	699.800	0.000	614.000	699.700
BT	0.000	614.000	704.000	0.000	614.000	700.300	0.000	736.000	722.400	0.000
GR	710.400	0.000	700.700	225.000	699.800	275.000	700.400	350.000	701.800	414.000
GR	701.100	518.000	700.400	572.000	700.100	580.000	698.400	580.000	698.200	586.000
GR	696.300	586.000	696.200	600.000	698.000	600.000	697.900	606.000	699.800	606.000
GR	699.700	614.000	700.900	640.000	700.300	728.000	722.400	736.000	730.000	778.000

SURVEYED VALLEY SECTION U/S OF WEIR

X1	7.400	15.000	572.000	614.000	2.000	2.000	2.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	550.000	0.000	640.000	0.000	0.000	0.000	0.000
GR	710.400	0.000	700.700	225.000	699.800	275.000	700.400	350.000	701.800	414.000
GR	701.100	518.800	699.760	572.000	697.570	580.000	695.910	586.000	695.990	600.000
GR	697.630	606.000	698.790	614.000	700.900	640.000	700.300	728.000	722.400	736.000
NC	.050	.050	.030	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	6.000	31.000	315.000	340.000	84.000	84.000	84.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	704.460	704.460	0.000
GR	707.000	100.000	706.000	250.000	705.200	300.000	698.000	315.000	697.600	320.000
GR	699.220	320.500	696.990	321.000	696.740	322.000	696.490	323.000	696.350	324.000
GR	696.350	325.000	696.400	326.000	696.610	327.000	696.900	328.000	697.300	329.000
GR	699.220	329.500	699.490	331.000	697.240	331.500	696.900	332.500	696.690	333.500
GR	696.510	334.500	696.490	335.500	696.560	336.500	696.750	337.500	697.050	338.500
GR	697.470	339.500	699.490	340.000	700.200	341.000	705.400	346.000	705.800	400.000
GR	706.300	500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.015	.015	.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF 32ND STREET BRIDGE 2 ARCHCMP (D)

X1	6.100	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	704.460	704.460	0.000
BT	26.000	300.000	705.200	0.000	320.500	705.200	0.000	320.500	705.200	699.220
BT	321.000	705.200	701.450	322.000	705.210	702.370	323.000	705.220	703.100	324.000
BT	705.230	703.500	325.000	705.240	703.680	326.000	705.250	703.630	327.000	705.260

BT	703.270	328.000	705.270	702.760	329.000	705.280	701.870	329.500	705.280	699.220
BT	331.000	705.310	699.490	331.500	705.310	701.750	332.500	705.320	702.740	333.500
BT	705.330	703.360	334.500	705.340	703.500	335.500	705.350	703.850	336.500	705.360
BT	703.780	337.500	705.370	703.420	338.500	705.380	702.910	339.500	705.390	701.990
BT	340.000	705.400	699.490	340.000	705.400	0.000	346.000	705.400	0.000	0.000
X1	6.200	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	705.200	705.200	0.000
X1	6.300	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	705.200	705.200	0.000
NC	.043	.043	.033	.100	.300	0.000	0.000	0.000	0.000	0.000

INTERPOLATED VALLEY SECTION

X1	6.400	10.000	470.000	530.000	400.000	400.000	400.000	0.000	0.000	0.000
GR	712.400	100.000	709.600	270.000	708.000	400.000	703.500	470.000	697.610	492.500
GR	697.610	507.500	703.500	530.000	706.500	600.000	710.000	650.000	714.000	750.000

INTERPOLATED VALLEY SECTION

X1	6.500	8.000	350.000	430.000	700.000	500.000	600.000	0.000	0.000	0.000
GR	719.500	100.000	710.500	130.000	706.200	260.000	706.600	350.000	699.510	382.500
GR	699.510	397.500	706.600	430.000	710.600	450.000	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION D/S OF WEIR

X1	11.000	11.000	179.000	239.000	48.000	398.000	428.000	0.000	0.000	0.000
GR	712.930	100.000	710.030	160.000	707.900	179.000	706.710	190.000	701.420	202.000
GR	700.710	206.500	700.960	212.500	700.880	217.000	706.920	229.000	707.700	239.000
GR	711.180	374.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	0.000	2.100	3.300	0.000	.500	0.000	.340	0.000	701.000	700.710

SURVEYED SECTION SHEET PILE WEIR (E)

X1	11.200	17.000	190.000	229.000	2.000	2.000	2.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	702.500	702.700	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	702.700	702.700	0.000
BT	17.000	100.000	712.930	0.000	160.000	710.030	0.000	179.000	707.900	0.000
BT	190.000	707.350	0.000	202.000	702.900	0.000	206.500	702.820	0.000	206.500
BT	702.700	0.000	209.000	702.700	0.000	209.000	702.700	701.500	209.500	702.700
BT	701.500	209.500	702.700	0.000	212.500	702.110	0.000	212.500	702.730	0.000
BT	217.000	702.870	0.000	229.000	707.280	0.000	240.000	711.810	0.000	374.000
BT	711.180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	712.930	100.000	710.030	160.000	707.900	179.000	707.350	190.000	702.900	202.000
GR	702.820	206.500	702.700	206.500	702.700	209.000	701.000	209.000	701.000	209.500
GR	702.700	209.500	702.110	212.500	702.730	212.500	702.870	217.000	707.280	229.000
GR	711.810	240.000	711.180	374.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED SECTION U/S OF WEIR

X1	11.300	11.000	190.000	229.000	2.000	2.000	2.000	0.000	0.000	0.000

GR	712.930	100.000	710.030	160.000	707.900	184.000	706.710	190.000	702.260	202.000
GR	702.160	206.500	702.850	212.500	701.670	217.000	706.710	229.000	711.810	230.000
GR	711.810	374.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.040	.040	.033	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	11.500	0.000	0.000	0.000	150.000	150.000	150.000	0.000	.135	0.000
NC	.015	.015	.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	11.600	7.000	190.000	245.000	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	711.660	711.660	0.000
GR	713.800	100.000	712.700	190.000	703.700	209.000	702.340	210.000	702.340	225.000
GR	703.700	226.000	712.700	245.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	.950	1.490	2.600	0.000	16.670	.670	100.200	0.000	702.600	702.300

U/S FACE OF M-37 TWIN CONCRETE BOX CULVERT (F)

X1	11.700	13.000	700.000	717.000	53.000	53.000	53.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	708.600	712.700	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	712.700	712.700	0.000
BT	10.000	600.000	711.900	0.000	700.000	712.700	0.000	700.000	712.700	708.600
BT	708.000	712.700	708.600	708.000	712.700	702.340	708.670	712.700	702.340	708.670
BT	712.700	708.600	717.000	712.700	708.600	717.000	712.700	0.000	850.000	713.200
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	710.600	100.000	710.400	200.000	710.900	300.000	711.600	500.000	711.900	600.000
GR	712.700	700.000	702.470	700.000	702.340	708.000	702.340	708.670	702.500	717.000
GR	712.700	717.000	713.200	850.000	713.700	950.000	0.000	0.000	0.000	0.000

INTERPOLATED CROSS SECTION

X1	11.900	7.000	190.000	245.000	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	712.700	712.700	0.000
GR	713.800	100.000	712.700	190.000	703.700	209.000	702.620	210.000	702.620	225.000
GR	703.700	226.000	712.700	245.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.055	.055	.033	.100	.300	0.000	0.000	0.000	0.000	0.000

INTERPOLATED CROSS SECTION

X1	11.950	7.000	370.000	425.000	80.000	110.000	100.000	0.000	0.000	0.000
GR	711.130	0.000	709.300	370.000	702.630	390.000	702.630	405.000	709.300	425.000
GR	710.700	610.000	718.000	656.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.035	.035	.020	.300	.500	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS-SECTION

X1	12.000	18.000	646.000	701.000	200.000	250.000	210.000	0.000	0.000	0.000
GR	716.850	0.000	717.160	52.000	711.650	110.000	712.630	206.000	712.120	350.000
GR	709.730	381.000	710.520	504.000	711.130	624.000	707.760	646.000	703.300	654.000
GR	702.660	660.000	702.730	666.000	702.730	667.000	703.370	668.000	709.050	701.000
GR	726.250	911.000	730.770	936.000	737.440	1049.000	0.000	0.000	0.000	0.000

SURVEYED CROSS-SECTION 50 FT D/S OF CULVERT

X1	13.000	15.000	372.000	427.000	695.000	735.000	715.000	0.000	0.000	0.000

GR	716.230	100.000	716.290	144.000	710.960	170.000	709.760	272.000	709.000	372.000
GR	707.200	381.000	703.160	391.000	702.930	396.000	702.830	400.000	703.330	404.000
GR	708.050	427.000	709.710	458.000	713.340	698.000	715.660	757.000	716.880	783.000
NC	.030	.030	.024	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	13.100	26.000	310.000	333.500	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	712.870	712.870	0.000
GR	716.840	100.000	713.250	282.000	707.100	310.000	706.000	310.250	705.600	310.750
GR	705.100	312.250	704.700	314.250	704.500	315.750	704.700	317.250	705.100	319.250
GR	705.600	320.750	706.000	321.250	707.100	321.500	707.100	322.000	706.000	322.250
GR	705.600	322.750	705.100	324.250	704.700	326.250	704.500	327.750	704.700	329.250
GR	705.100	331.250	705.600	332.750	706.000	333.250	707.100	333.500	712.350	361.500
GR	714.200	400.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF TWIN CMP ARCH CULVERT

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	712.870	712.870	0.000
BT	26.000	100.000	716.840	0.000	282.000	713.250	0.000	310.000	713.250	707.100
BT	310.250	713.240	708.600	310.750	713.220	709.700	312.250	713.180	711.400	314.250
BT	713.110	712.400	315.750	713.070	712.670	317.250	713.070	712.400	319.250	713.000
BT	711.400	320.750	713.000	709.700	321.250	713.100	708.600	321.500	713.100	707.100
BT	322.000	713.000	707.100	322.250	713.100	708.600	322.750	713.100	709.700	324.250
BT	713.100	711.400	326.250	713.100	712.400	327.750	713.100	712.700	329.250	713.100
BT	712.400	331.250	713.000	711.400	332.750	713.000	709.700	333.250	713.000	708.600
BT	333.500	713.100	707.100	361.500	712.350	0.000	400.000	714.200	0.000	0.000

X1	13.300	0.000	0.000	0.000	81.000	81.000	81.000	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	713.250	713.250	0.000
X1	13.400	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	713.250	713.250	0.000
NC	.055	.055	.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS-SECTION (H)

X1	14.000	12.000	364.000	424.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	718.330	100.000	718.330	144.000	711.680	170.000	710.960	364.000	708.220	384.000
GR	705.760	390.000	705.020	392.000	704.890	394.000	705.140	400.000	705.500	407.000
GR	713.170	424.000	713.630	452.000	0.000	0.000	0.000	0.000	0.000	0.000

INTERPOLATED CROSS SECTION

X1	14.100	20.000	364.000	424.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	711.000	364.000	709.920	384.000	709.050	386.100	708.170	388.200	707.310	390.300
GR	706.300	394.500	706.150	396.600	706.080	398.700	706.120	400.800	706.220	402.900
GR	706.380	405.000	706.660	407.200	707.450	409.500	707.980	411.400	708.510	413.500
GR	709.040	415.600	709.570	417.700	710.100	419.800	710.630	421.900	711.160	424.000

INTERPOLATED CROSS SECTION

X1	14.200	20.000	364.000	424.000	300.000	300.000	300.000	0.000	0.000	0.000

GR	711.630	364.000	710.740	386.100	709.850	388.200	708.970	390.300	708.180	392.400
GR	707.690	394.500	707.290	396.600	707.070	398.700	707.060	400.800	707.150	402.900
GR	707.360	405.100	707.780	407.100	708.710	409.300	709.130	411.400	709.540	413.400
GR	709.960	415.600	710.380	417.700	710.800	419.800	711.210	421.900	711.630	424.000

INTERPOLATED CROSS SECTION

X1	14.300	21.000	364.000	424.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	713.330	364.000	712.430	386.100	711.530	388.200	710.630	390.300	709.780	392.400
GR	709.070	394.500	708.440	396.600	708.060	398.600	708.060	398.700	707.990	400.800
GR	708.080	402.900	708.340	405.000	708.900	407.200	709.970	409.300	710.270	411.400
GR	710.570	413.500	710.880	415.600	711.180	417.700	711.490	419.800	711.790	421.900
GR	712.090	424.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.018	.018	.033	.100	.300	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS SECTION (I)

X1	15.000	15.000	159.000	207.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	719.270	100.000	718.600	135.000	715.040	159.000	709.820	171.000	709.090	173.000
GR	708.920	176.000	709.050	179.000	709.810	182.000	711.110	183.000	712.560	199.000
GR	715.420	207.000	719.800	219.000	723.090	376.000	726.490	401.000	726.690	437.000
NC	.018	.018	.030	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	15.100	15.000	171.000	183.750	84.000	84.000	84.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	717.790	717.790	0.000
GR	719.270	100.000	718.600	135.000	715.040	159.000	710.400	171.000	709.600	174.000
GR	709.080	177.000	709.080	177.750	709.080	180.000	709.520	183.750	715.000	183.750
GR	715.420	207.000	719.800	219.000	723.090	376.000	726.490	401.000	726.690	437.000
SR	1.250	2.710	2.800	0.000	12.750	.750	72.000	0.000	709.130	709.080

U/S FACE OF M-37 BRIDGE 2 TWIN BOX CULVERT (CONCRETE)

X1	15.300	0.000	0.000	0.000	126.000	126.000	126.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	715.130	722.260	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	722.260	722.260	0.000

X1	15.400	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	722.260	722.260	0.000
NC	.020	.020	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS SECTION (J)

X1	16.000	11.000	193.000	236.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	722.260	100.000	719.730	154.000	719.940	193.000	710.920	216.000	709.930	224.000
GR	709.530	226.000	709.910	230.000	716.400	236.000	718.560	284.000	721.250	392.000
GR	721.800	482.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	16.500	23.000	193.000	236.000	54.000	54.000	54.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	716.940	716.940	0.000
GR	722.300	100.000	719.730	154.000	719.940	193.000	712.890	216.000	711.890	216.000
GR	710.390	217.000	709.890	218.000	709.890	220.000	710.390	221.000	711.890	222.000
GR	712.890	222.000	712.720	223.400	711.770	223.400	710.270	224.400	709.770	225.400
GR	709.770	227.400	710.270	228.400	711.770	229.400	712.720	229.400	713.910	236.000

GR	718.560	284.000	721.540	392.000	721.800	482.000	0.000	0.000	0.000	0.000
NC	.020	.020	.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	2.780	2.800	0.000	10.640	1.400	56.550	0.000	710.220	709.770
X1	16.600	22.000	193.000	233.000	165.000	165.000	165.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	715.890	719.940	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	719.940	718.100	0.000
BT	18.000	100.000	722.260	722.260	154.000	719.730	719.730	193.000	719.940	719.940
BT	208.000	719.940	713.200	209.000	719.890	715.800	210.000	719.850	716.200	212.000
BT	719.800	716.200	213.000	719.760	715.800	214.000	719.710	713.200	215.000	719.660
BT	713.200	216.000	719.620	715.800	217.000	719.570	716.200	219.000	719.480	716.200
BT	220.000	719.430	715.800	221.000	719.200	713.200	233.000	718.100	718.100	250.000
BT	720.810	720.810	250.000	750.000	750.000	0.000	0.000	0.000	0.000	0.000
GR	722.260	100.000	719.730	154.000	719.940	193.000	713.200	208.000	712.200	208.000
GR	710.700	209.000	710.200	210.000	710.200	212.000	710.700	213.000	712.200	214.000
GR	713.200	214.000	713.200	215.000	712.200	215.000	710.700	216.000	710.200	217.000
GR	710.200	219.000	710.700	220.000	712.200	221.000	713.200	221.000	718.100	233.000
GR	720.810	250.000	750.000	250.000	0.000	0.000	0.000	0.000	0.000	0.000

U/S FACE OF TWIN CMP CULVERT

X1	16.700	8.000	193.000	233.000	5.000	5.000	5.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	719.940	718.100	0.000
GR	722.260	100.000	719.730	154.000	719.940	193.000	710.200	211.000	710.200	219.000
GR	718.100	233.000	720.800	250.000	750.000	250.000	0.000	0.000	0.000	0.000
X1	16.750	9.000	270.000	312.000	220.000	220.000	220.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	717.680	717.680	0.000
GR	720.310	100.000	719.160	270.000	712.300	286.000	710.790	286.000	710.540	292.000
GR	710.210	294.000	710.560	296.000	719.160	312.000	721.600	350.000	0.000	0.000
SB	1.250	1.450	2.800	0.000	10.640	1.400	56.550	0.000	710.210	710.210
X1	16.800	20.000	284.000	297.500	26.000	26.000	26.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	716.210	719.160	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	719.160	719.160	0.000
BT	17.000	100.000	720.310	720.310	284.000	719.160	719.160	284.000	719.160	713.210
BT	285.000	719.160	715.710	286.000	719.160	716.210	288.000	719.160	716.210	289.000
BT	719.160	715.710	290.000	719.160	713.210	291.500	719.160	713.210	292.500	719.160
BT	715.710	293.500	719.160	716.210	295.500	719.160	716.210	296.500	719.160	715.710
BT	297.500	719.160	713.210	297.500	719.160	719.160	312.000	719.160	719.160	350.000
BT	721.100	721.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	720.310	100.000	719.160	284.000	713.210	284.000	712.210	284.000	710.710	285.000
GR	710.210	286.000	710.210	288.000	710.710	289.000	712.210	290.000	713.210	290.000
GR	713.210	291.500	710.710	292.500	710.210	293.500	710.210	295.500	710.710	296.500
GR	712.210	297.500	713.210	297.500	719.160	297.500	719.160	312.000	721.100	350.000
NC	.025	.025	.030	.100	.300	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS SECTION (K)

X1	17.000	9.000	270.000	296.000	139.000	121.000	130.000	0.000	0.000	0.000
GR	720.310	100.000	719.160	270.000	712.300	286.000	710.790	286.000	710.540	292.000
GR	710.470	294.000	710.560	296.000	719.160	310.000	720.800	350.000	0.000	0.000

SURVEYED CROSS SECTION LIMIT OF STUDY (L)

X1	18.000	8.000	176.000	224.000	470.000	390.000	440.000	0.000	0.000	0.000
GR	720.600	100.000	717.740	176.000	711.720	188.000	711.460	194.000	711.340	198.000
GR	711.560	200.000	724.110	224.000	725.260	352.000	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

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

HISKEY CREEK

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSFL	CRIWS	EG	10K*S	VCH	AREA	.01K
8.000	0.00	0.00	0.00	687.80	350.00	693.71	0.00	693.82	4.27	2.74	208.60	169.36
8.000	0.00	0.00	0.00	687.80	530.00	695.57	0.00	695.62	1.76	2.15	701.64	399.50
8.000	0.00	0.00	0.00	687.80	610.00	696.32	0.00	696.35	1.16	1.87	1026.40	565.32
8.000	0.00	0.00	0.00	687.80	810.00	698.45	0.00	698.46	.40	1.29	2063.22	1279.16
9.000	325.00	0.00	0.00	688.00	350.00	693.88	0.00	693.97	5.39	2.45	143.15	150.75
9.000	325.00	0.00	0.00	688.00	530.00	695.62	0.00	695.72	4.32	2.56	214.27	255.05
9.000	325.00	0.00	0.00	688.00	610.00	696.33	0.00	696.44	3.94	2.58	249.59	307.34
9.000	325.00	0.00	0.00	688.00	810.00	698.43	0.00	698.51	2.52	2.36	432.04	510.17
9.500	125.00	0.00	0.00	689.20	350.00	693.92	0.00	694.10	14.35	3.43	102.10	92.40
9.500	125.00	0.00	0.00	689.20	530.00	695.66	0.00	695.81	8.79	3.14	168.91	178.81
9.500	125.00	0.00	0.00	689.20	610.00	696.37	0.00	696.51	7.29	3.02	201.67	225.90
9.500	125.00	0.00	0.00	689.20	810.00	698.45	0.00	698.55	3.87	2.57	316.33	411.88
10.000	50.00	0.00	0.00	689.50	350.00	694.01	0.00	694.17	12.50	3.27	107.03	99.00
10.000	50.00	0.00	0.00	689.50	530.00	695.72	0.00	695.85	6.96	2.94	180.43	200.88
10.000	50.00	0.00	0.00	689.50	610.00	696.43	0.00	696.55	5.65	2.82	216.34	256.73
10.000	50.00	0.00	0.00	689.50	810.00	698.51	0.00	698.58	2.14	2.16	501.14	554.14
10.100	1.00	697.90	698.30	689.50	350.00	693.98	0.00	694.21	12.27	3.88	90.14	99.92
10.100	1.00	697.90	698.30	689.50	530.00	695.65	0.00	695.93	12.14	4.26	124.44	152.12
10.100	1.00	697.90	698.30	689.50	610.00	696.34	0.00	696.64	13.11	4.46	136.67	168.44
10.100	1.00	697.90	698.30	689.50	810.00	698.36	0.00	698.73	20.52	4.94	189.38	178.81
10.200	15.00	697.90	698.35	689.55	350.00	693.99	0.00	694.23	12.52	3.91	89.47	98.90
10.200	15.00	697.90	698.35	689.55	530.00	695.66	0.00	695.95	12.29	4.28	123.76	151.18
10.200	15.00	697.90	698.35	689.55	610.00	696.35	0.00	696.67	13.23	4.48	136.08	167.68
10.200	15.00	697.90	698.35	689.55	810.00	698.37	0.00	698.78	22.05	5.13	158.04	172.49
10.300	1.00	0.00	0.00	689.55	350.00	694.09	0.00	694.25	7.75	3.23	108.27	125.72
10.300	1.00	0.00	0.00	689.55	530.00	695.87	0.00	696.00	4.14	2.86	185.32	260.36
10.300	1.00	0.00	0.00	689.55	610.00	696.61	0.00	696.73	3.31	2.73	223.45	335.23
10.300	1.00	0.00	0.00	689.55	810.00	698.80	0.00	698.88	1.47	2.30	351.90	667.53
10.400	50.00	0.00	0.00	689.72	350.00	694.11	0.00	694.33	9.73	3.76	93.06	112.18
10.400	50.00	0.00	0.00	689.72	530.00	695.87	0.00	696.05	5.83	3.38	156.99	219.53
10.400	50.00	0.00	0.00	689.72	610.00	696.61	0.00	696.77	4.71	3.21	189.76	281.12
10.400	50.00	0.00	0.00	689.72	810.00	698.82	0.00	698.89	1.62	2.24	475.91	636.38

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSFL	CRIWS	EG	10K*S	VCH	AREA	.01K
	10.700	675.00	0.00	0.00	691.50	350.00	694.94	0.00	695.16	16.17	3.78	98.67	87.05
	10.700	675.00	0.00	0.00	691.50	530.00	696.34	0.00	696.54	9.18	3.70	165.24	174.93
	10.700	675.00	0.00	0.00	691.50	610.00	696.98	0.00	697.17	7.32	3.62	200.68	225.39
	10.700	675.00	0.00	0.00	691.50	810.00	698.93	0.00	699.07	3.68	3.20	328.17	422.08
	7.000	525.00	0.00	0.00	689.37	350.00	695.56	0.00	695.67	6.36	2.71	129.17	138.78
	7.000	525.00	0.00	0.00	689.37	530.00	696.82	0.00	696.96	6.80	3.02	175.29	203.29
	7.000	525.00	0.00	0.00	689.37	610.00	697.39	0.00	697.53	6.57	3.05	199.95	237.98
	7.000	525.00	0.00	0.00	689.37	810.00	699.15	0.00	699.28	4.12	2.80	300.16	398.84
	7.200	25.00	0.00	0.00	689.50	350.00	695.57	0.00	695.69	6.36	2.82	123.98	138.82
	7.200	25.00	0.00	0.00	689.50	530.00	696.81	0.00	696.98	7.85	3.32	159.58	189.22
	7.200	25.00	0.00	0.00	689.50	610.00	697.38	0.00	697.56	7.93	3.42	178.33	216.64
	7.200	25.00	0.00	0.00	689.50	810.00	699.13	0.00	699.30	6.22	3.30	245.88	324.87
*	7.300	10.00	696.30	696.00	695.50	350.00	698.90	698.88	699.78	175.79	7.53	46.48	26.40
*	7.300	10.00	696.30	696.00	695.50	530.00	699.54	0.00	700.64	152.81	8.40	63.13	42.87
*	7.300	10.00	696.30	696.00	695.50	610.00	699.89	699.89	700.96	166.63	8.33	73.49	47.26
*	7.300	10.00	696.30	696.00	695.50	810.00	700.64	0.00	701.60	121.14	7.88	104.39	73.59
	7.400	2.00	0.00	0.00	695.91	350.00	699.70	0.00	699.86	14.80	3.22	112.85	90.99
	7.400	2.00	0.00	0.00	695.91	530.00	700.55	0.00	700.73	12.23	3.52	173.39	151.56
	7.400	2.00	0.00	0.00	695.91	610.00	700.87	0.00	701.06	11.45	3.62	201.40	180.30
	7.400	2.00	0.00	0.00	695.91	810.00	701.47	0.00	701.68	11.06	3.93	255.61	243.51
	6.000	84.00	0.00	0.00	696.35	350.00	699.75	0.00	700.24	54.59	5.58	62.75	47.37
	6.000	84.00	0.00	0.00	696.35	530.00	700.50	0.00	701.16	52.69	6.52	81.34	73.01
	6.000	84.00	0.00	0.00	696.35	610.00	700.77	0.00	701.51	53.38	6.92	88.16	83.49
	6.000	84.00	0.00	0.00	696.35	810.00	701.25	0.00	702.27	61.41	8.08	100.21	103.36
	6.100	1.00	705.20	703.85	696.35	350.00	699.61	0.00	700.40	57.53	7.14	49.02	46.15
	6.100	1.00	705.20	703.85	696.35	530.00	700.23	699.85	701.44	76.16	8.83	60.00	60.73
	6.100	1.00	705.20	703.85	696.35	610.00	700.44	700.14	701.86	86.35	9.59	63.61	65.64
*	6.100	1.00	705.20	703.85	696.35	810.00	700.80	700.80	702.90	120.14	11.64	69.62	73.90
	6.200	62.00	705.20	703.85	696.35	350.00	700.21	0.00	700.74	33.64	5.86	59.72	60.35
	6.200	62.00	705.20	703.85	696.35	530.00	701.15	0.00	701.92	41.90	7.03	75.36	81.88
	6.200	62.00	705.20	703.85	696.35	610.00	701.55	0.00	702.41	45.13	7.46	81.79	90.80
	6.200	62.00	705.20	703.85	696.35	810.00	702.62	0.00	703.70	54.94	8.31	97.52	109.28
	6.300	1.00	0.00	0.00	696.35	350.00	700.54	0.00	700.82	13.93	4.23	82.69	93.79
	6.300	1.00	0.00	0.00	696.35	530.00	701.69	0.00	702.04	11.94	4.77	111.07	153.38
	6.300	1.00	0.00	0.00	696.35	610.00	702.18	0.00	702.56	11.18	4.95	123.26	182.45
	6.300	1.00	0.00	0.00	696.35	810.00	703.47	0.00	703.89	9.05	5.20	155.65	269.19
	6.400	400.00	0.00	0.00	697.61	350.00	701.27	0.00	701.44	16.57	3.30	106.06	85.99
	6.400	400.00	0.00	0.00	697.61	530.00	702.38	0.00	702.55	12.71	3.35	158.42	148.66
	6.400	400.00	0.00	0.00	697.61	610.00	702.86	0.00	703.03	11.25	3.32	183.79	181.86
	6.400	400.00	0.00	0.00	697.61	810.00	704.09	0.00	704.24	7.30	3.15	262.97	299.73
	6.500	600.00	0.00	0.00	699.51	350.00	702.54	0.00	702.79	30.97	4.00	87.53	62.89
	6.500	600.00	0.00	0.00	699.51	530.00	703.37	0.00	703.64	26.18	4.20	126.12	103.58
	6.500	600.00	0.00	0.00	699.51	610.00	703.73	0.00	704.00	23.76	4.21	144.94	125.13
	6.500	600.00	0.00	0.00	699.51	810.00	704.67	0.00	704.92	17.68	4.06	199.31	192.61

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	11.000	428.00	0.00	0.00	700.71	350.00	704.04	0.00	704.50	49.04	5.42	64.53	49.98
	11.000	428.00	0.00	0.00	700.71	530.00	704.69	0.00	705.33	55.53	6.38	83.04	71.12
	11.000	428.00	0.00	0.00	700.71	610.00	704.94	0.00	705.64	57.81	6.74	90.56	80.23
	11.000	428.00	0.00	0.00	700.71	810.00	705.53	0.00	706.38	60.27	7.40	109.50	104.34
*	11.200	2.00	702.70	702.50	701.00	350.00	705.01	704.94	705.85	155.58	7.38	47.41	28.06
*	11.200	2.00	702.70	702.50	701.00	530.00	705.61	705.59	706.66	148.00	8.23	64.38	43.57
*	11.200	2.00	702.70	702.50	701.00	610.00	705.86	705.83	706.98	142.78	8.48	71.95	51.05
*	11.200	2.00	702.70	702.50	701.00	810.00	706.35	706.35	707.67	143.14	9.22	87.82	67.70
	11.300	2.00	0.00	0.00	701.67	350.00	705.65	0.00	705.92	26.98	4.17	83.88	67.38
	11.300	2.00	0.00	0.00	701.67	530.00	706.38	0.00	706.74	28.96	4.82	109.98	98.48
	11.300	2.00	0.00	0.00	701.67	610.00	706.66	0.00	707.06	29.71	5.06	120.56	111.01
	11.300	2.00	0.00	0.00	701.67	810.00	707.28	0.00	707.76	28.79	5.60	145.43	150.96
	11.500	150.00	0.00	0.00	701.81	350.00	706.07	0.00	706.28	19.80	3.74	93.64	78.66
	11.500	150.00	0.00	0.00	701.81	530.00	706.85	0.00	707.14	21.31	4.32	122.76	114.82
	11.500	150.00	0.00	0.00	701.81	610.00	707.13	0.00	707.45	21.08	4.55	134.20	132.86
	11.500	150.00	0.00	0.00	701.81	810.00	707.75	0.00	708.16	21.39	5.12	160.06	175.12
	11.600	50.00	0.00	0.00	702.34	350.00	706.08	0.00	706.42	11.82	4.72	74.12	101.81
	11.600	50.00	0.00	0.00	702.34	530.00	706.84	0.00	707.31	13.36	5.53	95.89	144.98
	11.600	50.00	0.00	0.00	702.34	610.00	707.11	0.00	707.64	14.02	5.84	104.43	162.89
	11.600	50.00	0.00	0.00	702.34	810.00	707.72	0.00	708.38	15.44	6.53	124.11	206.11
	11.700	53.00	712.70	708.60	702.34	350.00	706.11	0.00	706.59	15.72	5.56	62.92	88.27
	11.700	53.00	712.70	708.60	702.34	530.00	706.89	0.00	707.64	20.75	6.96	76.13	116.35
	11.700	53.00	712.70	708.60	702.34	610.00	707.17	0.00	708.05	23.04	7.53	80.97	127.08
	11.700	53.00	712.70	708.60	702.34	810.00	708.16	0.00	709.23	23.78	8.27	97.89	166.09
	11.900	1.00	0.00	0.00	702.62	350.00	706.31	0.00	706.64	11.11	4.59	76.20	105.01
	11.900	1.00	0.00	0.00	702.62	530.00	707.39	0.00	707.76	9.59	4.88	108.60	171.13
	11.900	1.00	0.00	0.00	702.62	610.00	707.83	0.00	708.21	8.99	4.95	123.21	203.41
	11.900	1.00	0.00	0.00	702.62	810.00	709.09	0.00	709.44	6.59	4.76	170.12	315.64
	11.950	100.00	0.00	0.00	702.63	350.00	706.61	0.00	706.78	14.12	3.26	107.42	93.16
	11.950	100.00	0.00	0.00	702.63	530.00	707.70	0.00	707.88	12.27	3.46	153.01	151.28
	11.950	100.00	0.00	0.00	702.63	610.00	708.13	0.00	708.33	11.56	3.52	173.42	179.42
	11.950	100.00	0.00	0.00	702.63	810.00	709.35	0.00	709.53	8.73	3.43	236.83	274.21
	12.000	210.00	0.00	0.00	702.66	350.00	706.80	0.00	706.99	6.76	3.48	100.60	134.58
	12.000	210.00	0.00	0.00	702.66	530.00	707.86	0.00	708.06	5.54	3.60	147.25	225.23
	12.000	210.00	0.00	0.00	702.66	610.00	708.28	0.00	708.49	5.02	3.62	169.07	272.29
	12.000	210.00	0.00	0.00	702.66	810.00	709.46	0.00	709.64	3.37	3.48	241.50	440.99
	13.000	715.00	0.00	0.00	702.83	350.00	707.26	0.00	707.41	4.79	3.08	113.72	159.94
	13.000	715.00	0.00	0.00	702.83	530.00	708.25	0.00	708.42	4.46	3.30	161.02	251.06
	13.000	715.00	0.00	0.00	702.83	610.00	708.64	0.00	708.82	4.14	3.36	184.42	299.72
	13.000	715.00	0.00	0.00	702.83	810.00	709.71	0.00	709.87	2.81	3.26	298.73	483.17
*	13.100	49.00	0.00	0.00	704.50	350.00	707.01	707.01	707.98	85.60	7.91	44.23	37.83
	13.100	49.00	0.00	0.00	704.50	530.00	707.86	0.00	708.92	59.29	8.26	64.14	68.83
	13.100	49.00	0.00	0.00	704.50	610.00	708.24	0.00	709.32	50.93	8.35	73.04	85.47
	13.100	49.00	0.00	0.00	704.50	810.00	709.30	0.00	710.36	33.68	8.26	98.02	139.57

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	13.200	1.00	712.35	712.70	704.50	350.00	707.02	707.01	707.99	85.94	7.92	44.17	37.75
	13.200	1.00	712.35	712.70	704.50	530.00	707.86	0.00	708.94	68.56	8.33	63.61	64.01
	13.200	1.00	712.35	712.70	704.50	610.00	708.23	0.00	709.34	64.22	8.48	71.95	76.12
	13.200	1.00	712.35	712.70	704.50	810.00	709.25	0.00	710.41	55.04	8.62	93.97	109.19
	13.300	81.00	712.35	712.70	704.50	350.00	708.10	0.00	708.50	23.92	5.08	68.84	71.56
	13.300	81.00	712.35	712.70	704.50	530.00	708.83	0.00	709.43	30.70	6.23	85.01	95.65
	13.300	81.00	712.35	712.70	704.50	610.00	709.15	0.00	709.84	33.14	6.64	91.84	105.96
	13.300	81.00	712.35	712.70	704.50	810.00	710.01	0.00	710.86	38.00	7.43	109.03	131.41
	13.400	1.00	0.00	0.00	704.50	350.00	708.12	0.00	708.50	19.37	5.00	69.94	79.52
	13.400	1.00	0.00	0.00	704.50	530.00	708.89	0.00	709.45	20.36	6.00	88.38	117.46
	13.400	1.00	0.00	0.00	704.50	610.00	709.24	0.00	709.86	20.09	6.32	96.55	136.10
	13.400	1.00	0.00	0.00	704.50	810.00	710.18	0.00	710.91	17.76	6.82	118.77	192.20
	14.000	50.00	0.00	0.00	704.89	350.00	708.25	0.00	708.66	44.76	5.14	68.04	52.31
	14.000	50.00	0.00	0.00	704.89	530.00	709.19	0.00	709.63	40.28	5.29	100.24	83.51
	14.000	50.00	0.00	0.00	704.89	610.00	709.64	0.00	710.05	35.56	5.17	117.94	102.29
	14.000	50.00	0.00	0.00	704.89	810.00	710.78	0.00	711.12	23.74	4.69	172.79	166.23
	14.100	300.00	0.00	0.00	706.08	350.00	709.57	0.00	709.91	38.15	4.70	74.44	56.66
	14.100	300.00	0.00	0.00	706.08	530.00	710.48	0.00	710.84	39.42	4.84	109.51	84.41
	14.100	300.00	0.00	0.00	706.08	610.00	710.82	0.00	711.18	38.60	4.80	127.18	98.18
	14.100	300.00	0.00	0.00	706.08	810.00	711.56	0.00	711.91	28.86	4.74	170.83	150.77
	14.200	300.00	0.00	0.00	707.06	350.00	710.75	0.00	711.10	40.43	4.75	73.70	55.05
	14.200	300.00	0.00	0.00	707.06	530.00	711.73	0.00	712.03	38.09	4.37	121.16	85.88
	14.200	300.00	0.00	0.00	707.06	610.00	711.98	0.00	712.29	34.63	4.48	136.08	103.66
	14.200	300.00	0.00	0.00	707.06	810.00	712.47	0.00	712.84	32.53	4.90	165.41	142.03
	14.300	300.00	0.00	0.00	707.99	350.00	711.97	0.00	712.29	38.94	4.56	76.80	56.09
	14.300	300.00	0.00	0.00	707.99	530.00	712.85	0.00	713.20	38.10	4.74	111.77	85.86
	14.300	300.00	0.00	0.00	707.99	610.00	713.09	0.00	713.46	41.97	4.94	123.49	94.16
	14.300	300.00	0.00	0.00	707.99	810.00	713.56	0.00	714.00	43.75	5.35	151.49	122.45
	15.000	300.00	0.00	0.00	708.92	350.00	713.13	0.00	713.43	36.62	4.39	79.67	57.84
	15.000	300.00	0.00	0.00	708.92	530.00	713.90	0.00	714.26	33.07	4.83	109.79	92.16
	15.000	300.00	0.00	0.00	708.92	610.00	714.18	0.00	714.57	32.61	5.01	121.67	106.82
	15.000	300.00	0.00	0.00	708.92	810.00	714.70	0.00	715.19	35.24	5.61	144.43	136.44
	15.100	84.00	0.00	0.00	709.08	350.00	713.24	0.00	714.04	50.50	7.20	48.64	49.25
	15.100	84.00	0.00	0.00	709.08	530.00	713.78	0.00	715.19	76.96	9.51	55.71	60.42
	15.100	84.00	0.00	0.00	709.08	610.00	713.94	0.00	715.68	92.35	10.59	57.58	63.47
*	15.100	84.00	0.00	0.00	709.08	810.00	714.41	714.41	716.93	121.51	12.75	63.54	73.48
	15.300	126.00	722.26	715.13	709.08	350.00	713.54	0.00	714.23	40.03	6.66	52.53	55.32
	15.300	126.00	722.26	715.13	709.08	530.00	715.28	0.00	716.06	31.63	7.09	74.74	94.24
*	15.300	126.00	722.26	715.13	709.08	610.00	716.18	0.00	716.96	26.08	7.08	86.16	119.45
*	15.300	126.00	722.26	715.13	709.08	810.00	719.06	0.00	719.73	14.08	6.59	122.90	215.89
	15.400	1.00	0.00	0.00	709.08	350.00	713.55	0.00	714.24	39.89	6.66	52.59	55.41
	15.400	1.00	0.00	0.00	709.08	530.00	715.29	0.00	716.07	31.54	7.09	74.80	94.37
	15.400	1.00	0.00	0.00	709.08	610.00	716.18	0.00	716.96	26.01	7.07	86.24	119.61
	15.400	1.00	0.00	0.00	709.08	810.00	719.06	0.00	719.73	14.07	6.59	122.93	215.97

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
16.000	50.00	0.00	0.00	709.53	350.00	714.19	0.00	714.49	20.99	4.44	78.92	76.39
16.000	50.00	0.00	0.00	709.53	530.00	716.08	0.00	716.32	11.08	3.93	134.83	159.19
16.000	50.00	0.00	0.00	709.53	610.00	716.99	0.00	717.20	7.97	3.64	170.49	216.11
16.000	50.00	0.00	0.00	709.53	810.00	719.88	0.00	719.94	1.68	2.09	432.50	625.04
16.500	54.00	0.00	0.00	709.77	350.00	714.24	0.00	714.81	67.52	6.02	58.14	42.60
16.500	54.00	0.00	0.00	709.77	530.00	716.10	0.00	716.47	24.17	4.86	109.02	107.80
16.500	54.00	0.00	0.00	709.77	610.00	717.10	0.00	717.26	8.50	3.24	193.25	209.20
16.500	54.00	0.00	0.00	709.77	810.00	719.90	0.00	719.95	1.42	1.68	459.52	678.90
* 16.600	165.00	719.94	715.89	710.20	350.00	715.12	0.00	715.59	29.75	5.51	63.47	64.17
16.600	165.00	719.94	715.89	710.20	530.00	719.80	0.00	719.89	2.21	2.43	223.14	356.69
16.600	165.00	719.94	715.89	710.20	610.00	720.05	0.00	720.16	2.47	2.64	245.47	387.75
16.600	165.00	719.94	715.89	710.20	810.00	720.95	0.00	721.06	2.16	2.73	345.46	551.49
16.700	5.00	0.00	0.00	710.20	350.00	715.44	0.00	715.67	8.42	3.81	91.81	120.63
16.700	5.00	0.00	0.00	710.20	530.00	719.83	0.00	719.90	1.27	2.16	250.96	470.10
16.700	5.00	0.00	0.00	710.20	610.00	720.08	0.00	720.16	1.44	2.36	275.30	508.11
16.700	5.00	0.00	0.00	710.20	810.00	720.97	0.00	721.06	1.39	2.53	373.62	686.57
16.750	220.00	0.00	0.00	710.21	350.00	715.64	0.00	715.88	10.32	4.00	87.54	108.96
16.750	220.00	0.00	0.00	710.21	530.00	719.86	0.00	719.93	1.37	2.14	279.78	452.68
16.750	220.00	0.00	0.00	710.21	610.00	720.12	0.00	720.20	1.46	2.27	325.71	505.67
16.750	220.00	0.00	0.00	710.21	810.00	721.05	0.00	721.10	.98	2.05	540.58	818.67
16.800	26.00	719.16	716.21	710.21	350.00	715.73	0.00	716.20	24.21	5.51	63.52	71.13
16.800	26.00	719.16	716.21	710.21	530.00	720.09	0.00	720.24	5.51	3.48	213.55	225.84
16.800	26.00	719.16	716.21	710.21	610.00	720.26	0.00	720.41	5.77	3.61	248.95	253.91
16.800	26.00	719.16	716.21	710.21	810.00	721.11	0.00	721.17	2.55	2.54	453.65	507.23
17.000	130.00	0.00	0.00	710.47	350.00	716.23	0.00	716.42	9.75	3.54	100.44	112.10
17.000	130.00	0.00	0.00	710.47	530.00	720.24	0.00	720.29	1.50	1.96	343.35	432.59
17.000	130.00	0.00	0.00	710.47	610.00	720.40	0.00	720.46	1.68	2.11	382.59	471.10
17.000	130.00	0.00	0.00	710.47	810.00	721.15	0.00	721.19	1.31	2.01	567.41	706.81
18.000	440.00	0.00	0.00	711.34	350.00	716.66	0.00	716.81	8.37	3.15	111.01	120.94
18.000	440.00	0.00	0.00	711.34	530.00	720.30	0.00	720.35	1.44	1.86	333.02	442.36
18.000	440.00	0.00	0.00	711.34	610.00	720.48	0.00	720.53	1.68	2.04	352.14	470.05
18.000	440.00	0.00	0.00	711.34	810.00	721.20	0.00	721.26	1.73	2.18	437.44	615.36

1) COUNTY: KENT

2) STUDY NAME: KENTWOOD, CITY OF

3) WATERCOURSE: WHISKEY CREEK

4) DOCUMENT TYPE: 100-YEAR NATURAL

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY 1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

C
T1  THE CITY OF KENTWOOD
T2  THE 100 YEAR FLOOD
T3  THE WHISKEY CREEK

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
       0.       4.       0.        0.   0.000000     0.00      0.0       0.   696.340    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   350.000   530.000   610.000   810.000   610.000     0.000     0.000     0.000     0.000
NC       .085      .085      .033      .100      .300     0.000     0.000     0.000     0.000     0.000

        CONFLUENCE WITH LITTLE PLASTER CREEK  (A)

X1      8.000    27.000   776.000   798.000     0.000     0.000     0.000     0.000     0.000     0.000
X3      0.000     0.000     0.000   712.000   695.000  1287.000     0.000     0.000     0.000     0.000
GR    707.900     0.000   708.800   184.000   706.200   406.000   696.500   486.000   695.000   602.000
GR    694.600   604.000   692.900   632.000   688.700   640.000   688.700   649.000   691.600   651.000
GR    693.800   712.000   693.300   756.000   691.100   776.000   688.200   782.000   687.800   786.000
GR    687.800   790.000   687.800   794.000   689.100   798.000   690.800   799.000   694.500   818.000
GR    692.800   865.000   694.900   959.000   708.400   997.000   711.800  1047.000   713.200  1143.000
GR    715.100  1249.000   719.600  1287.000     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

X1      9.000    19.000  1276.000  1324.000   400.000   300.000   325.000     0.000     0.000     0.000
GR    727.400  1000.000   725.600  1096.000   712.060  1142.000   707.000  1158.000   705.800  1178.000
GR    703.960  1234.000   698.800  1276.000   689.400  1304.000   688.000  1305.000   688.000  1307.000
GR    688.000  1309.000   688.500  1324.000   693.640  1324.000   696.400  1336.000   698.800  1384.000
GR    697.220  1430.000   710.700  1494.000   712.700  1718.000   714.310  1896.000     0.000     0.000

        INTERPOLATED VALLEY SECTION 50 FT D/S OF BRIDGE

X1      9.500    18.000   580.000   640.000   140.000    95.000   125.000     0.000     0.000     0.000
GR    723.400     0.000   721.200   100.000   710.000   300.000   705.600   350.000   699.800   450.000
GR    700.200   500.000   698.200   580.000   692.600   598.000   690.100   600.000   689.460   604.000
GR    689.200   609.000   689.500   611.000   690.000   614.000   690.400   618.000   691.300   622.000
GR    692.800   624.000   698.400   640.000   713.600   695.000     0.000     0.000     0.000     0.000
NC       .045      .045      .030      .300      .500     0.000     0.000     0.000     0.000     0.000

        D/S FACE OF DRIVEWAY CULVERT 2 CMP  (B)
```

X1	10.000	27.000	580.000	640.000	50.000	50.000	50.000	0.000	-.750	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	696.400	696.400	0.000
GR	723.400	0.000	720.800	73.000	718.000	147.000	713.370	271.000	709.600	333.000
GR	698.900	397.000	698.300	401.000	697.900	513.000	699.800	548.000	698.200	580.000
GR	692.600	598.000	691.300	598.700	690.600	600.700	690.250	603.600	690.600	606.700
GR	691.300	608.700	692.600	609.400	692.600	611.400	691.300	612.100	690.600	614.100
GR	690.250	617.100	690.600	620.100	691.300	622.100	692.600	622.800	693.100	623.000
GR	698.300	640.000	713.600	695.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.030	.030	.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	10.100	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	696.400	696.400	0.000
BT	26.000	73.000	720.800	0.000	147.000	718.000	0.000	271.000	713.370	0.000
BT	333.000	709.600	0.000	397.000	698.900	0.000	401.000	698.300	0.000	513.000
BT	697.900	0.000	548.000	699.800	0.000	580.000	699.800	0.000	598.000	699.800
BT	0.000	598.000	699.800	692.600	598.700	699.900	695.500	600.700	700.300	697.500
BT	603.600	700.900	698.300	606.700	701.500	697.500	608.700	701.910	695.300	609.400
BT	702.050	692.600	611.400	702.000	692.600	612.100	702.000	695.500	614.100	702.000
BT	697.500	617.100	703.200	698.300	620.100	702.150	697.500	622.100	702.500	695.300
BT	622.800	702.620	692.600	622.800	702.800	0.000	695.000	713.600	0.000	0.000
X1	10.200	0.000	0.000	0.000	15.000	15.000	15.000	0.000	.050	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	699.800	699.800	0.000
X1	10.300	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	699.800	699.800	0.000

INTERPOLATED CROSS-SECTION 50 FT U/S OF CULVERTS

X1	10.400	20.000	580.000	640.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	723.380	0.000	720.760	73.000	718.040	147.000	713.370	271.000	709.560	333.000
GR	698.880	397.000	698.260	401.000	696.890	513.000	699.820	548.000	698.230	580.000
GR	692.410	598.000	690.610	600.000	689.720	604.000	689.890	608.000	689.900	612.000
GR	689.910	616.000	690.700	620.000	693.140	620.000	699.000	640.000	713.630	695.000
NC	.050	.050	.032	.100	.300	0.000	0.000	0.000	0.000	0.000
X1	10.700	10.000	429.000	460.000	600.000	700.000	675.000	0.000	0.000	0.000
GR	711.700	100.000	710.200	200.000	700.810	400.000	693.500	429.000	691.500	437.000
GR	691.500	452.000	693.500	460.000	698.800	480.000	708.600	520.000	717.600	580.000

SURVEYED VALLEY SECTION D/S OF WEIR

X1	7.000	16.000	370.000	422.000	500.000	550.000	525.000	0.000	0.000	0.000
GR	701.350	100.000	702.250	152.000	701.840	214.000	701.090	318.000	697.870	370.000
GR	696.120	378.000	690.500	385.000	689.370	387.000	689.600	389.000	689.800	394.000
GR	690.530	399.000	699.200	422.000	700.980	440.000	700.350	528.000	722.370	530.000
GR	729.970	578.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.050	.050	.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	7.200	15.000	572.000	614.500	25.000	25.000	25.000	0.000	0.000	0.000
GR	710.400	0.000	700.700	225.000	699.800	275.000	700.400	350.000	701.800	414.000

GR	701.100	516.000	698.970	572.000	695.400	580.000	689.500	586.000	689.500	600.500
GR	696.010	606.500	699.290	614.500	700.900	640.000	700.300	728.000	722.400	736.000
SB	0.000	2.100	3.300	0.000	.500	0.000	.250	0.000	695.500	689.370

SURVEYED SECTION SHEET PILE WEIR (C)

X1	7.300	20.000	572.000	614.000	10.000	10.000	10.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	696.000	696.300	0.000	0.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	570.000	705.000	616.000	705.000	0.000	0.000	0.000
X4	4.000	696.300	592.500	695.500	592.500	695.500	593.000	696.300	593.000	0.000
BT	23.000	0.000	710.400	0.000	225.000	700.700	0.000	275.000	699.800	0.000
BT	350.000	700.400	0.000	572.000	700.400	0.000	572.000	704.000	0.000	572.000
BT	700.400	0.000	580.000	700.100	0.000	580.000	698.400	0.000	586.000	698.200
BT	0.000	586.000	696.300	0.000	592.500	696.300	0.000	592.500	696.300	696.000
BT	593.000	696.300	696.000	593.000	696.300	0.000	600.000	696.200	0.000	600.000
BT	698.000	0.000	606.000	697.900	0.000	606.000	699.800	0.000	614.000	699.700
BT	0.000	614.000	704.000	0.000	614.000	700.300	0.000	736.000	722.400	0.000
GR	710.400	0.000	700.700	225.000	699.800	275.000	700.400	350.000	701.800	414.000
GR	701.100	518.000	700.400	572.000	700.100	580.000	698.400	580.000	698.200	586.000
GR	696.300	586.000	696.200	600.000	698.000	600.000	697.900	606.000	699.800	606.000
GR	699.700	614.000	700.900	640.000	700.300	728.000	722.400	736.000	730.000	778.000

SURVEYED VALLEY SECTION U/S OF WEIR

X1	7.400	15.000	572.000	614.000	2.000	2.000	2.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	550.000	0.000	640.000	0.000	0.000	0.000	0.000
GR	710.400	0.000	700.700	225.000	699.800	275.000	700.400	350.000	701.800	414.000
GR	701.100	518.800	699.760	572.000	697.570	580.000	695.910	586.000	695.990	600.000
GR	697.630	606.000	698.790	614.000	700.900	640.000	700.300	728.000	722.400	736.000
NC	.050	.050	.030	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	6.000	31.000	315.000	340.000	84.000	84.000	84.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	704.460	704.460	0.000
GR	707.000	100.000	706.000	250.000	705.200	300.000	698.000	315.000	697.600	320.000
GR	699.220	320.500	696.990	321.000	696.740	322.000	696.490	323.000	696.350	324.000
GR	696.350	325.000	696.400	326.000	696.610	327.000	696.900	328.000	697.300	329.000
GR	699.220	329.500	699.490	331.000	697.240	331.500	696.900	332.500	696.690	333.500
GR	696.510	334.500	696.490	335.500	696.560	336.500	696.750	337.500	697.050	338.500
GR	697.470	339.500	699.490	340.000	700.200	341.000	705.400	346.000	705.800	400.000
GR	706.300	500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.015	.015	.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF 32ND STREET BRIDGE 2 ARCHCMP (D)

X1	6.100	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	704.460	704.460	0.000
BT	26.000	300.000	705.200	0.000	320.500	705.200	0.000	320.500	705.200	699.220
BT	321.000	705.200	701.450	322.000	705.210	702.370	323.000	705.220	703.100	324.000
BT	705.230	703.500	325.000	705.240	703.680	326.000	705.250	703.630	327.000	705.260
BT	703.270	328.000	705.270	702.760	329.000	705.280	701.870	329.500	705.280	699.220
BT	331.000	705.310	699.490	331.500	705.310	701.750	332.500	705.320	702.740	333.500
BT	705.330	703.360	334.500	705.340	703.500	335.500	705.350	703.850	336.500	705.360
BT	703.780	337.500	705.370	703.420	338.500	705.380	702.910	339.500	705.390	701.990
BT	340.000	705.400	699.490	340.000	705.400	0.000	346.000	705.400	0.000	0.000

X1	6.200	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	705.200	705.200	0.000
X1	6.300	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	705.200	705.200	0.000
NC	.043	.043	.033	.100	.300	0.000	0.000	0.000	0.000	0.000

INTERPOLATED VALLEY SECTION

X1	6.400	10.000	470.000	530.000	400.000	400.000	400.000	0.000	0.000	0.000
GR	712.400	100.000	709.600	270.000	708.000	400.000	703.500	470.000	697.610	492.500
GR	697.610	507.500	703.500	530.000	706.500	600.000	710.000	650.000	714.000	750.000

INTERPOLATED VALLEY SECTION

X1	6.500	8.000	350.000	430.000	700.000	500.000	600.000	0.000	0.000	0.000
GR	719.500	100.000	710.500	130.000	706.200	260.000	706.600	350.000	699.510	382.500
GR	699.510	397.500	706.600	430.000	710.600	450.000	0.000	0.000	0.000	0.000

SURVEYED VALLEY SECTION D/S OF WEIR

X1	11.000	11.000	179.000	239.000	48.000	398.000	428.000	0.000	0.000	0.000
GR	712.930	100.000	710.030	160.000	707.900	179.000	706.710	190.000	701.420	202.000
GR	700.710	206.500	700.960	212.500	700.880	217.000	706.920	229.000	707.700	239.000
GR	711.180	374.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	0.000	2.100	3.300	0.000	.500	0.000	.340	0.000	701.000	700.710

SURVEYED SECTION SHEET PILE WEIR (E)

X1	11.200	17.000	190.000	229.000	2.000	2.000	2.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	702.500	702.700	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	702.700	702.700	0.000
BT	17.000	100.000	712.930	0.000	160.000	710.030	0.000	179.000	707.900	0.000
BT	190.000	707.350	0.000	202.000	702.900	0.000	206.500	702.820	0.000	206.500
BT	702.700	0.000	209.000	702.700	0.000	209.000	702.700	701.500	209.500	702.700
BT	701.500	209.500	702.700	0.000	212.500	702.110	0.000	212.500	702.730	0.000
BT	217.000	702.870	0.000	229.000	707.280	0.000	240.000	711.810	0.000	374.000
BT	711.180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	712.930	100.000	710.030	160.000	707.900	179.000	707.350	190.000	702.900	202.000
GR	702.820	206.500	702.700	206.500	702.700	209.000	701.000	209.000	701.000	209.500
GR	702.700	209.500	702.110	212.500	702.730	212.500	702.870	217.000	707.280	229.000
GR	711.810	240.000	711.180	374.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED SECTION U/S OF WEIR

X1	11.300	11.000	190.000	229.000	2.000	2.000	2.000	0.000	0.000	0.000
GR	712.930	100.000	710.030	160.000	707.900	184.000	706.710	190.000	702.260	202.000
GR	702.160	206.500	702.850	212.500	701.670	217.000	706.710	229.000	711.810	230.000
GR	711.810	374.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.040	.040	.033	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	11.500	0.000	0.000	0.000	150.000	150.000	150.000	0.000	.135	0.000

NC	.015	.015	.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	11.600	7.000	190.000	245.000	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	711.660	711.660	0.000
GR	713.800	100.000	712.700	190.000	703.700	209.000	702.340	210.000	702.340	225.000
GR	703.700	226.000	712.700	245.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	.950	1.490	2.600	0.000	16.670	.670	100.200	0.000	702.600	702.300

U/S FACE OF M-37 TWIN CONCRETE BOX CULVERT (F)

X1	11.700	13.000	700.000	717.000	53.000	53.000	53.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	708.600	712.700	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	712.700	712.700	0.000
BT	10.000	600.000	711.900	0.000	700.000	712.700	0.000	700.000	712.700	708.600
BT	708.000	712.700	708.600	708.000	712.700	702.340	708.670	712.700	702.340	708.670
BT	712.700	708.600	717.000	712.700	708.600	717.000	712.700	0.000	850.000	713.200
BT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	710.600	100.000	710.400	200.000	710.900	300.000	711.600	500.000	711.900	600.000
GR	712.700	700.000	702.470	700.000	702.340	708.000	702.340	708.670	702.500	717.000
GR	712.700	717.000	713.200	850.000	713.700	950.000	0.000	0.000	0.000	0.000

INTERPOLATED CROSS SECTION

X1	11.900	7.000	190.000	245.000	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	712.700	712.700	0.000
GR	713.800	100.000	712.700	190.000	703.700	209.000	702.620	210.000	702.620	225.000
GR	703.700	226.000	712.700	245.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.055	.055	.033	.100	.300	0.000	0.000	0.000	0.000	0.000

INTERPOLATED CROSS SECTION

X1	11.950	7.000	370.000	425.000	80.000	110.000	100.000	0.000	0.000	0.000
GR	711.130	0.000	709.300	370.000	702.630	390.000	702.630	405.000	709.300	425.000
GR	710.700	610.000	718.000	656.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.035	.035	.020	.300	.500	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS-SECTION

X1	12.000	18.000	646.000	701.000	200.000	250.000	210.000	0.000	0.000	0.000
GR	716.850	0.000	717.160	52.000	711.650	110.000	712.630	206.000	712.120	350.000
GR	709.730	381.000	710.520	504.000	711.130	624.000	707.760	646.000	703.300	654.000
GR	702.660	660.000	702.730	666.000	702.730	667.000	703.370	668.000	709.050	701.000
GR	726.250	911.000	730.770	936.000	737.440	1049.000	0.000	0.000	0.000	0.000

SURVEYED CROSS-SECTION 50 FT D/S OF CULVERT

X1	13.000	15.000	372.000	427.000	695.000	735.000	715.000	0.000	0.000	0.000
GR	716.230	100.000	716.290	144.000	710.960	170.000	709.760	272.000	709.000	372.000
GR	707.200	381.000	703.160	391.000	702.930	396.000	702.830	400.000	703.330	404.000
GR	708.050	427.000	709.710	458.000	713.340	698.000	715.660	757.000	716.880	783.000
NC	.030	.030	.024	.300	.500	0.000	0.000	0.000	0.000	0.000
X1	13.100	26.000	310.000	333.500	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	712.870	712.870	0.000
GR	716.840	100.000	713.250	282.000	707.100	310.000	706.000	310.250	705.600	310.750
GR	705.100	312.250	704.700	314.250	704.500	315.750	704.700	317.250	705.100	319.250
GR	705.600	320.750	706.000	321.250	707.100	321.500	707.100	322.000	706.000	322.250
GR	705.600	322.750	705.100	324.250	704.700	326.250	704.500	327.750	704.700	329.250
GR	705.100	331.250	705.600	332.750	706.000	333.250	707.100	333.500	712.350	361.500
GR	714.200	400.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

D/S FACE OF TWIN CMP ARCH CULVERT

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	712.870	712.870	0.000
BT	26.000	100.000	716.840	0.000	282.000	713.250	0.000	310.000	713.250	707.100
BT	310.250	713.240	708.600	310.750	713.220	709.700	312.250	713.180	711.400	314.250
BT	713.110	712.400	315.750	713.070	712.670	317.250	713.070	712.400	319.250	713.000
BT	711.400	320.750	713.000	709.700	321.250	713.100	708.600	321.500	713.100	707.100
BT	322.000	713.000	707.100	322.250	713.100	708.600	322.750	713.100	709.700	324.250
BT	713.100	711.400	326.250	713.100	712.400	327.750	713.100	712.700	329.250	713.100
BT	712.400	331.250	713.000	711.400	332.750	713.000	709.700	333.250	713.000	708.600
BT	333.500	713.100	707.100	361.500	712.350	0.000	400.000	714.200	0.000	0.000

X1	13.300	0.000	0.000	0.000	81.000	81.000	81.000	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	713.250	713.250	0.000

X1	13.400	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	713.250	713.250	0.000
NC	.055	.055	.033	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS-SECTION (H)

X1	14.000	12.000	364.000	424.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	718.330	100.000	718.330	144.000	711.680	170.000	710.960	364.000	708.220	384.000
GR	705.760	390.000	705.020	392.000	704.890	394.000	705.140	400.000	705.500	407.000
GR	713.170	424.000	713.630	452.000	0.000	0.000	0.000	0.000	0.000	0.000

INTERPOLATED CROSS SECTION

X1	14.100	20.000	364.000	424.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	711.000	364.000	709.920	384.000	709.050	386.100	708.170	388.200	707.310	390.300
GR	706.300	394.500	706.150	396.600	706.080	398.700	706.120	400.800	706.220	402.900
GR	706.380	405.000	706.660	407.200	707.450	409.500	707.980	411.400	708.510	413.500
GR	709.040	415.600	709.570	417.700	710.100	419.800	710.630	421.900	711.160	424.000

INTERPOLATED CROSS SECTION

X1	14.200	20.000	364.000	424.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	711.630	364.000	710.740	386.100	709.850	388.200	708.970	390.300	708.180	392.400
GR	707.690	394.500	707.290	396.600	707.070	398.700	707.060	400.800	707.150	402.900
GR	707.360	405.100	707.780	407.100	708.710	409.300	709.130	411.400	709.540	413.400
GR	709.960	415.600	710.380	417.700	710.800	419.800	711.210	421.900	711.630	424.000

INTERPOLATED CROSS SECTION

X1	14.300	21.000	364.000	424.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	713.330	364.000	712.430	386.100	711.530	388.200	710.630	390.300	709.780	392.400
GR	709.070	394.500	708.440	396.600	708.060	398.600	708.060	398.700	707.990	400.800
GR	708.080	402.900	708.340	405.000	708.900	407.200	709.970	409.300	710.270	411.400
GR	710.570	413.500	710.880	415.600	711.180	417.700	711.490	419.800	711.790	421.900
GR	712.090	424.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	.018	.018	.033	.100	.300	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS SECTION (I)

X1	15.000	15.000	159.000	207.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	719.270	100.000	718.600	135.000	715.040	159.000	709.820	171.000	709.090	173.000
GR	708.920	176.000	709.050	179.000	709.810	182.000	711.110	183.000	712.560	199.000
GR	715.420	207.000	719.800	219.000	723.090	376.000	726.490	401.000	726.690	437.000
NC	.018	.018	.030	.300	.500	0.000	0.000	0.000	0.000	0.000

X1	15.100	15.000	171.000	183.750	84.000	84.000	84.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	717.790	717.790	0.000
GR	719.270	100.000	718.600	135.000	715.040	159.000	710.400	171.000	709.600	174.000
GR	709.080	177.000	709.080	177.750	709.080	180.000	709.520	183.750	715.000	183.750
GR	715.420	207.000	719.800	219.000	723.090	376.000	726.490	401.000	726.690	437.000
SB	1.250	2.710	2.800	0.000	12.750	.750	72.000	0.000	709.130	709.080

U/S FACE OF M-37 BRIDGE 2 TWIN BOX CULVERT (CONCRETE)

X1	15.300	0.000	0.000	0.000	126.000	126.000	126.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	715.130	722.260	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	722.260	722.260	0.000

X1	15.400	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	722.260	722.260	0.000
NC	.020	.020	.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS SECTION (J)

X1	16.000	11.000	193.000	236.000	50.000	50.000	50.000	0.000	0.000	0.000
GR	722.260	100.000	719.730	154.000	719.940	193.000	710.920	216.000	709.930	224.000
GR	709.530	226.000	709.910	230.000	716.400	236.000	718.560	284.000	721.250	392.000
GR	721.800	482.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	16.500	23.000	193.000	236.000	54.000	54.000	54.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	716.940	716.940	0.000
GR	722.300	100.000	719.730	154.000	719.940	193.000	712.890	216.000	711.890	216.000
GR	710.390	217.000	709.890	218.000	709.890	220.000	710.390	221.000	711.890	222.000
GR	712.890	222.000	712.720	223.400	711.770	223.400	710.270	224.400	709.770	225.400
GR	709.770	227.400	710.270	228.400	711.770	229.400	712.720	229.400	713.910	236.000
GR	718.560	284.000	721.540	392.000	721.800	482.000	0.000	0.000	0.000	0.000
NC	.020	.020	.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	1.250	2.780	2.800	0.000	10.640	1.400	56.550	0.000	710.220	709.770

X1	16.600	22.000	193.000	233.000	165.000	165.000	165.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	715.890	719.940	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	719.940	718.100	0.000
BT	18.000	100.000	722.260	722.260	154.000	719.730	719.730	193.000	719.940	719.940
BT	208.000	719.940	713.200	209.000	719.890	715.800	210.000	719.850	716.200	212.000
BT	719.800	716.200	213.000	719.760	715.800	214.000	719.710	713.200	215.000	719.660
BT	713.200	216.000	719.620	715.800	217.000	719.570	716.200	219.000	719.480	716.200
BT	220.000	719.430	715.800	221.000	719.200	713.200	233.000	718.100	718.100	250.000
BT	720.810	720.810	250.000	750.000	750.000	0.000	0.000	0.000	0.000	0.000
GR	722.260	100.000	719.730	154.000	719.940	193.000	713.200	208.000	712.200	208.000
GR	710.700	209.000	710.200	210.000	710.200	212.000	710.700	213.000	712.200	214.000
GR	713.200	214.000	713.200	215.000	712.200	215.000	710.700	216.000	710.200	217.000
GR	710.200	219.000	710.700	220.000	712.200	221.000	713.200	221.000	718.100	233.000
GR	720.810	250.000	750.000	250.000	0.000	0.000	0.000	0.000	0.000	0.000

U/S FACE OF TWIN CMP CULVERT

X1	16.700	8.000	193.000	233.000	5.000	5.000	5.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	719.940	718.100	0.000
GR	722.260	100.000	719.730	154.000	719.940	193.000	710.200	211.000	710.200	219.000
GR	718.100	233.000	720.800	250.000	750.000	250.000	0.000	0.000	0.000	0.000

X1	16.750	9.000	270.000	312.000	220.000	220.000	220.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	717.680	717.680	0.000
GR	720.310	100.000	719.160	270.000	712.300	286.000	710.790	286.000	710.540	292.000
GR	710.210	294.000	710.560	296.000	719.160	312.000	721.600	350.000	0.000	0.000
SB	1.250	1.450	2.800	0.000	10.640	1.400	56.550	0.000	710.210	710.210

X1	16.800	20.000	284.000	297.500	26.000	26.000	26.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	716.210	719.160	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	719.160	719.160	0.000
BT	17.000	100.000	720.310	720.310	284.000	719.160	719.160	284.000	719.160	713.210
BT	285.000	719.160	715.710	286.000	719.160	716.210	288.000	719.160	716.210	289.000
BT	719.160	715.710	290.000	719.160	713.210	291.500	719.160	713.210	292.500	719.160
BT	715.710	293.500	719.160	716.210	295.500	719.160	716.210	296.500	719.160	715.710
BT	297.500	719.160	713.210	297.500	719.160	719.160	312.000	719.160	719.160	350.000
BT	721.100	721.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	720.310	100.000	719.160	284.000	713.210	284.000	712.210	284.000	710.710	285.000
GR	710.210	286.000	710.210	288.000	710.710	289.000	712.210	290.000	713.210	290.000
GR	713.210	291.500	710.710	292.500	710.210	293.500	710.210	295.500	710.710	296.500
GR	712.210	297.500	713.210	297.500	719.160	297.500	719.160	312.000	721.100	350.000
NC	.025	.025	.030	.100	.300	0.000	0.000	0.000	0.000	0.000

SURVEYED CROSS SECTION (K)

X1	17.000	9.000	270.000	296.000	139.000	121.000	130.000	0.000	0.000	0.000
GR	720.310	100.000	719.160	270.000	712.300	286.000	710.790	286.000	710.540	292.000
GR	710.470	294.000	710.560	296.000	719.160	310.000	720.800	350.000	0.000	0.000

SURVEYED CROSS SECTION LIMIT OF STUDY (L)

X1	18.000	8.000	176.000	224.000	470.000	390.000	440.000	0.000	0.000	0.000
GR	720.600	100.000	717.740	176.000	711.720	188.000	711.460	194.000	711.340	198.000
GR	711.560	200.000	724.110	224.000	725.260	352.000	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

```
*PROF 1

CCHV=     .100 CEHV=     .300
*SECNO 8.000
   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=     712.0     1287.0  TYPE=     1  TARGET=     575.000
 ELENCL=     695.00  ELENCR= 100000.00

          CONFLUENCE WITH LITTLE PLASTER CREEK  (A)

      8.00       8.54     696.34       0.00     696.34     696.37        .03       0.00       0.00     691.10
      610.       128.       322.       160.       422.       173.       440.         0.         0.     689.10
      0.00        .30       1.86        .36       .085       .033       .085      0.000     687.80     498.37
   .000114         0.         0.         0.          0          0          0       0.00     464.68     963.05

*SECNO 9.000

          SURVEYED VALLEY SECTION

      9.00       8.35     696.35       0.00       0.00     696.45        .10        .06        .02     698.80
      610.         0.       603.         7.         0.       235.        16.         5.         2.     693.64
       .04       0.00       2.57        .42       .085       .033       .085       .032     688.00    1283.29
   .000390       400.       325.       300.          2          0          0       0.00      52.50    1335.79

*SECNO 9.500
          INTERPOLATED VALLEY SECTION 50 FT D/S OF BRIDGE

      9.50       7.19     696.39       0.00       0.00     696.53        .14        .06        .01     698.20
      610.         0.       610.         0.         0.       203.         0.         6.         2.     698.40
       .05       0.00       3.01       0.00       .085       .033       .085       .033     689.20     585.84
   .000721       140.       125.        95.          0          0          0       0.00      48.40     634.24

CCHV=     .300 CEHV=     .500
*SECNO 10.000

          D/S FACE OF DRIVEWAY CULVERT 2 CMP  (B)

     10.00       6.95     696.45       0.00       0.00     696.57        .12        .03        .01     697.45
      610.         0.       610.         0.         0.       217.         0.         6.         2.     697.55
       .05       0.00       2.81       0.00       .045       .030       .045       .032     689.50     583.23
   .000558        50.        50.        50.          2          0          0       0.00      53.16     636.39

*SECNO 10.100
   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= 26 MIN ELTRD=  697.90 MAX ELLC=  698.30

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      696.40 ELREA=      696.40

    10.10      6.85    696.35      0.00      0.00    696.66      .31       .00       .09    697.45
     610.        0.      610.        0.        0.      137.       0.        6.        2.    697.55
      .05      0.00      4.45      0.00      .030      .024      .030      .032    689.50    583.52
  .001305        1.        1.        1.         2         0         0    -75.48     52.56    636.09

*SECNO 10.200

3370 NORMAL BRIDGE,NRD= 26 MIN ELTRD=  697.90 MAX ELLC=  698.35

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      699.80 ELREA=      699.80

    10.20      6.82    696.37      0.00      0.00    696.68      .31       .02       .00    697.50
     610.        0.      610.        0.        0.      136.       0.        6.        2.    697.60
      .05      0.00      4.47      0.00      .030      .024      .030      .032    689.55    583.64
  .001317       15.       15.       15.         0         0         0    -74.18     52.33    635.97

*SECNO 10.300

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      699.80 ELREA=      699.80

    10.30      7.08    696.63      0.00      0.00    696.74      .11       .00       .06    697.50
     610.        0.      610.        0.        0.      224.       0.        6.        2.    697.60
      .05      0.00      2.72      0.00      .030      .024      .030      .032    689.55    582.80
  .000327        1.        1.        1.         2         0         0      0.00     54.02    636.82

*SECNO 10.400

          INTERPOLATED CROSS-SECTION 50 FT U/S OF CULVERTS

    10.40      6.90    696.62      0.00      0.00    696.78      .16       .02       .02    698.23
     610.        0.      610.        0.        0.      191.       0.        6.        2.    699.00
      .06      0.00      3.20      0.00      .030      .024      .030      .031    689.72    584.97
  .000465       50.       50.       50.         2         0         0      0.00     46.93    631.89

CCHV=     .100 CEHV=     .300
*SECNO 10.700
    10.70      5.49    696.99      0.00      0.00    697.18      .19       .39       .01    693.50
     610.       28.      556.       26.       24.      154.       23.        9.        3.    693.50
      .11      1.14      3.61      1.13      .050      .032      .050      .032    691.50    415.15
  .000725      600.      675.      700.         2         0         0      0.00     58.03    473.18

*SECNO 7.000
   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
```

10% high

Twin 11'-5" x 7'-3"
area = 2 x 63.9 = 127

how can this be
when the culvert is a twin
11'-5" x 7'-3" Multiplated
pipe arch
Top width 26 ft max

```
          SURVEYED VALLEY SECTION D/S OF WEIR
      7.00      8.03    697.40      0.00      0.00    697.54       .14       .36       .00    697.87
      610.        0.      610.        0.        0.      200.        0.       12.        4.    699.20
       .16      0.00      3.04      0.00      .050      .032      .050      .032    689.37    372.15
   .000653      500.      525.      550.         2         0         0      0.00     45.07    417.22

*SECNO 7.200
      7.20      7.89    697.39      0.00      0.00    697.57       .18       .02       .01    698.97
      610.        0.      610.        0.        0.      179.        0.       12.        4.    699.29
       .16      0.00      3.41      0.00      .050      .033      .050      .032    689.50    575.54
   .000789       25.       25.       25.         2         0         0      0.00     34.33    609.87

SPECIAL BRIDGE
SB  XK        XKOK      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      2.10      3.30      0.00      .50       0.00      .25       0.00      695.50    689.37
*SECNO 7.300
3301 HV CHANGED MORE THAN HVINS
   SECNO     DEPTH     CWSEL     CRIWS     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      XLOBR     ITRIAL    IDC       ICUNT     CORAR     TOPWID    ENDST

   PRESSURE AND WEIR FLOW

   EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID AREA      ELLC      ELTRD
   194836.52 703.57    0.00      610.      2.        0.        0.        696.00    696.30

   3685 20 TRIALS ATTEMPTED WSEL,CWSEL
   3720 CRITICAL DEPTH ASSUMED
   3470 ENCROACHMENT STATIONS=     570.0     616.0  TYPE=     1  TARGET=     46.000
    ELENCL=    705.00  ELENCR=    705.00
          SURVEYED SECTION SHEET PILE WEIR  (C)
      7.30      4.38    699.88    699.88      0.00    700.96      1.08       .02      -.02    700.40
      610.        0.      610.        0.        0.      73.        0.       12.        4.    699.70
       .16      0.00      8.36       .98      .050      .033      .050      .032    695.50    580.00
   .016864       10.       10.       10.        20        11         0      0.00     36.00    616.00

   *SECNO 7.400
   3301 HV CHANGED MORE THAN HVINS
```

```
3470 ENCROACHMENT STATIONS=      550.0      640.0  TYPE=      1  TARGET=      90.000

          SURVEYED VALLEY SECTION U/S OF WEIR

     7.40      4.96    700.87      0.00      0.00    701.06       .19       .01       .09    699.76
     610.       16.      567.       27.       18.      157.       27.       12.        4.    698.79
      .16       .87      3.62      1.03      .050      .033      .050      .032    695.91    550.00
 .001143        2.        2.        2.         3         0         0      0.00     89.57    639.57

CCHV=     .300 CEHV=     .500
*SECNO 6.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      704.46 ELREA=      704.46

     6.00      4.42    700.77      0.00      0.00    701.52       .74       .18       .28    698.00
     610.        0.      610.        0.        0.      88.        0.       12.        4.    699.49
      .17      0.00      6.92      0.00      .050      .030      .050      .032    696.35    315.00
 .005332       84.       84.       84.         3         0         0      0.00     25.00    340.00

*SECNO 6.100

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     COPAR     TOPWID      ENDST

3370 NORMAL BRIDGE,NRD= 26 MIN ELTRD=  705.20 MAX ELLC=  703.85

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      704.46 ELREA=      704.46

          D/S FACE OF 32ND STREET BRIDGE  2 ARCHCMP  (D)

     6.10      4.09    700.44    700.14      0.00    701.86      1.43       .01       .34    698.00
     610.        0.      610.        0.        0.      64.        0.       12.        4.    699.49
      .17      0.00      9.59      0.00      .015      .024      .015      .032    696.35    315.00
 .008627        1.        1.        1.         4        12         0    -16.99     25.00    340.00

*SECNO 6.200
3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 26 MIN ELTRD=  705.20 MAX ELLC=  703.85

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      705.20 ELREA=      705.20

     6.20      5.20    701.55      0.00      0.00    702.41       .86       .38       .17    698.00
```

```
     610.        0.      610.        0.        0.       82.        0.       12.        4.     699.49
      .17     0.00      7.46     0.00      .015      .024      .015      .031     696.35     315.00
 .004514      62.       62.       62.         3         0         0    -27.22      25.00     340.00

*SECNO 6.300

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      705.20 ELREA=      705.20

     6.30     5.83    702.18     0.00      0.00    702.56       .38       .00       .15     698.00
     610.       0.      610.       0.        0.      123.        0.       12.        4.     699.49
      .17     0.00      4.95     0.00      .015      .024      .015      .031     696.35     315.00
 .001118       1.        1.        1.         3         0         0      0.00      25.00     340.00

CCHV=     .100 CEHV=     .300
*SECNO 6.400

          INTERPOLATED VALLEY SECTION

     6.40     5.25    702.86     0.00      0.00    703.03       .17       .45       .02     703.50
     610.       0.      610.       0.        0.      184.        0.       14.        4.     703.50
      .20     0.00      3.32     0.00      .043      .033      .043      .032     697.61     472.46
 .001125     400.      400.     400.         2         0         0      0.00      55.07     527.54

*SECNO 6.500

          INTERPOLATED VALLEY SECTION

     6.50     4.22    703.73     0.00      0.00    704.00       .28       .95       .03     706.60
     610.       0.      610.       0.        0.      145.        0.       16.        5.     706.60
      .24     0.00      4.21     0.00      .043      .033      .043      .032     699.51     363.16
 .002376     700.      600.     500.         2         0         0      0.00      53.69     416.84

*SECNO 11.000
   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

          SURVEYED VALLEY SECTION D/S OF WEIR

    11.00     4.23    704.94     0.00      0.00    705.64       .70      1.51       .13     707.90
     610.       0.      610.       0.        0.       91.        0.       17.        6.     707.70
      .26     0.00      6.74     0.00      .043      .033      .043      .032     700.71     194.02
 .005781      48.      428.     398.         3         0         0      0.00      31.05     225.06

SPECIAL BRIDGE

SB   XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      2.10      3.30      0.00      .50       0.00      .34       0.00      701.00    700.71

*SECNO 11.200
   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

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3       QWEIR      QPR      BAREA   TRAPEZOID     ELLC      ELTRD
                                                             AREA
105667.70   705.93    0.00      609.        3.       0.       1.       702.50    702.70

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

          SURVEYED SECTION SHEET PILE WEIR  (E)

    11.20     4.86   705.86   705.83     0.00   706.98     1.12      .02     -.02   707.35
     610.      0.     610.      0.        0.      72.      0.       17.      6.     707.28
      .26     0.00    8.48     0.00      .043    .033     .043     .032   701.00   194.02
  .014278      2.      2.       2.        20       8       0      0.00    31.12   225.14

*SECNO 11.300

3301 HV CHANGED MORE THAN HVINS

          SURVEYED SECTION U/S OF WEIR

    11.30     4.99   706.66    0.00      0.00   707.06      .40      .01      .07   706.71
     610.      0.     610.      0.        0.     121.      0.       17.      6.     706.71
      .26     0.00    5.06     0.00      .043    .033     .043     .032   701.67   190.13
  .002971      2.      2.       2.         4       0       0      0.00    38.75   228.88

CCHV=     .300 CEHV=     .500
*SECNO 11.500
    11.50     5.33   707.13    0.00      0.00   707.45      .32      .37      .02   706.85
     610.      0.     610.      0.        0.     134.      0.       17.      6.     706.85
      .27      .47    4.55      .02      .040    .033     .040     .032   701.81   188.51
  .002108    150.    150.     150.         2       0       0      0.00    40.55   229.06

*SECNO 11.600

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      711.66 ELREA=      711.66

    11.60     4.77   707.11    0.00      0.00   707.64      .53      .09      .10   712.70
     610.      0.     610.      0.        0.     104.      0.       18.      6.     712.70
      .27     0.00    5.84     0.00      .015    .020     .015     .032   702.34   201.79
  .001402     50.     50.      50.         2       0       0      0.00    31.42   233.21

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP      BAREA     SS       ELCHU     ELCHD
     .95      1.49      2.60      0.00     16.67      .67    100.20     0.00     702.60    702.30
```

```
*SECNO 11.700
   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

CLASS A LOW FLOW

3420 BRIDGE W.S.=     707.13 BRIDGE VELOCITY=,      8.15      CALCULATED CHANNEL AREA=,      72.
 EGPRS     EGLWC      H3      QWEIR     QPR      BAREA   TRAPEZOID      ELLC     ELTRD
                                                          AREA
    0.00    708.05     .06       0.     610.      100.      96.      708.60    712.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      712.70 ELREA=      712.70

          U/S FACE OF M-37 TWIN CONCRETE BOX CULVERT  (F)

   11.70     4.83    707.17      0.00      0.00    708.05       .88       .41      0.00    712.70
    610.       0.      610.       0.        0.      81.        0.        18.       6.     712.70
     .27      0.00     7.53      0.00      .015      .020      .015      .032    702.34    700.00
  .002304     53.      53.       53.        0         0         0       0.00     17.00    717.00

*SECNO 11.900
3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      712.70 ELREA=      712.70

          INTERPOLATED CROSS SECTION

   11.90     5.21    707.83      0.00      0.00    708.21       .38       .00       .15    712.70
    610.       0.      610.       0.        0.     123.        0.        18.       6.     712.70
     .27      0.00     4.95      0.00      .015      .020      .015      .032    702.62    200.30
  .000899      1.       1.        1.         3         0         0       0.00     34.40    234.70

CCHV=     .100 CEHV=     .300
*SECNO 11.950

          INTERPOLATED CROSS SECTION

   11.95     5.50    708.13      0.00      0.00    708.33       .19       .10       .02    709.30
    610.       0.      610.       0.        0.     173.        0.        18.       6.     709.30
     .28      0.00     3.52      0.00      .055      .033      .055      .032    702.63    373.49
  .001156     80.     100.      110.         2         0         0       0.00     48.01    421.51

CCHV=     .300 CEHV=     .500
*SECNO 12.000

          SURVEYED CROSS-SECTION
```

```
    12.00      5.62    708.28      0.00      0.00    708.49       .20       .15       .01    707.76
     610.        0.      610.        0.        1.     168.        0.       19.        6.    709.05
      .30       .39      3.62      0.00      .035      .020      .035      .031    702.66    642.60
  .000502      200.      210.      250.         2         0         0      0.00     53.94    696.53

*SECNO 13.000

          SURVEYED CROSS-SECTION 50 FT D/S OF CULVERT

    13.00      5.81    708.64      0.00      0.00    708.82       .18       .33       .01    709.00
     610.        0.      609.        1.        0.     181.        3.       22.        7.    708.05
      .36      0.00      3.36       .38      .035      .020      .035      .029    702.83    373.78
  .000414      695.      715.      735.         2         0         0      0.00     64.32    438.10

CCHV=     .300 CEHV=     .500
*SECNO 13.100
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       WIN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      712.87 ELREA=      712.87

    13.10      3.74    708.24      0.00      0.00    709.32      1.08       .05       .45    707.10
     610.        0.      610.        0.        0.      73.        0.       22.        7.    707.10
      .36      0.00      8.35      0.00      .030      .024      .030      .029    704.50    310.00
  .005093       49.       49.       49.         3         0         0      0.00     23.50    333.50

*SECNO 13.200
3370 NORMAL BRIDGE.NRD= 26 MIN ELTRD=  712.35 MAX ELLC=  712.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      712.87 ELREA=      712.87

          D/S FACE OF TWIN CMP ARCH CULVERT

    13.20      3.73    708.23      0.00      0.00    709.34      1.12       .01       .02    707.10
     610.        0.      610.        0.        0.      72.        0.       22.        7.    707.10
      .36      0.00      8.48      0.00      .030      .024      .030      .029    704.50    310.00
  .006422        1.        1.        1.         1         0         0     -4.44     23.50    333.50

*SECNO 13.300
3370 NORMAL BRIDGE.NRD= 26 MIN ELTRD=  712.35 MAX ELLC=  712.70

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      713.25 ELREA=      713.25
```

```
   13.30      4.65    709.15      0.00      0.00    709.84       .68       .36       .13    707.10
    610.        0.      610.        0.        0.      92.        0.       22.        7.    707.10
     .36      0.00      6.64      0.00      .030      .024      .030      .029    704.50    310.00
 .003314       81.       81.       81.         3         0         0    -13.82     23.50    333.50

*SECNO 13.400
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      713.25 ELREA=      713.25

   13.40      4.74    709.24      0.00      0.00    709.86       .62       .00       .02    707.10
    610.        0.      610.        0.        0.      97.        0.       22.        7.    707.10
     .36      0.00      6.32      0.00      .030      .024      .030      .029    704.50    310.00
 .002009        1.        1.        1.         2         0         0      0.00     23.50    333.50

*SECNO 14.000
          SURVEYED CROSS-SECTION  (H)
   14.00      4.75    709.64      0.00      0.00    710.05       .42       .13       .06    710.96
    610.        0.      610.        0.        0.     118.        0.       22.        7.    713.17
     .36      0.00      5.17      0.00      .055      .033      .055      .029    704.89    373.66
 .003556       50.       50.       50.         3         0         0      0.00     42.50    416.17

*SECNO 14.100
  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

          INTERPOLATED CROSS SECTION
   14.10      4.74    710.82      0.00      0.00    711.18       .36      1.11       .02    711.00
    610.        0.      610.        0.        0.     127.        0.       23.        8.    711.16
     .38      0.00      4.60      0.00      .055      .033      .055      .029    706.08    367.26
 .003860      300.      300.      300.         3         0         0      0.00     55.40    422.67

*SECNO 14.200
3280 CROSS SECTION      14.20 EXTENDED       .35 FEET

          INTERPOLATED CROSS SECTION
   14.20      4.92    711.98      0.00      0.00    712.29       .31      1.10       .01    711.63
    610.        0.      610.        0.        0.     136.        0.       24.        8.    711.63
     .40      0.00      4.48      0.00      .055      .033      .055      .030    707.06    364.00
 .003463      300.      300.      300.         2         0         0      0.00     60.00    424.00

*SECNO 14.300
3280 CROSS SECTION      14.30 EXTENDED       .99 FEET
```

INTERPOLATED CROSS SECTION

14.30	5.10	713.09	0.00	0.00	713.46	.38	1.14	.03	713.33
610.	0.	610.	0.	0.	123.	0.	25.	8.	712.09
.42	0.00	4.94	0.00	.055	.033	.055	.030	707.99	370.23
.004197	300.	300.	300.	0	0	0	0.00	53.77	424.00

CCHV= .100 CEHV= .300
*SECNO 15.000

SURVEYED CROSS SECTION (I)

15.00	5.26	714.18	0.00	0.00	714.57	.39	1.11	.00	715.04
610.	0.	610.	0.	0.	122.	0.	26.	9.	715.42
.43	0.00	5.01	0.00	.018	.033	.018	.030	708.92	160.97
.003261	300.	300.	300.	2	0	0	0.00	42.57	203.54

CCHV= .300 CEHV= .500
*SECNO 15.100

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 717.79 ELREA= 717.79

15.10	4.86	713.94	0.00	0.00	715.68	1.74	.43	.68	710.40
610.	0.	610.	0.	0.	58.	0.	26.	9.	715.00
.44	0.00	10.59	0.00	.018	.030	.018	.030	709.08	171.00
.009235	84.	84.	84.	3	0	0	0.00	12.75	183.75

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS 712.50 ,NOT 713.94 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	2.71	2.80	0.00	12.75	.75	72.00	0.00	709.13	709.08

*SECNO 15.300

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

PRESSURE FLOW

EGPRS	EGLWC	H3	QWFIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
716.96	715.92	0.00	0.	610.	72.	72.	715.13	722.26

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 722.26 ELREA= 722.26

U/S FACE OF M-37 BRIDGE 2 TWIN BOX CULVERT (CONCRETE)

15.30	7.10	716.18	0.00	0.00	716.96	.78	1.28	0.00	710.40
610.	0.	610.	0.	0.	86.	0.	26.	9.	715.00
.44	0.00	7.08	0.00	.018	.030	.018	.030	709.08	171.00
.002608	126.	126.	126.	3	0	0	0.00	12.75	183.75

*SECNO 15.400

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA= 722.26 ELREA= 722.26

15.40	7.10	716.18	0.00	0.00	716.96	.78	.00	.00	710.40
610.	0.	610.	0.	0.	86.	0.	26.	9.	715.00
.44	0.00	7.07	0.00	.018	.030	.018	.030	709.08	171.00
.002601	1.	1.	1.	0	0	0	0.00	12.75	183.75

*SECNO 16.000

3301 HV CHANGED MORE THAN HVINS

SURVEYED CROSS SECTION (J)

16.00	7.46	716.99	0.00	0.00	717.20	.20	.07	.17	719.94
610.	0.	606.	4.	0.	166.	4.	26.	9.	716.40
.45	0.00	3.64	.94	.020	.030	.020	.030	709.53	200.50
.000797	50.	50.	50.	2	0	0	0.00	48.85	249.35

*SECNO 16.500

16.50	7.33	717.10	0.00	0.00	717.26	.16	.04	.01	719.94
610.	0.	456.	154.	0.	141.	52.	26.	9.	713.91
.45	0.00	3.24	2.94	.020	.030	.020	.030	709.77	202.29
.000850	54.	54.	54.	1	0	0	0.00	66.58	268.87

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	2.78	2.80	0.00	10.64	1.40	56.55	0.00	710.22	709.77

*SECNO 16.600
PRESSURE AND WEIR FLOW

EGPRS	FGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
722.13	717.56	.05	139.	476.	57.	52.	715.89	719.94

16.60	9.85	720.05	0.00	0.00	720.16	.11	2.90	0.00	719.94
610.	4.	593.	14.	9.	224.	12.	27.	9.	718.10
.47	.41	2.64	1.14	.020	.024	.020	.030	710.20	147.17
.000247	165.	165.	165.	2	0	4	0.00	98.07	245.23

```
*SECNO 16.700
   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

            U/S FACE OF TWIN CMP CULVERT

     16.70       9.88     720.08       0.00       0.00     720.16        .08        .00        .01     719.94
      610.         4.       596.        11.        11.       252.        12.        27.         9.     718.10
       .47        .34       2.36        .88       .020       .024       .020       .030     710.20     146.56
   .000144         5.         5.         5.          2          0          0       0.00      98.90     245.46

*SECNO 16.750
     16.75       9.91     720.12       0.00       0.00     720.20        .08        .03        .00     719.16
      610.        38.       568.         4.        68.       250.         7.        29.        10.     719.16
       .50        .55       2.27        .55       .020       .024       .020       .030     710.21     127.84
   .000146       220.       220.       220.          0          0          0       0.00     199.13     326.98

SPECIAL BRIDGE

SB  XK         XKOR       COFQ       RDLEN      HWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.25       1.45       2.80       0.00      10.64       1.40      56.55       0.00     710.21     710.21

*SECNO 16.800
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA      TRAPEZOID AREA      ELLC       ELTRD
 722.74     720.22       .02      407.       203.        57.        55.                716.21     719.16

     16.80      10.05     720.26       0.00       0.00     720.41        .16        .21       0.00     719.16
      610.       116.       450.        44.        97.       125.        28.        29.        10.     719.16
       .50       1.20       3.61       1.60       .020       .024       .020       .030     710.21     108.23
   .000577        26.        26.        26.          2          0          4       0.00     225.29     333.52

CCHV=     .100 CEHV=     .300
*SECNO 17.000
3280 CROSS SECTION      17.00 EXTENDED        .09 FEET

            SURVEYED CROSS SECTION  (K)

     17.00       9.93     720.40       0.00       0.00     720.46        .06        .04        .01     719.16
      610.        67.       365.       179.       113.       173.        96.        30.        11.     710.56
       .52        .59       2.11       1.85       .025       .030       .025       .030     710.47     100.00
   .000168       139.       130.       121.          2          0          0       0.00     240.30     340.30

*SECNO 18.000
```

SURVEYED CROSS SECTION LIMIT OF STUDY (L)

18.00	9.14	720.48	0.00	0.00	720.53	.06	.07	.00	717.74
610.	95.	515.	0.	99.	253.	0.	34.	13.	724.11
.58	.95	2.04	0.00	.025	.030	.025	.030	711.34	103.28
.000168	470.	440.	390.	2	0	0	0.00	113.77	217.05

1) COUNTY: KENT

2) STUDY NAME: KENWOOD, CITY OF

3) WATERCOURSE: WHISKEY CREEK

4) DOCUMENT TYPE: REPORT

00BREAK00

HYDRAULIC ANALYSIS REPORT

WHISKEY CREEK AT CITY OF KENTWOOD
KENT COUNTY, MICHIGAN

Prepared by

COMMONWEALTH ASSOCIATES INC.
209 EAST WASHINGTON AVENUE
JACKSON, MICHIGAN 49201

September, 1979

This report was w/ original submittal.
New Profile has been attached.

Introduction

Hydraulic calculations were performed for the Whiskey Creek from the confluence with the Little Plaster Creek to the 28th Street Bridge (Kentwood city limits). Cross sections for the entire reach were surveyed by Commonwealth Associates in 1978. The flood flows for the 10, 50, 100, and 500-year recurrence intervals were approved by the Michigan DNR. This study was performed by Commonwealth Associates Inc., Jackson, Michigan, and the Project Manager was E. A. Meyer, P.E.

Method of Analysis

The HEC-2 computer program was utilized for the entire hydraulic analysis.

Variables and Coefficients

Manning's roughness coefficients for the entire reach were estimated from pictures, aerial photographs, and visual inspection.

"n" values

For channel	0.030-0.055
For overbanks	0.018- .085

Coefficients for bridges

Contractions	.3
Expansion	.5

Coefficients for floodway

Contractions	.1
Expansion	.3

The bridge losses and weir coefficients were computed and are presented in the bridge notes.

High Water Marks

There were no recorded high water marks within the study limits.

Starting Conditions

The synthetic hydrographs for the Whiskey Creek generated by the SCS were not readily available for use. Based on the small size of the watershed, it is assumed that the peak

flows for Little Plaster and Whiskey Creek are coincident. Therefore, the flood levels for the Little Plaster Creek at the confluence with the Whiskey Creek were used as the starting water surface elevations.

Special Problems

The special problems encountered in performing the hydraulic computations for the Whiskey Creek are all related to bridges and weirs. A description of the problems is included with the bridge notes. The entire reach of the Whiskey Creek has been channelized and the flow is confined to the channel. Therefore, no distinction was made between the floodway and floodplain.

Gilbert/Commonwealth
ENGINEERS/CONSULTANTS Reading, PA / Jackson, MS

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
Whitley Creek		JOB NO.
CALC. BY/DATE RDF	SUBJECT	SHEET 1 OF 5
REVIEW BY/DATE		BOOK NO.

CROSS sections AND BRIDGE sections.

Sec NO	DESCRIPTION
8.0	SURVEYED VALLEY section, NATURAL channel, confluence with Little Plaster creek
9.0	SURVEYED VALLEY section, first section in Reach channelized top width approximately 60' slope of banks 1on4
9.5	INTERPOLATED VALLEY section TOPO BASED ON USGS MAPS
10.0	SURVEYED BRIDGE section, 2 - 11'-5" x 7'-5" multiplate corrugated metal arch, PRIVATE DRIVE WAY, GRAVEL/DIRT ROAD.
↓ 10.3	CROSS sections to model culverts by the NORMAL BRIDGE Routine. Expansion & contraction coef. used .5 .3
10.4	INTERPOLATED VALLEY section
10.7	INTERPOLATED VALLEY section
7.0	SURVEYED VALLEY section, BANKS of channel BROKEN concrete, located 25' U/S of "Ditch check"
7.2	INTERPOLATED VALLEY section 2' D/S of Ditch check
7.3.	SURVEYED section. This section is a sheet Pile weir. IT was coded as a special BRIDGE Routine using A VERY SMALL opening. Thus forcing ALL The flow to go weir. ALSO, critical Depth is crossed AT The crest of the weir. See sketch in BRIDGE sketches. XKOR factor ASSUMED HIGH AND weir coef. ASSUMED HIGH ALSO.
7.4	SURVEYED VALLEY section 2' U/S of Ditch check; BANKS BROKEN concrete.
6.0	SURVEYED cross sections of 32ND street BRIDGE. 2 11'-5" x 7'-5" multi plate arch culverts
↓ 6.3	NORMAL BRIDGE Routine USED to model BRIDGE ROADWAY PAVED.

Gilbert/Commonwealth
ENGINEERS/CONSULTANTS Reading, PA/Jackson, MI

CALCULATION SHEET

REV.

CLIENT/OWNER	FILING CODE
Whiskey creek Rd ✓	JOB NO.
CALC. BY/DATE: Rdl	SHEET 2 OF 5
REVIEW BY/DATE	BOOK NO.
SUBJECT	

SEC NO	DESCRIPTION.
6.4	interpolated VALLEY section
6.5	interpolated valley section
11.0	surveyed valley section 2' D/S of sheet pile "Ditch check" BANKS concrete.
11.2	Surveyed section at sheet pile "Ditch check"/weir. This section was modeled utilizing the special Bridge Routine. A very small opening was incorporated in the weir to force all flow To go over. CRITICAL DEPTHS exceed at the crest. See BRIDGE sketchs for Plan & PROFILE. X KOR and weir coef were assumed to be high and efficient.
11.3	Surveyed section 2' U/S of Ditch check/weir, BANKS concrete.
11.5	Repeat of cross section 11.3 only .135' was added to all ground points.
11.6	SURVEYED valley section at The D/S FACE of M-37 (BROOMMOORE) BRIDGE
11.7	Surveyed Bridge section. Two Box culverts 8'x6' concrete. SPECIAL BRIDGE Routine USED.
	$1.49 = XKOR = 1 + .2 + \frac{29.1 (.02)^2 53}{1.07 \frac{1}{3}}$; weir coef. Based on PAVED ROAD. N factors of ROADWAY Based on PAVED ROAD.
11.9	interpolated cross section
11.95	interpolated cross section
12.0	Surveyed valley sections Right Bank RIP RAPED Because of curve.

Gilbert/Commonwealth
ENGINEERS/CONSULTANTS Reading, PA / Jackson, NJ

CALCULATION SHEET

REV.

CLIENT/OWNER	FILING CODE
Whiskey Creek	JOB NO.
CALC. BY/DATE RDJ	SUBJECT	SHEET 3 OF 5
REVIEW BY/DATE		BOOK NO.

Sec No.	Description
13.0	Surveyed cross section
13.1	Surveyed BRIDGE section for twin arch corrugated metal pipe 11'-5" x 9'-3"
↓	GRAVEL ROAD. Private modelled by special BRIDGE Routine
13.4	
14.0	Surveyed valley section u/s of twin culvert.
14.1	Interpolated valley section
14.2	Interpolated valley sections
14.3	Interpolated valley section
15.0	Surveyed valley d/s of M-37 Bridge
15.1	Surveyed Bridge sections at M-37 Twin 6x6 concrete Box culvert.
↓	$XKOR = \frac{14.2 + 29.1(.023)^2\ 80}{1.5^{2/3}} = 2.16$ (2.423) Pier losses = 1.25 weir = Paved Road. Pier width = .75
15.4	A HYDRAULIC JUMP OCCURS at this Culvert for the 50 and [redacted] 100 yr. flows
16.0	Surveyed valley section over Banks are paved Parking lots channel is grass lined with some Rip Rap.
16.5	Surveyed BRIDGE section. Twin 72" ϕ PIPE 10 [redacted] [redacted] PAVED weir
↓	$XKOR = 14.2 + \frac{29.1(.024)^2(26)}{1.52^{2/3}} = 1.45$ Pier losses 1.25 Pier width 1.4'
16.8	NO weir flow. No Hydraulic jumps

Gilbert/Commonwealth
ENGINEERS/CONSULTANTS Reading, PA / Jackson, NJ

CALCULATION SHEET

REV.

CLIENT/OWNER		FILING CODE
Whiskey creek		JOB NO.
CALC. BY/DATE	SUBJECT	SHEET 4 OF 5
REVIEW BY/DATE		BOOK NO.

SEC NO.

170 Surveyed cross section
180 Surveyed cross section } overBanks grassy and Parking Lots channel well defined.

1) all interpolated cross sections are Based on U.S.G.S Topo maps for the overbanks ~~and slope~~ The channel for these sections were developed using the slope and Topowidths of cross sections on each side (up and downstream) of the interpolated section.

2) Since the whiskey creek is in a very urbanized area the overbanks are for the most parts short grass fields and paved Parking Lots.

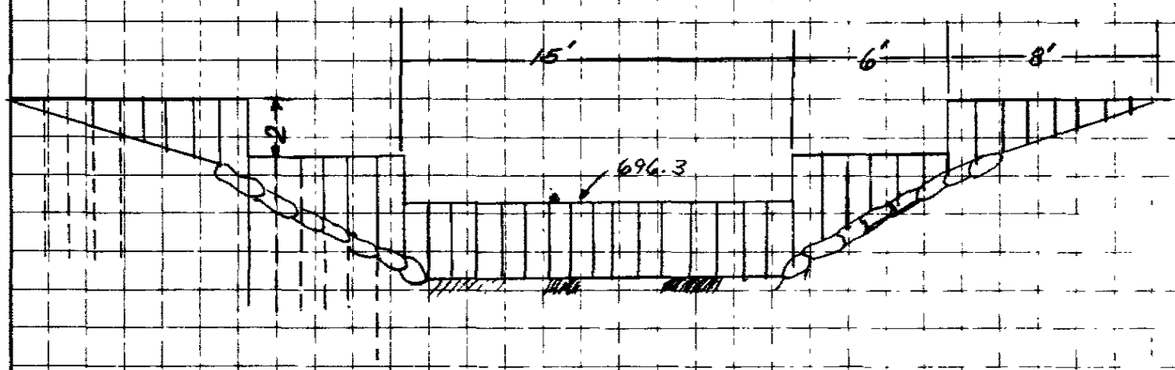
Gilbert/Commonwealth
ENGINEERS/CONSULTANTS Reading, PA / Jackson, MI

CALCULATION SHEET

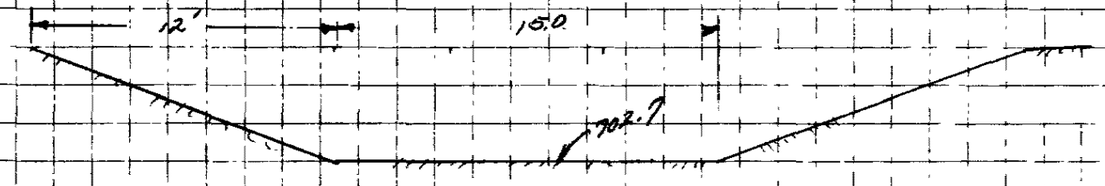
REV.

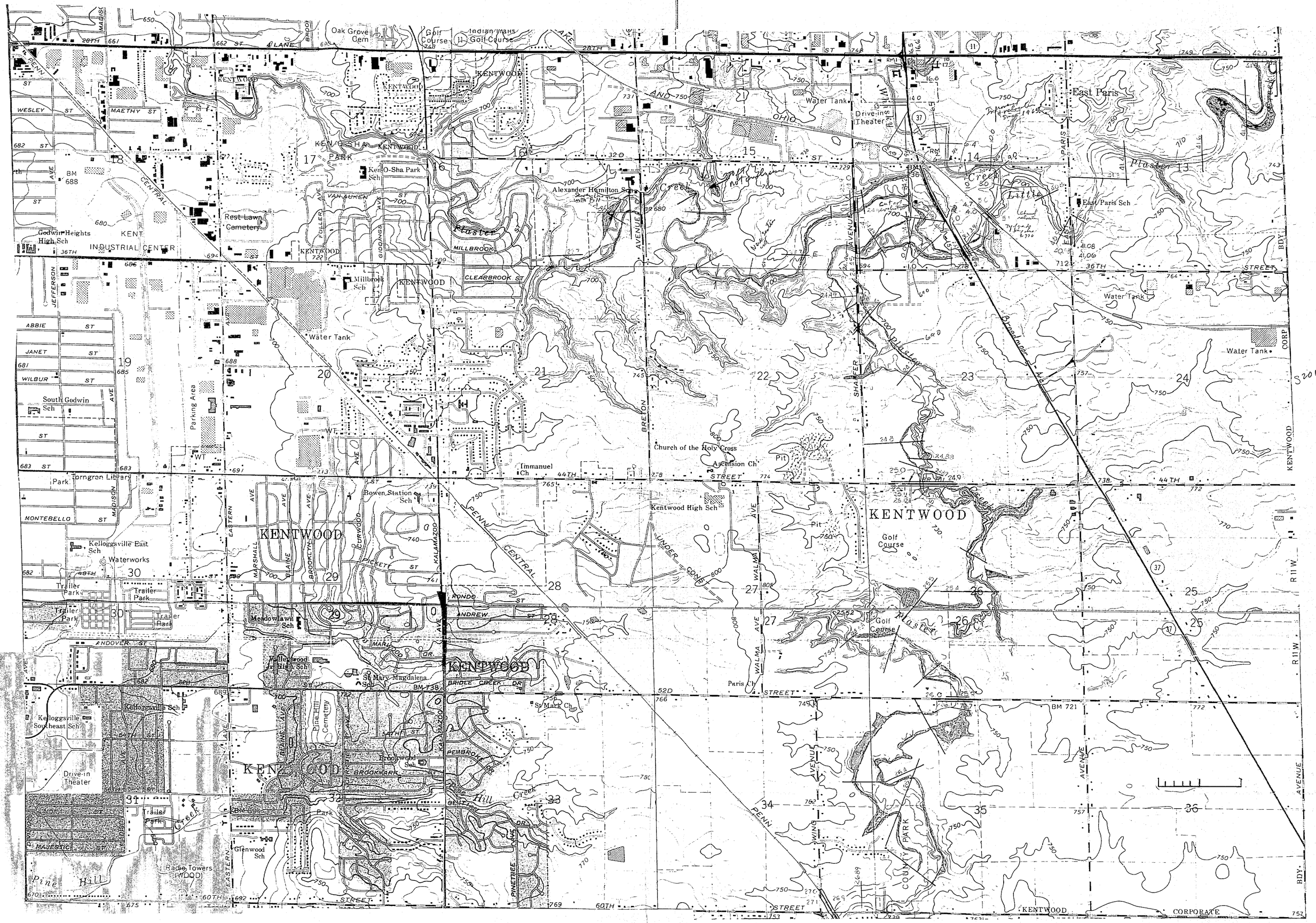
CLIENT/OWNER	FILING CODE
Whiskey Creek	JOB NO.
CALC. BY/DATE: KJC	SUBJECT:	SHEET 5 OF 5
REVIEW BY/DATE		BOOK NO.

weir 2.3



weir @ 11.2





X-SECS

PLASTER CREEK

RECEIVED
MAY 29 1980
WATER MANAGEMENT

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: LOWELL, CITY OF

3) WATERCOURSE: FLAT RIVER

4) DOCUMENT TYPE: 10, 50, 100, 500 SUMMARYS
B(3)

00BREAK00

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************
```

B-3 Summary printout – 10-, 50-, 100-, 500-year flows 070380

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

Assume Dam gate fully open (sta 3855)

FLAT RIVER

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	IOK*S	VCH	AREA	.01K
*	370.000	370.00	0.0	0.0	612.10	2800.00	615.01	615.01	616.13	179.79	3.50	329.36	208.82
*	370.000	370.00	0.0	0.0	612.10	4800.00	616.14	616.14	617.39	172.42	3.97	534.30	305.55
*	370.000	370.00	0.0	0.0	612.10	5900.00	616.53	616.53	617.93	169.82	9.51	620.22	452.75
*	370.000	370.00	0.0	0.0	612.10	8400.00	617.33	617.33	619.00	160.11	10.36	810.47	663.85
	710.000	340.00	0.0	0.0	613.20	2800.00	617.55	0.0	617.79	20.68	3.90	717.82	615.70
	710.000	340.00	0.0	0.0	613.20	4800.00	618.80	0.0	619.17	23.40	4.89	981.72	992.25
	710.000	340.00	0.0	0.0	613.20	5900.00	619.35	0.0	619.80	24.89	5.35	1103.05	1182.65
	710.000	340.00	0.0	0.0	613.20	8400.00	620.38	0.0	620.99	27.83	6.26	1346.79	1592.17
	860.000	150.00	0.0	0.0	613.70	2800.00	617.92	0.0	618.30	51.99	4.99	561.22	388.33
	860.000	150.00	0.0	0.0	613.70	4800.00	619.21	0.0	619.68	44.86	5.48	876.01	716.64
	860.000	150.00	0.0	0.0	613.70	5900.00	619.79	0.0	620.29	42.42	5.67	1040.04	905.90
	860.000	150.00	0.0	0.0	613.70	8400.00	620.89	0.0	621.47	36.66	6.13	1409.02	1387.40
	1600.000	500.00	0.0	0.0	614.60	2800.00	620.00	0.0	620.23	29.40	3.85	727.09	516.43
	1600.000	500.00	0.0	0.0	614.60	4800.00	621.11	0.0	621.45	28.44	4.68	1026.35	900.12
	1600.000	500.00	0.0	0.0	614.60	5900.00	621.63	0.0	622.02	28.44	5.05	1167.65	1106.38
	1600.000	500.00	0.0	0.0	614.60	8400.00	622.59	0.0	623.12	29.76	5.84	1437.59	1539.90
	2100.000	510.00	0.0	0.0	616.40	2800.00	621.04	0.0	621.15	11.91	2.64	1102.90	811.50
	2100.000	510.00	0.0	0.0	616.40	4800.00	622.19	0.0	622.34	11.31	3.16	1613.95	1427.12
	2100.000	510.00	0.0	0.0	616.40	5900.00	622.73	0.0	622.90	11.09	3.39	1859.25	1771.57
	2100.000	510.00	0.0	0.0	616.40	8400.00	623.80	0.0	624.02	10.94	3.84	2346.62	2539.47
	2800.000	440.00	0.0	0.0	617.20	2800.00	621.69	0.0	622.07	34.83	4.90	571.67	474.45
	2800.000	440.00	0.0	0.0	617.20	4800.00	622.74	0.0	623.37	45.14	6.37	759.35	714.43
	2800.000	440.00	0.0	0.0	617.20	5900.00	623.23	0.0	623.98	50.60	6.95	362.44	829.44
	2800.000	440.00	0.0	0.0	617.20	8400.00	624.28	0.0	625.18	62.61	7.65	1134.51	1061.55
	2900.000	100.00	0.0	0.0	616.00	2800.00	622.34	0.0	622.47	41.91	2.91	961.44	432.52
	2900.000	100.00	0.0	0.0	616.00	4800.00	623.68	0.0	623.88	49.60	3.64	1319.21	681.57
	2900.000	100.00	0.0	0.0	616.00	5900.00	624.30	0.0	624.54	51.95	3.93	1500.52	818.54
	2900.000	100.00	0.0	0.0	616.00	8400.00	625.56	0.0	625.87	62.36	4.44	1892.44	1063.67
	2901.000	1.00	632.10	632.90	616.00	2800.00	622.34	0.0	622.48	41.81	2.91	962.24	433.04
	2901.000	1.00	632.10	632.90	616.00	4800.00	623.68	0.0	623.89	49.54	3.64	1319.76	681.97
	2901.000	1.00	632.10	632.90	616.00	5900.00	624.31	0.0	624.55	51.92	3.93	1500.88	818.82
	2901.000	1.00	632.10	632.90	616.00	8400.00	625.57	0.0	625.87	62.72	4.43	1896.00	1060.64

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	2902.000	12.00	632.10	632.90	616.00	2900.00	622.40	0.0	622.52	40.23	2.87	975.12	441.46
	2902.000	12.00	632.10	632.90	616.00	4800.00	623.74	0.0	623.94	47.78	3.59	1336.58	694.40
	2902.000	12.00	632.10	632.90	616.00	5900.00	624.38	0.0	624.61	50.15	3.88	1519.37	833.15
	2902.000	12.00	632.10	632.90	616.00	8400.00	625.65	0.0	625.95	65.38	4.36	1926.62	1038.89
	2903.000	1.00	0.0	0.0	616.00	2800.00	622.40	0.0	622.53	40.03	2.87	976.80	442.56
	2903.000	1.00	0.0	0.0	616.00	4300.00	623.75	0.0	623.95	47.52	3.58	1339.20	696.34
	2903.000	1.00	0.0	0.0	616.00	5900.00	624.38	0.0	624.61	49.87	3.88	1522.34	835.46
	2903.000	1.00	0.0	0.0	616.00	8400.00	625.66	0.0	625.96	65.75	4.35	1931.66	1035.91
	3000.000	100.00	0.0	0.0	617.00	2800.00	622.57	0.0	622.63	3.95	1.89	1481.38	1408.74
	3000.000	100.00	0.0	0.0	617.00	4800.00	623.97	0.0	624.06	4.45	2.41	1990.80	2274.19
	3000.000	100.00	0.0	0.0	617.00	5900.00	624.63	0.0	624.74	4.62	2.64	2242.27	2743.70
	3000.000	100.00	0.0	0.0	617.00	8400.00	625.95	0.0	626.09	4.84	3.07	2826.64	3818.05
	3800.000	308.00	0.0	0.0	616.50	2800.00	622.69	0.0	622.77	4.75	2.17	1291.46	1285.04
	3800.000	308.00	0.0	0.0	616.50	4800.00	624.10	0.0	624.23	5.66	2.82	1700.72	2018.02
	3800.000	308.00	0.0	0.0	616.50	5900.00	624.76	0.0	624.91	6.05	3.12	1890.86	2399.65
	3800.000	308.00	0.0	0.0	616.50	8400.00	626.07	0.0	626.29	6.71	3.69	2274.14	3241.69
*	3855.000	50.00	0.0	0.0	621.40	2800.00	624.86	624.86	626.49	227.32	10.26	272.89	135.71
*	3855.000	50.00	0.0	0.0	621.40	4800.00	626.25	626.25	628.60	230.85	12.30	390.13	315.92
*	3855.000	50.00	0.0	0.0	621.40	5900.00	626.94	626.94	629.64	233.40	13.17	447.98	336.19
*	3855.000	50.00	0.0	0.0	621.40	8400.00	628.37	628.37	631.77	240.85	14.79	567.81	541.26
	3856.000	1.00	634.40	635.50	621.40	2800.00	625.20	0.0	626.54	168.34	9.29	301.56	215.80
	3856.000	1.00	634.40	635.50	621.40	4800.00	626.74	0.0	628.67	173.24	11.15	430.57	364.68
	3856.000	1.00	634.40	635.50	621.40	5900.00	627.46	0.0	629.70	178.91	12.01	491.45	441.10
	3856.000	1.00	634.40	635.50	621.40	8400.00	628.97	0.0	631.84	190.40	13.60	617.56	608.76
	3857.000	84.50	634.40	635.70	620.10	2800.00	626.70	0.0	627.27	43.93	6.03	464.22	422.46
	3857.000	84.50	634.40	635.70	620.10	4800.00	628.61	0.0	629.42	42.44	7.23	664.15	736.84
	3857.000	84.50	634.40	635.70	620.10	5900.00	629.55	0.0	630.48	41.96	7.73	762.97	910.81
	3857.000	84.50	634.40	635.70	620.10	8400.00	631.67	0.0	632.90	66.61	8.87	947.31	1029.25
	4000.000	150.00	0.0	0.0	621.90	2800.00	627.43	0.0	627.49	5.25	2.04	1373.22	1221.72
	4000.000	150.00	0.0	0.0	621.90	4800.00	629.56	0.0	629.63	3.81	2.15	2235.16	2460.08
	4000.000	150.00	0.0	0.0	621.90	5900.00	630.61	0.0	630.68	3.21	2.18	2707.61	3291.71
	4000.000	150.00	0.0	0.0	621.90	8400.00	633.03	0.0	633.10	2.00	2.15	4407.59	5933.03
	5200.000	680.00	0.0	0.0	621.50	2800.00	627.97	0.0	628.04	13.80	2.25	1244.31	753.75
	5200.000	680.00	0.0	0.0	621.50	4800.00	629.86	0.0	629.92	4.92	1.97	2437.53	2164.00
	5200.000	680.00	0.0	0.0	621.50	5900.00	630.85	0.0	630.91	3.40	1.91	3086.84	3197.77
	5200.000	680.00	0.0	0.0	621.50	8400.00	633.18	0.0	633.23	1.78	1.81	4694.36	5290.10
	5900.000	660.00	0.0	0.0	622.80	2800.00	628.65	0.0	628.70	7.52	1.85	1516.95	1021.12
	5900.000	660.00	0.0	0.0	622.80	4800.00	630.17	0.0	630.23	4.45	1.94	2472.40	2274.33
	5900.000	660.00	0.0	0.0	622.80	5900.00	631.07	0.0	631.13	3.42	1.94	3042.05	3158.43
	5900.000	660.00	0.0	0.0	622.80	8400.00	633.30	0.0	633.35	1.96	1.87	4493.06	5993.18
	6700.000	720.00	0.0	0.0	623.50	2800.00	629.14	0.0	629.22	6.01	2.14	1306.26	1089.35
	6700.000	720.00	0.0	0.0	623.50	4800.00	630.53	0.0	630.63	6.60	2.55	1886.21	1868.58
	6700.000	720.00	0.0	0.0	623.50	5900.00	631.35	0.0	631.46	5.60	2.63	2252.83	2493.82
	6700.000	720.00	0.0	0.0	623.50	8400.00	633.45	0.0	633.56	3.67	2.65	3228.49	4384.02

MOORE BUSINESS FORMS INC 27

SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
7200.000	500.00	0.0	0.0	624.30	2800.00	629.35	0.0	629.37	1.77	1.32	2122.82	2105.00
7200.000	500.00	0.0	0.0	624.30	4800.00	630.76	0.0	630.81	2.07	1.70	2817.27	3336.61
7200.000	500.00	0.0	0.0	624.30	5900.00	631.57	0.0	631.62	2.02	1.83	3220.07	4150.78
7200.000	500.00	0.0	0.0	624.30	8400.00	633.62	0.0	633.68	1.67	1.98	4242.21	6500.42
8600.000	1355.00	0.0	0.0	625.00	2800.00	629.70	0.0	629.76	5.03	2.01	1395.28	1248.96
8600.000	1355.00	0.0	0.0	625.00	4800.00	631.14	0.0	631.24	5.08	2.47	1940.15	2128.71
8600.000	1355.00	0.0	0.0	625.00	5900.00	631.93	0.0	632.04	4.82	2.63	2244.78	2688.45
8600.000	1355.00	0.0	0.0	625.00	8400.00	633.90	0.0	634.02	3.66	2.75	3196.89	4392.27
10100.000	1690.00	0.0	0.0	626.10	2800.00	631.11	0.0	631.27	18.88	3.25	864.28	644.44
10100.000	1690.00	0.0	0.0	626.10	4800.00	632.44	0.0	632.66	15.36	3.76	1308.93	1224.68
10100.000	1690.00	0.0	0.0	626.10	5900.00	633.13	0.0	633.37	13.79	3.94	1557.83	1588.62
10100.000	1690.00	0.0	0.0	626.10	8400.00	634.77	0.0	635.02	10.09	4.09	2190.79	2644.26
11600.000	1830.00	0.0	0.0	627.50	2800.00	633.28	0.0	633.42	8.01	2.98	953.14	989.40
11600.000	1830.00	0.0	0.0	627.50	4800.00	634.66	0.0	634.90	9.92	3.93	1292.67	1523.69
11600.000	1830.00	0.0	0.0	627.50	5900.00	635.30	0.0	635.58	10.61	4.33	1469.73	1811.04
11600.000	1830.00	0.0	0.0	627.50	8400.00	636.63	0.0	637.00	11.21	5.02	1878.38	2508.45

MOORE BUSINESS FORMS INC 27

1) COUNTY: KENT

2) STUDY NAME: LOWELL, CITY OF

3) WATERCOURSE: FLAT RIVER

4) DOCUMENT TYPE: (B) FLAT CONVERGANCE (SUMMARY)
(B1) DAM FULLY OPEN

00BREAK00

```
*****************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
 ERROR CORR -  01.02.03
 MODIFICATION -  50,51,52,53
*****************************************************
                          (B)          Flat River
                                       Convergence test                    070280
C                         B-1
T1      FLAT RIVER.LOWELL. PROJECT NO. 8551   Dam- Fully open. Control section
T2      FLAT RIVER
T3      FLAT RIVER

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ
     -10.      4.       0.       0.  -1.000000   0.0      0.0      0.     610.000   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

J5  LPRNT     NUMSEC          ********REQUESTED SECTION NUMBERS********
    -10.000  -10.000   0.0      0.0      0.0      0.0      0.0      0.0      0.0      0.0
```

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
  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

FLAT RIVER

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
*	370.000	370.00	0.0	0.0	612.10	5900.00	616.53	616.53	617.93	168.79	9.49	621.54	454.13
	370.000	370.00	0.0	0.0	612.10	5900.00	620.00	0.0	620.22	12.45	3.77	1565.99	1671.88
	370.000	370.00	0.0	0.0	612.10	5900.00	622.00	0.0	622.11	3.92	2.66	2273.82	2980.77
	710.000	340.00	0.0	0.0	613.20	5900.00	619.35	0.0	619.80	24.92	5.35	1102.54	1181.83
	710.000	340.00	0.0	0.0	613.20	5900.00	620.39	0.0	620.69	13.77	4.40	1345.59	1590.15
	710.000	340.00	0.0	0.0	613.20	5900.00	622.12	0.0	622.29	5.78	3.30	1898.80	2453.60
	860.000	150.00	0.0	0.0	613.70	5900.00	619.79	0.0	620.29	42.46	5.68	1039.61	905.40
	860.000	150.00	0.0	0.0	613.70	5900.00	620.63	0.0	620.95	22.08	4.58	1307.42	1255.59
	860.000	150.00	0.0	0.0	613.70	5900.00	622.23	0.0	622.38	7.30	3.22	2049.99	2184.12
	1600.000	500.00	0.0	0.0	614.60	5900.00	621.62	0.0	622.02	28.44	5.05	1167.65	1106.39
	1600.000	500.00	0.0	0.0	614.60	5900.00	621.78	0.0	622.15	25.36	4.87	1210.36	1171.63
	1600.000	500.00	0.0	0.0	614.60	5900.00	622.65	0.0	622.91	14.15	4.06	1454.27	1568.27
	2100.000	510.00	0.0	0.0	616.40	5900.00	622.73	0.0	622.90	11.09	3.39	1859.12	1771.37
	2100.000	510.00	0.0	0.0	616.40	5900.00	622.80	0.0	622.96	10.55	3.34	1889.88	1816.62
	2100.000	510.00	0.0	0.0	616.40	5900.00	623.30	0.0	623.43	7.42	2.99	2117.73	2165.55
	2800.000	440.00	0.0	0.0	617.20	5900.00	623.23	0.0	623.98	50.61	6.95	862.36	829.36
	2800.000	440.00	0.0	0.0	617.20	5900.00	623.27	0.0	624.00	49.47	6.89	870.76	838.82
	2800.000	440.00	0.0	0.0	617.20	5900.00	623.60	0.0	624.23	42.82	6.36	948.67	901.66
	2900.000	100.00	0.0	0.0	616.00	5900.00	624.30	0.0	624.54	51.93	3.93	1500.73	818.70
	2900.000	100.00	0.0	0.0	616.00	5900.00	624.32	0.0	624.56	51.49	3.92	1505.32	822.25
	2900.000	100.00	0.0	0.0	616.00	5900.00	624.49	0.0	624.72	46.80	3.79	1556.86	862.41
	2901.000	1.00	632.10	632.90	616.00	5900.00	624.31	0.0	624.55	51.91	3.93	1500.95	818.87
	2901.000	1.00	632.10	632.90	616.00	5900.00	624.32	0.0	624.56	51.45	3.92	1505.71	822.56
	2901.000	1.00	632.10	632.90	616.00	5900.00	624.50	0.0	624.72	46.77	3.79	1557.26	862.72
	2902.000	12.00	632.10	632.90	616.00	5900.00	624.38	0.0	624.61	50.14	3.88	1519.44	833.21
	2902.000	12.00	632.10	632.90	616.00	5900.00	624.39	0.0	624.62	49.72	3.87	1524.01	836.75
	2902.000	12.00	632.10	632.90	616.00	5900.00	624.56	0.0	624.78	45.36	3.75	1574.17	876.01
	2903.000	1.00	0.0	0.0	616.00	5900.00	624.38	0.0	624.61	49.86	3.88	1522.48	835.57
	2903.000	1.00	0.0	0.0	616.00	5900.00	624.40	0.0	624.63	49.44	3.86	1526.98	839.07
	2903.000	1.00	0.0	0.0	616.00	5900.00	624.56	0.0	624.78	45.15	3.74	1576.81	878.09

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	3000.000	100.00	0.0	0.0	617.00	5900.00	624.63	0.0	624.74	4.62	2.64	2242.37	2743.88
	3000.000	100.00	0.0	0.0	617.00	5900.00	624.64	0.0	624.75	4.59	2.64	2247.51	2753.41
	3000.000	100.00	0.0	0.0	617.00	5900.00	624.79	0.0	624.89	4.24	2.57	2308.28	2865.88
	3800.000	308.00	0.0	0.0	616.50	5900.00	624.76	0.0	624.91	6.04	3.12	1890.93	2399.79
	3800.000	308.00	0.0	0.0	616.50	5900.00	624.77	0.0	624.92	6.01	3.11	1894.69	2407.59
	3800.000	308.00	0.0	0.0	616.50	5900.00	624.91	0.0	625.05	5.61	3.05	1934.48	2490.66
*	3855.000	50.00	0.0	0.0	621.40	5900.00	626.94	626.94	629.64	233.40	13.17	447.98	386.19
*	3855.000	50.00	0.0	0.0	621.40	5900.00	626.94	626.94	629.64	233.46	13.17	447.94	386.14
*	3855.000	50.00	0.0	0.0	621.40	5900.00	626.94	626.94	629.64	233.74	13.18	447.76	385.91
	3856.000	1.00	634.40	635.50	621.40	5900.00	627.46	0.0	629.70	178.91	12.01	491.45	441.10
	3856.000	1.00	634.40	635.50	621.40	5900.00	627.46	0.0	629.70	178.91	12.01	491.45	441.09
	3856.000	1.00	634.40	635.50	621.40	5900.00	627.47	0.0	629.70	178.78	12.00	491.58	441.26
	3857.000	84.50	634.40	635.70	620.10	5900.00	629.55	0.0	630.48	41.96	7.73	762.97	910.81
	3857.000	84.50	634.40	635.70	620.10	5900.00	629.55	0.0	630.48	41.97	7.73	762.93	910.73
	3857.000	84.50	634.40	635.70	620.10	5900.00	629.55	0.0	630.48	41.97	7.73	762.92	910.71
	4000.000	150.00	0.0	0.0	621.90	5900.00	630.61	0.0	630.68	3.21	2.18	2707.61	3291.71
	4000.000	150.00	0.0	0.0	621.90	5900.00	630.61	0.0	630.68	3.21	2.18	2707.73	3291.93
	4000.000	150.00	0.0	0.0	621.90	5900.00	630.61	0.0	630.68	3.21	2.18	2707.83	3292.14
	5200.000	680.00	0.0	0.0	621.50	5900.00	630.85	0.0	630.91	3.40	1.91	3086.84	3197.77
	5200.000	680.00	0.0	0.0	621.50	5900.00	630.85	0.0	630.91	3.40	1.91	3087.00	3198.05
	5200.000	680.00	0.0	0.0	621.50	5900.00	630.85	0.0	630.91	3.40	1.91	3087.00	3198.05
	5900.000	660.00	0.0	0.0	622.80	5900.00	631.07	0.0	631.13	3.42	1.94	3042.05	3188.43
	5900.000	660.00	0.0	0.0	622.80	5900.00	631.07	0.0	631.13	3.42	1.94	3042.20	3188.70
	5900.000	660.00	0.0	0.0	622.80	5900.00	631.07	0.0	631.13	3.42	1.94	3042.20	3188.70
	6700.000	720.00	0.0	0.0	623.50	5900.00	631.35	0.0	631.46	5.60	2.63	2252.83	2493.82
	6700.000	720.00	0.0	0.0	623.50	5900.00	631.35	0.0	631.46	5.60	2.63	2252.94	2494.01
	6700.000	720.00	0.0	0.0	623.50	5900.00	631.35	0.0	631.46	5.60	2.63	2252.94	2494.01
	7200.000	500.00	0.0	0.0	624.30	5900.00	631.57	0.0	631.62	2.02	1.83	3220.07	4150.78
	7200.000	500.00	0.0	0.0	624.30	5900.00	631.57	0.0	631.62	2.02	1.83	3220.19	4151.03
	7200.000	500.00	0.0	0.0	624.30	5900.00	631.57	0.0	631.62	2.02	1.83	3220.19	4151.03
	8600.000	1355.00	0.0	0.0	625.00	5900.00	631.93	0.0	632.04	4.82	2.63	2244.78	2688.45
	8600.000	1355.00	0.0	0.0	625.00	5900.00	631.93	0.0	632.04	4.82	2.63	2244.88	2688.63
	8600.000	1355.00	0.0	0.0	625.00	5900.00	631.93	0.0	632.04	4.82	2.63	2244.88	2688.63
	10100.000	1690.00	0.0	0.0	626.10	5900.00	633.13	0.0	633.37	13.79	3.94	1557.83	1588.62
	10100.000	1690.00	0.0	0.0	626.10	5900.00	633.13	0.0	633.37	13.80	3.94	1557.74	1588.49
	10100.000	1690.00	0.0	0.0	626.10	5900.00	633.13	0.0	633.37	13.80	3.94	1557.74	1588.49
	11600.000	1830.00	0.0	0.0	627.50	5900.00	635.30	0.0	635.58	10.61	4.33	1469.73	1811.04
	11600.000	1830.00	0.0	0.0	627.50	5900.00	635.30	0.0	635.58	10.61	4.33	1469.74	1811.06
	11600.000	1830.00	0.0	0.0	627.50	5900.00	635.30	0.0	635.58	10.61	4.33	1469.74	1811.06

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: COWELL, CITY OF

3) WATERCOURSE: FLAT RIVER

4) DOCUMENT TYPE: 100-YEAR FLOOD

00BREAK00

GOVEA	JGOVEDSS	2113	GO.FT06F001	7.48.37	3 JUL 80	FLAT RIVER		RIVER
GOVEA	JGOVEDSS	2113	GO.FT06F001	7.48.37	3 JUL 80	FLAT RIVER		RIVER
GOVEA	JGOVEDSS	2113	GO.FT06F001	7.48.37	3 JUL 80	FLAT RIVER		RIVER

B-2 Flat River - 100-year flood 070380

Dam Gate Fully open

Backwater of Grand River to last cross section

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*****************************************************

C
T1      FLAT RIVER,LOWELL, PROJECT NO. 8551
T2      FLAT RIVER
T3      FLAT RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0.        4.        0.        0.  -1.000000    0.0       0.0       0.      610.000   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    0.060     0.060     0.040     0.100     0.300     0.0       0.0       0.0       0.0       0.0
QT    4.000  2800.000  4800.000  5900.000  8400.000     0.0       0.0       0.0       0.0       0.0

        A   MANUFACTURED

X1  370.000    11.000    30.000   350.000   370.000   370.000   370.000     0.0       0.0       0.0
GR  620.700     0.0     620.000    30.000   616.000    40.000   613.100    50.000   612.100   115.000
GR  613.100   180.000   615.000   190.000   616.000   250.000   620.000   350.000   632.000   460.000
GR  633.500   530.000     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

        B   MANUFACTURED

X1  710.000     9.000   110.000   370.000   340.000   340.000   340.000     0.0       0.0       0.0
GR  621.700     0.0     620.000   110.000   616.200   125.000   613.800   145.000   613.200   220.000
GR  613.800   295.000   616.200   314.000   624.000   370.000   628.000   560.000     0.0       0.0

        BC  MANUFACTURED

X1  860.000    17.000   240.000   550.000   150.000   150.000   150.000     0.0       0.0       0.0
GR  622.100     0.0     620.000   240.000   616.400   250.000   614.500   260.000   613.700   300.000
GR  614.500   340.000   616.400   350.000   620.100   380.000   616.400   410.000   614.500   425.000
GR  616.400   440.000   620.100   460.000   616.400   490.000   614.100   510.000   616.400   525.000
GR  624.000   550.000   628.000  1000.000     0.0       0.0       0.0       0.0       0.0       0.0

        ED

X1 1600.000    19.000   700.000  1031.000   500.000   500.000   500.000     0.0       0.0       0.0
GR  626.000     0.0     623.500    90.000   624.500   170.000   623.900   700.000   616.900   706.000
GR  614.600   735.000   614.700   760.000   615.900   790.000   716.900   816.000   619.100   822.000
GR  619.400   930.000   616.900   934.000   616.000   945.000   615.900   955.000   616.100   970.000
GR  616.300   980.000   616.900   991.000   627.700  1031.000   631.000  1850.000     0.0       0.0

        E   MANUFACTURED

X1 2100.000    18.000   340.000   730.000   510.000   510.000   510.000     0.0       0.0       0.0
X3    0.0       0.0       0.0     250.000     0.0       0.0       0.0       0.0       0.0       0.0
GR  623.500     0.0     620.000   340.000   618.000   360.000   617.000   370.000   616.400   400.000
GR  617.000   420.000   618.000   430.000   620.000   450.000   621.000   480.000   620.000   530.000
```

```
GR    613.000   540.000   617.000   550.000   616.400   610.000   617.000   670.000   618.000   680.000
GR    628.000   730.000   629.000   950.000   632.000  1200.000     0.0       0.0       0.0       0.0

      GF REVISED FIELD X-SECTION

X1   2800.000    18.000   162.000   551.000   440.000   440.000   440.000     0.0       0.0       0.0
GR    632.100     0.0     621.900   162.000   619.100   170.000   617.200   190.000   617.400   210.000
GR    617.700   225.000   619.100   245.000   623.300   253.000   626.600   360.000   622.400   468.000
GR    619.100   475.000   617.900   490.000   617.700   510.000   617.500   525.000   619.100   543.000
GR    621.000   551.000   628.000   560.000   632.000   850.000     0.0       0.0       0.0       0.0
NC      0.0       0.0       0.080     0.0       0.0       0.0       0.0       0.0       0.0       0.0

      HG RR TRESTLE BRIDGE,LC 630.1, TR 632.8, WIDTH 12, LENGTH 568

X1   2900.000    21.000   100.000   668.000   100.000   100.000   100.000     0.770     0.0       0.0
GR    632.100     0.0     632.900   100.000   628.100   100.000   618.900   196.000   617.700   220.000
GR    616.000   245.000   616.100   265.000   618.200   290.000   618.900   312.000   625.500   328.000
GR    625.700   400.000   624.900   437.000   619.100   490.000   617.200   515.000   617.800   540.000
GR    617.300   560.000   618.500   585.000   619.100   610.000   629.100   668.000   632.900   668.000
GR    632.900   800.000     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

X1   2901.000     0.0       0.0       0.0       1.000     1.000     1.000     0.0       0.0       0.0
X2      0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.770     0.0
BT      4.000     0.0     632.100   632.100   100.000   632.900   630.100   668.000   632.900   630.100
BT    800.000   632.900   632.900     0.0       0.0       0.0       0.0       0.0       0.0       0.0

X1   2902.000     0.0       0.0       0.0      12.000    12.000    12.000     0.0       0.0       0.0
X2      0.0       0.0       0.0       0.0       0.0       0.0       1.000     0.0       0.0       0.0

X1   2903.000     0.0       0.0       0.0       1.000     1.000     1.000     0.0       0.0       0.0
NC      0.0       0.0       0.040     0.0       0.0       0.0       0.0       0.0       0.0       0.0

      IH REVISED FIELD X-SECTION

X1   3000.000    15.000   225.000   720.000   100.000   100.000   100.000     0.770     0.0       0.0
GR    627.000     0.0     624.000   225.000   619.100   245.000   618.300   255.000   617.100   275.000
GR    618.300   290.000   619.100   300.000   621.000   370.000   619.100   440.000   617.700   450.000
GR    617.000   560.000   617.700   680.000   619.100   690.000   632.000   720.000   633.000  1000.000

      JI

X1   3800.000    13.000    72.000   370.000   308.000   308.000   308.000     0.0       0.0       0.0
GR    632.700     0.0     632.600    72.000   621.600    82.000   621.500    90.000   619.600    90.000
GR    618.100   130.000   618.100   170.000   618.400   210.000   618.500   250.000   617.600   290.000
GR    616.500   330.000   619.600   370.000   621.100   370.000     0.0       0.0       0.0       0.0

      KJ KING MILLING COMPANY DAM, ASSUME FULLY OPEN DURING FLOOD PERIOD

         DAM CREST 621.8 & 621.4, ALMOST THE SAME ELEVATION WITH UPSTREAM

         AND DOWNSTREAM CHANNEL BOTTOM, NORMAL BRIDGE ROUTINE THROUGH THE

         CREST TO UPSTREAM OF MAIN ST. BRIDGE

X1   3855.000    18.000   102.000   352.000    50.000    50.000    50.000     0.0       0.0       0.0
GR    634.400     0.0     634.600   102.000   621.800   102.000   621.800   124.000   633.100   124.000
GR    633.100   126.000   621.800   126.000   621.800   148.000   633.100   143.000   633.500   310.000
GR    621.400   310.000   621.400   335.000   633.500   335.000   633.500   337.000   621.400   337.000
```

```
GR    621.400    352.000    635.200    352.000    635.500    400.000      0.0        0.0        0.0        0.0

     *K MAIN ST. BRIDGE, MAX LC 632.5, MIN TR 634.6, WIDTH 74, LENGTH 265

X1   3856.000      0.0        0.0        0.0        1.000      1.000      1.000      0.0        0.0        0.0
BT      6.000      0.0      634.400    634.400    102.000    634.600    633.100    148.000    634.600    633.100
BT    310.000    635.200    633.500    352.000    635.200    633.500    400.000    635.500    635.500      0.0

X1   3857.000     14.000    100.000    365.000     84.500     84.500     84.500      0.0        0.0        0.0
BT      6.000      0.0      634.400    634.400    100.000    634.600    630.900    150.000    634.600    630.900
BT    310.000    635.200    632.100    365.000    635.600    632.500    500.000    635.700    635.700      0.0
GR    634.300      0.0      634.600    100.000    623.600    100.000    620.700    125.000    620.900    150.000
GR    630.900    150.000    632.100    310.000    623.100    310.000    626.100    325.000    620.100    346.000
GR    620.100    355.000    626.100    365.000    635.600    365.000    635.700    500.000      0.0        0.0

     *L U/S OF MAIN ST. BRIDGE

X1   4000.000     13.000    600.000   1064.000    150.000    150.000    150.000      0.0        0.0        0.0
GR    632.200      0.0      631.900    600.000    630.100    603.000    624.900    560.000    624.700    717.000
GR    623.100    773.000    622.900    829.000    622.500    991.000    621.900    947.000    627.400   1002.000
GR    630.100   1058.000    634.700   1064.000    636.000   1620.000      0.0        0.0        0.0        0.0

     *M

X1   5200.000     19.000    485.000   1147.000    680.000    680.000    680.000      0.0        0.0        0.0
GR    636.500      0.0      640.500    370.000    639.300    400.000    631.300    460.000    630.500    485.000
GR    629.800    486.000    622.100    545.000    621.500    605.000    624.100    665.000    626.900    725.000
GR    626.500    785.000    627.400    845.000    627.300    905.000    627.800    965.000    626.900   1025.000
GR    627.500   1085.000    629.800   1145.000    635.900   1147.000    636.000   1450.000      0.0        0.0

     *N MANUFACTURED

X1   5900.000     18.000    460.000   1140.000    660.000    660.000    660.000      0.0        0.0        0.0
GR    640.000      0.0      645.000    345.000    644.000    410.000    636.000    460.000    628.500    500.000
GR    627.500    510.000    626.000    535.000    627.000    570.000    627.000    810.000    626.000    860.000
GR    627.000    940.000    625.000   1000.000    622.800   1040.000    624.000   1100.000    628.500   1120.000
GR    636.000   1140.000    640.000   1180.000    641.200   1530.000      0.0        0.0        0.0        0.0

     *O

X1   6700.000     22.000    600.000   1062.000    720.000    720.000    720.000      0.0        0.0        0.0
GR    644.100      0.0      645.000    270.000    644.000    490.000    639.600    500.000    635.200    530.000
GR    633.600    550.000    630.200    600.000    629.800    601.000    627.000    610.000    626.600    640.000
GR    627.900    650.000    625.000    678.000    623.600    729.000    625.200    781.000    623.500    828.000
GR    625.800    879.000    627.300    931.000    629.000    982.000    629.800   1031.000    631.400   1032.000
GR    644.700   1062.000    646.500   1500.000      0.0        0.0        0.0        0.0        0.0        0.0

     *P MANUFACTURED

X1   7200.000     15.000    660.000   1185.000    500.000    500.000    500.000      0.0        0.0        0.0
GR    647.000      0.0      644.000    360.000    645.000    510.000    644.000    630.000    640.000    660.000
GR    629.700    670.000    625.000    690.000    625.000    720.000    624.300    920.000    625.000   1110.000
GR    626.000   1140.000    629.700   1160.000    640.000   1185.000    644.000   1200.000    646.700   1500.000

     *Q

X1   8600.000     15.000    120.000    550.000   1355.000   1355.000   1355.000      0.0        0.0        0.0
GR    633.000      0.0      631.700    120.000    629.600    124.000    626.200    160.000    626.400    195.000
```

GR	626.500	230.000	625.700	265.000	625.000	300.000	625.100	395.000	625.200	430.000
GR	625.500	465.000	629.600	+96.000	635.700	521.000	651.800	550.000	658.400	700.000

SR

X1	10100.000	23.000	1000.000	1304.000	1690.000	1690.000	1690.000	0.0	0.0	0.0
GR	656.000	0.0	648.000	450.000	636.000	540.000	636.000	950.000	631.000	1000.000
GR	629.700	1023.000	626.900	1025.000	626.800	1050.000	626.900	1075.000	627.000	1100.000
GR	629.700	1123.000	630.900	1125.000	630.100	1162.000	631.200	1198.000	629.700	1203.000
GR	627.000	1230.000	626.400	1250.000	626.100	1275.000	629.700	1303.000	630.700	1304.000
GR	633.200	1334.000	664.500	1402.000	668.000	1680.000	0.0	0.0	0.0	0.0

SS

X1	11600.000	15.000	200.000	395.000	1830.000	1830.000	1830.000	0.0	0.0	0.0
GR	643.000	0.0	640.000	180.000	631.600	200.000	630.100	204.000	628.500	230.000
GR	628.100	255.000	627.500	280.000	627.700	310.000	628.300	335.000	628.200	360.000
GR	630.100	388.000	632.300	395.000	636.000	500.000	652.000	660.000	665.000	1180.000
E1	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 370.000
   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

3720 CRITICAL DEPTH ASSUMED

        A   MANUFACTURED

   370.00      4.43    616.53    616.53    610.00    617.93      1.40       0.0       0.0    620.00
    5900.        0.    5900.        0.        0.    622.        0.        0.        0.    620.00
      0.0       0.0      9.49       0.0     0.060     0.040     0.060       0.0    612.10     38.67
 0.016879      370.     370.      370.         0        11         0     -0.00    224.62    263.29

*SECNO 710.000

3301 HV CHANGED MORE THAN HVINS

        B   MANUFACTURED

   710.00      6.15    619.35       0.0       0.0    619.30      0.44      1.77      0.10    620.00
    5900.        0.    5900.        0.        0.    1103.        0.        7.        2.    624.00
     0.02       0.0      5.35       0.0     0.060     0.040     0.060     0.040    613.20    112.56
 0.002492      340.     340.      340.         4         0         0     -0.00    224.06    336.62

*SECNO 860.000

3265 DIVIDED FLOW

        BC  MANUFACTURED

   860.00      6.09    619.79       0.0       0.0    620.29      0.50      0.48      0.02    620.00
    5900.        0.    5900.        0.        0.    1040.        0.       10.        3.    624.00
     0.02       0.0      5.68       0.0     0.060     0.040     0.060     0.040    613.70    240.56
 0.004246      150.     150.      150.         2         0         0     -0.02    286.70    536.18

*SECNO 1600.000

3265 DIVIDED FLOW

        BD

  1600.00      7.02    621.62       0.0       0.0    622.02      0.40      1.72      0.01    623.90
    5900.        0.    5900.        0.        0.    1168.        0.       23.        6.    627.70
     0.05       0.0      5.05       0.0     0.060     0.040     0.060     0.040    614.60    701.95
 0.002844      500.     500.      500.         2         0         0     -0.01    276.18   1008.50

*SECNO 2100.000
   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      250.0     1200.0  TYPE      1  TARGET     -250.000

        E  MANUFACTURED

   2100.00      6.33    622.73      0.0       0.0    622.90      0.17      0.86      0.02    620.00
     5900.      287.     5613.       0.       204.    1655.       0.       41.       10.    628.00
      0.10      1.40      3.39      0.0     0.060    0.040     0.060     0.040    616.40    250.00
  0.001109      510.      510.      510.         3        0         0     -0.00    453.65    703.65

*SECNO 2800.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

        BF  REVISED FIELD X-SECTION

   2800.00      6.03    623.23      0.0       0.0    623.98      0.75      0.91      0.17    621.90
     5900.       19.     5876.       5.       14.     845.       3.       55.       14.    621.00
      0.11      1.34      6.95     1.62     0.060    0.040     0.060     0.040    617.20    140.83
  0.005061      440.      440.      440.         2        0         0     -0.02    219.33    553.87

*SECNO 2900.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

        HG  RR TRESTLE BRIDGE,LC 630.1, TR 632.8, WIDTH 12, LENGTH 568

   2900.00      8.30    624.30      0.0       0.0    624.54      0.24      0.51      0.05    632.90
     5900.        0.     5900.       0.        0.     1501.       0.       57.       14.    632.90
      0.12       0.0      3.93      0.0     0.060    0.080     0.060     0.042    616.00    107.47
  0.005193      100.      100.      100.         2        0         0     -0.01    295.15    492.95

*SECNO 2901.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD   4 MIN ELTRD   632.10 MAX ELLC   632.90

   2901.00      8.31    624.31      0.0       0.0    624.55      0.24      0.01      0.00    632.90
     5900.        0.     5900.       0.        0.     1501.       0.       57.       14.    632.90
      0.12       0.0      3.93      0.0     0.060    0.080     0.060     0.042    616.00    107.47
  0.005191        1.        1.        1.         0        0         0     -0.01    295.17    492.96

*SECNO 2902.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD   4 MIN ELTRD   632.10 MAX ELLC   632.90

   2902.00      8.38    624.33      0.0       0.0    624.61      0.23      0.06      0.00    632.90
```

```
    5900.      0.     5900.      0.      0.     1519.      0.      58.      14.    632.90
     0.12     0.0      3.88     0.0   0.060     0.080    0.060   0.042   616.00    106.96
 0.005014     12.      12.      12.       0         0        0   -0.01   296.51    493.24


*SECNO 2903.000

3265 DIVIDED FLOW

    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

  2903.00     8.38    624.38       0.0       0.0    624.61      0.23      0.00     0.00    632.90
    5900.      0.     5900.        0.        0.     1522.        0.       58.      14.    632.90
     0.12     0.0      3.88       0.0     0.060     0.080    0.060   0.042   616.00    106.88
 0.004986      1.       1.        1.         0         0        0   -0.01   296.73    493.28


*SECNO 3000.000

        ZH REVISED FIELD X-SECTION

  3000.00     7.63    624.63       0.0       0.0    624.74      0.11      0.11     0.01    624.00
    5900.      3.     5897.        0.       11.     2231.        0.       62.      15.    632.00
     0.13     0.25      2.64       0.0     0.060     0.040    0.060   0.042   617.00    137.00
 0.000462     100.     100.       100.         2         0        0   -0.03   404.20    541.20


*SECNO 3800.000
3280 CROSS SECTION   3800.00 EXTENDED      3.66 FEET


        JI

  3800.00     8.26    624.76       0.0       0.0    624.91      0.15      0.16     0.01    632.60
    5900.      0.     5900.        0.        0.     1891.        0.       77.      17.    621.10
     0.16     0.0      3.12       0.0     0.060     0.040    0.060   0.042   616.50     79.13
 0.000604     308.     308.      308.         2         0        0   -0.00   290.87    370.00


*SECNO 3855.000

3265 DIVIDED FLOW

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

        KJ KING MILLING COMPANY DAM, ASSUME FULLY OPEN DURING FLOOD PERIOD
```

DAM CREST 621.9 & 621.4, ALMOST THE SAME ELEVATION WITH UPSTREAM

AND DOWNSTREAM CHANNEL BOTTOM, NORMAL BRIDGE ROUTINE THROUGH THE

CREST TO UPSTREAM OF MAIN ST. BRIDGE

3855.00	5.54	626.94	626.94	0.0	629.64	2.69	0.09	0.76	634.60
5900.	0.	5900.	0.	0.	448.	0.	78.	18.	635.20
0.16	0.0	13.17	0.0	0.060	0.040	0.060	0.042	621.40	102.00
0.023340	50.	50.	50.	20	14	0	0.0	84.00	352.00

*SECNO 3856.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD 6 MIN ELTRD 634.40 MAX ELLC 635.50

LK MAIN ST. BRIDGE, MAX LC 632.5, MIN TR 634.6, WIDTH 74, LENGTH 265

3856.00	6.06	627.46	0.0	0.0	629.70	2.24	0.02	0.05	634.60
5900.	0.	5900.	0.	0.	491.	0.	78.	18.	635.20
0.16	0.0	12.01	0.0	0.060	0.040	0.060	0.042	621.40	102.00
0.017891	1.	1.	1.	6	0	0	-0.00	84.00	352.00

*SECNO 3857.000

3265 DIVIDED FLOW

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

3370 NORMAL BRIDGE,NRD 6 MIN ELTRD 634.40 MAX ELLC 635.70

3857.00	9.45	629.55	0.0	0.0	630.48	0.93	0.64	0.13	634.60
5900.	0.	5900.	0.	0.	763.	0.	79.	18.	635.60
0.16	0.0	7.73	0.0	0.060	0.040	0.060	0.042	620.10	100.00
0.004196	85.	85.	85.	2	0	0	-0.01	105.00	365.00

*SECNO 4000.000

3301 HV CHANGED MORE THAN HVINS

ML U/S OF MAIN ST. BRIDGE

4000.00	8.71	630.61	0.0	0.0	630.68	0.07	0.12	0.09	631.90
5900.	0.	5900.	0.	0.	2708.	0.	85.	19.	634.70
0.18	0.0	2.18	0.0	0.060	0.040	0.060	0.041	621.90	602.16
0.000321	150.	150.	150.	2	0	0	-0.03	456.50	1058.66

*SECNO 5200.000

..M

```
 5200.00     9.35   630.85     0.0      0.0   630.91     0.06     0.22     0.00   630.50
   5900.       0.     5900.      0.       2.    3085.       0.     130.      28.   635.90
    0.28     0.14     1.91     0.0    0.060    0.040    0.060    0.041   621.50   474.25
0.000340     680.     680.    680.        2        0        0    -0.03   671.09  1145.34

*SECNO 5900.000

      ØN MANUFACTURED

 5900.00     8.27   631.07     0.0      0.0   631.13     0.06     0.23     0.00   636.00
   5900.       0.     5900.      0.       0.    3042.       0.     177.      38.   636.00
    0.38     0.0      1.94     0.0    0.060    0.040    0.060    0.041   622.80   486.31
0.000342     660.     660.    660.        0        0        0    -0.01   640.54  1126.85

*SECNO 6700.000

      PO

 6700.00     7.85   631.35     0.0      0.0   631.46     0.11     0.31     0.01   630.20
   5900.       4.     5896.      0.      10.    2243.       0.     221.      47.   644.70
    0.45     0.40     2.63     0.0    0.060    0.040    0.060    0.041   623.50   583.10
0.000560     720.     720.    720.        2        0        0    -0.03   448.87  1031.97

*SECNO 7200.000
   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

      ØP MANUFACTURED

 7200.00     7.27   631.57     0.0      0.0   631.62     0.05     0.16     0.01   640.00
   5900.       0.     5900.      0.       0.    3220.       0.     252.      52.   640.00
    0.53     0.0      1.83     0.0    0.060    0.040    0.060    0.041   624.30   668.18
0.000202     500.     500.    500.        0        0        0    -0.05   496.37  1164.55

*SECNO 8600.000

      RQ

 8600.00     6.93   631.93     0.0      0.0   632.04     0.11     0.40     0.02   631.70
   5900.       0.     5900.      0.       2.    2242.       0.     337.      66.   651.80
    0.67     0.13     2.63     0.0    0.060    0.040    0.060    0.041   625.00    98.58
0.000482    1355.    1355.   1355.        2        0        0    -0.03   406.98   505.56

*SECNO 10100.000

      SR

10100.00     7.03   633.13     0.0      0.0   633.37     0.24     1.29     0.04   631.00
   5900.      22.     5817.     62.      23.    1476.      59.     411.      81.   630.70
    0.79     0.95     3.94     1.05    0.060    0.040    0.060    0.040   626.10   978.74
0.001379    1690.    1690.   1690.        2        0        0    -0.03   373.77  1352.51

*SECNO 11600.000

      TS
```

11600.00	7.80	635.30	0.0	0.0	635.58	0.28	2.20	0.01	631.60
5900.	19.	5747.	134.	16.	1326.	127.	474.	95.	632.30
0.91	1.15	4.33	1.06	0.060	0.040	0.060	0.040	627.50	191.20
0.001061	1830.	1830.	1830.	2	0	0	-0.01	288.81	480.02

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: LOWELL, CITY OF

3) WATERCOURSE: GRAND RIVER

4) DOCUMENT TYPE: 100-YEAR ENCROACHED

00BREAK00

```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*************************************************
```

T1 100 - ENCROACHED A(2)
T2
T3

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.0	0.0	0.0	0.	633.980	0.0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.0	-1.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```
*PROF 2

CCHV     0.100 CEHV     0.300
*SECNO 363200.000
3280 CROSS SECTION 363200.00 EXTENDED       1.14 FEET

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

        A
363200.00     23.88    633.98      0.0     633.99    634.06      0.08      0.0       0.0     620.70
   41200.      9972.    25515.     5712.    11931.     9295.     6641.       0.        0.     612.40
     0.0       0.84      2.75      0.86     0.080     0.035     0.080      0.0     610.10      88.30
 0.000076       0.        0.        0.         0         0         0     -0.14    2081.70    2170.00

*SECNO 367000.000

3470 ENCROACHMENT STATIONS       670.0     3250.0  TYPE      1  TARGET      2580.000

        B   3200 FT U/S FROM A

367000.00     23.02    634.22      0.0       0.0    634.32      0.10      0.26      0.01     628.60
   41200.      7148.    22176.    11875.     9416.     6480.    17076.     2216.      168.     622.50
     0.41      0.76      3.42      0.70     0.080     0.030     0.120     0.030    611.20     670.00
 0.000088     2900.     3200.     3400.         0         0         0     -0.12   2579.99    3250.00

*SECNO 369200.000
3280 CROSS SECTION 369200.00 EXTENDED       2.32 FEET

        C   1200 FT U/S FROM B

369200.00     25.21    634.31      0.0       0.0    634.42      0.11      0.10      0.00     625.70
   41200.       733.    21797.    18670.     1249.     6041.    21066.     2947.      224.     617.20
     0.54      0.59      3.61      0.89     0.090     0.030     0.090     0.031    609.10     149.73
 0.000088     1350.     1200.      900.         0         0         0     -0.07   2050.27    2200.00

*SECNO 370600.000
3280 CROSS SECTION 370600.00 EXTENDED       4.65 FEET

3470 ENCROACHMENT STATIONS       430.0     2200.0  TYPE      1  TARGET      1770.000

        D   800 U/S FROM HUDSON ST. BRIDGE

370600.00     23.25    634.45      0.0       0.0    634.59      0.14      0.16      0.01     634.40
   41200.       103.    25808.    15284.      264.     7068.    11887.     3723.      287.     618.10
     0.68      0.41      3.65      1.29     0.120     0.035     0.060     0.032    611.20     430.00
 0.000145     1550.     1460.     1400.         1         0         0     -0.14   1770.00    2200.00

CCHV     0.300 CEHV     0.500
*SECNO 372000.000
```

```
3265 DIVIDED FLOW

3280 CROSS SECTION 372000.00 EXTENDED      1.46 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    IOC       ICONT     CORAR     TOPWID      ENDST

        E   HUDSON ST. BRIDGE  MAX LC 634.1, MIN TP 638.3, WIDTH 37, LENGTH 485

            STAGE STATION, A RATING CURVE HAS BEEN DEVELOPED FOR HIGH WATER

            FLOOD ELEVATIONS  629.5, 633.2, 634.5, 638.6

372000.00    24.76   634.56     0.0       0.0    634.91     0.35      0.22      0.11   638.50
   41200.       0.   39689.    1511.       0.     8221.    1376.     3982.      312.   638.80
    0.73       0.0     4.83     1.10     0.120    0.040    0.060     0.033   609.80   103.00
 0.000696      850.     810.     750.       2        0        0     -0.07  1147.77  1654.00

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.25      1.62      2.50      0.0     315.00     21.00   7672.00     5.67    615.50    615.50
*SECNO 372001.000

3265 DIVIDED FLOW

3280 CROSS SECTION 372001.00 EXTENDED      1.75 FEET

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                              AREA
  635.18    635.00     0.04      2874.   37972.      7672.     7430.      634.10    633.10

372001.00    25.05   634.85     0.0       0.0    635.18     0.33      0.27      0.0    638.50
   41200.       0.   39416.    1784.       0.     8357.    1569.     3991.      313.   638.80
    0.73       0.0     4.72     1.14     0.120    0.040    0.060     0.033   609.80   103.00
 0.000650      37.      37.      37.       2        0        3     -0.05  1166.50  1654.00

CCHV    0.300 CEHV    0.500
*SECNO 372250.000
3280 CROSS SECTION 372250.00 EXTENDED      6.25 FEET

3470 ENCROACHMENT STATIONS    380.0    1900.0  TYPE    1  TARGET     1520.000

        F   300 FT U/S FROM HUDSON ST. BRIDGE

372250.00    24.54   635.04     0.0       0.0    635.29     0.25      0.09      0.02   622.40
   41200.      803.   28229.   12167.    1169.     5913.   10897.     4089.      323.   618.80
    0.76      [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]  [illegible]
```

```
0.000155     340.     310.     300.      1        0        0     -0.17  1520.00  1900.00

CCHV    0.100 CEHV    0.300
*SECNO 374900.000
3280 CROSS SECTION 374900.00 EXTENDED      3.37 FEET

3470 ENCROACHMENT STATIONS        0.0    1750.0  TYPE      1  TARGET     1749.999

        G   600 U/S FROM C & O R.R. BRIDGE,U/S FROM THE CONFLUENCE OF FLAT RIVER

374900.00    23.57   635.37     0.0      0.0    635.49     0.12     0.19     0.01   619.00
   40400.     3715.   26351.   10333.    5716.    7721.   12727.    4883.     381.   620.00
     0.93     0.65     3.41     0.81    0.120    0.032    0.100    0.033   611.80    22.65
 0.000090    1700.    1650.    1480.        2        0        0    -0.07  1727.35  1750.00

CCHV    0.300 CEHV    0.500
*SECNO 375100.000

3265 DIVIDED FLOW

3280 CROSS SECTION 375100.00 EXTENDED      3.80 FEET

        H   C&O R. R. TRESTLE  LC 632.8, TR 637.8, WIDTH 17, LENGTH 340

375100.00    25.40   635.30     0.0      0.0    635.77     0.48     0.10     0.18   637.80
   40400.       0.    39346.    1054.      0.     7015.    2507.    5203.     409.   637.70
     0.97      0.0     5.61     0.42    0.120    0.030    0.120    0.033   609.90   106.00
 0.000282     750.     670.     900.        2        0        0    -0.05  1295.65  1750.00

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      BDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.90      1.58      2.50      0.0     327.00    10.00    6156.00    0.0      610.80    610.80

*SECNO 375101.000

3265 DIVIDED FLOW

3280 CROSS SECTION 375101.00 EXTENDED      3.95 FEET

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       THA      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     ELLC      ELTRD
                                                              AREA
  635.92    635.62     0.01     8934.    31095.     6156.     6974.      632.80    631.50

3470 ENCROACHMENT STATIONS        0.0    1750.0  TYPE      1  TARGET     1749.999
```

```
376301.00    25.90    635.48      0.0       0.0    635.92      0.47      0.0       0.0    631.00
  40400.      0.     39264.    1136.       0.     7064.     2664.    5206.      410.   637.70
    0.97     0.0       5.56     0.43     0.120     0.030     0.120    0.033    609.90   106.00
0.000274     17.       17.       17.         2         0         3    -0.02   1315.03  1750.00


*SECNO 376300.000

3470 ENCROACHMENT STATIONS       580.0     2740.0  TYPE       1  TARGET      2160.000

        I   DIVISION ST. BRIDGE  MAX LC 634.7, MIN TR 635.6, WIDTH 19.5


            LENGTH 290

376300.00    25.98    635.68      0.0       0.0    636.16      0.48      0.23      0.01   635.60
  40400.     890.     34714.    4796.    1619.     5820.     6624.    5414.      442.   635.60
    1.01     0.55      5.95     0.72     0.120     0.030     0.120    0.032    609.70   580.00
0.000397     700.      700.     850.        -1         0         6    -0.10   2160.00  2740.00


SPECIAL BRIDGE

SB  XK        XKOR      COEQ      RDLEN     BWC       BWP       BAREA     SS       ELCHU    ELCHD
    0.90      1.58      2.50      0.0     287.00      8.00    5518.00     0.0     615.00   615.00

*SECNO 376301.000
6870 D.S. ENERGY OF  636.16 HIGHER THAN COMPUTED ENERGY OF  635.97
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC     ELTRD
                                                              AREA
  635.97    635.92     0.00     21373.    18828.     5518.     5496.      634.70   630.00


3470 ENCROACHMENT STATIONS       580.0     2740.0  TYPE       1  TARGET      2160.000
376301.00    25.99    635.69      0.0       0.0    636.16      0.47      0.0       0.0    635.60
  40400.     894.     34699.    4807.    1625.     5823.     6639.    5420.      443.   635.60
    1.01     0.55      5.96     0.72     0.120     0.030     0.120    0.032    609.70   580.00
0.000396     20.       20.       20.         2         0         5    -0.10   2160.00  2740.00


CCHV    0.300 CEHV    0.500
*SECNO 376750.000
3280 CROSS SECTION 376750.00 EXTENDED      8.15 FEET


3470 ENCROACHMENT STATIONS       300.0     2660.0  TYPE       1  TARGET      2360.000

        J   500 FT U/S FROM DIVISION ST. BRIDGE

376750.00    25.38    636.18      0.0       0.0    636.34      0.15      0.08      0.10   632.90
  40400.    2216.     29131.    9053.    4801.     7889.    15066.    5664.      469.   622.50
    1.05     0.46      3.69     0.60     0.120     0.030     0.120    0.032    610.80   300.00
0.000089     550.      500.      500.         2         0         0    -0.04   2360.00  2660.00


CCHV    0.100 CEHV    0.300
*SECNO 379400.000

3470 ENCROACHMENT STATIONS       600.0     3350.0  TYPE       1  TARGET      2750.000
```

```
379400.00     34.48    635.38      0.0       0.0    636.50      0.12      0.16      0.00    622.70
   40400.    17415.    21792.    1192.    28220.    5895.     2360.     6803.      556.    622.00
     1.29      0.62      3.70      0.51     0.120     0.030     0.100     0.033    601.90    600.00
 0.000078     1150.     2170.     1800.         2         0         0     -0.23   2750.00   3350.00


CCHV     0.100 CEHV     0.300
*SECNO 381600.000
   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       ELAIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     COFAP     TOPWID     ENDST


3470 ENCROACHMENT STATIONS      860.0     3750.0  TYPE      1  TARGET     -860.000

        L   800 FT U/S FROM N

381600.00     28.76    636.46      0.0       0.0    636.55      0.09      0.05      0.00    626.80
   40400.     9900.    25950.    4549.    20408.    6636.     9249.     7406.      600.    616.90
     1.39      0.49      3.00      0.49     0.120     0.030     0.120     0.033    607.70    860.00
 0.000050      650.      800.      800.         1         0         0     -0.23   2785.55   3645.55
```

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: LOWELL, CITY OF

3) WATERCOURSE: GRAND RIVER

4) DOCUMENT TYPE: 100-YEAR NATURAL

00BREAK00

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
**************************************************

C
T1      GRAND RIVER AT LOWELL, PROJECT NO. 8551-LOSP-C   (A3)
T2      GRAND RIVER AT LOWELL   100 NATURAL
T3      GRAND RIVER AT LOWELL

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0.        4.        0.        0.      0.0       0.0       0.0       0.      633.880     0.0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLOC     IBW       CHNIM     ITRACE

    1.000     0.0      -1.000     0.0       0.0       0.0       0.0       0.0       0.0       0.0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

  110.000   200.000   150.000     0.0       0.0       0.0       0.0       0.0       0.0       0.0

NC      0.080     0.080     0.035     0.100     0.300     0.0       0.0       0.0       0.0       0.0
QT      7.000 24700.000 36000.000 41200.000 55500.000 40500.000 30000.000 31650.000     0.0       0.0

        A

X1 363200.000    29.000  1150.000  1602.000     0.0       0.0       0.0       0.0       0.0       0.0
GR    638.900    37.000   627.200   159.000   620.500   608.000   621.100  1146.000   620.700  1150.000
GR    613.200  1162.000   610.700  1195.000   610.100  1230.000   610.200  1265.000   611.000  1300.000
GR    613.200  1331.000   619.300  1342.000   618.900  1372.000   618.300  1437.000   613.200  1440.000
GR    612.300  1465.000   611.500  1490.000   612.400  1520.000   612.900  1545.000   611.500  1570.000
GR    613.200  1598.000   612.400  1602.000   612.800  1625.000   620.300  1640.000   621.900  1692.000
GR    616.800  1749.000   624.900  1809.000   621.100  2077.000   632.800  2170.000     0.0       0.0
NC      0.080     0.120     0.030     0.0       0.0       0.0       0.0       0.0       0.0       0.0

        B   3200 FT U/S FROM A

X1 367000.000    24.000  1750.000  2066.000  2900.000  3400.000  3200.000     0.0       0.0       0.0
X3      0.0       0.0       0.0     670.000     0.0     3250.000     0.0       0.0       0.0       0.0
GR    650.300     0.0     633.200   532.000   634.400   589.000   620.900  1226.000   624.200  1552.000
GR    628.300  1706.000   623.600  1750.000   620.100  1782.000   614.400  1784.000   613.000  1830.000
GR    611.700  1875.000   612.300  1920.000   611.300  1970.000   611.200  2015.000   614.400  2058.000
GR    622.500  2066.000   622.400  2148.000   617.700  2491.000   624.000  2553.000   618.500  2572.000
GR    618.500  3180.000   620.700  3190.000   628.000  3220.000   636.000  3535.000     0.0       0.0
NC      0.090     0.090     0.030     0.0       0.0       0.0       0.0       0.0       0.0       0.0

        C   1200 FT U/S FROM B

X1 369200.000    25.000   335.000   609.000  1350.000   900.000  1200.000     0.0       0.0       0.0
GR    647.400    29.000   626.700   220.000   625.200   297.000   625.700   335.000   620.000   357.000
GR    614.800   361.000   609.900   395.000   609.100   430.000   610.200   465.000   610.400   495.000
GR    611.000   530.000   612.000   565.000   614.800   600.000   617.200   609.000   626.200   652.000
GR    621.800   739.000   624.400  1015.000   614.000  1057.000   623.900  1083.000   618.600  1385.000
GR    621.300  1457.000   618.500  1471.000   618.500  2075.000   626.500  2094.000   632.000  2200.000
NC      0.120     0.060     0.035     0.0       0.0       0.0       0.0       0.0       0.0       0.0
```

D 800 D/S FROM HUDSON ST. BRIDGE

X1	370600.000	19.000	483.000	855.000	1550.000	1400.000	1460.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	430.000	0.0	2200.000	0.0	0.0	0.0	0.0
GR	663.000	0.0	621.600	422.000	633.100	471.000	634.400	488.000	614.600	552.000
GR	611.200	593.000	611.800	638.000	613.400	678.000	614.000	718.000	613.900	763.000
GR	612.900	803.000	614.500	843.000	618.100	855.000	625.100	893.000	625.300	1412.000
GR	622.400	1516.000	629.300	1972.000	625.800	2196.000	629.800	2248.000	0.0	0.0
NC	0.120	0.060	0.040	0.300	0.500	0.0	0.0	0.0	0.0	0.0

E HUDSON ST. BRIDGE MAX LC 634.1, MIN TR 638.3, WIDTH 37, LENGTH 485

STAGE STATION, A RATING CURVE HAS BEEN DEVELOPED FOR HIGH WATER

FLOOD ELEVATIONS 629.5, 633.2, 634.5, 638.6

X1	372000.000	53.000	103.000	583.000	850.000	750.000	810.000	0.0	0.0	0.0
GR	637.600	0.0	638.500	103.000	630.700	103.000	621.500	159.000	633.400	159.000
GR	633.400	162.000	621.500	162.000	618.100	179.000	614.800	184.000	612.000	195.000
GR	610.200	210.000	609.800	219.000	633.800	219.000	633.300	222.000	609.800	222.000
GR	610.000	245.000	610.100	260.000	610.400	281.000	634.000	281.000	634.000	284.000
GR	610.700	284.000	611.000	305.000	610.500	325.000	610.900	341.000	634.100	341.000
GR	634.100	344.000	611.200	344.000	612.000	365.000	611.800	380.000	612.300	403.000
GR	634.000	403.000	634.000	407.000	612.800	407.000	613.400	420.000	614.800	441.000
GR	618.500	463.000	633.800	463.000	633.800	466.000	618.500	466.000	622.500	523.000
GR	633.300	523.000	633.300	526.000	622.500	526.000	625.000	563.000	630.600	583.000
GR	638.800	583.000	636.100	700.000	635.100	845.000	635.100	951.000	632.000	1155.000
GR	632.000	1458.000	632.700	1560.000	633.100	1654.000	0.0	0.0	0.0	0.0
SB	1.250	1.620	2.500	0.0	315.000	21.000	7672.000	5.670	615.500	615.500

X1	372001.000	0.0	0.0	0.0	37.000	37.000	37.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	634.100	633.100	0.0	0.0	0.0	0.0	0.0
BT	16.000	70.000	633.000	636.000	103.000	638.500	633.000	159.000	639.000	633.400
BT	219.000	639.300	633.800	281.000	639.600	634.000	341.000	639.600	634.100	403.000
BT	639.600	634.000	463.000	639.300	633.800	523.000	638.900	633.300	583.000	638.800
BT	632.700	700.000	636.100	632.000	845.000	635.100	632.000	951.000	635.100	632.000
BT	1155.000	633.800	632.000	1458.000	633.500	632.000	1654.000	633.100	633.100	0.0
NC	0.120	0.080	0.030	0.300	0.500	0.0	0.0	0.0	0.0	0.0

F 300 FT U/S FROM HUDSON ST. BRIDGE

X1	372250.000	18.000	517.000	789.000	340.000	300.000	310.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	380.000	0.0	1900.000	0.0	0.0	0.0	0.0
GR	646.600	0.0	635.100	84.000	638.600	157.000	634.900	378.000	623.500	460.000
GR	622.400	517.000	624.800	527.000	612.800	567.000	611.300	612.000	610.500	652.000
GR	611.200	697.000	611.500	737.000	614.800	781.000	618.800	789.000	621.100	978.000
GR	628.300	1546.000	629.400	1825.000	628.800	2050.000	0.0	0.0	0.0	0.0
NC	0.120	0.100	0.032	0.100	0.300	0.0	0.0	0.0	0.0	0.0
QT	7.000	23800.000	35800.000	40400.000	50800.000	37400.000	26800.000	27800.000	0.0	0.0

G 500 D/S FROM C & O R.R. BRIDGE,U/S FROM THE CONFLUENCE OF FLAT RIVER

X1	374900.000	20.000	486.000	843.000	1700.000	1480.000	1650.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	0.0	0.0	1750.000	0.0	0.0	0.0	0.0
GR	638.700	0.0	624.000	100.000	620.000	440.000	619.000	486.000	615.900	497.000
GR	612.500	548.000	611.800	591.000	612.200	641.000	612.700	690.000	613.400	739.000
GR	615.800	783.000	615.900	831.000	620.000	843.000	622.200	1000.000	622.200	1300.000
GR	620.200	1600.000	620.000	1870.000	628.000	1940.000	629.000	2300.000	632.000	2660.000
NC	0.120	0.120	0.030	0.300	0.500	0.0	0.0	0.0	0.0	0.0

[illegible] 37.3, WIDTH 17, LENGTH 340

X1	375100.000	27.000	105.000	433.000	750.000	900.000	670.000	0.0	0.0	0.0
GR	637.400	0.0	637.800	106.000	620.500	106.000	615.900	129.000	613.200	165.000
GR	612.300	200.000	609.900	230.000	610.600	263.000	616.100	263.000	616.300	265.000
GR	632.700	265.000	632.700	274.000	616.600	274.000	616.600	277.000	610.800	277.000
GR	611.400	310.000	613.400	345.000	612.100	380.000	615.900	414.000	622.800	433.000
GR	637.700	433.000	637.800	440.000	637.300	540.000	633.100	1046.000	632.000	1252.000
GR	632.000	1715.000	631.500	1750.000	0.0	0.0	0.0	0.0	0.0	0.0
SB	0.900	1.580	2.500	0.0	327.000	10.000	6156.000	0.0	610.800	610.800

X1	375101.000	0.0	0.0	0.0	17.000	17.000	17.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	632.800	631.500	0.0	0.0	0.0	0.0	0.0
X3	0.0	0.0	0.0	0.0	0.0	1750.000	0.0	0.0	0.0	0.0
BT	11.000	0.0	637.400	637.400	106.000	637.800	632.800	265.000	637.700	632.700
BT	274.000	637.700	632.700	433.000	637.700	632.700	440.000	637.800	628.000	540.000
BT	637.300	632.000	1046.000	633.100	632.000	1252.000	633.100	632.000	1715.000	633.000
BT	632.000	1750.000	631.500	631.500	0.0	0.0	0.0	0.0	0.0	0.0

I DIVISION ST. BRIDGE MAX LC 634.7, MIN TR 635.6, WIDTH 19.5

LENGTH 290

X1	376300.000	38.000	1110.000	1397.000	700.000	850.000	700.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	580.000	0.0	2740.000	0.0	0.0	0.0	0.0
GR	649.600	0.0	644.200	60.000	631.700	694.000	631.700	904.000	633.300	1010.000
GR	635.600	1110.000	622.100	1110.000	615.800	1130.000	614.000	1144.000	614.100	1159.000
GR	612.600	1174.000	615.800	1190.000	616.100	1201.000	634.700	1201.000	634.700	1207.000
GR	616.500	1207.000	615.800	1218.000	612.100	1234.000	609.700	1254.000	610.400	1274.000
GR	615.800	1291.000	616.800	1301.000	634.600	1301.000	634.600	1309.000	616.700	1309.000
GR	615.800	1316.000	614.100	1334.000	613.400	1354.000	614.300	1369.000	615.800	1386.000
GR	621.600	1397.000	635.600	1397.000	631.200	1509.000	630.200	1598.000	630.900	1999.000
GR	630.000	2740.000	632.300	3401.000	646.100	3987.000	0.0	0.0	0.0	0.0
SB	0.900	1.580	2.500	0.0	287.000	8.000	5518.000	0.0	615.000	615.000

X1	376301.000	0.0	0.0	0.0	19.500	19.500	19.500	0.0	0.0	0.0
X2	0.0	0.0	1.000	634.700	630.000	0.0	0.0	0.0	0.0	0.0
X3	0.0	0.0	0.0	580.000	0.0	2740.000	0.0	0.0	0.0	0.0
BT	15.000	0.0	649.600	649.600	60.000	644.200	644.200	694.000	631.700	631.700
BT	904.000	631.700	631.700	1010.000	633.300	633.300	1110.000	635.600	634.000	1201.000
BT	636.300	634.700	1207.000	636.300	634.700	1301.000	636.200	634.600	1309.000	636.200
BT	634.600	1397.000	635.600	634.000	1509.000	631.200	631.200	1598.000	630.200	630.200
BT	1999.000	630.900	630.900	2740.000	630.000	630.000	0.0	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

J 500 FT U/S FROM DIVISION ST. BRIDGE

X1	376750.000	23.000	1000.000	1341.000	550.000	500.000	500.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	300.000	0.0	2660.000	0.0	0.0	0.0	0.0
GR	638.500	160.000	636.000	210.000	632.500	400.000	632.000	580.000	624.500	700.000
GR	628.500	890.000	628.000	900.000	624.000	970.000	632.900	1000.000	615.800	1006.000
GR	612.900	1053.000	612.400	1100.000	611.600	1141.000	610.800	1188.000	611.100	1235.000
GR	613.000	1282.000	615.800	1323.000	622.500	1341.000	624.000	1400.000	622.500	1800.000
GR	624.000	2160.000	628.000	2350.000	628.000	2980.000	0.0	0.0	0.0	0.0
NC	0.120	0.100	0.030	0.100	0.300	0.0	0.0	0.0	0.0	0.0

K 2100 FT U/S FROM M

X1	379400.000	20.000	2780.000	3013.000	1150.000	1800.000	2170.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	600.000	0.0	3350.000	0.0	0.0	0.0	0.0
GR	654.500	0.0	641.500	93.000	639.800	260.000	622.500	1147.000	624.900	1344.000

GR	612.000	2875.000	610.200	2910.000	604.500	2940.000	601.900	2975.000	615.900	3006.000
GR	622.000	3013.000	627.400	3066.000	632.500	3324.000	640.800	3467.000	643.700	3551.000
NC	0.120	0.120	0.030	0.100	0.300	0.0	0.0	0.0	0.0	0.0

23B

2980
2910
70

L 800 FT U/S FROM N

X1	381600.000	21.000	2470.000	2810.000	650.000	800.000	800.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	860.000	0.0	0.0	0.0	0.0	0.0	0.0
GR	646.700	0.0	642.600	43.000	636.200	500.000	637.200	637.000	624.700	1149.000
GR	622.300	1508.000	619.100	1684.000	626.800	2470.000	616.000	2482.000	609.800	2535.000
GR	610.000	2585.000	608.300	2635.000	607.700	2685.000	609.500	2735.000	616.000	2789.000
GR	616.900	2810.000	620.700	2914.000	620.500	3145.000	626.600	3306.000	638.000	3699.000
GR	645.800	3750.000	0.0	0.0	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 363200.000
3280 CROSS SECTION 363200.00 EXTENDED      1.08 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

        A

363200.00    23.78    633.88      0.0    633.88    633.96      0.08      0.0       0.0    620.70
   41200.     9934.    25573.    5694.    11825.    9250.     6584.       0.        0.     612.40
     0.0      0.84      2.76     0.86     0.080    0.035     0.080     0.0     610.10     89.35
 0.000077       0.        0.       0.         0        0         0    -0.14   2080.65   2170.00

*SECNO 367000.000

3470 ENCROACHMENT STATIONS      670.0    3250.0  TYPE      1  TARGET     2580.000

        B   3200 FT U/S FROM A

367000.00    22.93    634.13      0.0      0.0    634.23      0.10      0.26      0.01    628.60
   41200.     7096.    22234.   11869.    9313.    6449.    16963.    2199.       168.    622.50
     0.40      0.76      3.45     0.70    0.080    0.030     0.120    0.030    611.20    670.00
 0.000090     2900.     3200.    3400.        0        0         0    -0.11   2579.99   3250.00

*SECNO 369200.000
3280 CROSS SECTION 369200.00 EXTENDED      2.22 FEET

        C   1200 FT U/S FROM B

369200.00    25.12    634.22      0.0      0.0    634.33      0.11      0.10      0.00    625.70
   41200.      725.    21844.   18630.    1231.    6016.    20918.    2926.       224.    617.20
     0.53      0.59      3.63     0.89    0.090    0.030     0.090    0.031    609.10    150.59
 0.000089     1350.     1200.     900.        0        0         0    -0.07   2049.42   2200.00

*SECNO 370600.000

3265 DIVIDED FLOW

3280 CROSS SECTION 370600.00 EXTENDED      4.56 FEET

3470 ENCROACHMENT STATIONS      430.0    2200.0  TYPE      1  TARGET     1770.000

        D   800 D/S FROM HUDSON ST. BRIDGE

370600.00    23.16    634.36      0.0      0.0    634.50      0.14      0.16      0.01    634.40
   41200.      106.    25899.   15195.     259.    7035.    11765.    3696.       286.    618.10
     0.68      0.41      3.68     1.29    0.120    0.035     0.060    0.032    611.20    430.00
 0.000148     1550.     1460.    1400.        1        0         0    -0.15   1769.27   2200.00
```

```
CCHV     0.300 CEHV     0.500
*SECNO 372000.000

3265 DIVIDED FLOW

3280 CROSS SECTION 372000.00 EXTENDED       1.38 FEET

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    RANK 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

        E   HUDSON ST. BRIDGE  MAX LC 634.1, MIN TR 638.3, WIDTH 37, LENGTH 485

            STAGE STATION, A RATING CURVE HAS BEEN DEVELOPED FOR HIGH WATER

            FLOOD ELEVATIONS  629.5, 633.2, 634.5, 638.6

372000.00    24.58    634.48      0.0       0.0    634.83      6.36      0.22      0.11    638.50
   41200.       0.    39771.    1429.       0.     8178.     1318.     3953.      312.    638.80
    0.72       0.0      4.86      1.08     0.120     0.040     0.060     0.033    609.80    103.00
0.000710      350.      810.      750.         2         0         0     -0.05   1142.00   1654.00

SPECIAL BRIDGE

SB  XK        XKOR      COEQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
    1.25      1.62      2.50      0.0     315.00     21.00   7672.00     5.67    615.50    615.50

*SECNO 372001.000

3265 DIVIDED FLOW

3280 CROSS SECTION 372001.00 EXTENDED       1.66 FEET

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID AREA     ELLC      ELTRD
 635.10     634.92     0.04      2650.     38204.    7672.     7430.              634.10    633.10

372001.00    24.96    634.76      0.0       0.0    635.10      0.34      0.27      0.0     638.50
   41200.       0.    39498.    1702.       0.     8317.     1511.     3961.      313.    638.80
    0.73       0.0      4.75      1.13     0.120     0.040     0.060     0.033    609.80    103.00
0.000663      37.       37.       37.         2         0         3     -0.05   1160.93   1654.00

CCHV     0.300 CEHV     0.500
*SECNO 372250.000
3280 CROSS SECTION 372250.00 EXTENDED       6.17 FEET

3470 ENCROACHMENT STATIONS       380.0     1900.0  TYPE    1  TARGET     1520.000

        F   300 FT U/S FROM HUDSON ST. BRIDGE
```

```
372250.00    24.46   634.96     0.0      0.0    635.21     0.25      0.09     0.03   622.40
   41200.      798.   28290.   12112.    1158.    5891.   10807.    4058.      323.   618.80
    0.75     0.69     4.80     1.12    0.120    0.030    0.080    0.033   610.50   380.00
0.000158     340.     310.     300.        1        0        0    -0.17  1520.00  1900.00

CCHV    0.100 CEHV    0.300
*SECNO 374900.000
3280 CROSS SECTION 374900.00 EXTENDED      3.23 FEET

3470 ENCROACHMENT STATIONS        0.0    1750.0  TYPE      1  TARGET     1749.999

        G   600 U/S FROM C & O R.R. BRIDGE,U/S FROM THE CONFLUENCE OF FLAT RIVER

374900.00    23.49   635.29     0.0      0.0    635.42     0.12      0.19     0.01   619.00
   40400.     3705.   26382.   10313.    5681.    7694.   12658.    4848.      386.   620.00
    0.93     0.65     3.43     0.81    0.120    0.032    0.100    0.033   611.80    23.16
0.000091    1700.    1650.    1480.        2        0        0    -0.07  1726.83  1750.00

CCHV    0.300 CEHV    0.500
*SECNO 375100.000

3265 DIVIDED FLOW

3280 CROSS SECTION 375100.00 EXTENDED      3.72 FEET

        H   C&O R. R. TRESTLE  LC 632.8, TR 637.8, WIDTH 17, LENGTH 340

375100.00    25.32   635.22     0.0      0.0    635.70     0.48      0.11     0.18   637.80
   40400.       0.   39385.    1015.       0.    6991.    2434.    5165.      409.   637.70
    0.96      0.0     5.63     0.42    0.120    0.030    0.120    0.033   609.90   106.00
0.000285     750.     670.     900.        2        0        0    -0.05  1286.47  1750.00

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.90     1.58      2.50      0.0     327.00     10.00   6156.00     0.0      610.80    610.80

*SECNO 375101.000

3265 DIVIDED FLOW

3280 CROSS SECTION 375101.00 EXTENDED      3.89 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

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID AREA      ELLC      ELTRO
  635.86    635.55     0.01      8768.     31397.    6156.     6974.               632.80    631.50
```

```
3470 ENCROACHMENT STATIONS          0.0     1750.0  TYPE       1  TARGET      1749.999
375101.00     25.49    635.39      0.0       0.0     635.86     0.47      0.16      0.0     637.80
   40400.        0.    39299.    1101.        0.      7046.    2597.     5169.     409.     637.70
     0.96       0.0      5.58     0.42     0.120      0.030    0.120     0.033   609.90     106.00
 0.000277       17.       17.      17.         2          6        3     -0.05  1306.82    1750.00

*SECNO 376300.000

3470 ENCROACHMENT STATIONS        580.0     2740.0  TYPE       1  TARGET      2160.000

        I   DIVISION ST. BRIDGE  MAX LC 634.7, MIN TR 635.6, WIDTH 19.5

            LENGTH 290

376300.00     25.92    635.62      0.0       0.0     636.10     0.48      0.24      0.01    635.60
   40400.       868.   34804.    4729.    1584.      5801.    6535.     5374.     441.     635.60
     1.00      0.55      6.00     0.72     0.120      0.030    0.120     0.032   609.70     580.00
 0.000403      700.      700.     850.         1          0        0     -0.10  2160.00    2740.00

SPECIAL BRIDGE

SB  XK        XKOR      CBFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
    0.90      1.58      2.50      0.0     287.00      8.00    5518.00     0.0     615.00    615.00

*SECNO 376301.000
6870 D.S. ENERGY OF  636.10 HIGHER THAN COMPUTED ENERGY OF  635.91
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA    TRAPEZOID      ELLC      ELTRD
                                                                  AREA
  635.91    635.86     0.00     21291.    18925.     5518.     5496.       634.70    630.00

3470 ENCROACHMENT STATIONS        580.0     2740.0  TYPE       1  TARGET      2160.000
376301.00     25.92    635.62      0.0       0.0     636.10     0.48      0.0       0.0     635.60
   40400.       871.   34789.    4740.    1599.      5804.    6550.     5380.     442.     635.60
     1.00      0.55      5.99     0.72     0.120      0.030    0.120     0.032   609.70     580.00
 0.000402       20.       20.      20.         2          0        5     -0.10  2160.00    2740.00

CCHV    0.300 CEHV    0.500
*SECNO 376750.000
3280 CROSS SECTION 376750.00 EXTENDED      8.13 FEET

3470 ENCROACHMENT STATIONS        300.0     2660.0  TYPE       1  TARGET      2360.000

        J   500 FT U/S FROM DIVISION ST. BRIDGE

376750.00     25.33    636.13      0.0       0.0     636.28     0.16      0.08      0.10    632.90
   40400.      2200.   29171.    9029.    4760.      7369.   14988.     5623.     469.     622.50
     1.05      0.46      3.71     0.60     0.120     0.030    0.120     0.032   610.80     300.00
 0.000090      550.      500.     500.         2          0        0     -0.04  2360.00    2660.00

CCHV    0.100 CEHV    0.300
*SECNO 379400.000
```

3470 ENCROACHMENT STATIONS 600.0 3350.0 TYPE 1 TARGET 2750.000

K 2100 FT U/S FROM M

379400.00	34.42	636.32	0.0	0.0	636.44	0.12	0.16	0.00	622.70
40400.	17387.	21829.	1184.	28097.	5883.	2341.	6757.	555.	622.00
1.28	0.62	3.71	0.51	0.120	0.030	0.100	0.033	601.90	600.00
0.000079	1150.	2170.	1800.	2	0	0	-0.23	2750.00	3350.00

CCHV 0.100 CEHV 0.300

*SECNO 381600.000

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 860.0 3750.0 TYPE 1 TARGET -860.000

L 800 FT U/S FROM N

381600.00	28.70	636.40	0.0	0.0	636.49	0.09	0.05	0.00	626.80
40400.	9878.	25982.	4540.	20318.	8617.	9202.	7357.	600.	616.90
1.38	0.49	3.02	0.49	0.120	0.030	0.120	0.033	607.70	860.00
0.000051	650.	800.	800.	1	0	0	-0.23	2783.63	3643.63

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: LOWELL, CITY OF

3) WATERCOURSE: GRAND RIVER

4) DOCUMENT TYPE: STUDY SUMMARY

```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED JULY1979
  ERROR CORR -  01,02,03
  MODIFICATION -  50,51,52,53
*************************************************
```

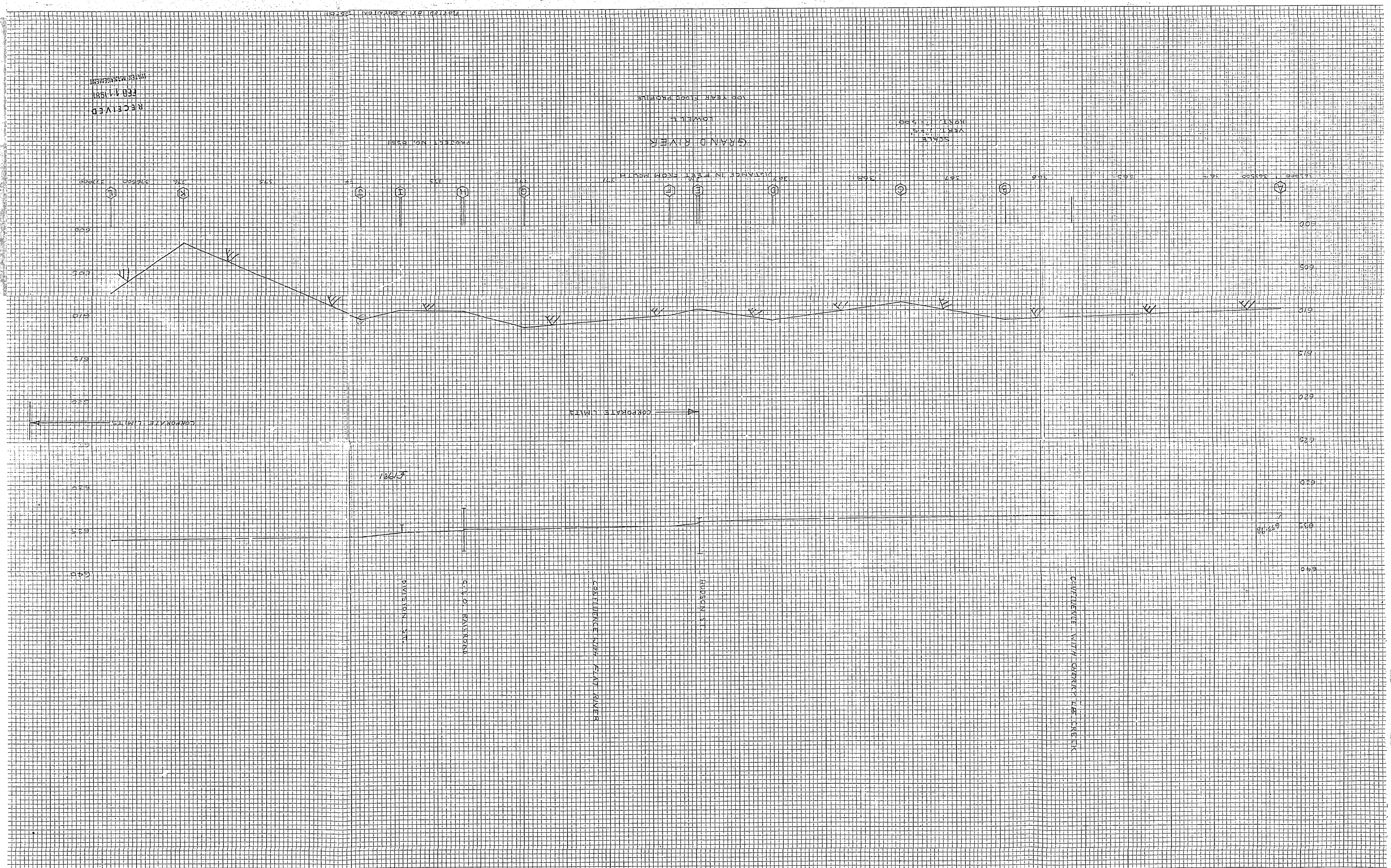
NOTE- ASTERISK * AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

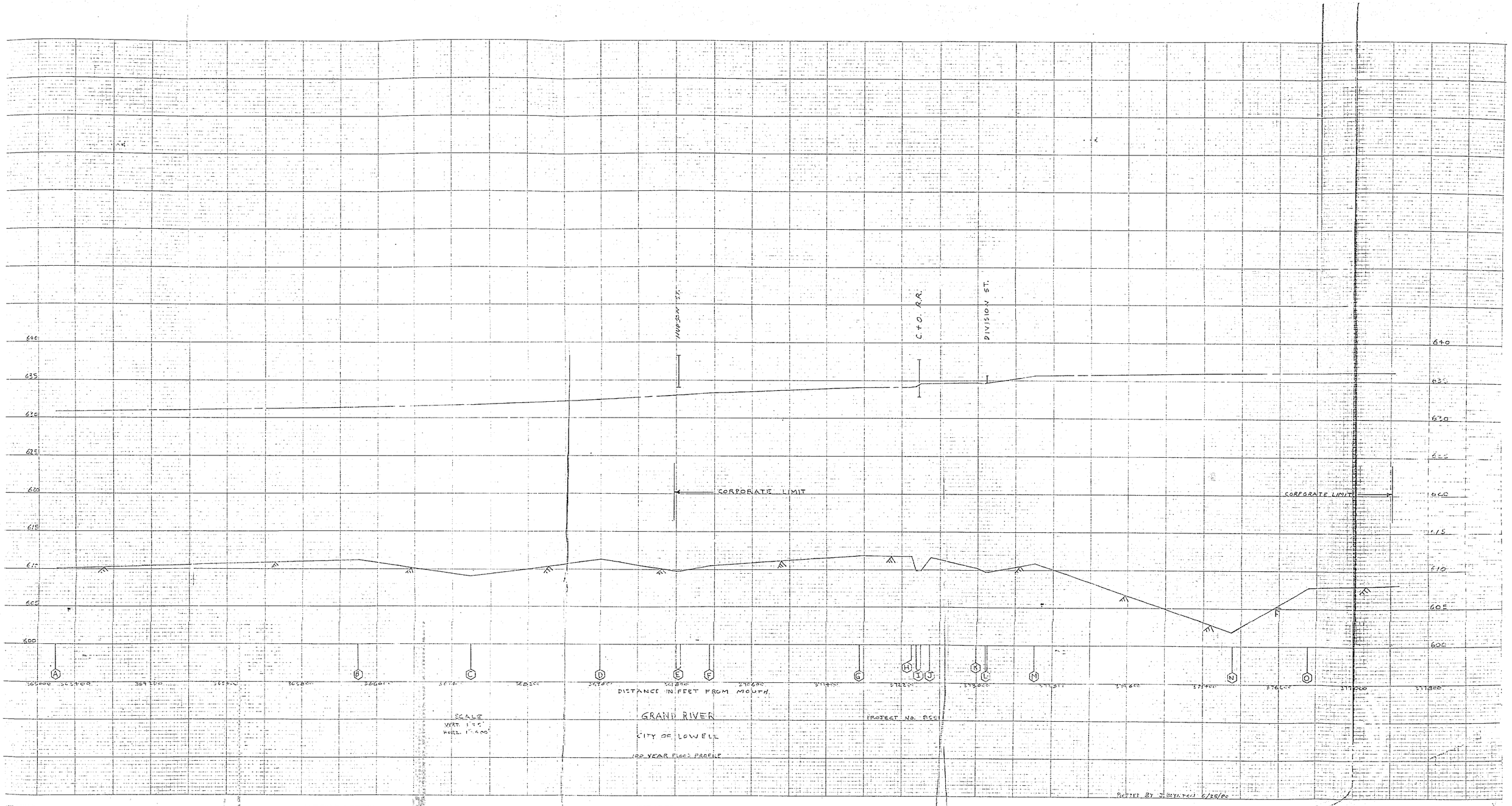
GRAND RIVER AT LOWELL

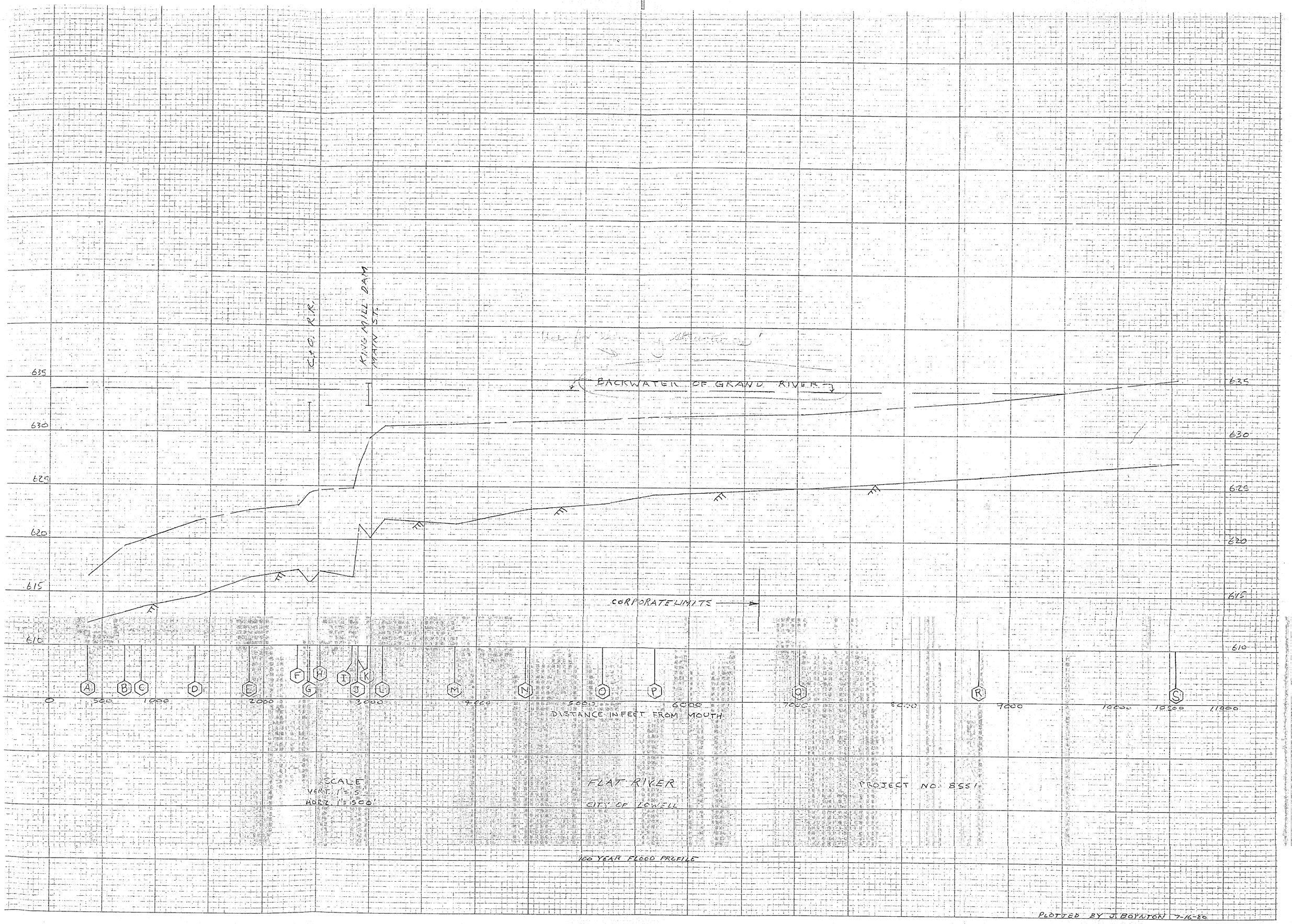
SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
363200.000	628.60	0.0	628.68	1992.22	4240.82	17818.53	2640.65	0.0	0.0	1150.00	1602.00	0.0
363200.000	632.57	0.0	632.64	2065.17	8201.12	23052.85	4746.01	0.0	0.0	1150.00	1602.00	0.0
363200.000	633.88	0.0	633.96	2080.65	9933.64	25572.72	5693.62	0.0	0.0	1150.00	1602.00	0.0
363200.000	638.10	0.0	638.18	2124.66	15189.72	31793.19	8517.11	0.0	0.0	1150.00	1602.00	0.0
367000.000	628.93	0.0	629.04	2402.49	2397.14	15725.52	6577.33	2580.00	670.00	1750.00	2066.00	3250.00
367000.000	632.32	0.0	632.92	2579.99	5532.14	20182.95	10284.89	2580.00	670.00	1750.00	2066.00	3250.00
367000.000	634.13	0.0	634.23	2579.99	7096.43	22234.12	11869.43	2580.00	670.00	1750.00	2066.00	3250.00
367000.000	638.30	0.0	638.40	2579.99	12081.42	27199.20	16219.35	2580.00	670.00	1750.00	2066.00	3250.00
369200.000	629.06	0.0	629.16	1945.05	146.34	15236.67	9316.98	0.0	0.0	335.00	609.00	0.0
369200.000	632.92	0.0	633.02	2037.39	533.13	19714.84	15752.02	0.0	0.0	335.00	609.00	0.0
369200.000	634.22	0.0	634.33	2049.42	725.36	21344.27	18630.36	0.0	0.0	335.00	609.00	0.0
369200.000	638.37	0.0	638.49	2087.77	1429.23	27073.89	26996.87	0.0	0.0	335.00	609.00	0.0
370600.000	629.21	0.0	629.41	1709.54	22.38	20109.16	4567.96	1770.00	430.00	488.00	855.00	2200.00
370600.000	633.06	0.0	633.20	1748.42	73.79	23924.80	12001.39	1770.00	430.00	488.00	855.00	2200.00
370600.000	634.36	0.0	634.50	1769.27	106.35	25898.52	15195.12	1770.00	430.00	488.00	855.00	2200.00
370600.000	638.50	0.0	638.62	1770.00	232.63	30648.43	24618.90	1770.00	430.00	488.00	855.00	2200.00
372000.000	629.47	0.0	629.74	446.48	0.0	24700.00	0.0	0.0	0.0	103.00	583.00	0.0
372000.000	633.19	0.0	633.53	1035.35	0.0	35656.13	343.88	0.0	0.0	103.00	583.00	0.0
372000.000	634.48	0.0	634.83	1142.00	0.0	39771.10	1428.88	0.0	0.0	103.00	583.00	0.0
372000.000	638.57	0.0	638.86	1644.00	9.41	46918.68	8571.91	0.0	0.0	103.00	583.00	0.0
372001.000	629.50	0.0	629.77	446.77	0.0	24700.00	0.0	0.0	0.0	103.00	583.00	0.0
372001.000	633.30	0.0	633.64	1045.82	0.0	35592.99	407.02	0.0	0.0	103.00	583.00	0.0
372001.000	634.76	0.0	635.10	1160.93	0.0	39498.22	1701.77	0.0	0.0	103.00	583.00	0.0
372001.000	638.89	0.0	639.16	1654.00	20.27	46363.91	9115.79	0.0	0.0	103.00	583.00	0.0
372250.000	629.62	0.0	629.88	1484.05	288.22	20014.58	4397.20	1520.00	380.00	517.00	789.00	1900.00
372250.000	633.51	0.0	633.76	1512.04	628.14	25737.02	9634.83	1520.00	380.00	517.00	789.00	1900.00
372250.000	634.96	0.0	635.21	1520.00	798.40	28289.64	12111.95	1520.00	380.00	517.00	789.00	1900.00
372250.000	638.99	0.0	639.24	1520.00	1344.77	34760.71	19394.50	1520.00	380.00	517.00	789.00	1900.00
374900.000	630.02	0.0	630.12	1690.97	1666.99	17230.39	4902.60	1750.00	0.00	486.00	843.00	1750.00
374900.000	633.35	0.0	633.97	1717.00	3107.71	23929.20	8763.08	1750.00	0.00	486.00	843.00	1750.00
374900.000	635.29	0.0	635.42	1726.33	3705.47	26381.50	10313.03	1750.00	0.00	486.00	843.00	1750.00
374900.000	639.29	0.0	639.41	1750.00	5226.23	31503.90	14069.85	1750.00	0.00	486.00	843.00	1750.00

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
375100.000	630.02	0.0	630.33	318.00	0.0	23799.99	0.0	0.0	0.0	106.00	433.00	0.0
375100.000	633.79	0.0	634.24	1113.79	0.0	35455.74	344.25	0.0	0.0	106.00	433.00	0.0
375100.000	635.22	0.0	635.70	1286.47	0.0	39384.86	1015.13	0.0	0.0	106.00	433.00	0.0
375100.000	639.21	0.0	639.66	1750.00	43.48	46354.56	4401.95	0.0	0.0	106.00	433.00	0.0
375101.000	630.03	0.0	630.34	318.00	0.0	23799.98	0.0	1750.00	0.00	106.00	433.00	1750.00
375101.000	634.03	0.0	634.47	1142.58	0.0	35375.93	424.07	1750.00	0.00	106.00	433.00	1750.00
375101.000	635.39	0.0	635.86	1306.82	0.0	39299.19	1100.80	1750.00	0.00	106.00	433.00	1750.00
375101.000	639.21	0.0	639.66	1750.00	43.47	46354.70	4401.83	1750.00	0.00	106.00	433.00	1750.00
376300.000	630.17	0.0	630.64	408.89	0.0	23799.45	0.55	2160.00	580.00	1110.00	1397.00	2740.00
376300.000	634.23	0.0	634.74	2051.76	371.33	32595.96	2832.71	2160.00	580.00	1110.00	1397.00	2740.00
376300.000	635.62	0.0	636.10	2160.00	867.57	34803.72	4728.70	2160.00	580.00	1110.00	1397.00	2740.00
376300.000	639.51	0.0	639.86	2160.00	2687.65	37987.43	10124.91	2160.00	580.00	1110.00	1397.00	2740.00
376301.000	630.18	0.0	630.56	422.76	0.0	23799.29	0.71	2160.00	580.00	1110.00	1397.00	2740.00
376301.000	634.23	0.0	634.74	2051.36	369.86	32602.98	2827.16	2160.00	580.00	1110.00	1397.00	2740.00
376301.000	635.62	0.0	636.10	2160.00	871.35	34788.79	4739.85	2160.00	580.00	1110.00	1397.00	2740.00
376301.000	639.51	0.0	639.86	2160.00	2687.83	37986.83	10125.33	2160.00	580.00	1110.00	1397.00	2740.00
376750.000	630.71	0.0	630.85	2051.12	481.82	19902.63	3415.53	2360.00	300.00	1000.00	1341.00	2660.00
376750.000	634.78	0.0	634.94	2360.00	1623.49	26723.00	7453.50	2360.00	300.00	1000.00	1341.00	2660.00
376750.000	636.13	0.0	636.28	2360.00	2199.96	29171.46	9028.56	2360.00	300.00	1000.00	1341.00	2660.00
376750.000	639.84	0.0	639.99	2360.00	3897.92	33909.50	12992.57	2360.00	300.00	1000.00	1341.00	2660.00
379400.000	630.92	0.0	631.04	2528.74	7989.68	15589.42	220.88	2750.00	600.00	2780.00	3013.00	3350.00
379400.000	634.98	0.0	635.10	2750.00	14751.76	20186.12	862.10	2750.00	600.00	2780.00	3013.00	3350.00
379400.000	636.32	0.0	636.44	2750.00	17387.32	21829.09	1183.57	2750.00	600.00	2780.00	3013.00	3350.00
379400.000	640.01	0.0	640.12	2750.00	23790.22	24894.50	2115.27	2750.00	600.00	2780.00	3013.00	3350.00
381600.000	631.01	0.0	631.09	2567.75	4110.10	17609.20	2080.69	-860.00	860.00	2470.00	2810.00	3750.00
381600.000	635.06	0.0	635.15	2737.51	8235.38	23740.18	3324.42	-860.00	860.00	2470.00	2810.00	3750.00
381600.000	636.40	0.0	636.49	2783.63	9877.66	25981.97	4540.36	-860.00	860.00	2470.00	2810.00	3750.00
381600.000	640.07	0.0	640.16	2852.49	13978.18	30346.27	6475.56	-860.00	860.00	2470.00	2810.00	3750.00


GRAND RIVER
PROJECT NO. 8558
SCALE
VERT. 1"=5'
HORZ. 1"=50'
LOWELL
100 YEAR FLOOD PROFILE
DISTANCE IN FEET - FROM MOUTH
CORPORATE LIMITS
COMMONALTY LIMITS
DAVISON ST.
CITY OF RAVENNA
CONFLUENCE WITH FLAT RIVER
HUDSON ST.
CONFLUENCE WITH GARRISON CREEK
136.73
RECEIVED
FEB 11 1981
WATER MANAGEMENT
GRAND RIVER
LOWELL


HUDSON ST.
C. & O. R.R.
DIVISION ST.
CORPORATE LIMIT
CORPORATE LIMIT
640
635
630
625
620
615
610
605
600
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
DISTANCE IN FEET FROM MOUTH.
SCALE
VERT. 1"=5'
HORZ. 1"=100'
GRAND RIVER
CITY OF LOWELL
100 YEAR FLOOD PROFILE
PROJECT No. 8501
PLOTTED BY J. SOVITCH 6/26/80


C.&O. R.R.
KING MILL DAM
MAIN ST.
BACKWATER OF GRAND RIVER
CORPORATE LIMITS
635
630
625
620
615
610
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
0
500
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
10500
11000
DISTANCE IN FEET FROM MOUTH
SCALE
VERT. 1"=5'
HORZ. 1"=1000'
FLAT RIVER
CITY OF LOWELL
PROJECT NO. 8551
100 YEAR FLOOD PROFILE
PLOTTED BY J. BOYNTON 7-16-80
KEUFFEL & ESSER CO.
MADE IN U.S.A.
K+E STANDARD ® CROSS SECTION
10X10 TO THE INCH
KEUFFEL & ESSER CO.
MADE IN U.S.A.
FLAT RIVER
LOWELL

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: SPARTA, VILLAGE OF

3) WATERCOURSE: NASH CREEK

4) DOCUMENT TYPE: 100-YEAR ENCROACHED

00BREAK00

```
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED  AUG1977
  ERROR CORR -  01,02
  MODIFICATION -  50,51,52,53
*****************************************************
```

T1 100 YEAR ENCROACHED
T2
T3

J1	ICHECK	INQ	NINV	ICIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	6.	0.	0.	0.0	0.0	0.0	0.	736.100	0.0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0.0	-1.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```
*PROF 2

CCHV    0.100 CEHV    0.300
*SECNO 2000.000
   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

        SECTION A  2000 FT FROM THE MOUTH TO ROGUE RIVER

                   STARTING ELEV BY CONVERGENCE TEST

  2000.00      7.10    736.10      0.0     736.10    735.91      0.81      0.0       0.0    739.20
    1625.        0.     1625.       0.        0.     225.        0.        0.        0.    741.10
     0.0       0.0      7.23      0.0     0.070     0.030     0.070       0.0    729.00   1078.61
 0.002657        0.        0.       0.         0         0         0       0.0     42.46   1121.09

*SECNO 2600.000

        SECTION B  MANUFACTURED VALLEY SECTION

  2600.00      7.80    737.65      0.0       0.0    738.28      0.63      1.34      0.02    740.05
    1625.        0.     1625.       0.        0.     255.        0.        3.        1.    741.95
     0.03       0.0      6.36      0.0     0.070     0.030     0.070     0.030    729.85   1076.67
 0.001916      600.      600.     600.         2         0         0       0.0     45.94   1122.61

*SECNO 3400.000

        SECTION C

  3400.00      8.27    738.97      0.0       0.0    739.68      0.71      1.38      0.03    746.00
    1625.        0.     1625.       0.        0.     240.        0.        7.        1.    744.90
     0.05       0.0      6.78      0.0     0.070     0.030     0.070     0.030    730.70    974.28
 0.002728      610.      610.     610.         2         0         0       0.0     50.79   1025.07

CCHV    0.300 CEHV    0.500
*SECNO 3500.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       746.00 ELREA       746.00

        SECTION D  DIVISION ST. BRIDGE, WIDTH 65 FT, LENGTH 48 FT

                   MULTIPLE STRUCTURAL PLATE STEEL-PIPE ARCHES, 20.3 X 13

  3500.00      6.46    739.26      0.0       0.0    739.95      0.69      0.25      0.01    736.50
    1625.        0.     1625.       0.        0.     244.        0.        7.        1.    736.50
     0.06       0.0      6.67      0.0     0.070     0.030     0.070     0.030    732.80   1097.70
 0.002382      100.      100.     100.         2         0         0       0.0     44.60   1142.30

*SECNO 3501.000
   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  26 MIN ELTRD   745.40 MAX ELLC   748.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       747.00 ELREA       747.00

  3501.00      6.42    739.22      0.0       0.0     740.03      0.81      0.03      0.06    736.50
    1625.        0.     1625.       0.        0.      225.        0.        7.        1.     736.50
     0.06       0.0      7.22      0.0     0.070     0.026     0.070     0.030    732.80   1097.70
 0.002819       10.       10.      10.         2         0         0    -26.56     44.60   1142.30

*SECNO 3502.000

3370 NORMAL BRIDGE,NRD  26 MIN ELTRD   745.40 MAX ELLC   748.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       747.00 ELREA       747.00

  3502.00      6.64    739.44      0.0       0.0     740.21      0.76      0.16      0.01    736.50
    1625.        0.     1625.       0.        0.      232.        0.        8.        1.     736.50
     0.06       0.0      7.00      0.0     0.070     0.026     0.070     0.030    732.80   1097.70
 0.002562       60.       60.      60.         2         0         0    -31.24     44.60   1142.30

*SECNO 3503.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       747.00 ELREA       747.00

  3503.00      6.89    739.69      0.0       0.0     740.28      0.59      0.02      0.05    736.50
    1625.        0.     1625.       0.        0.      263.        0.        8.        1.     736.50
     0.06       0.0      6.18      0.0     0.070     0.030     0.070     0.030    732.80   1097.70
 0.001869       10.       10.      10.         2         0         0       0.0     44.60   1142.30

*SECNO 3570.000

        SECTION E  MANUFACTURED VALLEY SECTION FROM A SURVEYED SECTION

                   200 FT U/S

  3570.00      7.79    739.59      0.0       0.0     740.63      1.04      0.13      0.22    747.80
    1625.        0.     1625.       0.        0.      199.        0.        8.        2.     747.50
     0.06       0.0      8.17      0.0     0.060     0.030     0.060     0.030    731.80     29.48
 0.003783       50.       50.      50.         2         0         0       0.0     41.95     71.43

CCHV    0.100 CEHV    0.300
*SECNO 4000.000

        SECTION F  MANUFACTURED VALLEY SECTION, REPEATING E BY INVERT ADJUSTMENT

  4000.00      7.08    740.48      0.0       0.0     741.90      1.41      1.16      0.11    749.40
    1625.        0.     1625.       0.        0.      170.        0.        9.        2.     749.10
     0.07       0.0      9.55      0.0     0.060     0.030     0.060     0.030    733.40     30.77
 0.005793      250.      250.     250.         2         0         0       0.0     39.22     69.99

CCHV    0.300 CEHV    0.500
*SECNO 4075.000

3301 HV CHANGED MORE THAN HVINS

   SECNO     DEPTH     CASEL     CPIWS     WSELK      CG        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        749.00 ELREA        749.00

        SECTION G  LOOMIS ST. BRIDGE, WIDTH 21.3 FT, LENGTH 42.2 FT

  4075.00     5.81   741.71      0.0        0.0    742.48      0.77       0.39       0.19   746.70
    1625.       0.    1625.       0.         0.     231.        0.         10.         2.   746.70
     0.07      0.0     7.03      0.0      0.060    0.030      0.060      0.030     735.90   554.80
 0.002754     100.     100.     100.          3        0          0        0.0      40.40   595.20

*SECNO 4076.000

3370 NORMAL BRIDGE,NRD    0 MIN ELTRD    746.70 MAX ELLC    745.10

  4076.00     5.83   741.73      0.0        0.0    742.49      0.76       0.01       0.00   746.70
    1625.       0.    1625.       0.         0.     232.        0.         10.         2.   746.70
     0.07      0.0     7.00      0.0      0.060    0.030      0.060      0.030     735.90   554.80
 0.002721       5.       5.       5.          0        0          0        0.0      40.40   595.20

*SECNO 4077.000

3370 NORMAL BRIDGE,NRD    0 MIN ELTRD    746.70 MAX ELLC    745.10

  4077.00     5.91   741.81      0.0        0.0    742.55      0.74       0.05       0.01   746.70
    1625.       0.    1625.       0.         0.     235.        0.         10.         2.   746.70
     0.07      0.0     6.90      0.0      0.060    0.030      0.060      0.030     735.90   554.80
 0.002608      20.      20.      20.          2        0          0        0.0      40.40   595.20

*SECNO 4078.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA        749.50 ELREA        749.50

  4078.00     5.93   741.83      0.0        0.0    742.57      0.74       0.01       0.00   746.70
    1625.       0.    1625.       0.         0.     236.        0.         10.         2.   746.70
     0.07      0.0     6.89      0.0      0.060    0.030      0.060      0.030     735.90   554.80
 0.002590       5.       5.       5.          0        0          0        0.0      40.40   595.20

*SECNO 4175.000

3301 HV CHANGED MORE THAN HVINS

   SECNO      DEPTH      CWSEL      CRIWS      WSELV      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

        SECTION H

  4175.00     6.35   741.75    741.75       0.0    743.98      2.23       0.50       0.75   749.00
    1625.       0.    1625.       0.         0.     135.        0.         10.         2.   750.40
     0.08      0.0    12.00      0.0      0.060    0.030      0.060      0.030     734.90   698.41
 0.[illegible]      11[illegible]     11[illegible]          3        [illegible]        0        [illegible]       30.33   728.80
```

```
*SECNO 4275.000

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


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       752.20 ELREA       752.20

       SECTION I  C & O R. R. BRIDGE, WIDTH 10.8 FT, LENGTH 100 FT

  4275.00      9.58    744.58      0.0       0.0     744.69      0.11      0.08      0.64    752.20
    1625.        0.     1625.       0.        0.       612.       0.        11.       2.     752.20
     0.09       0.0      2.65      0.0      0.060     0.030     0.060     0.030    735.00    742.00
 0.000258      100.      100.      100.        2         0         0       0.0      95.60    837.60


SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.90      1.50      2.50      0.0      34.00      7.00    513.80     0.33    735.00    735.00

*SECNO 4276.000
CLASS A LOW FLOW

3420 BRIDGE W.S.      744.37 BRIDGE VELOCITY ,       5.76      CALCULATED CHANNEL AREA ,       282.

 EGPRS     EGLWC      H3        QWEIR     QPR       BAREA     TRAPEZOID      ELLC      ELTRD
                                                                 AREA
    0.0    744.71     0.02        0.     1625.      514.      310.      745.20    752.20


  4276.00      9.60    744.60      0.0       0.0     744.71      0.11      0.02      0.0     752.20
    1625.        0.     1625.       0.        0.       613.       0.        11.       2.     752.20
     0.09       0.0      2.65      0.0      0.060     0.030     0.060     0.030    735.00    742.00
 0.000256       10.       10.       10.        0         0         0       0.0      95.60    837.60


*SECNO 4375.000

3301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       746.10 ELREA       752.60


       SECTION J


  4375.00      9.02    744.32      0.0       0.0     745.09      0.76      0.05      0.33    746.10
    1625.        0.     1625.       0.        0.       232.       0.        12.       2.     752.60
     0.09       0.0      7.01      0.0      0.060     0.030     0.060     0.030    735.30    664.50
 0.002355       85.       85.       85.        2         0         0       0.0      42.10    706.59


CCHV    0.100 CEHV    0.300
*SECNO 4700.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       747.10 ELREA       753.60
```

```
        SECTION K  MANUFACTURED VALLEY SECTIOIN,REPEATING J BY INVERT ADJUSTMENT

  4700.00      8.85    745.15      0.0       0.0    745.96      0.81      0.86      0.02    747.10
    1625.        0.     1625.       0.        0.     224.        0.       14.        3.    753.60
     0.10       0.0      7.24      0.0     0.040    0.030     0.060     0.030    736.30    664.79
 0.002567      350.      350.      350.         2        0         0       0.0     41.48    706.27

CCHV     0.300 CEHV     0.500
*SECNO 4750.000

3301 HV CHANGED MORE THAN HVINS

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       749.80 ELREA       749.80

        SECTION L  FIRST FOOT BRIDGE, WIDTH 7.7 FT, LENGTH 28 FT

  4750.00      4.86    744.86    744.85       0.0    747.20      2.34      0.47      0.76    749.80
    1625.        0.     1625.       0.        0.     132.        0.       14.        3.    749.80
     0.11       0.0     12.28      0.0     0.040    0.030     0.060     0.030    740.00    636.00
 0.011529      100.      100.      100.         6       11         0       0.0     28.40    664.40

*SECNO 4751.000

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


3370 NORMAL BRIDGE,NRD  14 MIN ELTRD   742.70 MAX ELLC   753.40


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       748.70 ELREA       748.70

  4751.00      5.80    745.80      0.0       0.0    747.42      1.62      0.01      0.22    749.80
    1625.        0.     1625.       0.        0.     159.        0.       14.        3.    749.80
     0.11       0.0     10.22      0.0     0.040    0.030     0.060     0.030    740.00    636.00
 0.006669        1.        1.        1.        12        0         0       0.0     28.40    664.40

*SECNO 4752.000

3370 NORMAL BRIDGE,NRD  14 MIN ELTRD   742.70 MAX ELLC   753.40

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       748.70 ELREA       748.70

  4752.00      5.99    745.99      0.0       0.0    747.51      1.52      0.05      0.03    749.80
    1625.        0.     1625.       0.        0.     165.        0.       14.        3.    749.80
     0.11       0.0      9.88      0.0     0.040    0.030     0.060     0.030    740.00    636.00
 0.006032        8.        8.        8.         2        0         0       0.0     28.40    664.40

*SECNO 4753.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       748.70 ELREA       748.70
```

```
  4793.00      0.00    746.00      0.0       0.0     747.51      1.51      0.01      0.00    749.80
    1625.        0.     1625.       0.        0.       165.        0.       14.        3.    749.80
     0.11       0.0      9.87      0.0     0.040     0.030     0.060     0.030    740.00    636.00
 0.006015        1.        1.       1.         0         0         0       0.0     28.40    664.40

*SECNO 4800.000

3301 HV CHANGED MORE THAN HVING

        SECTION M  MANUFACTURED VALLEY SECTION REPEATING N BY INVERT ADJUSTMENT

  4800.00     11.17    747.67      0.0       0.0     747.94      0.27      0.05      0.37    747.30
    1625.        0.     1625.       0.        1.       391.        0.       15.        3.    753.00
     0.11       0.29     4.16      0.0     0.040     0.030     0.060     0.030    736.50     86.38
 0.000587       40.       40.      40.         3         0         0       0.0     61.10    147.48

CCHV    0.100 CEHV    0.300
*SECNO 5375.000

        SECTION N

  5375.00      9.86    747.96      0.0       0.0     748.36      0.40      0.38      0.04    748.90
    1625.        0.     1625.       0.        0.       321.        0.       19.        3.    754.60
     0.14       0.0      5.06      0.0     0.070     0.030     0.050     0.030    738.10     94.53
 0.001026       500.      500.     500.         2         0         0       0.0     51.48    146.01

CCHV    0.300 CEHV    0.500
*SECNO 5475.000
   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       754.00 ELREA       754.00

        SECTION O  UNION ST. BRIDGE, WIDTH 37 FT, LENGTH 33.4 FT

  5475.00      9.49    747.99      0.0       0.0     748.52      0.52      0.09      0.06    753.50
    1625.        0.     1625.       0.        0.       280.        0.       19.        3.    753.50
     0.14       0.0      5.80      0.0     0.070     0.030     0.050     0.030    738.50    165.00
 0.001317       80.       80.      80.         2         0         0       0.0     30.00    195.00

*SECNO 5476.000

3370 NORMAL BRIDGE,NRD   0 MIN ELTRD   753.50 MAX ELLC   753.00

  5476.00      9.50    748.00      0.0       0.0     748.52      0.52      0.01      0.00    753.50
    1625.        0.     1625.       0.        0.       280.        0.       19.        3.    753.50
     0.14       0.0      5.79      0.0     0.070     0.030     0.050     0.030    738.50    165.00
 0.001314        5.        5.       5.         0         0         0       0.0     30.00    195.00

*SECNO 5477.000

3370 NORMAL BRIDGE,NRD   0 MIN ELTRD   753.50 MAX ELLC   753.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       754.00 ELREA       754.00
```

```
  5477.00      9.55    748.05      0.0       0.0     748.56      0.52      0.04      0.00    753.50
    1625.       0.      1625.       0.        0.       282.       0.       19.        3.     753.50
     0.14      0.0       5.77      0.0      0.070     0.030     0.050     0.030    738.50    165.00
 0.001298       30.       30.       30.        0         0         0       0.0      30.00    195.00

*SECNO 5478.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA        754.00 ELREA        754.00

  5478.00      9.55    748.05      0.0       0.0     748.57      0.52      0.01      0.00    753.50
    1625.       0.      1625.       0.        0.       282.       0.       19.        3.     753.50
     0.14      0.0       5.76      0.0      0.070     0.030     0.050     0.030    738.50    165.00
 0.001294        5.        5.        5.        0         0         0       0.0      30.00    195.00

*SECNO 5575.000

3470 ENCROACHMENT STATIONS        25.0      190.0  TYPE       1  TARGET       165.000

        SECTION P

  5575.00      9.35    748.65      0.0     748.65    748.72      0.08      0.02      0.13    742.80
    1625.      621.      896.      108.      547.      319.      84.       20.        4.     743.30
     0.15      1.13      2.80      1.29     0.060     0.030     0.040     0.030    739.30     25.00
 0.000216       55.       55.       55.         2         0         0       0.0     165.00    190.00

CCHV    0.100 CEHV    0.300
*SECNO 6325.000
   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       250.0      450.0  TYPE       1  TARGET       200.000

        SECTION Q

  6325.00      9.30    748.80      0.0     748.80    748.91      0.11      0.17      0.01    745.30
    1625.      458.     1054.      113.      445.      334.      94.       34.        6.     745.70
     0.23      1.03      3.16      1.20     0.060     0.030     0.040     0.030    739.50    250.00
 0.000301      680.      680.      680.         2         0         0       0.0     200.00    450.00

CCHV    0.300 CEHV    0.500
*SECNO 6575.000

3470 ENCROACHMENT STATIONS       250.0      450.0  TYPE       1  TARGET       200.000

        SECTION R  STATE ST. BRIDGE, WIDTH 58 FT, LENGTH 100 FT

                   ONE CMP 65 IN,MULTI-STRUCTURAL PLATE STEEL PIPE ARCHES

                   8-7 X 5-11

  6575.00      8.45    748.85      0.0     748.85    748.97      0.11      0.06      0.00    744.30
    1625.      364.     1091.      171.      367.      343.      97.       33.        7.     742.20
     0.25      0.99      3.18      1.77     0.060     0.030     0.040     0.030    740.40    250.00
 0.000365      170.      170.      170.         3         0         0       0.0     200.00    450.00
```

```
SPECIAL BRIDGE

SB  XK        XKOR      COFQ      ROLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.0       2.73      2.50      0.0      51.40      0.0      94.30      0.0     740.40    740.40

*SECNO 6576.000
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                AREA
   761.67    748.99     0.0       899.      739.       94.      303.      746.30    749.50


3470 ENCROACHMENT STATIONS      250.0     450.0  TYPE      1  TARGET      200.000
  6576.00    11.05   751.45     0.0     751.45   751.50    0.05      2.53      0.0    744.30
    1625.     442.    1024.     159.      694.     476.    158.       40.       8.    742.20
     0.26     0.64     2.15     1.00     0.060    0.024   0.040     0.030    740.40   250.00
 0.000069      86.      86.      86.         2        0       6       0.0    200.00   450.00

*SECNO 6675.000
3280 CROSS SECTION   6675.00 EXTENDED      5.06 FEET


3470 ENCROACHMENT STATIONS      150.0     360.0  TYPE      1  TARGET      210.000

        SECTION S  FIRST LOW DAM

  6675.00    11.15   751.45     0.0     751.45   751.51    0.07      0.00      0.01    743.80
    1625.     501.    1058.      65.      616.     422.    100.       41.       8.    748.90
     0.27     0.81     2.51     0.65     0.060    0.024   0.040     0.030    740.30   150.00
 0.000116      55.      55.      55.         1        0       0       0.0    210.00   360.00

*SECNO 6676.000
3280 CROSS SECTION   6676.00 EXTENDED      5.05 FEET


3370 NORMAL BRIDGE,NRD  20 MIN ELTRD   741.00 MAX ELLC   755.00

3470 ENCROACHMENT STATIONS      150.0     360.0  TYPE      1  TARGET      210.000
  6676.00    11.15   751.45     0.0     751.45   751.51    0.07      0.00      0.00    743.80
    1625.     517.    1041.      67.      615.     419.    100.       41.       8.    748.90
     0.27     0.84     2.48     0.67     0.060    0.024   0.040     0.030    740.30   150.00
 0.000124       1.       1.       1.         0        0       0     -1.70    210.00   360.00

*SECNO 6677.000
3280 CROSS SECTION   6677.00 EXTENDED      5.05 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  20 MIN ELTRD   741.00 MAX ELLC   755.00
```

```
3470 ENCROACHMENT STATIONS        150.0      360.0  TYPE       1  TARGET       210.000
  6677.00     11.15    751.45      0.0     751.45    751.52      0.07      0.00      0.00    743.80
    1625.      517.     1041.      67.      616.      420.      100.       41.        8.    748.90
     0.27      0.84      2.48     0.67     0.060     0.024     0.040     0.029    740.30    150.00
 0.000123        3.        3.       3.         0         0         0     -1.70    210.00    360.00

*SECNO 6678.000
3280 CROSS SECTION   6678.00 EXTENDED       5.05 FEET


3470 ENCROACHMENT STATIONS        150.0      360.0  TYPE       1  TARGET       210.000
  6678.00     11.15    751.45      0.0     751.45    751.52      0.07      0.00      0.00    743.80
    1625.      501.     1059.      65.      616.      421.      100.       42.        8.    748.90
     0.27      0.81      2.51     0.65     0.060     0.024     0.040     0.029    740.30    150.00
 0.000116        1.        1.       1.         0         0         0       0.0    210.00    360.00

*SECNO 6700.000
3280 CROSS SECTION   6700.00 EXTENDED       5.05 FEET


3470 ENCROACHMENT STATIONS        100.0      360.0  TYPE       1  TARGET       260.000

        SECTION T  MANUFACTURED VALLEY SECTION

  6700.00     11.04    751.44      0.0     751.44    751.53      0.09      0.01      0.01    742.50
    1625.      601.      895.     129.      823.      282.      205.       43.        8.    740.40
     0.28      0.73      3.18     0.63     0.080     0.030     0.080     0.029    740.40    100.00
 0.000186       50.       50.      50.         1         0         0       0.0    260.00    360.00

CCHV    0.100 CEHV    0.300
*SECNO 7925.000

3470 ENCROACHMENT STATIONS        750.0     1130.0  TYPE       1  TARGET       380.000

        SECTION U

  7925.00     11.80    751.60      0.0     751.60    751.62      0.01      0.07      0.01    744.80
    1540.      928.      559.      53.     2061.      371.      153.       80.       14.    746.70
     0.56      0.45      1.51     0.35     0.080     0.030     0.080     0.030    739.80    750.00
 0.000049      800.      920.     800.         2         0         0       0.0    380.00   1130.00

*SECNO 8800.000

3470 ENCROACHMENT STATIONS         75.0      360.0  TYPE       1  TARGET       285.000

        SECTION V

  8800.00      9.42    751.62      0.0     751.62    751.71      0.09      0.07      0.02    745.80
    1540.      675.      778.      87.      803.      238.      121.      110.       20.    746.90
     0.66      0.34      3.27     0.72     0.080     0.030     0.080     0.030    742.20     75.00
 0.000342      700.      750.     700.         2         0         0       0.0    285.00    360.00

*SECNO 9350.000
3280 CROSS SECTION   9350.00 EXTENDED       0.76 FEET

   SECNO    DEPTH    CWSEL    CRIWS     WSELK      FG        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       150.0      500.0  TYPE       1  TARGET       350.000

        SECTION W  MANUFACTURED VALLEY SECTION

  9350.00      8.76    751.76      0.0     751.76    751.80      0.04      0.08      0.01    750.30
     785.      335.      440.      10.      677.      212.      40.      117.      22.     750.30
     0.72      0.49      2.07     0.25     0.080     0.030    0.080     0.030    743.00    150.00
 0.000177      300.      300.     300.         2         0        0       0.0    350.00    500.00

CCHV    0.300 CEHV    0.500
*SECNO 9425.000
3280 CROSS SECTION   9425.00 EXTENDED      0.71 FEET

3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000

        SECTION X  SECOND FOOT BRIDGE, WIDTH 12 FT, LENGTH 25 FT

  9425.00      8.71    751.71      0.0     751.71    751.89      0.18      0.02      0.07    750.30
     785.       32.      738.      16.       80.      211.      38.      118.      22.     750.30
     0.73      0.39      3.50     0.42     0.080     0.030    0.080     0.030    743.00    350.00
 0.000509       70.       70.      70.         2         0        0       0.0    150.00    500.00

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK        XKOR      CDFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.0       1.50      2.50      0.0      25.00      0.0     150.00      0.0     743.00    743.00

*SECNO 9426.000
3280 CROSS SECTION   9426.00 EXTENDED      0.77 FEET

PRESSURE AND WEIR FLOW

 EGPRS      EGLWC       H3        QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
   752.35    751.89      0.0       310.      476.      150.      150.      749.00    750.60

3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000
  9426.00      8.77    751.77      0.0     751.77    751.94      0.17      0.06      0.0     750.30
     785.       35.      733.      17.       86.      212.      40.      118.      22.     750.30
     0.73      0.40      3.45     0.43     0.080     0.030    0.080     0.030    743.00    350.00
 0.000491       10.       10.      10.         2         0        4       0.0    150.00    500.00

*SECNO 9427.000
3280 CROSS SECTION   9427.00 EXTENDED      0.73 FEET

3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000
```

```
        SECTION Y  MANUFACTURED VALLEY SECTION

  9427.00      8.79    751.79      0.0     751.79    751.96      0.17      0.01      0.00    750.30
     785.       35.      732.      17.       87.      213.       41.      119.       22.    750.30
     0.73      0.41      3.44     0.43     0.080     0.030     0.080     0.030    743.00    350.00
 0.000486       30.       30.      30.         0         0         0       0.0    150.00    500.00

 *SECNO 9558.000

 3265 DIVIDED FLOW


 3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000

        SECTION Z  SECOND LOW DAM

  9558.00      7.20    751.80      0.0     751.80    752.01      0.21      0.04      0.02    749.80
     785.       35.      746.       4.       62.      199.       17.      119.       22.    750.20
     0.73      0.56      3.74     0.24     0.080     0.030     0.080     0.030    744.60    350.00
 0.000610       65.       65.      65.         1         0         0       0.0    139.38    500.00

 *SECNO 9559.000

 3265 DIVIDED FLOW

    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       350.0      500.0  TYPE       1  TARGET       150.000
  9559.00      5.76    751.76      0.0     751.76    752.06      0.30      0.00      0.05    749.80
     785.       43.      736.       6.       60.      163.       18.      119.       22.    750.20
     0.73      0.72      4.52     0.32     0.080     0.030     0.080     0.030    746.00    350.00
 0.001057        5.        5.       5.         2         0         0       0.0    137.12    500.00

 *SECNO 9560.000

 3265 DIVIDED FLOW

 3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000
  9560.00      5.76    751.76      0.0     751.76    752.06      0.30      0.00      0.00    749.80
     785.       43.      736.       6.       60.      163.       18.      119.       22.    750.20
     0.73      0.72      4.52     0.32     0.080     0.030     0.080     0.030    746.00    350.00
 0.001055        2.        2.       2.         0         0         0       0.0    137.27    500.00

 *SECNO 9561.000

 3265 DIVIDED FLOW

 3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000
  9561.00      7.30    751.90      0.0     751.90    752.10      0.20      0.00      0.03    749.80
     785.       38.      742.       5.       67.      202.       22.      119.       23.    750.20
     0.73      0.56      3.68     0.24     0.080     0.030     0.080     0.030    744.60    350.00
 0.000578        5.        5.       5.         2         0         0       0.0    149.58    500.00
```

```
3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000

        SECTION AA  D/S OF POND

  9600.00      8.73    752.03      0.0    752.03    752.14      0.11      0.01      0.03    749.60
     785.       23.      705.      56.      60.      257.      118.      119.       23.    749.50
     0.74      0.39      2.75     0.43    0.080     0.030     0.080     0.030    743.30    350.00
 0.000290       35.       35.      35.        2         0         0       0.0    150.00    500.00

CCHV    0.200 CEHV    0.400
*SECNO 9850.000

3470 ENCROACHMENT STATIONS       150.0      500.0  TYPE       1  TARGET       350.000

        SECTION AB  MANUFACTURED VALLEY SECTION ACROSS POND

  9850.00      7.96    752.16      0.0    752.16    752.16      0.00      0.00      0.02    748.00
     785.        1.      781.       3.      21.     2185.       58.      127.       24.    748.00
     0.93      0.05      0.36     0.06    0.080     0.030     0.080     0.030    744.20    150.00
 0.000003      250.      250.     250.        1         0         0       0.0    315.65    465.65

CCHV    0.100 CEHV    0.300
*SECNO 10225.000
   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       930.0     1635.0  TYPE       1  TARGET      -930.000

        SECTION AC

 10225.00      6.87    752.07      0.0    752.07    752.20      0.14      0.00      0.04    750.80
     785.        0.      785.       0.       1.      262.       1.      137.       25.    751.10
     0.96      0.19      2.99     0.23    0.080     0.030     0.080     0.030    745.20   1141.18
 0.000443      330.      330.     330.        2         0         0       0.0     55.14   1196.32

*SECNO 10325.000

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      1000.0     1190.0  TYPE       1  TARGET       190.000

        SECTION AD  THIRD FOOT BRIDGE, WIDTH 12 FT, LENGTH 12 FT

 10325.00      5.01    750.81    750.81    750.81    753.46      2.65      0.13      0.75    751.10
     785.        0.      785.       0.       0.       60.       0.      137.       25.    751.10
     0.97      0.0      13.05     0.0    0.080     0.030     0.080     0.030    745.80   1174.00
 0.018194      100.      100.     100.       20        12         0       0.0     12.00   1186.00
```

```
*SECNO 10326.000

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


3370 NORMAL BRIDGE,NRD  19 MIN ELTRD   749.30 MAX ELLC   760.00

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS     1000.0    1190.0  TYPE      1  TARGET      190.000
 10326.00     6.81   752.61   752.61   752.61   754.04     1.43     0.02     0.12   751.10
     785.      71.     695.      19.      25.      69.       6.      137.      25.   751.10
     0.97     2.88    10.15     3.13    0.080    0.030    0.080    0.030   745.80  1146.36
 0.025109       1.       1.       1.        2       12        0   -13.20    43.64  1190.00

*SECNO 10327.000

3301 HV CHANGED MORE THAN HVINS


3370 NORMAL BRIDGE,NRD  19 MIN ELTRD   749.30 MAX ELLC   760.00

3470 ENCROACHMENT STATIONS     1000.0    1190.0  TYPE      1  TARGET      190.000
 10327.00     7.80   753.60      0.0   753.60   754.31     0.71     0.19     0.07   751.10
     785.     152.     607.      26.      59.      80.      10.      137.      25.   751.10
     0.97     2.56     7.55     2.62    0.080    0.030    0.080    0.030   745.80  1131.53
 0.011235      12.      12.      12.        4        0        0   -13.20    58.46  1190.00

*SECNO 10328.000

3470 ENCROACHMENT STATIONS     1000.0    1190.0  TYPE      1  TARGET      190.000
 10328.00     7.78   753.58      0.0   753.58   754.32     0.75     0.01     0.01   751.10
     785.      81.     689.      14.      58.      93.      10.      137.      25.   751.10
     0.97     1.39     7.39     1.43    0.080    0.030    0.080    0.030   745.80  1131.86
 0.003359       1.       1.       1.        2        0        0      0.0    58.14  1190.00

*SECNO 10425.000

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


3470 ENCROACHMENT STATIONS     1015.0    1210.0  TYPE      1  TARGET      195.000

        SECTION BE

 10425.00    10.40   754.40      0.0   754.40   754.42     0.03     0.03     0.07   749.90
     785.     305.     410.      70.      628.     240.     155.     138.      26.   747.60
     [illegible]  [illegible]  1.71     0.45    0.080    0.030    0.080    0.030   744.00  1015.00
```

1) COUNTY: KENT

2) STUDY NAME: SPARTA, VILLAGE OF

3) WATERCOURSE: NASH CREEK

4) DOCUMENT TYPE: 100-YEAR NATURAL RUN

Nash Creek – Sparta

1. 100-year flood – flow distribution and floodway delineation
2. Summary printout – 10-, 50-, 100-, and 500-year floods
3. Island Flow Test
4. Iplot
5. Concerns about low "n" values address by contractor.

```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED  AUG1977
  ERROR CORR -  01,02
  MODIFICATION -  50,51,52,53
*************************************************
  1   100- year flood- flow distribution and floodway delineation                    011180
C
T1       VILLAGE OF SPARTA,PROJECT NO. 8566
T2       NASH CREEK                                NATURAL
T3       NASH CREEK

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ
      0.       4.        0.        0.   0.0            0.0       0.0       0.     736.000    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

    110.000  200.000     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

NC      0.070     0.070     0.030     0.100     0.300     0.0       0.0       0.0       0.0       0.0
QT      5.000  1010.000  1400.000  1625.000  2100.000  1625.000    0.0       0.0       0.0       0.0

        SECTION A  2000 FT FROM THE MOUTH TO ROGUE RIVER

                   STARTING ELEV BY CONVERGENCE TEST

X1   2000.000    14.000  1070.000  1132.000     0.0       0.0       0.0       0.0       0.0       0.0
GR    742.800  1030.000   741.900  1055.000   739.200  1070.000   735.600  1080.000   731.200  1085.000
GR    730.500  1090.000   729.200  1095.000   729.000  1100.000   729.300  1105.000   729.100  1110.000
GR    730.100  1115.000   735.600  1120.000   741.100  1132.000   745.000  1140.000     0.0       0.0

        SECTION B  MANUFACTURED VALLEY SECTION

X1   2600.000     0.0       0.0       0.0     600.000   600.000   600.000     0.0       0.850     0.0

        SECTION C

X1   3400.000    13.000   961.500  1034.500   610.000   610.000   610.000     0.0       0.0       0.0
GR    746.700   905.000   746.000   961.500   736.100   979.500   733.500   985.000   735.700   990.000
GR    735.700   995.000   733.000  1000.000   732.200  1005.000   730.700  1010.000   730.700  1015.000
GR    736.100  1020.500   744.900  1034.500   747.000  1100.000     0.0       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

        SECTION D  DIVISION ST. BRIDGE, WIDTH 65 FT, LENGTH 48 FT

                   MULTIPLE STRUCTURAL PLATE STEEL-PIPE ARCHES, 20.3 X 13

X1   3500.000    26.000  1097.700  1142.300   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     746.000   746.000     0.0
GR    748.200   625.000   745.400   710.000   746.200   970.000   745.500   985.000   746.800  1070.000
GR    736.500  1097.700   734.400  1098.800   733.300  1101.800   733.000  1104.800   732.800  1107.800
GR    733.000  1110.900   733.300  1113.900   734.400  1116.900   736.500  1118.000   736.500  1122.000
GR    734.400  1123.100   733.300  1125.100   733.000  1129.100   732.800  1132.200   733.000  1135.300
GR    733.300  1138.300   734.400  1141.300   736.500  1142.300   747.300  1170.000   747.700  1270.000
```

```
GR    748.200   1320.000      0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
NC      0.0        0.0       0.026     0.0       0.0       0.0       0.0       0.0       0.0       0.0

X1   3501.000      0.0       0.0       0.0      10.000    10.000    10.000      0.0       0.0       0.0
X3     10.000      0.0       0.0       0.0       0.0       0.0       0.0     747.000   747.000     0.0
BT     26.000    625.000   748.200   748.200   710.000   745.400   745.400   970.000   746.200   746.200
BT    985.000    745.500   745.500  1070.000   746.800   746.800  1097.700   747.000   736.500  1098.800
BT    747.000    739.000  1101.800   747.000   742.500  1104.800   747.000   744.200  1107.800   747.000
BT    744.800   1110.900   747.000   744.200  1113.900   747.000   742.500  1116.900   747.000   739.000
BT   1118.000    747.000   736.500  1122.000   747.000   736.500  1123.100   747.000   739.000  1126.100
BT    747.000    742.500  1129.100   747.000   744.200  1132.200   747.000   744.800  1135.300   747.000
BT    744.200   1138.300   747.000   742.500  1141.300   747.000   739.000  1142.300   747.000   736.500
BT   1170.000    747.300   747.300  1270.000   747.700   747.700  1320.000   748.200   748.200     0.0

X1   3502.000      0.0       0.0       0.0      60.000    60.000    60.000      0.0       0.0       0.0
X2      0.0        0.0       0.0       0.0       0.0       0.0       1.000      0.0       0.0       0.0
X3     10.000      0.0       0.0       0.0       0.0       0.0       0.0     747.000   747.000     0.0
NC      0.0        0.0       0.030     0.0       0.0       0.0       0.0       0.0       0.0       0.0

X1   3503.000      0.0       0.0       0.0      10.000    10.000    10.000      0.0       0.0       0.0
X3     10.000      0.0       0.0       0.0       0.0       0.0       0.0     747.000   747.000     0.0
NC      0.060      0.060     0.030     0.0       0.0       0.0       0.0       0.0       0.0       0.0

        SECTION E  MANUFACTURED VALLEY SECTION FROM A SURVEYED SECTION

                   200 FT U/S

X1   3570.000      8.000    14.500    87.500    50.000    50.000    50.000      0.0      -1.000     0.0
GR    750.000      0.0      748.800    14.500   736.200    37.500   732.800    44.000   733.200    50.000
GR    734.300     56.500    736.200    62.500   748.500    87.500     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

        SECTION F  MANUFACTURED VALLEY SECTION, REPEATING E BY INVERT ADJUSTMENT

X1   4000.000      0.0       0.0       0.0     250.000   250.000   250.000     0.0       1.600     0.0
NC      0.0        0.0       0.0       0.300     0.500     0.0       0.0       0.0       0.0       0.0

        SECTION G  LOOMIS ST. BRIDGE, WIDTH 21.3 FT, LENGTH 42.2 FT

X1   4075.000     14.000   554.800   595.200   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     749.000   749.000     0.0
GR    745.600    425.000   745.900   475.000   746.700   540.000   746.700   554.800   738.100   554.800
GR    738.100    555.600   735.900   555.600   735.900   594.400   738.100   594.400   738.100   595.200
GR    746.700    595.200   746.700   610.000   746.900   625.000   748.100   675.000     0.0       0.0

X1   4076.000      0.0       0.0       0.0       5.000     5.000     5.000     0.0       0.0       0.0
X2      0.0        0.0       0.0     745.100   746.700     0.0       0.0       0.0       0.0       0.0

X1   4077.000      0.0       0.0       0.0      20.000    20.000    20.000     0.0       0.0       0.0
X2      0.0        0.0       0.0     745.100   746.700     0.0       0.0       0.0       0.0       0.0

X1   4078.000      0.0       0.0       0.0       5.000     5.000     5.000     0.0       0.0       0.0
X3     10.000      0.0       0.0       0.0       0.0       0.0       0.0     749.500   749.500     0.0

        SECTION H
```

```
X1    4175.000     11.000    582.500    731.500    110.000    110.000    110.000      0.0        0.0        0.0
GR     746.600    365.000    743.200    465.000    748.000    580.000    749.000    682.500    737.600    707.500
GR     735.300    712.500    734.900    717.500    735.400    722.500    737.600    727.500    750.400    731.500
GR     750.200    740.000      0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0

        SECTION I  C & O R. R. BRIDGE, WIDTH 10.8 FT, LENGTH 100 FT

X1    4275.000     17.000    742.300    837.600    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    752.200    752.200      0.0
GR     753.000    585.000    752.200    725.000    752.200    742.000    744.300    742.000    744.300    743.300
GR     742.900    743.300    737.200    769.500    735.000    779.000    735.000    800.000    737.200    811.500
GR     742.900    836.300    744.300    836.600    744.300    837.600    752.200    837.600    752.200    855.000
GR     753.800    955.000    753.600   1000.000      0.0        0.0        0.0        0.0        0.0        0.0
SB       0.900      1.500      2.500      0.0       34.000      7.000    513.800      0.330    735.000    735.000

X1    4276.000      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    745.200    752.200      0.0        0.0        0.0        0.0        0.0
BT      14.000    585.000    753.000      0.0      725.000    752.200      0.0      742.000    752.200      0.0
BT     743.300    752.200      0.0      769.500    752.200      0.0      779.000    752.200      0.0      800.000
BT     752.200      0.0      811.500    752.200      0.0      836.300    752.200      0.0      836.600    752.200
BT       0.0      837.600    752.200      0.0      855.000    752.200      0.0      955.000    753.800      0.0
BT    1000.000    753.600      0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0

        SECTION J

X1    4375.000     12.000    661.500    722.000     85.000     85.000     85.000      0.0        0.0        0.0
X3      10.000      0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
GR     750.000      0.0      744.200     60.000    743.000    140.000    744.300    225.000    743.200    650.000
GR     746.100    661.500    738.100    675.000    735.800    680.000    735.300    685.000    735.500    690.000
GR     738.100    695.000    752.600    722.000      0.0        0.0        0.0        0.0        0.0        0.0
NC       0.040      0.060      0.030      0.100      0.300      0.0        0.0        0.0        0.0        0.0

        SECTION K  MANUFACTURED VALLEY SECTIOIN,REPEATING J BY INVERT ADJUSTMENT

X1    4700.000      0.0        0.0        0.0       350.000    350.000    350.000      0.0        1.000      0.0
X3      10.000      0.0        0.0        0.0        0.0        0.0        0.0        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

        SECTION L  FIRST FOOT BRIDGE, WIDTH 7.7 FT, LENGTH 28 FT

X1    4750.000     14.000    636.000    564.400    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        0.0        0.0        0.0
GR     750.000      0.0      743.200    180.000    743.200    510.000    743.500    550.000    742.700    600.000
GR     743.900    622.000    749.800    630.000    749.800    636.000    740.400    636.000    740.000    664.400
GR     749.800    664.400    749.700    670.000    751.000    673.000    753.400    700.000      0.0        0.0

X1    4751.000      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    748.700    748.700      0.0
BT      14.000      0.0      750.000    750.000    180.000    743.200    743.200    510.000    743.200    743.200
BT     550.000    743.500    743.500    600.000    742.700    742.700    622.000    743.900    743.900    630.000
BT     749.800    749.800    636.000    749.800    749.800    636.000    749.800    748.700    664.400    749.800
BT     748.700    664.400    749.800    749.800    670.000    749.700    749.700    673.000    751.000    751.000
BT     700.000    753.400    753.400      0.0        0.0        0.0        0.0        0.0        0.0        0.0

X1    4752.000      0.0        0.0        0.0        8.000      8.000      8.000      0.0        0.0        0.0
X2       0.0        0.0        0.0        0.0        0.0        0.0        1.000      0.0        0.0        0.0
X3      10.000      0.0        0.0        0.0        0.0        0.0        0.0    748.700    748.700      0.0
```

```
X1    4755.000     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     748.700   748.700     0.0

        SECTION M  MANUFACTURED VALLEY SECTION REPEATING N BY INVERT ADJUSTMENT

X1    4800.000    11.000    92.500   153.500    40.000    40.000    40.000     0.0      -1.600     0.0
GR     755.000     0.0     752.400    35.000   748.900    92.500   740.200   111.500   738.700   116.500
GR     738.700   123.000   738.100   129.500   740.900   134.500   741.700   135.500   743.100   140.500
GR     754.600   153.500     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
NC       0.070     0.050     0.030     0.100     0.300     0.0       0.0       0.0       0.0       0.0

        SECTION N

X1    5375.000     0.0       0.0       0.0     500.000   500.000   500.000     0.0       1.600     0.0
NC       0.0       0.0       0.0       0.300     0.500     0.0       0.0       0.0       0.0       0.0

        SECTION O  UNION ST. BRIDGE, WIDTH 37 FT, LENGTH 33.4 FT

X1    5475.000    14.000   165.000   195.000    80.000    80.000    80.000     0.0       0.0       1.000
X3      10.000     0.0       0.0       0.0       0.0       0.0       0.0     754.000   754.000     0.0
GR     754.500    30.000   753.600    80.000   753.200   130.000   753.500   150.000   753.500   165.000
GR     738.800   165.000   738.500   180.000   738.800   195.000   753.500   195.000   753.500   215.000
GR     753.700   230.000   754.000   280.000   754.800   330.000   755.300   380.000     0.0       0.0

X1    5476.000     0.0       0.0       0.0       5.000     5.000     5.000     0.0       0.0       1.000
X2       0.0       0.0       0.0     753.000   753.500     0.0       0.0       0.0       0.0       0.0

X1    5477.000     0.0       0.0       0.0      30.000    30.000    30.000     0.0       0.0       1.000
X2       0.0       0.0       0.0     753.000   753.500     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     754.000   754.000     0.0

X1    5478.000     0.0       0.0       0.0       5.000     5.000     5.000     0.0       0.0       1.000
X3      10.000     0.0       0.0       0.0       0.0       0.0       0.0     754.000   754.000     0.0
NC       0.060     0.040     0.030     0.0       0.0       0.0       0.0       0.0       0.0       0.0
ET       0.0       0.0       0.0       0.0       0.0       9.100     0.0       0.0      25.000   190.000

        SECTION P

X1    5575.000    15.000   129.000   170.000    55.000    55.000    55.000     0.0       0.0       0.0
GR     755.000     0.0     743.300    45.000   742.300   125.000   742.800   129.000   742.200   132.000
GR     741.800   141.000   740.700   144.000   739.300   150.000   739.300   160.000   741.100   164.000
GR     742.200   168.000   743.300   170.000   745.600   190.000   753.200   210.000   755.000   235.000
NC       0.0       0.0       0.0       0.100     0.300     0.0       0.0       0.0       0.0       0.0
ET       0.0       0.0       0.0       0.0       0.0       9.100     0.0       0.0     250.000   450.000

        SECTION Q

X1    6325.000    16.000   370.000   415.000   680.000   680.000   680.000     0.0       0.0       0.0
X3       0.0       0.0       0.0     250.000     0.0     450.000     0.0       0.0       0.0       0.0
GR     752.700   188.300   747.500   223.000   744.900   287.300   744.500   345.300   745.100   370.000
GR     741.500   375.000   739.700   382.500   739.500   390.000   740.500   397.500   741.500   405.000
GR     745.700   415.000   746.200   430.800   746.800   500.200   749.500   706.600   750.600   773.500
GR     752.100   812.900     0.0       0.0       0.0       0.0       0.0       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
ET       0.0       0.0       0.0       0.0       0.0       9.100     0.0       0.0     250.000   450.000

        SECTION R  STATE ST. BRIDGE, WIDTH 53 FT, LENGTH 100 FT
```

ONE CMP 65 IN.MULTI-STRUCTURAL PLATE STEEL PIPE ARCHES

Stark street Bldge

8-7 X 5-11

X1	6575.000	40.000	375.400	426.500	170.000	170.000	170.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	250.000	0.0	450.000	0.0	0.0	0.0	0.0
GR	754.600	150.000	752.900	175.000	747.500	225.000	747.600	250.000	744.900	350.000
GR	744.300	375.400	743.500	375.800	743.200	376.600	743.100	377.400	743.000	378.000
GR	743.100	378.600	743.200	379.400	743.500	380.200	744.300	380.600	742.200	395.700
GR	741.100	396.000	740.900	397.000	740.500	398.500	740.400	400.000	740.500	401.500
GR	740.900	403.000	741.100	404.000	742.200	404.500	742.200	417.700	741.100	418.000
GR	740.900	419.000	740.500	420.500	740.400	422.000	740.500	423.500	740.900	425.000
GR	741.100	426.000	742.200	426.500	745.700	440.000	746.000	460.000	746.200	525.000
GR	746.400	625.000	749.000	725.000	750.600	825.000	751.900	1135.000	755.000	1185.000
SB	0.0	2.780	2.500	0.0	51.400	0.0	94.300	0.0	740.400	740.400
NC	0.0	0.0	0.024	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ET	0.0	0.0	0.0	0.0	0.0	9.100	0.0	0.0	250.000	450.000

X1	6576.000	0.0	0.0	0.0	86.000	86.000	86.000	0.0	0.0	0.0
X2	0.0	0.0	1.000	746.300	749.500	0.0	0.0	0.0	0.0	0.0
X3	0.0	0.0	0.0	250.000	0.0	450.000	0.0	0.0	0.0	0.0
BT	40.000	150.000	755.000	754.600	175.000	755.000	752.900	250.000	755.000	747.500
BT	250.000	751.400	747.600	350.000	749.600	744.900	375.400	749.500	744.300	375.800
BT	749.500	745.100	376.600	749.500	745.800	377.400	749.500	746.100	378.000	749.500
BT	746.300	378.600	749.500	746.100	379.400	749.500	745.800	380.200	749.500	745.100
BT	380.600	749.500	744.300	395.700	749.500	742.200	396.000	749.500	743.500	397.000
BT	749.500	745.100	398.500	749.500	746.000	400.000	749.500	746.300	401.500	749.500
BT	746.000	403.000	749.500	745.100	404.000	749.500	743.500	404.500	749.500	742.200
BT	417.700	749.500	742.200	418.000	749.500	743.500	419.000	749.500	745.100	420.500
BT	749.500	746.000	422.000	749.500	746.300	423.500	749.500	746.000	425.000	749.500
BT	745.100	426.000	749.500	743.500	426.500	749.500	742.200	440.000	749.500	745.700
BT	450.000	755.000	746.000	525.000	755.000	746.200	625.000	755.000	746.400	725.000
BT	755.000	749.000	825.000	755.000	750.600	1135.000	755.000	751.900	1185.000	755.000
BT	755.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ET	0.0	0.0	0.0	0.0	0.0	9.100	0.0	0.0	150.000	360.000

SECTION S FIRST LOW DAM

X1	6675.000	20.000	263.000	313.500	55.000	55.000	55.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	150.000	0.0	360.000	0.0	0.0	0.0	0.0
GR	755.000	0.0	751.000	65.000	744.300	255.000	743.800	263.000	742.500	272.500
GR	742.400	281.500	740.300	281.500	740.800	282.000	741.600	282.500	740.800	283.800
GR	741.600	284.000	742.400	284.000	741.700	295.000	741.000	295.000	741.000	298.000
GR	748.900	313.500	749.700	360.000	748.100	425.000	746.900	555.000	746.400	620.000
ET	0.0	0.0	0.0	0.0	0.0	9.100	0.0	0.0	150.000	360.000

X1	6676.000	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	150.000	0.0	360.000	0.0	0.0	0.0	0.0
BT	20.000	0.0	755.000	755.000	65.000	751.000	751.000	255.000	744.300	744.300
BT	263.000	743.800	743.800	272.500	742.500	742.500	281.500	742.400	742.400	281.500
BT	742.400	740.300	282.000	742.400	741.800	282.500	742.400	741.600	283.800	742.400
BT	742.300	284.000	742.400	741.600	284.000	742.400	742.400	295.000	741.700	741.700
BT	295.000	741.000	741.000	298.000	741.000	741.000	313.500	748.900	748.900	360.000
BT	749.700	749.700	425.000	748.100	748.100	555.000	746.900	746.900	620.000	746.400
BT	746.400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ET	0.0	0.0	0.0	0.0	0.0	9.100	0.0	0.0	150.000	360.000

X1	6677.000	0.0	0.0	0.0	2.500	2.500	2.500	0.0	0.0	0.0
X2	0.0	0.0	0.0	0.0	0.0	0.0	1.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	150.000	0.0	360.000	0.0	0.0	0.0	0.0
ET	0.0	0.0	0.0	0.0	0.0	9.100	0.0	0.0	150.000	360.000

```
X1   6678.000     0.0       0.0       0.0       1.000     1.000     1.000     0.0       0.0       0.0
X3      0.0       0.0       0.0     150.000     0.0     360.000     0.0       0.0       0.0       0.0
NC      0.080     0.080     0.030     0.0       0.0       0.0       0.0       0.0       0.0       0.0
ET      0.0       0.0       0.0       0.0       0.0       9.100     0.0       0.0     100.000   360.000

        SECTION T  MANUFACTURED VALLEY SECTION

X1   6700.000    12.000   272.500   298.000    50.000    50.000    50.000     0.0       0.0       0.0
X3      0.0       0.0       0.0     100.000     0.0     360.000     0.0       0.0       0.0       0.0
GR    755.000     0.0     751.000    65.000   744.300   255.000   743.800   263.000   742.500   272.500
GR    740.400   272.500   740.400   298.000   748.900   313.500   749.700   360.000   748.100   425.000
GR    746.900   555.000   746.400   620.000     0.0       0.0       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
QT      5.000   960.000  1330.000  1540.000  2000.000  1540.000     0.0       0.0       0.0       0.0
ET      0.0       0.0       0.0       0.0       0.0       9.100     0.0       0.0     750.000  1130.000

        SECTION U

X1   7925.000    19.000  1062.500  1099.500   800.000   800.000   920.000     0.0       0.0       0.0
X3      0.0       0.0       0.0     750.000     0.0    1130.000     0.0       0.0       0.0       0.0
GR    755.100   600.000   752.400   630.000   746.600   665.000   745.000   810.000   744.900   975.000
GR    744.900  1050.000   744.800  1062.500   740.800  1066.500   739.800  1068.000   740.700  1075.500
GR    740.500  1080.000   740.000  1085.500   740.600  1087.500   743.000  1093.500   746.700  1099.500
GR    746.500  1110.000   747.000  1200.000   753.500  1220.000   755.100  1300.000     0.0       0.0
ET      0.0       0.0       0.0       0.0       0.0       9.100     0.0       0.0      75.000   360.000

        SECTION V

X1   8800.000    15.000   289.000   322.000   700.000   700.000   750.000     0.0       0.0       0.0
GR    760.000     0.0     752.800    50.000   748.700    95.000   747.000   190.000   748.300   270.000
GR    745.800   289.000   744.900   296.000   742.200   301.000   742.200   305.000   742.700   309.000
GR    744.900   314.000   746.600   315.000   746.900   322.000   750.000   360.000   760.000   395.000
ET      0.0       0.0       0.0       0.0       0.0       9.100     0.0       0.0      50.000   465.000
QT      5.000   490.000   680.000   785.000  1020.000   785.000     0.0       0.0       0.0       0.0

        SECTION W  MANUFACTURED VALLEY SECTION

X1   9350.000    14.000   437.500   462.500   300.000   300.000   300.000     0.0       0.0       0.0
X3      0.0       0.0       0.0     150.000     0.0     500.000     0.0       0.0       0.0       0.0
GR    760.000     0.0     749.400    55.000   749.600   185.000   746.400   250.000   749.200   290.000
GR    751.200   380.000   750.300   437.500   743.800   437.500   743.000   446.000   743.000   454.000
GR    743.800   462.500   750.300   462.500   751.200   505.000   751.000   595.000     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

        SECTION X  SECOND FOOT BRIDGE, WIDTH 12 FT, LENGTH 25 FT

X1   9425.000     0.0       0.0       0.0      70.000    70.000    70.000     0.0       0.0       0.0
X3      0.0       0.0       0.0     350.000     0.0     500.000     0.0       0.0       0.0       0.0
SB      0.0       1.500     2.500     0.0      25.000     0.0     150.000     0.0       0.0       0.0

X1   9426.000     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   749.000   750.600     0.0       0.0       0.0       0.0       0.0
X3      0.0       0.0       0.0     350.000     0.0     500.000     0.0       0.0       0.0       0.0
BT     14.000     0.0     760.000     0.0      55.000   760.000     0.0     185.000   760.000     0.0
BT    350.000   760.000     0.0     350.000   751.000     0.0     380.000   751.200     0.0     437.500
BT    750.300     0.0     437.500   752.300     0.0     446.000   753.300     0.0     454.000   753.400
BT      0.0     462.500   752.600     0.0     462.500   750.600     0.0     505.000   751.200     0.0
        760.000     0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
```

SECTION Y MANUFACTURED VALLEY SECTION

X1	9427.000	0.0	0.0	0.0	30.000	30.000	30.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	350.000	0.0	500.000	0.0	0.0	0.0	0.0

SECTION Z SECOND LOW DAM

X1	9558.000	20.000	402.500	432.500	65.000	65.000	65.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	350.000	0.0	500.000	0.0	0.0	0.0	0.0
GR	760.000	0.0	748.500	45.000	749.400	65.000	747.500	75.000	750.000	90.000
GR	751.800	115.000	751.500	180.000	749.800	290.000	751.400	365.000	749.600	396.500
GR	749.800	402.500	746.000	405.000	744.600	405.000	744.600	430.000	746.000	430.000
GR	750.200	432.500	751.900	440.000	751.200	520.000	753.200	610.000	754.300	740.000

X1	9559.000	20.000	402.500	432.500	5.000	5.000	5.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	350.000	0.0	500.000	0.0	0.0	0.0	0.0
GR	760.000	0.0	748.500	45.000	749.800	65.000	747.500	75.000	750.000	90.000
GR	751.800	115.000	751.500	180.000	749.800	290.000	751.400	365.000	749.600	396.500
GR	749.800	402.500	746.000	405.000	746.000	405.000	746.000	430.000	746.000	430.000
GR	750.200	432.500	751.900	440.000	751.000	520.000	753.200	610.000	754.300	740.000

X1	9560.000	0.0	0.0	0.0	2.000	2.000	2.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	350.000	0.0	500.000	0.0	0.0	0.0	0.0

X1	9561.000	20.000	402.500	432.500	5.000	5.000	5.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	350.000	0.0	500.000	0.0	0.0	0.0	0.0
GR	760.000	0.0	748.500	45.000	749.800	65.000	747.500	75.000	750.000	90.000
GR	751.800	115.000	751.500	180.000	749.800	290.000	751.400	365.000	749.600	396.500
GR	749.800	402.500	746.000	405.000	744.600	405.000	744.600	430.000	746.000	430.000
GR	750.200	432.500	751.900	440.000	751.200	520.000	753.200	610.000	754.300	740.000

SECTION AA D/S OF POND

X1	9600.000	21.000	396.500	437.500	35.000	35.000	35.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	350.000	0.0	500.000	0.0	0.0	0.0	0.0
GR	760.000	0.0	748.500	45.000	749.400	65.000	747.500	75.000	750.000	90.000
GR	751.800	115.000	751.500	180.000	749.800	290.000	751.400	365.000	749.600	396.500
GR	747.600	403.500	746.100	405.000	743.700	410.500	743.300	417.500	744.100	424.500
GR	746.100	430.000	747.400	431.500	749.500	437.500	751.200	520.000	753.200	610.000
GR	754.300	740.000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NC	0.0	0.0	0.0	0.200	0.400	0.0	0.0	0.0	0.0	0.0

SECTION AB MANUFACTURED VALLEY SECTION ACROSS POND

X1	9850.000	9.000	160.000	438.000	250.000	250.000	250.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	150.000	0.0	500.000	0.0	0.0	0.0	0.0
GR	760.000	0.0	752.700	100.000	752.000	150.000	748.000	160.000	744.200	165.000
GR	744.200	430.000	748.000	438.000	752.000	465.000	760.000	500.000	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

SECTION AC

X1	10225.000	23.000	1142.000	1194.000	330.000	330.000	330.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	930.000	0.0	0.0	0.0	0.0	0.0	0.0
GR	750.400	770.000	750.000	800.000	749.600	840.000	751.200	895.000	752.000	910.000
GR	753.900	930.000	753.300	1040.000	753.900	1140.000	750.800	1142.000	748.100	1150.500
GR	746.400	1152.500	745.600	1160.000	745.400	1167.500	745.200	1175.000	746.400	1182.500

GR	751.100	1194.000	753.600	1200.000	754.100	1295.000	755.000	1350.000	754.200	1430.000
GR	752.500	1460.000	755.600	1495.000	760.000	1635.000	0.0	0.0	0.0	0.0

SECTION AD THIRD FOOT BRIDGE, WIDTH 12 FT, LENGTH 12 FT

X1	10325.000	19.000	1174.000	1186.000	100.000	100.000	100.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1000.000	0.0	1190.000	0.0	0.0	0.0	0.0
GR	749.300	800.000	749.600	860.000	752.000	925.000	754.000	1000.000	754.000	1040.000
GR	754.000	1080.000	753.700	1130.000	751.100	1169.000	751.100	1174.000	745.800	1174.000
GR	745.800	1186.000	751.100	1186.000	751.100	1191.000	753.100	1245.000	753.500	1425.000
GR	751.700	1475.000	752.000	1535.000	754.200	1585.000	760.000	1805.000	0.0	0.0
X1	10326.000	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1000.000	0.0	1190.000	0.0	0.0	0.0	0.0
BT	19.000	800.000	749.300	749.300	860.000	749.600	749.600	925.000	752.000	752.000
BT	1000.000	754.000	754.000	1040.000	754.000	754.000	1080.000	754.000	754.000	1130.000
BT	753.700	753.700	1169.000	751.100	751.100	1174.000	751.100	751.100	1174.000	751.100
BT	750.000	1186.000	751.100	750.000	1186.000	751.100	751.100	1191.000	751.100	751.100
BT	1245.000	753.100	753.100	1425.000	753.500	753.500	1475.000	751.700	751.700	1535.000
BT	752.000	752.000	1585.000	754.200	754.200	1805.000	760.000	760.000	0.0	0.0
X1	10327.000	0.0	0.0	0.0	12.000	12.000	12.000	0.0	0.0	0.0
X2	0.0	0.0	0.0	0.0	0.0	0.0	1.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1000.000	0.0	1190.000	0.0	0.0	0.0	0.0
X1	10328.000	0.0	0.0	0.0	1.000	1.000	1.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1000.000	0.0	1190.000	0.0	0.0	0.0	0.0

SECTION AE

X1	10425.000	15.000	1144.500	1176.000	100.000	100.000	100.000	0.0	0.0	0.0
X3	0.0	0.0	0.0	1015.000	0.0	1210.000	0.0	0.0	0.0	0.0
GR	751.200	210.000	751.200	500.000	749.200	700.000	749.500	1100.000	749.900	1144.500
GR	747.400	1157.000	746.300	1159.500	744.100	1161.500	744.000	1165.000	744.200	1168.000
GR	746.300	1170.500	747.600	1176.000	753.400	1220.000	757.400	1255.000	760.000	1290.000
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 2000.000
   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    IOC       ICONT     CORAR     TOPWID      ENDST

        SECTION A  2000 FT FROM THE MOUTH TO ROGUE RIVER

                   STARTING ELEV BY CONVERGENCE TEST

  2000.00      7.00    736.00      0.0     736.00    736.84      0.84      0.0       0.0    739.20
    1625.        0.     1625.       0.        0.     220.        0.        0.        0.    741.10
     0.0       0.0      7.37      0.0     0.070     0.030     0.070       0.0    729.00   1078.89
 0.002788        0.        0.       0.         0         0         0       0.0     41.98   1120.87

FLOW DISTRIBUTION FOR SECNO    2000.00          CWSEL     736.00

STA      1079.    1132.
  PER Q     100.0
   AREA     220.4
    VEL       7.4

*SECNO 2600.000

        SECTION B  MANUFACTURED VALLEY SECTION

  2600.00      7.76    737.61      0.0       0.0    738.25      0.64      1.39      0.02    740.05
    1625.        0.     1625.       0.        0.     254.        0.        3.        1.    741.95
     0.03       0.0      6.40      0.0     0.070     0.030     0.070     0.030    729.85   1076.76
 0.001945      600.      600.     600.         2         0         0       0.0     45.78   1122.54

FLOW DISTRIBUTION FOR SECNO    2600.00          CWSEL     737.61

STA      1077.    1132.
  PER Q     100.0
   AREA     254.0
    VEL       6.4

*SECNO 3400.000

        SECTION C

  3400.00      8.26    738.96      0.0       0.0    739.68      0.72      1.40      0.02    746.00
    1625.        0.     1625.       0.        0.     239.        0.        7.        1.    744.90
     0.05       0.0      6.80      0.0     0.070     0.030     0.070     0.030    730.70    974.30
 0.002752      610.      610.     610.         2         0         0       0.0     50.74   1025.05

FLOW DISTRIBUTION FOR SECNO    3400.00          CWSEL     738.96

STA       974.    1035.
  PER Q     100.0
   AREA     239.1
    VEL       6.8

CCHV    0.300 CEHV    0.500
*SECNO 3500.000
```

```
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       746.00 ELREA       746.00

        SECTION 0  DIVISION ST. BRIDGE, WIDTH 65 FT, LENGTH 48 FT

                   MULTIPLE STRUCTURAL PLATE STEEL-PIPE ARCHES, 20.3 X 13

  3500.00      6.45    739.25      0.0       0.0     739.94      0.69      0.26      0.01    736.50
    1625.        0.     1625.       0.        0.      243.        0.        7.        1.     736.50
     0.06       0.0      6.68      0.0     0.070     0.030     0.070     0.030    732.80   1097.70
 0.002396       100.     100.      100.        2         0         0       0.0     44.60   1142.30

FLOW DISTRIBUTION FOR SECNO    3500.00          CWSEL      739.25

STA      1098.     1142.
  PER Q      100.0
   AREA      243.3
    VEL        6.7

*SECNO 3501.000
   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    IOC       ICONT     CORAR     TOPWID      ENDST

3370 NORMAL BRIDGE,NRD  26 MIN ELTRD   745.40 MAX ELLC   748.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       747.00 ELREA       747.00

  3501.00      6.41    739.21      0.0       0.0     740.02      0.81      0.03      0.06    736.50
    1625.        0.     1625.       0.        0.      225.        0.        7.        1.     736.50
     0.06       0.0      7.23      0.0     0.070     0.026     0.070     0.030    732.80   1097.70
 0.002831       10.      10.       10.        2         0         0    -26.36     44.60   1142.30

FLOW DISTRIBUTION FOR SECNO    3501.00          CWSEL      739.21

STA      1098.     1142.
  PER Q      100.0
   AREA      224.8
    VEL        7.2

*SECNO 3502.000

3370 NORMAL BRIDGE,NRD  26 MIN ELTRD   745.40 MAX ELLC   748.20

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       747.00 ELREA       747.00

  3502.00      6.64    739.44      0.0       0.0     740.20      0.76      0.16      0.01    736.50
    1625.        0.     1625.       0.        0.      232.        0.        8.        1.     736.50
     0.06       0.0      7.01      0.0     0.070     0.026     0.070     0.030    732.80   1097.70
 0.002571       60.      60.       60.        2         0         0    -31.07     44.60   1142.30

FLOW DISTRIBUTION FOR SECNO    3502.00          CWSEL      739.44

STA      1098.     1142.
  PER Q      100.0
   AREA      231.8
```

```
    VEL        7.0

*SECNO 3503.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA        747.00 ELREA        747.00

  3503.00      6.88    739.68      0.0       0.0    740.27      0.59      0.02      0.05    736.50
    1625.        0.     1625.       0.        0.     263.        0.        8.        1.    736.50
     0.06       0.0      6.19      0.0     0.070    0.030     0.070     0.030    732.80   1097.70
 0.001877       10.       10.      10.         2        0         0       0.0     44.60   1142.30

FLOW DISTRIBUTION FOR SECNO    3503.00          CWSEL     739.68

STA      1098.     1142.
  PER Q      100.0
   AREA      262.6
    VEL        6.2

*SECNO 3570.000

        SECTION E  MANUFACTURED VALLEY SECTION FROM A SURVEYED SECTION

                    200 FT U/S

  3570.00      7.78    739.58      0.0       0.0    740.62      1.04      0.13      0.22    747.80
    1625.        0.     1625.       0.        0.     199.        0.        8.        2.    747.50
     0.06       0.0      8.18      0.0     0.060    0.030     0.060     0.030    731.80     29.50
 0.003802       50.       50.      50.         2        0         0       0.0     41.92     71.41

FLOW DISTRIBUTION FOR SECNO    3570.00          CWSEL     739.58

STA        29.       88.
  PER Q      100.0
   AREA      198.6
    VEL        8.2

CCHV     0.100 CEHV     0.300
*SECNO 4000.000

        SECTION F  MANUFACTURED VALLEY SECTION, REPEATING E BY INVERT ADJUSTMENT

  4000.00      7.08    740.48      0.0       0.0    741.90      1.42      1.16      0.11    749.40
    1625.        0.     1625.       0.        0.     170.        0.        9.        2.    749.10
     0.07       0.0      9.55      0.0     0.060    0.030     0.060     0.030    733.40     30.78
 0.005801      250.      250.     250.         2        0         0       0.0     39.21     69.99

FLOW DISTRIBUTION FOR SECNO    4000.00          CWSEL     740.48

STA        31.       88.
  PER Q      100.0
   AREA      170.1
    VEL        9.6

CCHV     0.300 CEHV     0.500
*SECNO 4075.000

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    IOC       ICONT     CORAR     TOPWID      ENDST
```

```
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       749.00 ELREA       749.00

        SECTION G  LOOMIS ST. BRIDGE, WIDTH 21.3 FT, LENGTH 42.2 FT

  4075.00      5.81    741.71      0.0       0.0    742.48      0.77      0.39      0.19    746.70
    1625.        0.     1625.       0.        0.     231.        0.        9.        2.    746.70
     0.07       0.0      7.03      0.0     0.060     0.030     0.060     0.030    735.90    554.80
 0.002755      100.      100.     100.         3         0         0       0.0     40.40    595.20

FLOW DISTRIBUTION FOR SECNO    4075.00          CWSEL     741.71

STA       555.      595.
  PER Q     100.0
   AREA     231.2
    VEL       7.0

*SECNO 4076.000

3370 NORMAL BRIDGE,NRD   0 MIN ELTRD   746.70 MAX ELLC   745.10

  4076.00      5.83    741.73      0.0       0.0    742.49      0.76      0.01      0.00    746.70
    1625.        0.     1625.       0.        0.     232.        0.       10.        2.    746.70
     0.07       0.0      7.00      0.0     0.060     0.030     0.060     0.030    735.90    554.80
 0.002722        5.        5.       5.         0         0         0       0.0     40.40    595.20

FLOW DISTRIBUTION FOR SECNO    4076.00          CWSEL     741.73

STA       555.      595.
  PER Q     100.0
   AREA     232.1
    VEL       7.0

*SECNO 4077.000

3370 NORMAL BRIDGE,NRD   0 MIN ELTRD   746.70 MAX ELLC   745.10

  4077.00      5.91    741.81      0.0       0.0    742.55      0.74      0.05      0.01    746.70
    1625.        0.     1625.       0.        0.     235.        0.       10.        2.    746.70
     0.07       0.0      6.90      0.0     0.060     0.030     0.060     0.030    735.90    554.80
 0.002608       20.       20.      20.         2         0         0       0.0     40.40    595.20

FLOW DISTRIBUTION FOR SECNO    4077.00          CWSEL     741.81

STA       555.      595.
  PER Q     100.0
   AREA     235.4
    VEL       6.9

*SECNO 4078.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       749.50 ELREA       749.50

  4078.00      5.93    741.83      0.0       0.0    742.57      0.74      0.01      0.00    746.70
    1625.        0.     1625.       0.        0.     236.        0.       10.        2.    746.70
     0.07       0.0      6.89      0.0     0.060     0.030     0.060     0.030    735.90    554.80
 0.002591        5.        5.       5.         0         0         0       0.0     40.40    595.20

FLOW DISTRIBUTION FOR SECNO    4078.00          CWSEL     741.83
```

```
STA       555.      595.
  PER Q      100.0
   AREA      235.9
    VEL        6.9

*SECNO 4175.000

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

        SECTION H

  4175.00      6.85    741.75    741.75      0.0    743.98      2.23      0.50      0.75    749.00
    1625.        0.     1625.        0.       0.     136.        0.       10.        2.    750.40
     0.09       0.0     11.99       0.0    0.060    0.030     0.060     0.030    734.90    698.40
 0.009720      110.      110.      110.        3        8         0       0.0     30.39    728.80

FLOW DISTRIBUTION FOR SECNO    4175.00          CWSEL      741.75

STA       698.      732.
  PER Q      100.0
   AREA      135.5
    VEL       12.0

*SECNO 4275.000

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       752.20 ELREA       752.20

        SECTION I  C & O R. R. BRIDGE, WIDTH 10.8 FT, LENGTH 100 FT

  4275.00      9.58    744.58      0.0       0.0    744.69      0.11      0.08      0.64    752.20
    1625.        0.     1625.        0.       0.     612.        0.       11.        2.    752.20
     0.09       0.0      2.65       0.0    0.060    0.030     0.060     0.030    735.00    742.00
 0.000258      100.      100.      100.        2        0         0       0.0     95.60    837.60

FLOW DISTRIBUTION FOR SECNO    4275.00          CWSEL      744.58

STA       742.      833.
  PER Q      100.0
   AREA      612.1
    VEL        2.7

SPECIAL BRIDGE
```

xsec appears to be naturally very restrictive

```
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.90      1.50      2.50      0.0      34.00      7.00    513.80      0.33    735.00    735.00

*SECNO 4276.000
CLASS A LOW FLOW

3420 BRIDGE W.S.     744.37 BRIDGE VELOCITY ,      5.76      CALCULATED CHANNEL AREA ,      282.

 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                              AREA
     0.0     744.71     0.02        0.     1625.      514.     310.      745.20    752.20


  4276.00     9.60   744.60      0.0       0.0    744.71     0.11      0.02      0.0    752.20
    1625.       0.    1625.       0.        0.     613.       0.       11.       2.    752.20
     0.09      0.0     2.65      0.0     0.060    0.030    0.060     0.030   735.00    742.00
 0.000256      10.     10.       10.         0        0        0       0.0    95.60    837.60


FLOW DISTRIBUTION FOR SECNO    4276.00          CWSEL     744.60

STA       742.      838.
  PER Q     100.0
   AREA     613.2
    VEL       2.6

*SECNO 4375.000

3301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       746.10 ELREA       752.60

          SECTION J

  4375.00     9.02   744.32      0.0       0.0    745.09     0.76      0.05      0.33    746.10
    1625.       0.    1625.       0.        0.     232.       0.       12.       2.    752.60
     0.09      0.0     7.01      0.0     0.060    0.030    0.060     0.030   735.30    664.50
 0.002356      85.     85.       85.         2        0        0       0.0    42.09    706.59

FLOW DISTRIBUTION FOR SECNO    4375.00          CWSEL     744.32

STA       664.      722.
  PER Q     100.0
   AREA     231.7
    VEL       7.0

CCHV    0.100 CEHV    0.300
*SECNO 4700.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       747.10 ELREA       753.60


          SECTION K  MANUFACTURED VALLEY SECTIOIN,REPEATING J BY INVERT ADJUSTMENT

  4700.00     8.85   745.15      0.0       0.0    745.96     0.81      0.86      0.02    747.10
    1625.       0.    1625.       0.        0.     224.       0.       14.       3.    753.60
     0.10      0.0     7.24      0.0     0.040    0.030    0.060     0.030   736.30    664.79
 0.002567     350.    350.      350.         2        0        0       0.0    41.48    706.27

FLOW DISTRIBUTION FOR SECNO    4700.00          CWSEL     745.15

STA       665.      722.
```

```
  PER Q      100.0
   AREA      224.5
    VEL        7.2

CCHV    0.300 CEHV    0.500
*SECNO 4750.000

3301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       749.80 ELREA       749.80


        SECTION L  FIRST FOOT BRIDGE, WIDTH 7.7 FT, LENGTH 28 FT

  4750.00      4.86   744.86   744.85      0.0    747.20      2.34      0.47      0.76   749.80
    1625.        0.    1625.       0.       0.     132.        0.       14.        3.   749.80
     0.11       0.0    12.28      0.0    0.040    0.030     0.060     0.030   740.00   636.00
 0.011531      100.    100.      100.        6       11         0       0.0     28.40   664.40


FLOW DISTRIBUTION FOR SECNO    4750.00          CWSEL     744.86

STA      636.     664.
  PER Q      100.0
   AREA      132.3
    VEL       12.3

*SECNO 4751.000

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


3370 NORMAL BRIDGE,NRD  14 MIN ELTRD   742.70 MAX ELLC   753.40


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       748.70 ELREA       748.70

  4751.00      5.82   745.82      0.0       0.0    747.43      1.61      0.01      0.22   749.80
    1625.        0.    1625.       0.       0.     160.        0.       14.        3.   749.80
     0.11       0.0    10.18      0.0    0.040    0.030     0.060     0.030   740.00   636.00
 0.006591        1.       1.       1.        14         0         0       0.0     28.40   664.40


FLOW DISTRIBUTION FOR SECNO    4751.00          CWSEL     745.82

STA      636.     664.
  PER Q      100.0
   AREA      159.6
    VEL       10.2

*SECNO 4752.000

3370 NORMAL BRIDGE,NRD  14 MIN ELTRD   742.70 MAX ELLC   753.40


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       748.70 ELREA       748.70

  4752.00      5.99   745.99      0.0       0.0    747.51      1.52      0.05      0.03   749.80
    1625.        0.    1625.       0.       0.     164.        0.       14.        3.   749.80
```

Appears to be naturally encroached, berm along left bank

.006x8 = .05'

```
      0.11      0.0       9.88      0.0      0.040     0.030     0.060     0.030    740.00    636.00
  0.006043       8.        8.        8.        2         0         0       0.0     28.40    664.40


 FLOW DISTRIBUTION FOR SECNO    4752.00          CWSEL      745.99

 STA       636.      664.
   PER Q     100.0
    AREA     164.4
     VEL       9.9

 *SECNO 4753.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       748.70 ELREA       748.70

   4753.00     6.00    746.00      0.0       0.0    747.51      1.51      0.01      0.00    749.80
     1625.       0.     1625.       0.        0.     165.        0.       14.        3.     749.80
      0.11      0.0       9.87      0.0      0.040     0.030     0.060     0.030    740.00    636.00
  0.006026       1.        1.        1.        0         0         0       0.0     28.40    664.40


 FLOW DISTRIBUTION FOR SECNO    4753.00          CWSEL      746.00

 STA       636.      664.
   PER Q     100.0
    AREA     164.6
     VEL       9.9

 *SECNO 4800.000

 3301 HV CHANGED MORE THAN HVINS


          SECTION M  MANUFACTURED VALLEY SECTION REPEATING N BY INVERT ADJUSTMENT

   4800.00    11.17    747.67      0.0       0.0    747.94      0.27      0.05      0.37    747.30
     1625.       0.     1625.       0.        1.     391.        0.       14.        3.     753.00
      0.11      0.29      4.16      0.0      0.040     0.030     0.060     0.030    736.50     86.39
  0.000587      40.       40.       40.        3         0         0       0.0     61.09    147.48


 FLOW DISTRIBUTION FOR SECNO    4800.00          CWSEL      747.67

 STA        86.       93.      154.
   PER Q       0.0     100.0
    AREA       1.1     390.9
     VEL       0.3       4.2

 CCHV     0.100 CEHV     0.300
 *SECNO 5375.000

          SECTION N

   5375.00     9.86    747.96      0.0       0.0    748.36      0.40      0.38      0.04    748.90
     1625.       0.     1625.       0.        0.     321.        0.       19.        3.     754.60
      0.14      0.0       5.06      0.0      0.070     0.030     0.050     0.030    738.10     94.53
  0.001026     500.      500.      500.        2         0         0       0.0     51.48    146.01


 FLOW DISTRIBUTION FOR SECNO    5375.00          CWSEL      747.96

 STA        95.      154.
   PER Q     100.0
    AREA     321.3
     VEL       5.1
```

```
CCHV    0.300 CEHV    0.500
*SECNO 5475.000
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       ARCS      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       754.00 ELREA       754.00

        SECTION 0  UNION ST. BRIDGE, WIDTH 37 FT, LENGTH 33.4 FT

  5475.00      9.49    747.99      0.0       0.0     748.51      0.52      0.09      0.06    753.50
    1625.        0.     1625.       0.        0.      280.        0.       19.        3.     753.50
     0.14       0.0      5.80      0.0     0.070     0.030     0.050     0.030    738.50    165.00
 0.001317       80.       80.       80.         2         0         0       0.0     30.00    195.00

FLOW DISTRIBUTION FOR SECNO    5475.00          CWSEL     747.99

STA       165.      195.
  PER Q     100.0
   AREA     280.3
    VEL       5.8

*SECNO 5476.000

3370 NORMAL BRIDGE,NRD   0 MIN ELTRD   753.50 MAX ELLC   753.00

  5476.00      9.50    748.00      0.0       0.0     748.52      0.52      0.01      0.00    753.50
    1625.        0.     1625.       0.        0.      280.        0.       19.        3.     753.50
     0.14       0.0      5.79      0.0     0.070     0.030     0.050     0.030    738.50    165.00
 0.001315        5.        5.        5.         0         0         0       0.0     30.00    195.00

FLOW DISTRIBUTION FOR SECNO    5476.00          CWSEL     748.00

STA       165.      195.
  PER Q     100.0
   AREA     280.5
    VEL       5.8

*SECNO 5477.000

3370 NORMAL BRIDGE,NRD   0 MIN ELTRD   753.50 MAX ELLC   753.00

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA       754.00 ELREA       754.00

  5477.00      9.55    748.05      0.0       0.0     748.56      0.52      0.04      0.00    753.50
    1625.        0.     1625.       0.        0.      282.        0.       19.        3.     753.50
     0.14       0.0      5.77      0.0     0.070     0.030     0.050     0.030    738.50    165.00
 0.001299       30.       30.       30.         0         0         0       0.0     30.00    195.00

FLOW DISTRIBUTION FOR SECNO    5477.00          CWSEL     748.05

STA       165.      195.
  PER Q     100.0
   AREA     281.7
    VEL       5.8

*SECNO 5478.000
```

```
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA        754.00 ELREA        754.00

  5478.00      9.55    748.05      0.0       0.0     748.57      0.52      0.01      0.00    753.50
    1625.        0.     1625.       0.        0.      282.        0.       19.        3.    753.50
     0.14       0.0      5.76      0.0     0.070     0.030     0.050     0.030    738.50    165.00
 0.001294        5.        5.       5.         0         0         0       0.0     30.00    195.00

FLOW DISTRIBUTION FOR SECNO    5478.00          CWSEL      748.05

STA       165.      195.
  PER Q     100.0
   AREA     282.0
    VEL       5.8

*SECNO 5575.000

        SECTION P

  5575.00      9.35    748.65      0.0       0.0     748.72      0.07      0.02      0.13    742.80
    1625.      613.      886.     126.      548.      320.       96.       20.        4.    743.30
     0.15      1.12      2.77     1.31     0.060     0.030     0.040     0.030    739.30     24.42
 0.000211       55.       55.      55.         2         0         0       0.0    173.61    198.03

FLOW DISTRIBUTION FOR SECNO    5575.00          CWSEL      748.65

STA        24.       45.      125.      129.      170.      190.      198.
  PER Q      2.3      33.6       1.8      54.5       7.2       0.5
   AREA     55.1     468.1      24.4     319.6      84.0      12.3
    VEL      0.7       1.2       1.2       2.8       1.4       0.7

CCHV    0.100 CEHV    0.300
*SECNO 6325.000
   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      250.0      450.0  TYPE      1  TARGET      200.000

        SECTION Q

  6325.00      9.30    748.80      0.0       0.0     748.90      0.11      0.17      0.01    745.30
    1625.      458.     1054.     113.      445.      334.       94.       34.        7.    745.70
     0.23      1.03      3.16     1.20     0.060     0.030     0.040     0.030    739.50    250.00
 0.000302       680.      680.     680.         2         0         0       0.0    200.00    450.00

FLOW DISTRIBUTION FOR SECNO    6325.00          CWSEL      748.80

STA       250.      287.      346.      370.      415.      431.      450.
  PER Q      6.2      16.0       6.0      64.9       3.6       3.4
   AREA    114.9     237.6      92.3     333.9      45.0      49.2
    VEL      0.9       1.1       1.1       3.2       1.3       1.1

CCHV    0.300 CEHV    0.500
*SECNO 6575.000

3470 ENCROACHMENT STATIONS      250.0      450.0  TYPE      1  TARGET      200.000

        SECTION R  STATE ST. BRIDGE, WIDTH 53 FT, LENGTH 100 FT
```

-140 no impact

ONE CMP 65 IN.MULTI-STRUCTURAL PLATE STEEL PIPE ARCHES

8-7 X 5-11

6575.00	8.45	748.85	0.0	0.0	748.96	0.11	0.06	0.00	744.30
1625.	363.	1091.	171.	367.	343.	97.	38.	7.	742.20
0.25	0.99	3.18	1.77	0.060	0.030	0.040	0.030	740.40	250.00
0.000366	170.	170.	170.	0	0	0	0.0	200.00	450.00

FLOW DISTRIBUTION FOR SECNO 6575.00 CWSEL 748.85

STA	250.	350.	375.	427.	440.	450.
PER Q	14.1	8.2	67.1	8.1	2.4	
AREA	259.1	107.7	342.9	66.0	30.7	
VEL	0.9	1.2	3.2	2.0	1.3	

SPECIAL BRIDGE 3.25 183

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.0	2.78	2.50	0.0	51.40	0.0	94.30	0.0	740.40	740.40

offsetting, negligable impact

*SECNO 6576.000
PRESSURE AND WEIR FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
761.67	748.98	0.0	889.	739.	94.	303.	746.30	749.50

≈350 cfs

3470 ENCROACHMENT STATIONS 250.0 450.0 TYPE 1 TARGET 200.000

6576.00	11.05	751.45	0.0	0.0	751.50	0.05	2.54	0.0	744.30
1625.	442.	1024.	159.	694.	476.	158.	40.	8.	742.20
0.26	0.64	2.15	1.00	0.060	0.024	0.040	0.030	740.40	250.00
0.000069	86.	86.	86.	2	0	6	0.0	200.00	450.00

FLOW DISTRIBUTION FOR SECNO 6576.00 CWSEL 751.45

STA	250.	350.	375.	427.	440.	450.
PER Q	19.3	7.9	63.0	7.2	2.6	
AREA	520.1	174.0	476.3	101.3	56.8	
VEL	0.6	0.7	2.1	1.2	0.7	

*SECNO 6675.000
3280 CROSS SECTION 6675.00 EXTENDED 5.05 FEET

3470 ENCROACHMENT STATIONS 150.0 360.0 TYPE 1 TARGET 210.000

SECTION S FIRST LOW DAM

6675.00	11.15	751.45	0.0	0.0	751.51	0.07	0.00	0.01	743.80
1625.	501.	1058.	65.	616.	422.	100.	41.	8.	748.90
0.27	0.81	2.51	0.65	0.060	0.024	0.040	0.030	740.30	150.00
0.000116	55.	55.	55.	1	0	0	0.0	210.00	360.00

FLOW DISTRIBUTION FOR SECNO 6675.00 CWSEL 751.45

STA	150.	255.	263.	314.	360.

```
  PER Q      27.2       3.7      65.1       4.0
   AREA     556.9      59.2     421.5     100.2
    VEL       0.8       1.0       2.5       0.7

*SECNO 6676.000
3280 CROSS SECTION   6676.00 EXTENDED      5.05 FEET


3370 NORMAL BRIDGE,NRD  20 MIN ELTRD   741.00 MAX ELLC   755.00

3470 ENCROACHMENT STATIONS       150.0      360.0  TYPE       1  TARGET       210.000
  6676.00    11.15   751.45      0.0       0.0    751.51     0.07      0.00      0.00   743.80
    1625.     517.    1041.       67.      615.      419.     100.       41.        8.   748.90
     0.27     0.84     2.48     0.67    0.060     0.024    0.040     0.030    740.30   150.00
 0.000124       1.       1.       1.        0         0        0     -1.70    210.00   360.00

FLOW DISTRIBUTION FOR SECNO    6676.00          CWSEL     751.45

STA      150.     255.     263.     314.     360.
  PER Q      28.0       3.8      64.1       4.1
   AREA     556.0      59.2     419.4      99.8
    VEL       0.8       1.0       2.5       0.7

*SECNO 6677.000
3280 CROSS SECTION   6677.00 EXTENDED      5.05 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  20 MIN ELTRD   741.00 MAX ELLC   755.00

3470 ENCROACHMENT STATIONS       150.0      360.0  TYPE       1  TARGET       210.000
  6677.00    11.15   751.45      0.0       0.0    751.51     0.07      0.00      0.00   743.80
    1625.     517.    1041.       67.      616.      420.     100.       42.        8.   748.90
     0.27     0.84     2.48     0.67    0.060     0.024    0.040     0.029    740.30   150.00
 0.000123       3.       3.       3.        0         0        0     -1.70    210.00   360.00

FLOW DISTRIBUTION FOR SECNO    6677.00          CWSEL     751.45

STA      150.     255.     263.     314.     360.
  PER Q      28.0       3.8      64.1       4.1
   AREA     556.3      59.2     419.6     100.0
    VEL       0.8       1.0       2.5       0.7

*SECNO 6678.000
3280 CROSS SECTION   6678.00 EXTENDED      5.05 FEET


3470 ENCROACHMENT STATIONS       150.0      360.0  TYPE       1  TARGET       210.000
  6678.00    11.15   751.45      0.0       0.0    751.52     0.07      0.00      0.00   743.80
    1625.     501.    1059.       65.      616.      421.     100.       42.        8.   748.90
     0.27     0.81     2.51     0.65    0.060     0.024    0.040     0.029    740.30   150.00
 0.000116       1.       1.       1.        0         0        0       0.0    210.00   360.00
```

Low Dam

```
FLOW DISTRIBUTION FOR SECNO    6673.00          CWSEL      751.45

STA       150.      255.      263.      314.      360.
  PER Q     27.2       3.7      65.2       4.0
   AREA    556.3      59.2     421.3     100.0
    VEL      0.3       1.0       2.5       0.7

*SECNO 6700.000
3280 CROSS SECTION   6700.00 EXTENDED      5.05 FEET


3470 ENCROACHMENT STATIONS      100.0     360.0  TYPE      1  TARGET      260.000

        SECTION T  MANUFACTURED VALLEY SECTION

  6700.00     11.04    751.44      0.0       0.0    751.53      0.09      0.01      0.01    742.50
    1625.      601.      895.     129.      823.     282.      205.       43.        8.    740.40
     0.28      0.73      3.18     0.63     0.080    0.030     0.080     0.029    740.40    100.00
 0.000186       50.       50.      50.         1        0         0       0.0    260.00    360.00


FLOW DISTRIBUTION FOR SECNO    6700.00          CWSEL      751.44

STA       100.      255.      263.      273.      298.      314.      360.
  PER Q     28.5       3.5       5.0      55.1       5.4       2.5
   AREA    684.6      59.2      78.8     231.8     105.4     100.0
    VEL      0.7       1.0       1.0       3.2       0.8       0.4

CCHV    0.100 CEHV    0.300
*SECNO 7925.000

3470 ENCROACHMENT STATIONS      750.0    1130.0  TYPE      1  TARGET      380.000

        SECTION U

  7925.00     11.80    751.60      0.0       0.0    751.62      0.01      0.07      0.01    744.80
    1540.      928.      559.      53.      2061.     371.      153.       80.       14.    746.70
     0.56      0.45      1.51     0.35     0.080    0.030     0.080     0.030    739.80    750.00
 0.000049      800.      920.     800.         2        0         0       0.0    380.00   1130.00


FLOW DISTRIBUTION FOR SECNO    7925.00          CWSEL      751.60

STA       750.      810.      975.     1050.     1063.     1100.     1110.     1130.
  PER Q     10.1      32.6      15.0      2.5      36.3       1.3       2.1
   AREA    376.2    1097.4     502.6     84.4     371.1      52.5     100.9
    VEL      0.4       0.5       0.5      0.5       1.5       0.4       0.3

*SECNO 8800.000

        SECTION V

  8800.00      9.42    751.62      0.0       0.0    751.71      0.09      0.07      0.02    745.80
    1540.      673.      776.      90.      810.     238.      125.      110.       20.    746.90
     0.66      0.83      3.27     0.72     0.080    0.030     0.080     0.030    742.20     62.92
 0.000340      700.      750.     700.         2        0         0       0.0    302.76    365.68


FLOW DISTRIBUTION FOR SECNO    8800.00          CWSEL      751.62

STA        63.       95.      190.      270.      239.      322.      360.      366.
  PER Q      1.3      19.3      17.7       5.3      50.4       5.8       0.1
   AREA     46.9     358.4     317.8      86.9     237.8     120.6       4.6
```

140' d/s ≈230'

450 d/mated

```
*SECNO 9350.000
3280 CROSS SECTION   9350.00 EXTENDED      0.76 FEET

   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

3470 ENCROACHMENT STATIONS      150.0     500.0  TYPE      1  TARGET      350.000

        SECTION W  MANUFACTURED VALLEY SECTION

  9350.00      8.76    751.76      0.0       0.0    751.80      0.04      0.08      0.00    750.30
     785.       335.      4+0.      10.      677.      212.       40.      117.       22.    750.30
     0.72      0.50      2.07     0.25     0.080     0.030     0.080     0.030    743.00    150.00
 0.000177      300.      300.     300.         2         0         0       0.0    350.00    500.00

FLOW DISTRIBUTION FOR SECNO    9350.00          CWSEL     751.76

STA      150.     185.     250.     290.     380.     438.     463.     500.
  PER Q     3.9     18.6     12.5      5.9      1.8     56.0      1.3
   AREA    76.5    244.2    158.3    140.2     57.9    212.1     39.8
    VEL     0.4      0.6      0.6      0.3      0.2      2.1      0.3

CCHV    0.300 CEHV    0.500
*SECNO 9425.000
3280 CROSS SECTION   9425.00 EXTENDED      0.71 FEET

3470 ENCROACHMENT STATIONS      350.0     500.0  TYPE      1  TARGET      150.000

        SECTION X  SECOND FOOT BRIDGE, WIDTH 12 FT, LENGTH 25 FT

  9425.00      8.71    751.71      0.0       0.0    751.89      0.18      0.02      0.07    750.30
     785.       32.      738.      16.       80.      211.       38.      118.       22.    750.30
     0.73      0.39      3.50     0.42     0.080     0.030     0.080     0.030    743.00    350.00
 0.000509       70.       70.      70.         2         0         0       0.0    150.00    500.00

FLOW DISTRIBUTION FOR SECNO    9425.00          CWSEL     751.71

STA      350.     380.     438.     463.     500.
  PER Q     1.2      2.9     94.0      2.0
   AREA    25.2     55.0    210.9     37.9
    VEL     0.4      0.4      3.5      0.4

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      1.50      2.50       0.0     25.00       0.0    150.00       0.0    743.00    743.00

*SECNO 9426.000
3280 CROSS SECTION   9426.00 EXTENDED      0.77 FEET

PRESSURE AND WEIR FLOW

            HCIWC      H3       QWEIR      DPR       BAREA   TRAPEZOID      ELLC      ELTRD
```

Discharge "reduced" because of divided flow

```
                                                                    AREA
   752.34    751.89      0.0       310.      477.      150.      150.      749.00   750.60
```

No weir flow in the ed hermes
at spillway

```
                                  WEIR     PRESSURE
3470 ENCROACHMENT STATIONS       350.0     500.0  TYPE      1  TARGET      150.000
  9426.00      8.77   751.77      0.0       0.0    751.94      0.17      0.06      0.0    750.30
     785.       35.     733.      17.       86.     212.       40.      118.       22.    750.30
     0.73      0.40     3.45     0.43    0.080    0.030    0.080    0.030    743.00    350.00
 0.000491       10.      10.      10.        2        0        4      0.0    150.00    500.00

FLOW DISTRIBUTION FOR SECNO    9426.00          CWSEL     751.77

STA      350.     380.     438.     463.     500.
  PER Q      1.3      3.1     93.4      2.2
   AREA     27.1     58.6    212.4     40.2
    VEL      0.4      0.4      3.5      0.4

*SECNO 9427.000
3280 CROSS SECTION   9427.00 EXTENDED      0.78 FEET


3470 ENCROACHMENT STATIONS       350.0     500.0  TYPE      1  TARGET      150.000

        SECTION Y  MANUFACTURED VALLEY SECTION

  9427.00      8.79   751.79      0.0       0.0    751.96      0.17      0.01      0.00    750.30
     785.       35.     732.      17.       87.     213.       41.      119.       23.    750.30
     0.73      0.41     3.44     0.43    0.080    0.030    0.080    0.030    743.00    350.00
 0.000487       30.      30.      30.        0        0        0      0.0    150.00    500.00

FLOW DISTRIBUTION FOR SECNO    9427.00          CWSEL     751.79

STA      350.     380.     438.     463.     500.
  PER Q      1.3      3.2     93.3      2.2
   AREA     27.5     59.5    212.8     40.8
    VEL      0.4      0.4      3.4      0.4

*SECNO 9558.000

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS       350.0     500.0  TYPE      1  TARGET      150.000

        SECTION Z  SECOND LOW DAM

  9558.00      7.20   751.80      0.0       0.0    752.01      0.21      0.04      0.02    749.80
     785.       35.     746.       4.       62.     199.       17.      119.       23.    750.20
     0.73      0.56     3.74     0.24    0.080    0.030    0.080    0.030    744.60    350.00
 0.000610       65.      65.      65.        1        0        0      0.0    139.32    500.00

FLOW DISTRIBUTION FOR SECNO    9558.00          CWSEL     751.80

STA      350.     365.     397.     403.     433.     440.     500.
  PER Q      0.3      2.9      1.2     95.1      0.3      0.2
   AREA      8.6     41.3     12.7    199.3      5.7     10.8
    VEL      0.3      0.5      0.8      3.7      0.4      0.2

SECNO 9559.000

3 DIVIDED FLOW
```

```
   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     COPAR     TOPWID      ENDST


3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000
  9559.00      5.76    751.76      0.0       0.0    752.06      0.30      0.00      0.05    749.80
     785.       43.      736.       5.       60.     163.       18.      119.       23.    750.20
     0.73      0.72      4.52     0.32     0.080    0.030     0.080     0.030    746.00    350.00
 0.001057        5.        5.       5.         2        0         0       0.0    137.11    500.00

FLOW DISTRIBUTION FOR SECNO    9559.00          CWSEL     751.76

STA       350.      365.      397.      403.      433.      439.      500.
  PER Q       0.4       3.6       1.5      93.8       0.3       0.4
   AREA       7.8      39.7      12.4     162.9       5.4      12.8
    VEL       0.4       0.7       1.0       4.5       0.5       0.2

*SECNO 9560.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000
  9560.00      5.76    751.76      0.0       0.0    752.06      0.30      0.00      0.00    749.80
     785.       43.      736.       6.       60.     163.       18.      119.       23.    750.20
     0.73      0.72      4.52     0.32     0.080    0.030     0.080     0.030    746.00    350.00
 0.001056        2.        2.       2.         0        0         0       0.0    137.20    500.00

FLOW DISTRIBUTION FOR SECNO    9560.00          CWSEL     751.76

STA       350.      365.      397.      403.      433.      439.      500.
  PER Q       0.4       3.6       1.5      93.8       0.3       0.4
   AREA       7.8      39.8      12.4     162.9       5.4      12.9
    VEL       0.4       0.7       1.0       4.5       0.5       0.2

*SECNO 9561.000

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000
  9561.00      7.30    751.90      0.0       0.0    752.09      0.20      0.00      0.03    749.80
     785.       38.      742.       5.       67.     202.       22.      119.       23.    750.20
     0.74      0.56      3.68     0.24     0.080    0.030     0.080     0.030    744.60    350.00
 0.000578        5.        5.       5.         2        0         0       0.0    149.57    500.00

FLOW DISTRIBUTION FOR SECNO    9561.00          CWSEL     751.90

STA       350.      365.      397.      403.      433.      440.      500.
  PER Q       0.4       3.1       1.3      94.5       0.3       0.4
   AREA       9.8      44.0      13.2     201.9       6.3      15.5
    VEL       0.3       0.6       0.8       3.7       0.4       0.2

*SECNO 9600.000

3470 ENCROACHMENT STATIONS       350.0      500.0  TYPE       1  TARGET       150.000

        SECTION AA  D/S OF POND
```

Note this included divided flow

$Q_{100} = 1625$

```
  9600.00      8.73    752.03      0.0       0.0     752.14      0.11      0.01      0.03    749.60
     785.       23.      735.      56.       60.      257.      118.      120.       23.    749.50
     0.74      0.39      2.75     0.48     0.080     0.030     0.080     0.030    743.30    350.00
 0.000290       35.       35.      35.         2         0         0       0.0    150.00    500.00


FLOW DISTRIBUTION FOR SECNO    9600.00          CWSEL      752.03

STA       350.      365.      397.      438.      500.
  PER Q      0.4       2.6      89.9       7.2
   AREA     11.9      48.2     256.6     117.9
    VEL      0.3       0.4       2.7       0.5

CCHV    0.200 CEHV    0.400
*SECNO 9850.000

3470 ENCROACHMENT STATIONS      150.0     500.0  TYPE      1  TARGET      350.000

        SECTION AB  MANUFACTURED VALLEY SECTION ACROSS POND

  9850.00      7.96    752.16      0.0       0.0     752.16      0.00      0.00      0.02    748.00
     785.        1.      781.       3.       21.     2185.       58.      127.       24.    748.00
     0.93      0.05      0.35     0.06     0.080     0.030     0.080     0.030    744.20    150.00
 0.000003      250.      250.     250.         1         0         0       0.0    315.65    465.65


FLOW DISTRIBUTION FOR SECNO    9850.00          CWSEL      752.16

STA       150.      160.      438.      465.
  PER Q      0.1      99.4       0.4
   AREA     21.5    2184.8      58.0
    VEL      0.1       0.4       0.1

CCHV    0.100 CEHV    0.300
*SECNO 10225.000
   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      930.0    1635.0  TYPE      1  TARGET     -930.000

        SECTION AC

 10225.00      6.87    752.07      0.0       0.0     752.20      0.14      0.00      0.04    750.80
     785.        0.      785.       0.        1.      262.        1.      137.       26.    751.10
     0.97      0.19      2.99     0.23     0.080     0.030     0.080     0.030    745.20   1141.18
 0.000444      330.      330.     330.         2         0         0       0.0     55.13   1196.32


FLOW DISTRIBUTION FOR SECNO   10225.00          CWSEL      752.07

STA      1141.     1142.     1194.     1196.
  PER Q      0.0     100.0       0.0
   AREA      0.5     262.4       1.1
    VEL      0.2       3.0       0.2

*SECNO 10325.000

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      1000.0    1190.0  TYPE      1  TARGET      190.000

        SECTION AD  THIRD FOOT BRIDGE, WIDTH 12 FT, LENGTH 12 FT

 10325.00      5.01    750.81    750.81      0.0     753.46      2.65      0.13      0.75    751.10
     785.        0.      785.        0.       0.       60.        0.      137.       26.    751.10
     0.97       0.0     13.06       0.0    0.080     0.030     0.080     0.030    745.80   1174.00
 0.018235      100.      100.      100.       20        12         0       0.0     12.00   1186.00

FLOW DISTRIBUTION FOR SECNO   10325.00          CWSEL     750.81

STA      1174.     1186.
  PER Q     100.0
   AREA      60.1
    VEL      13.1

*SECNO 10326.000

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

3370 NORMAL BRIDGE,NRD  19 MIN ELTRD   749.30 MAX ELLC   760.00

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS      1000.0    1190.0  TYPE      1  TARGET      190.000
 10326.00      6.81    752.61    752.61      0.0     754.04      1.43      0.02      0.12    751.10
     785.       71.      695.       19.       25.       69.        6.      137.       26.    751.10
     0.97      2.88     10.15      3.13    0.080     0.030     0.080     0.030    745.80   1146.36
 0.025109        1.        1.        1.        2        12         0    -13.20     43.64   1190.00

FLOW DISTRIBUTION FOR SECNO   10326.00          CWSEL     752.61

STA      1146.     1169.     1174.     1186.     1190.
  PER Q      5.3       3.7      88.6       2.4
   AREA     17.1       7.5      68.5       6.0
    VEL      2.4       3.9      10.1       3.1

*SECNO 10327.000

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD  19 MIN ELTRD   749.30 MAX ELLC   760.00

3470 ENCROACHMENT STATIONS      1000.0    1190.0  TYPE      1  TARGET      190.000
 10327.00      7.80    753.60      0.0       0.0     754.31      0.71      0.19      0.07    751.10
     785.      152.      607.       26.       59.       80.       10.      137.       26.    751.10
     0.97      2.56      7.55      2.62    0.080     0.030     0.080     0.030    745.80   1131.53
```

Note: This is a portion of a divided flow analysis

Q_{100} = 1625

NOT

785

```
 0.011235      12.      12.      12.        4        0        0   -13.20    58.46  1190.00


FLOW DISTRIBUTION FOR SECNO   10327.00          CWSEL     753.60

STA      1132.    1169.    1174.    1186.    1190.
  PER Q      13.6      5.6     77.3      3.3
   AREA      46.8     12.5     80.4     10.0
    VEL       2.3      3.6      7.6      2.6

*SECNO 10328.000

3470 ENCROACHMENT STATIONS      1000.0    1190.0  TYPE      1  TARGET      190.000
 10328.00      7.78   753.58      0.0      0.0    754.32     0.75     0.01     0.01   751.10
     785.      81.     689.      14.      58.      93.      10.     137.      26.   751.10
     0.97      1.39     7.39     1.43    0.080    0.030    0.080    0.030   745.80  1131.86
 0.003359        1.       1.       1.        2        0        0      0.0    58.14  1190.00


FLOW DISTRIBUTION FOR SECNO   10328.00          CWSEL     753.58

STA      1132.    1169.    1174.    1186.    1190.
  PER Q       7.3      3.1     87.8      1.8
   AREA      46.0     12.4     93.3      9.9
    VEL       1.2      2.0      7.4      1.4

*SECNO 10425.000

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


3470 ENCROACHMENT STATIONS      1015.0    1210.0  TYPE      1  TARGET      195.000

        SECTION AE

 10425.00     10.40   754.40      0.0      0.0    754.42     0.03     0.03     0.07   749.90
     785.      305.     410.      70.     628.     240.     155.     139.      26.   747.60
     0.99      0.49     1.71     0.45    0.080    0.030    0.080    0.030   744.00  1015.00
 0.000087      100.     100.     100.        2        0        0      0.0   195.00  1210.00


FLOW DISTRIBUTION FOR SECNO   10425.00          CWSEL     754.40

STA      1015.    1100.    1145.    1176.    1210.
  PER Q      25.8     13.0     52.2      9.0
   AREA     419.0    209.0    240.0    154.9
    VEL       0.5      0.5      1.7      0.5
```

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: SPARTA VILLAGE OF

3) WATERCOURSE: NASH CREEK

4) DOCUMENT TYPE: REPORT

00BREAK00

HYDRAULIC ANALYSIS

NASH CREEK

SPARTA, MICHIGAN

KALAMAZOO, MICHIGAN
(616) 385-0011

April 7, 1980

Mr. Daniel H. Morgan, P.E.
Flood Insurance Unit
Flood Plain Management Section
Water Management Division
Michigan Department of
Natural Resources
P.O. Box 30028
Lansing, MI 48909

Re: Village of Sparta Flood Insurance Study

Dear Mr. Morgan:

Enclosed for your review is our Hydraulic Analysis of Nash Creek through the Village of Sparta.

The following information is included:

1. HEC-2 run for 10-, 50-, 100-, and 500-year floods
2. IPLOT for 100-year flow
3. Topographic map
4. Hydraulic Analysis Report

If you have any questions on this information, please call me.

Very truly yours,

GOVE ASSOCIATES INC.

William J. McDonough, P.E.
Associate

:sp

encl: as noted

TABLE OF CONTENTS

LETTER OF TRANSMITTAL

1. INTRODUCTION.....1

2. METHOD OF ANALYSIS.....1

3. RESULTS AND DISCUSSIONS.....2

TABLE 1.....4

FIGURE 1.....8

FIGURE 2.....9

FIGURE 3.....10

BRIDGE DATA.....11

HYDRAULIC ANALYSIS

NASH CREEK
SPARTA, MICHIGAN

1. INTRODUCTION

This study covers Nash Creek, which is within the limits of the Village of Sparta, Michigan. The drainage basin of Nash Creek at Sparta is 17.8 square miles. The flow of Nash Creek discharges to the Rogue River about one-half mile east of the Village. The flows used in this analysis were determined by the UD-21 method. A summary of the flows, which have been approved by the Michigan Department of Natural Resources, is presented below:

10-Year	50-Year	100-Year	500-Year	
1010	1400	1625	2100	(cfs)

The project managers for the Flood Insurance Studies are William McDonough and Duane Ellis.

2. METHOD OF ANALYSIS

Water surface profiles for 10-, 50-, 100-, and 500-year floods were computed through the HEC-2 Computer Program, developed by Hydrologic Engineering Center, U.S. Army Corps of Engineers, this model was preformed for 100-year flood. All of the relevant information about cross sections, roughness factors, and starting water elevations will be discussed in this section.

2.1 Cross Sections

Cross Sections were obtained by combining the results from the field ground survey for the channel portion and aerial photo survey for the flood plain portion. The field survey was taken in March, 1974. The locations of the cross sections including two (2) low dams and eight (8) bridges are shown in Table 1. The selection of bridge routines to each bridge was determined by the HEC-2 User's Manual and Training Document No. 6, published by the Hydrologic Engineering Center, Corps of Engineers (Reference 1 and 2).

2.2 Roughness Coefficients

The Manning's "N" factors were established by field descriptions taken by the Project Engineer in March, 1979 with descriptions and pohotographs found on pages 101 to 123 of V. T. Chow's Open Channel Hydraulics (Reference 3). Aerial photographs taken in 1978 were also used. The roughness coefficient for channel in this report is 0.03. In the overbanks the roughness coefficients are in the range of 0.04 to 0.08.

2.3 Starting Point and Starting Elevation

Water surface elevation computations were started at a point about 2,000 ft. above the mouth of Nash Creek, 750 ft. downstream of the Corporative limit. The starting elevation was determined by convergence test as shown in Figure 1. For different starting elevations, the water surface profiles converge at the Division Street Bridge except for extremely high starting elevation. It is also noted that the surface water is confined to the channel upstream to the Union Street Bridge. Therefore the starting elevation at 736 ft. for 100-year was chosen in this study.

3. RESULTS AND DISCUSSIONS

3.1 Island Flows

A possible island flow was observed between the SECNO 7925 and SECNO 9425. The backwater through SECNO #6 to SECNO #1 was established (see computer printout (3-1)). If the water elevation at SECNO #1 equals to SECNO 9425, then the flow through SECNO #6 to SECNO #1 only contributes 160 cfs to the total flow of 1450 cfs. The effect on main backwater elevation through SECNO 7925 to SECNO 9425 is negligible.

A high land strip about 100 ft. wide on the left overbank from SECNO 9425 to SECNO 10325 causes the flow to be divided. The reach between SECNO 8800 to SECNO 10425, as shown in Figure 2, was modeled as island flow. The profiles through Channel A and Channel B were calculated separately. We started with the critical depth for Channel A as for overland flow. For Channel B the starting elevation was the elevation for total Q from previous backwater computations. Based on the fact that the water surface elevation at SECNO 10425 for both channels should be equal, the flow distribution could be easily determined as shown in Figure 3 (Chow's Open Channel Hydraulics, page 320-321, reference 3). Because of highly restricted channel portion between SECNO 10225 and SECNO 10425 of Channel B, a critical depth would be expected. From the computer printout, the SECNO 10325, indeed shows critical depth for all of the flows.

3.2 Floodway Delineations

Floodway delineations were performed by Method 1 through the examination of the flow distribuiton at each section. No attempt has been made to encroach the floodway inside the channel.

REFERENCE

1. Users Manual, HEC-2 Water Surface Profiles, Hydrological Engineering Center, Corps of Engineers, U.S. Army, August 1979.

2. Application of the HEC-2 Bridge Routines, Training Document No. 6, Hydrological Engineering Center, Corps of Engineers, U.S. Army, June 1974.

3. Open-Channel Hydraulics, Van Te Chow, McGraw-Hill, 1959.

TABLE 1

LOCATIONS OF CROSS SECTION

CROSS SECTION	SECNO	LOCATION
A	2000	2000' from the mouth to Rouge River starting elevation was determined by convergence test
B	2600	600' U/S from Section A, manufactured section from Section A by invert adjustment
C	3400	110' D/S from D/S face of Division St. Bridge
D	3500 3501 3502 3503	Division St. Bridge Multiple-Structural plate steel pipe - arches 20.4' x 13' Normal Bridge Routine
E	3570	60' U/S from U/S face of Division St., manufactured from a surveyed section 200' U/S
F	4000	105' D/S from D/S face of Loomis St. Bridge, manufactured from Section E by invert adjustment
G	4075 4076 4077 4078	Loomis St. Bridge Normal Bridge Routine
H	4175	115' U/S from U/S face of Loomis St. Bridge

TABLE 1 (continued)

DES SECTION	SECNO	LOCATION
I	4275 4276	C & O R.R. Bridge 7' pier, Special Bridge Routine
J	4375	85' U/S from U/S face of C & O R.R. Bridge
K	4700	435' U/S from U/S face of C & O R.R. Bridge, manufactured from Section J by invert adjustment
L	4750 4751 4752 4753	First Foot Bridge Normal Bridge Routine
M	4800	40' U/S from U/S face of First Foot Bridge manufactured from N by invert adjustment
N	5375	540' U/S from U/S face of First Foot Bridge
O	5475 5476 5477 5478	Union St. Bridge Normal Bridge Routine
P	5575	60' U/S from U/S face of Union St. Bridge.
Q	6325	735' U/S from U/S face of Union St. Bridge. The skew has been corrected in the coding.
R	6575 6576	State St. Bridge Triple-Culverts, one 65" cmp. Multiple-Structural plate steel pipe - Arches 8'-7" x 5'-11". Pressure and weir flow. Special Bridge Routine hand calculation for XKOP included. Culverts along the flow line, no adjustment for bridge skew.

TABLE 1 (continued)

CROSS SECTION	SECNO	LOCATION
S	6675 6676 6677 6678	First Low Dam Multiple pipes, 12" and 18" under the top of dam High submerged. Normal Bridge Routine
T	6700	50' U/S from U/S face of First Low Dam, manufactured from SECNO 6675
U	7925	850' U/S from U/S face of First Low Dam
V	8800	1550' U/S from U/S face of First Low Dam
W	9350	70' D/S from D/S face of Second Foot Bridge manufactured from SECNO 9425
X	9425 9426	Second Foot Bridge Special Bridge Routine Narrow, XKOR = 1.5
Y	9427	30' U/S from U/S face of Second Foot Bridge manufactured from SECNO 9425
Z	9558 9559 9560 9561	Second Low Dam high submerged, coded as Step Dam
AA	9600	40' U/S from U/S face of Second Low Dam
AB	9850	290' U/S from U/S face of Second Low Dam manufactured from topographic map
AC	10225	100' D/S from D/S face of Third Foot Bridge

TABLE 1 (continued)

CROSS SECTION	SECNO	LOCATION
AD	10325 10326 10327 10328	Third Foot Bridge high LOB flow, coded by Normal Bridge Routine
AL	10425	100' U/S from U/S face of Third Foot Bridge

Mark Creek - Spartan

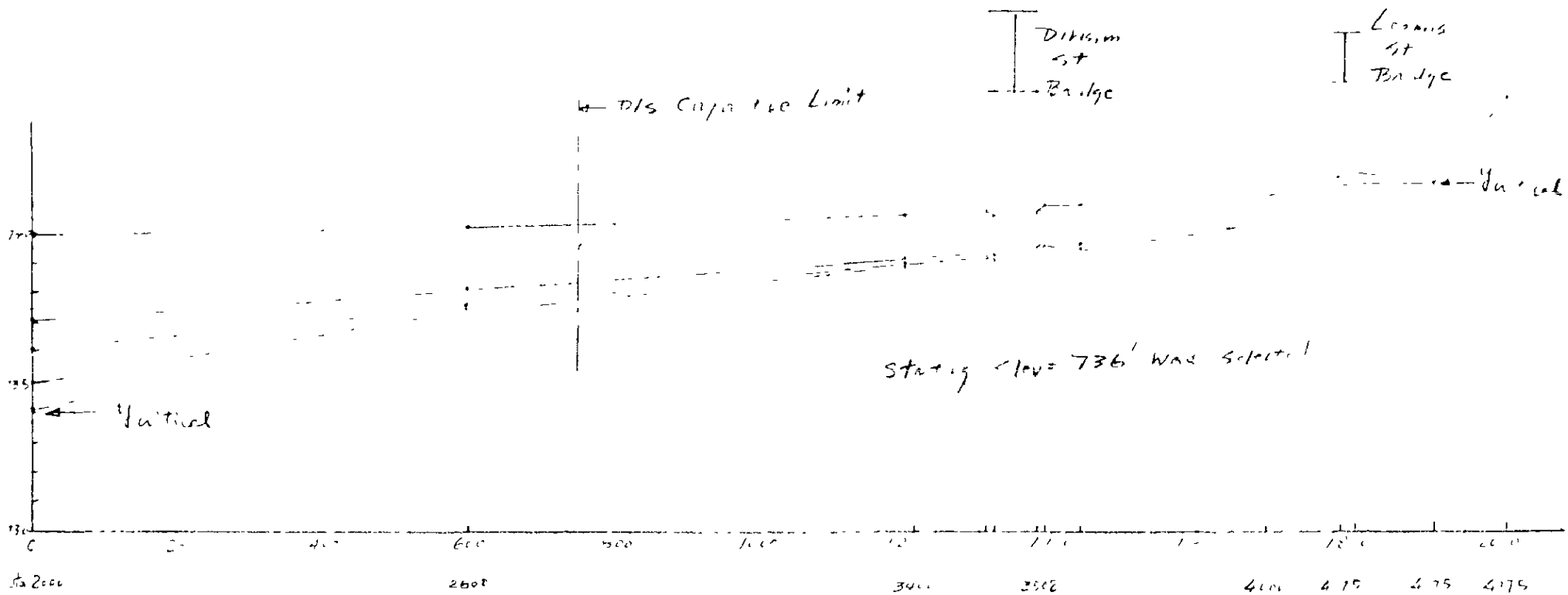
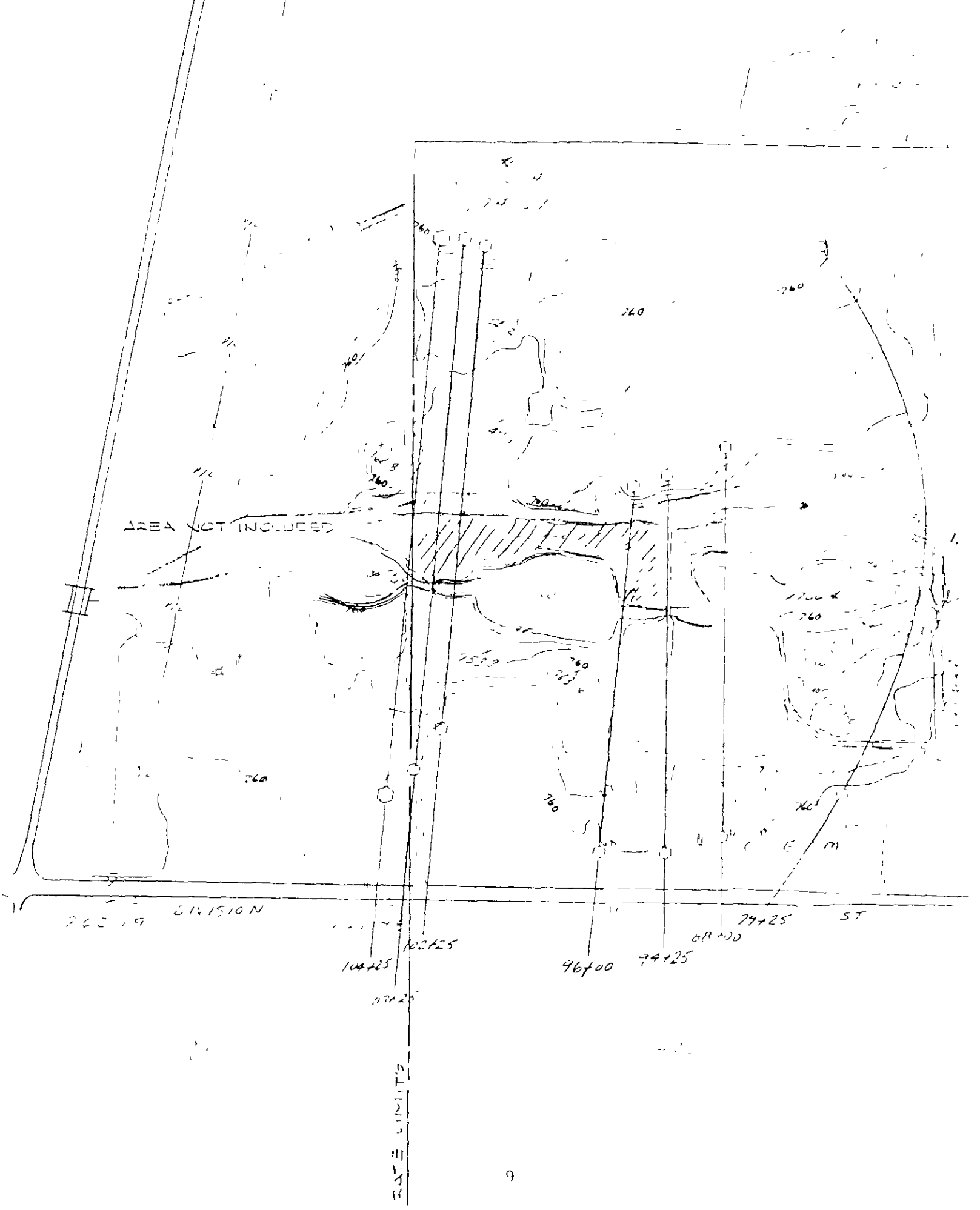


Fig 1. Convergence Test for 100 year flood


AREA NOT INCLUDED
760
DIVISION
ST
104+25
102+25
96+00
94+25
79+25
RATE LIMITS

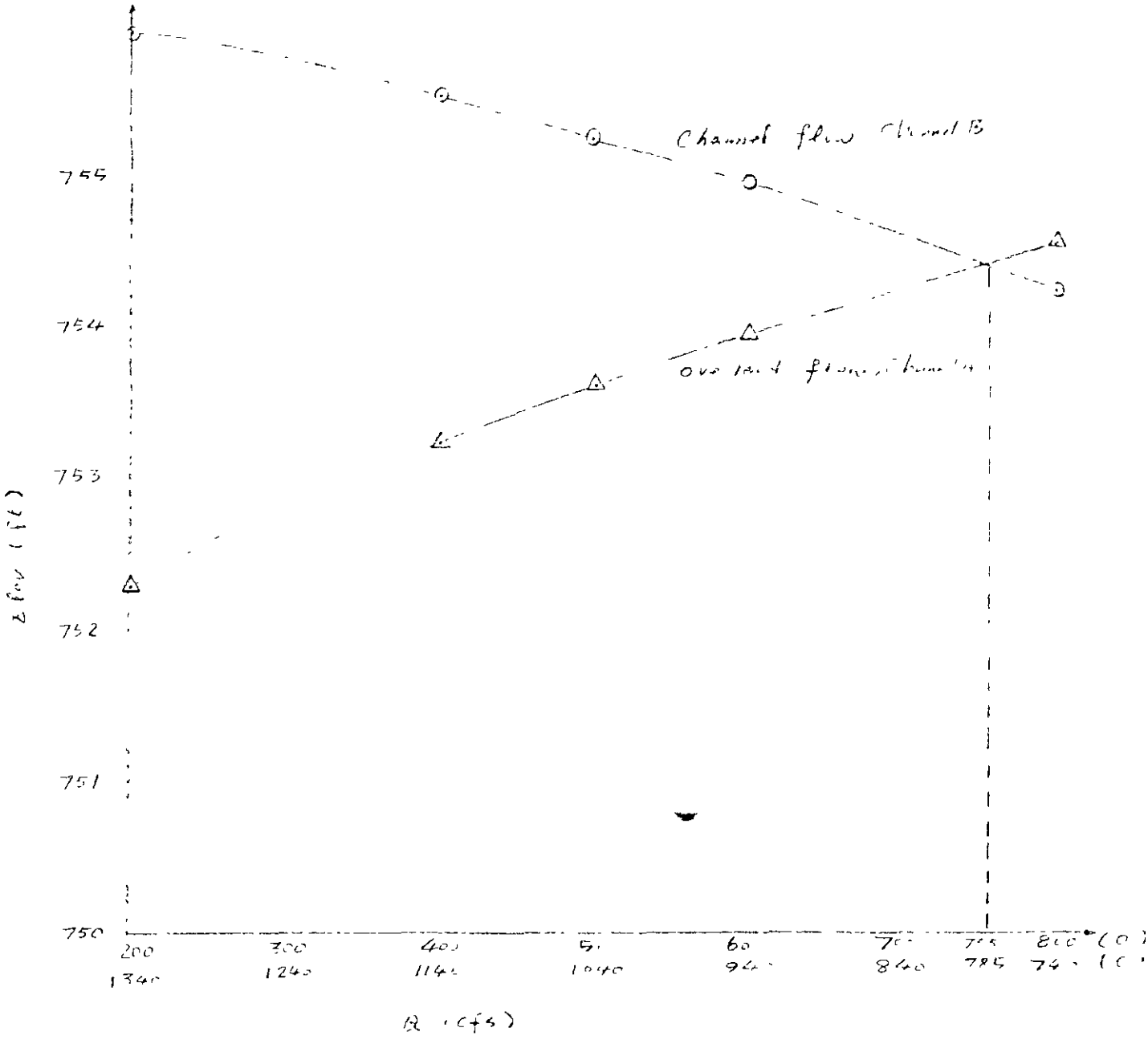


Fig 3 Rating Curve at Station 10425

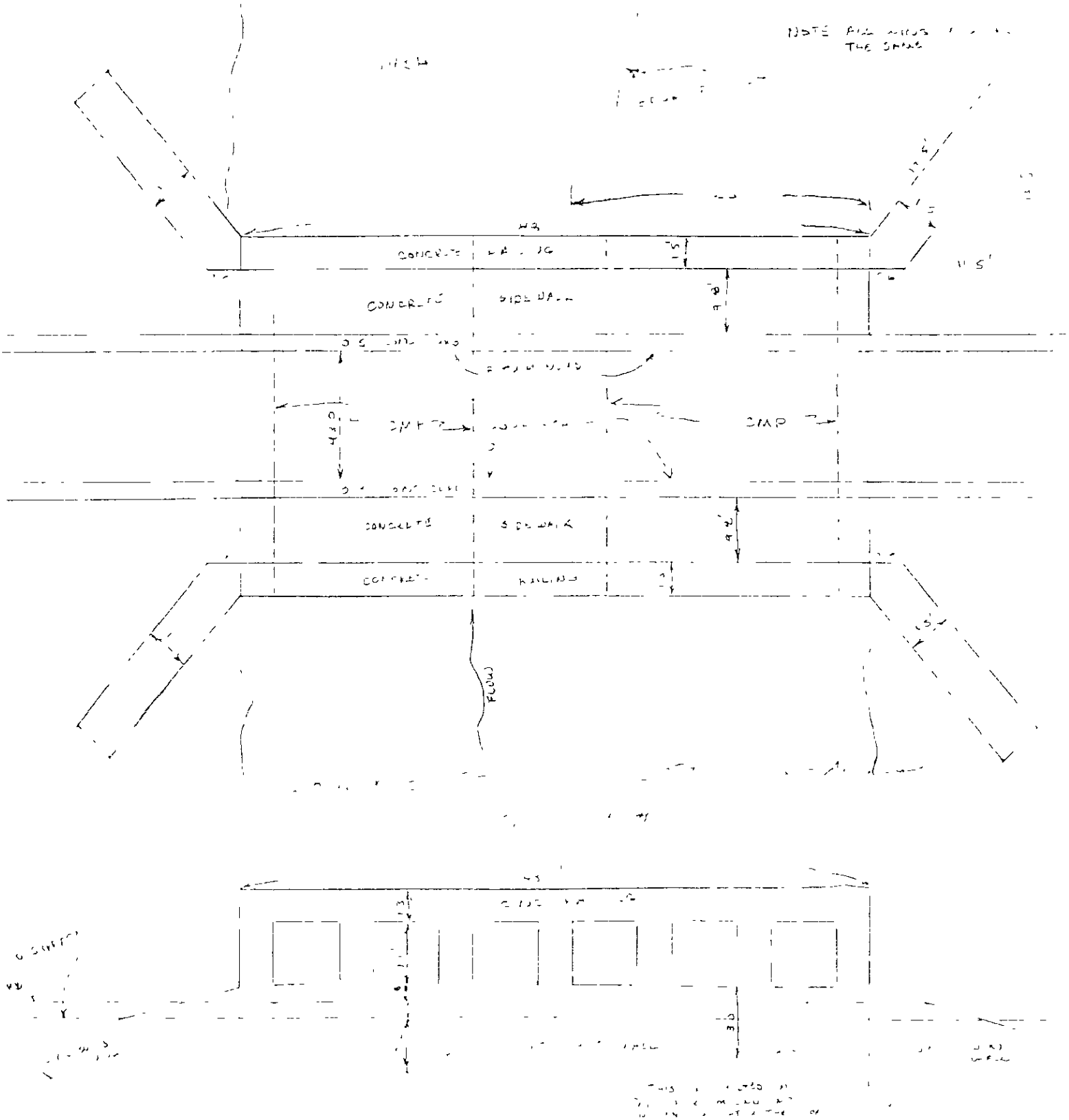
BRIDGE DATA

SUBJECT Bridge [illegible] @ [illegible]

PROJ NO [illegible] SH NO

DESIGN DATE

CHECK [illegible] DATE [illegible]



SUBJECT

PROJ NO

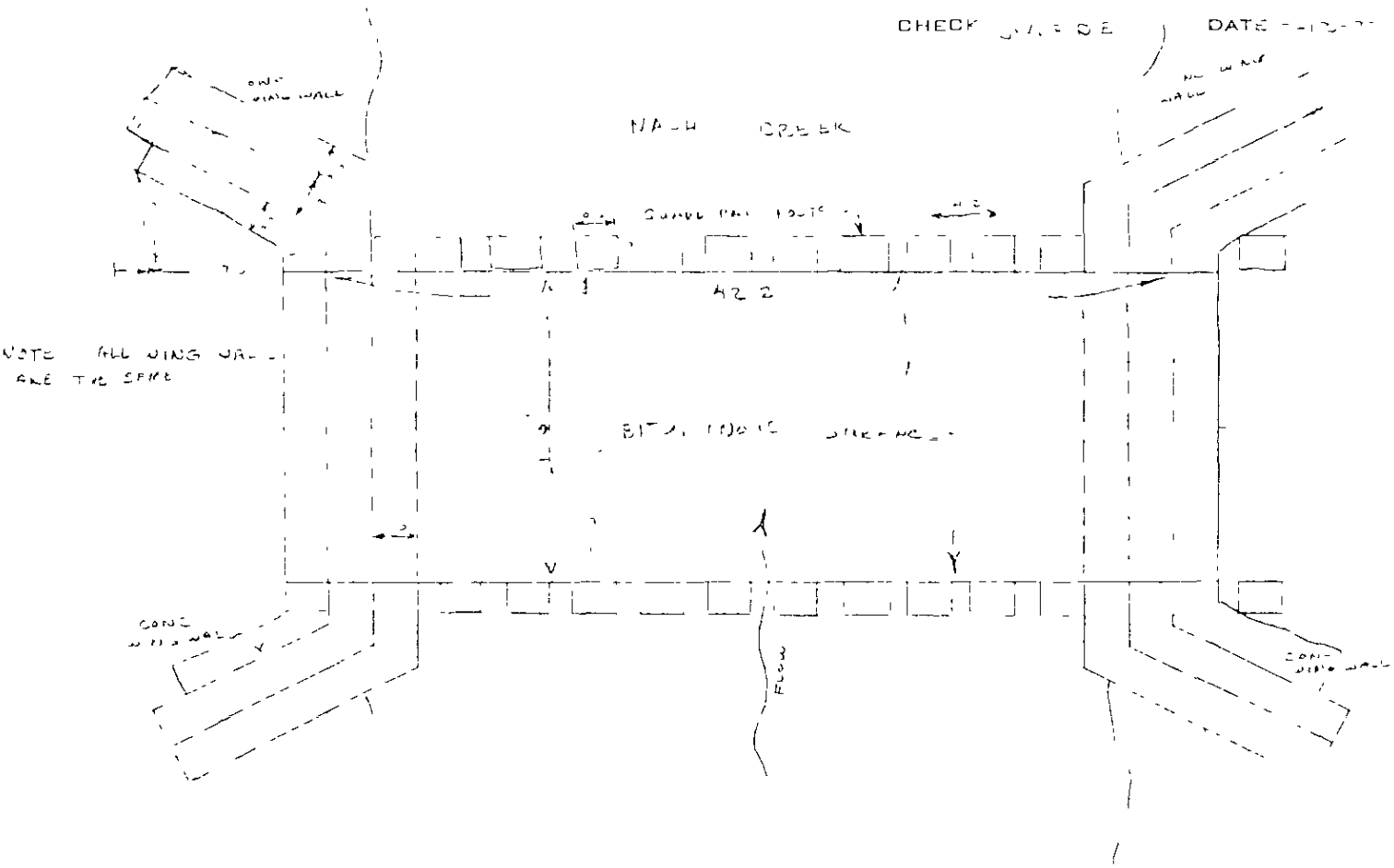
SH NO

DESIGN

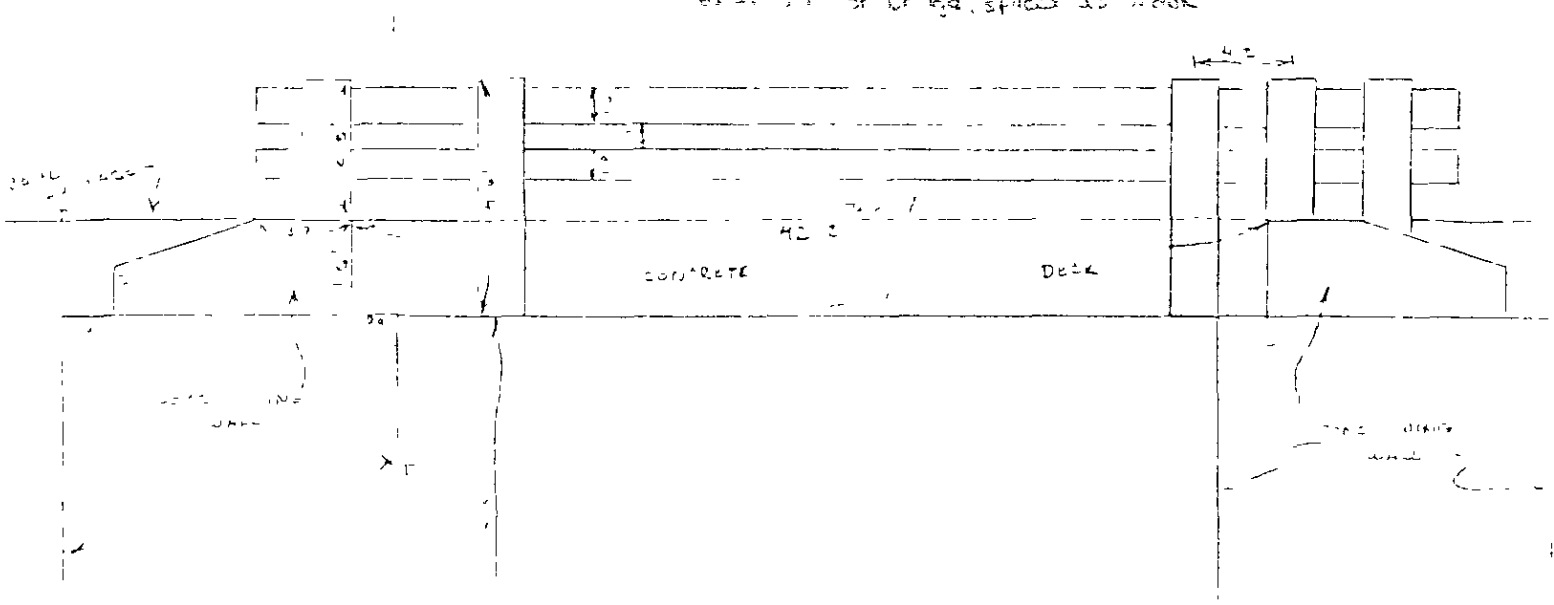
DATE

CHECK

DATE



NOTE: THERE ARE 13 [illegible]

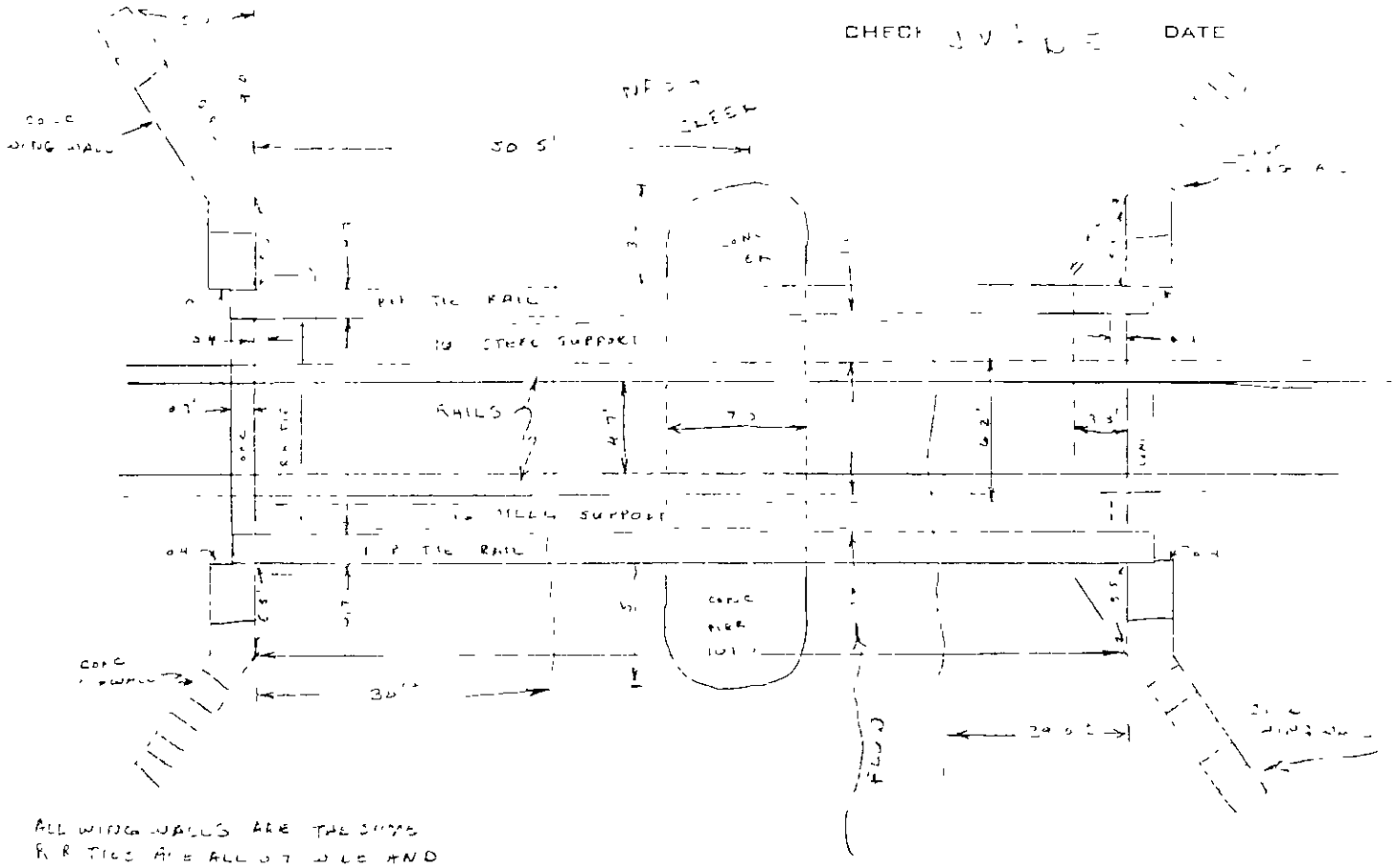


SUBJECT BRIDGE [illegible] @ STA [illegible]

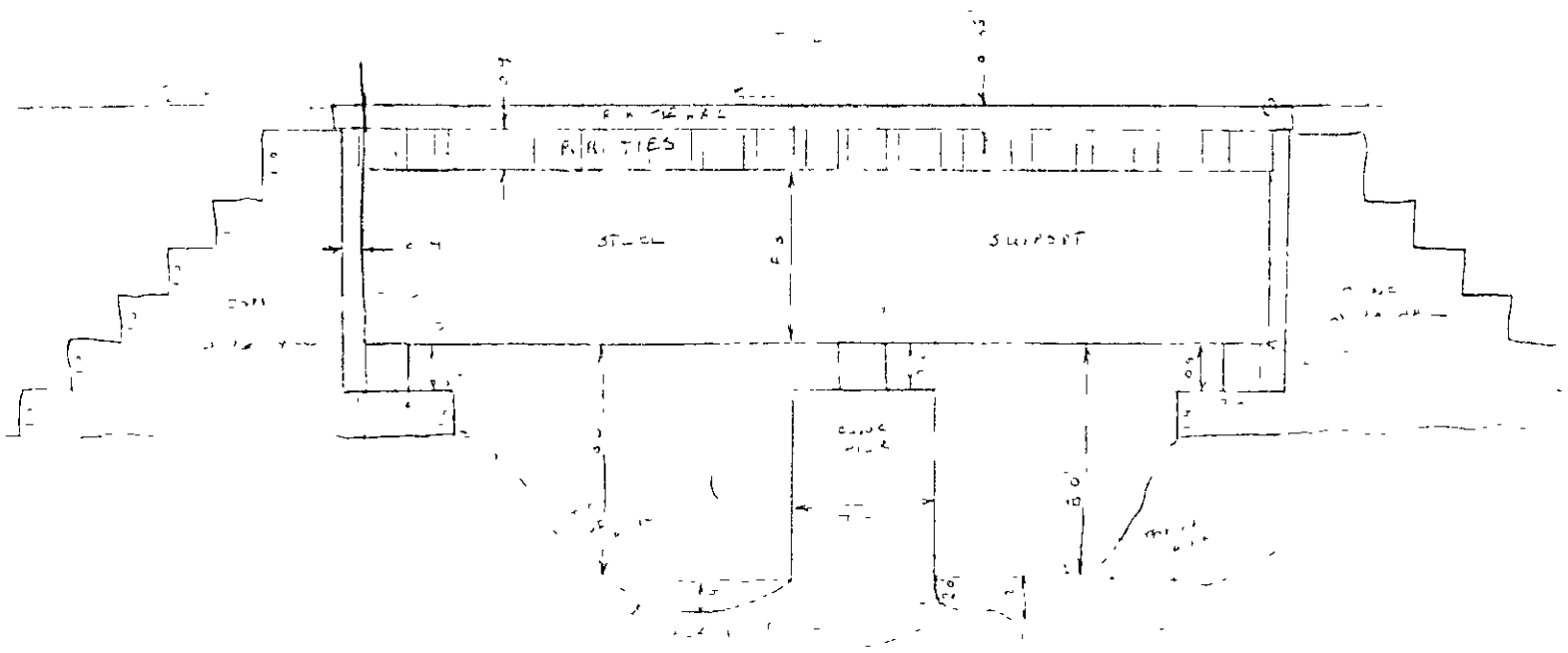
PROJ NO [illegible] SH NO

DESIGN DATE [illegible]

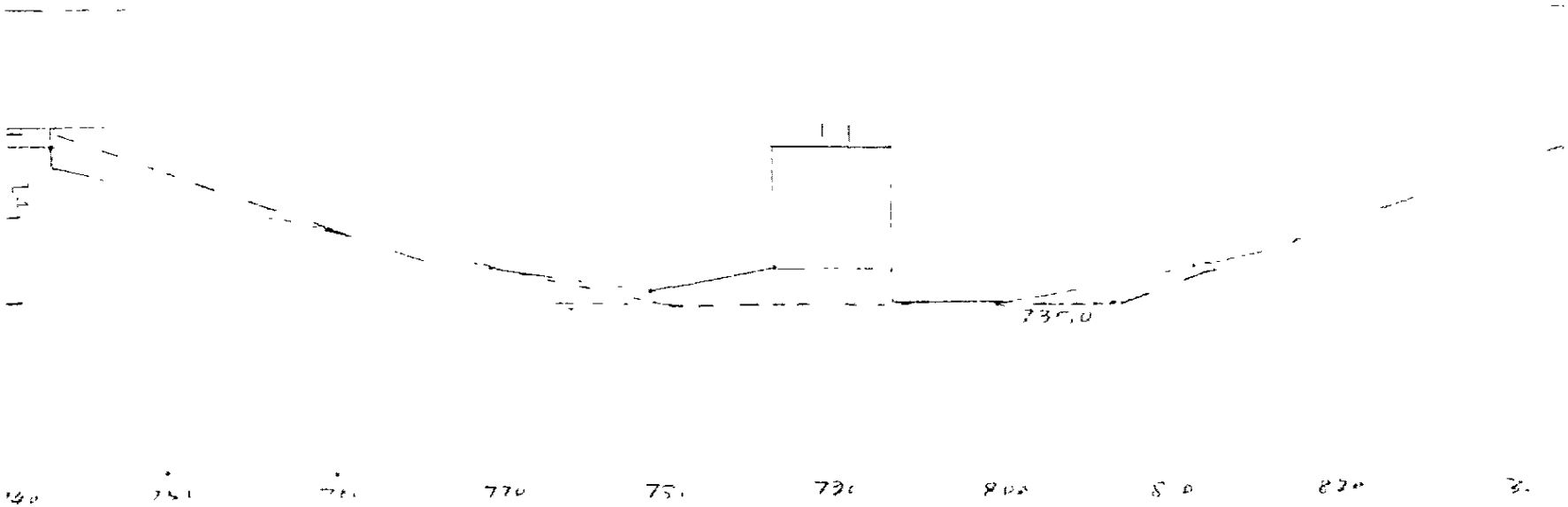
CHECK [illegible] DATE



NOTE ALL WING WALLS ARE THE SAME
R R TIES ARE ALL [illegible] WIDE AND
SPACED APPROX [illegible] APART



SM 4275



SB		15	25	0	34	7	513.8	0.33	735	735

SUBJECT [illegible] STA [illegible]

PROJ. NO [illegible]

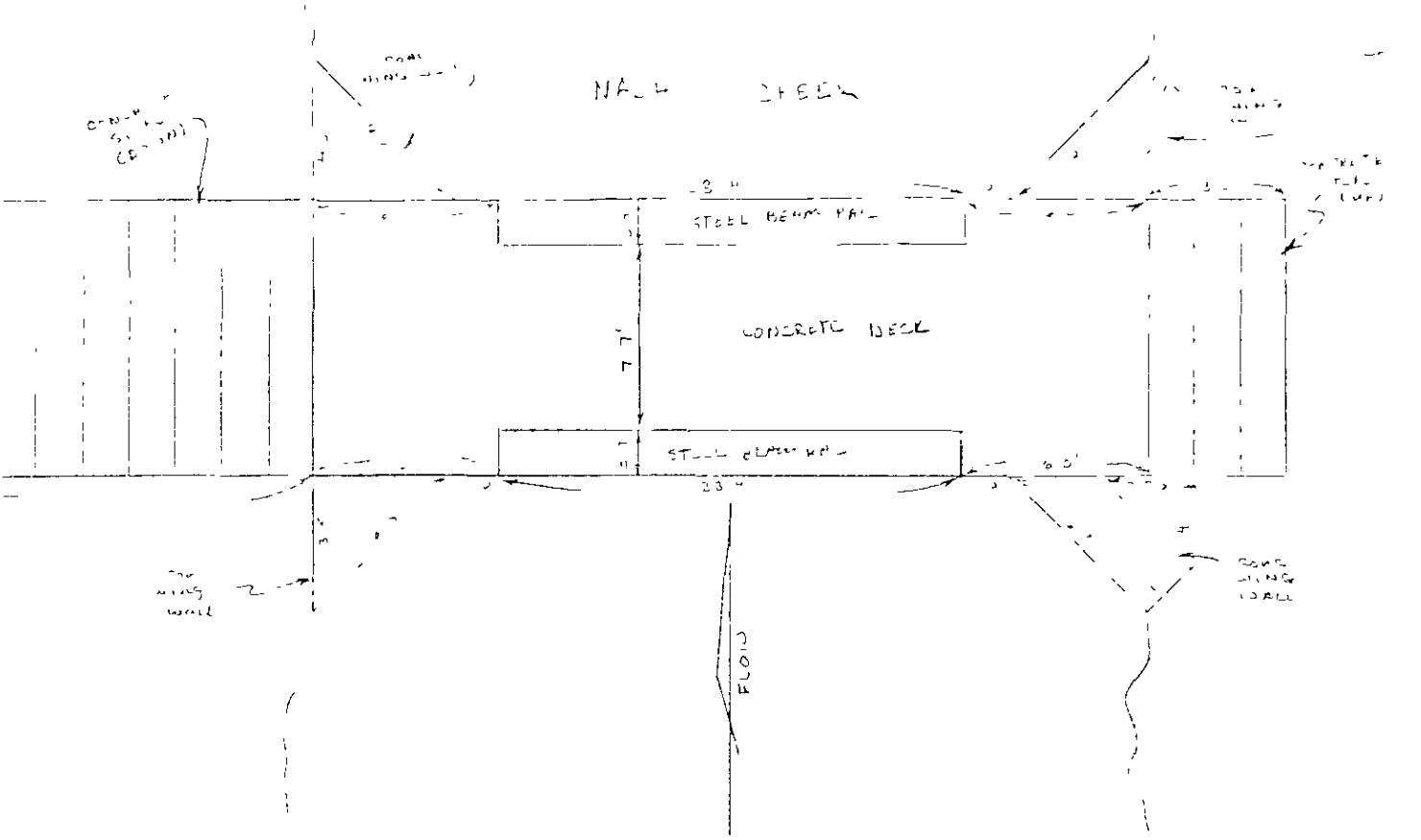
SH NO

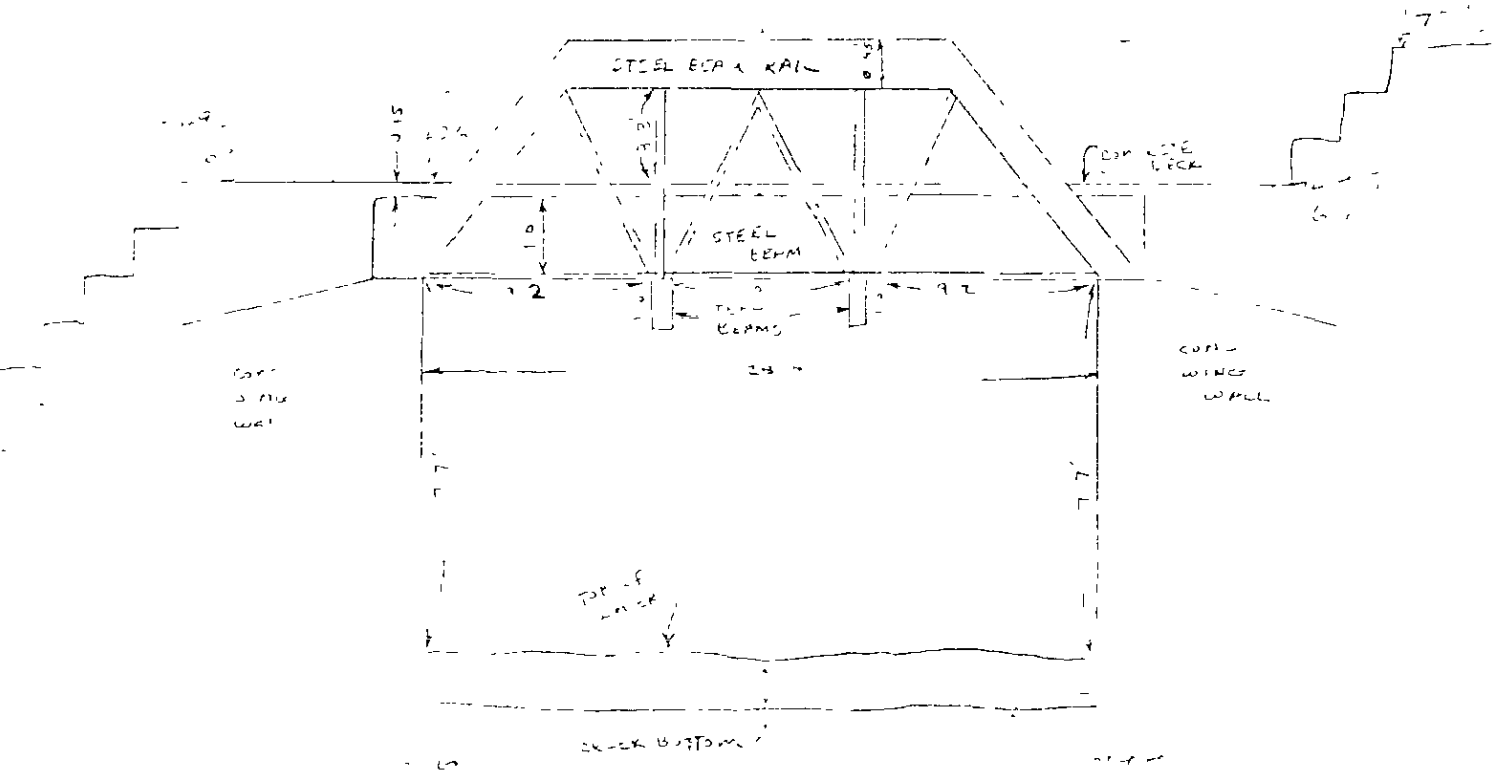
DESIGN

DATE

CHECK J V [illegible]

DATE 3-3-7[illegible]





SUBJECT

PROJ NO

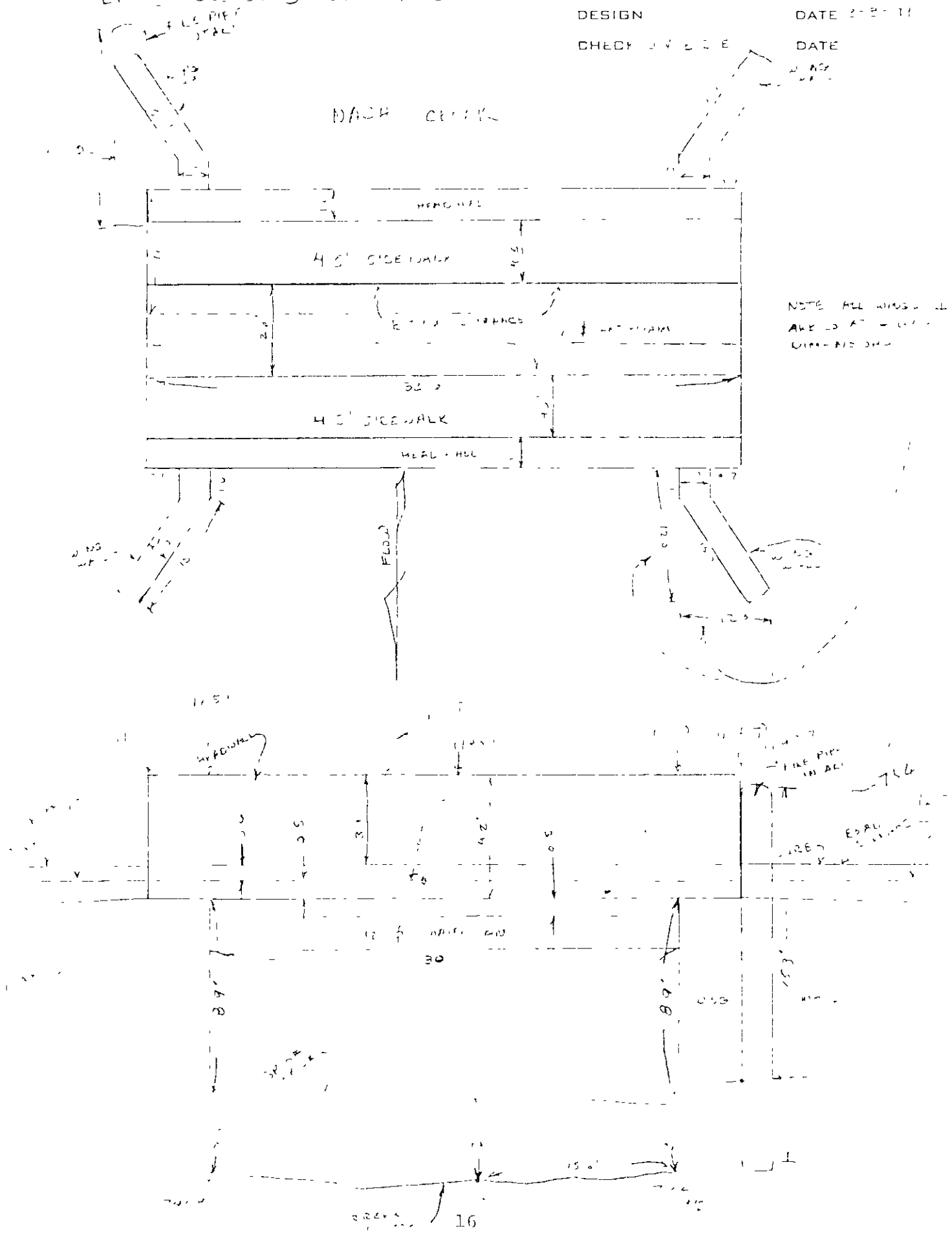
SH NO

DESIGN

DATE

CHECK

DATE

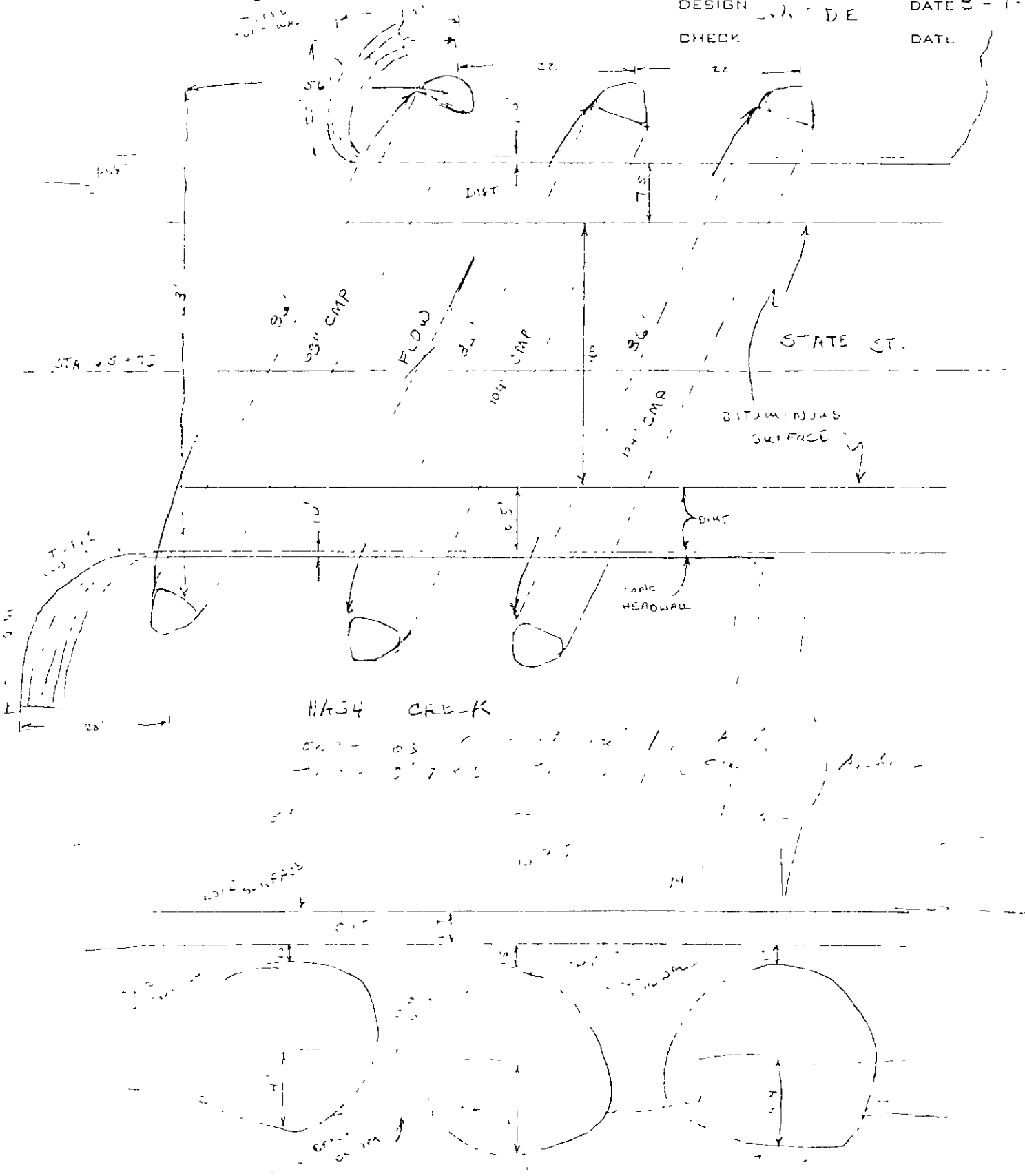


SUBJECT Bridge Section @ 45+75

PROJ NO 2538 SH NO

DESIGN DE DATE 3-7-

CHECK DATE



CULVERT DATA

COMMUNITY [illegible] PROJ NO [illegible] DATE

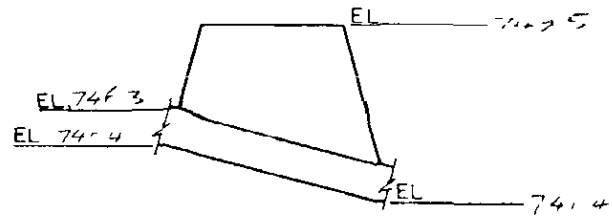
WATERCOURSE [illegible] DESIGN [illegible]

CULVERT LOCATION:

[illegible]

CULVERT DESCRIPTION

[illegible]



A = A_1 = 14.3, A_2 = [illegible]

W. P. = WP$_1$ = 14.1, P_2 = [illegible]

R = R_1 = [illegible], R_2 = [illegible]

n = n_1 = 0.024, n_2 = 0.32

Ke = 0.5

$\frac{29.1}{R^{4/3}}$ = [illegible]

So = —

L = 86

Sta. 6576

Sta 6575

$K_f = 29.1\, n^2\, L / R^{4/3}$

$X_{KOR} = 1 + Ke + K_f$

WEIR DESCRIPTION:

35° [illegible] with the [illegible] = [illegible]

[illegible]

K_e = 1.3

K_{f_2} = 1.6

K_1 = [illegible] = 2.9

K_2 = [illegible] = 2.76

A_T^2 = [illegible]

$\frac{A^2}{R^{4/3}}$ = [illegible] − 2 [illegible] = [illegible]

∴ K_{f_2} = 2.76

CEFR - 2.5

SUBJECT Crosssection of Dam @ STA 16+75

PROJ NO 8568

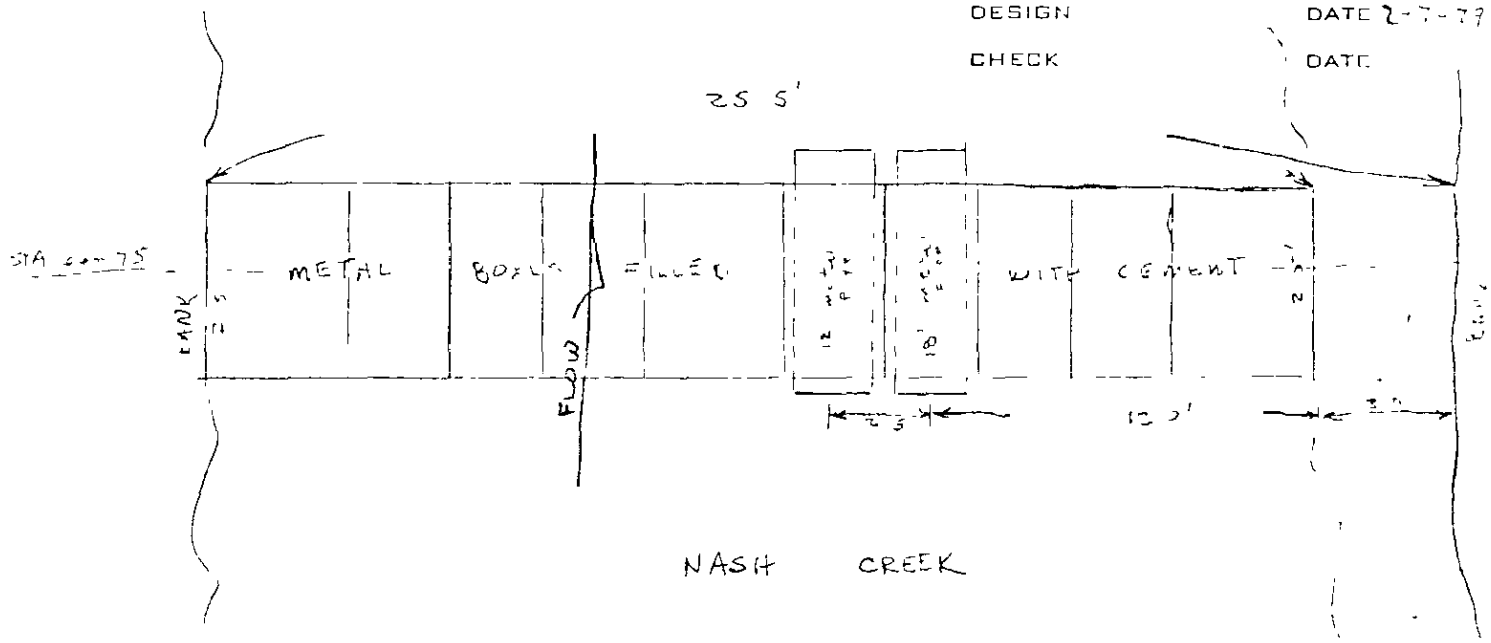
DESIGN

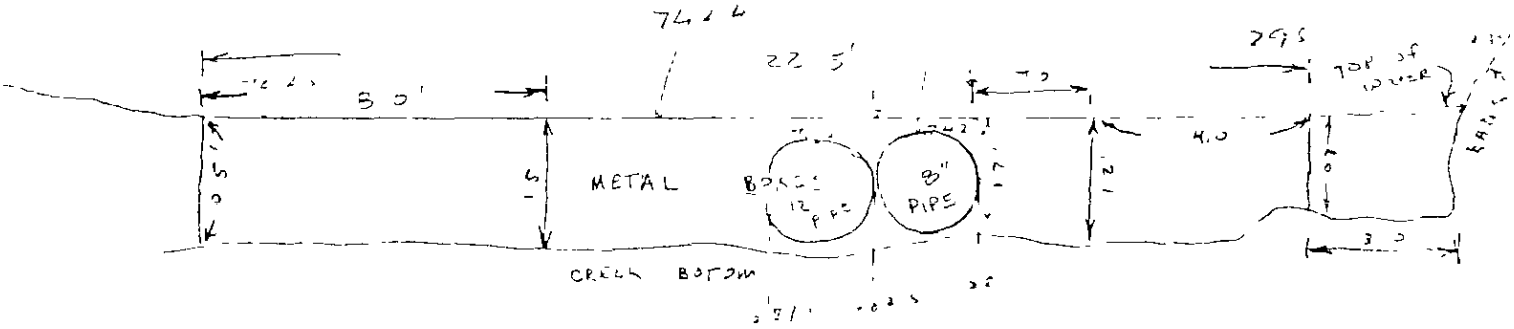
CHECK

SH. NO

DATE 2-7-79

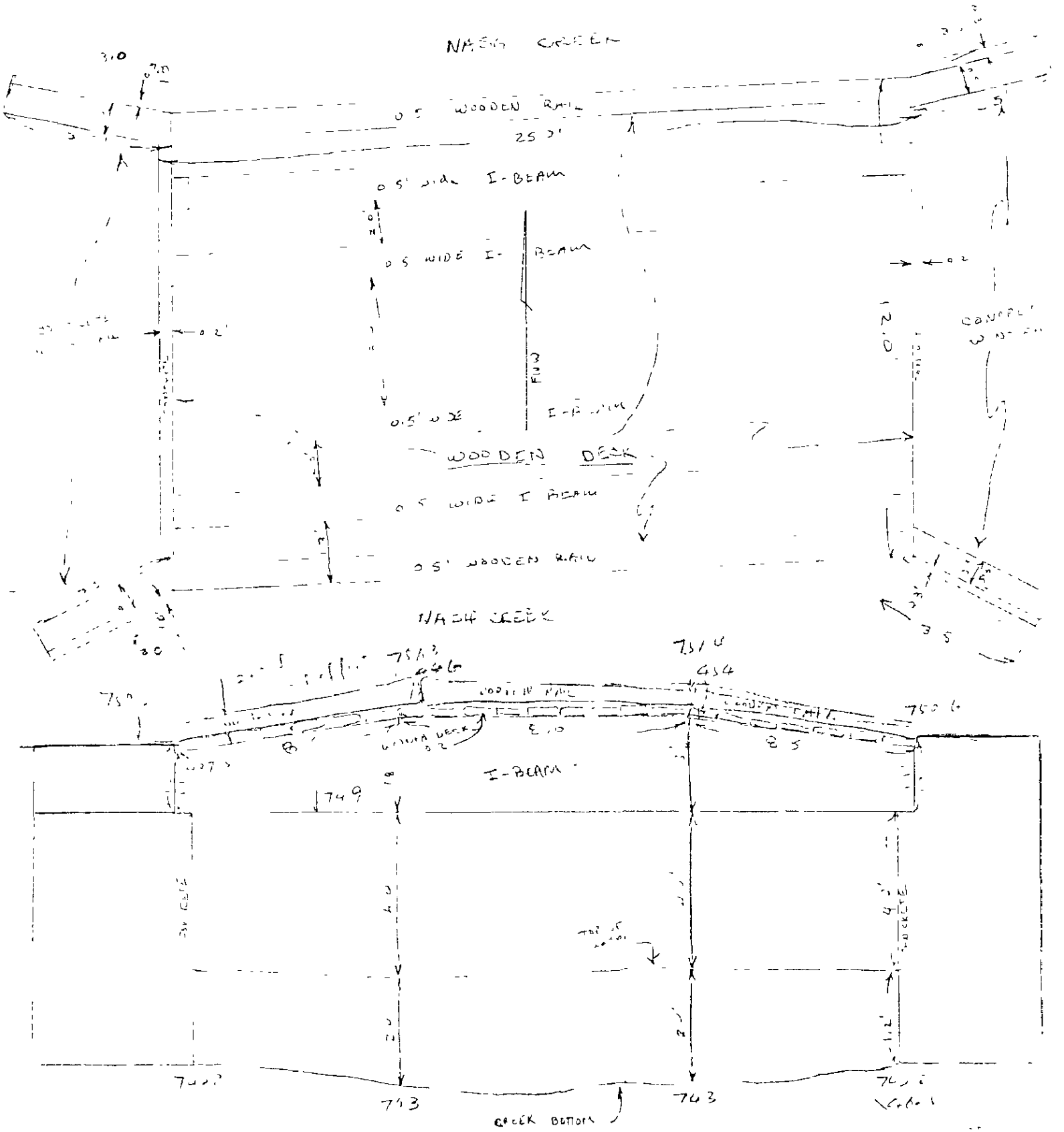
DATE





SUBJECT Bridge Survey STA 94+25

PROJ NO. | SH NO
DESIGN | DATE
CHECK | DATE

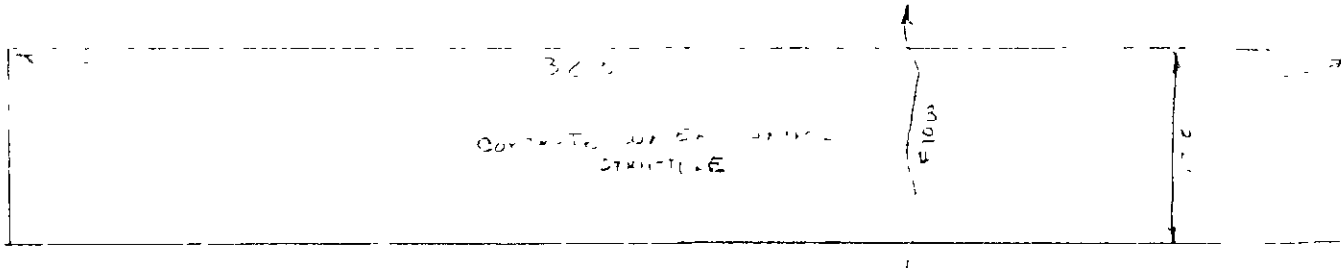


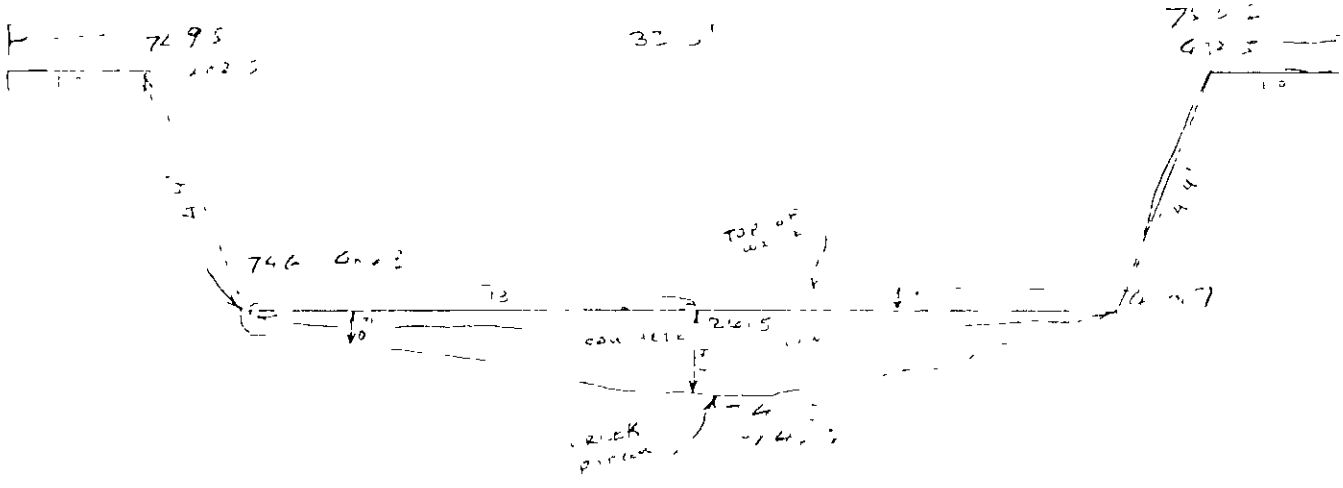
SUBJECT Dam Section

PROJ. NO 85103 SH NO

DESIGN DATE

CHECK DATE





Note Dam is 133 upstream from bridge at Sta 9+25

SUBJECT BRIDGE [illegible] STA [illegible]

PROJ NO [illegible]

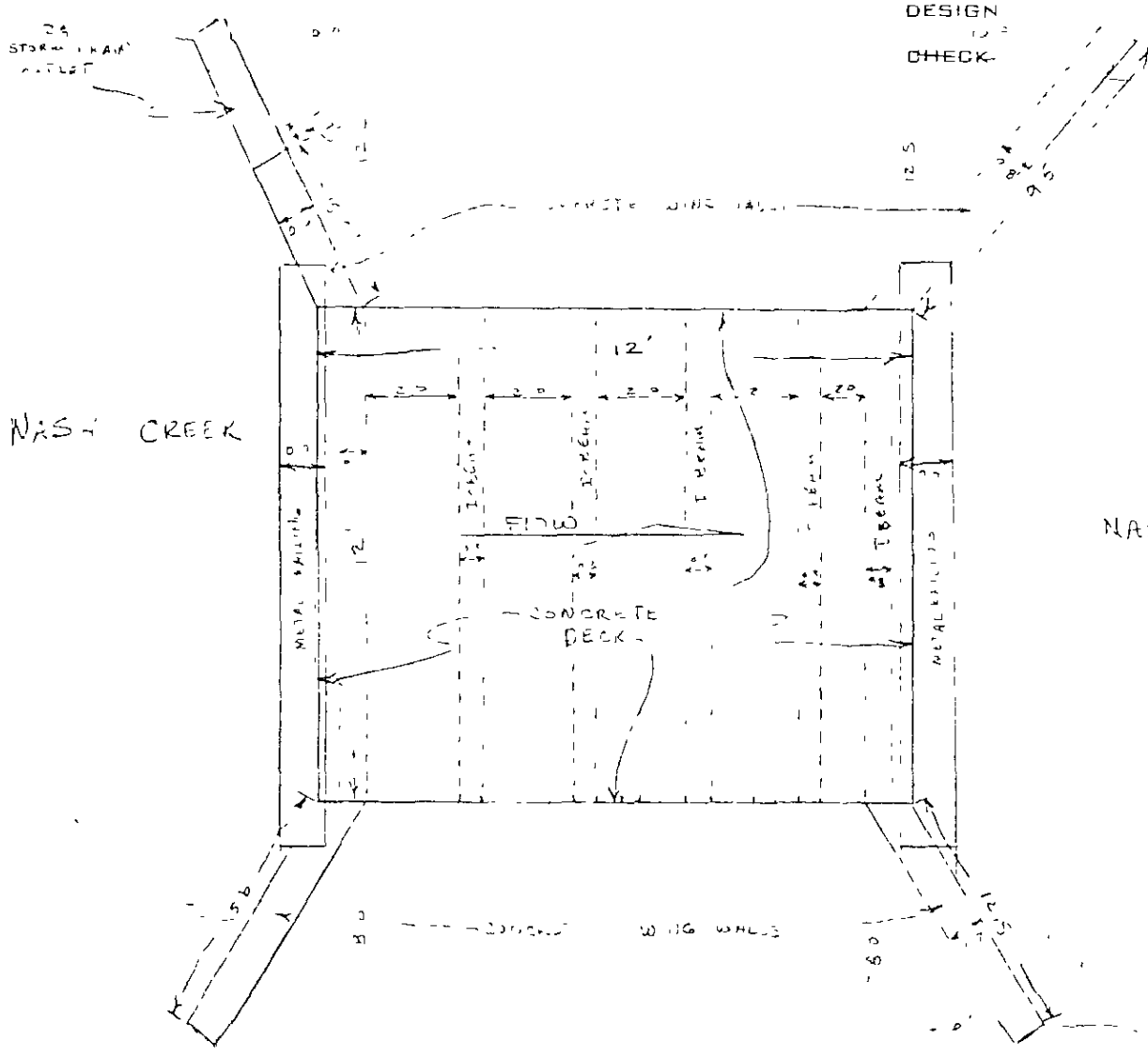
DESIGN

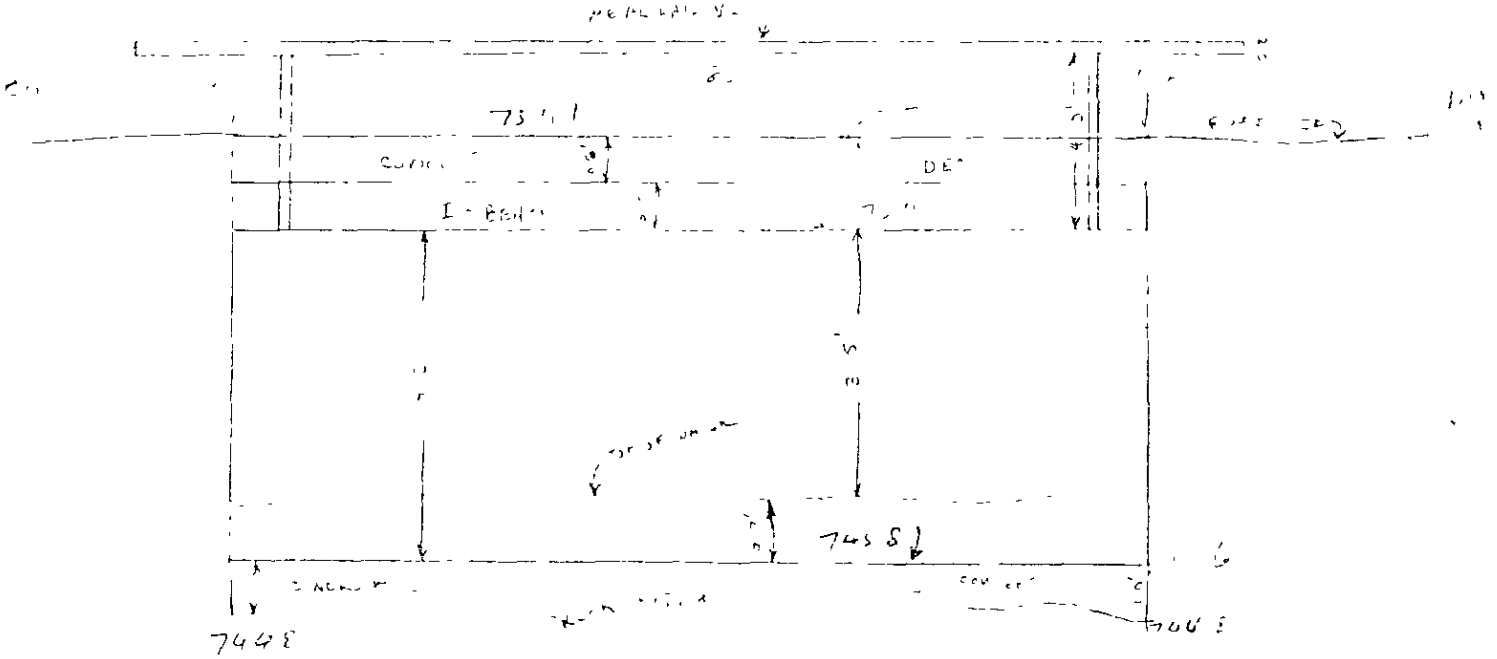
CHECK

SH. NO

DATE

DATE





00BREAK00

1) COUNTY: KENT

2) STUDY NAME: SPARTA, VILLAGE OF

3) WATERCOURSE: NASH CREEK

4) DOCUMENT TYPE: SUMMARY TABLES

00BREAK00

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

NASH CREEK

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
2000.000	0.0	0.0	0.0	729.00	1010.00	734.40	0.0	735.04	27.86	6.41	157.47	191.36
2000.000	0.0	0.0	0.0	729.00	1400.00	735.40	0.0	736.19	28.19	7.14	196.10	263.66
2000.000	0.0	0.0	0.0	729.00	1625.00	736.00	0.0	736.84	27.88	7.37	220.40	307.76
2000.000	0.0	0.0	0.0	729.00	2100.00	737.09	0.0	738.04	27.95	7.80	269.32	397.20
2600.000	600.00	0.0	0.0	729.85	1010.00	735.91	0.0	736.38	18.04	5.53	182.67	237.81
2600.000	600.00	0.0	0.0	729.85	1400.00	737.01	0.0	737.60	19.20	6.17	226.99	319.47
2600.000	600.00	0.0	0.0	729.85	1625.00	737.61	0.0	738.25	19.45	6.40	253.97	368.50
2600.000	600.00	0.0	0.0	729.85	2100.00	738.74	0.0	739.46	19.71	6.81	308.58	473.06
3400.000	610.00	0.0	0.0	730.70	1010.00	737.29	0.0	737.91	34.68	6.33	159.61	171.50
3400.000	610.00	0.0	0.0	730.70	1400.00	738.38	0.0	739.07	29.71	6.66	210.15	256.86
3400.000	610.00	0.0	0.0	730.70	1625.00	738.96	0.0	739.68	27.52	6.80	239.09	309.78
3400.000	610.00	0.0	0.0	730.70	2100.00	740.04	0.0	740.82	24.85	7.09	296.04	421.27
3500.000	100.00	0.0	0.0	732.80	1010.00	737.74	0.0	738.25	26.25	5.74	175.99	197.15
3500.000	100.00	0.0	0.0	732.80	1400.00	738.72	0.0	739.35	24.55	6.36	220.00	282.55
3500.000	100.00	0.0	0.0	732.80	1625.00	739.25	0.0	739.94	23.96	6.68	243.27	331.97
3500.000	100.00	0.0	0.0	732.80	2100.00	740.26	0.0	741.08	23.19	7.28	288.64	436.04
3501.000	10.00	745.40	748.20	732.80	1010.00	737.74	0.0	738.29	22.52	5.97	169.09	212.81
3501.000	10.00	745.40	748.20	732.80	1400.00	738.71	0.0	739.42	22.64	6.77	206.83	294.22
3501.000	10.00	745.40	748.20	732.80	1625.00	739.21	0.0	740.02	28.31	7.23	224.85	305.42
3501.000	10.00	745.40	748.20	732.80	2100.00	740.17	0.0	741.23	31.97	8.26	254.38	371.41
3502.000	60.00	745.40	748.20	732.80	1010.00	737.92	0.0	738.43	19.71	5.73	176.24	227.50
3502.000	60.00	745.40	748.20	732.80	1400.00	738.90	0.0	739.56	20.22	6.53	214.27	311.35
3502.000	60.00	745.40	748.20	732.80	1625.00	739.44	0.0	740.20	25.71	7.01	231.77	320.49
3502.000	60.00	745.40	748.20	732.80	2100.00	740.44	0.0	741.43	28.91	8.00	262.61	390.55
3503.000	10.00	0.0	0.0	732.80	1010.00	738.03	0.0	738.47	20.85	5.34	188.96	221.18
3503.000	10.00	0.0	0.0	732.80	1400.00	739.06	0.0	739.61	19.82	5.95	235.18	314.47
3503.000	10.00	0.0	0.0	732.80	1625.00	739.68	0.0	740.27	18.77	6.19	262.59	375.08
3503.000	10.00	0.0	0.0	732.80	2100.00	740.85	0.0	741.54	17.54	6.66	315.21	501.35
3570.000	50.00	0.0	0.0	731.80	1010.00	737.96	0.0	738.32	41.71	7.44	135.71	156.38
3570.000	50.00	0.0	0.0	731.80	1400.00	738.97	0.0	739.98	40.72	8.06	173.65	219.39
3570.000	50.00	0.0	0.0	731.80	1625.00	739.58	0.0	740.62	38.02	8.18	198.60	263.53
3570.000	50.00	0.0	0.0	731.80	2100.00	740.77	0.0	741.86	33.52	8.36	251.17	362.70

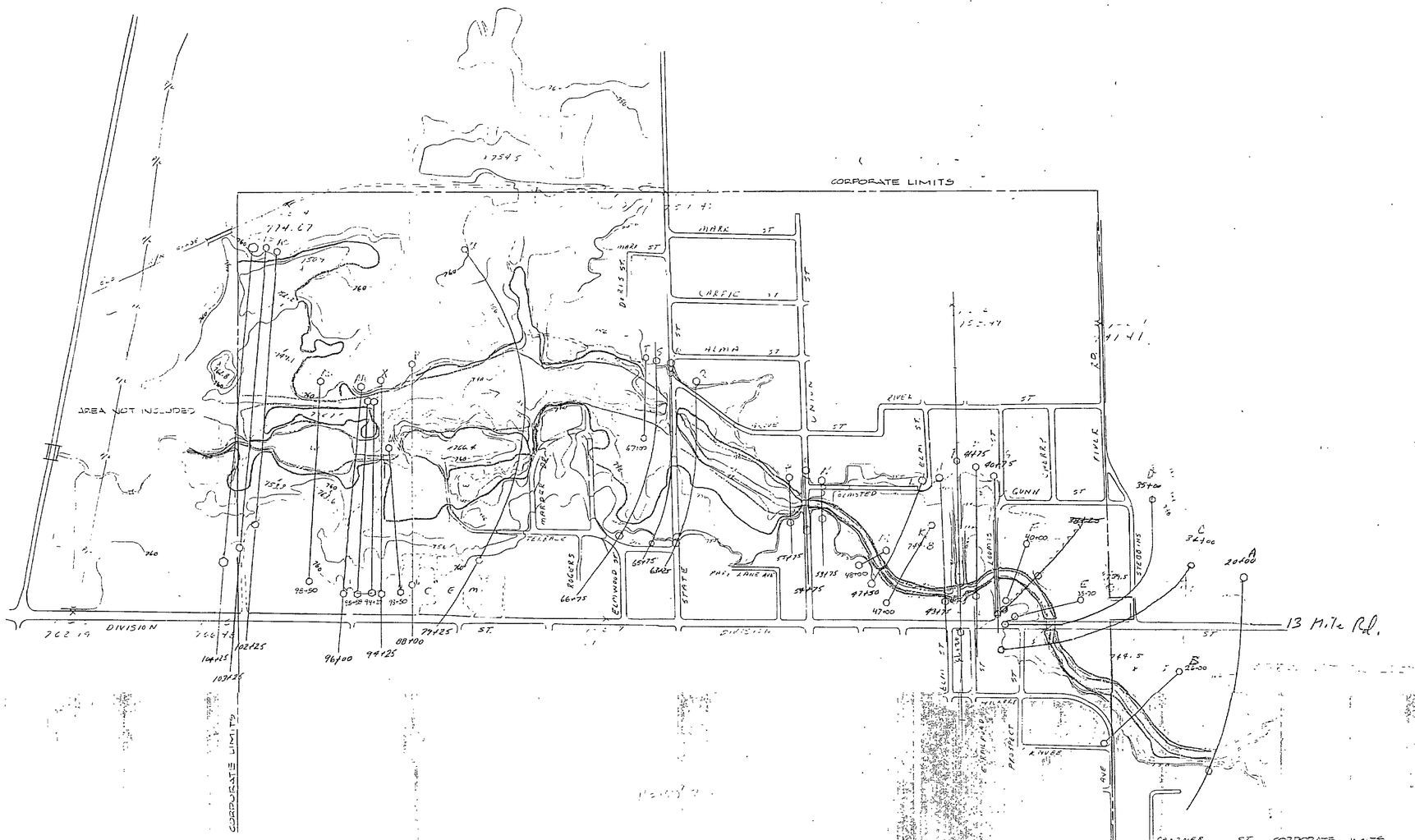
	SECNO	XLCH	ELTRO	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	4000.000	250.00	0.0	0.0	733.40	1010.00	739.02	0.0	740.18	62.65	8.62	117.13	127.60
	4000.000	250.00	0.0	0.0	733.40	1400.00	739.96	0.0	741.31	60.38	9.31	150.42	180.17
	4000.000	250.00	0.0	0.0	733.40	1625.00	740.48	0.0	741.90	58.01	9.55	170.14	213.35
	4000.000	250.00	0.0	0.0	733.40	2100.00	741.51	0.0	743.03	52.87	9.89	212.41	288.82
	4075.000	100.00	0.0	0.0	735.90	1010.00	740.21	0.0	740.75	27.13	5.92	170.50	193.89
	4075.000	100.00	0.0	0.0	735.90	1400.00	741.21	0.0	741.90	27.02	6.63	211.02	269.33
	4075.000	100.00	0.0	0.0	735.90	1625.00	741.71	0.0	742.48	27.55	7.03	231.19	309.57
	4075.000	100.00	0.0	0.0	735.90	2100.00	742.63	0.0	743.58	29.32	7.82	268.37	387.83
	4076.000	5.00	746.70	745.10	735.90	1010.00	740.23	0.0	740.77	26.66	5.89	171.46	195.60
	4076.000	5.00	746.70	745.10	735.90	1400.00	741.23	0.0	741.91	26.65	6.60	211.97	271.20
	4076.000	5.00	746.70	745.10	735.90	1625.00	741.73	0.0	742.49	27.22	7.00	232.12	311.47
	4076.000	5.00	746.70	745.10	735.90	2100.00	742.65	0.0	743.60	29.03	7.80	269.26	389.75
	4077.000	20.00	746.70	745.10	735.90	1010.00	740.31	0.0	740.83	25.26	5.79	174.47	200.95
	4077.000	20.00	746.70	745.10	735.90	1400.00	741.31	0.0	741.97	25.48	6.51	215.10	277.33
	4077.000	20.00	746.70	745.10	735.90	1625.00	741.81	0.0	742.55	26.08	6.90	235.41	318.19
	4077.000	20.00	746.70	745.10	735.90	2100.00	742.74	0.0	743.66	27.85	7.69	273.00	397.90
	4078.000	5.00	0.0	0.0	735.90	1010.00	740.32	0.0	740.84	25.03	5.77	175.00	201.90
	4078.000	5.00	0.0	0.0	735.90	1400.00	741.33	0.0	741.98	25.30	6.49	215.60	278.33
	4078.000	5.00	0.0	0.0	735.90	1625.00	741.83	0.0	742.57	25.91	6.89	235.93	319.26
	4078.000	5.00	0.0	0.0	735.90	2100.00	742.76	0.0	743.68	27.68	7.68	273.56	399.13
*	4175.000	110.00	0.0	0.0	734.90	1010.00	740.30	740.30	742.09	103.40	10.74	94.04	99.32
*	4175.000	110.00	0.0	0.0	734.90	1400.00	741.27	741.27	743.34	98.13	11.55	121.21	141.32
*	4175.000	110.00	0.0	0.0	734.90	1625.00	741.75	741.75	743.98	97.20	11.99	135.52	164.83
*	4175.000	110.00	0.0	0.0	734.90	2100.00	742.67	742.67	745.20	95.47	12.77	164.50	214.93
	4275.000	100.00	0.0	0.0	735.00	1010.00	742.60	0.0	742.69	2.95	2.37	426.53	587.60
	4275.000	100.00	0.0	0.0	735.00	1400.00	743.91	0.0	744.01	2.64	2.56	547.78	861.95
	4275.000	100.00	0.0	0.0	735.00	1625.00	744.58	0.0	744.69	2.58	2.65	612.09	1011.68
	4275.000	100.00	0.0	0.0	735.00	2100.00	745.86	0.0	745.99	2.43	2.86	733.90	1346.36
	4276.000	10.00	752.20	745.20	735.00	1010.00	742.61	0.0	742.70	2.93	2.36	427.62	589.64
	4276.000	10.00	752.20	745.20	735.00	1400.00	743.92	0.0	744.02	2.62	2.55	549.22	865.55
	4276.000	10.00	752.20	745.20	735.00	1625.00	744.60	0.0	744.71	2.56	2.65	613.25	1014.70
	4276.000	10.00	752.20	745.20	735.00	2100.00	746.13	0.0	746.25	2.18	2.76	759.74	1421.31
	4375.000	85.00	0.0	0.0	735.30	1010.00	742.39	0.0	743.03	26.04	6.43	156.97	197.92
	4375.000	85.00	0.0	0.0	735.30	1400.00	743.66	0.0	744.39	24.46	6.84	204.58	283.05
	4375.000	85.00	0.0	0.0	735.30	1625.00	744.32	0.0	745.09	23.56	7.01	231.74	334.77
	4375.000	85.00	0.0	0.0	735.30	2100.00	746.23	0.0	746.29	3.02	2.81	1844.46	1207.99
	4700.000	350.00	0.0	0.0	736.30	1010.00	743.31	0.0	743.97	27.36	6.55	154.12	193.08
	4700.000	350.00	0.0	0.0	736.30	1400.00	744.52	0.0	745.29	26.33	7.03	199.08	272.84
	4700.000	350.00	0.0	0.0	736.30	1625.00	745.15	0.0	745.96	25.67	7.24	224.47	320.72
	4700.000	350.00	0.0	0.0	736.30	2100.00	745.76	0.0	746.85	31.81	8.37	250.80	372.31
*	4750.000	100.00	0.0	0.0	740.00	1010.00	743.59	743.59	745.30	117.51	10.50	96.19	93.17
*	4750.000	100.00	0.0	0.0	740.00	1400.00	744.41	744.41	746.54	116.07	11.70	119.61	129.95
	4750.000	100.00	0.0	0.0	740.00	1625.00	744.86	744.85	747.20	115.31	12.28	132.32	151.33
*	4750.000	100.00	0.0	0.0	740.00	2100.00	745.73	745.73	748.51	115.29	13.36	157.16	195.58

	SECNO	XLCH	ELTRD	ELLC	FLMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	4751.000	1.00	742.70	753.40	740.00	1010.00	744.28	0.0	745.47	67.02	8.74	115.58	123.37
*	4751.000	1.00	742.70	753.40	740.00	1400.00	745.29	744.42	746.75	65.89	9.69	144.41	172.47
	4751.000	1.00	742.70	753.40	740.00	1625.00	745.82	0.0	747.43	65.91	10.18	159.65	200.16
	4751.000	1.00	742.70	753.40	740.00	2100.00	746.83	0.0	748.77	68.02	11.16	188.12	254.62
	4752.000	8.00	742.70	753.40	740.00	1010.00	744.48	0.0	745.55	57.44	8.30	121.62	133.27
	4752.000	8.00	742.70	753.40	740.00	1400.00	745.47	0.0	746.83	59.07	9.35	149.30	182.15
	4752.000	8.00	742.70	753.40	740.00	1625.00	745.99	0.0	747.51	60.43	9.88	164.41	209.03
	4752.000	8.00	742.70	753.40	740.00	2100.00	747.04	0.0	748.85	61.75	10.80	194.49	267.24
	4753.000	1.00	0.0	0.0	740.00	1010.00	744.49	0.0	745.56	57.36	8.30	121.68	133.36
	4753.000	1.00	0.0	0.0	740.00	1400.00	745.48	0.0	746.83	58.96	9.34	149.90	182.33
	4753.000	1.00	0.0	0.0	740.00	1625.00	746.00	0.0	747.51	60.26	9.87	164.57	209.34
	4753.000	1.00	0.0	0.0	740.00	2100.00	747.05	0.0	748.86	61.68	10.79	194.56	267.38
	4800.000	40.00	0.0	0.0	736.50	1010.00	745.68	0.0	745.87	5.45	3.53	286.32	432.61
	4800.000	40.00	0.0	0.0	736.50	1400.00	746.98	0.0	747.22	5.87	3.96	353.16	577.76
	4800.000	40.00	0.0	0.0	736.50	1625.00	747.67	0.0	747.94	5.87	4.16	392.07	670.76
	4800.000	40.00	0.0	0.0	736.50	2100.00	749.06	0.0	749.37	5.51	4.44	493.90	894.85
	5375.000	500.00	0.0	0.0	738.10	1010.00	745.96	0.0	746.28	10.67	4.49	224.87	309.15
	5375.000	500.00	0.0	0.0	738.10	1400.00	747.27	0.0	747.64	10.46	4.89	286.47	432.93
	5375.000	500.00	0.0	0.0	738.10	1625.00	747.96	0.0	748.36	10.26	5.06	321.31	507.29
	5375.000	500.00	0.0	0.0	738.10	2100.00	749.32	0.0	749.76	9.57	5.33	395.47	678.81
	5475.000	80.00	0.0	0.0	738.50	1010.00	746.04	0.0	746.36	9.96	4.56	221.50	319.99
	5475.000	80.00	0.0	0.0	738.50	1400.00	747.32	0.0	747.77	12.04	5.38	260.42	403.54
	5475.000	80.00	0.0	0.0	738.50	1625.00	747.99	0.0	748.51	13.17	5.80	280.28	447.78
	5475.000	80.00	0.0	0.0	738.50	2100.00	749.30	0.0	749.97	15.24	6.57	319.56	537.95
	5476.000	5.00	753.50	753.00	738.50	1010.00	746.05	0.0	746.37	9.92	4.55	221.35	320.72
	5476.000	5.00	753.50	753.00	738.50	1400.00	747.33	0.0	747.78	12.04	5.38	260.36	403.41
	5476.000	5.00	753.50	753.00	738.50	1625.00	748.00	0.0	748.52	13.15	5.79	280.46	448.17
	5476.000	5.00	753.50	753.00	738.50	2100.00	749.31	0.0	749.98	15.21	6.57	319.74	538.37
	5477.000	30.00	753.50	753.00	738.50	1010.00	746.08	0.0	746.40	9.80	4.53	222.77	322.65
	5477.000	30.00	753.50	753.00	738.50	1400.00	747.37	0.0	747.81	11.90	5.35	261.45	405.82
	5477.000	30.00	753.50	753.00	738.50	1625.00	748.05	0.0	748.56	12.99	5.77	281.68	450.93
	5477.000	30.00	753.50	753.00	738.50	2100.00	749.36	0.0	750.03	15.03	6.54	321.19	541.75
	5478.000	5.00	0.0	0.0	738.50	1010.00	746.08	0.0	746.40	9.77	4.53	223.01	323.16
	5478.000	5.00	0.0	0.0	738.50	1400.00	747.38	0.0	747.82	11.86	5.35	261.76	406.51
	5478.000	5.00	0.0	0.0	738.50	1625.00	748.05	0.0	748.57	12.94	5.76	282.04	451.76
	5478.000	5.00	0.0	0.0	738.50	2100.00	749.37	0.0	750.04	14.97	6.53	321.63	542.79
	5575.000	55.00	0.0	0.0	739.30	1010.00	746.42	0.0	746.50	3.30	2.77	592.62	555.99
	5575.000	55.00	0.0	0.0	739.30	1400.00	747.88	0.0	747.96	2.40	2.76	831.85	904.23
	5575.000	55.00	0.0	0.0	739.30	1625.00	748.65	0.0	748.72	2.11	2.77	963.44	1119.01
	5575.000	55.00	0.0	0.0	739.30	2100.00	750.16	0.0	750.23	1.72	2.82	1232.76	1601.80
	6325.000	680.00	0.0	0.0	739.50	1010.00	746.66	0.0	746.82	5.92	3.53	445.35	415.19
	6325.000	680.00	0.0	0.0	739.50	1400.00	748.05	0.0	748.17	3.68	3.25	723.49	729.54
	6325.000	680.00	0.0	0.0	739.50	1625.00	748.80	0.0	748.90	3.02	3.16	872.96	935.79
	6325.000	680.00	0.0	0.0	739.50	2100.00	750.28	0.0	750.37	2.22	3.06	1168.82	1410.34

SECNO	XLCH	ELTRO	ELLC	FLMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
6575.000	170.00	0.0	0.0	740.40	1010.00	746.77	0.0	746.93	7.12	3.47	405.37	378.43
6575.000	170.00	0.0	0.0	740.40	1400.00	748.12	0.0	748.24	4.55	3.28	659.88	656.57
6575.000	170.00	0.0	0.0	740.40	1625.00	748.85	0.0	748.96	3.66	3.18	806.46	849.49
6575.000	170.00	0.0	0.0	740.40	2100.00	750.31	0.0	750.41	2.60	3.06	1100.36	1302.54
6576.000	86.00	749.50	746.30	740.40	1010.00	750.23	0.0	750.26	0.47	1.62	1084.53	1471.14
6576.000	86.00	749.50	746.30	740.40	1400.00	751.09	0.0	751.13	0.60	1.95	1256.85	1807.56
6576.000	86.00	749.50	746.30	740.40	1625.00	751.45	0.0	751.50	0.69	2.15	1328.53	1955.85
6576.000	86.00	749.50	746.30	740.40	2100.00	752.07	0.0	752.14	0.89	2.55	1452.79	2224.10
6675.000	55.00	0.0	0.0	740.30	1010.00	750.23	0.0	750.27	0.88	1.97	879.97	1077.43
6675.000	55.00	0.0	0.0	740.30	1400.00	751.09	0.0	751.15	1.03	2.30	1062.88	1377.11
6675.000	55.00	0.0	0.0	740.30	1625.00	751.45	0.0	751.51	1.16	2.51	1137.84	1510.37
6675.000	55.00	0.0	0.0	740.30	2100.00	752.07	0.0	752.16	1.43	2.93	1268.14	1755.46
6676.000	1.00	741.00	755.00	740.30	1010.00	750.23	0.0	750.27	0.94	1.95	878.38	1042.01
6676.000	1.00	741.00	755.00	740.30	1400.00	751.09	0.0	751.15	1.11	2.28	1059.26	1331.46
6676.000	1.00	741.00	755.00	740.30	1625.00	751.45	0.0	751.51	1.24	2.48	1134.42	1462.01
6676.000	1.00	741.00	755.00	740.30	2100.00	752.07	0.0	752.16	1.52	2.89	1264.90	1701.97
6677.000	2.50	741.00	755.00	740.30	1010.00	750.23	0.0	750.27	0.94	1.95	878.74	1042.54
6677.000	2.50	741.00	755.00	740.30	1400.00	751.09	0.0	751.15	1.10	2.28	1059.77	1332.33
6677.000	2.50	741.00	755.00	740.30	1625.00	751.45	0.0	751.51	1.23	2.48	1135.08	1463.20
6677.000	2.50	741.00	755.00	740.30	2100.00	752.07	0.0	752.16	1.52	2.89	1265.77	1703.63
6678.000	1.00	0.0	0.0	740.30	1010.00	750.23	0.0	750.27	0.88	1.97	880.49	1078.23
6678.000	1.00	0.0	0.0	740.30	1400.00	751.09	0.0	751.15	1.04	2.31	1061.47	1374.67
6678.000	1.00	0.0	0.0	740.30	1625.00	751.45	0.0	751.52	1.16	2.51	1136.78	1508.46
6678.000	1.00	0.0	0.0	740.30	2100.00	752.07	0.0	752.16	1.43	2.93	1267.52	1754.26
6700.000	50.00	0.0	0.0	740.40	1010.00	750.22	0.0	750.29	1.34	2.50	993.42	871.10
6700.000	50.00	0.0	0.0	740.40	1400.00	751.09	0.0	751.16	1.64	2.92	1217.62	1093.35
6700.000	50.00	0.0	0.0	740.40	1625.00	751.44	0.0	751.53	1.86	3.18	1309.76	1192.51
6700.000	50.00	0.0	0.0	740.40	2100.00	752.07	0.0	752.18	2.33	3.69	1471.62	1377.05
7925.000	920.00	0.0	0.0	739.80	960.00	750.34	0.0	750.35	0.35	1.17	2101.03	1621.95
7925.000	920.00	0.0	0.0	739.80	1330.00	751.22	0.0	751.24	0.43	1.38	2441.74	2028.94
7925.000	920.00	0.0	0.0	739.80	1540.00	751.60	0.0	751.62	0.49	1.51	2585.08	2211.15
7925.000	920.00	0.0	0.0	739.80	2000.00	752.26	0.0	752.28	0.62	1.77	2837.24	2546.93
8800.000	750.00	0.0	0.0	742.20	960.00	750.34	0.0	750.43	3.53	2.92	797.66	510.70
8800.000	750.00	0.0	0.0	742.20	1330.00	751.24	0.0	751.32	3.32	3.11	1058.45	729.71
8800.000	750.00	0.0	0.0	742.20	1540.00	751.62	0.0	751.71	3.40	3.27	1173.00	834.58
8800.000	750.00	0.0	0.0	742.20	2000.00	752.30	0.0	752.40	3.73	3.63	1379.83	1035.75
9350.000	300.00	0.0	0.0	743.00	490.00	750.47	0.0	750.51	1.91	1.93	517.18	354.32
9350.000	300.00	0.0	0.0	743.00	680.00	751.37	0.0	751.41	1.81	2.03	792.92	505.29
9350.000	300.00	0.0	0.0	743.00	785.00	751.76	0.0	751.80	1.77	2.07	929.04	539.64
9350.000	300.00	0.0	0.0	743.00	1020.00	752.45	0.0	752.49	1.79	2.20	1171.80	761.71
9425.000	70.00	0.0	0.0	743.00	490.00	750.45	0.0	750.57	3.84	2.73	180.84	250.12
9425.000	70.00	0.0	0.0	743.00	680.00	751.33	0.0	751.49	4.76	3.28	271.96	311.78
9425.000	70.00	0.0	0.0	743.00	785.00	751.71	0.0	751.89	5.09	3.50	329.01	348.00
9425.000	70.00	0.0	0.0	743.00	1020.00	752.39	0.0	752.60	5.81	3.93	430.69	423.23

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
	9426.000	10.00	750.60	749.00	743.00	490.00	750.58	0.0	750.69	3.61	2.68	187.20	257.78
	9426.000	10.00	750.60	749.00	743.00	680.00	751.43	0.0	751.59	4.48	3.21	287.82	321.37
	9426.000	10.00	750.60	749.00	743.00	785.00	751.77	0.0	751.94	4.91	3.45	338.37	354.38
	9426.000	10.00	750.60	749.00	743.00	1020.00	752.42	0.0	752.63	5.69	3.91	436.08	427.56
	9427.000	30.00	0.0	0.0	743.00	490.00	750.59	0.0	750.70	3.59	2.67	187.86	258.45
	9427.000	30.00	0.0	0.0	743.00	680.00	751.45	0.0	751.60	4.44	3.20	289.81	322.59
	9427.000	30.00	0.0	0.0	743.00	785.00	751.79	0.0	751.96	4.87	3.44	340.53	355.87
	9427.000	30.00	0.0	0.0	743.00	1020.00	752.44	0.0	752.65	5.64	3.89	438.49	429.51
	9558.000	65.00	0.0	0.0	744.60	490.00	750.61	0.0	750.74	5.00	2.97	178.40	219.19
	9558.000	65.00	0.0	0.0	744.60	680.00	751.46	0.0	751.65	5.66	3.48	237.83	285.95
	9558.000	65.00	0.0	0.0	744.60	785.00	751.80	0.0	752.01	6.10	3.74	279.31	317.79
	9558.000	65.00	0.0	0.0	744.60	1020.00	752.46	0.0	752.71	6.78	4.20	376.39	391.83
	9559.000	5.00	0.0	0.0	746.00	490.00	750.57	0.0	750.79	10.46	3.81	140.73	151.48
	9559.000	5.00	0.0	0.0	746.00	680.00	751.42	0.0	751.70	10.30	4.27	199.93	211.92
	9559.000	5.00	0.0	0.0	746.00	785.00	751.76	0.0	752.06	10.57	4.52	240.98	241.47
	9559.000	5.00	0.0	0.0	746.00	1020.00	752.42	0.0	752.75	10.71	4.91	339.02	311.68
	9560.000	2.00	0.0	0.0	746.00	490.00	750.57	0.0	750.79	10.45	3.81	140.80	151.57
	9560.000	2.00	0.0	0.0	746.00	680.00	751.43	0.0	751.70	10.28	4.27	200.08	212.04
	9560.000	2.00	0.0	0.0	746.00	785.00	751.76	0.0	752.06	10.56	4.52	241.12	241.56
	9560.000	2.00	0.0	0.0	746.00	1020.00	752.42	0.0	752.75	10.70	4.91	339.22	311.83
	9561.000	5.00	0.0	0.0	744.60	490.00	750.69	0.0	750.82	4.76	2.92	182.68	224.63
	9561.000	5.00	0.0	0.0	744.60	680.00	751.55	0.0	751.73	5.37	3.42	246.65	293.55
	9561.000	5.00	0.0	0.0	744.60	785.00	751.90	0.0	752.09	5.78	3.68	290.78	326.51
	9561.000	5.00	0.0	0.0	744.60	1020.00	752.55	0.0	752.79	6.44	4.13	388.64	402.02
	9600.000	35.00	0.0	0.0	743.30	490.00	750.77	0.0	750.85	2.83	2.34	255.68	291.12
	9600.000	35.00	0.0	0.0	743.30	680.00	751.67	0.0	751.77	2.80	2.59	380.47	406.42
	9600.000	35.00	0.0	0.0	743.30	785.00	752.03	0.0	752.14	2.90	2.75	434.55	460.58
	9600.000	35.00	0.0	0.0	743.30	1020.00	752.71	0.0	752.83	3.17	3.08	536.02	572.52
	9850.000	250.00	0.0	0.0	744.20	490.00	750.87	0.0	750.87	0.02	0.27	1865.33	3169.21
	9850.000	250.00	0.0	0.0	744.20	680.00	751.79	0.0	751.79	0.03	0.33	2148.42	3947.31
	9850.000	250.00	0.0	0.0	744.20	785.00	752.16	0.0	752.16	0.03	0.36	2264.33	4280.39
	9850.000	250.00	0.0	0.0	744.20	1020.00	752.86	0.0	752.86	0.04	0.42	2489.95	4956.10
	10225.000	330.00	0.0	0.0	745.20	490.00	750.80	0.0	750.90	4.42	2.49	196.93	233.07
	10225.000	330.00	0.0	0.0	745.20	680.00	751.71	0.0	751.83	4.26	2.79	244.48	329.43
	10225.000	330.00	0.0	0.0	745.20	785.00	752.07	0.0	752.20	4.44	2.99	264.06	372.63
	10225.000	330.00	0.0	0.0	745.20	1020.00	752.74	0.0	752.92	4.92	3.42	302.72	459.66
	10325.000	100.00	0.0	0.0	745.80	490.00	749.94	0.0	751.45	119.34	9.84	49.79	44.85
*	10325.000	100.00	0.0	0.0	745.80	680.00	750.42	750.42	752.76	170.72	12.27	55.43	52.04
*	10325.000	100.00	0.0	0.0	745.80	785.00	750.81	750.81	753.46	182.35	13.06	60.09	58.13
*	10325.000	100.00	0.0	0.0	745.80	1020.00	752.56	752.56	754.65	104.93	11.90	110.37	99.57
	10326.000	1.00	749.30	760.00	745.80	490.00	749.95	0.0	751.46	119.40	9.84	49.78	44.84
*	10326.000	1.00	749.30	760.00	745.80	680.00	752.16	752.16	753.63	274.82	10.05	81.08	41.02
*	10326.000	1.00	749.30	760.00	745.80	785.00	752.61	752.61	754.04	251.09	10.15	99.18	49.54
*	10326.000	1.00	749.30	760.00	745.80	1020.00	753.36	753.36	754.77	230.03	10.54	135.91	67.25

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
10327.000	12.00	749.30	760.00	745.30	490.00	750.18	0.0	751.65	216.97	9.72	50.40	33.27
10327.000	12.00	749.30	760.00	745.80	680.00	753.21	0.0	753.91	115.62	7.36	127.72	63.24
10327.000	12.00	749.30	760.00	745.80	785.00	753.60	0.0	754.31	112.35	7.55	149.63	74.06
10327.000	12.00	749.30	760.00	745.80	1020.00	754.61	0.0	755.01	68.16	6.46	297.58	123.55
10328.000	1.00	0.0	0.0	745.80	490.00	750.54	0.0	751.69	82.64	8.62	56.86	53.90
10328.000	1.00	0.0	0.0	745.80	680.00	753.27	0.0	753.92	30.36	5.84	144.23	123.40
10328.000	1.00	0.0	0.0	745.80	785.00	753.58	0.0	754.32	33.59	7.39	161.58	135.45
10328.000	1.00	0.0	0.0	745.80	1020.00	754.39	752.56	755.11	32.09	7.72	268.65	180.06
10425.000	100.00	0.0	0.0	744.00	490.00	751.83	0.0	751.87	2.14	2.03	521.76	335.25
10425.000	100.00	0.0	0.0	744.00	680.00	753.99	0.0	754.01	0.83	1.60	944.50	748.45
10425.000	100.00	0.0	0.0	744.00	785.00	754.40	0.0	754.42	0.37	1.71	1022.96	839.90
10425.000	100.00	0.0	0.0	744.00	1020.00	755.18	0.0	755.21	0.98	1.93	1175.54	1029.60



VILLAGE OF SPARTA
KENT COUNTY, MICHIGAN

100 YEAR FLOOD PROFILE
NASH CREEK @ SPARTA
STREAM DISTANCE IN FEET ABOVE MOUTH
ELEVATION - FEET NGVD
SCALE: 1" = 200'
BACKWATER - ROUGE RIVER
FOOT BRIDGE
DAM
STATE STREET
UNION STREET
DIVISION STREET
LOOMIS STREET
C.&O. R.R.
RECEIVED
AUG 2 9 1980

00BREAK00

1) COUNTY: KENT

2) STUDY NAME: WYOMING, CITY OF

3) WATERCOURSE: BEHAN - FOLEY DRAIN

4) DOCUMENT TYPE: HYDRAULIC & HYDROLOGY OUTPUT

00BREAK00

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    19OCT92    TIME   13:06:03 *
 *****************************************
```

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

PROFILES CALC. (BF.OUT)

```
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
```

```
1
   19OCT92      13:06:04                                                                    PAGE    1


                                                                THIS RUN EXECUTED 19OCT92    13:06:04
 *************************************
  HEC-2 WATER SURFACE PROFILES

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


T1 CITY OF WYOMING, KENT COUNTY, MICHIGAN
T2 FLOOD INSURANCE STUDY
T3       BEHAN-FOLEY DRAIN

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0        0        0        0        0     631.98      0

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      1        0        1        0        0        0        0        0        0        0


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38       43        1        8        4        3       26

NC     .12      .12      .05       .1       .3
QT       4      364      626      743      930
X1     8.0       17      300      400        0        0        0        0        0        0
GR   637.0        0    635.0       50    633.1      100    631.4      150    629.2      200
GR     630      300    629.9      350    630.8      400    630.8      425    634.2      450
GR   636.6      475    636.9      500    637.2      550    638.2      570    639.8      582
GR  640.54      593   640.51      600
```

```
QT        4       350       584       688       856
X1       14        19       542       565       600       600       600         0         0         0
X3                                    350
GR      636         0       634       300     634.3       350     633.5       400     632.8       425
GR    633.3       450       634       500       634       532     634.4       542     632.7       545
GR    632.8       550     632.5       555     636.3       565     636.5       575     645.3       600
GR    646.7       650     646.7       700     646.5       750     645.4       800


NC      .12       .12       .05        .6        .8
X1    17.85        19       240       280       385       385       385         0         0         0
X3                                     90                 313
GR    643.9         0     641.4        30     640.5        50     639.9       100       639       150
GR      637       175       634       200       635.5     240       633.6       243     633.1       250
GR    633.2       254     635.2       258     639.2       280     639.2       300     639.4       325
GR    641.9       350    645.25       400    645.95       450    647.55       500
  PINE CREEK (BRIDGE #1)
1
   19OCT92      13:06:04                                                                                PAGE    2


X1    18.15        19       240       280        30        30        30         0         0
X3        0         0         0        90         0       313         0         0         0
X4        1     633.3       248
GR    643.9         0     641.4        30     640.5        50     639.9       100       639       150
GR      637       175       634       200       635.5     240       633.6       243     633.1       250
GR    633.2       254     635.2       258     639.2       280     639.2       300     639.4       325
GR    641.9       350    645.25       400    645.95       450    647.55       500


SC    1.024        .5       2.6         0       5.3       5.5       105       8.2    633.35    633.15
X1    19.20         0         0         0       105       105       105         0         0         0
X2        0         0         2    639.35     638.7         0         0         0         0         0
X3        0    633.35         0       158         0       276         0         0         0
BT      -14         0     643.9         0        50     640.5         0       100     639.9         0
BT              150     639.25         0       200    638.93         0       250     638.7         0
BT              254     638.8         0       258     638.9         0       280     639.2         0
BT              300     639.2         0       350     641.9         0       400    645.25         0
BT              450    645.95         0       500    647.55         0


X1    19.50        16       242       265        30        30        30         0         0         0
GR    642.8         0     641.3        50     640.8       100     639.4       150     639.2       200
GR    636.1       215     635.4       242     633.4       246     633.5       250     633.8       254
GR    636.4       265     637.4       300     639.9       350    643.45       400    643.35       450
GR   645.45       500


NC      .12       .12       .05        .1        .3
X1       21        16       240       300       150       150       150         0      +.30         0
X3                                    150
GR      644         0     643.3        50       642       100     638.5       125     639.6       150
GR      639       200     637.6       240       634       245     633.6       250       634       255
GR    633.3       260     638.1       300       640       350     644.1       400     644.9       450
GR    644.9       500


QT        4       361       580       682       840
NC      .12       .12       .05        .6        .8
```

```
X1    23.70      16      240      258      270      270      270        0        0        0
X3                              150               300
GR    638.2       0    638.1       50    638.5      100    639.6      150      639      200
GR    639.7     220      638      240    634.6      245    634.3      250    634.6      254
GR    637.9     258    640.8      300    641.3      350    643.1      400      647      450
GR      648     500
  NORTH OF 44TH STREET (BRIDGE #2)

NC      .12     .12      .05       .6       .8
X1    24.0       17      248      254       30       30       30        0        0        0
X3      10        0        0      150        0      300        0    639.5    639.5
GR    638.2       0    638.1       50    638.5      100    639.6      150      639      200
GR    639.7     220      638      240    634.6      245    634.4      248    634.3      250
GR    634.6     254    637.9      258    640.8      300    641.3      350    643.1      400
GR    647.0     450    648.0      500
1
   19OCT92     13:06:04                                                                PAGE    3



SC    1.024      .5      2.6        0        6        6       45      2.2   633.98   633.90
X1    24.45       0        0        0       45       45       45        0        0        0
X2        0       0        2   639.98    639.5        0        0        0        0        0
X3       10       0        0      150        0      300        0    639.5    641.0
BT       -5     100    640.1        0      150    639.9        0      200    639.5        0
BT              250   640.26        0      300      641        0


X1    24.75      16      244      265       30       30       30        0     +.30        0
X3                              150               300
GR    640.8       0      641       50    640.9      100    640.5      150    640.1      200
GR    640.7     220    637.9      244    634.9      246    634.6      250    635.1      254
GR    638.7     265      639      300    641.3      350    645.6      400    646.8      450
GR    646.2     500


NC      .12     .12      .05       .1       .3
X1      26      19      240      258      125      125      125        0        0        0
GR   642.95       0   642.39       50    642.4       80    645.3      100    644.2      140
GR    641.3     150    639.4      170    639.9      200    638.2      240    635.4      245
GR    635.4     250    635.8      255    638.7      258    639.7      300      640      350
GR    645.7     375    645.5      400    646.1      450    646.9      500


NC      .12     .12      .05       .6       .8
X1    27.30      18      238      300      130      130      130        0        0        0
X3                              166               320
GR    645.7       0    645.3       50    644.6      100    645.4      150    643.5      200
GR    641.8     238    636.2      246    635.8      250    636.1      254    638.6      260
GR    638.7     275    640.5      285    641.3      300    644.5      330    645.4      350
GR    645.9     400    646.5      450    646.8      500
  NORTH OF 44TH STREET (BRIDGE #3)

X1    27.60      16      238      285       30       30       30        0        0        0
X3                 0        0      166        0      320        0        0        0
GR    645.7       0    645.3       50    644.6      100    645.4      150    643.5      200
GR    641.8     238    636.2      246    636.1      248    635.8      250    636.1      254
GR    638.6     260    638.7      275    640.5      285    645.9      400    646.5      450
GR    646.8     500
```

```
SC    1.024      .5      2.6       0       6       6      52     2.2  636.44   635.8
X1    28.15       0       0       0      55      55      55       0       0       0
X2        0       0       2  642.44  643.28       0       0       0       0       0
X3        0  636.44       0     205       0     295       0       0       0
BT      -11       0   645.7       0      50   645.3       0     100   644.6       0
BT              150   645.4       0     200  643.62       0     250  643.28       0
BT              300  644.32       0     350  645.91       0     400  646.89       0
BT              450  646.78       0     500   646.8       0
```

1


```
X1    28.45      18     240     258      30      30      30       0   +.40       0
X3                          205              295
GR    647.1       0   646.2      50   646.6     100   646.2     150   644.6     200
GR    641.8     240   636.7     245   636.3     250   636.9     255   638.9     258
GR    643.4     270   645.1     300   646.3     350   647.1     400   648.8     415
GR    647.5     435   647.6     450   647.9     500


NC      .12     .12     .05      .1      .3
X1       32      16     235     263     355     355     355       0       0       0
GR    647.2       0     647      50   646.2     100   643.9     150   641.1     200
GR    641.8     235   638.1     241   637.6     250   637.9     259     643     263
GR    646.4     300   647.2     330   650.4     350   650.7     400   651.7     450
GR   652.51     500
  44TH STREET BRIDGE (BRIDGE #4)

NC      .12     .12     .07      .6      .8
X1     37.0      19     240     255     500     500     500       0       0       0
X3        0       0       0       0       0     265       0       0       0       0
GR    647.3       0   647.6      50   647.4     100   647.3     150  648.71     200
GR    648.3     223   639.6     237  639.45     240  639.56     245  639.56     250
GR   639.56     255  640.21     260   640.4     264   642.5     267   644.3     300
GR    643.9     350   647.1     400   649.2     450   651.4     500

SB              3.7     2.6       0    15.0       0    50.0       0   640.1  639.56
X1     38.5      18     240     255     150     150     150       0       0       0
X2        0       0       1   644.7   650.2       0       0       0       0       0
X3       10       0       0     150       0     255       0   650.2   650.2
BT      -11       0   650.6       0      50   650.5       0     100   650.2       0
BT              150   650.8       0     200  650.31       0     250  650.91       0
BT              300  651.57       0     350  652.24       0     400  652.68       0
BT              450  653.23       0     500  653.27       0
GR    650.6     0.0   650.5      50   650.2     100   650.8     150   649.6     200
GR    649.4     215     645     235   642.6     240   640.4     245   640.1     250
GR    640.6     255   640.7     260  645.75     275  647.45     300   648.9     350
GR    649.6     400   651.6     450   652.7     500


NC      .12     .12     .05      .1      .3
X1    43.50      24     245     260     500     500     500       0       0       0
X3                            0       0     500
GR    650.9       0   650.3      50   649.3      60   649.3      60   649.3      60
GR    649.1     100   649.3     150   649.5     180   645.8     195   645.6     200
GR    645.0     245   643.3     247   642.4     250     643     252   646.4     260
```

GR	646.8	300	646.1	350	648	400	650.1	420	653.9	426
GR	654	444	652.5	450	652.6	460	654.5	500		

1

QT	4	288	430	486	576					
X1	50	22	240	260	650	650	650	0	0	0
GR	665.7	0	666.1	50	665.7	100	665.3	108	655	135
GR	653.8	140	654.92	150	648.7	175	648	200	648.2	240
GR	646.3	245	646.4	250	646.6	253	648.8	260	649.2	285
GR	648.2	290	648	300	648.1	350	648.4	400	651.3	450
GR	651.5	500	656.0	550						
MANUFACTURED										
X1	52.5	22	240	260	250	250	250	0	+1.0	0
GR	665.7	0	666.1	50	665.7	100	665.3	108	655	135
GR	653.8	140	654.92	150	648.7	175	648	200	648.2	240
GR	646.3	245	646.4	250	646.6	253	648.8	260	649.2	285
GR	648.2	290	648	300	648.1	350	648.4	400	651.3	450
GR	651.5	500	656.0	550						
X1	55.0	19	242	261	250	250	250	0	0	0
GR	665.4	0	665.1	50	663.5	100	663.4	125	663.9	150
GR	663.3	175	653.3	190	650.7	200	651.6	242	648.9	244
GR	648.4	250	648.6	256	651.7	261	651.9	300	651.2	350
GR	651.8	400	652.1	424	658.6	450	658.7	500		
QT	4	193	293	341	417					
X1	61	32	230	255	600	600	600	0	0	0
X3				210		400				
GR	651.9	0	653.1	50	653.5	90	654.1	100	655.1	131
GR	654.9	150	654.9	186	654.1	190	653.3	200	653.2	205
GR	655	210	654.4	215	652.6	225	653.1	230	651.6	236
GR	650.9	247	650.8	250	650.7	253	652.9	255	653.8	280
GR	653.8	290	653	300	651.3	305	651.2	308	651.3	312
GR	653	320	652.7	350	652.5	355	653.4	373	652.8	400
GR	652.7	450	652.9	500						
QT	4	190	282	324	391					
MANUFACTURED										
X1	63.3	32	230	255	230	230	230	0	+1.0	0
X3				210		320				
GR	651.9	0	653.1	50	653.5	90	654.1	100	655.1	131
GR	654.9	150	654.9	186	654.1	190	653.3	200	653.2	205
GR	655	210	654.4	215	652.6	225	653.1	230	651.6	236
GR	650.9	247	650.8	250	650.7	253	652.9	255	653.8	280
GR	653.8	290	653	300	651.3	305	651.2	308	651.3	312
GR	653	320	652.7	350	652.5	355	653.4	373	652.8	400
GR	652.7	450	652.9	500						
MANUFACTURED										
X1	65.5	33	244	253	220	220	220	0	-1.9	0
X3				0		335				
GR	697.29	0	688	50	682.3	77	680.5	79	680	86
GR	680.8	88	676.26	100	663.9	123	661	150	660.8	155
GR	661.7	184	661.1	200	660.8	205	661	221	660	230
GR	655.7	244	654.7	248	654.6	250	654.8	252	656	253

```
GR    655.6       257     657.9       265     657.3       279     658.2       300     658.2       315
1
   19OCT92     13:06:04                                                                          PAGE    6


GR    656.9       325     657.7       350     658.4       365     658.7       400     660.2       435
GR    659.3       450     660.2       490     661.6       500

X1       70        33       244       253       450       450       450         0         0         0
X3                                      0                 325
GR   697.29         0       688        50     682.3        77     680.5        79       680        86
GR    680.8        88    676.26       100     663.9       123       661       150     660.8       155
GR    661.7       184     661.1       200     660.8       205       661       221       660       230
GR    655.7       244     654.7       248     654.6       250     654.8       252       656       253
GR    655.6       257     657.9       265     657.3       279     658.2       300     658.2       315
GR    656.9       325     657.7       350     658.4       365     658.7       400     660.2       435
GR    659.3       450     660.2       490     661.6       500

X1     79.5        36       246       253       950       950       950         0         0         0
X3                                    190                 325
GR    664.1         0     663.7        50     663.8        60    662.82        85     663.3       100
GR    663.6       120    664.72       135       663       142     657.1       150    663.62       165
GR    663.3       184     665.0       190     665.1       200     664.7       210     664.1       230
GR    664.5       233     660.7       246     658.4       247     657.8       250     658.3       252
GR    660.6       253     663.6       263     663.9       274     664.9       280     663.8       285
GR    663.9       295     664.6       297     664.6       300     665.6       315     665.9       325
GR    662.4       330     666.5       350     666.6       360     663.7       400     671.8       450
GR    676.6       500

X1    88.50        23       245       258       900       900       900         0         0         0
GR    681.3         0     681.4        50     680.1       100     676.7       150     671.4       190
GR    672.2       200     670.2       208     668.8       232     665.6       240     664.8       245
GR    663.5       247     662.4       250     662.7       253     667.6       258     669.6       290
GR    672.3       300     677.4       350     681.7       391     681.4       400     681.6       404
GR    683.2       408     683.6       450     682.9       500

X1       94        25       235       265       550       550       550         0         0         0
X3                                    215                 285
GR    675.1         0     670.9        50       670       100     669.9       150     670.5       200
GR    670.7       215     669.5       220     669.9       235       667       247     665.6       248
GR    665.5       250     665.6       252     667.5       254     670.4       265     671.2       285
GR      670       295     670.7       300     670.8       305       671       340     670.6       350
GR   670.11       372       668       385     667.6       400     667.7       450     667.7       500
  52ed STREET BRIDGE (BRIDGE #5)

NC      .12       .12       .05        .6        .8
X1     97.0        17       245       255       300       300       300         0         0         0
X3        0    668.07         0       245         0       256         0         0         0
GR    677.8         0     676.3        50     675.6       100     675.8       150     674.7       200
GR      675       225     666.3       240     666.4       245     666.5       250     666.6       255
GR    666.6       258     674.8       275     675.3       300     676.6       350       679       400
GR   680.47       450    681.07       500
  CONCRETE WITH HEADWALL
1
   19OCT92     13:06:04                                                                          PAGE    7


SC    2.013        .5       2.6         0       5.4       5.4       100       1.1     668.5    668.07
X1       98        21       245       255       100       100       100         0         0         0
```

```
X2       0        0        2    673.5    676.52        0        0        0        0        0
X3       0    668.5        0      245         0      256        0        0        0        0
BT     -18        0   680.11        0        50      679        0      100    678.1        0
BT              150    677.4        0       200    676.9        0      225    676.8        0
BT              242    676.6        0       248   676.59        0      250   676.52        0
BT              300   676.69        0       350   677.51        0      375    677.5        0
BT              400    682.9        0       440    683.1        0      444    681.1        0
BT              450    681.4        0       453    682.9        0      500    682.7        0
GR     680        0    678.4       50     677.4      100    677.2      150    676.9      200
GR   676.8      225    668.4      242     668.3      245      668      250    668.2      255
GR   668.5      262    674.9      275     675.1      300      677      350    677.5      375
GR   682.9      400    683.1      440     681.1      444    681.4      450    682.9      453
GR   682.7      500


NC     .12      .12      .05       .1        .3
X1   104.5       27      238      260       650      650      650        0        0        0
GR   686.9        0      683       40     682.9       50    680.9       70      681      100
GR   679.2      150    678.3      200     677.4      238    671.2      244    669.8      246
GR   669.8      250      670      254     670.9      255   677.94      260    677.4      275
GR   677.4      292    678.2      300     679.2      315    684.6      336    684.8      350
GR     684      398   683.68      400    684.24      425   684.14      450   683.74      463
GR   684.3      470    685.3      500

X1     109       32      244      275       450      450      450        0        0        0
GR   684.8        0    684.4       15     683.4       50      682      100    682.4      108
GR   681.2      135      681      150     679.9      165    678.8      200    679.1      215
GR   681.3      232    670.3      244     670.0      250    670.4      256    671.5      257
GR   672.7      275      678      300       679      330    681.1      347    683.1      348
GR   683.1      350    682.8      360     681.9      395    681.6      400   681.54      404
GR  681.32      405   681.65      420    681.32      435   681.53      436    682.1      450
GR   682.9      490    682.9      500


QT       4      132      220      260       325
NC     .12      .12      .05       .6        .8
X1  110.53       19      235      260       153      153      153        0        0        0
X3                               220               288
GR   681.2        0    681.9       50     681.2      100      679      150    676.1      200
GR   675.4      220    675.5      235     670.3      243    670.3      250    670.8      257
GR     672      260    673.4      280     676.4      295    676.9      300   680.79      350
GR  681.47      380    681.2      400    681.25      450    682.7      500
  BECKY STREET BRIDGE (BRIDGE #6)

X1  110.83       19      244      255        30       30       30        0     +.10        0
X3       0        0        0      220         0      288        0        0        0        0
GR   681.2        0    681.9       50     681.2      100      679      150    676.1      200
GR   675.4      220    675.5      235     670.3      244    670.3      250    670.8      255
GR     672      260    673.4      280     676.4      295    676.9      300   680.79      350
GR  681.00      380    681.2      400    681.25      450    682.7      500

1
   19OCT92      13:06:04                                                                PAGE    8


SC   2.024       .5      2.6        0       5.5      5.5       70      2.3   670.50    670.4
X1  111.53        0        0        0        70       70       70        0     +.10        0
X2       0        0        2   676.06    677.25        0        0        0        0        0
X3       0   670.06        0      220         0      288        0        0        0        0
```

BT	-14	0	682.04	0	50	681.9	0	100	681.2	0
BT		150	679.67	0	200	678.35	0	250	677.25	0
BT		300	677.87	0	350	680.79	0	400	681.2	0
BT		427	681.21	0	442	681.21	0	443	681.40	0
BT		450	681.5	0	500	682.7	0			

X1	111.83	26	237	275	30	30	30	0	0	0
X3	0	0	0	220		288				
GR	680.1	0	679.7	50	681.5	75	681.5	100	680.6	110
GR	675.3	135	675.5	150	676	195	673.9	200	673.7	220
GR	676	225	675.9	233	673.4	237	672.7	240	670.6	243
GR	670.9	250	670.7	257	672.1	260	673.1	275	675.3	295
GR	677.8	300	680	350	681	400	681.41	425	681.87	450
GR	683.7	500								

NC	.12	.12	.05	.1	.3					
QT	4	38	52	63	85					
X1	115.50	23	240	265	367	367	367	0	0	0
X3				150		340				
GR	675.9	0	675.7	50	676.1	75	674.2	100	673.7	120
GR	673.5	150	673.7	200	672.8	240	670.5	242	670.4	250
GR	670.8	258	671.6	260	672.8	265	673.9	300	674.1	316
GR	678.7	350	683.1	385	683.1	400	681.9	440	681.9	450
GR	682	458	681.93	475	682.7	500				

X1	121.50	20	242	261	600	600	600	0	0	0
X3				240		305				
GR	679.7	0	679.9	50	679.3	100	679.4	125	678.7	150
GR	677.7	200	677.6	223	679.3	240	677.8	242	671.1	244
GR	670.1	250	671.5	256	673.5	261	676.5	285	679.2	300
GR	682	315	683.4	350	681.64	400	682.85	450	683.97	500

56th STREET BRIDGE (BRIDGE #7)

NC	.12	.12	.05	.6	.8					
X1	125.80	13	248	251	430	430	430	0	0	0
X3	10	0	0	160	0	395	0	676.27	676.27	0
GR	675.80	0	675.40	50	675.20	100	674.9	150	674.90	200
GR	670.83	248	670.82	250	670.81	251	675.70	300	676.40	350
GR	676.60	400	677.90	450	679.90	500				

SC	1.013	.5	2.6	0	3	3	204	1.1	671.87	670.83
X1	126.43	0	0	0	64	64	64	0	0.0	0
X2	0	0	2	674.87	676.27	0	0	0	0	0
X3	10	671.87	0	160	0	395	0	676.27	676.27	0
BT	-9.0	100	676.48	0	101	676.46	0	150	676.52	0
BT		200	676.33	0	250	676.27	0	300	676.70	0
BT		350	677.40	0	400	677.67	0	450	678.90	0

1

QT	4	78	115	131	159					
X1	126.83	17	240	270	400	400	400	0	0	0
X3				160		395				
GR	674.3	0	674.0	50	673.9	100	673.9	150	673.5	200
GR	674.0	240	673.0	245	672.5	250	672.0	254	673.0	255

```
GR    675.7      270     676.1      275     675.6      300     676.0      350     676.1      400
GR    677.8      450     678.9      500


NC      .12      .12       .05       .1       .3
X1    129.0       23     244.0      256      217      217      217        0         0        0
X3                                  160                450
GR    673.9        0     673.8       50     673.8      100     673.9      150       674      200
GR    674.2      225       674      235     674.0      244      673      248     672.6      250
GR    672.5      251     673.5      253     674.5      256     676.2      265     676.6      270
GR    675.8      281     675.9      300     677.5      340     678.3      350     679.8      400
GR    680.9      450     682.1      480     682.5      500
  AERIAL TOPO

X1    132.6       13     244.0      256      360      360      360        0         0        0
X3                                  220                270
GR    674.4        0     676.0      144     678.0      184     679.0      214     675.6      244
GR    674.6      248     674.2      250     674.1      251     675.1      253     676.1      256
GR    678.0      386     680.0      476     682.0      526
  AERIAL TOPO

X1    136.2       14       241      270      360      360      360        0         0        0
GR    684.0        0     684.0      100     682.0      110     680.0      200     678.6      241
GR    676.8      246     675.7      247     675.7      250     675.8      253     676.2      256
GR    678.3      270     680.0      300     682.0      350     692.5      440

QT        4       48        55       60       68
X1    140.0       20       241      270      380      380      380        0         0        0
GR    685.1        0     684.1       50     683.2      100     682.3      110     681.9      150
GR    681.3      200     681.5      225     680.3      241     678.5      246     677.4      247
GR    677.4      250     677.5      253     677.9      256      680      270     681.4      300
GR    682.8      340     686.7      350     683.1      400     682.8      450       683      500

X1    145.0       20       246      257      500      500      500        0         0        0
GR    687.4        0     685.9       27     686.4       50     686.8      100     687.3      150
GR    687.7      200     688.2      228     686.6      236     680.1      246     677.8      247
GR    677.5      250     678.4      252     680.3      257     680.4      271       687      281
GR    686.4      300     686.2      350     685.1      400     683.5      450       683      500


NC      .12      .12       .05       .6       .8
X1    151.0       16       238      260      600      600      600        0         0        0
X3                                  238                260
GR    683.3        0     683.5       50     683.8      100     684.5      150     684.3      200
GR    683.3      228     682.1      238     680.2      243     679.4      250     680.1      257
GR    682.4      260     684.3      300     686.3      350     686.3      400       686      450
GR    687.1      500
1
   19OCT92      13:06:04                                                                  PAGE    10


  R.R. BRIDGE (BRIDGE #8)

X1   151.35       16       248      251      600      600      600        0       0.0        0
X3       10   680.23         0        0        0        0        0   690.07    690.07
X4        2    679.4       248    679.4      251
GR    683.3        0     683.5       50     683.8      100     684.5      150     684.3      200
GR    683.3      228     682.1      238     680.2      243     679.4      250     680.1      257
GR    682.4      260     684.3      300     686.3      350     686.3      400     686.0      450
GR    687.1      500
```

```
SC    1.024       .5       2.6        0       3.0       3.0        38       1.3    680.67    680.23
X1   151.73        0         0        0        38        38        38         0       0.0         0
X2        0        0         2   683.67    690.07         0         0         0         0         0
X3       10   680.67         0        0         0         0         0    690.07    690.58
BT      -11        0    690.14        0        50    690.33         0       100    690.46         0
BT              150    690.20        0       200    690.07         0       250    690.18         0
BT              300    690.58        0       350    690.86         0       400    691.03         0
BT              450    691.15        0       500    691.11         0


QT        4       123       205      241       299
X1    152.0        16       241      258        27        27        27         0         0         0
X3                                  225                  275
GR    684.4         0     685.1       50     685.1       100     683.7       150       684       200
GR    684.2       241     682.7      248     681.8       250       683       253     684.7       258
GR    688.1       300     688.8      330     691.6       350     696.2       400     697.6       450
GR    697.6       500

NC      .12       .12       .05       .1        .3
X1    157.0        26       228      255       500       500       500         0         0         0
X3                                  100
GR      689         0     688.3        3     690.9         9    691.49        20     691.1        35
GR      687        40     687.2       45     689.7        50     688.7       100     687.6       150
GR    685.9       185     685.9      200     685.6       228     685.1       243     684.5       247
GR    684.5       250     684.5      253     685.3       255     685.4       275     685.1       300
GR    684.7       350     685.3      370     687.2       377     688.7       400       692       450
GR    696.2       500
1
```



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


*PROF 1
0

CCHV=     .100 CEHV=     .300
*SECNO 8.000
    8.000     2.78   631.98      .00   631.98   631.99      .01      .00      .00   630.00
    364.0    160.2    193.1     10.7    326.9    183.0     34.6       .0       .0   630.80
      .00      .49     1.06      .31     .120     .050     .120     .000   629.20   132.94
  .000563       0.       0.       0.        0        0        0      .00   300.73   433.68


*SECNO 14.000

3265 DIVIDED FLOW

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

3470 ENCROACHMENT STATIONS=      350.0     800.0  TYPE=      1  TARGET=     -350.000
    14.000     1.68   634.18   634.18      .00   634.50      .32     1.05      .09   634.40
```

```
        14750.  C        .        .        .        .        .     I  .        WE       .        .   M     R
        14800.  C        .        .        .        .        .      I .       L.E       .        . M      R
        14850.  C        .        .        .        .        .      I .      L .WE      .        .M       R
        14900.  C        .        .        .        .        .      I .     L  . WE     .       M.        R
        14950.  C        .        .        .        .        .       I.     L  .  WE    .      M .        R
        15000.  C        .        .        .        .        .       I.    L   .  W E   .    M   .        R
        15050.  C        .        .        .        .        .       I.   L    .   W E  .   M    .        R
        15100.  C        .        .        .        .        .        I  L     .    WE  .  M     .        R
        15150.  C        .        .        .        .        .        I  L     .    W E .M       .        R
        15200.  C        .        .        .        .        .        I  L     .     W E M       .        R
        15250.  C        .        .        .        .        .        .IL      .      WME.       .        R
  151.35 15300.  C        .        .        .        .        .        .I       .     MW  E       .        .
  151.73 15350.  C        .        .        .        .        .        . I      .     M   .      WE.       .
  152.00 15400.  C        .        .        .        .        .        .       I.        .L  R   WE.       M
        15450.  C        .        .        .        .        .        .        I        . L R    WE       M
        15500.  C        .        .        .        .        .        .       . I       . L R    WE       M
        15550.  C        .        .        .        .        .        .       .  I      .  LR    WE       M
        15600.  C        .        .        .        .        .        .       .   I     .   LR   .E       M
        15650.  C        .        .        .        .        .        .       .    I   .   LR   .WE       M
        15700.  C        .        .        .        .        .        .       .     I  .    L   . E       M
        15750.  C        .        .        .        .        .        .       .      I .     L  . E       M
        15800.  C        .        .        .        .        .        .       .        I     RL . E       M
  157.00 15850.  C        .        .        .        .        .        .       .        . I  R L .  E       M
1
   19OCT92      13:06:04                                                                                PAGE   45


T1 CITY OF WYOMING, KENT COUNTY, MICHIGAN
T2 FLOOD INSURANCE STUDY
T3 BEHAN-FOLEY-100 YEAR FLOOD

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

    -10        4        0        0        0        0        0        0      633.7      0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     3         0        1        0        0        0        0        0        0        0

1
   19OCT92      13:06:04                                                                                PAGE   46


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


 *PROF 3
0

 CCHV=     .100 CEHV=     .300
 *SECNO 8.000
     8.000      4.50    633.70       .00    633.70    633.71       .01       .00       .00    630.00
     743.0     307.2     398.3      37.5     657.2     355.0     103.4        .0        .0    630.80
       .00       .47      1.12       .36      .120      .050      .120      .000    629.20     84.21
   .000263        0.        0.        0.         0         0         0       .00    362.11    446.32
```

```
*SECNO 14.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      350.0     800.0  TYPE=      1  TARGET=     -350.000
    14.000      2.08    634.58    634.58       .00    634.96       .38       .51       .11    634.40
     688.0     470.4     217.6        .0     176.8      27.6        .0       9.1       3.9    636.30
       .04      2.66      7.89       .00      .120      .050      .000      .000    632.50    350.00
   .043843      600.      600.      600.        20        13         0       .00    210.47    560.47


CCHV=     .600 CEHV=     .800
*SECNO 17.850

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.60


3470 ENCROACHMENT STATIONS=       90.0     313.0  TYPE=      1  TARGET=      223.000
    17.850      5.08    638.18       .00       .00    638.30       .12      3.19       .16    635.50
     688.0     314.0     374.0        .0     209.9     105.3        .0      11.4       5.4    639.20
       .08      1.50      3.55       .00      .120      .050      .000      .000    633.10    160.21
   .003381      385.      385.      385.         4         0         0       .00    114.20    274.41


*SECNO 18.150

3470 ENCROACHMENT STATIONS=       90.0     313.0  TYPE=      1  TARGET=      223.000
    18.150      5.20    638.30       .00       .00    638.41       .11       .10       .01    635.50
     688.0     316.8     371.2        .0     219.5     109.2        .0      11.6       5.5    639.20
       .08      1.44      3.40       .00      .120      .050      .000      .000    633.10    158.72
   .003021       30.       30.       30.         2         0         0       .00    116.34    275.06


1
   19OCT92      13:06:04                                                                                    PAGE   47


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



SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .024      .50      2.60       .00      5.30      5.50     105.00      8         2       633.35    633.15

CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE  2 - WINGWALLS FLARED 90 OR 15 DEGREES

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC=  659.87..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  651.62 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 19.200

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    640.00
```

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.02

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
659.87	651.62	1.60	446.	236.	2.146	29.2	638.70	223.

3470 ENCROACHMENT STATIONS= 158.0 276.0 TYPE= 1 TARGET= 118.000

19.200	6.61	639.96	.00	.00	640.00	.04	1.60	.00	635.50
688.0	328.2	359.8	.0	355.3	167.6	.0	12.6	5.7	100000.00
.10	.92	2.15	.00	.120	.050	.000	.000	633.35	158.00
.000741	105.	105.	105.	2	0	0	.00	118.00	276.00

*SECNO 19.500

19.500	6.58	639.98	.00	.00	640.07	.09	.03	.04	635.40
688.0	163.4	394.7	129.8	188.8	127.4	174.1	13.0	5.9	636.40
.11	.87	3.10	.75	.120	.050	.120	.000	633.40	129.40
.001161	30.	30.	30.	2	0	0	.00	221.68	351.08

CCHV= .100 CEHV= .300
*SECNO 21.000

3470 ENCROACHMENT STATIONS= 150.0 500.0 TYPE= 1 TARGET= -150.000

21.000	6.54	640.14	.00	.00	640.21	.08	.15	.00	637.90
688.0	34.8	640.6	12.6	87.5	276.4	39.3	14.5	6.6	638.40
.12	.40	2.32	.32	.120	.050	.120	.000	633.60	150.00
.000820	150.	150.	150.	1	0	0	.00	195.46	345.46

1

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

CCHV= .600 CEHV= .800
*SECNO 23.700

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .42

3470 ENCROACHMENT STATIONS= 150.0 300.0 TYPE= 1 TARGET= 150.000

23.700	6.21	640.51	.00	.00	640.88	.36	.44	.23	638.00
682.0	118.0	514.5	49.5	117.3	92.7	49.5	16.6	7.6	637.90
.14	1.01	5.55	1.00	.120	.050	.120	.000	634.30	150.00
.004587	270.	270.	270.	2	0	0	.00	145.86	295.86

CCHV= .600 CEHV= .800
*SECNO 24.000

3470 ENCROACHMENT STATIONS= 150.0 300.0 TYPE= 1 TARGET= 150.000

24.000	6.36	640.66	.00	.00	641.12	.46	.16	.08	634.40
682.0	275.8	299.9	106.3	170.3	37.4	72.6	16.8	7.7	634.60
.14	1.62	8.01	1.46	.120	.050	.120	.000	634.30	150.00
.006342	30.	30.	30.	2	0	0	.00	147.91	297.91

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.50	2.60	.00	6.00	6.00	45.00	2	2	633.98	633.90

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 2 - MITERED TO CONFORM TO SLOPE

5130, EGIC= 665.43..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 658.18 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 24.450

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 640.91
5150, EG OF 640.91 LESS THAN XEG OF 641.12
SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
665.43	658.18	.00	439.	243.	6.861	28.3	639.50	194.

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3710 WSEL ASSUMED BASED ON MIN DIFF

3470 ENCROACHMENT STATIONS= 150.0 300.0 TYPE= 1 TARGET= 150.000

24.450	6.70	641.00	.00	.00	641.31	.31	.00	.00	634.40
682.0	295.5	271.1	115.4	204.1	39.5	88.4	17.1	7.9	634.60
.15	1.45	6.86	1.31	.120	.050	.120	.000	634.30	150.00
.004331	45.	45.	45.	20	0	0	.00	150.00	300.00

1

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

*SECNO 24.750

3470 ENCROACHMENT STATIONS= 150.0 300.0 TYPE= 1 TARGET= 150.000

24.750	6.23	641.13	.00	.00	641.48	.35	.13	.03	638.20
682.0	59.3	534.3	88.4	71.9	100.4	69.3	17.3	8.0	639.00
.15	.82	5.32	1.27	.120	.050	.120	.000	634.90	150.00
.004559	30.	30.	30.	0	0	0	.00	150.00	300.00

CCHV= .100 CEHV= .300
*SECNO 26.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.70

```
   26.000      6.31    641.71       .00       .00    641.81       .10       .31       .02    638.20
    682.0     166.6     347.0     168.3     196.0     100.1     205.2      18.3       8.5    638.70
      .16       .85      3.47       .82      .120      .050      .120      .000    635.40    148.57
  .001581      125.      125.      125.         2         0         0       .00    208.94    357.52


CCHV=     .600 CEHV=     .800
*SECNO 27.300

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68


3470 ENCROACHMENT STATIONS=      166.0     320.0  TYPE=      1  TARGET=      154.000
   27.300      6.19    641.99       .00       .00    642.19       .20       .29       .08    641.80
    682.0        .1     681.2        .8        .4     190.0       2.2      19.4       8.9    641.30
      .17       .15      3.59       .35      .120      .050      .120      .000    635.80    233.85
  .003446      130.      130.      130.         2         0         0       .00     72.58    306.43


*SECNO 27.600

3470 ENCROACHMENT STATIONS=      166.0     320.0  TYPE=      1  TARGET=      154.000
   27.600      6.28    642.08       .00       .00    642.29       .21       .09       .01    641.80
    682.0        .1     667.0      14.9        .8     177.4      26.2      19.5       9.0    640.50
      .18       .18      3.76       .57      .120      .050      .120      .000    635.80    231.98
  .002914       30.       30.       30.         1         0         0       .00     86.45    318.42


1
   19OCT92      13:06:04                                                                                PAGE   50


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



SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .024      .50      2.60       .00      6.00      6.00      52.00      2         2       636.44    635.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5130, EGIC=  667.93..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  660.23 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 28.150

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    644.86

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.58

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   667.93    660.23      2.57      414.      265.     2.080      28.3    643.28      187.
```

```
3470 ENCROACHMENT STATIONS=      205.0     295.0  TYPE=      1  TARGET=       90.000
    28.150      8.36    644.80       .00       .00    644.86       .06      2.57       .00    641.80
     682.0      32.2     628.2      21.6      74.6     302.0      40.6      19.9       9.1    640.50
       .18       .43      2.08       .53      .120      .050      .120      .000    636.44    205.00
   .000437       55.       55.       55.         2         0         0       .00     90.00    295.00


*SECNO 28.450

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .42


3470 ENCROACHMENT STATIONS=      205.0     295.0  TYPE=      1  TARGET=       90.000
    28.450      8.07    644.77       .00       .00    645.09       .32       .03       .20    642.20
     682.0      35.2     594.1      52.7      47.2     123.3      47.0      20.1       9.2    639.30
       .19       .75      4.82      1.12      .120      .050      .120      .000    636.70    205.00
   .002451       30.       30.       30.         2         0         0       .00     82.18    287.18


CCHV=     .100 CEHV=     .300
*SECNO 32.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.00

    32.000      7.84    645.44       .00       .00    645.50       .07       .39       .03    641.80
     682.0     206.4     464.3      11.3     312.0     190.3      32.3      23.2      10.2    643.00
       .24       .66      2.44       .35      .120      .050      .120      .000    637.60    116.60
   .000613      355.      355.      355.         2         0         0       .00    172.92    289.51


1
   19OCT92      13:06:04                                                                                PAGE   51


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


CCHV=     .600 CEHV=     .800
*SECNO 37.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .40


3470 ENCROACHMENT STATIONS=          .0     265.0  TYPE=      1  TARGET=      264.999
    37.000      6.58    646.03       .00       .00    646.26       .23       .62       .14    639.45
     682.0     101.4     442.9     137.7      52.7      97.3      58.9      27.5      11.4    639.56
       .28      1.92      4.55      2.34      .120      .070      .120      .000    639.45    226.66
   .003802      500.      500.      500.         2         0         0       .00     38.34    265.00


 SPECIAL BRIDGE

 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
```

```
     .00      3.70      2.60       .00     15.00       .00     50.00       .00    640.10    639.56

*SECNO 38.500
PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape


 EGPRS      EGLWC       H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                                 AREA
   656.72    647.58      .00      220.      465.       50.       69.      644.70    650.20      257.



3470 ENCROACHMENT STATIONS=      150.0     255.0  TYPE=      1  TARGET=      105.000
   38.500     10.78    650.88       .00       .00    650.99       .12      4.73       .00    642.60
    682.0     196.0     486.0        .0     163.3     152.6        .0      28.4      11.7 100000.00
      .29      1.20      3.18       .00      .120      .070      .000      .000    640.10    150.00
  .002099      150.      150.      150.         2         0         6       .00    105.00    255.00


CCHV=     .100 CEHV=     .300
*SECNO 43.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.48


3470 ENCROACHMENT STATIONS=        .0     500.0  TYPE=      1  TARGET=      499.999
   43.500      8.81    651.21       .00       .00    651.21       .01       .21       .01    645.00
    682.0     241.7     148.2     292.1     625.7     108.2     673.9      38.3      14.7    646.40
      .52       .39      1.37       .43      .120      .050      .120      .000    642.40       .00
  .000173      500.      500.      500.         3         0         0       .00    421.75    421.75


1
   19OCT92      13:06:04                                                                                PAGE   52


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


*SECNO 50.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .47

   50.000      5.05    651.35       .00       .00    651.37       .01       .15       .00    648.20
    486.0     112.3     129.8     243.9     219.4      85.7     500.7      54.8      20.1    648.80
      .75       .51      1.51       .49      .120      .050      .120      .000    646.30    164.33
  .000391      650.      650.      650.         2         0         0       .00    299.22    463.55


*SECNO 52.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60

   52.500      4.20    651.50       .00       .00    651.52       .03       .15       .00    649.20
    486.0     108.9     149.1     228.0     156.0      68.5     343.0      58.7      21.7    649.80
      .81       .70      2.18       .66      .120      .050      .120      .000    647.30    167.78
  .001085      250.      250.      250.         2         0         0       .00    268.38    436.16
```

```
*SECNO 55.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    55.000      3.71    652.11    652.11       .00    652.59       .48       .65       .14    651.60
     486.0      59.2     360.3      66.5      44.0      55.9      73.9      60.8      23.1    651.70
       .83      1.35      6.45       .90      .120      .050      .120      .000    648.40    194.59
   .012977      250.      250.      250.        20         9         0       .00    229.44    424.03


*SECNO 61.000
3280 CROSS SECTION     61.00 EXTENDED      1.75 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.31


3470 ENCROACHMENT STATIONS=      210.0     400.0  TYPE=      1  TARGET=      190.000
    61.000      3.95    654.65       .00       .00    654.69       .04      2.05       .04    653.10
     341.0      11.1     173.0     156.9      20.8      80.0     246.5      64.4      26.0    652.90
       .95       .53      2.16       .64      .120      .050      .120      .000    650.70    212.92
   .001194      600.      600.      600.         6         0         0       .00    187.08    400.00


1
   19OCT92      13:06:04                                                                                PAGE   53


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


*SECNO 63.300
3280 CROSS SECTION     63.30 EXTENDED       .14 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .49


3470 ENCROACHMENT STATIONS=      210.0     320.0  TYPE=      1  TARGET=      110.000
    63.300      3.34    655.04       .00       .00    655.20       .16       .47       .04    654.10
     324.0       9.3     237.3      77.3      11.7      64.7      69.9      65.7      26.7    653.90
       .97       .80      3.67      1.11      .120      .050      .120      .000    651.70    217.02
   .004571      230.      230.      230.         2         0         0       .00    102.98    320.00


*SECNO 65.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59


3470 ENCROACHMENT STATIONS=        .0     335.0  TYPE=      1  TARGET=      334.999
    65.500      3.67    656.37    656.24       .00    656.90       .53      1.59       .11    653.80
     324.0      17.5     211.6      94.9      10.8      29.5      62.8      66.4      27.3    654.10
       .98      1.63      7.16      1.51      .120      .050      .120      .000    652.70    235.63
   .013151      220.      220.      220.         6         8         0       .00     99.37    335.00
```

```
*SECNO 70.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.04


3470 ENCROACHMENT STATIONS=          .0     325.0  TYPE=      1  TARGET=      324.999
    70.000      4.75    659.35       .00       .00    659.50       .15      2.56       .04    655.70
     324.0      21.9     166.5     135.6      21.7      39.3     128.5      67.9      28.2    656.00
      1.03      1.01      4.24      1.06      .120      .050      .120      .000    654.60    232.11
   .003156      450.      450.      450.         3         0         0       .00     92.89    325.00


*SECNO 79.500

3265 DIVIDED FLOW

1
   19OCT92      13:06:04                                                                                                    PAGE   54


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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .57


3470 ENCROACHMENT STATIONS=        190.0     325.0  TYPE=      1  TARGET=      135.000
    79.500      6.77    663.87       .00       .00    664.51       .63      4.86       .14    660.70
     324.0      27.8     265.0      31.2      17.2      37.7      19.4      70.7      29.8    660.60
      1.07      1.61      7.03      1.61      .120      .050      .120      .000    657.10    235.15
   .009701      950.      950.      950.         3         0         0       .00     45.39    292.22


*SECNO 88.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.77

    88.500      6.45    668.85       .00       .00    669.10       .24      4.55       .04    664.80
     324.0      41.9     275.7       6.4      31.6      64.6      12.7      72.6      30.7    667.60
      1.13      1.33      4.27       .51      .120      .050      .120      .000    662.40    230.98
   .003096      900.      900.      900.         3         0         0       .00     47.16    278.15


*SECNO 94.000
3280 CROSS SECTION     94.00 EXTENDED      3.16 FEET


3470 ENCROACHMENT STATIONS=        215.0     285.0  TYPE=      1  TARGET=       70.000
    94.000      5.36    670.86       .00       .00    671.05       .19      1.95       .01    669.90
     324.0      17.7     305.5        .8      21.3      84.4       2.7      74.0      31.4    670.40
      1.18       .83      3.62       .30      .120      .050      .120      .000    665.50    215.00
   .004099      550.      550.      550.         3         0         0       .00     61.57    276.57
```

```
CCHV=     .600 CEHV=     .800
*SECNO 97.000

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59


3470 ENCROACHMENT STATIONS=      245.0     256.0  TYPE=      1  TARGET=       11.000
    97.000      4.62    672.69       .00       .00    673.42       .73      1.94       .43    668.07
     324.0        .0     318.6       5.4        .0      46.1       4.6      74.6      31.6    668.07
      1.19       .00      6.90      1.17      .000      .050      .120      .000    668.07    245.00
   .011648      300.      300.      300.         2         0         0       .00     11.00    256.00


1
   19OCT92      13:06:04                                                                                    PAGE   55


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


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .013      .50      2.60       .00      5.40      5.40    100.00      1         1       668.50    668.07

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  1 - SQUARE EDGE ENTRANCE WITH HEADWALL

*SECNO 98.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    674.127  EGOC =    674.356  PCWSE=    672.691  ELTRD=    676.520

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    674.13    674.36       .94        0.      324.     6.001      45.8    676.52        0.


3470 ENCROACHMENT STATIONS=      245.0     256.0  TYPE=      1  TARGET=       11.000
    98.000      5.31    673.81       .00       .00    674.36       .55       .94       .00    668.50
     324.0        .0     318.8       5.2        .0      53.1       5.3      74.7      31.7    668.50
      1.20       .00      6.00       .97      .000      .050      .120      .000    668.50    245.00
   .007760      100.      100.      100.         2         0         0       .00     11.00    256.00


CCHV=     .100 CEHV=     .300
*SECNO 104.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.91

   104.500      6.81    676.61       .00       .00    676.78       .17      2.38       .04    677.40
```

```
    324.0       .0     324.0       .0       .0      98.2       .0      75.9      31.9    677.94
     1.25      .00      3.30      .00     .000      .050     .000      .000    669.80    238.76
  .002130     650.      650.     650.        4         0        0       .00     20.29    259.06


*SECNO 109.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.59

   109.000     7.05    677.05      .00      .00    677.09      .04      .30       .01    670.30
    324.0      10.1     297.7     16.3     24.8     177.7     44.6     77.6      32.3    672.70
     1.33       .40      1.68      .36     .120      .050     .120      .000    670.00    236.64
  .000317      450.      450.     450.        3         0        0       .00     58.88    295.51


1
   19OCT92      13:06:04                                                                          PAGE   56


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


CCHV=     .600 CEHV=     .800
*SECNO 110.530

3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=       68.000
   110.530     6.82    677.12      .00      .00    677.14      .02      .04       .01    675.50
    260.0       6.2     201.4     52.4     25.0     144.6    111.7     78.6      32.5    672.00
     1.37       .25      1.39      .47     .120      .050     .120      .000    670.30    220.00
  .000232      153.      153.     153.        2         0        0       .00     68.00    288.00


*SECNO 110.830

3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=       68.000
   110.830     6.72    677.12      .00      .00    677.16      .04      .01       .01    670.40
    260.0     27.9     147.0     85.0     60.7      72.7    137.2     78.8      32.6    670.90
     1.37       .46      2.02      .62     .120      .050     .120      .000    670.40    220.00
  .000374       30.       30.      30.        0         0        0       .00     68.00    288.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .024      .50      2.60      .00       5.50      5.50      70.00     2         3         670.50    670.40

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  3 - PIPE PROJECTING FROM FILL

*SECNO 111.530

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    677.90
SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV      VCH     ACULV     ELTRD    WEIRLN
    675.64    678.18      .73       39.      223.    1.764      47.5    677.25       80.
```

```
3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=      68.000
   111.530      7.37    677.87      .00       .00    677.90      .03       .73       .00    670.50
     260.0      31.8     140.7     87.5      76.2      79.8    158.4      79.2      32.7    671.00
      1.39       .42      1.76      .55      .120      .050     .120      .000    670.50    220.00
   .000252       70.       70.      70.         2         0        0       .00     68.00    288.00


*SECNO 111.830

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51

1
   19OCT92      13:06:04                                                                                                PAGE   57


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



3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=      68.000
   111.830      7.29    677.89      .00       .00    677.91      .01       .00       .01    673.40
     260.0       9.1     236.0     15.0      43.6     231.5     52.9      79.4      32.7    673.10
      1.40       .21      1.02      .28      .120      .050     .120      .000    670.60    220.00
   .000110       30.       30.      30.         1         0        0       .00     68.00    288.00


CCHV=     .100 CEHV=     .300
*SECNO 115.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.60


3470 ENCROACHMENT STATIONS=      150.0     340.0  TYPE=      1  TARGET=     190.000
   115.500      7.52    677.92      .00       .00    677.92      .00       .01       .00    672.80
      63.0      20.9      28.6     13.4     402.7     172.9    275.3      84.4      33.8    672.80
      2.39       .05       .17      .05      .120      .050     .120      .000    670.40    150.00
   .000003      367.      367.     367.         2         0        0       .00    190.00    340.00


*SECNO 121.500

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


3470 ENCROACHMENT STATIONS=      240.0     305.0  TYPE=      1  TARGET=      65.000
   121.500      7.82    677.92      .00       .00    677.92      .00       .00       .00    677.80
      63.0        .0      53.6      9.4        .0     120.7     75.7      91.6      35.5    673.50
      2.81       .00       .44      .12      .000      .050     .120      .000    670.10    241.84
   .000027      600.      600.     600.         2         0        0       .00     51.05    292.89


CCHV=     .600 CEHV=     .800
*SECNO 125.800
```

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.04


3470 ENCROACHMENT STATIONS=      160.0     395.0  TYPE=      1  TARGET=      235.000
   125.800      7.12    677.93       .00       .00    677.93       .00       .00       .00    670.83
      63.0      30.0       5.9      27.0     364.0      21.3     387.4      96.4      36.9    670.81
      4.06       .08       .28       .07      .120      .050      .120      .000    670.81    160.00
   .000006      430.      430.      430.         0         0         0       .00    235.00    395.00


1
   19OCT92      13:06:04                                                                                                PAGE   58


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


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .013      .50      2.60       .00      3.00      3.00    204.00      1         1       671.87    670.83

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  1 - SQUARE EDGE ENTRANCE WITH HEADWALL

*SECNO 126.430
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       241. DOES NOT EQUAL ACTUAL Q =        63.


SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    677.93
SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    677.03    681.60       .00      239.        2.      .261       7.1    676.27      311.


3470 ENCROACHMENT STATIONS=      160.0     395.0  TYPE=      1  TARGET=      235.000
   126.430      6.06    677.93       .00       .00    677.93       .00       .00       .00    671.87
      63.0      30.5       4.7      27.7     358.3      18.2     382.8      97.5      37.2    671.87
      4.25       .09       .26       .07      .120      .050      .120      .000    671.87    160.00
   .000007       64.       64.       64.         0         0         0       .00    235.00    395.00


*SECNO 126.830

3470 ENCROACHMENT STATIONS=      160.0     395.0  TYPE=      1  TARGET=      235.000
   126.830      5.94    677.94       .00       .00    677.94       .00       .01       .00    674.00
     131.0      54.0      51.4      25.6     338.5     130.1     254.3     104.3      39.4    675.70
      4.71       .16       .40       .10      .120      .050      .120      .000    672.00    160.00
   .000026      400.      400.      400.         0         0         0       .00    235.00    395.00


CCHV=     .100 CEHV=     .300
*SECNO 129.000
```

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .65

3470 ENCROACHMENT STATIONS= 160.0 450.0 TYPE= 1 TARGET= 290.000

129.000	5.45	677.95	.00	.00	677.95	.00	.01	.00	674.00
131.0	76.9	34.4	19.8	329.3	55.2	141.0	107.4	40.5	674.50
4.90	.23	.62	.14	.120	.050	.120	.000	672.50	160.00
.000061	217.	217.	217.	0	0	0	.00	185.54	345.54

1

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

*SECNO 132.600

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .17

3470 ENCROACHMENT STATIONS= 220.0 270.0 TYPE= 1 TARGET= 50.000

132.600	3.85	677.95	.00	.00	678.04	.09	.06	.03	675.60
131.0	15.1	97.4	18.4	24.5	36.1	24.6	110.0	41.4	676.10
4.95	.62	2.70	.75	.120	.050	.120	.000	674.10	223.20
.002011	360.	360.	360.	1	0	0	.00	46.80	270.00

*SECNO 136.200

136.200	3.08	678.78	.00	.00	678.87	.08	.83	.00	678.60
131.0	.1	130.4	.5	.5	56.0	2.0	110.6	41.8	678.30
4.99	.13	2.33	.25	.120	.050	.120	.000	675.70	235.74
.002669	360.	360.	360.	2	0	0	.00	42.73	278.47

*SECNO 140.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .51

140.000	2.37	679.77	.00	.00	679.81	.04	.94	.00	680.30
60.0	.0	60.0	.0	.0	36.0	.0	111.0	42.1	680.00
5.05	.00	1.67	.00	.000	.050	.000	.000	677.40	242.47
.002127	380.	380.	380.	2	0	0	.00	26.00	268.47

*SECNO 145.000

145.000	3.38	680.88	.00	.00	680.96	.08	1.13	.01	680.10
60.0	.1	56.9	3.0	.5	25.1	7.6	111.4	42.4	680.30
5.12	.29	2.26	.39	.120	.050	.120	.000	677.50	244.80
.002419	500.	500.	500.	2	0	0	.00	26.93	271.73

CCHV= .600 CEHV= .800

*SECNO 151.000

```
3470 ENCROACHMENT STATIONS=      238.0     260.0  TYPE=      1  TARGET=       22.000
   151.000      2.62    682.02       .00       .00    682.05       .04      1.08       .02    682.10
      60.0        .0      60.0        .0        .0      38.1        .0     111.9      42.7 100000.00
      5.22       .00      1.58       .00      .000      .050      .000      .000    679.40    238.23
   .001381      600.      600.      600.         2         0         0       .00     21.27    259.50


1
   19OCT92      13:06:04                                                                          PAGE   60


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


*SECNO 151.350
3280 CROSS SECTION    151.35 EXTENDED       .27 FEET


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .41


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      690.07 ELREA=      690.07

   151.350      3.34    683.57       .00       .00    684.13       .56      1.66       .41    680.23
      60.0        .0      60.0        .0        .0      10.0        .0     112.2      42.9    680.23
      5.25       .00      5.98       .00      .000      .050      .000      .000    680.23    248.00
   .008114      600.      600.      600.         2         0         0       .00      3.00    251.00



SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1          .024      .50      2.60       .00      3.00      3.00     38.00      1         3       680.67    680.23

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

*SECNO 151.730

SPECIAL CULVERT OUTLET CONTROL
EGIC =    685.007  EGOC =    686.299  PCWSE=    683.573  ELTRD=    690.070

3280 CROSS SECTION    151.73 EXTENDED      2.79 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.24

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    685.01    686.30      2.17        0.       60.     3.691       7.1    690.07        0.
```

```
3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      690.07 ELREA=      690.58

   151.730      5.42    686.09       .00       .00    686.30       .21      2.17       .00    680.67
      60.0        .0      60.0        .0        .0      16.3        .0     112.2      42.9    680.67
      5.25       .00      3.69       .00      .000      .050      .000      .000    680.67    248.00
   .001621       38.       38.       38.         2         0         0       .00      3.00    251.00


1
   19OCT92      13:06:04                                                                                    PAGE   61


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


*SECNO 152.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.53


3470 ENCROACHMENT STATIONS=      225.0     275.0  TYPE=      1  TARGET=      50.000
   152.000      4.42    686.22       .00       .00    686.40       .18       .09       .02    684.20
     241.0      38.8     192.4       9.8      32.9      50.6      14.1     112.2      42.9    684.70
      5.26      1.18      3.80       .69      .120      .050      .120      .000    681.80    225.00
   .004079       27.       27.       27.         0         0         0       .00     50.00    275.00


CCHV=     .100 CEHV=     .300
*SECNO 157.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.31


3470 ENCROACHMENT STATIONS=      100.0     500.0  TYPE=      1  TARGET=     -100.000
   157.000      2.65    687.15       .00       .00    687.17       .01       .74       .02    685.60
     241.0      28.4      76.4     136.2      74.3      56.9     245.8     115.0      44.4    685.30
      5.43       .38      1.34       .55      .120      .050      .120      .000    684.50    159.18
   .000763      500.      500.      500.         3         0         0       .00    217.65    376.83


1
PROFILE FOR STREAM  -FOLEY-100 YEAR FLOOD



PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA



ELEVATION   629.      630.      631.      632.      633.      634.      635.      636.      637.      638.
    SECNO   CUMDIS

     8.00     0.  C I       L       R .         .         .     E  .         .         .         M         .         .
             50.  C    I    .  L     . R       .         .      E .         .         .         .     M .         .
            100.  C       I .      L  .      R  .         .      WE.         .         .         .         .  M     .
            150.  C         I         .L       . R       .       WE         .         .         .         .         M
```

```
        14600.  C        .        .        .        .        .   I    .       LE        .        . M      R
        14650.  C        .        .        .        .        .    I   .        WE        .        .  M     R
   151.00 14700.  C        .        .        .        .        .     I  .        LE        .        .   M    R
        14750.  C        .        .        .        .        .     I  .        L E       .        .  M     R
        14800.  C        .        .        .        .        .      I .       L. WE      .        . M      R
        14850.  C        .        .        .        .        .      I .      L .  WE     .        .M       R
        14900.  C        .        .        .        .        .      I .     L  .  W E    .       M.        R
        14950.  C        .        .        .        .        .       I.     L  .  W E    .      M .        R
        15000.  C        .        .        .        .        .       I.    L   .   W E   .    M   .        R
        15050.  C        .        .        .        .        .       I.   L    .   W E   .  M     .        R
        15100.  C        .        .        .        .        .        I  L     .    W E . M      .        R
        15150.  C        .        .        .        .        .        I L      .     W E.M       .        R
        15200.  C        .        .        .        .        .        I L      .     W  E        .        R
        15250.  C        .        .        .        .        .        .IL      .      W .E       .        R
   151.35 15300.  C        .        .        .        .        .        .I       .    M  W. E      .        .
   151.73 15350.  C        .        .        .        .        .        . I      .    M   .        .   WE   .
   152.00 15400.  C        .        .        .        .        .        .       I.        .L  R    .    WE  M
        15450.  C        .        .        .        .        .        .        I        . L R    .    WE  M
        15500.  C        .        .        .        .        .        .        . I      . L R    .     E  M
        15550.  C        .        .        .        .        .        .        .  I     .  LR    .     E  M
        15600.  C        .        .        .        .        .        .        .   I    .  LR    .    WE M
        15650.  C        .        .        .        .        .        .        .    I   .  LR    .    WE M
        15700.  C        .        .        .        .        .        .        .     I  .   L    .     E M
        15750.  C        .        .        .        .        .        .        .      I .    L    .     E M
        15800.  C        .        .        .        .        .        .        .        I    RL   .     E M
   157.00 15850.  C        .        .        .        .        .        .        .        . I  R L .      EM
1
   19OCT92      13:06:04                                                                                PAGE   79
```

THIS RUN EXECUTED 19OCT92 13:06:55

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

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

BEHAN-FOLEY DRAIN

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	DEPTH	TOPWID	EG	VCH
	8.000	364.00	631.98	2.78	300.73	631.99	1.06
	8.000	626.00	633.12	3.92	342.59	633.13	1.14
	8.000	743.00	633.70	4.50	362.11	633.71	1.12
	8.000	930.00	635.00	5.80	408.33	635.01	1.01
*	14.000	350.00	634.18	1.68	196.18	634.50	6.72
*	14.000	584.00	634.45	1.95	210.12	634.83	7.81
*	14.000	688.00	634.58	2.08	210.47	634.96	7.89
*	14.000	856.00	635.13	2.63	211.91	635.33	5.99

*	17.850	350.00	637.18	4.08	96.23	637.26	2.78
*	17.850	584.00	637.94	4.84	109.78	638.05	3.32
*	17.850	688.00	638.18	5.08	114.20	638.30	3.55
*	17.850	856.00	638.32	5.22	116.61	638.49	4.20
	18.150	350.00	637.27	4.17	97.90	637.34	2.66
	18.150	584.00	638.04	4.94	111.84	638.14	3.17
	18.150	688.00	638.30	5.20	116.34	638.41	3.40
	18.150	856.00	638.48	5.38	119.47	638.63	3.97
*	19.200	350.00	639.46	6.11	118.00	639.48	1.23
*	19.200	584.00	639.84	6.49	118.00	639.87	1.87
*	19.200	688.00	639.96	6.61	118.00	640.00	2.15
*	19.200	856.00	640.21	6.86	118.00	640.27	2.53
	19.500	350.00	639.47	6.07	193.92	639.51	1.86
	19.500	584.00	639.86	6.46	215.36	639.93	2.74
	19.500	688.00	639.98	6.58	221.68	640.07	3.10
	19.500	856.00	640.23	6.83	234.52	640.35	3.54
	21.000	350.00	639.54	5.94	149.18	639.57	1.41
	21.000	584.00	639.98	6.38	191.49	640.05	2.06
	21.000	688.00	640.14	6.54	195.46	640.21	2.32
	21.000	856.00	640.43	6.83	201.47	640.53	2.65

	SECNO	Q	CWSEL	DEPTH	TOPWID	EG	VCH
*	23.700	361.00	639.72	5.42	134.35	639.96	4.13
*	23.700	580.00	640.30	6.00	142.78	640.63	5.15
*	23.700	682.00	640.51	6.21	145.86	640.88	5.55
*	23.700	840.00	640.87	6.57	150.00	641.26	5.94
	24.000	361.00	639.81	5.51	135.65	640.18	6.39
	24.000	580.00	640.43	6.13	144.61	640.86	7.57
	24.000	682.00	640.66	6.36	147.91	641.12	8.01
	24.000	840.00	641.02	6.72	150.00	641.48	8.38
	24.450	361.00	639.84	5.54	104.00	640.37	7.20
*	24.450	580.00	640.27	5.97	104.00	641.11	9.55
*	24.450	682.00	641.00	6.70	150.00	641.31	6.86
	24.450	840.00	641.03	6.73	150.00	641.48	8.35
*	24.750	361.00	640.54	5.64	97.49	640.70	3.52
*	24.750	580.00	641.44	6.54	150.00	641.63	4.03
	24.750	682.00	641.13	6.23	150.00	641.48	5.32
	24.750	840.00	641.21	6.31	150.00	641.70	6.34
	26.000	361.00	640.84	5.44	198.92	640.92	2.73
*	26.000	580.00	641.77	6.37	209.36	641.84	2.89
*	26.000	682.00	641.71	6.31	208.94	641.81	3.47
*	26.000	840.00	642.00	6.60	211.20	642.11	3.82
*	27.300	361.00	641.07	5.27	56.69	641.18	2.69
*	27.300	580.00	641.96	6.16	71.70	642.10	3.08
*	27.300	682.00	641.99	6.19	72.58	642.19	3.59
*	27.300	840.00	642.30	6.50	82.51	642.55	4.00

	27.600	361.00	641.14	5.34	59.50	641.25	2.69
	27.600	580.00	642.03	6.23	84.28	642.19	3.24
	27.600	682.00	642.08	6.28	86.45	642.29	3.76
	27.600	840.00	642.40	6.60	95.22	642.67	4.21
*	28.150	361.00	644.11	7.67	90.00	644.13	1.26
*	28.150	580.00	644.63	8.19	90.00	644.68	1.82
*	28.150	682.00	644.80	8.36	90.00	644.86	2.08
*	28.150	840.00	645.01	8.57	90.00	645.09	2.47
*	28.450	361.00	644.10	7.40	62.49	644.23	2.96
*	28.450	580.00	644.61	7.91	78.80	644.86	4.25
*	28.450	682.00	644.77	8.07	82.18	645.09	4.82
*	28.450	840.00	644.97	8.27	85.67	645.40	5.68
*	32.000	361.00	644.41	6.81	139.34	644.44	1.69
*	32.000	580.00	645.16	7.56	163.75	645.21	2.23
*	32.000	682.00	645.44	7.84	172.92	645.50	2.44
*	32.000	840.00	645.83	8.23	185.76	645.91	2.73

1

	SECNO	Q	CWSEL	DEPTH	TOPWID	EG	VCH
*	37.000	361.00	644.77	5.32	36.31	644.87	3.06
*	37.000	580.00	645.68	6.23	37.78	645.87	4.11
*	37.000	682.00	646.03	6.58	38.34	646.26	4.55
*	37.000	840.00	646.51	7.06	39.13	646.82	5.18
	38.500	361.00	647.57	7.47	15.00	647.76	3.50
*	38.500	580.00	650.72	10.62	101.59	650.81	2.80
	38.500	682.00	650.88	10.78	105.00	650.99	3.18
	38.500	840.00	651.05	10.95	105.00	651.22	3.77
*	43.500	361.00	648.43	6.03	219.73	648.45	1.99
*	43.500	580.00	650.99	8.59	421.40	651.00	1.24
*	43.500	682.00	651.21	8.81	421.75	651.21	1.37
*	43.500	840.00	651.48	9.08	422.19	651.49	1.56
*	50.000	288.00	649.22	2.92	241.24	649.30	3.06
*	50.000	430.00	651.12	4.82	281.71	651.14	1.46
*	50.000	486.00	651.35	5.05	299.22	651.37	1.51
*	50.000	576.00	651.66	5.36	338.59	651.67	1.61
	52.500	288.00	650.22	2.92	241.26	650.29	3.06
*	52.500	430.00	651.27	3.97	263.56	651.30	2.16
*	52.500	486.00	651.50	4.20	268.38	651.52	2.18
*	52.500	576.00	651.80	4.50	274.79	651.83	2.24
*	55.000	288.00	651.60	3.20	125.35	652.07	5.75
*	55.000	430.00	652.03	3.63	223.18	652.48	6.12
*	55.000	486.00	652.11	3.71	229.44	652.59	6.45
*	55.000	576.00	652.26	3.86	230.67	652.75	6.69
*	61.000	193.00	654.03	3.33	182.94	654.06	1.76
*	61.000	293.00	654.47	3.77	185.62	654.51	2.04
*	61.000	341.00	654.65	3.95	187.08	654.69	2.16

*	61.000	417.00	654.88	4.18	189.02	654.93	2.36
*	63.300	190.00	654.41	2.71	73.92	654.53	3.05
*	63.300	282.00	654.86	3.16	101.98	655.01	3.52
*	63.300	324.00	655.04	3.34	102.98	655.20	3.67
*	63.300	391.00	655.29	3.59	104.37	655.46	3.90
*	65.500	190.00	655.74	3.04	58.73	656.20	6.15
*	65.500	282.00	656.20	3.50	80.91	656.72	6.91
*	65.500	324.00	656.37	3.67	99.37	656.90	7.16
*	65.500	391.00	656.61	3.91	100.16	657.15	7.42
*	70.000	190.00	658.59	3.99	90.41	658.73	3.68
*	70.000	282.00	659.14	4.54	92.22	659.28	4.07
*	70.000	324.00	659.35	4.75	92.89	659.50	4.24
*	70.000	391.00	659.63	5.03	93.81	659.80	4.52

	SECNO	Q	CWSEL	DEPTH	TOPWID	EG	VCH
*	79.500	190.00	662.85	5.75	21.89	663.29	5.59
*	79.500	282.00	663.58	6.48	26.80	664.17	6.68
*	79.500	324.00	663.87	6.77	45.39	664.51	7.03
*	79.500	391.00	664.29	7.19	63.63	664.95	7.39
*	88.500	190.00	667.56	5.16	22.86	667.74	3.60
*	88.500	282.00	668.50	6.10	39.86	668.73	4.08
*	88.500	324.00	668.85	6.45	47.16	669.10	4.27
*	88.500	391.00	669.31	6.91	62.23	669.58	4.55
	94.000	190.00	669.90	4.40	44.78	670.07	3.37
	94.000	282.00	670.59	5.09	54.35	670.78	3.54
	94.000	324.00	670.86	5.36	61.57	671.05	3.62
	94.000	391.00	671.25	5.75	70.00	671.45	3.74
	97.000	190.00	671.80	3.73	11.00	672.18	5.01
*	97.000	282.00	672.46	4.39	11.00	673.07	6.33
*	97.000	324.00	672.69	4.62	11.00	673.42	6.90
*	97.000	391.00	673.03	4.96	11.00	673.95	7.77
	98.000	190.00	672.41	3.91	11.00	672.76	4.77
	98.000	282.00	673.38	4.88	11.00	673.87	5.68
	98.000	324.00	673.81	5.31	11.00	674.36	6.00
	98.000	391.00	674.62	6.12	11.00	675.22	6.29
*	104.500	190.00	674.90	5.10	17.43	675.03	2.88
*	104.500	282.00	676.11	6.31	19.46	676.27	3.19
*	104.500	324.00	676.61	6.81	20.29	676.78	3.30
*	104.500	391.00	677.39	7.59	21.60	677.57	3.42
*	109.000	190.00	675.34	5.34	48.97	675.37	1.44
*	109.000	282.00	676.55	6.55	56.00	676.59	1.61
*	109.000	324.00	677.05	7.05	58.88	677.09	1.68
*	109.000	391.00	677.82	7.82	63.36	677.86	1.76
	110.530	132.00	675.41	5.11	54.70	675.43	1.08
	110.530	220.00	676.62	6.32	68.00	676.64	1.32

110.530	260.00	677.12	6.82	68.00	677.14	1.39
110.530	325.00	677.89	7.59	68.00	677.91	1.50
110.830	132.00	675.42	5.02	52.69	675.45	1.61
110.830	220.00	676.63	6.23	68.00	676.66	1.92
110.830	260.00	677.12	6.72	68.00	677.16	2.02
110.830	325.00	677.89	7.49	68.00	677.93	2.15
111.530	132.00	675.67	5.17	63.47	675.70	1.54
111.530	220.00	677.35	6.85	68.00	677.37	1.66
111.530	260.00	677.87	7.37	68.00	677.90	1.76
111.530	325.00	678.33	7.83	68.00	678.37	2.02

1

	SECNO	Q	CWSEL	DEPTH	TOPWID	EG	VCH
*	111.830	132.00	675.70	5.10	58.99	675.71	.85
*	111.830	220.00	677.37	6.77	68.00	677.38	.95
*	111.830	260.00	677.89	7.29	68.00	677.91	1.02
*	111.830	325.00	678.36	7.76	68.00	678.38	1.17
*	115.500	38.00	675.72	5.32	178.01	675.72	.19
*	115.500	52.00	677.40	7.00	190.00	677.40	.15
*	115.500	63.00	677.92	7.52	190.00	677.92	.17
*	115.500	85.00	678.40	8.00	190.00	678.40	.20
*	121.500	38.00	675.73	5.63	36.22	675.73	.46
*	121.500	52.00	677.40	7.30	47.86	677.40	.41
*	121.500	63.00	677.92	7.82	51.05	677.92	.44
*	121.500	85.00	678.40	8.30	54.34	678.40	.54
*	125.800	38.00	675.76	4.95	3.00	675.86	2.57
*	125.800	52.00	677.41	6.60	235.00	677.41	.28
*	125.800	63.00	677.93	7.12	235.00	677.93	.28
*	125.800	85.00	678.41	7.60	235.00	678.41	.32
*	126.430	38.00	676.45	4.58	202.68	676.45	.28
	126.430	52.00	677.41	5.54	235.00	677.41	.26
	126.430	63.00	677.93	6.06	235.00	677.93	.26
	126.430	85.00	678.41	6.54	235.00	678.41	.30
	126.830	78.00	676.46	4.46	235.00	676.46	.42
	126.830	115.00	677.42	5.42	235.00	677.42	.41
	126.830	131.00	677.94	5.94	235.00	677.94	.40
	126.830	159.00	678.42	6.42	235.00	678.42	.42
*	129.000	78.00	676.48	3.98	150.75	676.48	.68
*	129.000	115.00	677.43	4.93	178.04	677.43	.66
*	129.000	131.00	677.95	5.45	185.54	677.95	.62
*	129.000	159.00	678.43	5.93	194.15	678.43	.65
*	132.600	78.00	676.45	2.35	33.50	676.70	4.09
*	132.600	115.00	677.43	3.33	42.25	677.55	3.05
*	132.600	131.00	677.95	3.85	46.80	678.04	2.70
*	132.600	159.00	678.43	4.33	50.00	678.51	2.67
*	136.200	78.00	678.29	2.59	28.09	678.34	1.86

	136.200	115.00	678.59	2.89	34.14	678.67	2.27
	136.200	131.00	678.78	3.08	42.73	678.87	2.33
	136.200	159.00	679.11	3.41	58.19	679.20	2.38
*	140.000	48.00	679.32	1.92	21.83	679.38	1.89
*	140.000	55.00	679.65	2.25	24.83	679.69	1.67
*	140.000	60.00	679.77	2.37	26.00	679.81	1.67
*	140.000	68.00	679.97	2.57	27.92	680.02	1.64

1

	SECNO	Q	CWSEL	DEPTH	TOPWID	EG	VCH
	145.000	48.00	680.68	3.18	26.32	680.74	2.03
	145.000	55.00	680.79	3.29	26.66	680.86	2.18
	145.000	60.00	680.88	3.38	26.93	680.96	2.26
	145.000	68.00	681.02	3.52	27.34	681.10	2.38
	151.000	48.00	681.75	2.35	20.25	681.79	1.47
	151.000	55.00	681.91	2.51	20.86	681.95	1.53
	151.000	60.00	682.02	2.62	21.27	682.05	1.58
	151.000	68.00	682.17	2.77	21.70	682.21	1.64
*	151.350	48.00	683.27	3.04	3.00	683.70	5.27
*	151.350	55.00	683.45	3.22	3.00	683.95	5.69
*	151.350	60.00	683.57	3.34	3.00	684.13	5.98
*	151.350	68.00	683.75	3.52	3.00	684.39	6.44
*	151.730	48.00	684.77	4.10	3.00	685.01	3.90
*	151.730	55.00	685.52	4.85	3.00	685.74	3.78
*	151.730	60.00	686.09	5.42	3.00	686.30	3.69
*	151.730	68.00	687.06	6.39	3.00	687.25	3.55
*	152.000	123.00	684.99	3.19	36.59	685.18	3.71
*	152.000	205.00	685.65	3.85	44.75	685.88	4.20
*	152.000	241.00	686.22	4.42	50.00	686.40	3.80
*	152.000	299.00	687.21	5.41	50.00	687.34	3.29
*	157.000	123.00	686.36	1.86	198.46	686.37	1.18
*	157.000	205.00	686.87	2.37	210.91	686.88	1.35
*	157.000	241.00	687.15	2.65	217.65	687.17	1.34
*	157.000	299.00	687.77	3.27	243.25	687.78	1.23

1

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=     14.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     14.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     14.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=     14.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     14.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     14.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
```

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES          *
*                                        *
*  Version   4.6.2;  May 1991            *
*                                        *
*  RUN DATE    28SEP92    TIME   16:05:40 *
*****************************************
```

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

FLOODWAY CALC. (BFF.OUT)

```
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
```

28SEP92 16:05:40 PAGE 1

THIS RUN EXECUTED 28SEP92 16:05:40

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

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

T1 CITY OF WYOMING, KENT COUNTY, MICHIGAN
T2 100 YEAR FLOOD-NATURAL
T3 BEHAN-FOLEY DRAIN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	0	0	0	0	0	633.70	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	1	0	0	0	0	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

	110	150	200							
NC	.12	.12	.05	.1	.3					
QT	2	743	743							
ET			1.4							
X1	8.0	17	300	400	0	0	0	0	0	0
GR	637.0	0	635.0	50	633.1	100	631.4	150	629.2	200
GR	630	300	629.9	350	630.8	400	630.8	425	634.2	450
GR	636.6	475	636.9	500	637.2	550	638.2	570	639.8	582
GR	640.54	593	640.51	600						

```
QT       2       688       688
ET               4.1       1.4       350
X1      14        19       542       565       600       600       600         0         0         0
GR     636         0       634       300     634.3       350     633.5       400     632.8       425
GR   633.3       450       634       500       634       532     634.4       542     632.7       545
GR   632.8       550     632.5       555     636.3       565     636.5       575     645.3       600
GR   646.7       650     646.7       700     646.5       750     645.4       800

NC     .12       .12       .05        .6        .8
ET               4.1       4.1        90       313
X1   17.85        19       240       280       385       385       385         0         0         0
GR   643.9         0     641.4        30     640.5        50     639.9       100       639       150
GR     637       175     634.1       200     635.5       240     633.6       243     633.1       250
GR   633.2       254     635.2       258     639.2       280     639.2       300     639.4       325
GR   641.9       350    645.25       400    645.95       450    647.55       500
  PINE CREEK (BRIDGE #1)
```



```
ET               4.1       4.1        90       313
X1   18.15        19       240       280        30        30        30         0         0
X4       1     633.3       248
GR   643.9         0     641.4        30     640.5        50     639.9       100       639       150
GR     637       175     634.1       200     635.5       240     633.6       243     633.1       250
GR   633.2       254     635.2       258     639.2       280     639.2       300     639.4       325
GR   641.9       350    645.25       400    645.95       450    647.55       500

SC   1.024        .5       2.6         0       5.3       5.5       105       8.2    633.35    633.15
ET               4.1       4.1       158       276
X1   19.20         0         0         0       105       105       105         0         0         0
X2       0         0         2     638.7     638.7         0         0         0         0         0
X3       0    633.35         0         0         0         0         0         0         0         0
BT     -14         0     643.9         0        50     640.5         0       100     639.9         0
BT               150    639.25         0       200    638.93         0       250     638.7         0
BT               254     638.8         0       258     638.9         0       280     639.2         0
BT               300     639.2         0       350     641.9         0       400    645.25         0
BT               450    645.95         0       500    647.55         0

ET               4.1       4.1       158       276
X1   19.50        16       242       265        30        30        30         0         0         0
GR   642.8         0     641.3        50     640.8       100     639.4       150     639.2       200
GR   636.1       215     635.4       242     633.4       246     633.5       250     633.8       254
GR   636.4       265     637.4       300     639.9       350    643.45       400    643.35       450
GR   645.45      500

NC     .12       .12       .05        .1        .3
ET               4.1       1.4       150
X1      21        16       240       300       150       150       150         0      +.30         0
GR     644         0     643.3        50       642       100     638.5       125     639.6       150
GR     639       200     637.6       240       634       245     633.6       250       634       255
GR   633.3       260     638.1       300       640       350     644.1       400     644.9       450
GR   644.9       500
```

```
QT        2       682       682
NC      .12       .12       .05        .6        .8
ET                4.1       4.1       150       300
X1    23.70        16       240       258       270       270       270         0         0         0
GR    638.2         0     638.1        50     638.5       100     639.6       150       639       200
GR    639.7       220       638       240     634.6       245     634.3       250     634.6       254
GR    637.9       258     640.8       300     641.3       350     643.1       400       647       450
GR      648       500
  NORTH OF 44TH STREET (BRIDGE #2)
```



```
NC      .12       .12       .05        .6        .8
ET                4.1       4.1       150       300
X1    24.0         17       248       254        30        30        30         0         0         0
X3      10          0         0       150         0       300         0     639.5     639.5
GR    638.2         0     638.1        50     638.5       100     639.6       150       639       200
GR    639.7       220       638       240     634.6       245     634.4       248     634.3       250
GR    634.6       254     637.9       258     640.8       300     641.3       350     643.1       400
GR    647.0       450     648.0       500

SC    1.024        .5       2.6         0         6         6        45       2.2    633.98    633.90
ET                4.1       4.1       150       300
X1    24.45         0         0         0        45        45        45         0         0         0
X2        0         0         2    639.98     639.5         0         0         0         0         0
X3       10         0         0       150         0       300         0     639.5     639.5
BT       -5       100     640.1         0       150     639.9         0       200     639.5         0
BT                250    640.26         0       300       641         0

ET                4.1       4.1       150       300
X1    24.75        16       244       265        30        30        30         0       +.30         0
GR    640.8         0       641        50     640.9       100     640.5       150     640.1       200
GR    640.7       220     637.9       244     634.9       246     634.6       250     635.1       254
GR    638.7       265       639       300     641.3       350     645.6       400     646.8       450
GR    646.2       500

NC      .12       .12       .05        .1        .3
ET                          1.4
X1       26        19       240       258       125       125       125         0         0         0
GR   642.95         0    642.39        50     642.4        80     645.3       100     644.2       140
GR    641.3       150     639.4       170     639.9       200     638.2       240     635.4       245
GR    635.4       250     635.8       255     638.7       258     639.7       300       640       350
GR    645.7       375     645.5       400     646.1       450     646.9       500

NC      .12       .12       .05        .6        .8
ET                4.1       4.1       166       320
X1    27.30        18       238       300       130       130       130         0         0         0
GR    645.7         0     645.3        50     644.6       100     645.4       150     643.5       200
GR    641.8       238     636.2       246     635.8       250     636.1       254     638.6       260
GR    638.7       275     640.5       285     641.3       300     644.5       330     645.4       350
GR    645.9       400     646.5       450     646.8       500
  NORTH OF 44TH STREET (BRIDGE #3)
```

ET		4.1	4.1	166	320					
X1	27.60	16	238	285	30	30	30	0	0	0
GR	645.7	0	645.3	50	644.6	100	645.4	150	643.5	200
GR	641.8	238	636.2	246	636.1	248	635.8	250	636.1	254
GR	638.6	260	638.7	275	640.5	285	645.9	400	646.5	450
GR	646.8	500								

SC	1.024	.5	2.6	0	6	6	52	2.2	636.44	635.8
ET		4.1	4.1	205	295					
X1	28.15	0	0	0	55	55	55	0	0	0
X2	0	0	2	642.44	643.28	0	0	0	0	0
X3	0	636.44	0	0	0	0	0	0	0	0
BT	-11	0	645.7	0	50	645.3	0	100	644.6	0
BT		150	645.4	0	200	643.62	0	250	643.28	0
BT		300	644.32	0	350	645.91	0	400	646.89	0
BT		450	646.78	0	500	646.8	0			

ET		4.1	4.1	205	295					
X1	28.45	18	240	258	30	30	30	0	+.40	0
GR	647.1	0	646.2	50	646.6	100	646.2	150	644.6	200
GR	641.8	240	636.7	245	636.3	250	636.9	255	638.9	258
GR	643.4	270	645.1	300	646.3	350	647.1	400	648.8	415
GR	647.5	435	647.6	450	647.9	500				

NC	.12	.12	.05	.1	.3					
ET			1.4							
X1	32	16	235	263	355	355	355	0	0	0
GR	647.2	0	647	50	646.2	100	643.9	150	641.1	200
GR	641.8	235	638.1	241	637.6	250	637.9	259	643	263
GR	646.4	300	647.2	330	650.4	350	650.7	400	651.7	450
GR	652.51	500								

44TH STREET BRIDGE (BRIDGE #4)

NC	.12	.12	.07	.6	.8					
ET		4.1	4.1		265					
X1	37.0	19	240	255	500	500	500	0	0	0
GR	647.3	0	647.6	50	647.4	100	647.3	150	648.71	200
GR	648.3	223	639.6	237	639.45	240	639.56	245	639.56	250
GR	639.56	255	640.21	260	640.4	264	642.5	267	644.3	300
GR	643.9	350	647.1	400	649.2	450	651.4	500		

SB		3.7	2.6	0	15.0	0	50.0	0	640.1	639.56
ET		4.1	4.1	150	255					
X1	38.5	18	240	255	150	150	150	0	0	0
X2	0	0	1	644.7	650.2	0	0	0	0	0
X3	10	0	0	0	0	0	0	650.2	650.2	
BT	-11	0	650.6	0	50	650.5	0	100	650.2	0
BT		150	650.8	0	200	650.31	0	250	650.91	0
BT		300	651.57	0	350	652.24	0	400	652.68	0
BT		450	653.23	0	500	653.27	0			
GR	650.6	0.0	650.5	50	650.2	100	650.8	150	649.6	200
GR	649.4	215	645	235	642.6	240	640.4	245	640.1	250
GR	640.6	255	640.7	260	645.75	275	647.45	300	648.9	350

GR	649.6	400	651.6	450	652.7	500

VC	.12	.12	.05	.1	.3					
ET		4.1	1.4	0	500					
X1	43.50	24	245	260	500	500	500	0	0	0
GR	650.9	0	650.3	50	649.3	60	649.3	60	649.3	60
GR	649.1	100	649.3	150	649.5	180	645.8	195	645.6	200
GR	645.0	245	643.3	247	642.4	250	643	252	646.4	260
GR	646.8	300	646.1	350	648	400	650.1	420	653.9	426
GR	654	444	652.5	450	652.6	460	654.5	500		

QT	2	486	486							
ET			1.4							
X1	50	22	240	260	650	650	650	0	0	0
GR	665.7	0	666.1	50	665.7	100	665.3	108	655	135
GR	653.8	140	654.92	150	648.7	175	648	200	648.2	240
GR	646.3	245	646.4	250	646.6	253	648.8	260	649.2	285
GR	648.2	290	648	300	648.1	350	648.4	400	651.3	450
GR	651.5	500	656.0	550						

MANUFACTURED

ET			1.4							
X1	52.5	22	240	260	250	250	250	0	+1.0	0
GR	665.7	0	666.1	50	665.7	100	665.3	108	655	135
GR	653.8	140	654.92	150	648.7	175	648	200	648.2	240
GR	646.3	245	646.4	250	646.6	253	648.8	260	649.2	285
GR	648.2	290	648	300	648.1	350	648.4	400	651.3	450
GR	651.5	500	656.0	550						

ET			1.4							
X1	55.0	19	242	261	250	250	250	0	0	0
GR	665.4	0	665.1	50	663.5	100	663.4	125	663.9	150
GR	663.3	175	653.3	190	650.7	200	651.6	242	648.9	244
GR	648.4	250	648.6	256	651.7	261	651.9	300	651.2	350
GR	651.8	400	652.1	424	658.6	450	658.7	500		

QT	2	341	341							
ET		4.1	4.1	210	400					
X1	61	32	230	255	600	600	600	0	0	0
GR	651.9	0	653.1	50	653.5	90	654.1	100	655.1	131
GR	654.9	150	654.9	186	654.1	190	653.3	200	653.2	205
GR	655	210	654.4	215	652.6	225	653.1	230	651.6	236
GR	650.9	247	650.8	250	650.7	253	652.9	255	653.8	280
GR	653.8	290	653	300	651.3	305	651.2	308	651.3	312
GR	653	320	652.7	350	652.5	355	653.4	373	652.8	400
GR	652.7	450	652.9	500						

QT	2	324	324		

MANUFACTURED

ET		4.1	4.1	210	320

1

X1	63.3	32	230	255	230	230	230	0	+1.0	0
GR	651.9	0	653.1	50	653.5	90	654.1	100	655.1	131
GR	654.9	150	654.9	186	654.1	190	653.3	200	653.2	205
GR	655	210	654.4	215	652.6	225	653.1	230	651.6	236
GR	650.9	247	650.8	250	650.7	253	652.9	255	653.8	280
GR	653.8	290	653	300	651.3	305	651.2	308	651.3	312
GR	653	320	652.7	350	652.5	355	653.4	373	652.8	400
GR	652.7	450	652.9	500						

MANUFACTURED

ET		4.1	4.1		340					
X1	65.5	33	244	253	220	220	220	0	-1.9	0
GR	697.29	0	688	50	682.3	77	680.5	79	680	86
GR	680.8	88	676.26	100	663.9	123	661	150	660.8	155
GR	661.7	184	661.1	200	660.8	205	661	221	660	230
GR	655.7	244	654.7	248	654.6	250	654.8	252	656	253
GR	655.6	257	657.9	265	657.3	279	658.2	300	658.2	315
GR	656.9	325	657.7	350	658.4	365	658.7	400	660.2	435
GR	659.3	450	660.2	490	661.6	500				

ET		4.1	4.1		325					
X1	70	33	244	253	450	450	450	0	0	0
GR	697.29	0	688	50	682.3	77	680.5	79	680	86
GR	680.8	88	676.26	100	663.9	123	661	150	660.8	155
GR	661.7	184	661.1	200	660.8	205	661	221	660	230
GR	655.7	244	654.7	248	654.6	250	654.8	252	656	253
GR	655.6	257	657.9	265	657.3	279	658.2	300	658.2	315
GR	656.9	325	657.7	350	658.4	365	658.7	400	660.2	435
GR	659.3	450	660.2	490	661.6	500				

ET		4.1	4.1	190	325					
X1	79.5	36	246	253	950	950	950	0	0	0
GR	664.1	0	663.7	50	663.8	60	662.82	85	663.3	100
GR	663.6	120	664.72	135	663	142	657.1	150	663.62	165
GR	663.3	184	665.0	190	665.1	200	664.7	210	664.1	230
GR	664.5	233	660.7	246	658.4	247	657.8	250	658.3	252
GR	660.6	253	663.6	263	663.9	274	664.9	280	663.8	285
GR	663.9	295	664.6	297	664.6	300	665.6	315	665.9	325
GR	662.4	330	666.5	350	666.6	360	663.7	400	671.8	450
GR	676.6	500								

ET			1.4							
X1	88.50	23	245	258	900	900	900	0	0	0
GR	681.3	0	681.4	50	680.1	100	676.7	150	671.4	190
GR	672.2	200	670.2	208	668.8	232	665.6	240	664.8	245
GR	663.5	247	662.4	250	662.7	253	667.6	258	669.6	290
GR	672.3	300	677.4	350	681.7	391	681.4	400	681.6	404
GR	683.2	408	683.6	450	682.9	500				

1

ET		4.1	6.1	215	285	230	272			
X1	94	25	235	265	550	550	550	0	0	0
GR	675.1	0	670.9	50	670	100	669.9	150	670.5	200
GR	670.7	215	669.5	220	669.9	235	667	247	665.6	248
GR	665.5	250	665.6	252	667.5	254	670.4	265	671.2	285
GR	670	295	670.7	300	670.8	305	671	340	670.6	350
GR	670.11	372	668	385	667.6	400	667.7	450	667.7	500

52ed STREET BRIDGE (BRIDGE #5)

```
NC      .12      .12      .05      .6      .8
ET               4.1      4.1     245     256
X1      97.0      17      245     255     300     300     300       0       0       0
X3         0  668.07        0       0       0       0       0       0       0       0
GR     677.8       0    676.3      50   675.6     100   675.8     150   674.7     200
GR       675     225    666.3     240   666.4     245   666.5     250   666.6     255
GR     666.6     258    674.8     275   675.3     300   676.6     350     679     400
GR    680.47     450   681.07     500
  CONCRETE WITH HEADWALL

SC     2.013      .5      2.6       0     5.4     5.4     100     1.1   668.5  668.07
ET               4.1      4.1     245     256
X1        98      21      245     255     100     100     100       0       0       0
X2         0       0        2  673.5  676.52       0       0       0       0       0
X3         0   668.5        0       0       0       0       0       0       0       0
BT       -18       0   680.11       0      50     679       0     100   678.1       0
BT               150    677.4       0     200   676.9       0     225   676.8       0
BT               242    676.6       0     248   676.59      0     250  676.52       0
BT               300   676.69       0     350   677.51      0     375   677.5       0
BT               400    682.9       0     440   683.1       0     444   681.1       0
BT               450    681.4       0     453   682.9       0     500   682.7       0
GR     680.0       0    678.4      50   677.4     100   677.2     150   676.9     200
GR     676.8     225    668.4     242   668.3     245     668     250   668.2     255
GR     668.5     262    674.9     275   675.1     300     677     350   677.5     375
GR     682.9     400    683.1     440   681.1     444   681.4     450   682.9     453
GR     682.7     500


NC      .12      .12      .05      .1      .3
X1     104.5      27      238     260     650     650     650       0       0       0
GR     686.9       0      683      40   682.9      50   680.9      70     681     100
GR     679.2     150    678.3     200   677.4     238   671.2     244   669.8     246
GR     669.8     250      670     254   670.9     255  677.94     260   677.4     275
GR     677.4     292    678.2     300   679.2     315   684.6     336   684.8     350
GR       684     398   683.68     400  684.24     425  684.14     450  683.74     463
GR     684.3     470    685.3     500

ET                       1.4
X1       109      32      244     275     450     450     450       0       0       0
GR     684.8       0    684.4      15   683.4      50     682     100   682.4     108
GR     681.2     135      681     150   679.9     165   678.8     200   679.1     215
GR     681.3     232    670.3     244   670.0     250   670.4     256   671.5     257
GR     672.7     275      678     300     679     330   681.1     347   683.1     348
GR     683.1     350    682.8     360   681.9     395   681.6     400  681.54     404
```



```
GR    681.32     405   681.65     420  681.32     435  681.53     436   682.1     450
GR     682.9     490    682.9     500


QT         2     260      260
NC      .12      .12      .05      .6      .8
ET               4.1      4.1     220     288
X1    110.53      19      235     260     153     153     153       0       0       0
GR     681.2       0    681.9      50   681.2     100     679     150   676.1     200
GR     675.4     220    675.5     235   670.3     243   670.3     250   670.8     257
```

```
GR      672       260      673.4       280      676.4       295      676.9       300     680.79       350
GR   681.47       380      681.2       400     681.25       450      682.7       500
  BECKY STREET BRIDGE (BRIDGE #6)

ET               4.1        4.1       220        288
X1   110.83        19        244       255         30        30         30         0      +.10         0
X3        0    670.3          0         0          0         0          0         0         0         0
GR    681.2         0      681.9        50      681.2       100        679       150     676.1       200
GR    675.4       220      675.5       235      670.3       244      670.3       250     670.8       255
GR      672       260      673.4       280      676.4       295      676.9       300     680.79       350
GR   681.00       380      681.2       400     681.25       450      682.7       500


SC    2.024        .5        2.6         0        5.5       5.5         70       2.3     670.50     670.4
ET               4.1        4.1       220        288
X1   111.53         0          0         0         70        70         70         0      +.10         0
X2        0         0          2   676.06     677.25         0          0         0         0         0
X3        0    670.06          0         0          0         0          0         0         0         0
BT      -14         0     682.04         0         50     681.9          0       100     681.2         0
BT               150     679.67         0        200    678.35          0       250    677.25         0
BT               300     677.87         0        350    680.79          0       400     681.2         0
BT               427     681.21         0        442    681.21          0       443    681.40         0
BT               450      681.5         0        500     682.7          0


ET               4.1        4.1       220        288
X1   111.83        26        237       275         30        30         30         0         0         0
GR    680.1         0      679.7        50      681.5        75      681.5       100     680.6       110
GR    675.3       135      675.5       150       676       195      673.9       200     673.7       220
GR      676       225      675.9       233      673.4       237      672.7       240     670.6       243
GR    670.9       250      670.7       257      672.1       260      673.1       275     675.3       295
GR    677.8       300        680       350       681       400     681.41       425    681.87       450
GR    683.7       500


NC      .12       .12        .05        .1        .3
QT        2        63         63
ET               4.1        6.1       150       340       220       280
X1   115.50        23        240       265       367       367       367         0         0         0
GR    675.9         0      675.7        50      676.1        75      674.2       100     673.7       120
GR    673.5       150      673.7       200      672.8       240      670.5       242     670.4       250
GR    670.8       258      671.6       260      672.8       265      673.9       300     674.1       316
GR    678.7       350      683.1       385      683.1       400      681.9       440     681.9       450
GR      682       458     681.93       475      682.7       500
1
   28SEP92      16:05:40                                                                          PAGE    9


ET               4.1        1.4       240       305
X1   121.50        20        242       261       600       600       600         0         0         0
GR    679.7         0      679.9        50      679.3       100      679.4       125     678.7       150
GR    677.7       200      677.6       223      679.3       240      677.8       242     671.1       244
GR    670.1       250      671.5       256      673.5       261      676.5       285     679.2       300
GR      682       315      683.4       350     681.64       400     682.85       450    683.97       500
  56th STREET BRIDGE (BRIDGE #7)

NC      .12       .12        .05        .6        .8
ET               4.1        6.1       160       395       210       290
X1   125.80        13        248       251       430       430       430         0         0         0
```

```
X3      10        0        0        0        0        0        0   676.27   676.27        0
GR  675.80        0   675.40       50   675.20      100    674.9      150   674.90      200
GR  670.83      248   670.82      250   670.81      251   675.70      300   676.40      350
GR  676.60      400   677.90      450   679.90      500

SC   1.013       .5      2.6        0        3        3      204      1.1   671.87   670.83
ET              4.1      6.1      160      395      210      290
X1  126.43        0        0        0       64       64       64        0      0.0        0
X2       0        0        2   674.87   676.27        0        0        0        0        0
X3      10   671.87        0        0        0        0        0   676.27   676.27        0
BT    -9.0      100   676.48        0      101   676.46        0      150   676.52        0
BT              200   676.33        0      250   676.27        0      300   676.70        0
BT              350   677.40        0      400   677.67        0      450   678.90        0


QT       2      131      131
ET              4.1      6.1      160      395      210      290
X1  126.83       17      240      270      400      400      400        0        0        0
GR   674.3        0    674.0       50    673.9      100    673.9      150    673.5      200
GR   674.0      240    673.0      245    672.5      250    672.0      254    673.0      255
GR   675.7      270    676.1      275    675.6      300    676.0      350    676.1      400
GR   677.8      450    678.9      500


NC     .12      .12      .05       .1       .3
ET              4.1      6.1      160              210      290
X1   129.0       23    244.0      256      217      217      217        0        0        0
GR   673.9        0    673.8       50    673.8      100    673.9      150      674      200
GR   674.2      225      674      235    674.0      244      673      248    672.6      250
GR   672.5      251    673.5      253    674.5      256    676.2      265    676.6      270
GR   675.8      281    675.9      300    677.5      340    678.3      350    679.8      400
GR   680.9      450    682.1      480    682.5      500
  AERIAL TOPO

ET              4.1      4.1      220      270
X1   132.6       13    244.0      256      360      360      360        0        0        0
GR   674.4        0    676.0      144    678.0      184    679.0      214    675.6      244
GR   674.6      248    674.2      250    674.1      251    675.1      253    676.1      256
GR   678.0      386    680.0      476    682.0      526
  AERIAL TOPO
1
   28SEP92      16:05:40                                                                PAGE   10


ET                       1.4
X1   136.2       14      241      270      360      360      360        0        0        0
GR   684.0        0    684.0      100    682.0      110    680.0      200    678.6      241
GR   676.8      246    675.7      247    675.7      250    675.8      253    676.2      256
GR   678.3      270    680.0      300    682.0      350    692.5      440

QT       2       60       60
ET                       1.4
X1   140.0       20      241      270      380      380      380        0        0        0
GR   685.1        0    684.1       50    683.2      100    682.3      110    681.9      150
GR   681.3      200    681.5      225    680.3      241    678.5      246    677.4      247
GR   677.4      250    677.5      253    677.9      256      680      270    681.4      300
GR   682.8      340    686.7      350    683.1      400    682.8      450      683      500

ET                       1.4
```

```
X1    145.0       20      246      257      500      500      500        0        0        0
GR    687.4        0    685.9       27    686.4       50    686.8      100    687.3      150
GR    687.7      200    688.2      228    686.6      236    680.1      246    677.8      247
GR    677.5      250    678.4      252    680.3      257    680.4      271      687      281
GR    686.4      300    686.2      350    685.1      400    683.5      450      683      500


NC      .12      .12      .05       .6       .8
ET               4.1      4.1      238      260
X1    151.0       16      238      260      600      600      600        0        0        0
GR    683.3        0    683.5       50    683.8      100    684.5      150    684.3      200
GR    683.3      228    682.1      238    680.2      243    679.4      250    680.1      257
GR    682.4      260    684.3      300    686.3      350    686.3      400      686      450
GR    687.1      500
  R.R. BRIDGE (BRIDGE #8)

X1    151.35      16      248      251       35       35       35        0      0.0        0
X3        10  680.23        0        0        0        0        0   690.07   690.07
X4         2   679.4      248    679.4      251
GR    683.3        0    683.5       50    683.8      100    684.5      150    684.3      200
GR    683.3      228    682.1      238    680.2      243    679.4      250    680.1      257
GR    682.4      260    684.3      300    686.3      350    686.3      400    686.0      450
GR    687.1      500


SC    1.024       .5      2.6        0      3.0      3.0       38      1.3   680.67   680.23
X1    151.73        0        0        0       38       38       38        0      0.0        0
X2         0        0        2   683.67   690.07        0        0        0        0        0
X3        10  680.67        0        0        0        0        0   690.07   690.58
BT       -11        0   690.14        0       50   690.33        0      100   690.46        0
BT               150   690.20        0      200   690.07        0      250   690.18        0
BT               300   690.58        0      350   690.86        0      400   691.03        0
BT               450   691.15        0      500   691.11        0
```

1

28SEP92 16:05:40 PAGE 11

```
QT         2      241      241
ET               4.1      6.1      225      275      240      260
X1    152.0       16      241      258       27       27       27        0        0        0
GR    684.4        0    685.1       50    685.1      100    683.7      150      684      200
GR    684.2      241    682.7      248    681.8      250      683      253    684.7      258
GR    688.1      300    688.8      330    691.6      350    696.2      400    697.6      450
GR    697.6      500

NC      .12      .12      .05       .1       .3
ET               4.1      4.1      100
X1    157.0       26      228      255      500      500      500        0        0        0
GR      689        0    688.3        3    690.9        9  691.49       20    691.1       35
GR      687       40    687.2       45    689.7       50    688.7      100    687.6      150
GR    685.9      185    685.9      200    685.6      228    685.1      243    684.5      247
GR    684.5      250    684.5      253    685.3      255    685.4      275    685.1      300
GR    684.7      350    685.3      370    687.2      377    688.7      400      692      450
GR    696.2      500
```

1

28SEP92 16:05:40 PAGE 12

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


*PROF 1
]

CCHV=     .100 CEHV=     .300
*SECNO 8.000
    8.000      4.50    633.70       .00    633.70    633.71       .01       .00       .00    630.00
    743.0     307.2     398.3      37.5     657.2     355.0     103.4        .0        .0    630.80
      .00       .47      1.12       .36      .120      .050      .120      .000    629.20     84.21
  .000263        0.        0.        0.         0         0         0       .00    362.11    446.32


*SECNO 14.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      350.0     800.0  TYPE=      1  TARGET=     -350.000
   14.000      2.08    634.58    634.58       .00    634.96       .38       .51       .11    634.40
    688.0     470.4     217.6        .0     176.8      27.6        .0       9.1       3.9    636.30
      .04      2.66      7.89       .00      .120      .050      .000      .000    632.50    350.00
  .043843      600.      600.      600.        20        13         0       .00    210.47    560.47


CCHV=     .600 CEHV=     .800
*SECNO 17.850

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.60


3470 ENCROACHMENT STATIONS=       90.0     313.0  TYPE=      1  TARGET=      223.000
   17.850      5.08    638.18       .00       .00    638.30       .12      3.19       .16    635.50
    688.0     314.0     374.0        .0     209.9     105.3        .0      11.4       5.4    639.20
      .08      1.50      3.55       .00      .120      .050      .000      .000    633.10    160.21
  .003381      385.      385.      385.         4         0         0       .00    114.20    274.41


*SECNO 18.150

3470 ENCROACHMENT STATIONS=       90.0     313.0  TYPE=      1  TARGET=      223.000
   18.150      5.20    638.30       .00       .00    638.41       .11       .10       .01    635.50
    688.0     316.8     371.2        .0     219.5     109.2        .0      11.6       5.5    639.20
      .08      1.44      3.40       .00      .120      .050      .000      .000    633.10    158.72
  .003021       30.       30.       30.         2         0         0       .00    116.34    275.06


1
   28SEP92      16:05:40                                                                          PAGE   13


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

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.50	2.60	.00	5.30	5.50	105.00	8	2	633.35	633.15

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 2 - WINGWALLS FLARED 90 OR 15 DEGREES

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC= 659.87..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 651.62 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 19.200

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 640.00

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.02

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
659.87	651.62	1.60	446.	236.	2.146	29.2	638.70	223.

3470 ENCROACHMENT STATIONS= 158.0 276.0 TYPE= 1 TARGET= 118.000

19.200	6.61	639.96	.00	.00	640.00	.04	1.60	.00	635.50
688.0	328.2	359.8	.0	355.3	167.6	.0	12.6	5.7	100000.00
.10	.92	2.15	.00	.120	.050	.000	.000	633.35	158.00
.000741	105.	105.	105.	2	0	0	.00	118.00	276.00

*SECNO 19.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .68

3470 ENCROACHMENT STATIONS= 158.0 276.0 TYPE= 1 TARGET= 118.000

19.500	6.57	639.97	.00	.00	640.11	.14	.03	.08	635.40
688.0	188.7	463.8	35.5	177.5	127.2	37.5	12.9	5.8	636.40
.10	1.06	3.65	.95	.120	.050	.120	.000	633.40	158.00
.001609	30.	30.	30.	2	0	0	.00	118.00	276.00

CCHV= .100 CEHV= .300
*SECNO 21.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.45

1

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

```
3470 ENCROACHMENT STATIONS=      150.0     500.0  TYPE=      1  TARGET=     -150.000
   21.000      6.61    640.21       .00       .00    640.28       .07       .16       .01    637.90
    688.0      37.7     636.5      13.8      94.8     281.3      43.0      14.2       6.4    638.40
      .12       .40      2.26       .32      .120      .050      .120      .000    633.60    150.00
  .000764      150.      150.      150.         2         0         0       .00    197.59    347.59


CCHV=     .600 CEHV=     .800
*SECNO 23.700

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .42


3470 ENCROACHMENT STATIONS=      150.0     300.0  TYPE=      1  TARGET=      150.000
   23.700      6.26    640.56       .00       .00    640.91       .35       .41       .22    638.00
    682.0     122.0     509.3      50.7     121.6      93.6      51.3      16.4       7.4    637.90
      .14      1.00      5.44       .99      .120      .050      .120      .000    634.30    150.00
  .004358      270.      270.      270.         2         0         0       .00    146.56    296.56


CCHV=     .600 CEHV=     .800
*SECNO 24.000

3470 ENCROACHMENT STATIONS=      150.0     300.0  TYPE=      1  TARGET=      150.000
   24.000      6.40    640.70       .00       .00    641.14       .44       .15       .07    634.40
    682.0     278.6     296.3     107.2     174.3      37.7      74.5      16.6       7.5    634.60
      .14      1.60      7.86      1.44      .120      .050      .120      .000    634.30    150.00
  .006056       30.       30.       30.         2         0         0       .00    148.51    298.51



SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .024      .50      2.60       .00      6.00      6.00      45.00      2         2       633.98    633.90

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5130, EGIC=  665.43..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  658.23 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 24.450

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    640.91
5150, EG OF   640.91 LESS THAN XEG OF   641.14
1
   28SEP92      16:05:40                                                                                          PAGE   15


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


SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   665.43    658.23      .00      436.      243.     7.839      28.3    639.50      194.
```

```
3470 ENCROACHMENT STATIONS=      150.0     300.0  TYPE=      1  TARGET=      150.000
    24.450      6.40    640.70       .00       .00    641.14       .43       .00       .00    634.40
     682.0     279.0     295.7     107.3     175.0      37.7      74.7      16.9       7.7    634.60
       .15      1.59      7.84      1.44      .120      .050      .120      .000    634.30    150.00
   .006013       45.       45.       45.         3         0         0       .00    148.61    298.61


*SECNO 24.750

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=      150.0     300.0  TYPE=      1  TARGET=      150.000
    24.750      5.98    640.88       .00       .00    641.32       .44       .18       .01    638.20
     682.0      42.8     558.1      81.0      48.8      95.1      60.6      17.0       7.8    639.00
       .15       .88      5.87      1.34      .120      .050      .120      .000    634.90    150.00
   .005948       30.       30.       30.         0         0         0       .00    145.04    300.00


CCHV=     .100 CEHV=     .300
*SECNO 26.000

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

    26.000      6.21    641.61       .00       .00    641.72       .11       .37       .03    638.20
     682.0     163.1     354.7     164.2     187.3      98.4     195.7      18.0       8.3    638.70
       .16       .87      3.61       .84      .120      .050      .120      .000    635.40    148.90
   .001750      125.      125.      125.         1         0         0       .00    208.19    357.10


CCHV=     .600 CEHV=     .800
*SECNO 27.300

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68

1
   28SEP92      16:05:40                                                                                                PAGE   16


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


3470 ENCROACHMENT STATIONS=      166.0     320.0  TYPE=      1  TARGET=      154.000
    27.300      6.11    641.91       .00       .00    642.12       .21       .32       .08    641.80
     682.0        .0     681.4        .6        .1     185.4       1.8      19.0       8.7    641.30
       .17       .11      3.68       .34      .120      .050      .120      .000    635.80    235.51
   .003743      130.      130.      130.         2         0         0       .00     70.22    305.73


*SECNO 27.600

3470 ENCROACHMENT STATIONS=      166.0     320.0  TYPE=      1  TARGET=      154.000
    27.600      6.21    642.01       .00       .00    642.23       .22       .10       .01    641.80
```

682.0	.1	668.2	13.7	.5	174.3	24.0	19.1	8.8	640.50
.18	.15	3.83	.57	.120	.050	.120	.000	635.80	233.47
.003104	30.	30.	30.	1	0	0	.00	83.53	317.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.50	2.60	.00	6.00	6.00	52.00	2	2	636.44	635.80

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 2 - MITERED TO CONFORM TO SLOPE

5130, EGIC= 667.93..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 660.16 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 28.150

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 644.86

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.67

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
667.93	660.16	2.63	416.	265.	2.079	28.3	643.28	188.

3470 ENCROACHMENT STATIONS= 205.0 295.0 TYPE= 1 TARGET= 90.000

28.150	8.36	644.80	.00	.00	644.86	.06	2.63	.00	641.80
682.0	32.3	628.1	21.6	74.7	302.1	40.7	19.5	8.9	640.50
.18	.43	2.08	.53	.120	.050	.120	.000	636.44	205.00
.000436	55.	55.	55.	2	0	0	.00	90.00	295.00

*SECNO 28.450
1

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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .42

3470 ENCROACHMENT STATIONS= 205.0 295.0 TYPE= 1 TARGET= 90.000

28.450	8.08	644.78	.00	.00	645.09	.32	.03	.20	642.20
682.0	35.3	593.9	52.8	47.3	123.3	47.1	19.7	8.9	639.30
.19	.75	4.82	1.12	.120	.050	.120	.000	636.70	205.00
.002446	30.	30.	30.	2	0	0	.00	82.24	287.24

CCHV= .100 CEHV= .300
*SECNO 32.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.00

32.000	7.84	645.44	.00	.00	645.50	.06	.39	.03	641.80
682.0	206.5	464.2	11.3	312.3	190.4	32.4	22.8	10.0	643.00
.24	.66	2.44	.35	.120	.050	.120	.000	637.60	116.55
.000613	355.	355.	355.	2	0	0	.00	172.99	289.54

CCHV= .600 CEHV= .800
*SECNO 37.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .39

37.000	6.59	646.04	.00	.00	646.30	.26	.64	.15	639.45
682.0	105.9	462.0	114.1	52.9	97.4	53.7	27.1	11.2	639.56
.27	2.00	4.74	2.12	.120	.070	.120	.000	639.45	226.64
.004115	500.	500.	500.	2	0	0	.00	37.36	264.00

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	ROLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	.00	3.70	2.60	.00	15.00	.00	50.00	.00	640.10	639.56

*SECNO 38.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.40

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

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
656.73	647.58	.00	220.	464.	50.	69.	644.70	650.20	257.

3470 ENCROACHMENT STATIONS= 150.0 255.0 TYPE= 1 TARGET= 105.000

38.500	10.78	650.88	.00	.00	650.99	.12	4.70	.00	642.60
682.0	196.1	485.9	.0	163.4	152.6	.0	28.0	11.4	100000.00
.29	1.20	3.18	.00	.120	.070	.000	.000	640.10	150.00
.002098	150.	150.	150.	2	0	6	.00	105.00	255.00

CCHV= .100 CEHV= .300
*SECNO 43.500
3280 CROSS SECTION 43.50 EXTENDED .31 FEET

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.48

   43.500      8.81    651.21       .00       .00    651.21       .01       .21       .01    645.00
    682.0     241.7     148.2     292.1     625.9     108.3     674.1      37.8      14.4    646.40
      .51       .39      1.37       .43      .120      .050      .120      .000    642.40       .00
   000173      500.      500.      500.         3         0         0       .00    421.75    421.75


*SECNO 50.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .47

   50.000      5.06    651.36       .00       .00    651.37       .01       .15       .00    648.20
    486.0     112.3     129.8     243.9     219.5      85.7     500.8      54.4      19.8    648.80
      .75       .51      1.51       .49      .120      .050      .120      .000    646.30    164.33
  .000391      650.      650.      650.         2         0         0       .00    299.36    463.69


*SECNO 52.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60


  28SEP92      16:05:40                                                                                PAGE   19


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


   52.500      4.20    651.50       .00       .00    651.52       .03       .15       .00    649.20
    486.0     108.9     149.1     228.0     156.1      68.5     343.1      58.3      21.5    649.80
      .81       .70      2.17       .66      .120      .050      .120      .000    647.30    167.78
  .001084      250.      250.      250.         2         0         0       .00    268.39    436.16


*SECNO 55.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   55.000      3.70    652.10    652.10       .00    652.59       .49       .65       .14    651.60
    486.0      59.1     360.7      66.1      43.9      55.8      73.5      60.4      22.9    651.70
      .82      1.35      6.46       .90      .120      .050      .120      .000    648.40    194.60
  .013046      250.      250.      250.        20         9         0       .00    229.42    424.02


*SECNO 61.000
3280 CROSS SECTION     61.00 EXTENDEO      1.75 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.32


3470 ENCROACHMENT STATIONS=      210.0     400.0  TYPE=       1  TARGET=      190.000
   61.000      3.95    654.65       .00       .00    654.69       .04      2.05       .04    653.10
    341.0      11.1     173.0     157.0      20.8      80.0     246.7      64.0      25.8    652.90
      .94       .53      2.16       .64      .120      .050      .120      .000    650.70    212.90
```

001192	600.	600.	600.	6	0	0	.00	187.09	400.00

*SECNO 63.300

3280 CROSS SECTION 63.30 EXTENDED .14 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .49

3470 ENCROACHMENT STATIONS= 210.0 320.0 TYPE= 1 TARGET= 110.000

63.300	3.34	655.04	.00	.00	655.20	.16	.47	.04	654.10
324.0	9.4	237.3	77.3	11.7	64.7	69.9	65.3	26.5	653.90
.96	.80	3.67	1.11	.120	.050	.120	.000	651.70	217.02
.004569	230.	230.	230.	2	0	0	.00	102.98	320.00

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

*SECNO 65.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .55

65.500	3.67	656.37	656.34	.00	657.01	.64	1.66	.14	653.80
324.0	18.6	224.9	80.5	10.7	29.5	50.5	65.9	27.0	654.10
.97	1.73	7.62	1.59	.120	.050	.120	.000	652.70	235.64
.014888	220.	220.	220.	6	8	0	.00	89.37	325.00

*SECNO 70.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.27

70.000	4.82	659.42	.00	.00	659.56	.14	2.51	.05	655.70
324.0	22.1	163.8	138.1	22.6	39.9	133.7	67.4	27.9	656.00
1.02	.98	4.10	1.03	.120	.050	.120	.000	654.60	231.87
.002890	450.	450.	450.	3	0	0	.00	93.13	325.00

*SECNO 79.500

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .52

3470 ENCROACHMENT STATIONS= 190.0 325.0 TYPE= 1 TARGET= 135.000

79.500	6.68	663.78	.00	.00	664.46	.68	4.73	.16	660.70
324.0	26.7	268.0	29.3	16.2	37.0	17.3	70.3	29.3	660.60
1.06	1.65	7.24	1.69	.120	.050	.120	.000	657.10	235.48
.010546	950.	950.	950.	3	0	0	.00	33.93	269.41

*SECNO 88.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.87

88.500	6.49	668.89	.00	.00	669.13	.24	4.63	.04	664.80
324.0	42.1	275.2	6.7	32.0	65.0	13.2	72.2	30.2	667.60
1.13	1.32	4.24	.51	.120	.050	.120	.000	662.40	230.54
.003032	900.	900.	900.	4	0	0	.00	48.02	278.56

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

*SECNO 94.000
3280 CROSS SECTION 94.00 EXTENDED 3.17 FEET

3470 ENCROACHMENT STATIONS= 215.0 285.0 TYPE= 1 TARGET= 70.000

94.000	5.36	670.86	.00	.00	671.05	.19	1.92	.00	669.90
324.0	17.8	305.4	.8	21.3	84.6	2.7	73.6	30.9	670.40
1.18	.83	3.61	.30	.120	.050	.120	.000	665.50	215.00
.004076	550.	550.	550.	3	0	0	.00	61.68	276.68

CCHV= .600 CEHV= .800
*SECNO 97.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .59

3470 ENCROACHMENT STATIONS= 245.0 256.0 TYPE= 1 TARGET= 11.000

97.000	4.62	672.69	.00	.00	673.42	.73	1.93	.43	668.07
324.0	.0	318.6	5.4	.0	46.1	4.6	74.1	31.1	668.07
1.19	.00	6.91	1.17	.000	.050	.120	.000	668.07	245.00
.011676	300.	300.	300.	2	0	0	.00	11.00	256.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.013	.50	2.60	.00	5.40	5.40	100.00	1	1	668.50	668.07

CHART 1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE 1 - SQUARE EDGE ENTRANCE WITH HEADWALL

*SECNO 98.000

SPECIAL CULVERT OUTLET CONTROL
EGIC = 674.127 EGOC = 674.356 PCWSE= 672.687 ELTRD= 676.520

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
674.13	674.36	.94	0.	324.	6.001	45.8	676.52	0.

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

3470 ENCROACHMENT STATIONS= 245.0 256.0 TYPE= 1 TARGET= 11.000

98.000	5.30	673.80	.00	.00	674.36	.55	.94	.00	668.50
324.0	.0	318.8	5.2	.0	53.1	5.3	74.2	31.1	668.50
1.19	.00	6.00	.97	.000	.050	.120	.000	668.50	245.00
.007762	100.	100.	100.	2	0	0	.00	11.00	256.00

CCHV= .100 CEHV= .300
*SECNO 104.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.91

104.500	6.81	676.61	.00	.00	676.78	.17	2.39	.04	677.40
324.0	.0	324.0	.0	.0	98.2	.0	75.4	31.4	677.94
1.25	.00	3.30	.00	.000	.050	.000	.000	669.80	238.76
.002130	650.	650.	650.	4	0	0	.00	20.29	259.06

*SECNO 109.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.59

109.000	7.05	677.05	.00	.00	677.09	.04	.30	.01	670.30
324.0	10.1	297.7	16.3	24.8	177.7	44.6	77.2	31.8	672.70
1.33	.40	1.68	.36	.120	.050	.120	.000	670.00	236.64
.000317	450.	450.	450.	3	0	0	.00	58.88	295.51

CCHV= .600 CEHV= .800
*SECNO 110.530

3470 ENCROACHMENT STATIONS= 220.0 288.0 TYPE= 1 TARGET= 68.000

110.530	6.82	677.12	.00	.00	677.14	.02	.04	.01	675.50
260.0	6.2	201.4	52.4	25.0	144.6	111.7	78.1	32.0	672.00
1.36	.25	1.39	.47	.120	.050	.120	.000	670.30	220.00
.000232	153.	153.	153.	2	0	0	.00	68.00	288.00

*SECNO 110.830

```
3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=      68.000
   110.830      6.72    677.12       .00       .00    677.16       .04       .01       .01    670.40
     260.0      27.9     147.0      85.0      60.7      72.7     137.2      78.3      32.1    670.90
      1.37       .46      2.02       .62      .120      .050      .120      .000    670.40    220.00
   .000374       30.       30.       30.         0         0         0       .00     68.00    288.00
```



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

SPECIAL CULVERT

```
SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     2         .024      .50       2.60      .00       5.50      5.50      70.00     2         3         670.50    670.40
```

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

*SECNO 111.530

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 677.90
SPECIAL CULVERT

```
     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    675.64    678.18      .73       39.      223.     1.764      47.5    677.25       80.
```

```
3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=      68.000
   111.530      7.37    677.87       .00       .00    677.90       .03       .73       .00    670.50
     260.0      31.8     140.7      87.5      76.2      79.8     158.4      78.8      32.2    671.00
      1.38       .42      1.76       .55      .120      .050      .120      .000    670.50    220.00
   .000252       70.       70.       70.         2         0         0       .00     68.00    288.00
```

*SECNO 111.830

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.51

```
3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=      68.000
   111.830      7.29    677.89       .00       .00    677.91       .01       .00       .01    673.40
     260.0       9.1     236.0      15.0      43.6     231.5      52.9      79.0      32.2    673.10
      1.39       .21      1.02       .28      .120      .050      .120      .000    670.60    220.00
   .000110       30.       30.       30.         1         0         0       .00     68.00    288.00
```

CCHV= .100 CEHV= .300
*SECNO 115.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.60

```
3470 ENCROACHMENT STATIONS=      150.0     340.0  TYPE=      1  TARGET=      190.000
   115.500      7.52    677.92       .00       .00    677.92       .00       .01       .00    672.80
      63.0      20.9      28.6      13.4     402.7     172.9     275.3      84.0      33.3    672.80
      2.38       .05       .17       .05      .120      .050      .120      .000    670.40    150.00
   .000003      367.      367.      367.         2         0         0       .00    190.00    340.00
```



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

*SECNO 121.500

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

3470 ENCROACHMENT STATIONS=      240.0     305.0  TYPE=      1  TARGET=       65.000
   121.500      7.82    677.92       .00       .00    677.92       .00       .00       .00    677.80
      63.0        .0      53.6       9.4        .0     120.7      75.7      91.2      35.0    673.50
      2.80       .00       .44       .12      .000      .050      .120      .000    670.10    241.84
   .000027      600.      600.      600.         2         0         0       .00     51.05    292.89

CCHV=     .600 CEHV=     .800
*SECNO 125.800

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.04

3470 ENCROACHMENT STATIONS=      160.0     395.0  TYPE=      1  TARGET=      235.000
   125.800      7.12    677.93       .00       .00    677.93       .00       .00       .00    670.83
      63.0      30.0       5.9      27.0     364.0      21.3     387.4      96.0      36.4    670.81
      4.06       .08       .28       .07      .120      .050      .120      .000    670.81    160.00
   .000006      430.      430.      430.         0         0         0       .00    235.00    395.00


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .013       .50      2.60       .00      3.00      3.00    204.00      1         1       671.87    670.83

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  1 - SQUARE EDGE ENTRANCE WITH HEADWALL

*SECNO 126.430
5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV =       241. DOES NOT EQUAL ACTUAL Q =        63.


SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG =    677.93
SPECIAL CULVERT
```

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
677.03	681.60	.00	239.	2.	.261	7.1	676.27	311.

3470 ENCROACHMENT STATIONS= 160.0 395.0 TYPE= 1 TARGET= 235.000

126.430	6.06	677.93	.00	.00	677.93	.00	.00	.00	671.87
63.0	30.5	4.7	27.7	358.3	18.2	382.8	97.1	36.7	671.87
4.25	.09	.26	.07	.120	.050	.120	.000	671.87	160.00
.000007	64.	64.	64.	0	0	0	.00	235.00	395.00

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

*SECNO 126.830

3470 ENCROACHMENT STATIONS= 160.0 395.0 TYPE= 1 TARGET= 235.000

126.830	5.94	677.94	.00	.00	677.94	.00	.01	.00	674.00
131.0	54.0	51.4	25.6	338.5	130.1	254.3	103.9	38.9	675.70
4.71	.16	.40	.10	.120	.050	.120	.000	672.00	160.00
.000026	400.	400.	400.	0	0	0	.00	235.00	395.00

CCHV= .100 CEHV= .300
*SECNO 129.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .65

3470 ENCROACHMENT STATIONS= 160.0 500.0 TYPE= 1 TARGET= -160.000

129.000	5.45	677.95	.00	.00	677.95	.00	.01	.00	674.00
131.0	76.9	34.4	19.8	329.3	55.2	141.0	107.0	39.9	674.50
4.90	.23	.62	.14	.120	.050	.120	.000	672.50	160.00
.000061	217.	217.	217.	0	0	0	.00	185.54	345.54

*SECNO 132.600

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .17

3470 ENCROACHMENT STATIONS= 220.0 270.0 TYPE= 1 TARGET= 50.000

132.600	3.85	677.95	.00	.00	678.04	.09	.06	.03	675.60
131.0	15.1	97.4	18.4	24.5	36.1	24.6	109.5	40.9	676.10
4.94	.62	2.70	.75	.120	.050	.120	.000	674.10	223.20
.002011	360.	360.	360.	1	0	0	.00	46.80	270.00

*SECNO 136.200

136.200	3.08	678.78	.00	.00	678.87	.08	.83	.00	678.60
131.0	.1	130.4	.5	.5	56.0	2.0	110.1	41.3	678.30
4.99	.13	2.33	.25	.120	.050	.120	.000	675.70	235.74

```
   .002669      360.      360.      360.         2         0         0       .00     42.73    278.47


*SECNO 140.000
1
   28SEP92      16:05:40                                                                                                PAGE   26


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



3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .51

   140.000      2.37    679.77       .00       .00    679.81       .04       .94       .00    680.30
      60.0        .0      60.0        .0        .0      36.0        .0     110.5      41.6    680.00
      5.05       .00      1.67       .00      .000      .050      .000      .000    677.40    242.47
   .002127      380.      380.      380.         2         0         0       .00     26.00    268.47


*SECNO 145.000
   145.000      3.38    680.88       .00       .00    680.96       .08      1.13       .01    680.10
      60.0        .1      56.9       3.0        .5      25.1       7.6     110.9      41.9    680.30
      5.11       .29      2.26       .39      .120      .050      .120      .000    677.50    244.80
   .002419      500.      500.      500.         2         0         0       .00     26.93    271.73


CCHV=     .600 CEHV=     .800
*SECNO 151.000

3470 ENCROACHMENT STATIONS=      238.0     260.0  TYPE=      1  TARGET=      22.000
   151.000      2.62    682.02       .00       .00    682.05       .04      1.08       .02    682.10
      60.0        .0      60.0        .0        .0      38.1        .0     111.4      42.2 100000.00
      5.22       .00      1.58       .00      .000      .050      .000      .000    679.40    238.23
   .001381      600.      600.      600.         2         0         0       .00     21.27    259.50


*SECNO 151.350

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      690.07 ELREA=      690.07

   151.350      2.31    682.54    682.54       .00    683.70      1.17       .13       .90    680.23
      60.0        .0      60.0        .0        .0       6.9        .0     111.4      42.2    680.23
      5.22       .00      8.67       .00      .000      .050      .000      .000    680.23    248.00
   .027870       35.       35.       35.        20        11         0       .00      3.00    251.00


1
   28SEP92      16:05:40                                                                                                PAGE   27
```

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

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.50	2.60	.00	3.00	3.00	38.00	1	3	680.67	680.23

CHART 1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE 3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 151.730

SPECIAL CULVERT INLET CONTROL
EGIC = 685.007 EGOC = 684.589 PCWSE= 682.538 ELTRD= 690.070

3280 CROSS SECTION 151.73 EXTENDED 1.31 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.44

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
685.01	684.59	1.30	0.	60.	5.073	7.1	690.07	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 690.07 ELREA= 690.58

151.730	3.94	684.61	.00	.00	685.01	.40	1.30	.00	680.67
60.0	.0	60.0	.0	.0	11.8	.0	111.4	42.2	680.67
5.22	.00	5.07	.00	.000	.050	.000	.000	680.67	248.00
.004676	38.	38.	38.	2	0	0	.00	3.00	251.00

*SECNO 152.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.61

3470 ENCROACHMENT STATIONS= 225.0 275.0 TYPE= 1 TARGET= 50.000

152.000	3.21	685.01	685.01	.00	685.73	.72	.47	.26	684.20
241.0	24.8	215.8	.4	13.6	30.1	.6	111.5	42.2	684.70
5.22	1.83	7.18	.61	.120	.050	.120	.000	681.80	225.00
.029160	27.	27.	27.	4	15	0	.00	36.82	261.82

1

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

CCHV= .100 CEHV= .300
*SECNO 157.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 5.74

3470 ENCROACHMENT STATIONS= 100.0 500.0 TYPE= 1 TARGET= -100.000

157.000	2.57	687.07	.00	.00	687.09	.01	1.28	.07	685.60
241.0	27.2	76.9	136.9	68.6	54.6	235.5	113.8	43.7	685.30
5.39	.40	1.41	.58	.120	.050	.120	.000	684.50	160.92
.000886	500.	500.	500.	2	0	0	.00	215.60	376.52

1
PROFILE FOR STREAM -FOLEY DRAIN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

```
ELEVATION  629.     630.     631.     632.     633.     634.     635.     636.     637.     638.
    SECNO  CUMDIS

     8.00     0.  C I      L      R .       .       .     E .       .       .       M       .       .
             50.  C   I    .  L    . R     .       .      E .       .       .       .     M .       .
            100.  C      I .     L .     R .       .      WE.       .       .       .       . M     .
            150.  C        I       .L       . R     .       WE       .       .       .       .       M
            200.  C        . I     .   L   .    R  .        WE      .       .       .       .       M
            250.  C        .    I  .      L .       .R       .WE     .       .       .       .       M
            300.  C        .       I.       . L     .   R   .W E     .       .       .       .       M
            350.  C        .        .I      .    L  .       R W E    .       .       .       .       M
            400.  C        .        .  I    .      L.        . W E   .       .       .       .       M
            450.  C        .        .    I  .       . L     .  W E R.       .       .       .       M
            500.  C        .        .       I       .    L  .  W  E .  R    .       .       .       M
            550.  C        .        .       . I     .       L   W  E.     R .       .       .       M
     14.00  600.  .        .        .       .   I   .       .  L W  E       . R     .       .       M
            650.  C        .        .       .    I  .       .   L   W  E    .    R  .       .       M
            700.  C        .        .       .     I .       .     L  .   W  E .       .R      .       M
            750.  C        .        .       .     I .       .      L .       W  E     .  R    .       M
            800.  C        .        .       .      I .       .       L       .   W E .      R .       M
            850.  C        .        .       .       I.       .       .L      .      W.E      . R     M
            900.  C        .        .       .        I       .       . L     .       .  W E  .    R  M
            950.  C        .        .       .        I       .       .  L    .       .      WE      RM
     17.85 1000.  C        .        .       .        .I      .       .   L   .       .       . WE    R
     18.15 1050.  C        .        .       .        .I      .       .   L   .       .       . WE    R
```

1
PROFILE FOR STREAM -FOLEY DRAIN

```
        15100.  C        .        .        .        .        .        .        .    I   .   LR    W E      M
        15150.  C        .        .        .        .        .        .        .     I  .    L    .W E      M
        15200.  C        .        .        .        .        .        .        .      I .     L   . WE      M
        15250.  C        .        .        .        .        .        .        .        I     RL  .  WE     M
   157.00 15300.  C        .        .        .        .        .        .        .         . I  R L .    E    M
1
   28SEP92      16:05:40                                                                                    PAGE   29


T1 CITY OF WYOMING, KENT COUNTY, MICHIGAN
T2 100 YEAR FLOOD-ENCROACHED
T3 BEHAN-FOLEY DRAIN

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        3        0        0        0        0        0        0      633.7      0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     15        0        1        0        0        0        0        0        0        0

1
   28SEP92      16:05:40                                                                                    PAGE   30


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


 *PROF 2
0

 CCHV=     .100 CEHV=     .300
 *SECNO 8.000
  2800 NAT Q1=     458.05  WSELK=     633.70  ENC Q1=     458.05  WSEL=     633.80  RATIO=    .0000
  NAT Q1=     480.  RATIOS LOB, CH, ROB=    .4134    .5353    .0513  WSEL=     633.80

 3470 ENCROACHMENT STATIONS=      145.5     419.4  TYPE=      4  TARGET=        .046
      8.000      4.50    633.70      .00    633.70    633.71      .01       .00       .00    630.00
      743.0     304.3     416.8     21.9     590.0     355.0     56.3        .0        .0    630.80
        .00       .52      1.17      .39      .120      .050     .120      .000    629.20    145.51
    .000288        0.        0.       0.         0         0        0       .00    273.89    419.40


 *SECNO 14.000
  2800 NAT Q1=      32.86  WSELK=     634.58  ENC Q1=      32.86  WSEL=     634.68  RATIO=    .0000
  NAT Q1=      42.  RATIOS LOB, CH, ROB=    .7269    .2731    .0000  WSEL=     634.68
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

 3470 ENCROACHMENT STATIONS=      403.5     565.0  TYPE=      4  TARGET=        .218
     14.000      2.11    634.61    634.61    634.58    635.12      .51       .56       .15    634.40
      688.0     443.5     244.5        .0     143.7      28.2        .0       8.1       3.0    636.30
        .03      3.09      8.66       .00      .120      .050     .000      .000    632.50    403.50
    .051563      600.      600.      600.        20        14        0       .00    157.07    560.57
```

```
CCHV=     .600 CEHV=     .800
*SECNO 17.850

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.11


3470 ENCROACHMENT STATIONS=       90.0     313.0  TYPE=      1  TARGET=      223.000
    17.850      5.19    638.29       .00    638.18    638.41       .11      3.04       .24    635.50
     688.0     316.0     372.0        .0     218.2     108.9        .0      10.3       4.2    639.20
       .08      1.45      3.42       .00      .120      .050      .000      .000    633.10    158.92
   .003057      385.      385.      385.         6         0         0       .00    116.06    274.98


.

   28SEP92      16:05:40                                                                                                PAGE   31


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


*SECNO 18.150

3470 ENCROACHMENT STATIONS=       90.0     313.0  TYPE=      1  TARGET=      223.000
    18.150      5.30    638.40       .00    638.30    638.50       .10       .09       .01    635.50
     688.0     318.6     369.4        .0     227.8     112.8        .0      10.5       4.3    639.20
       .08      1.40      3.27       .00      .120      .050      .000      .000    633.10    157.45
   .002741       30.       30.       30.         2         0         0       .00    118.17    275.62


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .024      .50      2.60       .00      5.30      5.50    105.00      8         2       633.35    633.15

CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE  2 - WINGWALLS FLARED 90 OR 15 DEGREES

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
5130, EGIC=  659.87..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  651.62 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 19.200

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    640.01

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.93

SPECIAL CULVERT

     EGIC      EGOC       H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
    659.87    651.62     1.51      450.      236.     2.144      29.2    638.70      224.


3470 ENCROACHMENT STATIONS=      158.0     276.0  TYPE=      1  TARGET=      118.000
    19.200      6.61    639.96       .00    639.96    640.01       .04      1.51       .00    635.50
     688.0     328.3     359.7        .0     355.7     167.8        .0      11.6       4.5 100000.00
```

```
      .10       .92      2.14       .00      .120      .050      .000      .000    633.35    158.00
   .000738      105.      105.      105.         2         0         0       .00    118.00    276.00


*SECNO 19.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .68


3470 ENCROACHMENT STATIONS=      158.0     276.0  TYPE=      1  TARGET=      118.000
    19.500      6.58    639.98       .00    639.97    640.12       .14       .03       .08    635.40
     688.0     188.9     463.6      35.6     178.0     127.3      37.6      11.9       4.6    636.40
       .10      1.06      3.64       .95      .120      .050      .120      .000    633.40    158.00
   .001603       30.       30.       30.         2         0         0       .00    118.00    276.00


1
   28SEP92      16:05:40                                                                                PAGE   32


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


CCHV=     .100 CEHV=     .300
*SECNO 21.000
 2800 NAT Q1=     248.87  WSELK=     640.21  ENC Q1=     248.87  WSEL=     640.31  RATIO=     .0000
 NAT Q1=     264.  RATIOS LOB, CH, ROB=     .0732    .9049    .0219  WSEL=     640.31

3470 ENCROACHMENT STATIONS=      209.8     300.0  TYPE=      4  TARGET=         .056
    21.000      6.61    640.21       .00    640.21    640.30       .08       .17       .01    637.90
     688.0      27.9     660.1        .0      54.0     281.6        .0      13.0       5.0    638.40
       .12       .52      2.34       .00      .120      .050      .000      .000    633.60    209.77
   .000851      150.      150.      150.         2         0         0       .00     90.23    300.00


CCHV=     .600 CEHV=     .800
*SECNO 23.700

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .45


3470 ENCROACHMENT STATIONS=      150.0     300.0  TYPE=      1  TARGET=      150.000
    23.700      6.30    640.60       .00    640.56    640.93       .33       .44       .20    638.00
     682.0     125.0     505.4      51.6     124.9      94.2      52.8      14.9       5.7    637.90
       .14      1.00      5.36       .98      .120      .050      .120      .000    634.30    150.00
   .004192      270.      270.      270.         2         0         0       .00    147.09    297.09


CCHV=     .600 CEHV=     .800
*SECNO 24.000

3470 ENCROACHMENT STATIONS=      150.0     300.0  TYPE=      1  TARGET=      150.000
    24.000      6.43    640.73       .00    640.70    641.15       .42       .15       .07    634.40
     682.0     280.6     293.5     107.8     177.5      37.9      75.9      15.1       5.8    634.60
       .14      1.58      7.75      1.42      .120      .050      .120      .000    634.30    150.00
   .005846       30.       30.       30.         2         0         0       .00    148.97    298.97
```

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.50	2.60	.00	6.00	6.00	45.00	2	2	633.98	633.90

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 2 - MITERED TO CONFORM TO SLOPE

5130, EGIC= 665.43..MAY BE TOO LARGE IF INLET CONTROLS.

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

5135, EGOC= 658.26 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 24.450

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 640.91
5150, EG OF 640.91 LESS THAN XEG OF 641.15
SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
665.43	658.26	.00	433.	243.	7.734	28.3	639.50	194.

3470 ENCROACHMENT STATIONS= 150.0 300.0 TYPE= 1 TARGET= 150.000

24.450	6.43	640.73	.00	640.70	641.15	.42	.00	.00	634.40
682.0	280.9	293.1	107.9	177.9	37.9	76.1	15.4	6.0	634.60
.14	1.58	7.73	1.42	.120	.050	.120	.000	634.30	150.00
.005816	45.	45.	45.	3	0	0	.00	149.04	299.04

*SECNO 24.750

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 150.0 300.0 TYPE= 1 TARGET= 150.000

24.750	6.00	640.90	.00	640.88	641.34	.43	.17	.01	638.20
682.0	44.2	555.9	81.9	51.0	95.6	61.5	15.6	6.1	639.00
.14	.87	5.81	1.33	.120	.050	.120	.000	634.90	150.00
.005795	30.	30.	30.	0	0	0	.00	146.07	300.00

CCHV= .100 CEHV= .300
*SECNO 26.000
2800 NAT Q1= 163.04 WSELK= 641.61 ENC Q1= 163.04 WSEL= 641.71 RATIO= .0000
NAT Q1= 171. RATIOS LOB, CH, ROB= .2442 .5091 .2467 WSEL= 641.71

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.74

```
3470 ENCROACHMENT STATIONS=      170.0     340.5  TYPE=      4  TARGET=         .048
    26.000      6.22    641.62       .00    641.61    641.75       .13       .38       .03    638.20
     682.0     154.9     370.9     156.2     162.3      98.5     174.8      16.5       6.5    638.70
       .16       .95      3.77       .89      .120      .050      .120      .000    635.40    169.96
   .001905      125.      125.      125.         2         0         0       .00    170.52    340.48
```



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

CCHV=     .600 CEHV=     .800
*SECNO 27.300

3470 ENCROACHMENT STATIONS=      166.0     320.0  TYPE=      1  TARGET=      154.000
    27.300      6.14    641.94       .00    641.91    642.15       .21       .33       .06    641.80
     682.0        .0     681.3        .7        .2     187.2       1.9      17.4       6.9    641.30
       .17       .13      3.64       .35      .120      .050      .120      .000    635.80    234.84
   .003620      130.      130.      130.         2         0         0       .00     71.17    306.01

*SECNO 27.600

3470 ENCROACHMENT STATIONS=      166.0     320.0  TYPE=      1  TARGET=      154.000
    27.600      6.24    642.04       .00    642.01    642.26       .22       .10       .01    641.80
     682.0        .1     667.7      14.2        .6     175.6      25.0      17.6       6.9    640.50
       .17       .16      3.80       .57      .120      .050      .120      .000    635.80    232.83
   .003021       30.       30.       30.         1         0         0       .00     84.77    317.60


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
     1         .024      .50      2.60       .00      6.00      6.00      52.00     2         2        636.44    635.80

CHART  2 - CORRUGATED METAL PIPE CULVERT
SCALE  2 - MITERED TO CONFORM TO SLOPE

5130, EGIC=  667.93..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC=  660.19 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO 28.150

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =    644.87

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.64

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV    ELTRD    WEIRLN
   667.93    660.19      2.61      421.      265.     2.076      28.3   643.28      189.
```

```
3470 ENCROACHMENT STATIONS=      205.0     295.0  TYPE=      1  TARGET=      90.000
   28.150      8.37    644.81       .00    644.80    644.87       .06      2.61       .00    641.80
    682.0      32.4     628.0      21.6      75.0     302.5      40.7      18.0       7.1    640.50
      .18       .43      2.08       .53      .120      .050      .120      .000    636.44    205.00
   000434       55.       55.       55.         2         0         0       .00     90.00    295.00


  28SEP92      16:05:40                                                                                PAGE   35


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


*SECNO 28.450

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .42


3470 ENCROACHMENT STATIONS=      205.0     295.0  TYPE=      1  TARGET=      90.000
   28.450      8.08    644.78       .00    644.78    645.10       .31       .03       .20    642.20
    682.0      35.5     593.6      52.9      47.6     123.5      47.4      18.2       7.1    639.30
      .18       .75      4.81      1.12      .120      .050      .120      .000    636.70    205.00
  .002434       30.       30.       30.         2         0         0       .00     82.38    287.38


CCHV=     .100 CEHV=     .300
*SECNO 32.000
 2800 NAT Q1=     275.57  WSELK=     645.44  ENC Q1=     275.57  WSEL=     645.54  RATIO=    .0000
 NAT Q1=     285.  RATIOS LOB, CH, ROB=    .3083   .6739   .0178  WSEL=     645.54

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.94


3470 ENCROACHMENT STATIONS=      152.9     263.5  TYPE=      4  TARGET=        .034
   32.000      7.85    645.45       .00    645.44    645.52       .07       .40       .02    641.80
    682.0     203.2     478.6        .2     283.0     190.8       1.3      21.0       7.9    643.00
      .23       .72      2.51       .19      .120      .050      .120      .000    637.60    152.86
  .000647      355.      355.      355.         2         0         0       .00    110.68    263.55


CCHV=     .600 CEHV=     .800
*SECNO 37.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .40

   37.000      6.63    646.08       .00    646.04    646.33       .25       .66       .15    639.45
    682.0     106.2     461.8     114.0      53.4      98.0      54.0      24.9       8.7    639.56
      .27      1.99      4.71      2.11      .120      .070      .120      .000    639.45    226.58
  .004034      500.      500.      500.         2         0         0       .00     37.42    264.00


1
  28SEP92      16:05:40                                                                                PAGE   36


   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
```

```
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA      R-BANK ELEV
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN    SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID   ENDST


SPECIAL BRIDGE

SB  XK       XKOR     COFQ     RDLEN    BWC      BWP      BAREA    SS       ELCHU    ELCHD
     .00     3.70     2.60      .00    15.00      .00    50.00      .00   640.10   639.56

*SECNO 38.500
PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape


 EGPRS     EGLWC     H3       QWEIR    QPR      BAREA   TRAPEZOID     ELLC     ELTRD    WEIRLN
                                                          AREA
   656.76   647.61     .00      222.     463.      50.      69.      644.70   650.20     257.



3470 ENCROACHMENT STATIONS=      150.0     255.0  TYPE=      1  TARGET=      105.000
   38.500    10.78   650.88      .00   650.88   651.00      .12     4.67      .00   642.60
    682.0    196.3    485.7       .0    163.6    152.7       .0     25.8      9.0 100000.00
      .28     1.20     3.18      .00     .120     .070     .000     .000   640.10   150.00
  .002096     150.     150.     150.        2        0        6      .00   105.00   255.00


CCHV=     .100 CEHV=     .300
*SECNO 43.500
 2800 NAT Q1=     518.22  WSELK=     651.21  ENC Q1=     518.22  WSEL=     651.31  RATIO=    .0000
 NAT Q1=     538.  RATIOS LOB, CH, ROB=    .3579   .2139   .4282  WSEL=     651.31
3280 CROSS SECTION     43.50 EXTENDED       .32 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.38


3470 ENCROACHMENT STATIONS=       68.9     402.5  TYPE=      4  TARGET=         .038
   43.500     8.82   651.22      .00   651.21   651.23      .01      .22      .01   645.00
    682.0    238.1    152.8    291.1    566.0    108.4    638.9     35.2     11.5   646.40
      .49      .42     1.41      .46     .120     .050     .120     .000   642.40    68.93
  .000183     500.     500.     500.        2        0        0      .00   333.53   402.47


*SECNO 50.000
 2800 NAT Q1=     245.93  WSELK=     651.36  ENC Q1=     245.93  WSEL=     651.46  RATIO=    .0000
 NAT Q1=     259.  RATIOS LOB, CH, ROB=    .2314   .2633   .5053  WSEL=     651.46
1
   28SEP92      16:05:40                                                                    PAGE   37


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


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .47
```

```
3470 ENCROACHMENT STATIONS=      179.0     411.7  TYPE=      4  TARGET=         .052
    50.000      5.08    651.38       .00    651.36    651.39       .01       .16       .00    648.20
     486.0     105.6     136.0     244.4     196.1      86.3     460.0      50.5      15.7    648.80
       .71       .54      1.58       .53      .120      .050      .120      .000    646.30    179.03
   .000419      650.      650.      650.         1         0         0       .00    232.62    411.65


*SECNO 52.500
 2800 NAT Q1=     147.58  WSELK=     651.50  ENC Q1=     147.58  WSEL=     651.60  RATIO=    .0000
 NAT Q1=     158.  RATIOS LOB, CH, ROB=    .2252   .3009   .4739  WSEL=     651.60

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .60


3470 ENCROACHMENT STATIONS=      183.9     400.9  TYPE=      4  TARGET=         .065
    52.500      4.23    651.53       .00    651.50    651.56       .03       .16       .01    649.20
     486.0     100.3     158.0     227.7     134.6      69.3     312.5      54.1      17.0    649.80
       .77       .74      2.28       .73      .120      .050      .120      .000    647.30    183.92
   .001173      250.      250.      250.         1         0         0       .00    216.96    400.88


*SECNO 55.000
 2800 NAT Q1=      42.55  WSELK=     652.10  ENC Q1=      42.55  WSEL=     652.20  RATIO=    .0000
 NAT Q1=      47.  RATIOS LOB, CH, ROB=    .1291   .7046   .1663  WSEL=     652.20

3301 HV CHANGED MORE THAN HVINS

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

3470 ENCROACHMENT STATIONS=      209.2     362.6  TYPE=      4  TARGET=         .102
    55.000      3.81    652.21    652.21    652.10    652.74       .53       .69       .15    651.60
     486.0      42.1     381.1      62.8      31.5      57.8      60.7      56.0      18.1    651.70
       .78      1.34      6.59      1.03      .120      .050      .120      .000    648.40    209.20
   .012959      250.      250.      250.        20        10         0       .00    153.43    362.63


1
   28SEP92      16:05:40                                                                                PAGE   38


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


 *SECNO 61.000
 3280 CROSS SECTION     61.00 EXTENDED      1.80 FEET


 3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.40


 3470 ENCROACHMENT STATIONS=      210.0     400.0  TYPE=      1  TARGET=      190.000
    61.000      4.00    654.70       .00    654.65    654.74       .04      1.95       .05    653.10
     341.0      11.3     171.2     158.5      21.7      81.3     254.2      59.5      20.4    652.90
```

.90	.52	2.10	.62	.120	.050	.120	.000	650.70	212.48
001107	600.	600.	600.	6	0	0	.00	187.52	400.00

*SECNO 63.300

3280 CROSS SECTION 63.30 EXTENDED .16 FEET

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

3470 ENCROACHMENT STATIONS= 210.0 320.0 TYPE= 1 TARGET= 110.000

63.300	3.36	655.06	.00	655.04	655.22	.15	.44	.03	654.10
324.0	9.5	236.4	78.0	12.0	65.3	71.6	60.8	21.2	653.90
.92	.80	3.62	1.09	.120	.050	.120	.000	651.70	216.88
.004388	230.	230.	230.	2	0	0	.00	103.12	320.00

*SECNO 65.500

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .53

65.500	3.65	656.35	656.33	656.37	657.01	.66	1.64	.15	653.80
324.0	18.5	226.5	79.0	10.6	29.3	48.9	61.4	21.7	654.10
.93	1.75	7.73	1.62	.120	.050	.120	.000	652.70	235.71
.015457	220.	220.	220.	5	8	0	.00	89.29	325.00

*SECNO 70.000

1

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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.33

70.000	4.84	659.44	.00	659.42	659.57	.14	2.51	.05	655.70
324.0	22.1	163.4	138.5	22.7	40.0	134.6	62.9	22.6	656.00
.98	.97	4.08	1.03	.120	.050	.120	.000	654.60	231.83
.002847	450.	450.	450.	3	0	0	.00	93.17	325.00

*SECNO 79.500

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .52

```
3470 ENCROACHMENT STATIONS=      190.0     325.0  TYPE=      1  TARGET=      135.000
    79.500      6.66    663.76       .00    663.78    664.45       .69      4.71       .17    660.70
     324.0      26.5     268.5      29.0      16.0      36.9      17.0      65.8      24.0    660.60
      1.03      1.65      7.28      1.70      .120      .050      .120      .000    657.10    235.54
    010708      950.      950.      950.         3         0         0       .00     33.22    268.76


*SECNO 88.500
 2800 NAT Q1=      58.84  WSELK=     668.89  ENC Q1=      58.84  WSEL=     668.99  RATIO=    .0000
 NAT Q1=      61.  RATIOS LOB, CH, ROB=    .1327   .8431   .0243  WSEL=     668.99

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.86


3470 ENCROACHMENT STATIONS=      237.5     259.5  TYPE=      4  TARGET=         .040
    88.500      6.55    668.96       .00    668.89    669.22       .26      4.72       .04    664.80
     324.0      37.3     285.6       1.1      25.9      65.9       2.0      67.5      24.6    667.60
      1.09      1.44      4.33       .55      .120      .050      .120      .000    662.40    237.52
   .003107      900.      900.      900.         3         0         0       .00     22.00    259.53


*SECNO 94.000
1
   28SEP92      16:05:40                                                                                PAGE   40


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


3280 CROSS SECTION     94.00 EXTENDED      3.26 FEET


3470 ENCROACHMENT STATIONS=      230.0     272.0  TYPE=      1  TARGET=       42.000
    94.000      5.45    670.95       .00    670.86    671.15       .20      1.93       .01    669.90
     324.0       4.1     318.6       1.2       5.6      87.2       2.9      68.7      25.0    670.40
      1.13       .73      3.65       .43      .120      .050      .120      .000    665.50    230.00
   .004002      550.      550.      550.         3         0         0       .00     42.00    272.00


CCHV=     .600 CEHV=     .800
*SECNO 97.000

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .59


3470 ENCROACHMENT STATIONS=      245.0     256.0  TYPE=      1  TARGET=       11.000
    97.000      4.67    672.74       .00    672.69    673.45       .71      1.89       .41    668.07
     324.0        .0     318.6       5.4        .0      46.6       4.7      69.2      25.2    668.07
      1.14       .00      6.84      1.16      .000      .050      .120      .000    668.07    245.00
   .011322      300.      300.      300.         2         0         0       .00     11.00    256.00
```

```
SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    2          .013      .50      2.60       .00      5.40      5.40    100.00      1         1       668.50    668.07

CHART  1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE  1 - SQUARE EDGE ENTRANCE WITH HEADWALL

*SECNO 98.000

SPECIAL CULVERT OUTLET CONTROL
EGIC =    674.127  EGOC =    674.359  PCWSE=    672.736  ELTRD=    676.520

SPECIAL CULVERT

     EGIC      EGOC        H4     QWEIR     QCULV       VCH     ACULV     ELTRD    WEIRLN
   674.13    674.36       .91        0.      324.     5.996      45.8    676.52        0.



3470 ENCROACHMENT STATIONS=      245.0     256.0  TYPE=      1  TARGET=       11.000
1
   28SEP92      16:05:40                                                                                          PAGE   41


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


    98.000      5.31    673.81       .00    673.80    674.36       .55       .91       .00    668.50
     324.0        .0     318.8       5.2        .0      53.2       5.3      69.4      25.2    668.50
      1.15       .00      6.00       .97      .000      .050      .120      .000    668.50    245.00
   .007745      100.      100.      100.         2         0         0       .00     11.00    256.00


CCHV=     .100 CEHV=     .300
*SECNO 104.500

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.91

   104.500      6.81    676.61       .00    676.61    676.78       .17      2.38       .04    677.40
     324.0        .0     324.0        .0        .0      98.2        .0      70.5      25.4    677.94
      1.20       .00      3.30       .00      .000      .050      .000      .000    669.80    238.76
   .002129      650.      650.      650.         4         0         0       .00     20.29    259.06

 .

*SECNO 109.000
 2800 NAT Q1=     181.94  WSELK=     677.05  ENC Q1=     181.94  WSEL=     677.15  RATIO=     .0000
 NAT Q1=     188.  RATIOS LOB, CH, ROB=    .0313    .9170    .0517  WSEL=     677.15

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.51


3470 ENCROACHMENT STATIONS=      241.4     282.7  TYPE=      4  TARGET=        .030
   109.000      7.06    677.06       .00    677.05    677.10       .04       .31       .01    670.30
     324.0       4.8     307.5      11.7      14.3     177.9      27.3      72.2      25.7    672.70
      1.28       .34      1.73       .43      .120      .050      .120      .000    670.00    241.45
```

.000337	450.	450.	450.	2	0	0	.00	41.26	282.71

CCHV= .600 CEHV= .800
*SECNO 110.530

3470 ENCROACHMENT STATIONS= 220.0 288.0 TYPE= 1 TARGET= 68.000

110.530	6.83	677.13	.00	677.12	677.16	.02	.04	.01	675.50
260.0	6.2	201.3	52.5	25.3	145.0	112.1	73.1	25.9	672.00
1.31	.25	1.39	.47	.120	.050	.120	.000	670.30	220.00
.000230	153.	153.	153.	2	0	0	.00	68.00	288.00

*SECNO 110.830

1

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

3470 ENCROACHMENT STATIONS= 220.0 288.0 TYPE= 1 TARGET= 68.000

110.830	6.74	677.14	.00	677.12	677.18	.04	.01	.01	670.40
260.0	28.0	146.9	85.1	61.2	72.9	137.8	73.2	26.0	670.90
1.32	.46	2.01	.62	.120	.050	.120	.000	670.40	220.00
.000370	30.	30.	30.	0	0	0	.00	68.00	288.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	2	.024	.50	2.60	.00	5.50	5.50	70.00	2	3	670.50	670.40

CHART 2 - CORRUGATED METAL PIPE CULVERT
SCALE 3 - PIPE PROJECTING FROM FILL

*SECNO 111.530

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 677.90
SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
675.64	678.19	.73	41.	221.	1.761	47.5	677.25	81.

3470 ENCROACHMENT STATIONS= 220.0 288.0 TYPE= 1 TARGET= 68.000

111.530	7.38	677.88	.00	677.87	677.90	.03	.73	.00	670.50
260.0	31.8	140.7	87.5	76.4	79.9	158.7	73.7	26.1	671.00
1.34	.42	1.76	.55	.120	.050	.120	.000	670.50	220.00
.000250	70.	70.	70.	2	0	0	.00	68.00	288.00

*SECNO 111.830

```
3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51


3470 ENCROACHMENT STATIONS=      220.0     288.0  TYPE=      1  TARGET=       68.000
   111.830      7.30    677.90       .00    677.89    677.92       .01       .00       .01    673.40
     260.0       9.1     235.9      15.0      43.7     231.8      53.0      73.9      26.1    673.10
      1.34       .21      1.02       .28      .120      .050      .120      .000    670.60    220.00
   .000109       30.       30.       30.         1         0         0       .00     68.00    288.00


CCHV=     .100 CEHV=     .300
*SECNO 115.500

3470 ENCROACHMENT STATIONS=      220.0     280.0  TYPE=      1  TARGET=       60.000
1
   28SEP92      16:05:40                                                                                PAGE   43


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


   115.500       7.53    677.93       .00    677.92    677.93       .00       .02       .00    672.80
      63.0        8.2      48.8       5.9      98.2     173.2      73.5      76.8      26.7    672.80
      1.77        .08       .28       .08      .120      .050      .120      .000    670.40    220.00
   .000007       367.      367.      367.         2         0         0       .00     60.00    280.00


*SECNO 121.500
 2800 NAT Q1=     121.70  WSELK=     677.92  ENC Q1=     121.70  WSEL=     678.02  RATIO=     .0000
 NAT Q1=     126.  RATIOS LOB, CH, ROB=    .0054    .8416    .1530  WSEL=     678.02

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .51


3470 ENCROACHMENT STATIONS=      242.0     279.0  TYPE=      4  TARGET=          .036
   121.500      7.84    677.94       .00    677.92    677.94       .00       .01       .00    677.80
      63.0        .0      55.0       8.0        .0     121.1      59.8      80.4      27.3    673.50
      2.18       .00       .45       .13      .000      .050      .120      .000    670.10    242.00
   .000028       600.      600.      600.         0         0         0       .00     37.02    279.02


CCHV=     .600 CEHV=     .800
*SECNO 125.800

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.43


3470 ENCROACHMENT STATIONS=      210.0     290.0  TYPE=      1  TARGET=       80.000
   125.800      7.14    677.95       .00    677.93    677.95       .00       .01       .00    670.83
      63.0      28.0       8.7      26.3     209.2      21.4     202.4      83.4      27.9    670.81
      2.88       .13       .41       .13      .120      .050      .120      .000    670.81    210.00
   .000014       430.      430.      430.         0         0         0       .00     80.00    290.00


 SPECIAL CULVERT
```

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.013	.50	2.60	.00	3.00	3.00	204.00	1	1	671.87	670.83

CHART 1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE 1 - SQUARE EDGE ENTRANCE WITH HEADWALL

*SECNO 126.430

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

5155, 20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID
FINAL QWEIR + QCULV = 244. DOES NOT EQUAL ACTUAL Q = 63.

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 677.96
SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
677.03	681.62	.00	242.	2.	.389	7.1	676.27	312.

3470 ENCROACHMENT STATIONS= 210.0 290.0 TYPE= 1 TARGET= 80.000

126.430	6.08	677.95	.00	677.93	677.96	.00	.00	.00	671.87
63.0	28.7	7.1	27.2	203.2	18.3	197.1	84.1	28.0	671.87
2.99	.14	.39	.14	.120	.050	.120	.000	671.87	210.00
.000015	64.	64.	64.	0	0	0	.00	80.00	290.00

*SECNO 126.830

3470 ENCROACHMENT STATIONS= 210.0 290.0 TYPE= 1 TARGET= 80.000

126.830	5.97	677.97	.00	677.94	677.98	.01	.02	.00	674.00
131.0	32.7	91.6	6.7	124.4	130.8	40.5	87.3	28.8	675.70
3.18	.26	.70	.17	.120	.050	.120	.000	672.00	210.00
000081	400.	400.	400.	0	0	0	.00	80.00	290.00

CCHV= .100 CEHV= .300
*SECNO 129.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .66

3470 ENCROACHMENT STATIONS= 210.0 290.0 TYPE= 1 TARGET= 80.000

129.000	5.49	677.99	.00	677.95	678.00	.01	.03	.00	674.00
131.0	51.6	60.5	18.9	132.4	55.7	70.8	88.7	29.2	674.50
3.27	.39	1.09	.27	.120	.050	.120	.000	672.50	210.00
.000184	217.	217.	217.	1	0	0	.00	80.00	290.00

*SECNO 132.600

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

1
   28SEP92      16:05:40                                                                                                PAGE   45

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


3470 ENCROACHMENT STATIONS=      220.0     270.0  TYPE=      1  TARGET=       50.000
   132.600      4.00    678.10       .00    677.95    678.17       .07       .15       .02    675.60
     131.0      16.1      95.9      19.0      27.5      37.8      26.5      90.2      29.7    676.10
      3.32       .59      2.54       .72      .120      .050      .120      .000    674.10    221.98
   .001678      360.      360.      360.         2         0         0       .00     48.02    270.00


*SECNO 136.200
 2800 NAT Q1=      25.36  WSELK=     678.78  ENC Q1=      27.57  WSEL=     678.88  RATIO=   -.0872
 NAT Q1=      28.  RATIOS LOB, CH, ROB=    .0014   .9927   .0059  WSEL=     678.88

3470 ENCROACHMENT STATIONS=      241.0     270.0  TYPE=      4  TARGET=         .007
   136.200      3.13    678.83       .00    678.78    678.91       .08       .74       .00    678.60
     131.0        .0     131.0        .0        .0      57.5        .0      90.8      30.0    678.30
      3.36       .00      2.28       .00      .000      .050      .000      .000    675.70    241.00
   .002557      360.      360.      360.         2         0         0       .00     29.00    270.00


*SECNO 140.000
 2800 NAT Q1=      13.01  WSELK=     679.77  ENC Q1=      14.30  WSEL=     679.87  RATIO=   -.0993
 NAT Q1=      14.  RATIOS LOB, CH, ROB=    .0000  1.0000   .0000  WSEL=     679.87

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .51


3470 ENCROACHMENT STATIONS=      241.0     270.0  TYPE=      4  TARGET=         .000
   140.000      2.38    679.78       .00    679.77    679.82       .04       .91       .00    680.30
      60.0        .0      60.0        .0        .0      36.3        .0      91.2      30.3    680.00
      3.43       .00      1.65       .00      .000      .050      .000      .000    677.40    242.44
   .002086      380.      380.      380.         2         0         0       .00     26.10    268.54


*SECNO 145.000
 2800 NAT Q1=      12.20  WSELK=     680.88  ENC Q1=      12.42  WSEL=     680.98  RATIO=   -.0179
 NAT Q1=      13.  RATIOS LOB, CH, ROB=    .0029   .9355   .0616  WSEL=     680.98

3470 ENCROACHMENT STATIONS=      246.0     257.0  TYPE=      4  TARGET=         .064
   145.000      3.46    680.96       .00    680.88    681.04       .08      1.20       .01    680.10
      60.0        .0      60.0        .0        .0      26.0        .0      91.5      30.5    680.30
      3.49       .00      2.31       .00      .000      .050      .000      .000    677.50    246.00
   .002804      500.      500.      500.         2         0         0       .00     11.00    257.00


1
   28SEP92      16:05:40                                                                                                PAGE   46
```

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

CCHV= .600 CEHV= .800
*SECNO 151.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.51

3470 ENCROACHMENT STATIONS= 238.0 260.0 TYPE= 1 TARGET= 22.000

151.000	2.70	682.10	.00	682.02	682.13	.04	1.06	.03	682.10
60.0	.0	60.0	.0	.0	39.7	.0	92.0	30.7	100000.00
3.60	.00	1.51	.00	.000	.050	.000	.000	679.40	238.02
.001223	600.	600.	600.	2	0	0	.00	21.58	259.60

*SECNO 151.350

3301 HV CHANGED MORE THAN HVINS

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

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 690.07 ELREA= 690.07

151.350	2.31	682.54	682.54	682.54	683.70	1.16	.12	.90	680.23
60.0	.0	60.0	.0	.0	6.9	.0	92.0	30.7	680.23
3.60	.00	8.65	.00	.000	.050	.000	.000	680.23	248.00
.027723	35.	35.	35.	20	11	0	.00	3.00	251.00

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.024	.50	2.60	.00	3.00	3.00	38.00	1	3	680.67	680.23

CHART 1 - CONCRETE PIPE CULVERT; NO BEVELED RING ENTRANCE
SCALE 3 - GROOVE END ENTRANCE, PIPE PROJECTING FROM FILL

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO 151.730

SPECIAL CULVERT INLET CONTROL
EGIC = 685.007 EGOC = 684.589 PCWSE= 682.542 ELTRD= 690.070

3280 CROSS SECTION 151.73 EXTENDED 1.31 FEET

1

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

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.43

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
685.01	684.59	1.30	0.	60.	5.073	7.1	690.07	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 690.07 ELREA= 690.58

151.730	3.94	684.61	.00	684.61	685.01	.40	1.30	.00	680.67
60.0	.0	60.0	.0	.0	11.8	.0	92.0	30.7	680.67
3.60	.00	5.07	.00	.000	.050	.000	.000	680.67	248.00
.004676	38.	38.	38.	2	0	0	.00	3.00	251.00

*SECNO 152.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 240.0 260.0 TYPE= 1 TARGET= 20.000

152.000	3.27	685.07	685.07	685.01	685.98	.92	.50	.41	684.20
241.0	1.2	239.3	.5	.9	31.1	.6	92.0	30.7	684.70
3.60	1.33	7.71	.90	.120	.050	.120	.000	681.80	240.00
.032152	27.	27.	27.	2	15	0	.00	20.00	260.00

CCHV= .100 CEHV= .300
*SECNO 157.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 6.61

1

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

3470 ENCROACHMENT STATIONS= 100.0 500.0 TYPE= 1 TARGET= -100.000

157.000	2.67	687.17	.00	687.07	687.18	.01	1.11	.09	685.60
241.0	28.7	76.3	136.0	75.8	57.5	248.3	94.4	32.1	685.30
3.78	.38	1.33	.55	.120	.050	.120	.000	684.50	158.75

.000736	500.	500.	500.	7	0	0	.00	218.16	376.91

PROFILE FOR STREAM -FOLEY DRAIN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

```
ELEVATION   629.     630.     631.     632.     633.     634.     635.     636.     637.     638.
    SECNO   CUMDIS

    8.00     0.  C I      L      R .        .        .     E .        .        .        M        .        .
            50.  C   I    .  L    . R      .        .      E .        .        .       M.        .        .
           100.  C      I .     L .     R .        .       E.        .        .      M .        .        .
           150.  C        I        .L       . R      .       W.E       .        .      M .        .        .
           200.  C        . I      .   L    .    R   .        W E      .        .     M  .        .        .
           250.  C        .    I   .      L .        .R       .W E     .        .    M   .        .        .
           300.  C        .       I.        . L      .   R    . W E    .        .   M    .        .        .
           350.  C        .        .I       .    L   .        R W  E   .        .  M     .        .        .
           400.  C        .        .  I     .       L.        .  W R E .        . M      .        .        .
           450.  C        .        .    I   .        . L      .  W   ER.        . M      .        .        .
           500.  C        .        .       I        .     L  .   W  E.  R     . M       .        .        .
           550.  C        .        .        . I     .        L   W   E      R .M        .        .        .
    14.00  600.  .        .        .        .   I   .        .  L W  .E       M  R      .        .        .
           650.  C        .        .        .    I  .        .   L   .W  E   .     R  .   M    .        .
           700.  C        .        .        .     I .        .     L .    W  E        .R       .        M
           750.  C        .        .        .     I .        .      L .        W  E    .  R     .        M
           800.  C        .        .        .      I .        .        L        .   W  E .      R .        M
           850.  C        .        .        .       I.        .        .L       .        W  E     . R      M
           900.  C        .        .        .        I        .        . L      .        .   W E .    R  M
           950.  C        .        .        .        I        .        .  L     .        .        WE      RM
    17.85 1000.  C        .        .        .        .I       .        .   L    .        .        . WE    R
    18.15 1050.  C        .        .        .        .I       .        .   L    .        .        .  WE   R
```

PROFILE FOR STREAM -FOLEY DRAIN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

```
ELEVATION   633.     634.     635.     636.     637.     638.     639.     640.     641.     642.
    SECNO   CUMDIS

           1100.  C I      .        .   L    .        .        .        .WE      .        .        .        R
    19.20  1150.  C  I     .        .   L    .        .        .        .        E        .        .        R
    19.50  1200.  C   I    .        .  L     .   R    .        .        .        WE       .        .        M
           1250.  C    I   .        .        . L      .R       .        .        .WE      .        .        M
    21.00  1300.  C     I  .        .        .        .        L.   R   .        . WE     .        .        M
           1350.  C      I .        .        .        .        L. R     .        .  WE    .        .        M
           1400.  C       I.        .        .        .        L. R     .        .   WE   .        .        M
           1450.  C        I        .        .        .        LR       .        .   W E  .        .        M
           1500.  C        .I       .        .        .        L        .        .    W  E .        .        M
           1550.  C        . I      .        .        .        RL       .        .     W  E.        .        M
    23.70  1600.  C        .  I     .        .        .        RL       .        .     W  E.        .        M
```

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

-FOLEY DRAIN

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	8.000	633.70	.00	633.71	362.11	307.22	398.26	37.52	.00	.00	300.00	400.00	.00
	8.000	633.70	.00	633.71	273.89	304.30	416.78	21.92	.05	145.51	300.00	400.00	419.40
*	14.000	634.58	.00	634.96	210.47	470.41	217.59	.00	-350.00	350.00	542.00	565.00	800.00
*	14.000	634.61	.04	635.12	157.07	443.49	244.51	.00	.22	403.50	542.00	565.00	565.00
*	17.850	638.18	.00	638.30	114.20	313.99	374.01	.00	223.00	90.00	240.00	280.00	313.00
*	17.850	638.29	.11	638.41	116.06	315.98	372.02	.00	223.00	90.00	240.00	280.00	313.00
	18.150	638.30	.00	638.41	116.34	316.80	371.20	.00	223.00	90.00	240.00	280.00	313.00
	18.150	638.40	.10	638.50	118.17	318.61	369.39	.00	223.00	90.00	240.00	280.00	313.00
*	19.200	639.96	.00	640.00	118.00	328.23	359.77	.00	118.00	158.00	240.00	280.00	276.00
*	19.200	639.96	.01	640.01	118.00	328.25	359.74	.00	118.00	158.00	240.00	280.00	276.00
*	19.500	639.97	.00	640.11	118.00	188.66	463.78	35.55	118.00	158.00	242.00	265.00	276.00
*	19.500	639.98	.01	640.12	118.00	188.85	463.59	35.56	118.00	158.00	242.00	265.00	276.00
*	21.000	640.21	.00	640.28	197.59	37.68	636.55	13.77	-150.00	150.00	240.00	300.00	500.00
	21.000	640.21	.01	640.30	90.23	27.91	660.09	.00	.06	209.77	240.00	300.00	300.00
*	23.700	640.56	.00	640.91	146.56	122.01	509.30	50.69	150.00	150.00	240.00	258.00	300.00
*	23.700	640.60	.04	640.93	147.09	125.03	505.40	51.57	150.00	150.00	240.00	258.00	300.00
	24.000	640.70	.00	641.14	148.51	278.56	296.26	107.18	150.00	150.00	248.00	254.00	300.00
	24.000	640.73	.03	641.15	148.97	280.64	293.54	107.82	150.00	150.00	248.00	254.00	300.00
	24.450	640.70	.00	641.14	148.61	278.98	295.71	107.31	150.00	150.00	248.00	254.00	300.00
	24.450	640.73	.03	641.15	149.04	280.94	293.15	107.92	150.00	150.00	248.00	254.00	300.00
	24.750	640.88	.00	641.32	145.04	42.83	558.13	81.04	150.00	150.00	244.00	265.00	300.00
	24.750	640.90	.02	641.34	146.07	44.20	555.93	81.87	150.00	150.00	244.00	265.00	300.00

1

28SEP92 16:05:40 PAGE 50

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	26.000	641.61	.00	641.72	208.19	163.10	354.67	164.23	.00	.00	240.00	258.00	.00
*	26.000	641.62	.01	641.75	170.52	154.91	370.87	156.22	.05	169.96	240.00	258.00	340.48
*	27.300	641.91	.00	642.12	70.22	.02	681.38	.60	154.00	166.00	238.00	300.00	320.00
	27.300	641.94	.03	642.15	71.17	.03	681.30	.67	154.00	166.00	238.00	300.00	320.00
	27.600	642.01	.00	642.23	83.53	.07	668.23	13.70	154.00	166.00	238.00	285.00	320.00
	27.600	642.04	.03	642.26	84.77	.10	667.70	14.21	154.00	166.00	238.00	285.00	320.00
*	28.150	644.80	.00	644.86	90.00	32.29	628.14	21.57	90.00	205.00	238.00	285.00	295.00
*	28.150	644.81	.01	644.87	90.00	32.40	628.01	21.58	90.00	205.00	238.00	285.00	295.00

*	28.450	644.78	.00	645.09	82.24	35.29	593.94	52.76	90.00	205.00	240.00	258.00	295.00
*	28.450	644.78	.01	645.10	82.38	35.53	593.57	52.90	90.00	205.00	240.00	258.00	295.00
*	32.000	645.44	.00	645.50	172.99	206.52	464.19	11.29	.00	.00	235.00	263.00	.00
*	32.000	645.45	.01	645.52	110.68	203.19	478.57	.25	.03	152.86	235.00	263.00	263.55
*	37.000	646.04	.00	646.30	37.36	105.90	462.03	114.07	265.00	.00	240.00	255.00	265.00
*	37.000	646.08	.04	646.33	37.42	106.15	461.83	114.02	265.00	.00	240.00	255.00	265.00
*	38.500	650.88	.00	650.99	105.00	196.10	485.90	.00	105.00	150.00	240.00	255.00	255.00
	38.500	650.88	.00	651.00	105.00	196.26	485.74	.00	105.00	150.00	240.00	255.00	255.00
*	43.500	651.21	.00	651.21	421.75	241.74	148.17	292.09	500.00	.00	245.00	260.00	500.00
*	43.500	651.22	.01	651.23	333.53	238.05	152.83	291.12	.04	68.93	245.00	260.00	402.47
*	50.000	651.36	.00	651.37	299.36	112.34	129.79	243.86	.00	.00	240.00	260.00	.00
*	50.000	651.38	.02	651.39	232.62	105.61	135.98	244.42	.05	179.03	240.00	260.00	411.66
*	52.500	651.50	.00	651.52	268.39	108.89	149.08	228.03	.00	.00	240.00	260.00	.00
*	52.500	651.53	.03	651.56	216.96	100.25	158.03	227.71	.07	183.92	240.00	260.00	400.89
*	55.000	652.10	.00	652.59	229.42	59.11	360.74	66.15	.00	.00	242.00	261.00	.00
*	55.000	652.21	.10	652.74	153.43	42.12	381.11	62.77	.10	209.20	242.00	261.00	362.63
*	61.000	654.65	.00	654.69	187.09	11.06	172.96	156.97	190.00	210.00	230.00	255.00	400.00
*	61.000	654.70	.05	654.74	187.52	11.33	171.18	158.49	190.00	210.00	230.00	255.00	400.00
*	63.300	655.04	.00	655.20	102.98	9.35	237.31	77.34	110.00	210.00	230.00	255.00	320.00
*	63.300	655.06	.02	655.22	103.12	9.54	236.45	78.01	110.00	210.00	230.00	255.00	320.00
*	65.500	656.37	.00	657.01	89.37	18.62	224.89	80.50	340.00	.00	244.00	253.00	340.00
*	65.500	656.35	-.02	657.01	89.29	18.52	226.46	79.02	340.00	.00	244.00	253.00	340.00
*	70.000	659.42	.00	659.56	93.13	22.09	163.84	138.07	325.00	.00	244.00	253.00	325.00
*	70.000	659.44	.01	659.57	93.17	22.12	163.39	138.49	325.00	.00	244.00	253.00	325.00
*	79.500	663.78	.00	664.46	33.93	26.66	268.01	29.33	135.00	190.00	246.00	253.00	325.00
*	79.500	663.76	-.02	664.45	33.22	26.45	268.55	29.00	135.00	190.00	246.00	253.00	325.00

1

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	88.500	668.89	.00	669.13	48.02	42.11	275.18	6.70	.00	.00	245.00	258.00	.00
*	88.500	668.96	.07	669.22	22.00	37.28	285.61	1.11	.04	237.52	245.00	258.00	259.53
	94.000	670.86	.00	671.05	61.68	17.78	305.40	.82	70.00	215.00	235.00	265.00	285.00
	94.000	670.95	.09	671.15	42.00	4.12	318.64	1.24	42.00	230.00	235.00	265.00	272.00
*	97.000	672.69	.00	673.42	11.00	.00	318.59	5.40	11.00	245.00	245.00	255.00	256.00
*	97.000	672.74	.05	673.45	11.00	.00	318.61	5.39	11.00	245.00	245.00	255.00	256.00
	98.000	673.80	.00	674.36	11.00	.00	318.84	5.16	11.00	245.00	245.00	255.00	256.00
	98.000	673.81	.00	674.36	11.00	.00	318.84	5.16	11.00	245.00	245.00	255.00	256.00
*	104.500	676.61	.00	676.78	20.29	.00	324.00	.00	.00	.00	238.00	260.00	.00
*	104.500	676.61	.00	676.78	20.29	.00	324.00	.00	.00	.00	238.00	260.00	.00

*	109.000	677.05	.00	677.09	58.88	10.06	297.67	16.27	.00	.00	244.00	275.00	.00
*	109.000	677.06	.01	677.10	41.26	4.81	307.53	11.65	.03	241.45	244.00	275.00	282.71
	110.530	677.12	.00	677.14	68.00	6.17	201.43	52.40	68.00	220.00	235.00	260.00	288.00
	110.530	677.13	.02	677.16	68.00	6.24	201.30	52.47	68.00	220.00	235.00	260.00	288.00
	110.830	677.12	.00	677.16	68.00	27.93	147.05	85.03	68.00	220.00	244.00	255.00	288.00
	110.830	677.14	.02	677.18	68.00	28.04	146.86	85.10	68.00	220.00	244.00	255.00	288.00
	111.530	677.87	.00	677.90	68.00	31.80	140.74	87.46	68.00	220.00	244.00	255.00	288.00
	111.530	677.88	.01	677.90	68.00	31.85	140.67	87.48	68.00	220.00	244.00	255.00	288.00
*	111.830	677.89	.00	677.91	68.00	9.07	235.96	14.97	68.00	220.00	237.00	275.00	288.00
*	111.830	677.90	.01	677.92	68.00	9.09	235.93	14.98	68.00	220.00	237.00	275.00	288.00
*	115.500	677.92	.00	677.92	190.00	20.93	28.62	13.45	190.00	150.00	240.00	265.00	340.00
	115.500	677.93	.01	677.93	60.00	8.25	48.83	5.92	60.00	220.00	240.00	265.00	280.00
*	121.500	677.92	.00	677.92	51.05	.00	53.58	9.42	65.00	240.00	242.00	261.00	305.00
*	121.500	677.94	.02	677.94	37.02	.00	54.96	8.04	.04	242.00	242.00	261.00	279.03
*	125.800	677.93	.00	677.93	235.00	30.02	5.94	27.04	235.00	160.00	248.00	251.00	395.00
*	125.800	677.95	.02	677.95	80.00	27.98	8.71	26.31	80.00	210.00	248.00	251.00	290.00
	126.430	677.93	.00	677.93	235.00	30.53	4.74	27.73	235.00	160.00	248.00	251.00	395.00
	126.430	677.95	.02	677.96	80.00	28.70	7.11	27.19	80.00	210.00	248.00	251.00	290.00
	126.830	677.94	.00	677.94	235.00	54.03	51.42	25.55	235.00	160.00	240.00	270.00	395.00
	126.830	677.97	.03	677.98	80.00	32.67	91.59	6.74	80.00	210.00	240.00	270.00	290.00
*	129.000	677.95	.00	677.95	185.54	76.85	34.35	19.79	-160.00	160.00	244.00	256.00	500.00
*	129.000	677.99	.05	678.00	80.00	51.61	60.49	18.90	80.00	210.00	244.00	256.00	290.00
*	132.600	677.95	.00	678.04	46.80	15.13	97.43	18.43	50.00	220.00	244.00	256.00	270.00
*	132.600	678.10	.14	678.17	48.02	16.09	95.91	19.00	50.00	220.00	244.00	256.00	270.00

1

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	136.200	678.78	.00	678.87	42.73	.06	130.44	.50	.00	.00	241.00	270.00	.00
	136.200	678.83	.05	678.91	29.00	.00	131.00	.00	.01	241.00	241.00	270.00	270.00
*	140.000	679.77	.00	679.81	26.00	.00	60.00	.00	.00	.00	241.00	270.00	.00
*	140.000	679.78	.01	679.82	26.10	.00	60.00	.00	.00	241.00	241.00	270.00	270.00
	145.000	680.88	.00	680.96	26.93	.14	56.86	3.01	.00	.00	246.00	257.00	.00
	145.000	680.96	.07	681.04	11.00	.00	60.00	.00	.06	246.00	246.00	257.00	257.00
	151.000	682.02	.00	682.05	21.27	.00	60.00	.00	22.00	238.00	238.00	260.00	260.00
*	151.000	682.10	.08	682.13	21.58	.00	60.00	.00	22.00	238.00	238.00	260.00	260.00
*	151.350	682.54	.00	683.70	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00
*	151.350	682.54	.00	683.70	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00
*	151.730	684.61	.00	685.01	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00
*	151.730	684.61	.00	685.01	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00

*	152.000	685.01	.00	685.73	36.82	24.82	215.82	.36	50.00	225.00	241.00	258.00	275.00
*	152.000	685.07	.06	685.98	20.00	1.16	239.32	.52	20.00	240.00	241.00	258.00	260.00
*	157.000	687.07	.00	687.09	215.60	27.19	76.92	136.89	-100.00	100.00	228.00	255.00	500.00
*	157.000	687.17	.10	687.18	218.16	28.69	76.30	136.00	-100.00	100.00	228.00	255.00	500.00

1

-FOLEY DRAIN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	8.000	.00	.00	.00	629.20	743.00	633.70	.00	633.71	2.63	1.12	1115.66	458.05
	8.000	.00	.00	.00	629.20	743.00	633.70	.00	633.71	2.88	1.17	1001.25	437.69
*	14.000	600.00	.00	.00	632.50	688.00	634.58	634.58	634.96	438.43	7.89	204.36	32.86
*	14.000	600.00	.00	.00	632.50	688.00	634.61	634.61	635.12	515.63	8.66	171.96	30.30
*	17.850	385.00	.00	.00	633.10	688.00	638.18	.00	638.30	33.81	3.55	315.22	118.33
*	17.850	385.00	.00	.00	633.10	688.00	638.29	.00	638.41	30.57	3.42	327.07	124.43
	18.150	30.00	.00	.00	633.10	688.00	638.30	.00	638.41	30.21	3.40	328.72	125.18
	18.150	30.00	.00	.00	633.10	688.00	638.40	.00	638.50	27.41	3.27	340.64	131.40
*	19.200	105.00	638.70	638.70	633.35	688.00	639.96	.00	640.00	7.41	2.15	522.90	252.79
*	19.200	105.00	638.70	638.70	633.35	688.00	639.96	.00	640.01	7.38	2.14	523.53	253.27
*	19.500	30.00	.00	.00	633.40	688.00	639.97	.00	640.11	16.09	3.65	342.28	171.51
*	19.500	30.00	.00	.00	633.40	688.00	639.98	.00	640.12	16.03	3.64	342.91	171.86
*	21.000	150.00	.00	.00	633.60	688.00	640.21	.00	640.28	7.64	2.26	419.08	248.87
	21.000	150.00	.00	.00	633.60	688.00	640.21	.00	640.30	8.51	2.34	335.60	235.88
*	23.700	270.00	.00	.00	634.30	682.00	640.56	.00	640.91	43.58	5.44	266.51	103.31
*	23.700	270.00	.00	.00	634.30	682.00	640.60	.00	640.93	41.92	5.36	271.91	105.34
	24.000	30.00	.00	.00	634.30	682.00	640.70	.00	641.14	60.56	7.86	286.48	87.64
	24.000	30.00	.00	.00	634.30	682.00	640.73	.00	641.15	58.46	7.75	291.22	89.20
	24.450	45.00	639.50	639.98	634.30	682.00	640.70	.00	641.14	60.13	7.84	287.43	87.95
	24.450	45.00	639.50	639.98	634.30	682.00	640.73	.00	641.15	58.16	7.73	291.92	89.43
	24.750	30.00	.00	.00	634.90	682.00	640.88	.00	641.32	59.48	5.87	204.48	88.43
	24.750	30.00	.00	.00	634.90	682.00	640.90	.00	641.34	57.95	5.81	208.08	89.59
*	26.000	125.00	.00	.00	635.40	682.00	641.61	.00	641.72	17.50	3.61	481.33	163.04
*	26.000	125.00	.00	.00	635.40	682.00	641.62	.00	641.75	19.05	3.77	435.65	156.24
*	27.300	130.00	.00	.00	635.80	682.00	641.91	.00	642.12	37.43	3.68	187.25	111.48
	27.300	130.00	.00	.00	635.80	682.00	641.94	.00	642.15	36.20	3.64	189.36	113.35
	27.600	30.00	.00	.00	635.80	682.00	642.01	.00	642.23	31.04	3.83	198.78	122.41
	27.600	30.00	.00	.00	635.80	682.00	642.04	.00	642.26	30.21	3.80	201.17	124.07

*	28.150	55.00	643.28	642.44	636.44	682.00	644.80	.00	644.86	4.36	2.08	417.50	326.59
*	28.150	55.00	643.28	642.44	636.44	682.00	644.81	.00	644.87	4.34	2.08	418.20	327.31
*	28.450	30.00	.00	.00	636.70	682.00	644.78	.00	645.09	24.46	4.82	217.80	137.90
*	28.450	30.00	.00	.00	636.70	682.00	644.78	.00	645.10	24.34	4.81	218.44	138.24

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	32.000	355.00	.00	.00	637.60	682.00	645.44	.00	645.50	6.13	2.44	535.03	275.57
*	32.000	355.00	.00	.00	637.60	682.00	645.45	.00	645.52	6.47	2.51	475.09	268.16
*	37.000	500.00	.00	.00	639.45	682.00	646.04	.00	646.30	41.15	4.74	204.04	106.32
*	37.000	500.00	.00	.00	639.45	682.00	646.08	.00	646.33	40.34	4.71	205.42	107.37
*	38.500	150.00	650.20	644.70	640.10	682.00	650.88	.00	650.99	20.98	3.18	316.01	148.88
	38.500	150.00	650.20	644.70	640.10	682.00	650.88	.00	651.00	20.96	3.18	316.28	148.98
*	43.500	500.00	.00	.00	642.40	682.00	651.21	.00	651.21	1.73	1.37	1408.22	518.22
*	43.500	500.00	.00	.00	642.40	682.00	651.22	.00	651.23	1.83	1.41	1313.31	503.53
*	50.000	650.00	.00	.00	646.30	486.00	651.36	.00	651.37	3.91	1.51	805.94	245.93
*	50.000	650.00	.00	.00	646.30	486.00	651.38	.00	651.39	4.19	1.58	742.33	237.35
*	52.500	250.00	.00	.00	647.30	486.00	651.50	.00	651.52	10.84	2.17	567.67	147.58
*	52.500	250.00	.00	.00	647.30	486.00	651.53	.00	651.56	11.73	2.28	516.44	141.89
*	55.000	250.00	.00	.00	648.40	486.00	652.10	652.10	652.59	130.46	6.46	173.26	42.55
*	55.000	250.00	.00	.00	648.40	486.00	652.21	652.21	652.74	129.59	6.59	150.03	42.69
*	61.000	600.00	.00	.00	650.70	341.00	654.65	.00	654.69	11.92	2.16	347.53	98.78
*	61.000	600.00	.00	.00	650.70	341.00	654.70	.00	654.74	11.07	2.10	357.19	102.50
*	63.300	230.00	.00	.00	651.70	324.00	655.04	.00	655.20	45.69	3.67	146.23	47.93
*	63.300	230.00	.00	.00	651.70	324.00	655.06	.00	655.22	43.88	3.62	148.88	48.91
*	65.500	220.00	.00	.00	652.70	324.00	656.37	656.34	657.01	148.88	7.62	90.80	26.55
*	65.500	220.00	.00	.00	652.70	324.00	656.35	656.33	657.01	154.57	7.73	88.74	26.06
*	70.000	450.00	.00	.00	654.60	324.00	659.42	.00	659.56	28.90	4.10	196.25	60.27
*	70.000	450.00	.00	.00	654.60	324.00	659.44	.00	659.57	28.47	4.08	197.42	60.73
*	79.500	950.00	.00	.00	657.10	324.00	663.78	.00	664.46	105.46	7.24	70.51	31.55
*	79.500	950.00	.00	.00	657.10	324.00	663.76	.00	664.45	107.08	7.28	69.91	31.31
*	88.500	900.00	.00	.00	662.40	324.00	668.89	.00	669.13	30.32	4.24	110.14	58.84
*	88.500	900.00	.00	.00	662.40	324.00	668.96	.00	669.22	31.07	4.33	93.84	58.13
	94.000	550.00	.00	.00	665.50	324.00	670.86	.00	671.05	40.76	3.61	108.63	50.75
	94.000	550.00	.00	.00	665.50	324.00	670.95	.00	671.15	40.02	3.65	95.74	51.21
*	97.000	300.00	.00	.00	668.07	324.00	672.69	.00	673.42	116.76	6.91	50.71	29.98
*	97.000	300.00	.00	.00	668.07	324.00	672.74	.00	673.45	113.22	6.84	51.26	30.45
	98.000	100.00	676.52	673.50	668.50	324.00	673.80	.00	674.36	77.62	6.00	58.44	36.78
	98.000	100.00	676.52	673.50	668.50	324.00	673.81	.00	674.36	77.45	6.00	58.48	36.82

*	104.500	650.00	.00	.00	669.80	324.00	676.61	.00	676.78	21.30	3.30	98.20	70.20
*	104.500	650.00	.00	.00	669.80	324.00	676.61	.00	676.78	21.29	3.30	98.21	70.21

1

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	109.000	450.00	.00	.00	670.00	324.00	677.05	.00	677.09	3.17	1.68	247.13	181.94
*	109.000	450.00	.00	.00	670.00	324.00	677.06	.00	677.10	3.37	1.73	219.51	176.56
	110.530	153.00	.00	.00	670.30	260.00	677.12	.00	677.14	2.32	1.39	281.21	170.62
	110.530	153.00	.00	.00	670.30	260.00	677.13	.00	677.16	2.30	1.39	282.39	171.58
	110.830	30.00	.00	.00	670.40	260.00	677.12	.00	677.16	3.74	2.02	270.68	134.42
	110.830	30.00	.00	.00	670.40	260.00	677.14	.00	677.18	3.70	2.01	271.86	135.18
	111.530	70.00	677.25	676.06	670.50	260.00	677.87	.00	677.90	2.52	1.76	314.38	163.93
	111.530	70.00	677.25	676.06	670.50	260.00	677.88	.00	677.90	2.50	1.76	314.93	164.31
*	111.830	30.00	.00	.00	670.60	260.00	677.89	.00	677.91	1.10	1.02	327.99	248.12
*	111.830	30.00	.00	.00	670.60	260.00	677.90	.00	677.92	1.09	1.02	328.52	248.68
*	115.500	367.00	.00	.00	670.40	63.00	677.92	.00	677.92	.03	.17	850.86	396.25
	115.500	367.00	.00	.00	670.40	63.00	677.93	.00	677.93	.07	.28	344.83	233.06
*	121.500	600.00	.00	.00	670.10	63.00	677.92	.00	677.92	.27	.44	196.40	121.70
*	121.500	600.00	.00	.00	670.10	63.00	677.94	.00	677.94	.28	.45	180.88	118.89
*	125.800	430.00	.00	.00	670.81	63.00	677.93	.00	677.93	.06	.28	772.78	248.44
*	125.800	430.00	.00	.00	670.81	63.00	677.95	.00	677.95	.14	.41	433.04	170.11
	126.430	64.00	676.27	674.87	671.87	63.00	677.93	.00	677.93	.07	.26	759.28	238.88
	126.430	64.00	676.27	674.87	671.87	63.00	677.95	.00	677.96	.15	.39	418.57	160.33
	126.830	400.00	.00	.00	672.00	131.00	677.94	.00	677.94	.26	.40	722.88	257.36
	126.830	400.00	.00	.00	672.00	131.00	677.97	.00	677.98	.81	.70	295.73	145.82
*	129.000	217.00	.00	.00	672.50	131.00	677.95	.00	677.95	.61	.62	525.45	167.64
*	129.000	217.00	.00	.00	672.50	131.00	677.99	.00	678.00	1.84	1.09	258.90	96.70
*	132.600	360.00	.00	.00	674.10	131.00	677.95	.00	678.04	20.11	2.70	85.24	29.21
*	132.600	360.00	.00	.00	674.10	131.00	678.10	.00	678.17	16.78	2.54	91.80	31.98
	136.200	360.00	.00	.00	675.70	131.00	678.78	.00	678.87	26.69	2.33	58.52	25.36
	136.200	360.00	.00	.00	675.70	131.00	678.83	.00	678.91	25.57	2.28	57.45	25.91
*	140.000	380.00	.00	.00	677.40	60.00	679.77	.00	679.81	21.27	1.67	36.02	13.01
*	140.000	380.00	.00	.00	677.40	60.00	679.78	.00	679.82	20.86	1.65	36.28	13.14
	145.000	500.00	.00	.00	677.50	60.00	680.88	.00	680.96	24.19	2.26	33.22	12.20
	145.000	500.00	.00	.00	677.50	60.00	680.96	.00	681.04	28.04	2.31	25.95	11.33
	151.000	600.00	.00	.00	679.40	60.00	682.02	.00	682.05	13.81	1.58	38.07	16.15
*	151.000	600.00	.00	.00	679.40	60.00	682.10	.00	682.13	12.23	1.51	39.73	17.16
*	151.350	35.00	.00	.00	680.23	60.00	682.54	682.54	683.70	278.70	8.67	6.92	3.59
*	151.350	35.00	.00	.00	680.23	60.00	682.54	682.54	683.70	277.23	8.65	6.93	3.60

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	151.730	38.00	690.07	683.67	680.67	60.00	684.61	.00	685.01	46.76	5.07	11.83	8.77
*	151.730	38.00	690.07	683.67	680.67	60.00	684.61	.00	685.01	46.76	5.07	11.83	8.77
*	152.000	27.00	.00	.00	681.80	241.00	685.01	685.01	685.73	291.60	7.18	44.23	14.11
*	152.000	27.00	.00	.00	681.80	241.00	685.07	685.07	685.98	321.52	7.71	32.50	13.44
*	157.000	500.00	.00	.00	684.50	241.00	687.07	.00	687.09	8.86	1.41	358.74	80.97
*	157.000	500.00	.00	.00	684.50	241.00	687.17	.00	687.18	7.36	1.33	381.58	88.83

-FOLEY DRAIN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	8.000	743.00	633.70	.00	.00	.00	362.11	.00
	8.000	743.00	633.70	.00	.00	.00	273.89	.00
*	14.000	688.00	634.58	.00	.88	.00	210.47	600.00
*	14.000	688.00	634.61	.04	.91	.04	157.07	600.00
*	17.850	688.00	638.18	.00	3.60	.00	114.20	385.00
*	17.850	688.00	638.29	.11	3.68	.11	116.06	385.00
	18.150	688.00	638.30	.00	.11	.00	116.34	30.00
	18.150	688.00	638.40	.10	.10	.10	118.17	30.00
*	19.200	688.00	639.96	.00	1.66	.00	118.00	105.00
*	19.200	688.00	639.96	.01	1.57	.01	118.00	105.00
*	19.500	688.00	639.97	.00	.01	.00	118.00	30.00
*	19.500	688.00	639.98	.01	.01	.01	118.00	30.00
*	21.000	688.00	640.21	.00	.24	.00	197.59	150.00
	21.000	688.00	640.21	.01	.24	.01	90.23	150.00
*	23.700	682.00	640.56	.00	.35	.00	146.56	270.00
*	23.700	682.00	640.60	.04	.38	.04	147.09	270.00
	24.000	682.00	640.70	.00	.13	.00	148.51	30.00
	24.000	682.00	640.73	.03	.13	.03	148.97	30.00
	24.450	682.00	640.70	.00	.00	.00	148.61	45.00
	24.450	682.00	640.73	.03	.00	.03	149.04	45.00
	24.750	682.00	640.88	.00	.18	.00	145.04	30.00
	24.750	682.00	640.90	.02	.17	.02	146.07	30.00
*	26.000	682.00	641.61	.00	.73	.00	208.19	125.00

*	26.000	682.00	641.62	.01	.72	.01	170.52	125.00
*	27.300	682.00	641.91	.00	.30	.00	70.22	130.00
	27.300	682.00	641.94	.03	.32	.03	71.17	130.00
	27.600	682.00	642.01	.00	.10	.00	83.53	30.00
	27.600	682.00	642.04	.03	.10	.03	84.77	30.00
*	28.150	682.00	644.80	.00	2.79	.00	90.00	55.00
*	28.150	682.00	644.81	.01	2.77	.01	90.00	55.00
*	28.450	682.00	644.78	.00	-.02	.00	82.24	30.00
*	28.450	682.00	644.78	.01	-.02	.01	82.38	30.00

1

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	32.000	682.00	645.44	.00	.66	.00	172.99	355.00
*	32.000	682.00	645.45	.01	.67	.01	110.68	355.00
*	37.000	682.00	646.04	.00	.60	.00	37.36	500.00
*	37.000	682.00	646.08	.04	.62	.04	37.42	500.00
*	38.500	682.00	650.88	.00	4.84	.00	105.00	150.00
	38.500	682.00	650.88	.00	4.80	.00	105.00	150.00
*	43.500	682.00	651.21	.00	.33	.00	421.75	500.00
*	43.500	682.00	651.22	.01	.34	.01	333.53	500.00
*	50.000	486.00	651.36	.00	.15	.00	299.36	650.00
*	50.000	486.00	651.38	.02	.16	.02	232.62	650.00
*	52.500	486.00	651.50	.00	.14	.00	268.39	250.00
*	52.500	486.00	651.53	.03	.15	.03	216.96	250.00
*	55.000	486.00	652.10	.00	.61	.00	229.42	250.00
*	55.000	486.00	652.21	.10	.68	.10	153.43	250.00
*	61.000	341.00	654.65	.00	2.55	.00	187.09	600.00
*	61.000	341.00	654.70	.05	2.49	.05	187.52	600.00
*	63.300	324.00	655.04	.00	.39	.00	102.98	230.00
*	63.300	324.00	655.06	.02	.36	.02	103.12	230.00
*	65.500	324.00	656.37	.00	1.33	.00	89.37	220.00
*	65.500	324.00	656.35	-.02	1.29	-.02	89.29	220.00
*	70.000	324.00	659.42	.00	3.05	.00	93.13	450.00
*	70.000	324.00	659.44	.01	3.08	.01	93.17	450.00
*	79.500	324.00	663.78	.00	4.35	.00	33.93	950.00
*	79.500	324.00	663.76	-.02	4.32	-.02	33.22	950.00
*	88.500	324.00	668.89	.00	5.11	.00	48.02	900.00
*	88.500	324.00	668.96	.07	5.20	.07	22.00	900.00
	94.000	324.00	670.86	.00	1.98	.00	61.68	550.00

	94.000	324.00	670.95	.09	1.99	.09	42.00	550.00
*	97.000	324.00	672.69	.00	1.83	.00	11.00	300.00
*	97.000	324.00	672.74	.05	1.79	.05	11.00	300.00
	98.000	324.00	673.80	.00	1.12	.00	11.00	100.00
	98.000	324.00	673.81	.00	1.07	.00	11.00	100.00
*	104.500	324.00	676.61	.00	2.80	.00	20.29	650.00
*	104.500	324.00	676.61	.00	2.80	.00	20.29	650.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	109.000	324.00	677.05	.00	.44	.00	58.88	450.00
*	109.000	324.00	677.06	.01	.45	.01	41.26	450.00
	110.530	260.00	677.12	.00	.07	.00	68.00	153.00
	110.530	260.00	677.13	.02	.08	.02	68.00	153.00
	110.830	260.00	677.12	.00	.01	.00	68.00	30.00
	110.830	260.00	677.14	.02	.01	.02	68.00	30.00
	111.530	260.00	677.87	.00	.75	.00	68.00	70.00
	111.530	260.00	677.88	.01	.74	.01	68.00	70.00
*	111.830	260.00	677.89	.00	.03	.00	68.00	30.00
*	111.830	260.00	677.90	.01	.03	.01	68.00	30.00
*	115.500	63.00	677.92	.00	.03	.00	190.00	367.00
	115.500	63.00	677.93	.01	.03	.01	60.00	367.00
*	121.500	63.00	677.92	.00	.00	.00	51.05	600.00
*	121.500	63.00	677.94	.02	.01	.02	37.02	600.00
*	125.800	63.00	677.93	.00	.01	.00	235.00	430.00
*	125.800	63.00	677.95	.02	.01	.02	80.00	430.00
	126.430	63.00	677.93	.00	.00	.00	235.00	64.00
	126.430	63.00	677.95	.02	.00	.02	80.00	64.00
	126.830	131.00	677.94	.00	.01	.00	235.00	400.00
	126.830	131.00	677.97	.03	.02	.03	80.00	400.00
*	129.000	131.00	677.95	.00	.01	.00	185.54	217.00
*	129.000	131.00	677.99	.05	.02	.05	80.00	217.00
*	132.600	131.00	677.95	.00	.01	.00	46.80	360.00
*	132.600	131.00	678.10	.14	.10	.14	48.02	360.00
	136.200	131.00	678.78	.00	.83	.00	42.73	360.00
	136.200	131.00	678.83	.05	.73	.05	29.00	360.00
*	140.000	60.00	679.77	.00	.99	.00	26.00	380.00
*	140.000	60.00	679.78	.01	.95	.01	26.10	380.00
	145.000	60.00	680.88	.00	1.11	.00	26.93	500.00

	145.000	60.00	680.96	.07	1.17	.07	11.00	500.00
	151.000	60.00	682.02	.00	1.13	.00	21.27	600.00
*	151.000	60.00	682.10	.08	1.14	.08	21.58	600.00
*	151.350	60.00	682.54	.00	.52	.00	3.00	35.00
*	151.350	60.00	682.54	.00	.45	.00	3.00	35.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	151.730	60.00	684.61	.00	2.07	.00	3.00	38.00
*	151.730	60.00	684.61	.00	2.07	.00	3.00	38.00
*	152.000	241.00	685.01	.00	.40	.00	36.82	27.00
*	152.000	241.00	685.07	.06	.46	.06	20.00	27.00
*	157.000	241.00	687.07	.00	2.07	.00	215.60	500.00
*	157.000	241.00	687.17	.10	2.11	.10	218.16	500.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=     14.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     14.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     14.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=     14.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     14.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     14.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=     17.850  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     17.850  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     19.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     19.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     19.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     19.500  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     21.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     23.700  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     23.700  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     26.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     26.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     27.300  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     28.150  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     28.150  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

```
WARNING SECNO=    111.830  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    115.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    121.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    121.500  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    125.800  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    125.800  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    129.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    129.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    132.600  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    132.600  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    140.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    140.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    151.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
1
```



```
CAUTION SECNO=    151.350  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    151.350  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    151.350  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=    151.350  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    151.350  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    151.350  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    151.730  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    151.730  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    152.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=    152.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    152.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=    157.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    157.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

1
```


FLOODWAY DATA, -FOLEY DRAIN
PROFILE NO. 2

STATION	------- FLOODWAY ------- WIDTH	SECTION AREA	MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
8.000	274.	1001.	.7	633.7	633.7	.0
14.000	157.	172.	4.0	634.6	634.6	.0
17.850	116.	327.	2.1	638.3	638.2	.1
18.150	118.	341.	2.0	638.4	638.3	.1

19.200	118.	524.	1.3	640.0	640.0	.0
19.500	118.	343.	2.0	640.0	640.0	.0
21.000	90.	336.	2.1	640.2	640.2	.0
23.700	147.	272.	2.5	640.6	640.6	.0
24.000	149.	291.	2.3	640.7	640.7	.0
24.450	149.	292.	2.3	640.7	640.7	.0
24.750	150.	208.	3.3	640.9	640.9	.0
26.000	171.	436.	1.6	641.6	641.6	.0
27.300	71.	189.	3.6	641.9	641.9	.0
27.600	85.	201.	3.4	642.0	642.0	.0
28.150	90.	418.	1.6	644.8	644.8	.0
28.450	82.	218.	3.1	644.8	644.8	.0
32.000	111.	475.	1.4	645.4	645.4	.0
37.000	37.	205.	3.3	646.0	646.0	.0
38.500	105.	316.	2.2	650.9	650.9	.0
43.500	334.	1313.	.5	651.2	651.2	.0
50.000	233.	742.	.7	651.4	651.4	.0
52.500	217.	516.	.9	651.5	651.5	.0
55.000	153.	150.	3.2	652.2	652.1	.1
61.000	188.	357.	1.0	654.8	654.7	.1
63.300	103.	149.	2.2	655.0	655.0	.0
65.500	89.	89.	3.7	656.4	656.4	.0
70.000	93.	197.	1.6	659.4	659.4	.0
79.500	33.	70.	4.6	663.8	663.8	.0
88.500	22.	94.	3.5	669.0	668.9	.1
94.000	42.	96.	3.4	671.0	670.9	.1
97.000	11.	51.	6.3	672.7	672.7	.0
98.000	11.	58.	5.5	673.8	673.8	.0
104.500	20.	98.	3.3	676.6	676.6	.0
109.000	41.	220.	1.5	677.0	677.0	.0
110.530	68.	282.	.9	677.1	677.1	.0
110.830	68.	272.	1.0	677.1	677.1	.0
111.530	68.	315.	.8	677.9	677.9	.0
111.830	68.	329.	.8	677.9	677.9	.0
115.500	60.	345.	.2	677.9	677.9	.0
121.500	37.	181.	.3	677.9	677.9	.0
125.800	80.	433.	.1	677.9	677.9	.0
126.430	80.	419.	.2	677.9	677.9	.0

1

FLOODWAY DATA, -FOLEY DRAIN
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
126.830	80.	296.	.4	677.9	677.9	.0
129.000	80.	259.	.5	677.9	677.9	.0
132.600	48.	92.	1.4	678.1	678.0	.1
136.200	29.	57.	2.3	678.8	678.8	.0
140.000	26.	36.	1.7	679.8	679.8	.0
145.000	11.	26.	2.3	681.0	680.9	.1
151.000	22.	40.	1.5	682.1	682.0	.1
151.350	3.	7.	8.7	682.5	682.5	.0

151.730	3.	12.	5.1	684.6	684.6	.0
152.000	20.	33.	7.4	685.1	685.0	.1
157.000	218.	382.	.6	687.2	687.1	.1

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

-FOLEY DRAIN

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENC
	8.000	633.70	.00	633.71	362.11	307.22	398.26	37.52	.00	.00	300.00	400.00	.0
	8.000	633.70	.00	633.71	273.89	304.30	416.78	21.92	.05	145.51	300.00	400.00	419.4
*	14.000	634.58	.00	634.96	210.47	470.41	217.59	.00	-350.00	350.00	542.00	565.00	800.0
*	14.000	634.61	.04	635.12	157.07	443.49	244.51	.00	.22	403.50	542.00	565.00	565.0
*	17.850	638.18	.00	638.30	114.20	313.99	374.01	.00	223.00	90.00	240.00	280.00	313.0
*	17.850	638.29	.11	638.41	116.06	315.98	372.02	.00	223.00	90.00	240.00	280.00	313.0
	18.150	638.30	.00	638.41	116.34	316.80	371.20	.00	223.00	90.00	240.00	280.00	313.00
	18.150	638.40	.10	638.50	118.17	318.61	369.39	.00	223.00	90.00	240.00	280.00	313.00
*	19.200	639.96	.00	640.00	118.00	328.23	359.77	.00	118.00	158.00	240.00	280.00	276.00
*	19.200	639.96	.01	640.01	118.00	328.25	359.74	.00	118.00	158.00	240.00	280.00	276.00
*	19.500	639.97	.00	640.11	118.00	188.66	463.78	35.55	118.00	158.00	242.00	265.00	276.00
*	19.500	639.98	.01	640.12	118.00	188.85	463.59	35.56	118.00	158.00	242.00	265.00	276.00
*	21.000	640.21	.00	640.28	197.59	37.68	636.55	13.77	-150.00	150.00	240.00	300.00	500.00
	21.000	640.21	.01	640.30	90.23	27.91	660.09	.00	.06	209.77	240.00	300.00	300.00
*	23.700	640.56	.00	640.91	146.56	122.01	509.30	50.69	150.00	150.00	240.00	258.00	300.00
*	23.700	640.60	.04	640.93	147.09	125.03	505.40	51.57	150.00	150.00	240.00	258.00	300.00
	24.000	640.70	.00	641.14	148.51	278.56	296.26	107.18	150.00	150.00	248.00	254.00	300.00
	24.000	640.73	.03	641.15	148.97	280.64	293.54	107.82	150.00	150.00	248.00	254.00	300.00
	24.450	640.70	.00	641.14	148.61	278.98	295.71	107.31	150.00	150.00	248.00	254.00	300.00
	24.450	640.73	.03	641.15	149.04	280.94	293.15	107.92	150.00	150.00	248.00	254.00	300.00
	24.750	640.88	.00	641.32	145.04	42.83	558.13	81.04	150.00	150.00	244.00	265.00	300.00
	24.750	640.90	.02	641.34	146.07	44.20	555.93	81.87	150.00	150.00	244.00	265.00	300.00

1

28SEP92 16:05:40 PAGE 50

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	26.000	641.61	.00	641.72	208.19	163.10	354.67	164.23	.00	.00	240.00	258.00	.00
*	26.000	641.62	.01	641.75	170.52	154.91	370.87	156.22	.05	169.96	240.00	258.00	340.48
*	27.300	641.91	.00	642.12	70.22	.02	681.38	.60	154.00	166.00	238.00	300.00	320.00
	27.300	641.94	.03	642.15	71.17	.03	681.30	.67	154.00	166.00	238.00	300.00	320.00
	27.600	642.01	.00	642.23	83.53	.07	668.23	13.70	154.00	166.00	238.00	285.00	320.00
	27.600	642.04	.03	642.26	84.77	.10	667.70	14.21	154.00	166.00	238.00	285.00	320.00
*	28.150	644.80	.00	644.86	90.00	32.29	628.14	21.57	90.00	205.00	238.00	285.00	295.00
*	28.150	644.81	.01	644.87	90.00	32.40	628.01	21.58	90.00	205.00	238.00	285.00	295.00

*	28.450	644.78	.00	645.09	82.24	35.29	593.94	52.76	90.00	205.00	240.00	258.00	295.00
*	28.450	644.78	.01	645.10	82.38	35.53	593.57	52.90	90.00	205.00	240.00	258.00	295.00
*	32.000	645.44	.00	645.50	172.99	206.52	464.19	11.29	.00	.00	235.00	263.00	.00
*	32.000	645.45	.01	645.52	110.68	203.19	478.57	.25	.03	152.86	235.00	263.00	263.55
*	37.000	646.04	.00	646.30	37.36	105.90	462.03	114.07	265.00	.00	240.00	255.00	265.00
*	37.000	646.08	.04	646.33	37.42	106.15	461.83	114.02	265.00	.00	240.00	255.00	265.00
*	38.500	650.88	.00	650.99	105.00	196.10	485.90	.00	105.00	150.00	240.00	255.00	255.00
	38.500	650.88	.00	651.00	105.00	196.26	485.74	.00	105.00	150.00	240.00	255.00	255.00
*	43.500	651.21	.00	651.21	421.75	241.74	148.17	292.09	500.00	.00	245.00	260.00	500.00
*	43.500	651.22	.01	651.23	333.53	238.05	152.83	291.12	.04	68.93	245.00	260.00	402.47
*	50.000	651.36	.00	651.37	299.36	112.34	129.79	243.86	.00	.00	240.00	260.00	.00
*	50.000	651.38	.02	651.39	232.62	105.61	135.98	244.42	.05	179.03	240.00	260.00	411.66
*	52.500	651.50	.00	651.52	268.39	108.89	149.08	228.03	.00	.00	240.00	260.00	.00
*	52.500	651.53	.03	651.56	216.96	100.25	158.03	227.71	.07	183.92	240.00	260.00	400.89
*	55.000	652.10	.00	652.59	229.42	59.11	360.74	66.15	.00	.00	242.00	261.00	.00
*	55.000	652.21	.10	652.74	153.43	42.12	381.11	62.77	.10	209.20	242.00	261.00	362.63
*	61.000	654.65	.00	654.69	187.09	11.06	172.96	156.97	190.00	210.00	230.00	255.00	400.00
*	61.000	654.70	.05	654.74	187.52	11.33	171.18	158.49	190.00	210.00	230.00	255.00	400.00
*	63.300	655.04	.00	655.20	102.98	9.35	237.31	77.34	110.00	210.00	230.00	255.00	320.00
*	63.300	655.06	.02	655.22	103.12	9.54	236.45	78.01	110.00	210.00	230.00	255.00	320.00
*	65.500	656.37	.00	657.01	89.37	18.62	224.89	80.50	340.00	.00	244.00	253.00	340.00
*	65.500	656.35	-.02	657.01	89.29	18.52	226.46	79.02	340.00	.00	244.00	253.00	340.00
*	70.000	659.42	.00	659.56	93.13	22.09	163.84	138.07	325.00	.00	244.00	253.00	325.00
*	70.000	659.44	.01	659.57	93.17	22.12	163.39	138.49	325.00	.00	244.00	253.00	325.00
*	79.500	663.78	.00	664.46	33.93	26.66	268.01	29.33	135.00	190.00	246.00	253.00	325.00
*	79.500	663.76	-.02	664.45	33.22	26.45	268.55	29.00	135.00	190.00	246.00	253.00	325.00

1

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	88.500	668.89	.00	669.13	48.02	42.11	275.18	6.70	.00	.00	245.00	258.00	.00
*	88.500	668.96	.07	669.22	22.00	37.28	285.61	1.11	.04	237.52	245.00	258.00	259.53
	94.000	670.86	.00	671.05	61.68	17.78	305.40	.82	70.00	215.00	235.00	265.00	285.00
	94.000	670.95	.09	671.15	42.00	4.12	318.64	1.24	42.00	230.00	235.00	265.00	272.00
*	97.000	672.69	.00	673.42	11.00	.00	318.59	5.40	11.00	245.00	245.00	255.00	256.00
*	97.000	672.74	.05	673.45	11.00	.00	318.61	5.39	11.00	245.00	245.00	255.00	256.00
	98.000	673.80	.00	674.36	11.00	.00	318.84	5.16	11.00	245.00	245.00	255.00	256.00
	98.000	673.81	.00	674.36	11.00	.00	318.84	5.16	11.00	245.00	245.00	255.00	256.00
*	104.500	676.61	.00	676.78	20.29	.00	324.00	.00	.00	.00	238.00	260.00	.00
*	104.500	676.61	.00	676.78	20.29	.00	324.00	.00	.00	.00	238.00	260.00	.00

*	109.000	677.05	.00	677.09	58.88	10.06	297.67	16.27	.00	.00	244.00	275.00	.00
*	109.000	677.06	.01	677.10	41.26	4.81	307.53	11.65	.03	241.45	244.00	275.00	282.71
	110.530	677.12	.00	677.14	68.00	6.17	201.43	52.40	68.00	220.00	235.00	260.00	288.00
	110.530	677.13	.02	677.16	68.00	6.24	201.30	52.47	68.00	220.00	235.00	260.00	288.00
	110.830	677.12	.00	677.16	68.00	27.93	147.05	85.03	68.00	220.00	244.00	255.00	288.00
	110.830	677.14	.02	677.18	68.00	28.04	146.86	85.10	68.00	220.00	244.00	255.00	288.00
	111.530	677.87	.00	677.90	68.00	31.80	140.74	87.46	68.00	220.00	244.00	255.00	288.00
	111.530	677.88	.01	677.90	68.00	31.85	140.67	87.48	68.00	220.00	244.00	255.00	288.00
*	111.830	677.89	.00	677.91	68.00	9.07	235.96	14.97	68.00	220.00	237.00	275.00	288.00
*	111.830	677.90	.01	677.92	68.00	9.09	235.93	14.98	68.00	220.00	237.00	275.00	288.00
*	115.500	677.92	.00	677.92	190.00	20.93	28.62	13.45	190.00	150.00	240.00	265.00	340.00
	115.500	677.93	.01	677.93	60.00	8.25	48.83	5.92	60.00	220.00	240.00	265.00	280.00
*	121.500	677.92	.00	677.92	51.05	.00	53.58	9.42	65.00	240.00	242.00	261.00	305.00
*	121.500	677.94	.02	677.94	37.02	.00	54.96	8.04	.04	242.00	242.00	261.00	279.03
*	125.800	677.93	.00	677.93	235.00	30.02	5.94	27.04	235.00	160.00	248.00	251.00	395.00
*	125.800	677.95	.02	677.95	80.00	27.98	8.71	26.31	80.00	210.00	248.00	251.00	290.00
	126.430	677.93	.00	677.93	235.00	30.53	4.74	27.73	235.00	160.00	248.00	251.00	395.00
	126.430	677.95	.02	677.96	80.00	28.70	7.11	27.19	80.00	210.00	248.00	251.00	290.00
	126.830	677.94	.00	677.94	235.00	54.03	51.42	25.55	235.00	160.00	240.00	270.00	395.00
	126.830	677.97	.03	677.98	80.00	32.67	91.59	6.74	80.00	210.00	240.00	270.00	290.00
*	129.000	677.95	.00	677.95	185.54	76.85	34.35	19.79	-160.00	160.00	244.00	256.00	500.00
*	129.000	677.99	.05	678.00	80.00	51.61	60.49	18.90	80.00	210.00	244.00	256.00	290.00
*	132.600	677.95	.00	678.04	46.80	15.13	97.43	18.43	50.00	220.00	244.00	256.00	270.00
*	132.600	678.10	.14	678.17	48.02	16.09	95.91	19.00	50.00	220.00	244.00	256.00	270.00

1

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	136.200	678.78	.00	678.87	42.73	.06	130.44	.50	.00	.00	241.00	270.00	.00
	136.200	678.83	.05	678.91	29.00	.00	131.00	.00	.01	241.00	241.00	270.00	270.00
*	140.000	679.77	.00	679.81	26.00	.00	60.00	.00	.00	.00	241.00	270.00	.00
*	140.000	679.78	.01	679.82	26.10	.00	60.00	.00	.00	241.00	241.00	270.00	270.00
	145.000	680.88	.00	680.96	26.93	.14	56.86	3.01	.00	.00	246.00	257.00	.00
	145.000	680.96	.07	681.04	11.00	.00	60.00	.00	.06	246.00	246.00	257.00	257.00
	151.000	682.02	.00	682.05	21.27	.00	60.00	.00	22.00	238.00	238.00	260.00	260.00
*	151.000	682.10	.08	682.13	21.58	.00	60.00	.00	22.00	238.00	238.00	260.00	260.00
*	151.350	682.54	.00	683.70	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00
*	151.350	682.54	.00	683.70	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00
*	151.730	684.61	.00	685.01	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00
*	151.730	684.61	.00	685.01	3.00	.00	60.00	.00	.00	.00	248.00	251.00	.00

*	152.000	685.01	.00	685.73	36.82	24.82	215.82	.36	50.00	225.00	241.00	258.00	275.00
*	152.000	685.07	.06	685.98	20.00	1.16	239.32	.52	20.00	240.00	241.00	258.00	260.00
*	157.000	687.07	.00	687.09	215.60	27.19	76.92	136.89	-100.00	100.00	228.00	255.00	500.00
*	157.000	687.17	.10	687.18	218.16	28.69	76.30	136.00	-100.00	100.00	228.00	255.00	500.00

-FOLEY DRAIN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	8.000	.00	.00	.00	629.20	743.00	633.70	.00	633.71	2.63	1.12	1115.66	458.05
	8.000	.00	.00	.00	629.20	743.00	633.70	.00	633.71	2.88	1.17	1001.25	437.69
*	14.000	600.00	.00	.00	632.50	688.00	634.58	634.58	634.96	438.43	7.89	204.36	32.86
*	14.000	600.00	.00	.00	632.50	688.00	634.61	634.61	635.12	515.63	8.66	171.96	30.30
*	17.850	385.00	.00	.00	633.10	688.00	638.18	.00	638.30	33.81	3.55	315.22	118.33
*	17.850	385.00	.00	.00	633.10	688.00	638.29	.00	638.41	30.57	3.42	327.07	124.43
	18.150	30.00	.00	.00	633.10	688.00	638.30	.00	638.41	30.21	3.40	328.72	125.18
	18.150	30.00	.00	.00	633.10	688.00	638.40	.00	638.50	27.41	3.27	340.64	131.40
*	19.200	105.00	638.70	638.70	633.35	688.00	639.96	.00	640.00	7.41	2.15	522.90	252.79
*	19.200	105.00	638.70	638.70	633.35	688.00	639.96	.00	640.01	7.38	2.14	523.53	253.27
*	19.500	30.00	.00	.00	633.40	688.00	639.97	.00	640.11	16.09	3.65	342.28	171.51
*	19.500	30.00	.00	.00	633.40	688.00	639.98	.00	640.12	16.03	3.64	342.91	171.86
*	21.000	150.00	.00	.00	633.60	688.00	640.21	.00	640.28	7.64	2.26	419.08	248.87
	21.000	150.00	.00	.00	633.60	688.00	640.21	.00	640.30	8.51	2.34	335.60	235.88
*	23.700	270.00	.00	.00	634.30	682.00	640.56	.00	640.91	43.58	5.44	266.51	103.31
*	23.700	270.00	.00	.00	634.30	682.00	640.60	.00	640.93	41.92	5.36	271.91	105.34
	24.000	30.00	.00	.00	634.30	682.00	640.70	.00	641.14	60.56	7.86	286.48	87.64
	24.000	30.00	.00	.00	634.30	682.00	640.73	.00	641.15	58.46	7.75	291.22	89.20
	24.450	45.00	639.50	639.98	634.30	682.00	640.70	.00	641.14	60.13	7.84	287.43	87.95
	24.450	45.00	639.50	639.98	634.30	682.00	640.73	.00	641.15	58.16	7.73	291.92	89.43
	24.750	30.00	.00	.00	634.90	682.00	640.88	.00	641.32	59.48	5.87	204.48	88.43
	24.750	30.00	.00	.00	634.90	682.00	640.90	.00	641.34	57.95	5.81	208.08	89.59
*	26.000	125.00	.00	.00	635.40	682.00	641.61	.00	641.72	17.50	3.61	481.33	163.04
*	26.000	125.00	.00	.00	635.40	682.00	641.62	.00	641.75	19.05	3.77	435.65	156.24
*	27.300	130.00	.00	.00	635.80	682.00	641.91	.00	642.12	37.43	3.68	187.25	111.48
	27.300	130.00	.00	.00	635.80	682.00	641.94	.00	642.15	36.20	3.64	189.36	113.35
	27.600	30.00	.00	.00	635.80	682.00	642.01	.00	642.23	31.04	3.83	198.78	122.41
	27.600	30.00	.00	.00	635.80	682.00	642.04	.00	642.26	30.21	3.80	201.17	124.07

28.150	55.00	643.28	642.44	636.44	682.00	644.80	.00	644.86	4.36	2.08	417.50	326.59
28.150	55.00	643.28	642.44	636.44	682.00	644.81	.00	644.87	4.34	2.08	418.20	327.31
28.450	30.00	.00	.00	636.70	682.00	644.78	.00	645.09	24.46	4.82	217.80	137.90
28.450	30.00	.00	.00	636.70	682.00	644.78	.00	645.10	24.34	4.81	218.44	138.24

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	32.000	355.00	.00	.00	637.60	682.00	645.44	.00	645.50	6.13	2.44	535.03	275.57
	32.000	355.00	.00	.00	637.60	682.00	645.45	.00	645.52	6.47	2.51	475.09	268.16
	37.000	500.00	.00	.00	639.45	682.00	646.04	.00	646.30	41.15	4.74	204.04	106.32
	37.000	500.00	.00	.00	639.45	682.00	646.08	.00	646.33	40.34	4.71	205.42	107.37
	38.500	150.00	650.20	644.70	640.10	682.00	650.88	.00	650.99	20.98	3.18	316.01	148.88
	38.500	150.00	650.20	644.70	640.10	682.00	650.88	.00	651.00	20.96	3.18	316.28	148.98
	43.500	500.00	.00	.00	642.40	682.00	651.21	.00	651.21	1.73	1.37	1408.22	518.22
	43.500	500.00	.00	.00	642.40	682.00	651.22	.00	651.23	1.83	1.41	1313.31	503.53
	50.000	650.00	.00	.00	646.30	486.00	651.36	.00	651.37	3.91	1.51	805.94	245.93
*	50.000	650.00	.00	.00	646.30	486.00	651.38	.00	651.39	4.19	1.58	742.33	237.35
*	52.500	250.00	.00	.00	647.30	486.00	651.50	.00	651.52	10.84	2.17	567.67	147.58
*	52.500	250.00	.00	.00	647.30	486.00	651.53	.00	651.56	11.73	2.28	516.44	141.89
*	55.000	250.00	.00	.00	648.40	486.00	652.10	652.10	652.59	130.46	6.46	173.26	42.55
*	55.000	250.00	.00	.00	648.40	486.00	652.21	652.21	652.74	129.59	6.59	150.03	42.69
*	61.000	600.00	.00	.00	650.70	341.00	654.65	.00	654.69	11.92	2.16	347.53	98.78
*	61.000	600.00	.00	.00	650.70	341.00	654.70	.00	654.74	11.07	2.10	357.19	102.50
*	63.300	230.00	.00	.00	651.70	324.00	655.04	.00	655.20	45.69	3.67	146.23	47.93
*	63.300	230.00	.00	.00	651.70	324.00	655.06	.00	655.22	43.88	3.62	148.88	48.91
*	65.500	220.00	.00	.00	652.70	324.00	656.37	656.34	657.01	148.88	7.62	90.80	26.55
*	65.500	220.00	.00	.00	652.70	324.00	656.35	656.33	657.01	154.57	7.73	88.74	26.06
*	70.000	450.00	.00	.00	654.60	324.00	659.42	.00	659.56	28.90	4.10	196.25	60.27
*	70.000	450.00	.00	.00	654.60	324.00	659.44	.00	659.57	28.47	4.08	197.42	60.73
*	79.500	950.00	.00	.00	657.10	324.00	663.78	.00	664.46	105.46	7.24	70.51	31.55
*	79.500	950.00	.00	.00	657.10	324.00	663.76	.00	664.45	107.08	7.28	69.91	31.31
*	88.500	900.00	.00	.00	662.40	324.00	668.89	.00	669.13	30.32	4.24	110.14	58.84
*	88.500	900.00	.00	.00	662.40	324.00	668.96	.00	669.22	31.07	4.33	93.84	58.13
	94.000	550.00	.00	.00	665.50	324.00	670.86	.00	671.05	40.76	3.61	108.63	50.75
	94.000	550.00	.00	.00	665.50	324.00	670.95	.00	671.15	40.02	3.65	95.74	51.21
*	97.000	300.00	.00	.00	668.07	324.00	672.69	.00	673.42	116.76	6.91	50.71	29.98
*	97.000	300.00	.00	.00	668.07	324.00	672.74	.00	673.45	113.22	6.84	51.26	30.45
	98.000	100.00	676.52	673.50	668.50	324.00	673.80	.00	674.36	77.62	6.00	58.44	36.78
	98.000	100.00	676.52	673.50	668.50	324.00	673.81	.00	674.36	77.45	6.00	58.48	36.82

*	104.500	650.00	.00	.00	669.80	324.00	676.61	.00	676.78	21.30	3.30	98.20	70.20
*	104.500	650.00	.00	.00	669.80	324.00	676.61	.00	676.78	21.29	3.30	98.21	70.21

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	109.000	450.00	.00	.00	670.00	324.00	677.05	.00	677.09	3.17	1.68	247.13	181.94
*	109.000	450.00	.00	.00	670.00	324.00	677.06	.00	677.10	3.37	1.73	219.51	176.56
	110.530	153.00	.00	.00	670.30	260.00	677.12	.00	677.14	2.32	1.39	281.21	170.62
	110.530	153.00	.00	.00	670.30	260.00	677.13	.00	677.16	2.30	1.39	282.39	171.58
	110.830	30.00	.00	.00	670.40	260.00	677.12	.00	677.16	3.74	2.02	270.68	134.42
	110.830	30.00	.00	.00	670.40	260.00	677.14	.00	677.18	3.70	2.01	271.86	135.18
	111.530	70.00	677.25	676.06	670.50	260.00	677.87	.00	677.90	2.52	1.76	314.38	163.93
	111.530	70.00	677.25	676.06	670.50	260.00	677.88	.00	677.90	2.50	1.76	314.93	164.31
*	111.830	30.00	.00	.00	670.60	260.00	677.89	.00	677.91	1.10	1.02	327.99	248.12
*	111.830	30.00	.00	.00	670.60	260.00	677.90	.00	677.92	1.09	1.02	328.52	248.68
*	115.500	367.00	.00	.00	670.40	63.00	677.92	.00	677.92	.03	.17	850.86	396.25
	115.500	367.00	.00	.00	670.40	63.00	677.93	.00	677.93	.07	.28	344.83	233.06
*	121.500	600.00	.00	.00	670.10	63.00	677.92	.00	677.92	.27	.44	196.40	121.70
*	121.500	600.00	.00	.00	670.10	63.00	677.94	.00	677.94	.28	.45	180.88	118.89
*	125.800	430.00	.00	.00	670.81	63.00	677.93	.00	677.93	.06	.28	772.78	248.44
*	125.800	430.00	.00	.00	670.81	63.00	677.95	.00	677.95	.14	.41	433.04	170.11
	126.430	64.00	676.27	674.87	671.87	63.00	677.93	.00	677.93	.07	.26	759.28	238.88
	126.430	64.00	676.27	674.87	671.87	63.00	677.95	.00	677.96	.15	.39	418.57	160.33
	126.830	400.00	.00	.00	672.00	131.00	677.94	.00	677.94	.26	.40	722.88	257.36
	126.830	400.00	.00	.00	672.00	131.00	677.97	.00	677.98	.81	.70	295.73	145.82
*	129.000	217.00	.00	.00	672.50	131.00	677.95	.00	677.95	.61	.62	525.45	167.64
*	129.000	217.00	.00	.00	672.50	131.00	677.99	.00	678.00	1.84	1.09	258.90	96.70
*	132.600	360.00	.00	.00	674.10	131.00	677.95	.00	678.04	20.11	2.70	85.24	29.21
*	132.600	360.00	.00	.00	674.10	131.00	678.10	.00	678.17	16.78	2.54	91.80	31.98
	136.200	360.00	.00	.00	675.70	131.00	678.78	.00	678.87	26.69	2.33	58.52	25.36
	136.200	360.00	.00	.00	675.70	131.00	678.83	.00	678.91	25.57	2.28	57.45	25.91
*	140.000	380.00	.00	.00	677.40	60.00	679.77	.00	679.81	21.27	1.67	36.02	13.01
*	140.000	380.00	.00	.00	677.40	60.00	679.78	.00	679.82	20.86	1.65	36.28	13.14
	145.000	500.00	.00	.00	677.50	60.00	680.88	.00	680.96	24.19	2.26	33.22	12.20
	145.000	500.00	.00	.00	677.50	60.00	680.96	.00	681.04	28.04	2.31	25.95	11.33
	151.000	600.00	.00	.00	679.40	60.00	682.02	.00	682.05	13.81	1.58	38.07	16.15
*	151.000	600.00	.00	.00	679.40	60.00	682.10	.00	682.13	12.23	1.51	39.73	17.16
*	151.350	35.00	.00	.00	680.23	60.00	682.54	682.54	683.70	278.70	8.67	6.92	3.59
*	151.350	35.00	.00	.00	680.23	60.00	682.54	682.54	683.70	277.23	8.65	6.93	3.60

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	151.730	38.00	690.07	683.67	680.67	60.00	684.61	.00	685.01	46.76	5.07	11.83	8.77
*	151.730	38.00	690.07	683.67	680.67	60.00	684.61	.00	685.01	46.76	5.07	11.83	8.77
*	152.000	27.00	.00	.00	681.80	241.00	685.01	685.01	685.73	291.60	7.18	44.23	14.11
*	152.000	27.00	.00	.00	681.80	241.00	685.07	685.07	685.98	321.52	7.71	32.50	13.44
*	157.000	500.00	.00	.00	684.50	241.00	687.07	.00	687.09	8.86	1.41	358.74	80.97
*	157.000	500.00	.00	.00	684.50	241.00	687.17	.00	687.18	7.36	1.33	381.58	88.83

-FOLEY DRAIN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	8.000	743.00	633.70	.00	.00	.00	362.11	.00
	8.000	743.00	633.70	.00	.00	.00	273.89	.00
*	14.000	688.00	634.58	.00	.88	.00	210.47	600.00
*	14.000	688.00	634.61	.04	.91	.04	157.07	600.00
*	17.850	688.00	638.18	.00	3.60	.00	114.20	385.00
*	17.850	688.00	638.29	.11	3.68	.11	116.06	385.00
	18.150	688.00	638.30	.00	.11	.00	116.34	30.00
	18.150	688.00	638.40	.10	.10	.10	118.17	30.00
*	19.200	688.00	639.96	.00	1.66	.00	118.00	105.00
*	19.200	688.00	639.96	.01	1.57	.01	118.00	105.00
*	19.500	688.00	639.97	.00	.01	.00	118.00	30.00
*	19.500	688.00	639.98	.01	.01	.01	118.00	30.00
*	21.000	688.00	640.21	.00	.24	.00	197.59	150.00
	21.000	688.00	640.21	.01	.24	.01	90.23	150.00
*	23.700	682.00	640.56	.00	.35	.00	146.56	270.00
*	23.700	682.00	640.60	.04	.38	.04	147.09	270.00
	24.000	682.00	640.70	.00	.13	.00	148.51	30.00
	24.000	682.00	640.73	.03	.13	.03	148.97	30.00
	24.450	682.00	640.70	.00	.00	.00	148.61	45.00
	24.450	682.00	640.73	.03	.00	.03	149.04	45.00
	24.750	682.00	640.88	.00	.18	.00	145.04	30.00
	24.750	682.00	640.90	.02	.17	.02	146.07	30.00
*	26.000	682.00	641.61	.00	.73	.00	208.19	125.00

*	26.000	682.00	641.62	.01	.72	.01	170.52	125.00
*	27.300	682.00	641.91	.00	.30	.00	70.22	130.00
	27.300	682.00	641.94	.03	.32	.03	71.17	130.00
	27.600	682.00	642.01	.00	.10	.00	83.53	30.00
	27.600	682.00	642.04	.03	.10	.03	84.77	30.00
*	28.150	682.00	644.80	.00	2.79	.00	90.00	55.00
*	28.150	682.00	644.81	.01	2.77	.01	90.00	55.00
*	28.450	682.00	644.78	.00	-.02	.00	82.24	30.00
*	28.450	682.00	644.78	.01	-.02	.01	82.38	30.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	32.000	682.00	645.44	.00	.66	.00	172.99	355.00
*	32.000	682.00	645.45	.01	.67	.01	110.68	355.00
*	37.000	682.00	646.04	.00	.60	.00	37.36	500.00
*	37.000	682.00	646.08	.04	.62	.04	37.42	500.00
*	38.500	682.00	650.88	.00	4.84	.00	105.00	150.00
	38.500	682.00	650.88	.00	4.80	.00	105.00	150.00
*	43.500	682.00	651.21	.00	.33	.00	421.75	500.00
*	43.500	682.00	651.22	.01	.34	.01	333.53	500.00
*	50.000	486.00	651.36	.00	.15	.00	299.36	650.00
*	50.000	486.00	651.38	.02	.16	.02	232.62	650.00
*	52.500	486.00	651.50	.00	.14	.00	268.39	250.00
*	52.500	486.00	651.53	.03	.15	.03	216.96	250.00
*	55.000	486.00	652.10	.00	.61	.00	229.42	250.00
*	55.000	486.00	652.21	.10	.68	.10	153.43	250.00
*	61.000	341.00	654.65	.00	2.55	.00	187.09	600.00
*	61.000	341.00	654.70	.05	2.49	.05	187.52	600.00
*	63.300	324.00	655.04	.00	.39	.00	102.98	230.00
*	63.300	324.00	655.06	.02	.36	.02	103.12	230.00
*	65.500	324.00	656.37	.00	1.33	.00	89.37	220.00
*	65.500	324.00	656.35	-.02	1.29	-.02	89.29	220.00
*	70.000	324.00	659.42	.00	3.05	.00	93.13	450.00
*	70.000	324.00	659.44	.01	3.08	.01	93.17	450.00
*	79.500	324.00	663.78	.00	4.35	.00	33.93	950.00
*	79.500	324.00	663.76	-.02	4.32	-.02	33.22	950.00
*	88.500	324.00	668.89	.00	5.11	.00	48.02	900.00
*	88.500	324.00	668.96	.07	5.20	.07	22.00	900.00
	94.000	324.00	670.86	.00	1.98	.00	61.68	550.00

	94.000	324.00	670.95	.09	1.99	.09	42.00	550.00
*	97.000	324.00	672.69	.00	1.83	.00	11.00	300.00
*	97.000	324.00	672.74	.05	1.79	.05	11.00	300.00
	98.000	324.00	673.80	.00	1.12	.00	11.00	100.00
	98.000	324.00	673.81	.00	1.07	.00	11.00	100.00
*	104.500	324.00	676.61	.00	2.80	.00	20.29	650.00
*	104.500	324.00	676.61	.00	2.80	.00	20.29	650.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	109.000	324.00	677.05	.00	.44	.00	58.88	450.00
*	109.000	324.00	677.06	.01	.45	.01	41.26	450.00
	110.530	260.00	677.12	.00	.07	.00	68.00	153.00
	110.530	260.00	677.13	.02	.08	.02	68.00	153.00
	110.830	260.00	677.12	.00	.01	.00	68.00	30.00
	110.830	260.00	677.14	.02	.01	.02	68.00	30.00
	111.530	260.00	677.87	.00	.75	.00	68.00	70.00
	111.530	260.00	677.88	.01	.74	.01	68.00	70.00
*	111.830	260.00	677.89	.00	.03	.00	68.00	30.00
*	111.830	260.00	677.90	.01	.03	.01	68.00	30.00
*	115.500	63.00	677.92	.00	.03	.00	190.00	367.00
	115.500	63.00	677.93	.01	.03	.01	60.00	367.00
*	121.500	63.00	677.92	.00	.00	.00	51.05	600.00
*	121.500	63.00	677.94	.02	.01	.02	37.02	600.00
*	125.800	63.00	677.93	.00	.01	.00	235.00	430.00
*	125.800	63.00	677.95	.02	.01	.02	80.00	430.00
	126.430	63.00	677.93	.00	.00	.00	235.00	64.00
	126.430	63.00	677.95	.02	.00	.02	80.00	64.00
	126.830	131.00	677.94	.00	.01	.00	235.00	400.00
	126.830	131.00	677.97	.03	.02	.03	80.00	400.00
*	129.000	131.00	677.95	.00	.01	.00	185.54	217.00
*	129.000	131.00	677.99	.05	.02	.05	80.00	217.00
*	132.600	131.00	677.95	.00	.01	.00	46.80	360.00
*	132.600	131.00	678.10	.14	.10	.14	48.02	360.00
	136.200	131.00	678.78	.00	.83	.00	42.73	360.00
	136.200	131.00	678.83	.05	.73	.05	29.00	360.00
*	140.000	60.00	679.77	.00	.99	.00	26.00	380.00
*	140.000	60.00	679.78	.01	.95	.01	26.10	380.00
	145.000	60.00	680.88	.00	1.11	.00	26.93	500.00

	145.000	60.00	680.96	.07	1.17	.07	11.00	500.00
	151.000	60.00	682.02	.00	1.13	.00	21.27	600.00
*	151.000	60.00	682.10	.08	1.14	.08	21.58	600.00
*	151.350	60.00	682.54	.00	.52	.00	3.00	35.00
*	151.350	60.00	682.54	.00	.45	.00	3.00	35.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	151.730	60.00	684.61	.00	2.07	.00	3.00	38.00
*	151.730	60.00	684.61	.00	2.07	.00	3.00	38.00
*	152.000	241.00	685.01	.00	.40	.00	36.82	27.00
*	152.000	241.00	685.07	.06	.46	.06	20.00	27.00
*	157.000	241.00	687.07	.00	2.07	.00	215.60	500.00
*	157.000	241.00	687.17	.10	2.11	.10	218.16	500.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=     14.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     14.000  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     14.000  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=     14.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     14.000  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     14.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=     17.850  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     17.850  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     19.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     19.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     19.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     19.500  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     21.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     23.700  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     23.700  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     26.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     26.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     27.300  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     28.150  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     28.150  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

```
WARNING SECNO=    111.830  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    115.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    121.500  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    121.500  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    125.800  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    125.800  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    129.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    129.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    132.600  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    132.600  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    140.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    140.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    151.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
1
```



```
CAUTION SECNO=    151.350  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    151.350  PROFILE=  1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    151.350  PROFILE=  1  20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=    151.350  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    151.350  PROFILE=  2  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=    151.350  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO=    151.730  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    151.730  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    152.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=    152.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    152.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=    157.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    157.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

1
```


FLOODWAY DATA, -FOLEY DRAIN
PROFILE NO. 2

STATION	------- FLOODWAY ------- WIDTH	SECTION AREA	MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
8.000	274.	1001.	.7	633.7	633.7	.0
14.000	157.	172.	4.0	634.6	634.6	.0
17.850	116.	327.	2.1	638.3	638.2	.1
18.150	118.	341.	2.0	638.4	638.3	.1

19.200	118.	524.	1.3	640.0	640.0	.0
19.500	118.	343.	2.0	640.0	640.0	.0
21.000	90.	336.	2.1	640.2	640.2	.0
23.700	147.	272.	2.5	640.6	640.6	.0
24.000	149.	291.	2.3	640.7	640.7	.0
24.450	149.	292.	2.3	640.7	640.7	.0
24.750	150.	208.	3.3	640.9	640.9	.0
26.000	171.	436.	1.6	641.6	641.6	.0
27.300	71.	189.	3.6	641.9	641.9	.0
27.600	85.	201.	3.4	642.0	642.0	.0
28.150	90.	418.	1.6	644.8	644.8	.0
28.450	82.	218.	3.1	644.8	644.8	.0
32.000	111.	475.	1.4	645.4	645.4	.0
37.000	37.	205.	3.3	646.0	646.0	.0
38.500	105.	316.	2.2	650.9	650.9	.0
43.500	334.	1313.	.5	651.2	651.2	.0
50.000	233.	742.	.7	651.4	651.4	.0
52.500	217.	516.	.9	651.5	651.5	.0
55.000	153.	150.	3.2	652.2	652.1	.1
61.000	188.	357.	1.0	654.8	654.7	.1
63.300	103.	149.	2.2	655.0	655.0	.0
65.500	89.	89.	3.7	656.4	656.4	.0
70.000	93.	197.	1.6	659.4	659.4	.0
79.500	33.	70.	4.6	663.8	663.8	.0
88.500	22.	94.	3.5	669.0	668.9	.1
94.000	42.	96.	3.4	671.0	670.9	.1
97.000	11.	51.	6.3	672.7	672.7	.0
98.000	11.	58.	5.5	673.8	673.8	.0
104.500	20.	98.	3.3	676.6	676.6	.0
109.000	41.	220.	1.5	677.0	677.0	.0
110.530	68.	282.	.9	677.1	677.1	.0
110.830	68.	272.	1.0	677.1	677.1	.0
111.530	68.	315.	.8	677.9	677.9	.0
111.830	68.	329.	.8	677.9	677.9	.0
115.500	60.	345.	.2	677.9	677.9	.0
121.500	37.	181.	.3	677.9	677.9	.0
125.800	80.	433.	.1	677.9	677.9	.0
126.430	80.	419.	.2	677.9	677.9	.0

1

FLOODWAY DATA, -FOLEY DRAIN
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
126.830	80.	296.	.4	677.9	677.9	.0
129.000	80.	259.	.5	677.9	677.9	.0
132.600	48.	92.	1.4	678.1	678.0	.1
136.200	29.	57.	2.3	678.8	678.8	.0
140.000	26.	36.	1.7	679.8	679.8	.0
145.000	11.	26.	2.3	681.0	680.9	.1
151.000	22.	40.	1.5	682.1	682.0	.1
151.350	3.	7.	8.7	682.5	682.5	.0

151.730	3.	12.	5.1	684.6	684.6	.0
152.000	20.	33.	7.4	685.1	685.0	.1
157.000	218.	382.	.6	687.2	687.1	.1

Camp Dresser & McKee
One Woodward Avenue
Suite 1500
Detroit, Michigan 48226
(313) 963-1313 Fax No (313) 963-3130

LETTER OF TRANSMITTAL

DATE	JOB NO
11-23-92	1641-5-C6-ERPT

ATTENTION: BRUCE MENEREY, P.E.

RE: BEHAN-FOLEY

TO: LAND & WATER MANAGEMENT DIVISION
STEVENS T. MASON BUILD.
P.O. BOX 30028
LANSING, MI 48909

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

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☑ REPORT & OUTPUT FILES

COPIES	DATE	NO.	DESCRIPTION
1	9-31-92	—	BEHAN-FOLEY REPORT
1	—	—	HYDRAULIC & HYDROLOGIC OUTPUT FILES

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☑ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☑ AS SUBMITTED TO FEMA
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: BRUCE,
ENCLOSED IS A COPY OF THE BEHAN-FOLEY DRAIN REPORT THAT WAS APPROVED BY THE CITY OF WYOMING & SENT TO FEMA. ALSO, THE HEC-1 AND HEC-2 OUTPUT FILES THAT WERE SENT TO FEMA HAVE BEEN INCLUDED FOR YOUR USE.

COPY TO _____

SIGNED: James A. Winter

If enclosures are not as noted, kindly notify us at once.

The City of Wyoming
Kent County Michigan
Behan - Foley Drain
Floodplain Analysis

The City of Wyoming

T6N, R12W

Kent County, Michigan

The Behan-Foley Drain Floodplain Analysis

September 31, 1992

TABLE OF CONTENTS

I - INTRODUCTION **Page #**

Purpose 1
The National Flood Insurance Program 1-2
Mandatory Purchase of Flood Insurance 2
Floodplain Jurisdiction 2-3
Existing Effective Flood Insurance Maps 4

II - FIELD INVESTIGATIONS

Field Reconnaissance 4
Field Survey 5
Vertical Datum 5

III - HYDROLOGY

Watershed Description 5
Design Storm Precipitation 7
Soil Conservation Service Curve Numbers 7
Time of Concentration Calculation 12
Hydrologic Computer Modeling 19
Flow Calculations 24

IV - HYDRAULICS

Drain Description 24
Hydraulic Computer Modeling 27
Flood Profiles 27
Floodway Calculation 35
Mapping 36

V - CONCLUSIONS & RECOMMENDATIONS 36

LIST OF FIGURES

Page #

Figure 1 - Sub Basin Delineation 6

Figure 2 - 10-year, 24-hour rainfall amount 8

Figure 3 - 50-year, 24-hour rainfall amount 9

Figure 4 - 100-year, 24-hour rainfall amount 10

Figure 5 - Soil Conservation Service Soil Groups 11

LIST OF APPENDICES

Appendix A - Field Surveyed Cross Sections

Appendix B - SCS Runoff Curve Numbers

Appendix C - Federal Highway Admiistration Rating Curves

Appendix D - The 10, 50, 100, & 500 Year Flood Profiles

Appendix E - Floodplain/Floodway Maps

BEHAN-FOLEY DRAIN

Flood Insurance Study

Draft Report

I - INTRODUCTION

Purpose

The purpose of this report is to provide detailed hydrologic and hydraulic information on the portion of the Behan-Foley Drain located in the City of Wyoming Michigan. This information is required by Federal Emergency Management Agency (FEMA) officials and local Michigan Department of Natural Resources (MDNR) officials to legally incorporate and adopt the Behan-Foley Drain into the City of Wyoming's existing Effective Flood Insurance Study (FIS). The results of this floodplain analysis are provided in this report and include the comprehensive data necessary to accurately delineate and calculate the 100 year floodplain and floodway, to calculate the 100 year base flood elevation (BFE), and to calculate the 10, 50, 100, and 500 year flood profiles.

The National Flood Insurance Program

The U. S. Congress established the National Flood Insurance Plan (NFIP) in 1968. Communities like the City of Wyoming participating in the NFIP do so in two phases, the emergency and regular phase. The City of Wyoming currently participates in the regular phase of the NFIP, and therefore, is eligible to receive full flood insurance coverage in the event that citizens of the community suffer damages associated with flooding. The NFIP and related regulations, which define responsibilities and requirements for both FEMA and the City of Wyoming, are set forth at Title 44, Chapter I, Parts 59-77, Code of Federal Regulations.

The NFIP is designed to benefit both individual property owners and communities. It does so by enabling property owners to purchase flood insurance at reasonable rates, and it assists communities by requiring that they adopt, administer, and enforce local floodplain management measures aimed at protecting lives and new construction from future flooding. All communities that have the authority to adopt, administer, and enforce floodplain management regulations can participate in the NFIP.

As of September 30, 1990, 14,718 flood insurance policies were in force in Michigan alone. From 1978 to 1990, 6,491 claims were paid to Michigan residents to cover losses encountered because of flooding. These claims averaged $3,569 each, and totaled $23,172,401. The total premiums paid for coverage within this same period was only $3,968,168, obviously much less then the amount received for damages incurred. Clearly, Michigan realized the benefits of a NFIP which effectively spreads the economic burden of flooding throughout the Nation, without requiring that the community be responsible for losses entirely on its own. The average individual policy holder paid $269 for coverage within this period and the average coverage was $60,064.

The first step that a community takes toward receiving NFIP benefits is to conduct a detailed FIS. This study includes hydrologic analysis that yields flood discharge-frequency relationships and hydraulic analysis that yield computed flood elevations. The hydrologic analysis usually involves the use of statistical analysis of recorded stream gage data, regional discharge-drainage area relationships, or rainfall runoff models like the Hydrologic Engineering Center's HEC-1 model. The HEC-1 model has been used for the City of Wyoming's previous studies and has been used for this analysis of the Behan-Foley Drain.

The FIS also includes hydraulic information such as base flood elevations (BFEs) presented as water surface elevations referenced to the National Geodetic Vertical Datum of 1929; 10-year, 50-year, and usually the 500 year water surface elevations; 100 year floodway boundaries; and 500 year floodplain boundaries. The results of the FIS are presented on a Flood Insurance Rate Map (FIRM) and a Flood Boundary and Floodway Map (FBFM). These maps are the binding legal documents that communities utilize to regulate their floodplains. The values are developed using the Hydrologic Engineering Center's HEC-2 model. The HEC-2 model has been used for the City of Wyoming's previous studies and has been used for this analysis of the Behan-Foley Drain hydraulics.

Mandatory Purchase of Flood Insurance

Since March 2, 1974, the Flood Disaster Protection Act of 1973 has required the purchase of flood insurance as a condition of receiving any form of Federal or Federally related financial assistance from any Federal officer or agency for acquisition or construction purposes with respect to any building or parcel located in any special flood hazard area identified by FEMA. Since special flood hazard areas require mapping per FEMA's standards, the community must be actively participating in the NFIP. Lending institutions are now entitled to verify that a residence, or any building seeking financing or refinancing within a mapped special flood hazard area, be insured with flood insurance as a prerequisite to the loan. Clearly, the consequences of building within a special flood hazard area can be great, and therefore, such proposed construction should be flagged as soon as possible. This often occurs during the permit stage.

Floodplain Jurisdiction

State statutes regulate certain aspects of floodplain development. NFIP controls complement State regulations with more comprehensive controls to be administered at the local level. Minimum standards are required, however local communities like the City of Wyoming can benefit by tailoring their standards to local conditions. Such community controls can achieve better compliance than floodplain management controls administered at either the State or Federal level.

The City of Wyoming may exercise control over floodplain development through their zoning powers (Act 184, Public Acts of 1943 & Act 207, Public Acts of 1921). Community consideration of flood hazards and enforcement of minimum floodplain

management regulations are required for the City's participation in the NFIP. Additionally, communities are encouraged by State regulators to preserve floodplains and flood prone areas, to consider flood loss reduction, and environmental quality prior to permitting a land use change in floodplains or flood prone areas.

The control of floodplain development within the State of Michigan is under joint control. The Michigan Department of Natural Resources administers statutes which control alterations of the 100-year floodplain and subdivision development within the floodplains of communities similar to The City of Wyoming.

The State's specific floodplain statutes as summarized are:

> "Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968, (The Floodplain Regulatory Authority), requires that a permit be obtained from the Department before filling or otherwise occupying the floodplain or altering the channel of any watercourse in the State. The purpose of this control is to insure that the channels and the portion of the floodplain that are the floodways (See later definition),are not inhabited and are kept free and clear of interference or obstruction which will cause undue restriction of the flood carrying capacities."
>
> "Act 288, Public Acts of 1967, (The Subdivision Control Act), establishes minimum standards for subdividing land within areas effected by a floodplain. Preliminary plats abutting lakes or streams are submitted to the Department for review and establishment of the 100-year floodplain limits. Each lot in the subdivision must have a building site above the established floodplain or BFE and be accessible during times of flood before the subdivision can be conditionally approved."

The Michigan Department of Natural Resources is mandated to assure the minimum controls of these statutes. Local units of government must enforce NFIP requirements and enact any additional controls to meet local needs. Under NFIP Rules, Section 60.3a(2), local units of government must also insure compliance with the State statute. Michigan floodplain controls are more stringent than NFIP requirements for allowable rise in flood elevations and floodway designations. The State's Floodplain Regulatory Authority, prohibits any development within the floodplains of the State which will harmfully interfere with the stage or discharge characteristics of the stream. "Harmful interference" means causing an unnaturally high stage or unnatural direction of flow on a river or stream which causes, or may cause, damage to property, a threat to life, a threat of personal injury, or a threat to water resources.

New developments in the floodplains of the State are then prohibited unless a Department permit is secured under the harmful interference criteria of Act 245 as amended. Through community participation in the NFIP, enforcement of NFIP floodplain management requirements and compliance with State statute, prudent development of the City's floodplains may continue without incurring additional public and private losses due to flooding.

Existing Effective Flood Insurance Maps

The City of Wyoming, with help from the U.S. Soil Conservation Service; the U.S. Army Corps of Engineers, and the Michigan Department of Natural Resources, completed a FIS report that was reviewed extensively in a coordination meeting on January 27, 1976. The FIRM and FBFM that resulted from this study became effective on September 2, 1982. A FIS restudy was recently performed under Inter-Agency Agreement No. EMW-88-E-2739 for The City of Wyoming to reflect any changes that may have occurred or to include areas that may not have been studied previously. This restudy resulted in a revision to the above maps and FIS and became effective on February 5, 1992. The current effective maps for the City of Wyoming are dated February 5, 1992, panels 260111-0005-0015 and 260111-0005-0005. All previously dated map panels should be disregarded.

The Flood Insurance Rate Map (FIRM) for the City of Wyoming is used entirely for determining equitable flood insurance rates within the community. This map enables flood insurance agencies to determine equitable flood insurance rates depending on the risk of flooding that a particular parcel seeking flood insurance experiences. To make this rate assessment, the FIRM includes special flood hazard zones that are determined in the detailed analysis required by FEMA before a FIRM is adopted and becomes effective. Each zone designation has a separate flood risk factor attached to it and depending on this flood risk factor a certain rate is assessed for flood insurance in that zone. This zone oriented rate structure allows for an equitable distribution of costs within the community and establishes the relationship between what a homeowner pays for insurance against flooding damage and what is his probability of experiencing flood damage.

II - FIELD INVESTIGATIONS

Field Reconnaissance

Project staff performed several site visits to verify hydraulic information used for HEC-2 computer model input. These visits involved walking the entire 3.0 mile reach of the stream to verify and collect pertinent hydraulic data including pipe and culvert sizes, culvert types, corrugation dimensions, culvert coefficients, bridge dimensions, bridge locations, mannings n values, bridge loss coefficients, and restrictions and contractions that needed to be identified for hydraulic backwater considerations.

Hydrologic parameters used as input into the hydrologic computer model HEC-1, which calculates flow rates, were also field verified. Because several of the topographic maps used for the Behan-Foley watershed are dated 1969 a number of changes have occurred since these maps were produced. Changes were identified so that any needed modification could be reflected in the models. During the field investigations drainage districts were verified, detention basins located, land usage checked, and time of concentration flow paths verified.

Field Survey

Detailed field survey was obtained for the entire 3.0 mile reach of the Behan-Foley Drain. This data was used as input into the HEC-2 hydraulic computer model. This model was used to determine the 100 year base flood elevations and flood profiles. Survey data included obtaining stream cross-sections and bridge geometry for the entire reach of the drain. Twenty Five full cross sections were obtained excluding bridge cross-sections. Each of the eight bridge crossings was surveyed in detail and information provided for each bridge including: low chord, road profile, width, height, skew, and one cross sections 30' directly upstream and one cross section 30' directly downstream of the bridge opening. Each field surveyed cross-section used for hydraulic profile calculation is enclosed in Appendix A of this report.

Vertical Datum

All elevations are referenced to the National Geodetic Vertical Datum (NGVD) of 1929. Two existing FIS bench marks were used as verification of vertical control. These two bench marks are referenced in the recently revised February 5, 1992 FIS.

Reference mark # 1 (630.731), and reference mark # 21 (643.075), were verified to be consistent with the datum used for the Behan-Foley drain analysis. A description of these two bench marks follows:

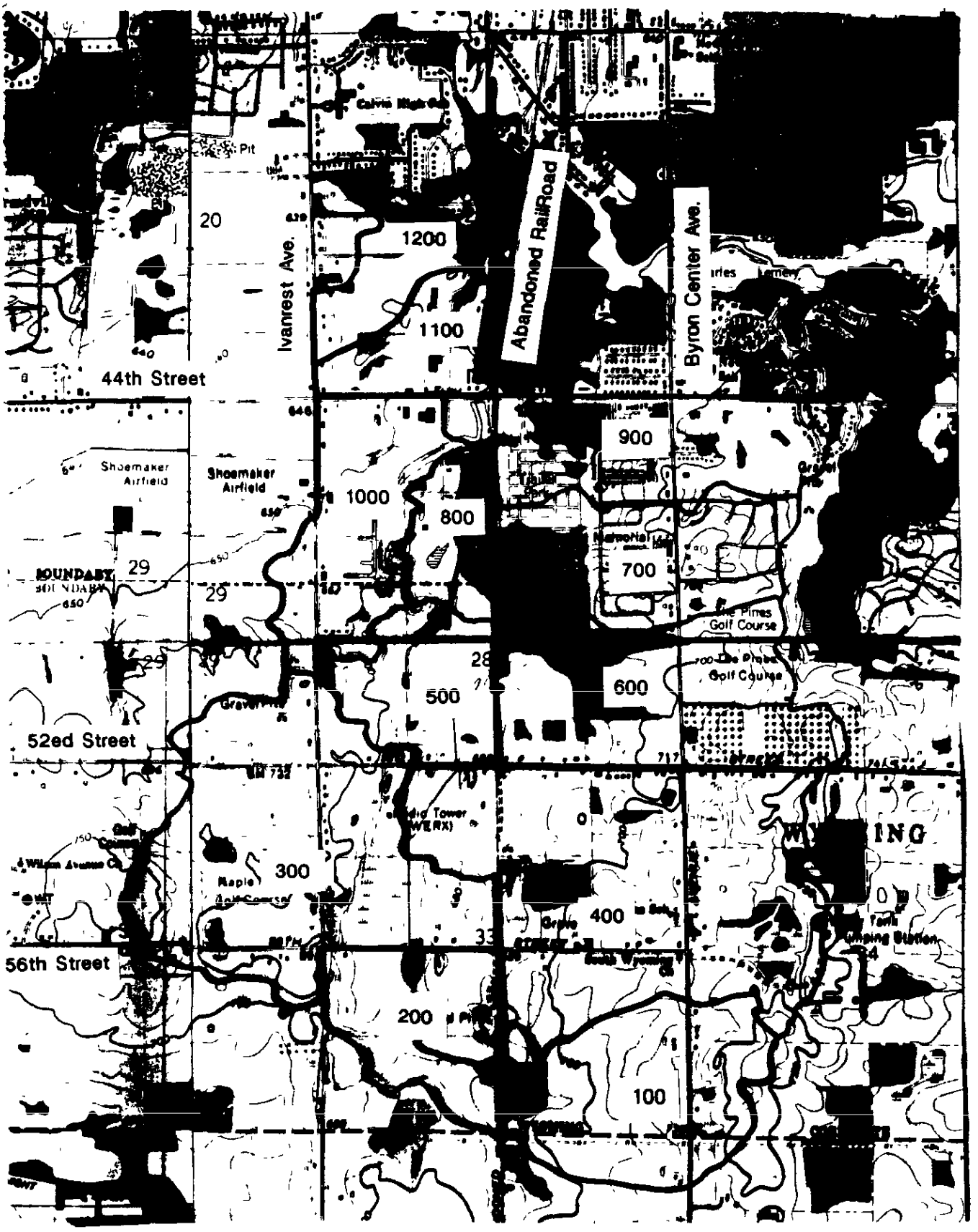
> RM-01 (630.731) - Bronze disk at the southwest corner of 36th Street and Wentworth Drive, power pole northeast 64.76 feet, telephone pole east southeast 56.50 feet, guy pole south southwest 20.2 feet.
>
> RM-21 (643.075) - Chiseled square in northwest wingwall of Bighorn Center Avenue bridge over Buck Creek.

III - HYDROLOGY

Watershed Description

The total area tributary to the Behan-Foley drain is 2,083 acres (3.25 square miles). For modeling purposes this area was sub divided into twelve individual sub-basins (See Figure 1). These twelve sub-basins range in size from about 74 acres to about 413 acres. Each basin was delineated using existing 1"=200', 2' contour interval, topographic maps.

The Behan-Foley Drain's natural drainage pattern was altered years ago when a railroad track was constructed which spans and splits the entire length of the basin. The effect of this railroad right-of-way, which is now abandoned, is to restrict areas contributing runoff from the east side of the basin. Flows must now enter the Behan-Foley drain through culverts located underneath the Railroad right-of-way. These culverts convey floodwaters, but act as restrictors and place an upper limit on the amount of flow that enters the drain. Each restriction is modeled so that an accurate attenuation of floodwaters is represented.



BEHAN-FOLEY DRAIN FLOODPLAIN ANALYSIS

CDM

environmental engineers, scientists, planners, & management consultants

SUB-BASIN DELINEATION

Figure No. 1

Date: 08/20/92

Design Storm Precipitation

The NFIP requires that the 10, 50, 100, and 500 year storm frequencies be evaluated for the production and acceptance of a FIRM. Each of these design storms, therefore, has been evaluated for the City of Wyoming and the Behan-Foley drain analysis.

A large amount of rainfall data is available from governmental agencies which provide design rainfall amounts for various durations and frequency intervals. In Michigan the normal practice has been to use a 24-hour design storm rainfall duration. The amount of rainfall used for design purposes have been exclusively taken from Hershfield (1961), commonly referred to as National Weather Service (NWS) technical paper TP-40.

More recently, however, rainfall amounts in excess of those published in TP-40 have occurred quite regularly throughout Michigan. This may be attributed to the fact that TP-40 data only included in its database rainfall data up through 1958. In order to update this TP-40 information, Sorrell and Hamilton of the Michigan Department of Natural Resources, have analyzed 24-hour rainfall data from Michigan gages up through 1991, and have incorporated this data with the TP-40 database. This updated comprehensive rainfall database has been evaluated by the aforementioned to produce new statistical rainfall design storms that are more representative of actual conditions.

The newly calculated values of total rainfall for the 24-hour, 10-year storm is 3.9". Likewise, the 50-year, 100-year, and 500-year total rainfall volumes are 5.2" , 5.8" , and 6.6" inches. Figures 1.2, 1.3, and 1.4, reveal the new rainfall contour maps that have been produced by the State of Michigan Department of Natural Resources, for the 10, 50, and 100 year 24 hour rainfall events, respectively.

Soil Conservation Service Curve Numbers

The Soil Conservation Service (SCS) soil maps of Kent County were used to determine hydrologic soil characteristics for each of the twelve sub-basins tributary to the Behan-Foley Drain. These soil characteristics are used to determine how much runoff is generated within each sub-basin. The four standard SCS soil groups are A, B, C, and D. Soil group A is characterized as having a very high infiltration capacity, whereas, types B, C, and D, have progressively decreasing infiltration capacities, and therefore, produce much greater runoff volumes.

A runoff curve number was calculated for each sub-basin by determining what percentage of that particular sub-basin is soil group type A, B, C, and D. Figure 5, illustrates the percentages of each soil group within each of the twelve sub-basins tributary to the drain. In this figure each sub-basins boundary has been overlaid onto the SCS map. Once this relationship was established, land usages were determined so that a weighted curve number (WCN) could be calculated for each sub-basin and used as input into the hydrologic model.

Figure No. 2

Behan-Foley Drain Floodplain Analysis

10 year, 24 hour Rainfall (inches)

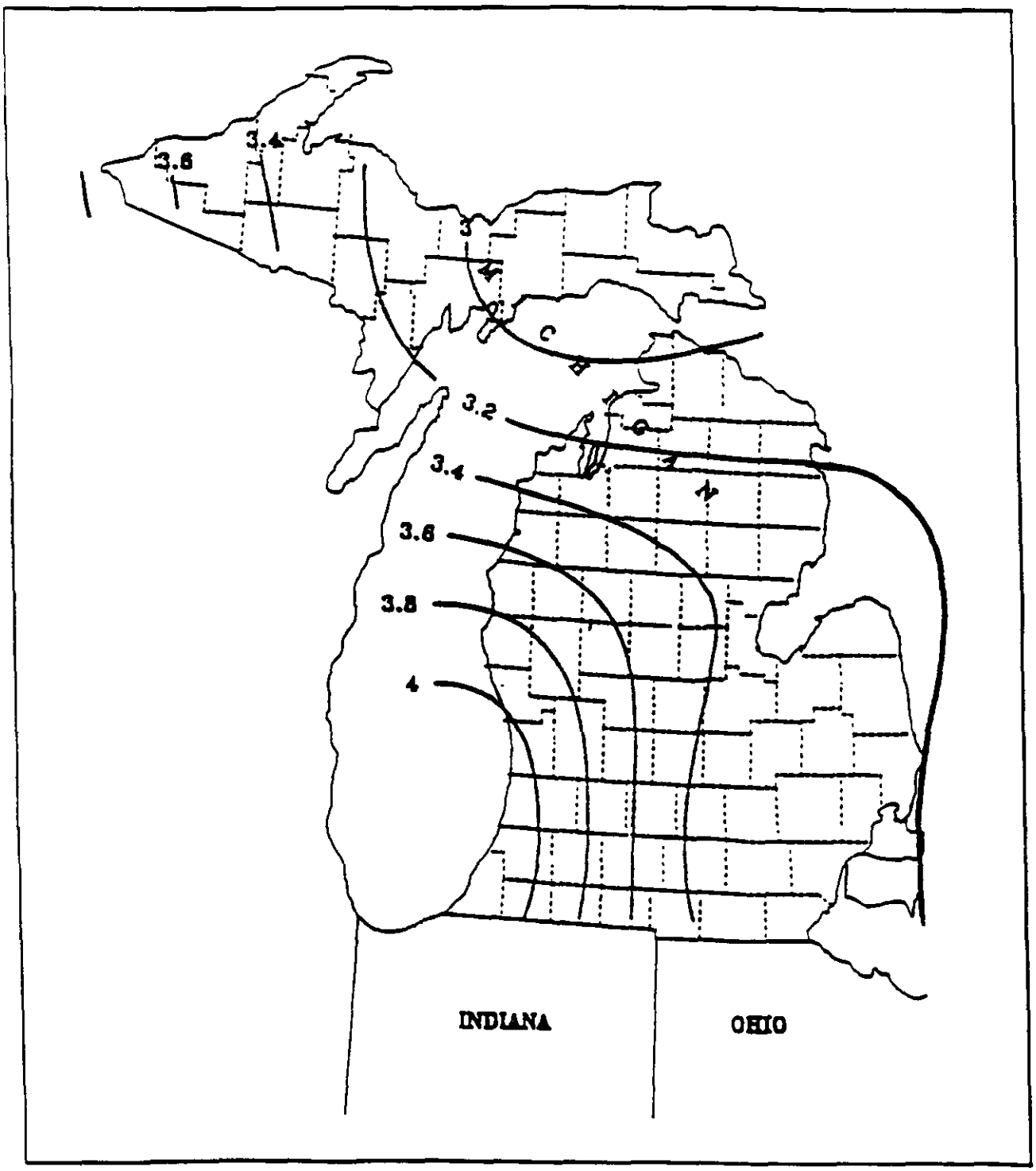


Figure No. 3

Behan-Foley Drain Floodplain Analysis

50 year, 24 hour Rainfall (inches)

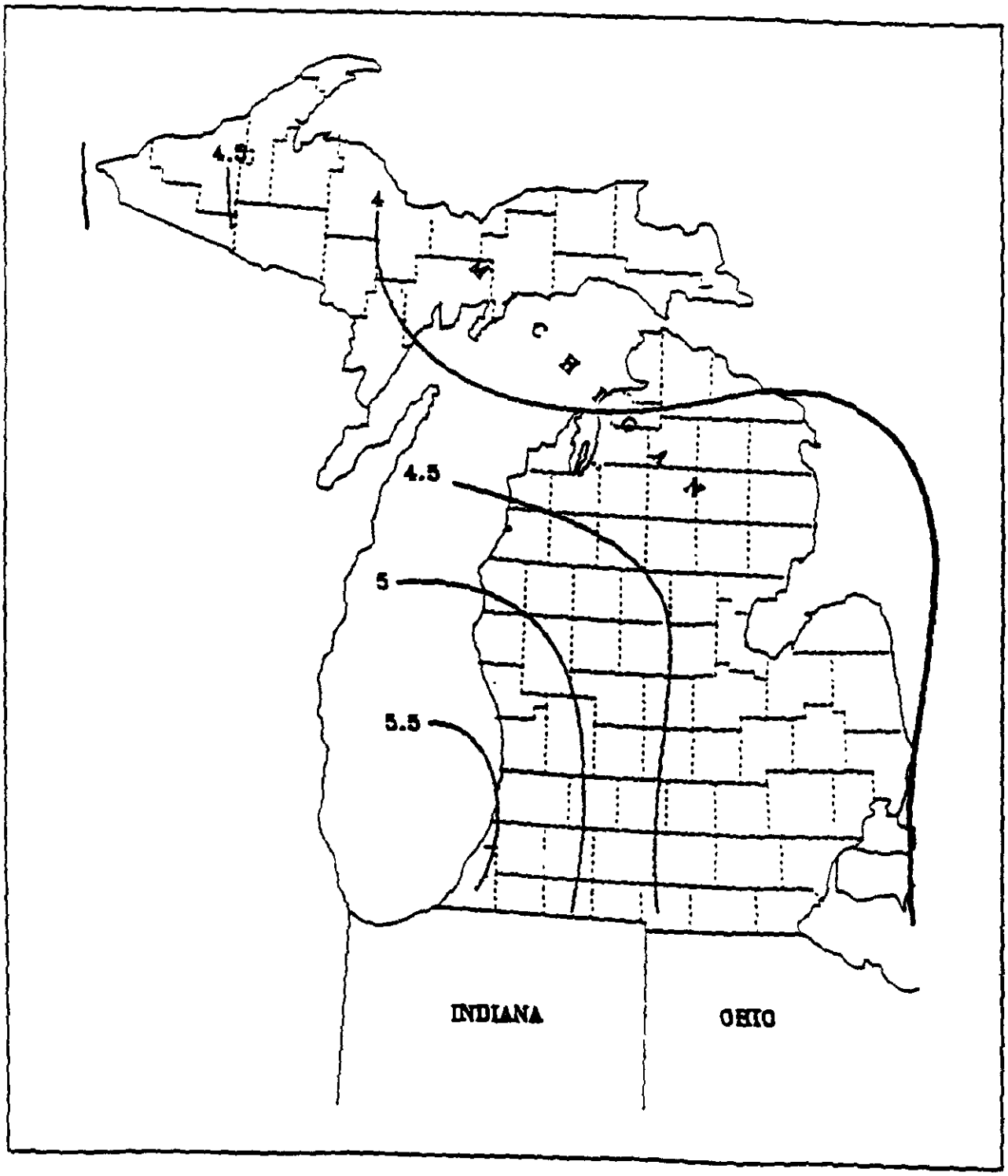
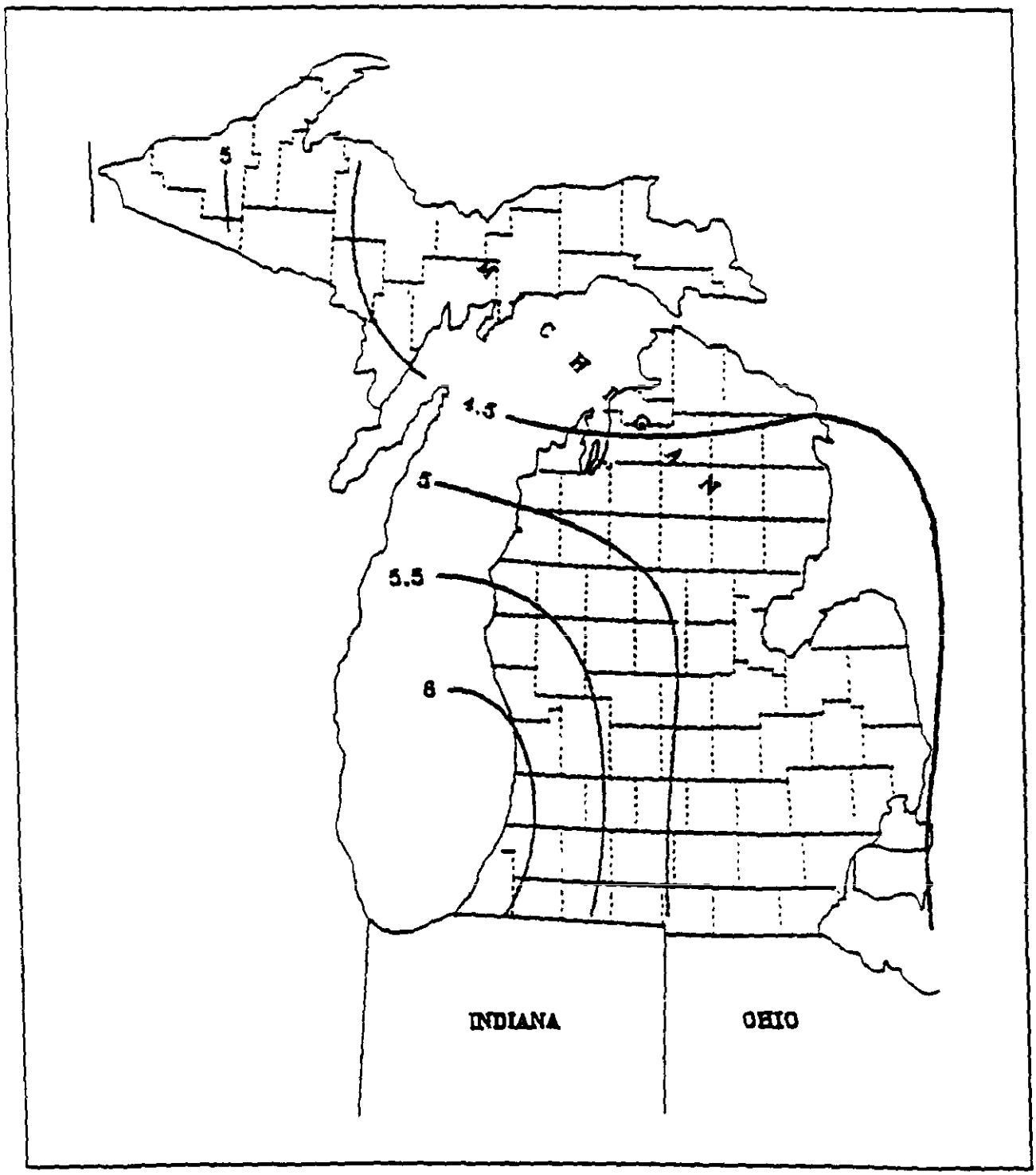
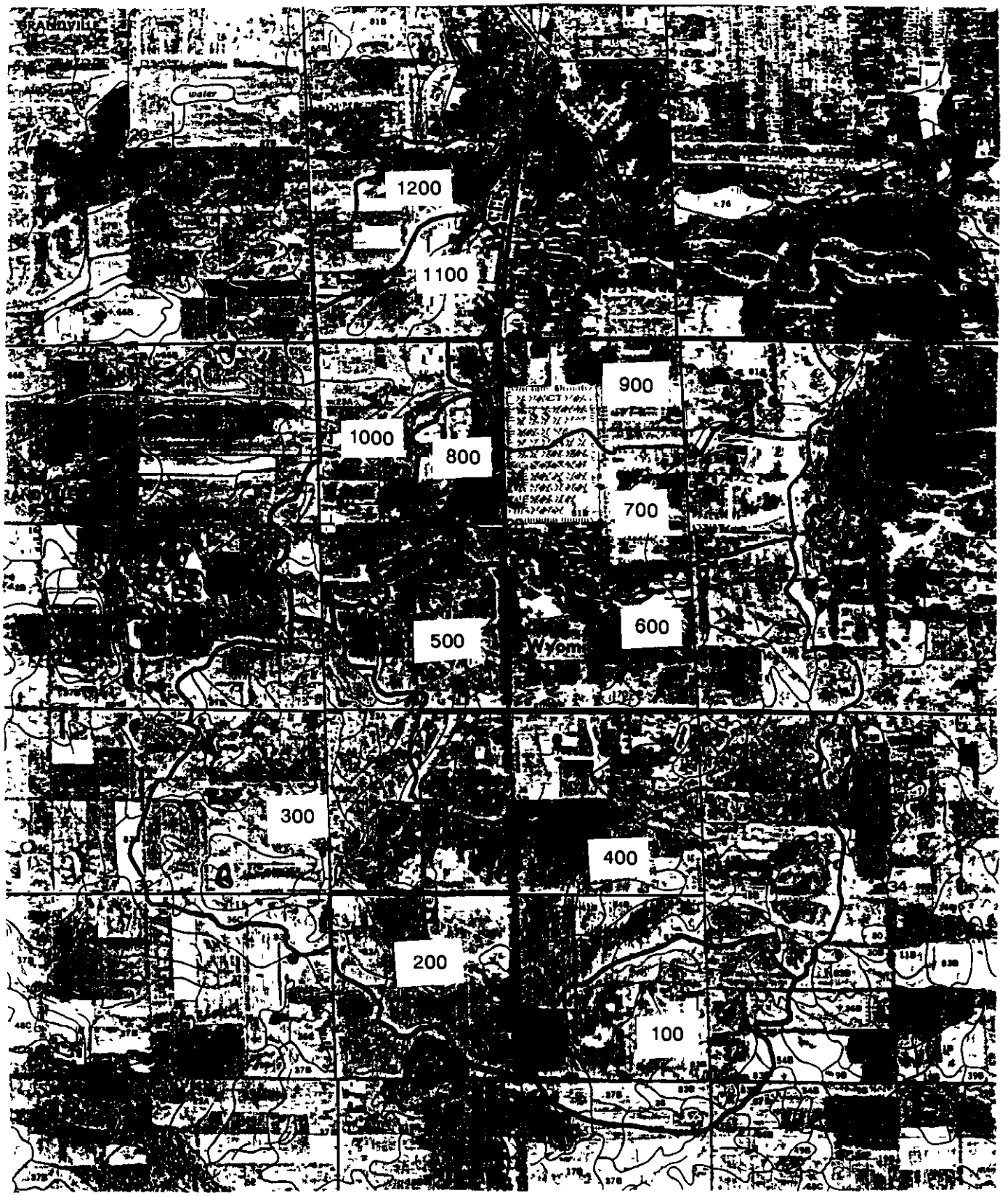


Figure No. 4

Behan-Foley Drain Floodplain Analysis

100 year. 24 hour Rainfall (inches)





BEHAN-FOLEY DRAIN FLOODPLAIN ANALYSIS

SCS SOIL GROUPS

Figure No. 5

CDM
environmental engineers, scientists, planners, & management consultants

Date: 08/20/92

The WCN is a number that is used to determine the percentage of rainfall that will typically occur as runoff from the watershed during a rainstorm. The WCN is dependent on soil group classification and land usage. An area weighting methodology is applied to each sub-basin in order to determine the representative WCN. Exhibit B-1 and B-2 in Appendix B reveal the SCS runoff curve numbers for various land usage/soil group combinations. The curve numbers used to represent land usages within the City of Wyoming have been identified on these tables with a box. Clearly, five land usages were assumed to appropriately represent the various developmental phases of the drains tributary area. These land usages are: wooded, small grain (good condition), residential, commercial, and mobile home. Table 1 includes the weighted curve number calculations that have been determined for each of the twelve sub-basins.

The highest curve number calculated is 76 for sub-basin # 100, whereas, the lowest value is 53 for sub-basin # 800. Sub basin # 100, therefore, with a WCN of 76, will experience 76 percent runoff, while the remaining 24% of precipitation will be lost due to infiltration and other abstractions. Sub basin # 800, on the other hand, with a curve number of 53, will experience only 53% of the precipitation as runoff and the remaining 47% will be lost as infiltration and abstractions. Clearly, more runoff is produced by a higher WCN.

Type A soils were found to be most dominant. This reveals the sandy and generally pervious nature of the watershed. Type B soils were the second most prevalent type with moderately less capacity to drain overland flows. Some areas were even less pervious and were classified as type C and D soils, but these areas consisted of only about 5 percent of the total area.

Time of Concentration Calculation

The time of concentration (Tc) has been calculated for each sub-basin for input into the HEC-1 hydrologic model. The time of concentration is the time it takes for the runoff to travel from the hydraulically most distant point in the watershed to the design point. In hydrograph analysis, T_c is the time from the end of rainfall excess to the inflection point of the falling limb of the hydrograph. This point signifies the end of surface runoff and the beginning of baseflow recession. In practice T_c is considered to be constant for all design storms despite the fact that it is a function of the amount on runoff.

For ungaged watersheds similar to the Behan-Foley Drain, T_c is calculated by estimating the velocity through the various components of the stream network. There are several methods used to estimate the velocity. The method used in this analysis, which is accepted by local regulatory officials, expresses velocity in the form:

$$V = K * S^{.5}$$

where K is a coefficient depending on the type of flow, S is the slope of the flow path in percent, and V is the velocity in feet per second.

Table 1 (Sheet 1 of 6)
Behan-Foley Drain Floodplain Analysis
Weighted Soil Conservation Service Curve Numbers

SUB-BASIN 100

		LAND USAGE										
Soil	Area	Woods		Small grain (good)								Soil Group
Group	(Ac.)	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Weighted C.N.
A	24	9	36	15	63							53
B	82	0	60	82	75							75
C	65	0	73	65	83							83
D	15	0	79	15	87							87
Totals	186	9		177								

CATCHMENT W.C.N. = 76

SUB-BASIN 200

		LAND USAGE										
Soil	Area	Woods		Small grain (good)								Soil Group
Group	(Ac.)	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Weighted C.N.
A	85	0	36	85	63							63
B	6	0	60	6	75							75
C	9	0	73	9	83							83
D	18	5	79	13	87							85
Totals	118	5		113								

CATCHMENT W.C.N. = 68

SCS.XLS

Table 1 (Sheet 2 of 6)
Behan-Foley Drain Floodplain Analysis
Weighted Soil Conservation Service Curve Numbers

SUB-BASIN 300

		LAND USAGE										
Soil	Area	Residential		Woods		Small grain (good)		Golf Course				Soil Group
Group	(Ac.)	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Weighted C.N.
A	72	34	54	0	36	38	63	0	39			59
B	127	0	70	0	60	92	75	34	61			71
C	79	0	80	17	73	34	83	27	74			78
D	65	0	85	0	79	65	87	0	80			87
Totals	342	34		17		229		62				

CATCHMENT W.C.N. = 73

SUB-BASIN 400

		LAND USAGE										
Soil	Area	Residential		Woods		Small grain (good)						Soil Group
Group	(Ac.)	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Weighted C.N.
A	157	41	54	33	36	83	63					55
B	140	8	70	29	60	103	75					72
C	50	0	80	12	73	37	83					81
D	66	33	85	17	79	17	87					84
Totals	413	83		91		240						

CATCHMENT W.C.N. = 68

Table 1 (Sheet 3 of 6)
Behan-Foley Drain Floodplain Analysis
Weighted Soil Conservation Service Curve Numbers

SUB-BASIN 500

		LAND USAGE										
Soil Group	Area (Ac.)	Small grain (good)		Woods								Soil Group Weighted C.N.
		Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	
A	65	44	63	22	36							54
B	27	24	75	3	60							73
C	0	0	83	0	73							83
D	7	3	87	4	79							82
Totals	99	70		29								

CATCHMENT W.C.N. = 61

SUB-BASIN 600

		LAND USAGE										
Soil Group	Area (Ac.)	Small grain (good)		Woods		Residential						Soil Group Weighted C.N.
		Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	
A	145	78	63	53	36	14	54					52
B	39	39	75	0	60	0	70					75
C	46	44	83	2	73	0	80					83
D	0	0	87	0	79	0	85					87
Totals	230	161		55		14						

CATCHMENT W.C.N. = 62

Table 1 (Sheet 4 of 6)
Behan-Foley Drain Floodplain Analysis
Weighted Soil Conservation Service Curve Numbers

SUB-BASIN 700

		LAND USAGE										
Soil	Area	Small grain (good)		Woods		Residential		Mobil Ho.				Soil Group
Group	(Ac.)	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Weighted C.N.
A	61	5	63	8	36	11	54	38	77			67
B	0	0	75	0	60	0	70	0	85			75
C	91	18	83	18	73	55	80	0	90			79
D	0	0	87	0	79	0	85	0	92			87
Totals	152	23		26		65		38				

CATCHMENT W.C.N. = 74

SUB-BASIN 800

		LAND USAGE										
Soil	Area	Small grain (good)		Woods		Commercial						Soil Group
Group	(Ac.)	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Weighted C.N.
A	72	5	63	48	36	19	89					52
B	0	0	75	0	60	0	92					75
C	0	0	83	0	73	0	94					83
D	2	0	87	0	79	2	95					95
Totals	74	5		48		21						

CATCHMENT W.C.N. = 53

Table 1 (Sheet 5 of 6)
Behan-Foley Drain Floodplain Analysis
Weighted Soil Conservation Service Curve Numbers

SUB-BASIN 900

		LAND USAGE										
Soil Group	Area (Ac.)	Small grain (good)		Woods		Residence		Commercial		Mobil Home		Soil Group Weighted C.N.
		Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	
A	145	34	63	32	36	5	54	39	89	35	77	67
B	0	0	75	0	60	0	70	0	92	0	85	75
C	9	5	83	0	73	5	80	0	94	0	90	82
D	0	0	87	0	79	0	85	0	95	0	92	87
Totals	154	39		32		9		39		35		

CATCHMENT W.C.N. = 68

SUB-BASIN 1000

		LAND USAGE										
Soil Group	Area (Ac.)	Residential		Woods		Small grain (good)		Commercial				Soil Group Weighted C.N.
		Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	
A	71	7	54	7	36	49	63	7	89			62
B	21	0	70	6	60	15	75	0	92			71
C	0	0	80	0	73	0	83	0	94			80
D	56	3	85	6	79	44	87	3	95			86
Totals	148	10		19		108		10				

CATCHMENT W.C.N. = 73

Table 1 (Sheet 6 of 6)
Behan-Foley Drain Floodplain Analysis
Weighted Soil Conservation Service Curve Numbers

SUB-BASIN 1100

		LAND USAGE										
Soil Group	Area (Ac.)	Small grain (good)		Woods		Commercial		Residential				Soil Group Weighted C.N.
		Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	
A	58	17	63	9	36	20	89	11	54			66
B	0	0	75	0	60	0	92	0	70			75
C	0	0	83	0	73	0	94	0	80			83
D	17	9	87	8	79	0	95	0	85			83
Totals	75	26		17		20		11				

CATCHMENT W.C.N. = 70

SUB-BASIN 1200

		LAND USAGE										
Soil Group	Area (Ac)	Small grain (good)		Woods		Commercial		Residential				Soil Group Weighted C.N.
		Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	Area (Ac.)	Curve No.	
A	52	16	63	13	36	18	89	6	54			65
B	14	0	75	6	60	0	92	7	70			65
C	0	0	83	0	73	0	94	0	80			83
D	26	0	87	18	79	0	95	7	85			81
Totals	92	16		38		18		20				

CATCHMENT W.C.N. = 69

SCS.XLS

Three flow types have been used based on the configuration or geometry of the conveyance channel. A description of each conveyance mode and the coefficient use are provided below:

1. Small tributary: Permanent or intermittent streams which appear as a solid or dashed blue line on the topographic maps. This also applies to a swamp that has a defined stream channel (K=2.1).

2. Waterway: This is an overland route which is a well defined swale by elevation contours. This also applies to a swamp that does not have a defined channel flowing through it (K= 1.2).

3. Sheet flow: This is an overland flow path which does not conform to the waterway definition (K=0.48).

Once the velocity is determined, the time of concentration is computed as:

$$T_c = L / V * 3600$$

where L is the length in feet of the particular flow path and the factor 3600 converts T_c from seconds to hours.

Table 2, includes the time of concentration calculation for the each sub-basin tributary to the Behan-Foley Drain. The above methodology is used for this calculation and these values are summarized in Table 3.

Hydrologic Computer Modeling

The Army Corps of Engineers (COE's) HEC-1 hydrologic computer model was used to analyze the Behan-Foley Drain's twelve tributary sub-basins. This model calculates flow rates at strategic locations throughout the drain, which allows the user to increase flow rates progressively downstream as more runoff actually enters the drain. Once these flow sets have been calculated with HEC-1 they are input into HEC-2 the COE's hydraulic profiling model.

An SCS Type rainfall distribution and an SCS Dimensionless Unit Hydrograph were used for this analysis. The Unit Hydrograph is defined as the surface runoff hydrograph resulting from one inch of excess rainfall generated uniformly over the drainage area at a constant rate for an effective time duration. The losses, or infiltration capacity, have been approximated using the SCS standard curve number loss rate methodology. This relies on the SCS curve number values as determined earlier in this report to calculate how much and at what rate runoff is lost due to infiltration and other abstractions.

Six storage routing nodes were modeled within the Behan-Foley Drain to account for peak flow attenuation within the basin. These six storage routing nodes were located at existing detention basins, storm sewer networks, and at locations where a culvert restrict flows underneath the abandoned Railroad right-of-way. If these storage routing nodes

Table 2 (Sheet 1 of 4)
Behan-Foley Drain Floodplain Analysis
UD-21 Time of Concentration Calculation

SUB-BASIN 100					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
1	0.7	2.1	1.7	1000	0.2
2	1.4	1.2	1.4	4350	0.9

TOTAL Tc 1.0

SUB-BASIN 200					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
3	0.6	0.48	0.4	1300	0.9
1	0.4	2.1	1.3	2600	0.5

TOTAL Tc 1.5

SUB-BASIN 300					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
3	0.4	0.48	0.3	2000	1.7
2	1.5	1.2	1.5	850	0.2
1	0.67	2.1	1.7	1750	0.3

TOTAL Tc 2.2

Table 2 (Sheet 2 of 4)
Behan-Foley Drain Floodplain Analysis
UD-21 Time of Concentration Calculation

SUB-BASIN 400					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
1.0	1.5	2.1	2.6	2150	0.2
2.0	1.0	1.20	1.2	2400	0.6
4.0	0.5	PIPE FLOW *	6.7	2700	0.1
				TOTAL Tc	0.9

SUB-BASIN 500					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
3	0.3	0.48	0.3	150	0.2
4	0.5	PIPE FLOW *	6.7	1450	0.1
1	0.66	2.1	1.7	3850	0.6
				TOTAL Tc	0.8

SUB-BASIN 600					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
2	0.5	1.2	0.8	3000	1.0
4	0.5	PIPE FLOW *	6.7	1400	0.1
1	0.5	2.1	1.5	1500	0.3
				TOTAL Tc	1.3

* ALL PIPES 36" @ .5%, VEL= 6.67 FT/SEC.

Table 2 (Sheet 3 of 4)
Behan-Foley Drain Floodplain Analysis
UD-21 Time of Concentration Calculation

SUB-BASIN 700					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
3.0	0.5	0.5	0.3	900	0.7
4.0	1.0	PIPE FLOW *	7.8	4750	0.2
				TOTAL Tc	0.9

SUB-BASIN 800					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
2	10.0	1.2	3.8	850	0.1
1	0.5	2.1	1.5	2300	0.4
				TOTAL Tc	0.5

SUB-BASIN 900					
Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
3	0.3	0.48	0.3	1200	1.3
4	1.0	PIPE FLOW *	9.4	3600	0.1
				TOTAL Tc	1.4

* SUB-BASIN 700: 27" PIPE @ 1.0 %, VEL=7.8 FT/SEC.
SUB-BASIN 900: 36" PIPE @ 1.0%, VEL=9.4 FT/SEC.

Table 2 (Sheet 4 of 4)
Behan-Foley Drain Floodplain Analysis
UD-21 Time of Concentration Calculation

SUB-BASIN 1000

Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
3.0	1.3	0.5	0.5	400	0.2
2.0	6.0	1.20	2.9	1200	0.1
1.0	0.5	2.1	1.5	3700	0.7

TOTAL Tc 1.0

SUB-BASIN 1100

Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
2	0.5	1.2	0.8	1500	0.5
1	0.5	2.1	1.5	1100	0.2

TOTAL Tc 0.7

SUB-BASIN 1200

Channel type	Slope (%)	Coeficient (K)	Velocity (ft/sec)	Length (ft)	Time of Conc. (hr)
3	0.5	0.48	0.3	900	0.7
2	0.5	1.2	0.8	900	0.3
1	0.4	2.1	1.3	2100	0.4

TOTAL Tc 1.5

were neglected, the peak flow rates would be overestimated, and flood profiles would also be incorrectly over predicted. A "stage-discharge-volume" rating curve is required for each storage routing node. This information is then input into HEC-1's modified Puls Routing option, which performs all of the necessary routing calculations in order to correctly model the peak shaving effects of each of these structures.

The "flow-elevation" portion of this rating curve was analyzed with the Integrated Drainage Design Computer System (HYDRAIN) computer program developed by the Federal Highway Administration. The HY8 block of this program was used to calculate a "head-discharge" table for each of the six storage routing nodes and each calculation is included in Appendix C. The volume portion of the rating curve was calculated by directly planimetering or digitizing in autocad the storage areas. These areas were then converted to storage volumes.

Flow Calculations

Table 3, summarizes each sub-basin's hydrologic data and includes information such as sub-basin weighted curve number, time of concentration (Tc), lag time, and area. The weighted curve numbers range from 53 for sub-basin 800 to 76 for sub-basin 100. The average WCN for the twelve basins without any area weighting is 67.9. This means that 67.9% of the total precipitation actually enters the drain as runoff. The remaining 32.1%, however, is lost due to infiltration and other abstractions.

Table 4 is a summary of flow rates for the Behan-Foley Drain, and includes flow rates for the 10-year, 50-year, 100-year, and 500-year frequency storms. The node identifiers shown in the table are used to determine the inflow locations within the drain. These identifiers are also shown on the enclosed floodplain and floodway work map. The flow rates listed to the right of the node identifier apply to the cross sections within that row only. Cross sections 0+00 thru 61+00 lie entirely within the City of Grandville while sections 70+00 thru 157+00 lie within the City of Wyoming.

At the confluence area of the Behan-Foley Drain and Buck Creek, the peak flow rates have been calculated as 364 cfs, 626 cfs, 743 cfs, and 930 cfs for the 10-year, 50-year, 100-year and 500-year frequency storms, respectively. The peak flow rates within the City of Wyoming occur at cross section 70+00 and are 190 cfs, 282 cfs, 324 cfs, and 391 cfs for the 10-year, 50-year, 100-year, and 500-year storms respectively.

IV - HYDRAULICS

Drain Description

The Behan-Foley drain is located within both the City of Grandville and the City of Wyoming. The portion of the drain within Wyoming lies in Sections 28 and 33, T6N, R12W, in Kent County Michigan. The drain is a total of 3.0 miles long beginning at the confluence of Buck Creek and running upstream in a southerly direction just past the abandoned railroad right-of-way south of 56th street in the City of Wyoming.

Table 3
Behan-Foley Drain Floodplain Analysis
Sub-Basin Summary

Sub-basin	SCS Weighted Curve Number	Time of Conc. (hr.)	Lag Time (hr.)	Area (acres)	Area (square/miles)
100	76	1.0	0.6	186	0.29
200	68	1.5	0.9	118	0.18
300	73	2.2	1.3	342	0.53
400	68	0.9	0.5	413	0.65
500	61	0.8	0.5	99	0.15
600	62	1.3	0.8	230	0.36
700	74	0.9	0.5	152	0.24
800	53	0.5	0.3	74	0.12
900	68	1.4	0.8	154	0.24
1000	73	1.0	0.6	148	0.23
1100	70	0.7	0.4	75	0.12
1200	69	1.5	0.9	92	0.14
			Total	2083	3.25

Table 4
Behan-Foley Drain Floodplain Analysis
Flow Rate Summary

Node Identifier	HEC-1 Flow Rates (cfs)				HEC-2 Cross Sections (Stationing in feet)
	10 year (3.9 in)	50 year (5.2 in)	100 year (5.75 in)	500 year (6.6 in)	
C1200	364	626	743	930	8
C1100	350	584	690	856	14, 17.85, 18.15, 19.20, 19.50, 21.0
C1000	361	580	682	840	23.7, 24.0, 24.45, 24.75, 26.0, 27.3, 27.60, 28.15, 28.45, 32.0, 37.0, 38.5, 43.5
C700	288	430	486	576	50.0, 52.5, 55.0
C500	193	293	341	417	61.0
C400	190	282	324	391	63.3, 65.5 *, 70.0, 79.5, 88.5, 94.0, 97.0, 98.0, 104.5, 109.0
C300	132	220	260	325	110.53, 110.83, 111.53, 111.83
DB200	38	52	63	85	115.50, 121.50, 125.80, 126.43
C200	78	115	131	159	126.83, 129.0 132.6, 136.2
DB100	48	55	60	68	140.0, 145.0, 151.0, 151.35, 151.73
100	123	205	241	299	152.0, 157.0

* First station inside Wyoming

The lower 1.3 miles of the drain is entirely within The City of Grandville, and runs from station 0+00, at the confluence of Buck Creek, to about station 64+50, the Grandville-Wyoming border. The remaining 1.7 miles of drain is located entirely within the City of Wyoming, and runs from about station 64+50, the Grandville-Wyoming border, south to station 157+00, the upper most part of the drain. Section 157+00 is south east of the intersection of 56th Street and the drain, and is located just east of the abandoned Railroad tracks.

Hydraulic Computer Modeling

The Army Corps of Engineers hydraulic computer model HEC-2 was used to determine flood profiles for the Behan-Foley drain analysis. This hydraulic model is accepted by the MDNR and FEMA floodplain regulating officials, and it calculates backwater effects that can be of vital importance in predicting flood stages. The HEC-2 model used also has the capability of calculating floodway encroachments. These floodway calculations are used to calculate allowable encroachments of future development within the floodplain.

A total of eight culverts, referred to in this report as bridges, were modeled with HEC-2 for this analysis. Four of these bridges, are located within the City of Grandville, while the remaining four bridges are located within the City of Wyoming. Since each of these road crossings are culverts, not traditional bridges, the special culvert method available in HEC-2 has been used to model seven of the eight culverts. The culvert located at 44th street in Grandville was modeled with the special bridge method rather then the special culvert method because of excessive siltation. The special bridge method was used because it allowed for direct input of the actual conveyance area available.

The special culvert method has the capability to compute energy losses at a roadway culvert crossing for a number of different flow conditions, including inlet control, outlet control flow, weir flow over the roadway, or any possible combination of these flow conditions. The Federal Highway Administrations culvert nomographs are used to calculated stage-elevation information at these bridges.

Theoretical encroachments within the vicinity of each bridge were modeled, where applicable, to reflect the natural expansion and contraction characteristics associated with low flows at bridge structures Typically the contraction of floodwaters occurs over a shorter length then its respective expansion. The expansion of floodwaters was modeled as a 1 on 4 expansion, whereas, the contraction of floodwaters was modeled at a 1 on 1 contraction. If road overtopping or weir flow dominates a bridge structure, then the effective weir flow length was used as the encroachment limits directly upstream and downstream from the bridge.

Flood Profiles

Several flood profiles have been calculated for the Behan-Foley Drain with the hydraulic computer model HEC-2. FEMA's mapping guidelines require that the 10-year, 50-year, 100-year, and 500-year flood profiles be calculated, and therefore, these profiles have been

Table 5 (Sheet 1 of 7)
Behan-Foley Drain Floodplain Analysis
Summary of Flood Profile Information

Profile Type	Section Number	Flow (cfs)	Water Elevation (ft)	Depth of Flow (ft)	Width of Flow (ft)	Energy Elevation (ft)	Mean Velocity (ft/sec)
10-year	8.00	364.00	631.98	2.78	300.73	631.99	1.06
50-year	8.00	626.00	633.12	3.92	342.59	633.13	1.14
100-year	8.00	743.00	633.70	4.50	362.11	633.71	1.12
500-year	8.00	930.00	635.00	5.80	408.33	635.01	1.01
10-year	14.00	350.00	634.18	1.68	196.18	634.50	6.72
50-year	14.00	584.00	634.45	1.95	210.12	634.83	7.81
100-year	14.00	688.00	634.58	2.08	210.47	634.96	7.89
500-year	14.00	856.00	635.13	2.63	211.91	635.33	5.99
10-year	17.85	350.00	637.18	4.08	96.23	637.26	2.78
50-year	17.85	584.00	637.94	4.84	109.78	638.05	3.32
100-year	17.85	688.00	638.18	5.08	114.20	638.30	3.55
500-year	17.85	856.00	638.32	5.22	116.61	638.49	4.20
10-year	18.15	350.00	637.27	4.17	97.90	637.34	2.66
50-year	18.15	584.00	638.04	4.94	111.84	638.14	3.17
100-year	18.15	688.00	638.30	5.20	116.34	638.41	3.40
500-year	18.15	856.00	638.48	5.38	119.47	638.63	3.97
10-year	19.20	350.00	639.46	6.11	118.00	639.48	1.23
50-year	19.20	584.00	639.84	6.49	118.00	639.87	1.87
100-year	19.20	688.00	639.96	6.61	118.00	640.00	2.15
500-year	19.20	856.00	640.21	6.86	118.00	640.27	2.53
10-year	19.50	350.00	639.47	6.07	193.92	639.51	1.86
50-year	19.50	584.00	639.86	6.46	215.36	639.93	2.74
100-year	19.50	688.00	639.98	6.58	221.68	640.07	3.10
500-year	19.50	856.00	640.23	6.83	234.52	640.35	3.54
10-year	21.00	350.00	639.54	5.94	149.18	639.57	1.41
50-year	21.00	584.00	639.98	6.38	191.49	640.05	2.06
100-year	21.00	688.00	640.14	6.54	195.46	640.21	2.32
500-year	21.00	856.00	640.43	6.83	201.47	640.53	2.65
10-year	23.70	361.00	639.72	5.42	134.35	639.96	4.13
50-year	23.70	580.00	640.30	6.00	142.78	640.63	5.15
100-year	23.70	682.00	640.51	6.21	145.86	640.88	5.55
500-year	23.70	840.00	640.87	6.57	150.00	641.26	5.94

Table 5 (Sheet 2 of 7)
Behan-Foley Drain Floodplain Analysis
Summary of Flood Profile Information

Profile Type	Section Number	Flow (cfs)	Water Elevation (ft)	Depth of Flow (ft)	Width of Flow (ft)	Energy Elevation (ft)	Mean Velocity (ft/sec)
10-year	24.00	361.00	639.81	5.51	135.65	640.18	6.39
50-year	24.00	580.00	640.43	6.13	144.61	640.86	7.57
100-year	24.00	682.00	640.66	6.36	147.91	641.12	8.01
500-year	24.00	840.00	641.02	6.72	150.00	641.48	8.38
10-year	24.45	361.00	639.84	5.54	104.00	840.37	7.20
50-year	24.45	580.00	640.27	5.97	104.00	641.11	9.55
100-year	24.45	682.00	641.00	6.70	150.00	641.31	6.86
500-year	24.45	840.00	641.03	6.73	150.00	641.48	8.35
10-year	24.75	361.00	640.54	5.64	97.49	640.70	3.52
50-year	24.75	580.00	641.44	6.54	150.00	641.63	4.03
100-year	24.75	682.00	641.13	6.23	150.00	641.48	5.32
500-year	24.75	840.00	641.21	6.31	150.00	641.70	6.34
10-year	26.00	361.00	640.84	5.44	198.92	640.92	2.73
50-year	26.00	580.00	641.77	6.37	209.36	641.84	2.89
100-year	26.00	682.00	641.71	6.31	208.94	641.81	3.47
500-year	26.00	840.00	642.00	6.60	211.20	642.11	3.82
10-year	27.30	361.00	641.07	5.27	56.69	641.18	2.69
50-year	27.30	580.00	641.96	6.16	71.70	642.10	3.08
100-year	27.30	682.00	641.99	6.19	72.58	642.19	3.59
500-year	27.30	840.00	642.30	6.50	82.51	642.55	4.00
10-year	27.60	361.00	641.14	5.34	59.50	641.25	2.69
50-year	27.60	580.00	642.03	6.23	84.28	642.19	3.24
100-year	27.60	682.00	642.08	6.28	86.45	642.29	3.76
500-year	27.60	840.00	642.40	6.60	95.22	642.67	4.21
10-year	28.15	361.00	644.11	7.67	90.00	644.13	1.26
50-year	28.15	580.00	644.63	8.19	90.00	644.68	1.82
100-year	28.15	682.00	644.80	8.36	90.00	644.86	2.08
500-year	28.15	840.00	645.01	8.57	90.00	645.09	2.47
10-year	28.45	361.00	644.10	7.40	62.49	644.23	2.96
50-year	28.45	580.00	644.61	7.91	78.80	644.86	4.25
100-year	28.45	682.00	644.77	8.07	82.18	645.09	4.82
500-year	28.45	840.00	644.97	8.27	85.67	645.40	5.68

Table 5 (Sheet 3 of 7)
Behan-Foley Drain Floodplain Analysis
Summary of Flood Profile Information

Profile Type	Section Number	Flow (cfs)	Water Elevation (ft)	Depth of Flow (ft)	Width of Flow (ft)	Energy Elevation (ft)	Mean Velocity (ft/sec)
10-year	32.00	361.00	644.41	6.81	139.34	644.44	1.69
50-year	32.00	580.00	645.16	7.56	163.75	645.21	2.23
100-year	32.00	682.00	645.44	7.84	172.92	645.50	2.44
500-year	32.00	840.00	645.83	8.23	185.76	645.91	2.73
10-year	37.00	361.00	644.77	5.32	36.31	644.87	3.06
50-year	37.00	580.00	645.68	6.23	37.78	645.87	4.11
100-year	37.00	682.00	646.03	6.58	38.34	646.26	4.55
500-year	37.00	840.00	646.51	7.06	39.13	646.82	5.18
10-year	38.50	361.00	647.57	7.47	15.00	647.76	3.50
50-year	38.50	580.00	650.72	10.62	101.59	650.81	2.80
100-year	38.50	682.00	650.88	10.78	105.00	650.99	3.18
500-year	38.50	840.00	651.05	10.95	105.00	651.22	3.77
10-year	43.50	361.00	648.43	6.03	219.73	648.45	1.99
50-year	43.50	580.00	650.99	8.59	421.40	651.00	1.24
100-year	43.50	682.00	651.21	8.81	421.75	651.21	1.37
500-year	43.50	840.00	651.48	9.08	422.19	651.49	1.56
10-year	50.00	288.00	649.22	2.92	241.24	649.30	3.06
50-year	50.00	430.00	651.12	4.82	281.71	651.14	1.46
100-year	50.00	486.00	651.35	5.05	299.22	651.37	1.51
500-year	50.00	576.00	651.66	5.36	338.59	651.67	1.61
10-year	52.50	288.00	650.22	2.92	241.26	650.29	3.06
50-year	52.50	430.00	651.27	3.97	263.56	651.30	2.16
100-year	52.50	486.00	651.50	4.20	268.38	651.52	2.18
500-year	52.50	576.00	651.80	4.50	274.79	651.83	2.24
10-year	55.00	288.00	651.60	3.20	125.35	652.07	5.75
50-year	55.00	430.00	652.03	3.63	223.18	652.48	6.12
100-year	55.00	486.00	652.11	3.71	229.44	652.59	6.45
500-year	55.00	576.00	652.26	3.86	230.67	652.75	6.69
10-year	61.00	193.00	654.03	3.33	182.94	654.06	1.76
50-year	61.00	293.00	654.47	3.77	185.62	654.51	2.04
100-year	61.00	341.00	654.65	3.95	187.08	654.69	2.16
500-year	61.00	417.00	654.88	4.18	189.02	654.93	2.36

Table 5 (Sheet 4 of 7)
Behan-Foley Drain Floodplain Analysis
Summary of Flood Profile Information

Profile Type	Section Number	Flow (cfs)	Water Elevation (ft)	Depth of Flow (ft)	Width of Flow (ft)	Energy Elevation (ft)	Mean Velocity (ft/sec)
10-year	63.30	190.00	654.41	2.71	73.92	654.53	3.05
50-year	63.30	282.00	654.86	3.16	101.98	655.01	3.52
100-year	63.30	324.00	655.04	3.34	102.98	655.20	3.67
500-year	63.30	391.00	655.29	3.59	104.37	655.46	3.90
10-year	65.50	190.00	655.74	3.04	58.73	656.20	6.15
50-year	65.50	282.00	656.20	3.50	80.91	656.72	6.91
100-year	65.50	324.00	656.37	3.67	99.37	656.90	7.16
500-year	65.50	391.00	656.61	3.91	100.16	657.15	7.42
10-year	70.00	190.00	658.59	3.99	90.41	658.73	3.68
50-year	70.00	282.00	659.14	4.54	92.22	659.28	4.07
100-year	70.00	324.00	659.35	4.75	92.89	659.50	4.24
500-year	70.00	391.00	659.63	5.03	93.81	659.80	4.52
10-year	79.50	190.00	662.85	5.75	21.89	663.29	5.59
50-year	79.50	282.00	663.58	6.48	26.80	664.17	6.88
100-year	79.50	324.00	663.87	6.77	45.39	664.51	7.03
500-year	79.50	391.00	664.29	7.19	63.63	664.95	7.39
10-year	88.50	190.00	667.56	5.16	22.86	667.74	3.60
50-year	88.50	282.00	668.50	6.10	39.86	668.73	4.08
100-year	88.50	324.00	668.85	6.45	47.16	669.10	4.27
500-year	88.50	391.00	669.31	6.91	62.23	669.58	4.55
10-year	94.00	190.00	669.90	4.40	44.78	670.07	3.37
50-year	94.00	282.00	670.59	5.09	54.35	670.78	3.54
100-year	94.00	324.00	670.86	5.36	61.57	671.05	3.62
500-year	94.00	391.00	671.25	5.75	70.00	671.45	3.74
10-year	97.00	190.00	671.80	3.73	11.00	672.18	5.01
50-year	97.00	282.00	672.46	4.39	11.00	673.07	6.33
100-year	97.00	324.00	672.69	4.62	11.00	673.42	6.90
500-year	97.00	391.00	673.03	4.96	11.00	673.95	7.77
10-year	98.00	190.00	672.41	3.91	11.00	672.76	4.77
50-year	98.00	282.00	673.38	4.88	11.00	673.87	5.68
100-year	98.00	324.00	673.81	5.31	11.00	674.36	6.00
500-year	98.00	391.00	674.62	6.12	11.00	675.22	6.29

Table 5 (Sheet 5 of 7)
Behan-Foley Drain Floodplain Analysis
Summary of Flood Profile Information

Profile Type	Section Number	Flow (cfs)	Water Elevation (ft)	Depth of Flow (ft)	Width of Flow (ft)	Energy Elevation (ft)	Mean Velocity (ft/sec)
10-year	104.50	190.00	674.90	5.10	17.43	675.03	2.88
50-year	104.50	282.00	676.11	6.31	19.46	676.27	3.19
100-year	104.50	324.00	676.61	6.81	20.29	676.78	3.30
500-year	104.50	391.00	677.39	7.59	21.60	677.57	3.42
10-year	109.00	190.00	675.34	5.34	48.97	675.37	1.44
50-year	109.00	282.00	676.55	6.55	56.00	676.59	1.61
100-year	109.00	324.00	677.05	7.05	58.88	677.09	1.68
500-year	109.00	391.00	677.82	7.82	63.36	677.86	1.76
10-year	110.53	132.00	675.41	5.11	54.70	675.43	1.08
50-year	110.53	220.00	676.62	6.32	68.00	676.64	1.32
100-year	110.53	260.00	677.12	6.82	68.00	677.14	1.39
500-year	110.53	325.00	677.89	7.59	68.00	677.91	1.50
10-year	110.83	132.00	675.42	5.02	52.69	675.45	1.61
50-year	110.83	220.00	676.63	6.23	68.00	676.66	1.92
100-year	110.83	260.00	677.12	6.72	68.00	677.16	2.02
500-year	110.83	325.00	677.89	7.49	68.00	677.93	2.15
10-year	111.53	132.00	675.67	5.17	63.47	675.70	1.54
50-year	111.53	220.00	677.35	6.85	68.00	677.37	1.66
100-year	111.53	260.00	677.87	7.37	68.00	677.90	1.76
500-year	111.53	325.00	678.33	7.83	68.00	678.37	2.02
10-year	111.83	132.00	675.70	5.10	58.99	675.71	0.85
50-year	111.83	220.00	677.37	6.77	68.00	677.38	0.95
100-year	111.83	260.00	677.89	7.29	68.00	677.91	1.02
500-year	111.83	325.00	678.36	7.76	68.00	678.38	1.17
10-year	115.50	38.00	675.72	5.32	178.01	675.72	0.19
50-year	115.50	52.00	677.40	7.00	190.00	677.40	0.15
100-year	115.50	63.00	677.92	7.52	190.00	677.92	0.17
500-year	115.50	85.00	678.40	8.00	190.00	678.40	0.20
10-year	121.50	38.00	675.73	5.63	36.22	675.73	0.46
50-year	121.50	52.00	677.40	7.30	47.86	677.40	0.41
100-year	121.50	63.00	677.92	7.82	51.05	677.92	0.44
500-year	121.50	85.00	678.40	8.30	54.34	678.40	0.54

Table 5 (Sheet 6 of 7)
Behan-Foley Drain Floodplain Analysis
Summary of Flood Profile Information

Profile Type	Section Number	Flow (cfs)	Water Elevation (ft)	Depth of Flow (ft)	Width of Flow (ft)	Energy Elevation (ft)	Mean Velocity (ft/sec)
10-year	121.50	38.00	675.73	5.63	36.22	675.73	0.46
50-year	121.50	52.00	677.40	7.30	47.86	677.40	0.41
100-year	121.50	63.00	677.92	7.82	51.05	677.92	0.44
500-year	121.50	85.00	678.40	8.30	54.34	678.40	0.54
10-year	125.80	38.00	675.76	4.95	3.00	675.86	2.57
50-year	125.80	52.00	677.41	6.60	235.00	677.41	0.28
100-year	125.80	63.00	677.93	7.12	235.00	677.93	0.28
500-year	125.80	85.00	678.41	7.60	235.00	678.41	0.32
10-year	126.43	38.00	676.45	4.58	202.68	676.45	0.28
50-year	126.43	52.00	677.41	5.54	235.00	677.41	0.26
100-year	126.43	63.00	677.93	6.06	235.00	677.93	0.26
500-year	126.43	85.00	678.41	6.54	235.00	678.41	0.30
10-year	126.83	78.00	676.46	4.46	235.00	676.46	0.42
50-year	126.83	115.00	677.42	5.42	235.00	677.42	0.41
100-year	126.83	131.00	677.94	5.94	235.00	677.94	0.40
500-year	126.83	159.00	678.42	6.42	235.00	678.42	0.42
10-year	129.00	78.00	676.48	3.98	150.75	676.48	0.68
50-year	129.00	115.00	677.43	4.93	178.04	677.43	0.66
100-year	129.00	131.00	677.95	5.45	185.54	677.95	0.62
500-year	129.00	159.00	678.43	5.93	194.15	678.43	0.65
10-year	132.60	78.00	676.45	2.35	33.50	676.70	4.09
50-year	132.60	115.00	677.43	3.33	42.25	677.55	3.05
100-year	132.60	131.00	677.95	3.85	46.80	678.04	2.70
500-year	132.60	159.00	678.43	4.33	50.00	678.51	2.67
10-year	136.20	78.00	678.29	2.59	28.09	678.34	1.86
50-year	136.20	115.00	678.59	2.89	34.14	678.67	2.27
100-year	136.20	131.00	678.78	3.08	42.73	678.87	2.33
500-year	136.20	159.00	679.11	3.41	58.19	679.20	2.38
10-year	140.00	48.00	679.32	1.92	21.83	679.38	1.89
50-year	140.00	55.00	679.65	2.25	24.83	679.69	1.67
100-year	140.00	60.00	679.77	2.37	26.00	679.81	1.67
500-year	140.00	68.00	679.97	2.57	27.92	680.02	1.64

Table 5 (Sheet 7 of 7)
Behan-Foley Drain Floodplain Analysis
Summary of Flood Profile Information

Profile Type	Section Number	Flow (cfs)	Water Elevation (ft)	Depth of Flow (ft)	Width of Flow (ft)	Energy Elevation (ft)	Mean Velocity (ft/sec)
10-year	145.00	48.00	680.68	3.18	26.32	680.74	2.03
50-year	145.00	55.00	680.79	3.29	26.66	680.86	2.18
100-year	145.00	60.00	680.88	3.38	26.93	680.96	2.26
500-year	145.00	68.00	681.02	3.52	27.34	681.10	2.38
10-year	151.00	48.00	681.75	2.35	20.25	681.79	1.47
50-year	151.00	55.00	681.91	2.51	20.86	681.95	1.53
100-year	151.00	60.00	682.02	2.62	21.27	682.06	1.58
500-year	151.00	68.00	682.17	2.77	21.70	682.21	1.64
10-year	151.35	48.00	683.27	3.04	3.00	683.70	5.27
50-year	151.35	55.00	683.45	3.22	3.00	683.95	5.69
100-year	151.35	60.00	683.57	3.34	3.00	684.13	5.98
500-year	151.35	68.00	683.75	3.52	3.00	684.39	6.44
10-year	151.73	48.00	684.77	4.10	3.00	685.01	3.90
50-year	151.73	55.00	685.52	4.85	3.00	685.74	3.78
100-year	151.73	60.00	686.09	5.42	3.00	686.30	3.69
500-year	151.73	68.00	687.06	6.39	3.00	687.25	3.55
10-year	152.00	123.00	684.99	3.19	36.59	685.18	3.71
50-year	152.00	205.00	685.65	3.85	44.75	685.88	4.20
100-year	152.00	241.00	686.22	4.42	50.00	686.40	3.80
500-year	152.00	299.00	687.21	5.41	50.00	687.34	3.29
10-year	157.00	123.00	686.36	1.86	198.46	686.37	1.18
50-year	157.00	205.00	686.87	2.37	210.91	686.88	1.35
100-year	157.00	241.00	687.15	2.65	217.65	687.17	1.34
500-year	157.00	299.00	687.77	3.27	243.25	687.78	1.23

determined using HEC-2's multiple profile option. A summary of results for each of these profiles is provided in table 5. Four profiles have been calculated for each field surveyed cross-section and important information regarding each these profiles is summarized in the table.. The following information was included in the table; the cross-section number, the flow rate as calculated in HEC-1, the computed water surface elevation, the depth of flow within the channel, the width of the channel, the energy grade line, and the channels mean velocity.

The 100-year flood profile is the most significant output in terms of State and local regulatory restrictions on development. The 100-year flood elevations, which make up the 100 year flood profile, are referred to as the base flood elevations (BFE's). Current State floodplain regulations apply only to those areas within the BFE, and not to areas outside of the 100 year floodplain.

A visual representation of the 10-year, 50-year, 100-year, and 500-year flood profiles is included in Appendix D of this report. These four profile sheets cover the entire drain length, beginning at station 8+00, and proceeding south to station 157+00. Each field surveyed cross-section is clearly identified with a marker and the station or section number on the profile sheet.

The starting water surface elevations needed to begin each of these profiles was taken from the COE's latest HEC-2 version for Buck Creek. CDM received this information directly from the Detroit COE's office who performed the latest revision to Wyoming's FIS. The station in the Buck Creek profile that was used for starting water surface elevations is station 5+00. The Behan-Foley/Buck Creek confluence lies approximately 700' downstream from section 12+35, the abandoned Railroad right-of-way.

The starting water surface elevations used are 631.98, 633.12, 633.70, and 635.0, for the 10-year, 50-year, 100-year, and 500-year flood profiles, respectively.

Floodway Calculation

Program regulations require structures to be protected to the BFE. If flood waters are obstructed and the BFE heights are significantly increased, these structures would no longer be protected from the base flood, a primary objective of floodplain management. To avoid this possibility a portion of the floodplain called the floodway must be kept free of obstructions. The floodway boundary is determined by "squeezing in" the floodplain boundary on the computer until the base flood is raised a specified amount. This amount or distance is regulated by both State and Federal floodway statutes. While a maximum value of 1.0' is allowed by FEMA for floodway acknowledgment in the NFIP, Michigan's floodway statute is more stringent and allows only a 0.1' increase in established BFE for a floodway determination.

Therefore, as mandated by State statute, the floodway for the Behan-Foley drain uses an increase of 0.1' in BFE. This simulates the effect of building a wall from both sides of the floodplain toward the center of the drain. When this imaginary obstruction has blocked

the flood flow enough to raise the BFE 0.1' as required, the limits of the obstruction define the boundary of the floodway and the boundary between the floodway and the fringe areas of the floodplain. The fringe areas outside the floodway serve primarily as storage areas for floodwaters and can be filled in or otherwise obstructed without causing more than a 0.1' rise in the BFE upstream. The States "harmful interference criteria" however, is most stringent, and must always be assured with a permit prior to any filling within the floodplain.

A floodway calculation has been performed for the entire length of the Behan-Foley drain. Encroachment methods 1 and 4, available in HEC-2, were utilized for calculation purposes. Table 6, summarizes the results of the floodway calculation and includes information needed to properly regulate the floodway. This information includes; the identifying station, the width of the floodway, the floodway section area, the mean velocity of the floodway, the water surface elevation with the floodway and without, and the difference in elevation between the floodway and the natural BFE.

Mapping

The intent of this study is to produce all maps required for adoption of the Behan-Foley drain into the City's existing effective FIS. The mapping products required by FEMA for adopting of the drain have been produced, and include delineation of the 100-year floodplain boundary and floodway. Normally, this "work map" also includes the delineation of the 500-year floodplain as well, however, because the 100-year and 500-year floodplains vary in elevation by less then 1', and since a two foot contour map is used for mapping purposes, for all practical purposes the 500-year boundary can be assumed coincident or slightly above the mapped 100-year boundary. In terms of regulating the floodplain, however, the actual elevations are always used, not the map products, and these elevations are taken from the profiles calculated and documented as previously described.

Three maps or "work maps" have been produced for the drain and are enclosed in Appendix E. The floodway and floodplain have been clearly defined on these three maps as well as the location of each field surveyed cross-section.

The three topographic maps used for mapping of the drain vary in age significantly, but all maps have been aerial surveyed, using 1"=200', 2' contour interval maps The first map, sheet #1 (Section 21 - Grandville), is entirely within the City of Grandville and was flown in December of 1959 and mapped in July of 1960. Sheet #2 (Section 28 - Wyoming), lies within both the Cities of Grandville and Wyoming and was flown in March of 1976 and mapped in February of 1977. Sheet #3 (Section 33 - Wyoming), is entirely within Wyoming and was flown and mapped in April of 1992 for purposes of this study.

V - Conclusions & Recommendations

Based on the extensive hydrologic and hydraulic analysis performed for the Behan-Foley Drain, it appears that no more then a few structures within the City of Wyoming's limits

Table 6 (Sheet 1 of 2)
Behan-Foley Drain Floodplain Analysis
Floodway Calculation Data

	Floodway			Water Surface Elevation (ft.)		
Station Number	Width (ft.)	Area (ft^2)	Velocity (ft/sec)	With Floodway	Without Floodway	Difference
8	274	1001	0.7	633.7	633.7	0.0
14	157	172	4.0	634.6	634.6	0.0
17.85	116	327	2.1	638.3	638.2	0.1
18.15	118	341	2.0	638.4	638.3	0.1
19.2	118	524	1.3	640.0	640.0	0.0
19.5	118	343	2.0	640.0	640.0	0.0
21	90	336	2.1	640.2	640.2	0.0
23.7	147	272	2.5	640.6	640.6	0.0
24	149	291	2.3	640.7	640.7	0.0
24.45	149	292	2.3	640.7	640.7	0.0
24.75	150	208	3.3	640.9	640.9	0.0
26	171	436	1.6	641.6	641.6	0.0
27.3	71	189	3.6	641.9	641.9	0.0
27.6	85	201	3.4	642.0	642.0	0.0
28.15	90	418	1.6	644.8	644.8	0.0
28.45	82	218	3.1	644.8	644.8	0.0
32	111	475	1.4	645.4	645.4	0.0
37	37	205	3.3	646.0	646.0	0.0
38.5	105	316	2.2	650.9	650.9	0.0
43.5	334	1313	0.5	651.2	651.2	0.0
50	233	742	0.7	651.4	651.4	0.0
52.5	217	516	0.9	651.5	651.5	0.0
55	153	150	3.2	652.2	652.1	0.1
61	188	357	1.0	654.8	654.7	0.1

Table 6 (Sheet 2 of 2)
Behan-Foley Drain Floodplain Analysis
Floodway Calculation Data

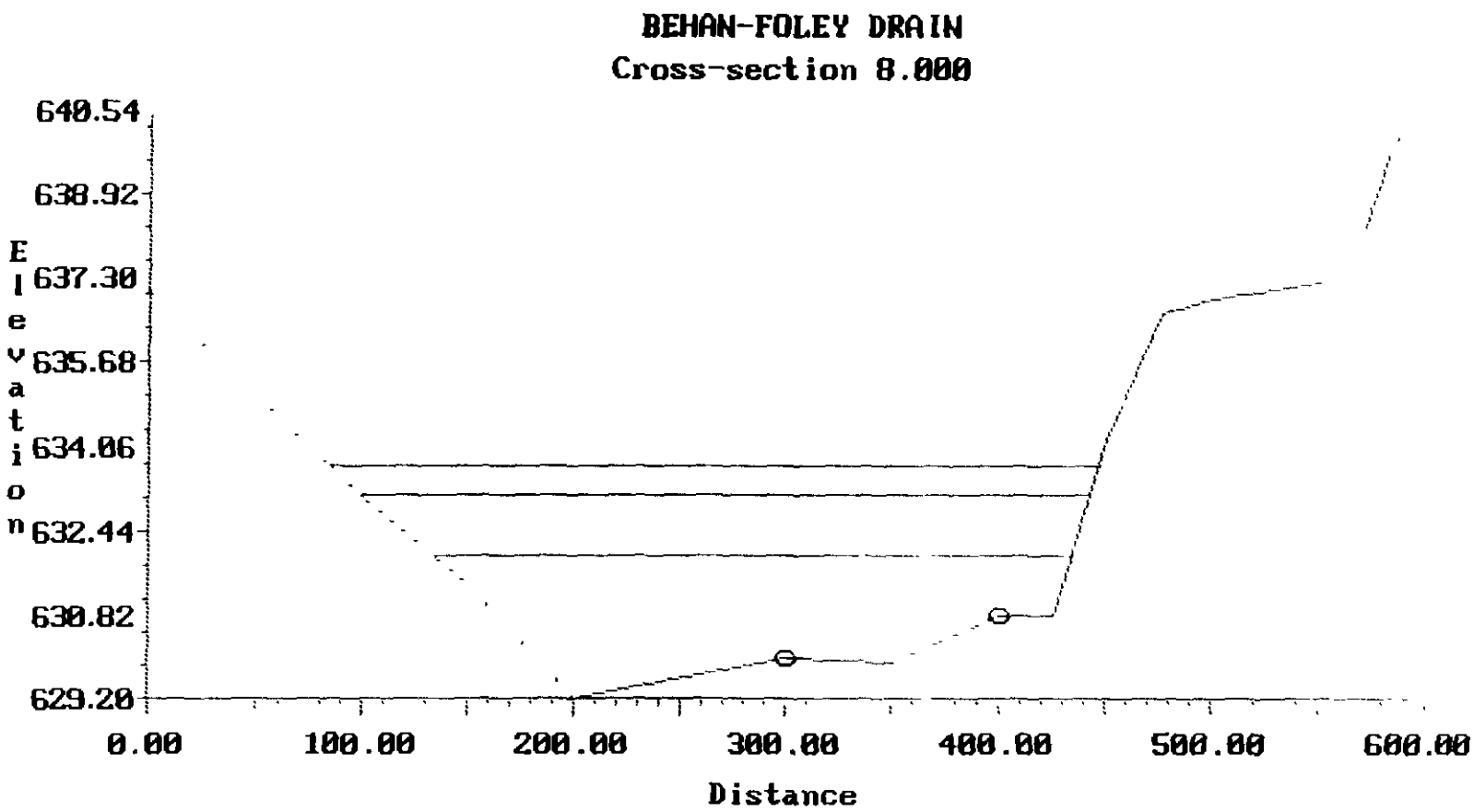
	Floodway			Water Surface Elevation (ft.)		
Station Number	Width (ft.)	Area (ft^2)	Velocity (ft/sec)	With Floodway	Without Floodway	Difference
63.3	103	149	2.2	655.0	655.0	0.0
65.5	89	89	3.7	656.4	656.4	0.0
70	93	197	1.6	659.4	659.4	0.0
79.5	33	70	4.6	663.8	663.8	0.0
88.5	22	94	3.5	669.0	668.9	0.1
94	42	96	3.4	671.0	670.9	0.1
97	11	51	6.3	672.7	672.7	0.0
98	11	58	5.5	673.8	673.8	0.0
104.5	20	98	3.3	676.6	676.6	0.0
109	41	220	1.5	677.0	677.0	0.0
110.53	68	282	0.9	677.1	677.1	0.0
110.83	68	272	1.0	677.1	677.1	0.0
111.53	68	315	0.8	677.9	677.9	0.0
111.83	68	329	0.8	677.9	677.9	0.0
115.5	60	345	0.2	677.9	677.9	0.0
121.5	37	181	0.3	677.9	677.9	0.0
125.8	80	433	0.1	677.9	677.9	0.0
126.43	80	419	0.2	677.9	677.9	0.0
126.83	80	296	0.4	677.9	677.9	0.0
129	80	259	0.5	677.9	677.9	0.0
132.6	48	92	1.4	678.1	678.0	0.1
136.2	29	57	2.3	678.8	678.8	0.0
140	26	36	1.7	679.8	679.8	0.0
145	11	26	2.3	681.0	680.9	0.1
151	22	40	1.5	682.1	682.0	0.1
151.35	3	7	8.7	682.5	682.5	0.0
151.73	3	12	5.1	684.6	684.6	0.0
152	20	33	7.4	685.1	685.0	0.1
157	218	382	0.6	687.2	687.1	0.1

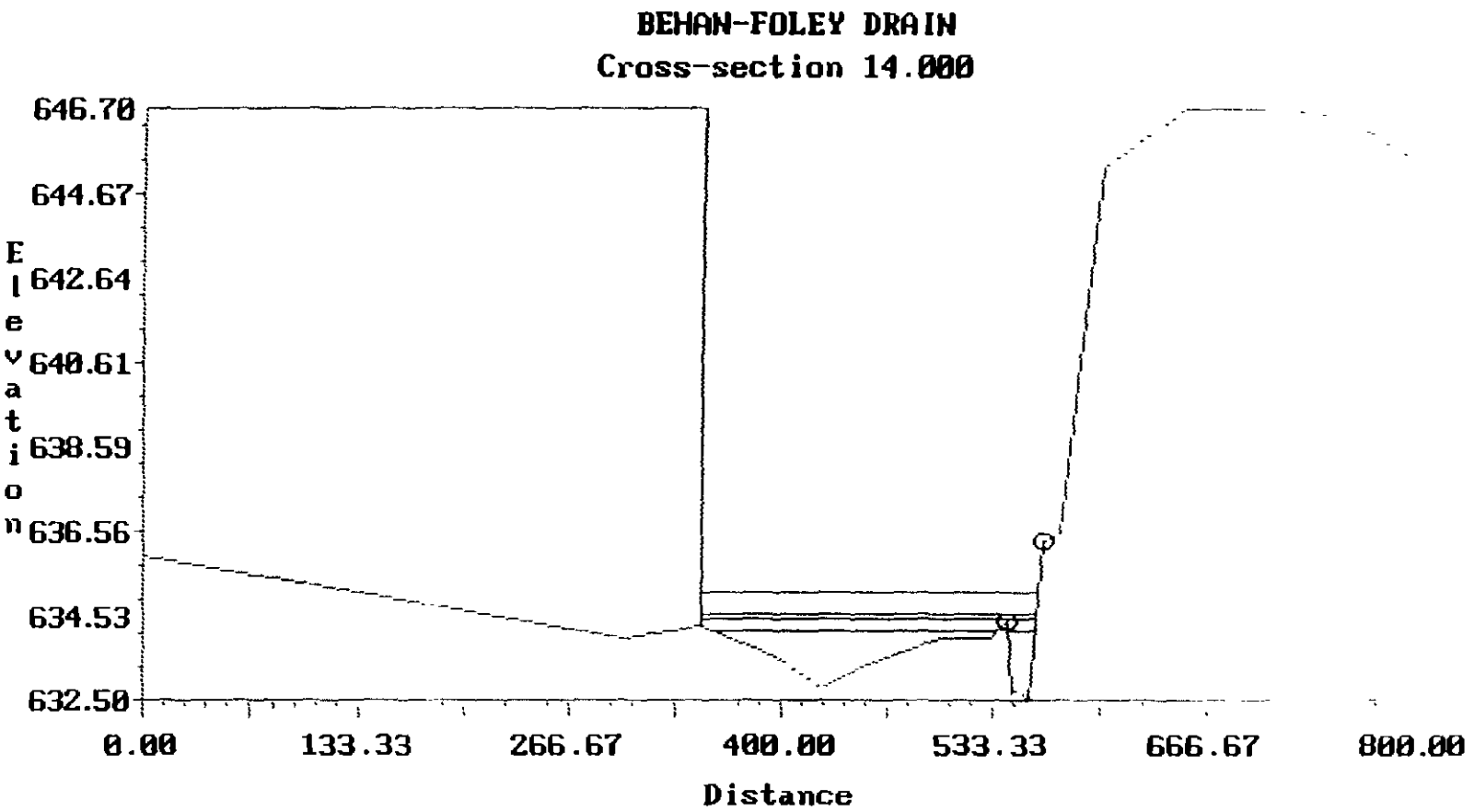
are currently located within the 100 year delineated floodplain. This judgement is based solely on the accuracy of the aerial topographic maps used for mapping as discussed earlier in this report. Actual elevation certifications for these structures would be needed to verify the structures floodplain status. If these structures, based on a formal elevation certificate, fall within the BFE as identified on the proposed FIRM map, then they will be subject to the mandatory purchase of flood insurance guidelines, as discussed earlier in this report.

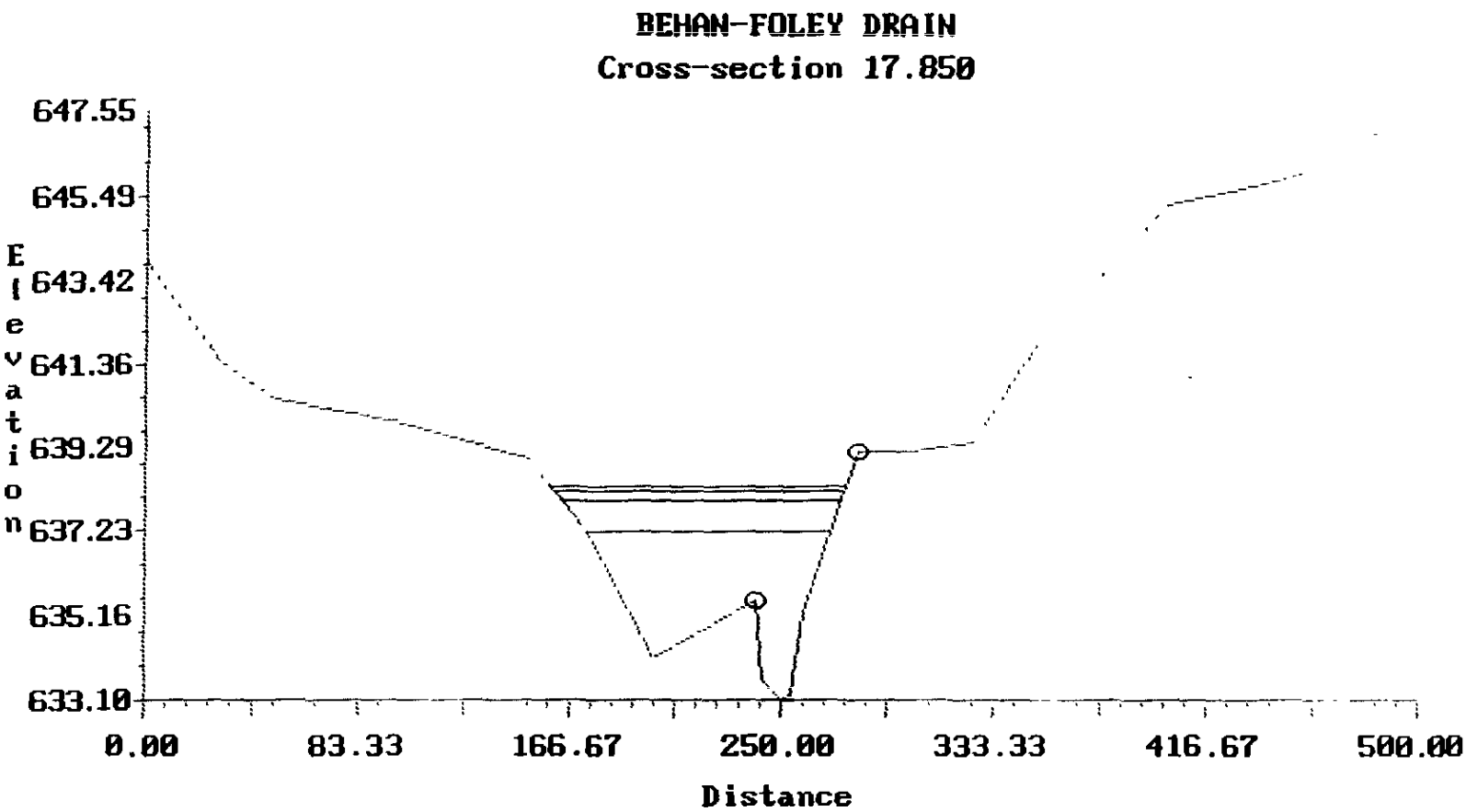
The City of Wyoming's floodplain regulating officials are now provided with the information necessary to properly regulate and enforce floodplain construction on the Behan-Foley Drain. This will ensure that future development does not occur in flood prone areas subject to flooding during the 100 year storm event. It is a report recommendation that the City review this draft report so that any possible discrepancies can be addressed prior to final FEMA submittal. Final FEMA submittal will commence as soon as MDNR hydraulic approval is granted.

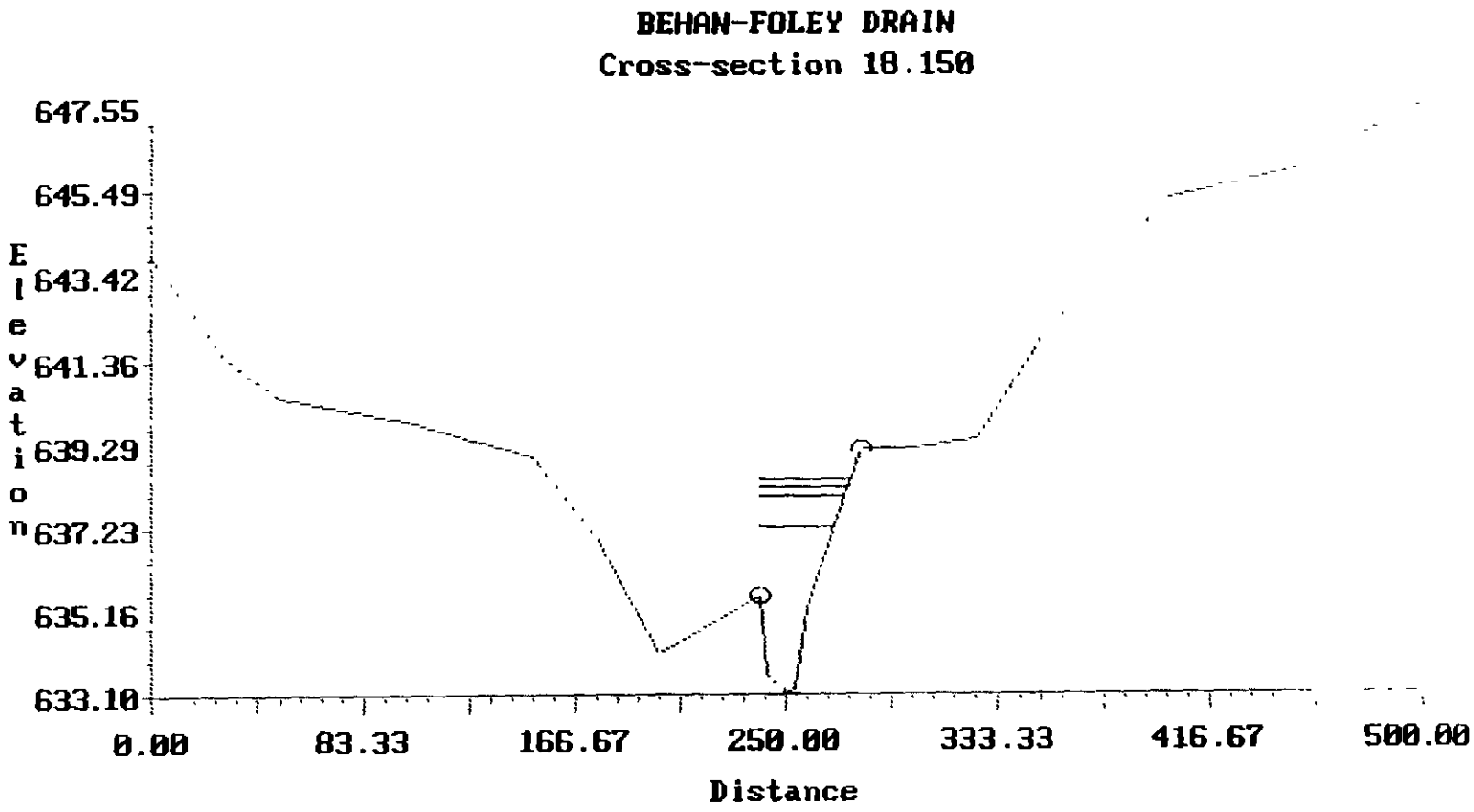
Appendix A

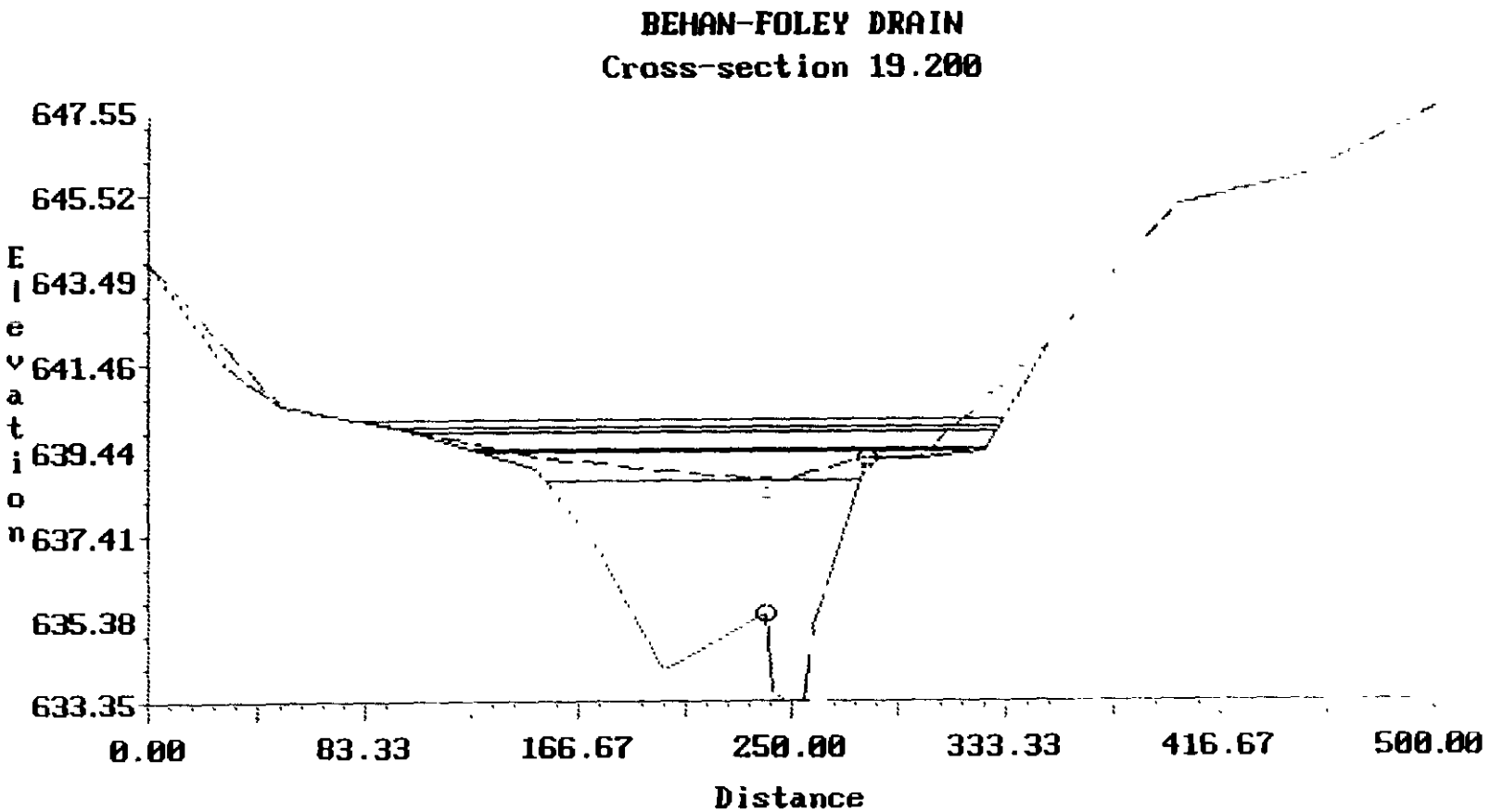
Field surveyed cross sections for the entire 3.0 mile reach of the Behan-Foley Drain. Cross sections also show the 10, 50, 100, and 500 year storm elevations and bridge and encroachment geometry.

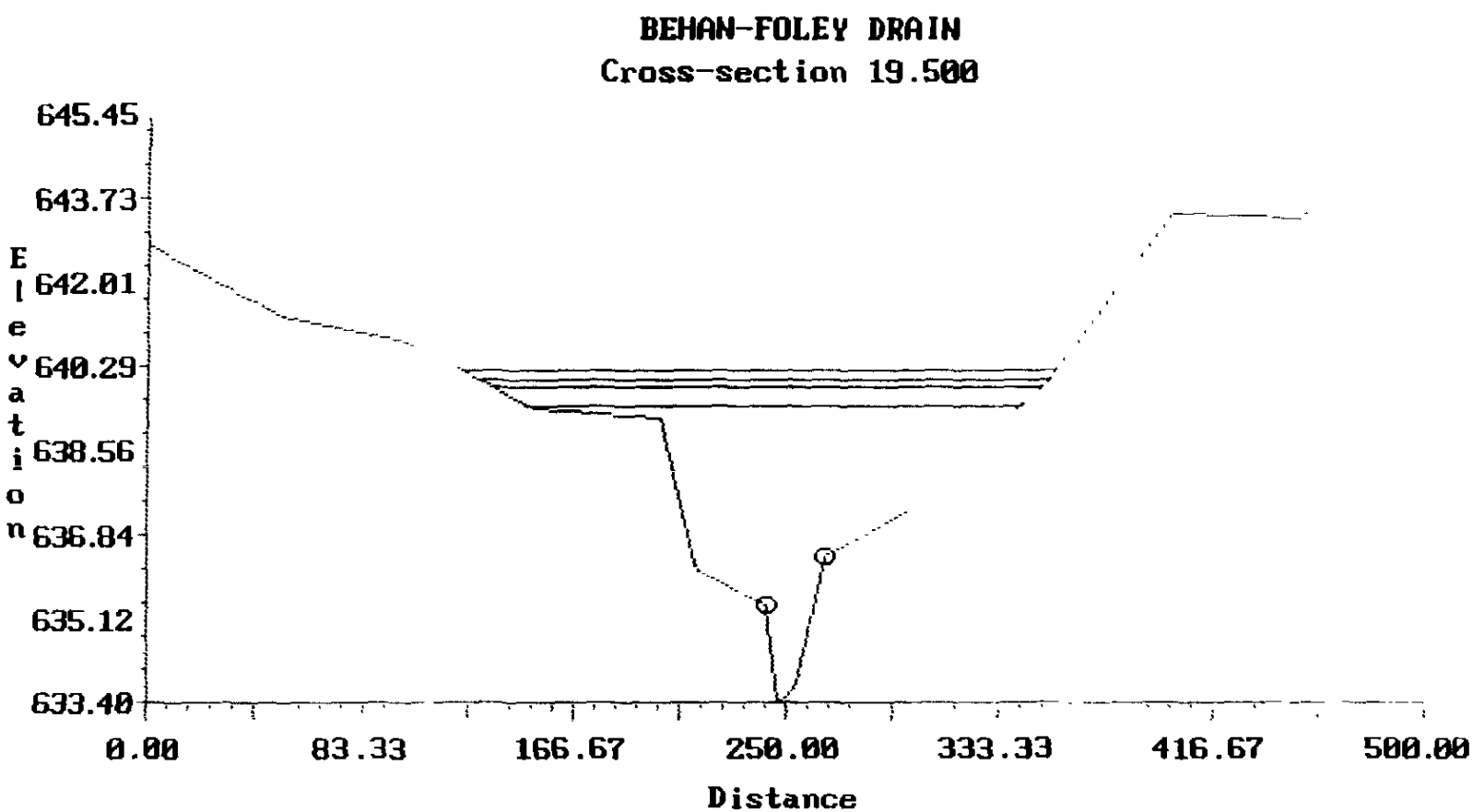

BEHAN-FOLEY DRAIN
Cross-section 8.000
640.54
638.92
637.30
635.68
634.06
632.44
630.82
629.20
Elevation
0.00
100.00
200.00
300.00
400.00
500.00
600.00
Distance

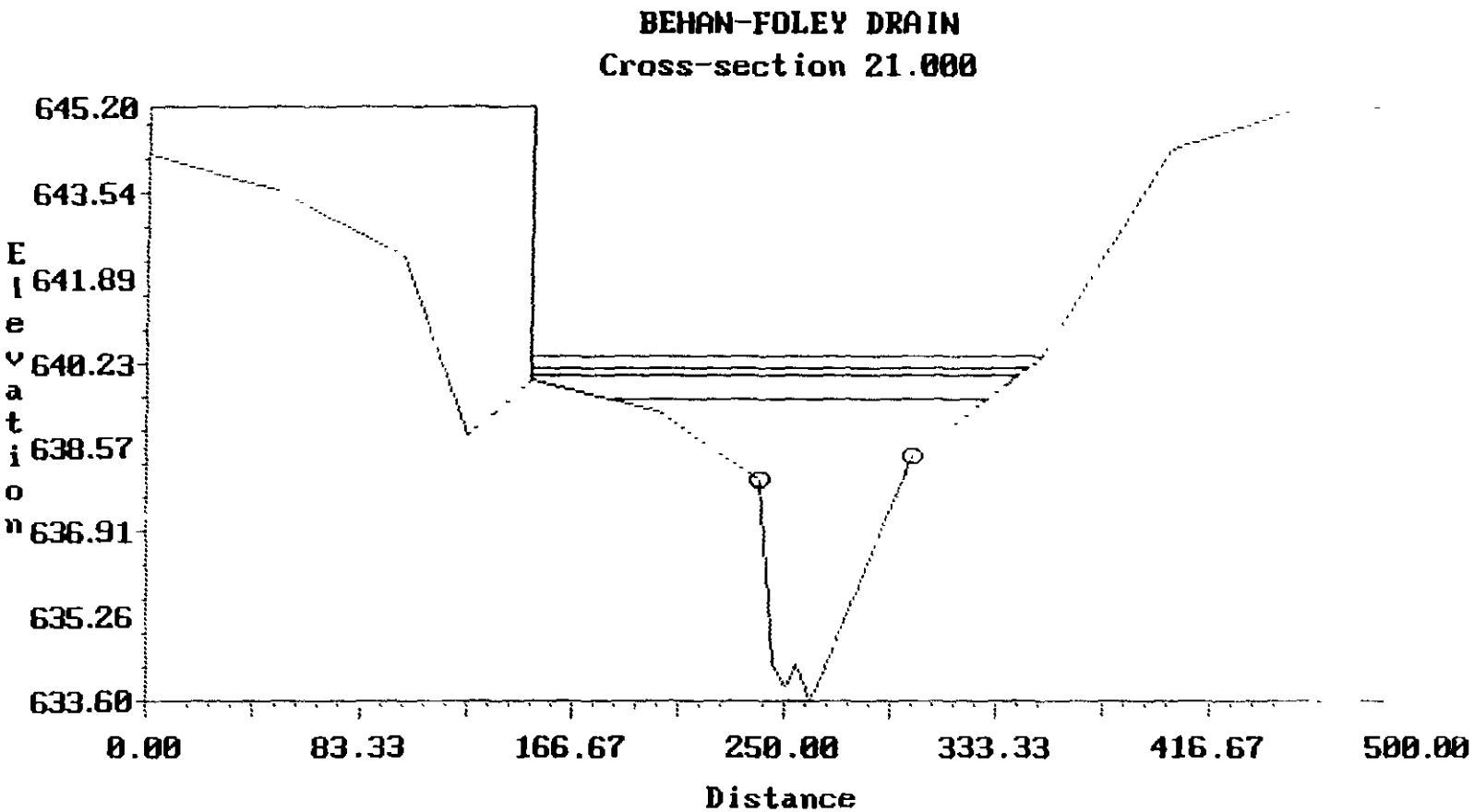

BEHAN-FOLEY DRAIN
Cross-section 14.000
646.70
644.67
642.64
640.61
638.59
636.56
634.53
632.50
Elevation
0.00
133.33
266.67
400.00
533.33
666.67
800.00
Distance

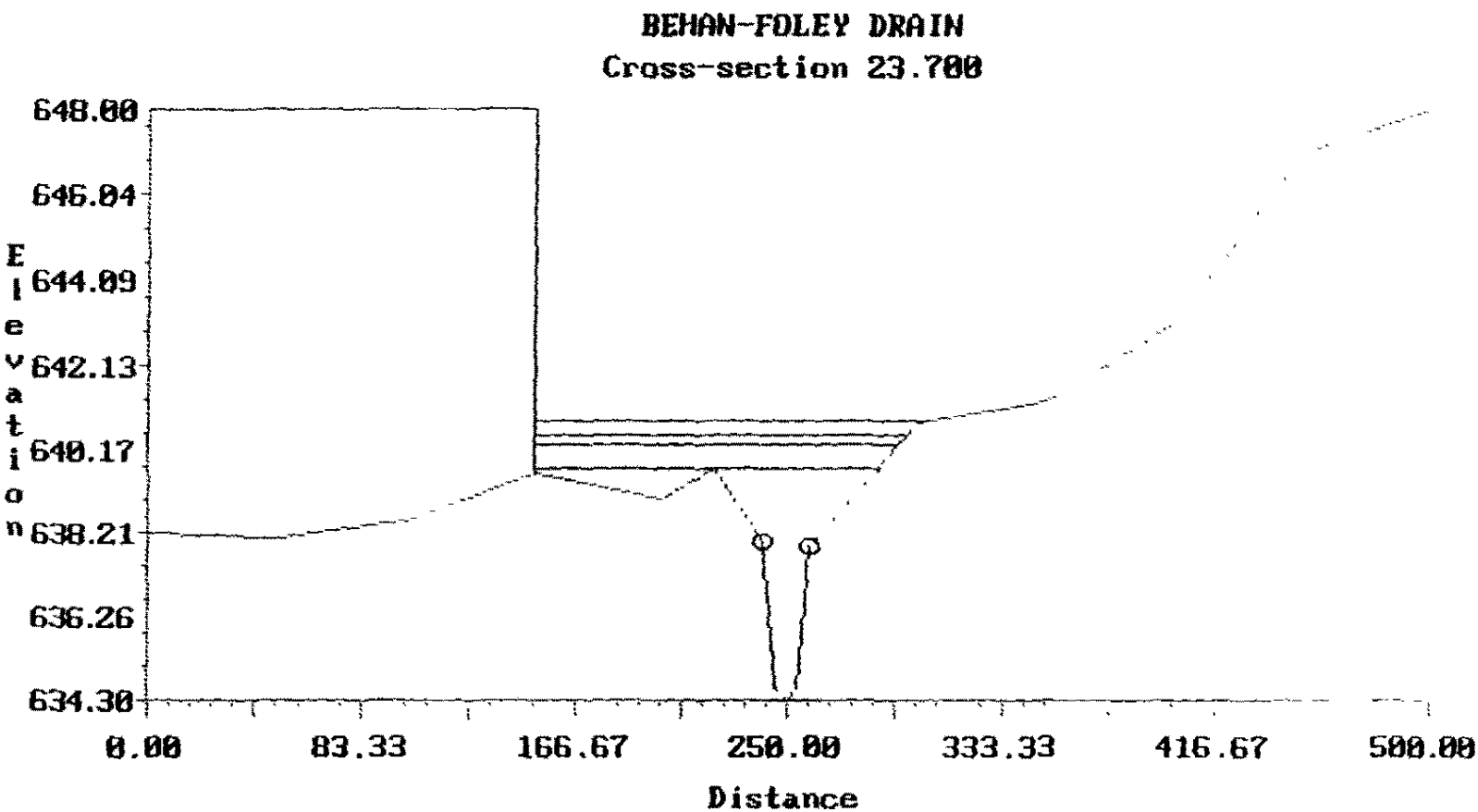

BEHAN-FOLEY DRAIN
Cross-section 17.850
647.55
645.49
643.42
641.36
639.29
637.23
635.16
633.10
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

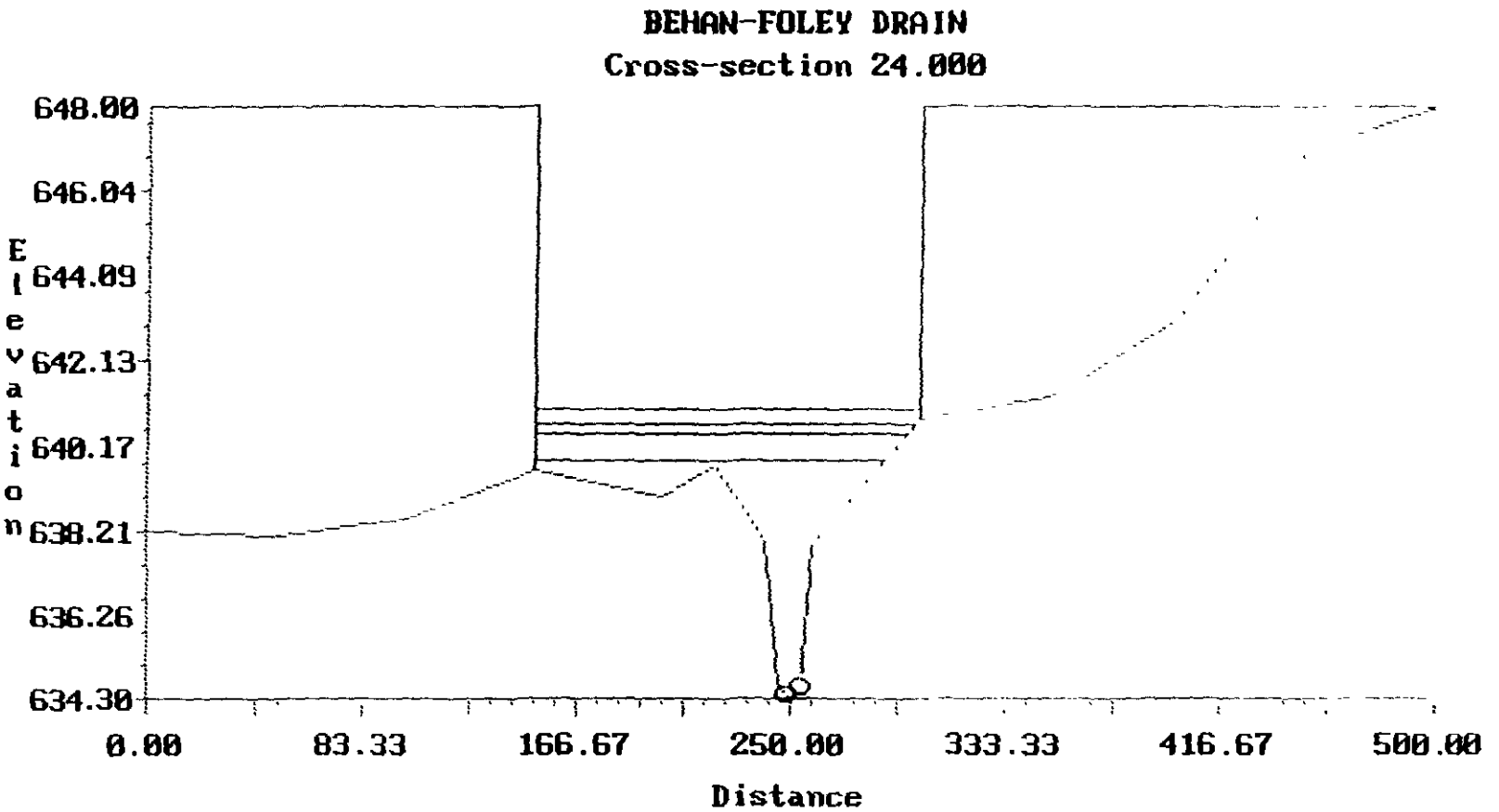

BEHAN-FOLEY DRAIN
Cross-section 18.150
647.55
645.49
643.42
641.36
639.29
637.23
635.16
633.10
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

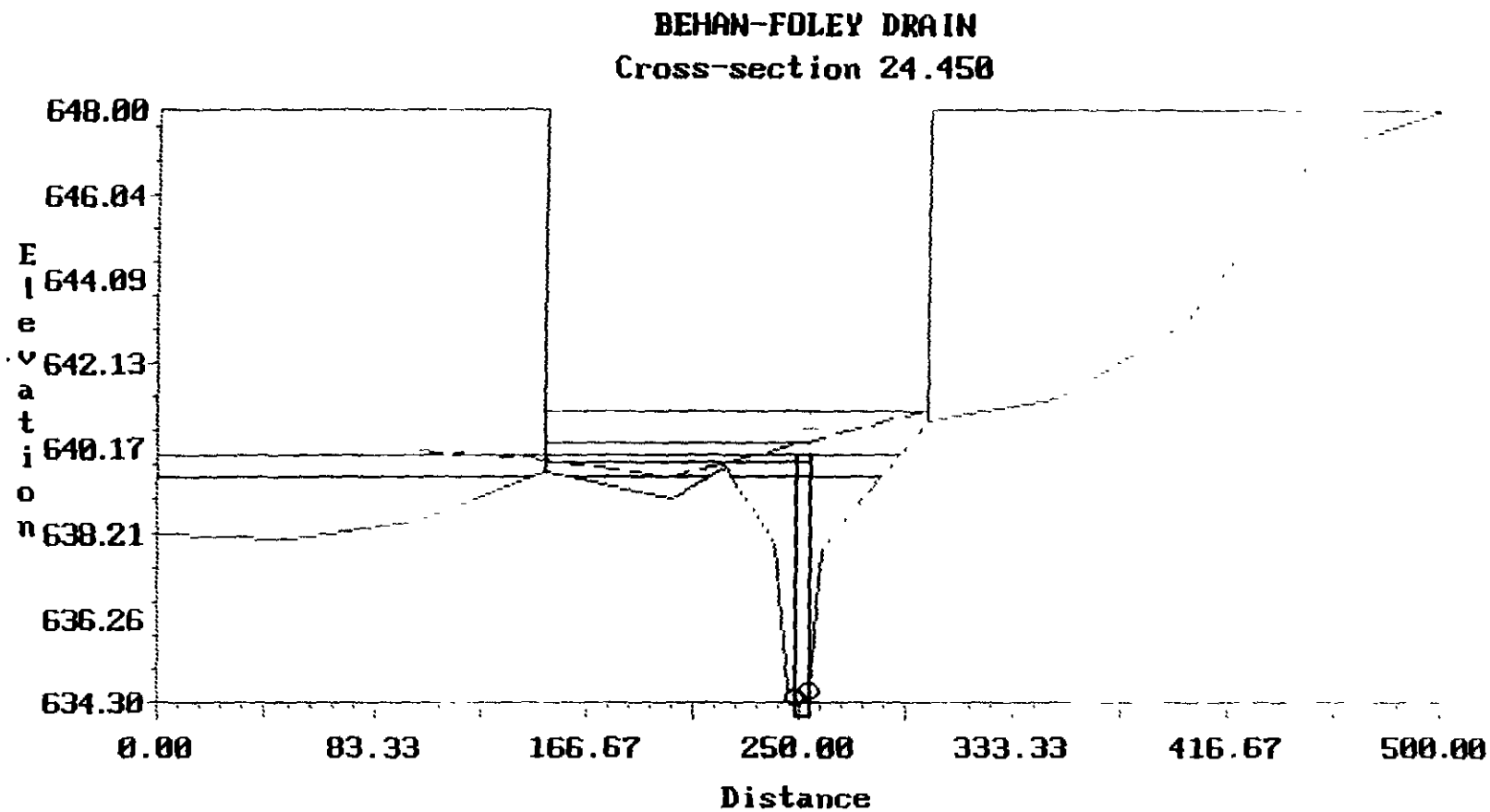

BEHAN-FOLEY DRAIN
Cross-section 19.200
647.55
645.52
643.49
641.46
639.44
637.41
635.38
633.35
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

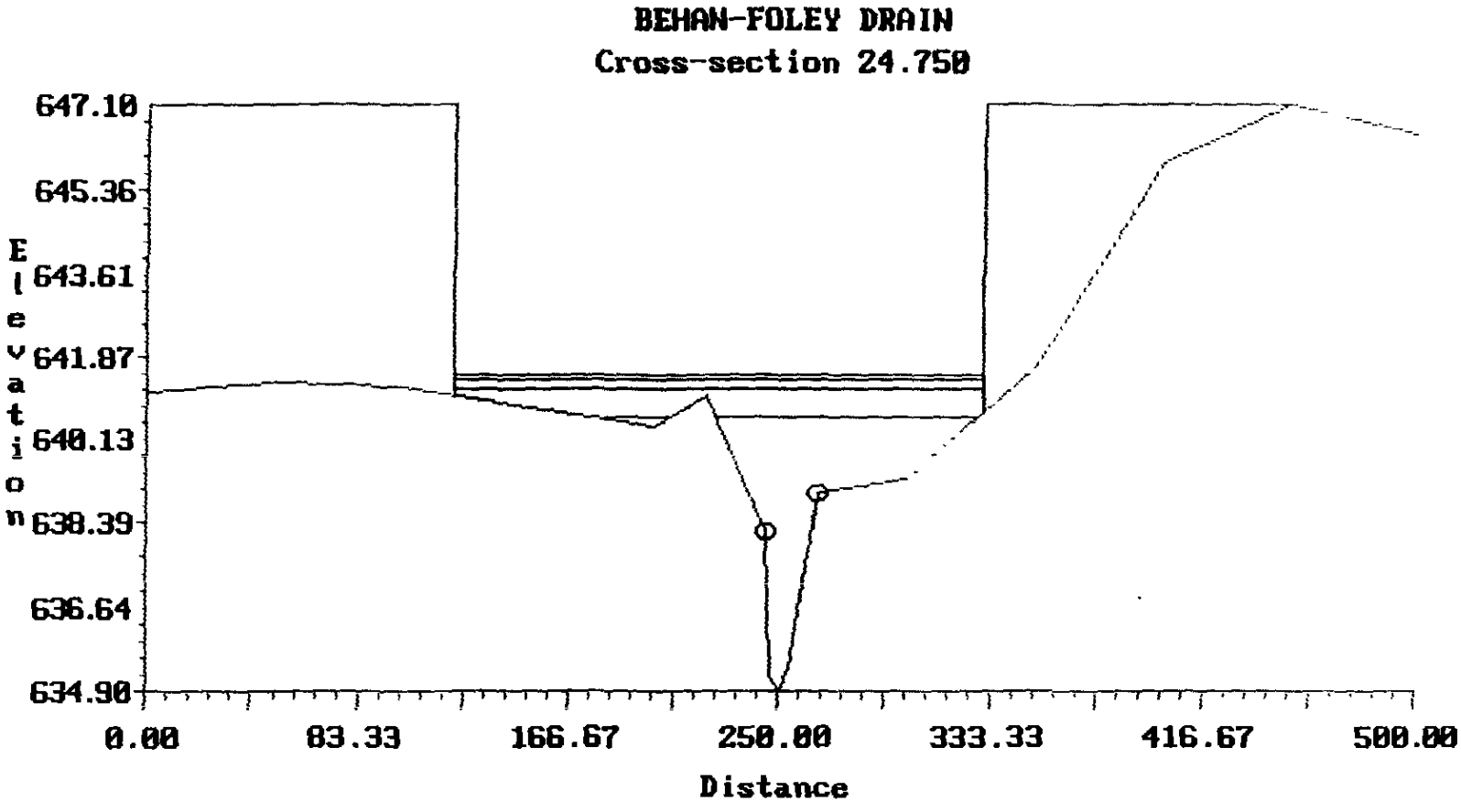

BEHAN-FOLEY DRAIN
Cross-section 19.500
645.45
643.73
642.01
640.29
638.56
636.84
635.12
633.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

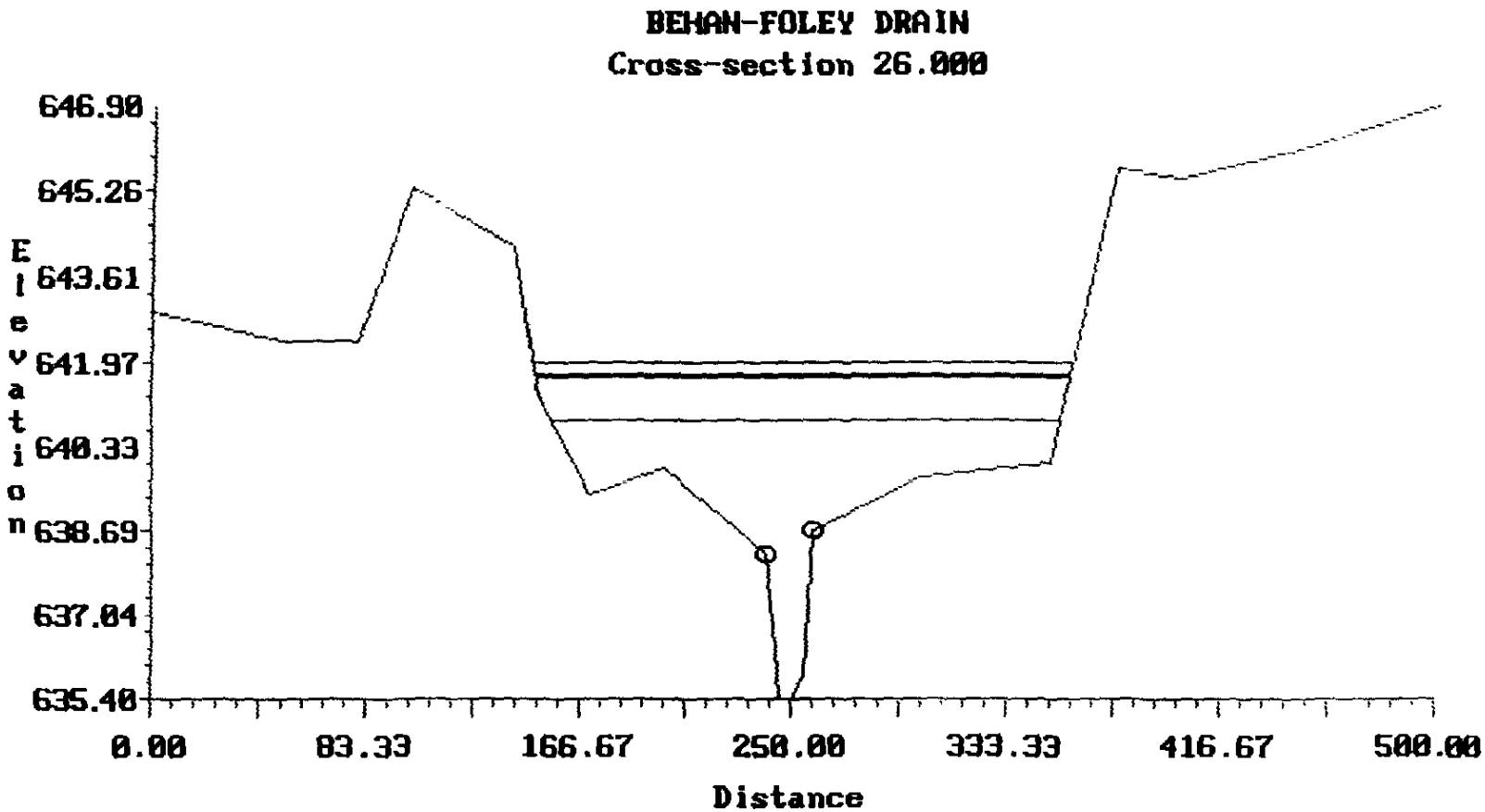

BEHAN-FOLEY DRAIN
Cross-section 21.000
645.20
643.54
641.89
640.23
638.57
636.91
635.26
633.60
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

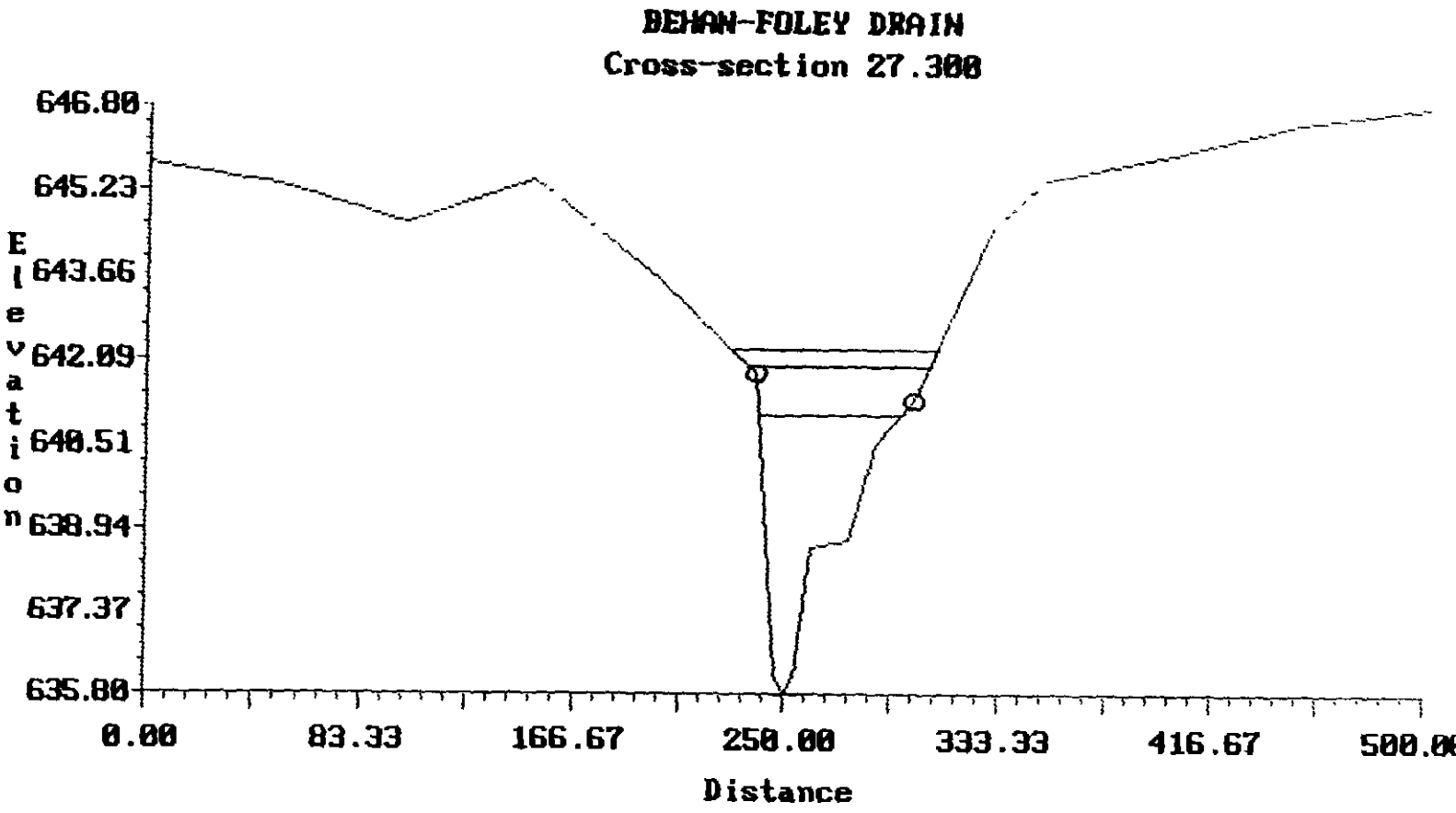

BEHAN-FOLEY DRAIN
Cross-section 23.700
648.00
646.04
644.09
642.13
640.17
638.21
636.26
634.30
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

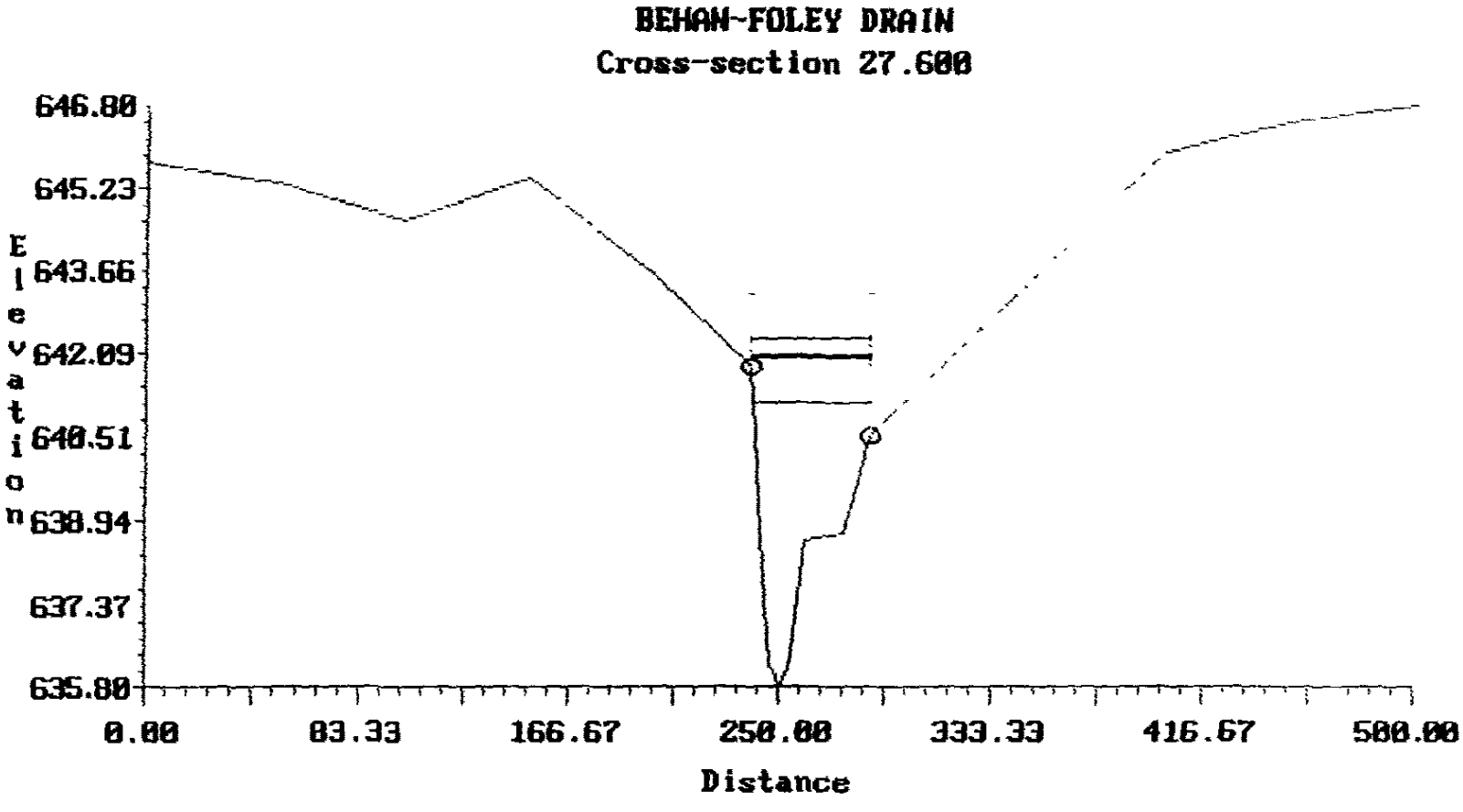

BEHAN-FOLEY DRAIN
Cross-section 24.000
648.00
646.04
644.09
642.13
640.17
638.21
636.26
634.30
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

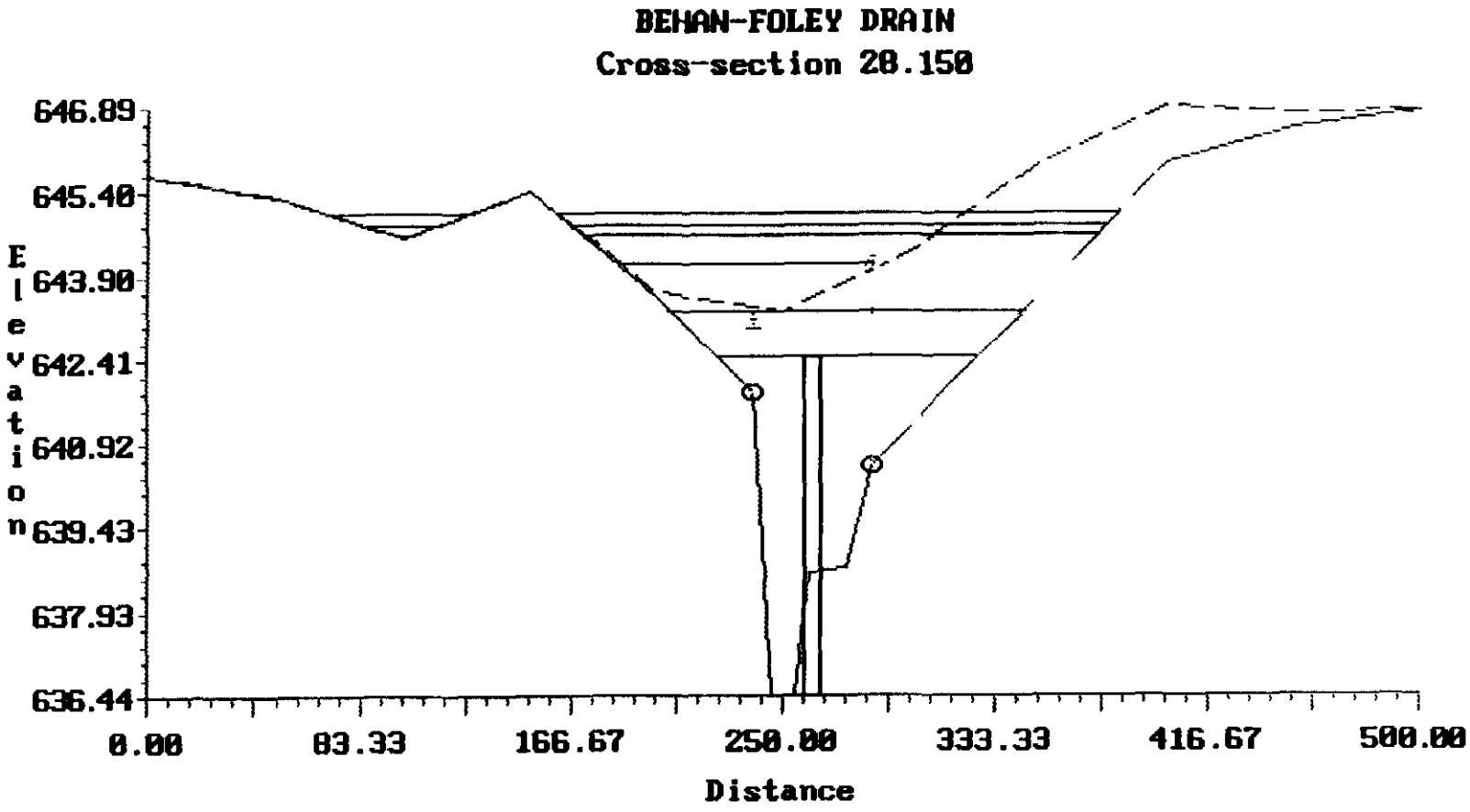

BEHAN-FOLEY DRAIN
Cross-section 24.450
648.00
646.04
644.09
642.13
640.17
638.21
636.26
634.30
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

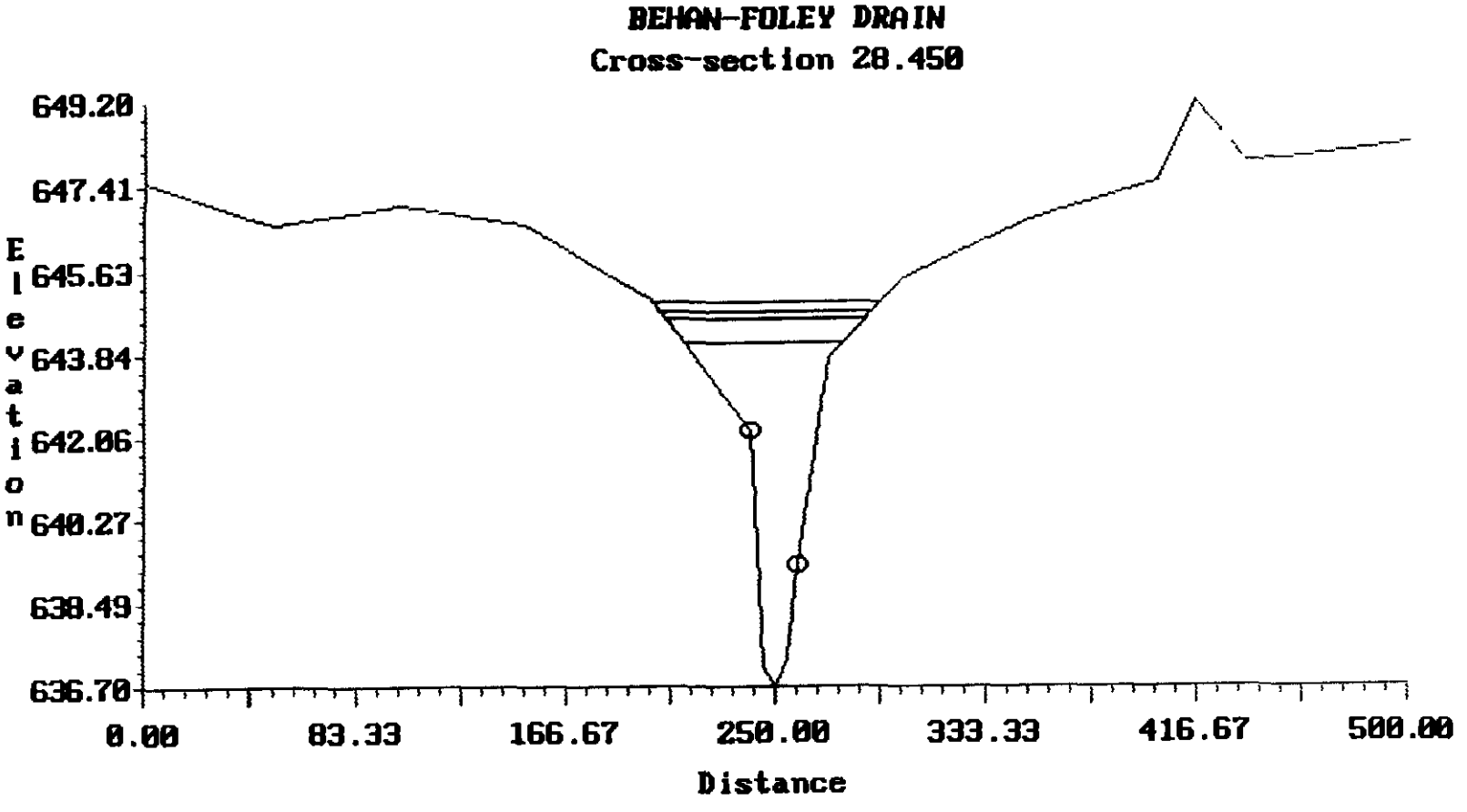

BEHAN-FOLEY DRAIN
Cross-section 24.750
647.10
645.36
643.61
641.87
640.13
638.39
636.64
634.90
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

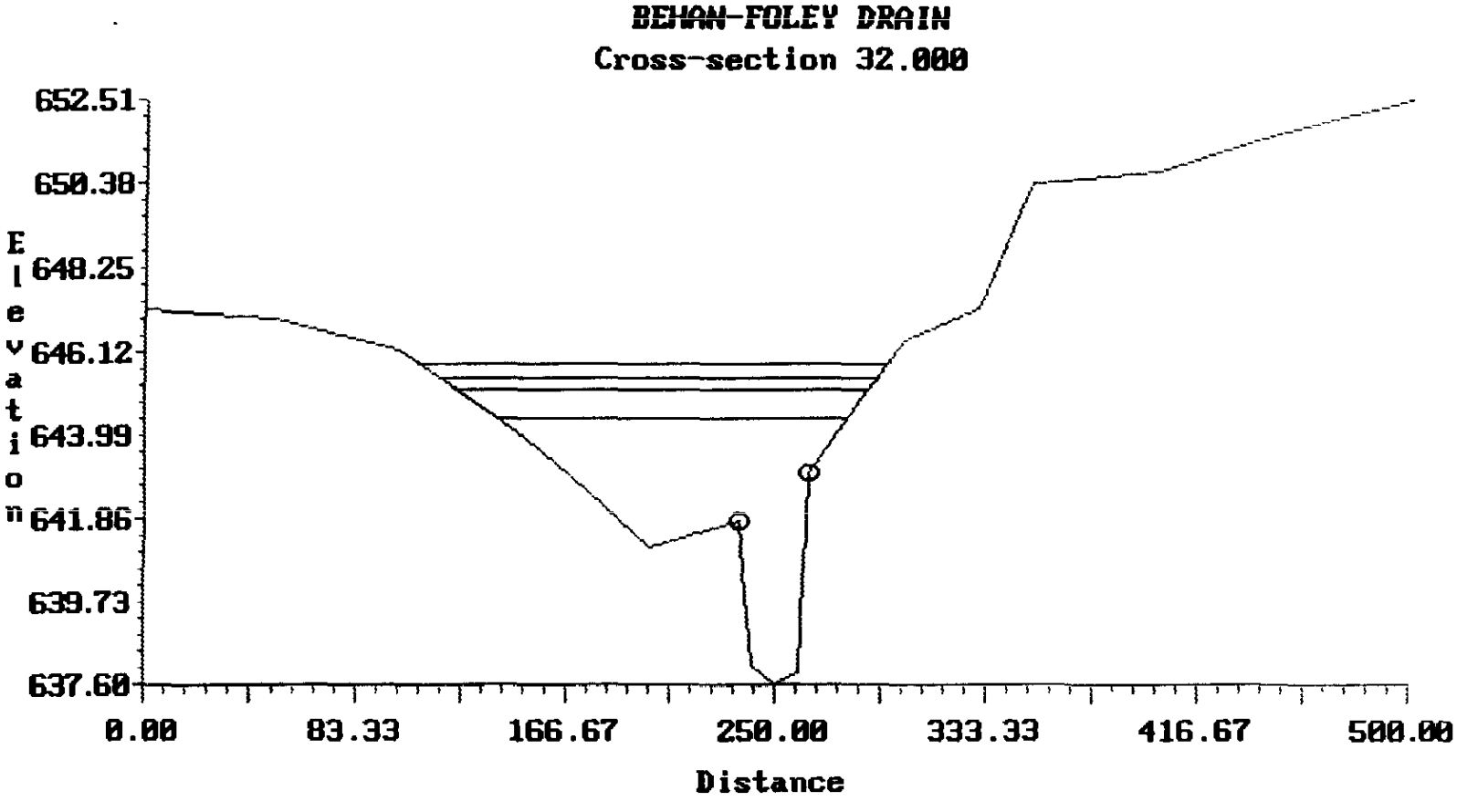

BEHAN-FOLEY DRAIN
Cross-section 26.000
646.90
645.26
643.61
641.97
640.33
638.69
637.04
635.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

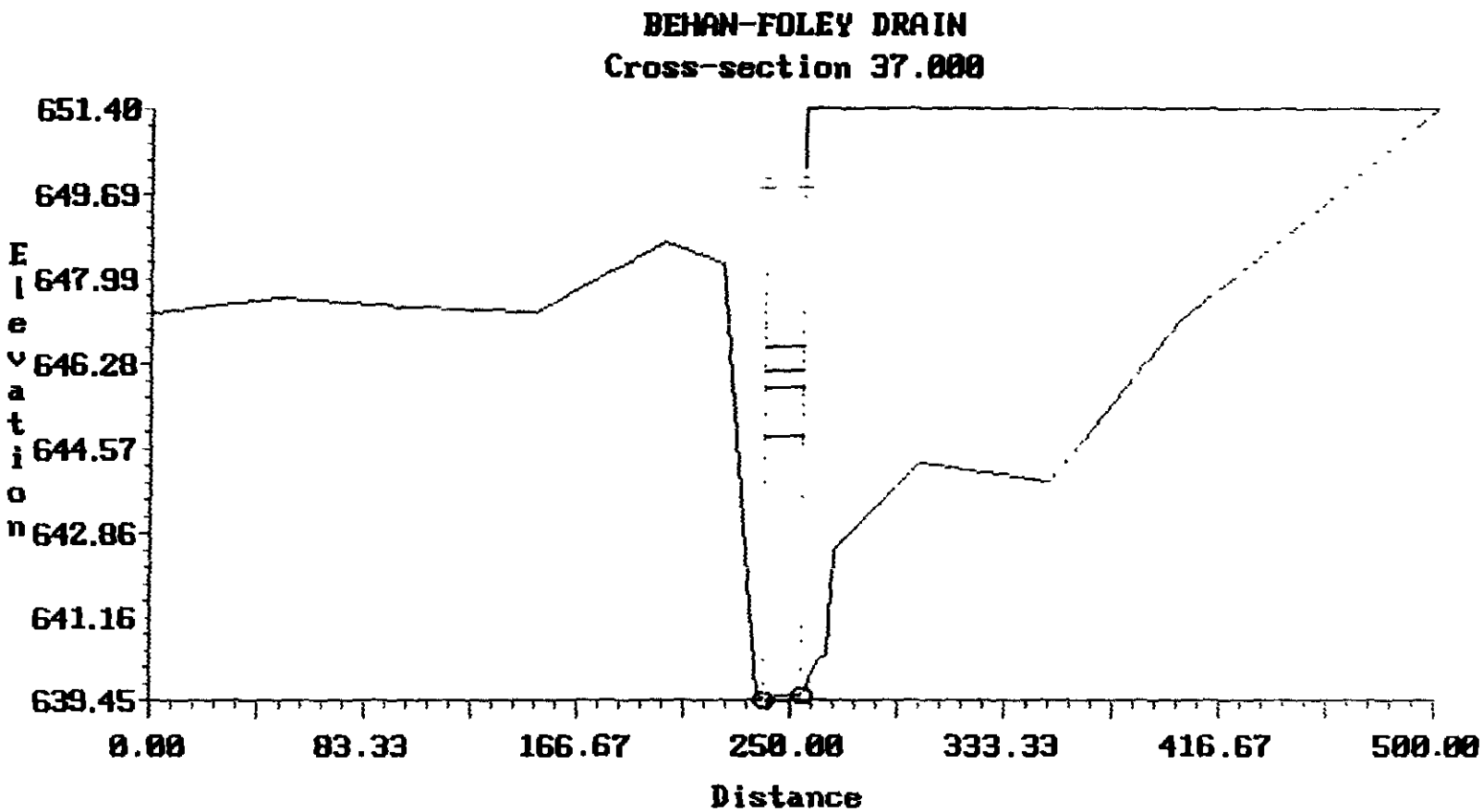

BEHAN-FOLEY DRAIN
Cross-section 27.300
646.80
645.23
643.66
642.09
640.51
638.94
637.37
635.80
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

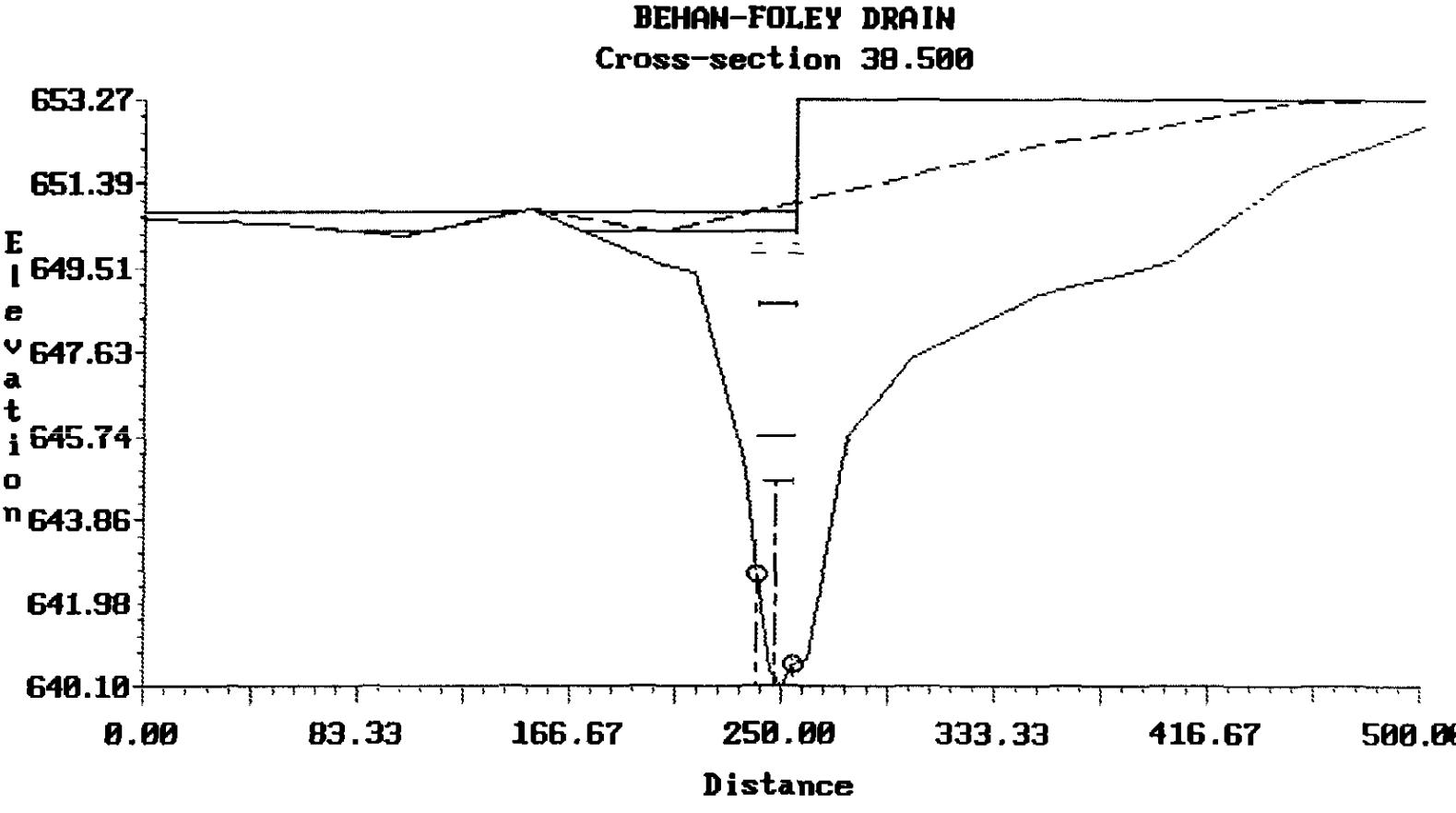

BEHAN-FOLEY DRAIN
Cross-section 27.600
646.80
645.23
643.66
642.09
640.51
638.94
637.37
635.80
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

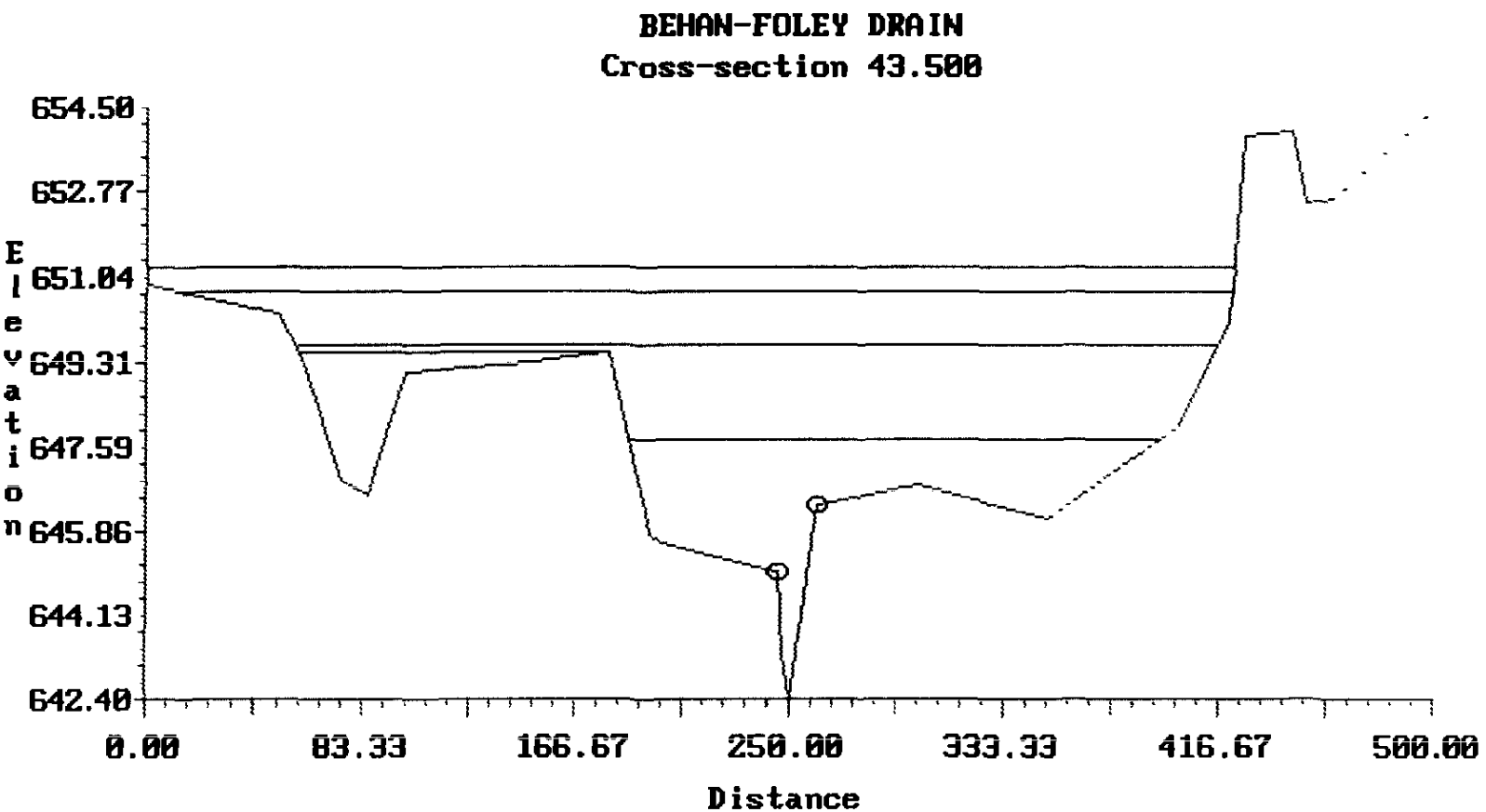

BEHAN-FOLEY DRAIN
Cross-section 28.150
646.89
645.40
643.90
642.41
640.92
639.43
637.93
636.44
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

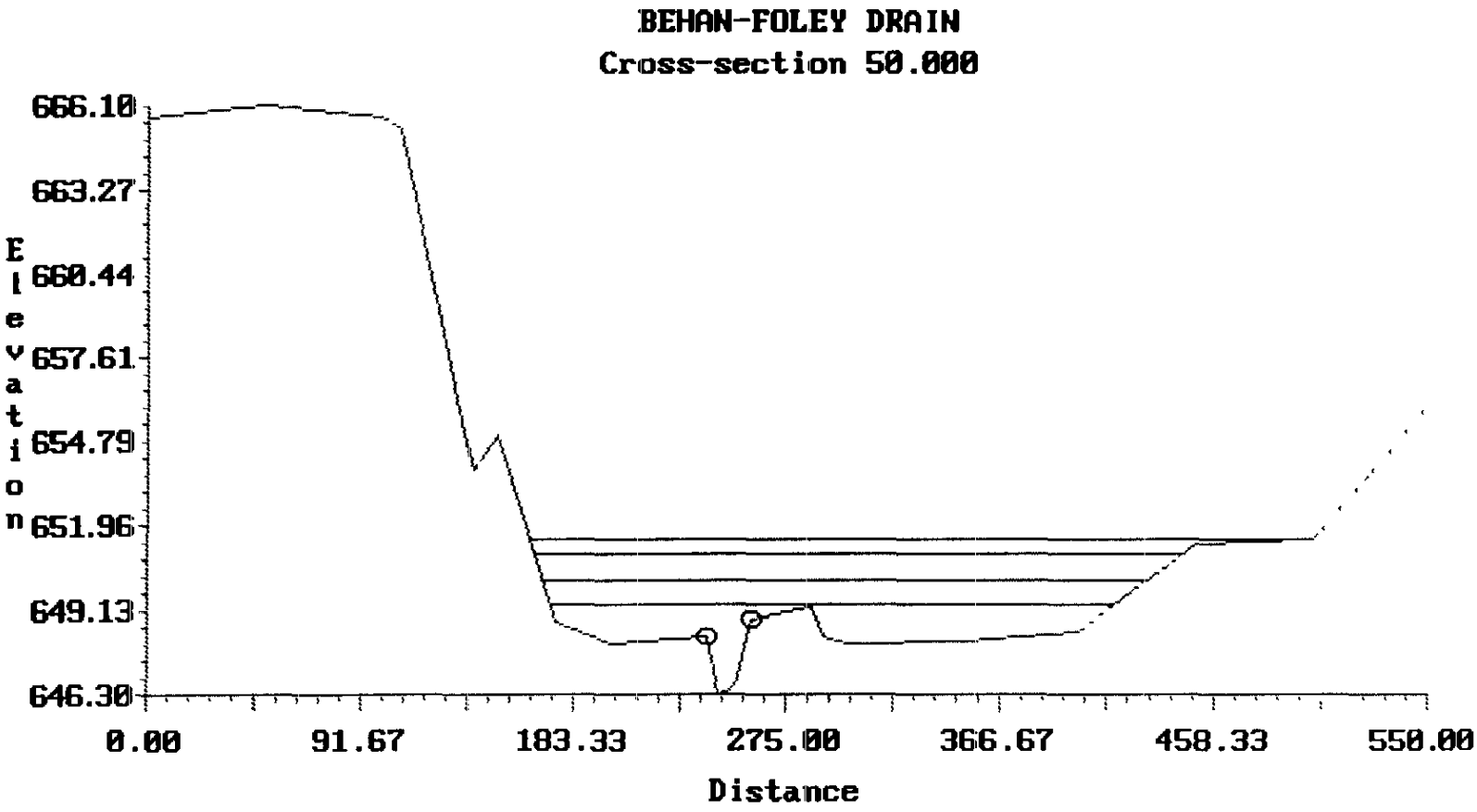

BEHAN-FOLEY DRAIN
Cross-section 28.450
649.20
647.41
645.63
643.84
642.06
640.27
638.49
636.70
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

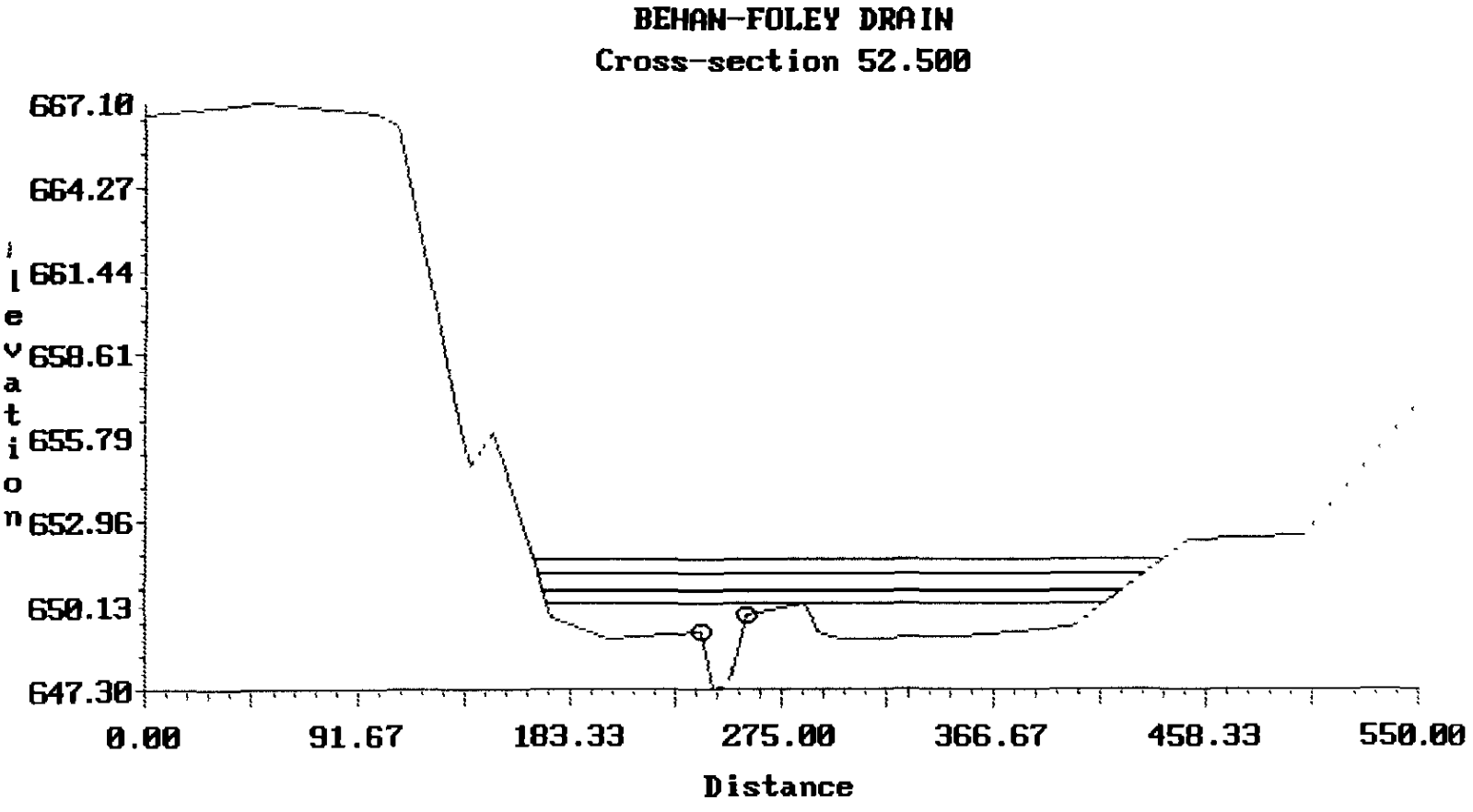

BEHAN-FOLEY DRAIN
Cross-section 32.000
652.51
650.38
648.25
646.12
643.99
641.86
639.73
637.60
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

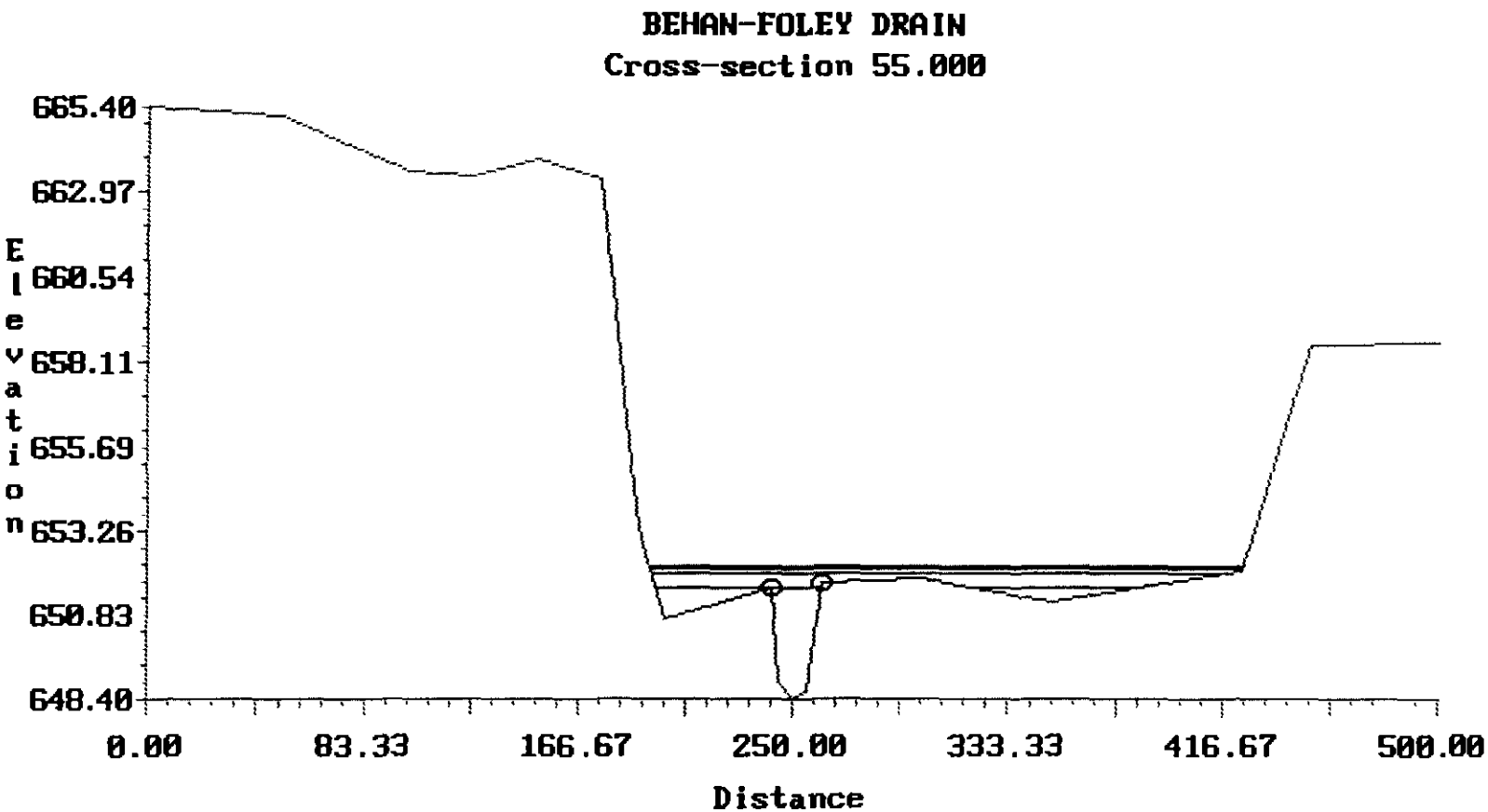

BEHAN-FOLEY DRAIN
Cross-section 37.000
651.40
649.69
647.99
646.28
644.57
642.86
641.16
639.45
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

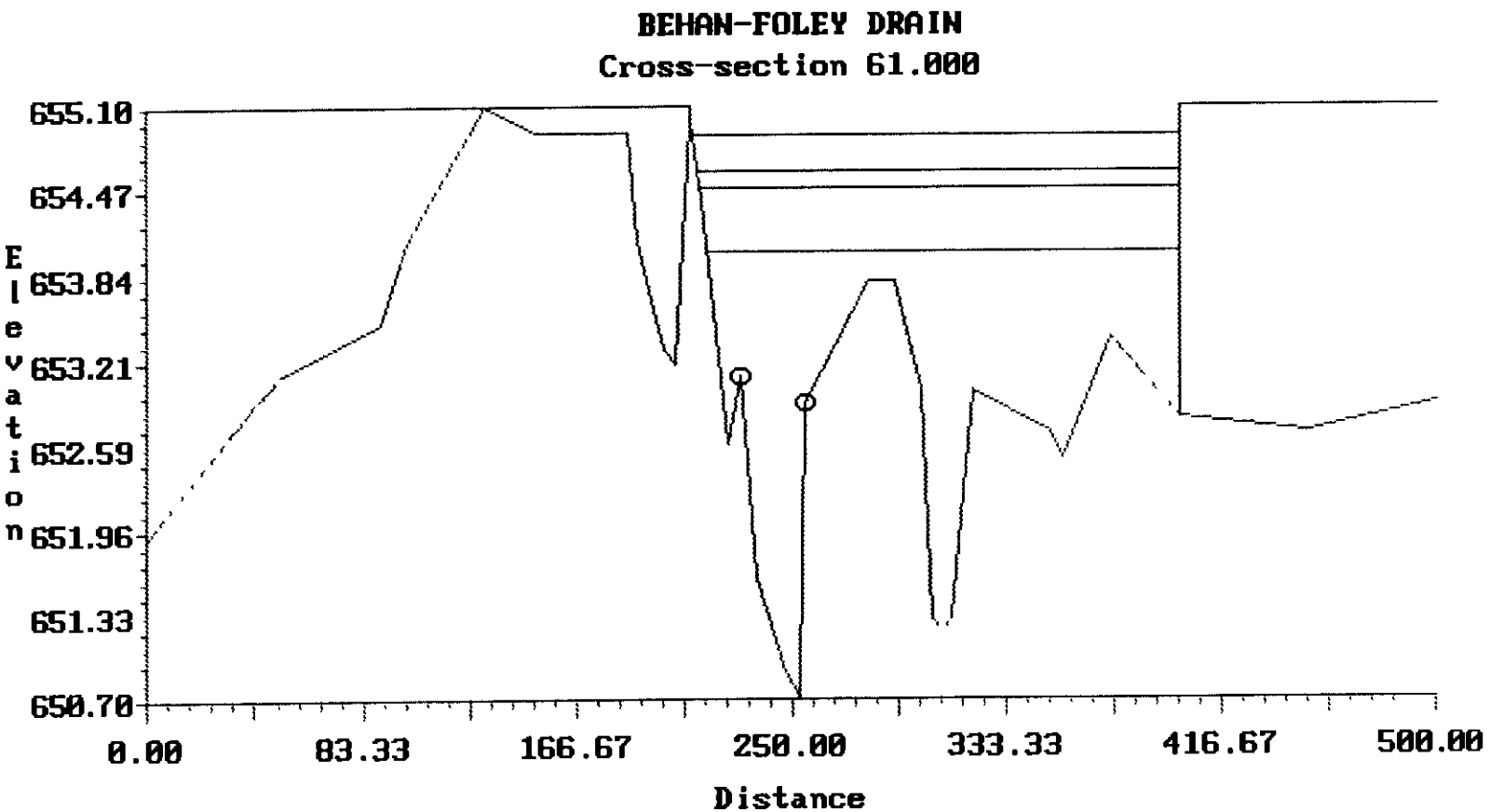

BEHAN-FOLEY DRAIN
Cross-section 38.500
653.27
651.39
649.51
647.63
645.74
643.86
641.98
640.10
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

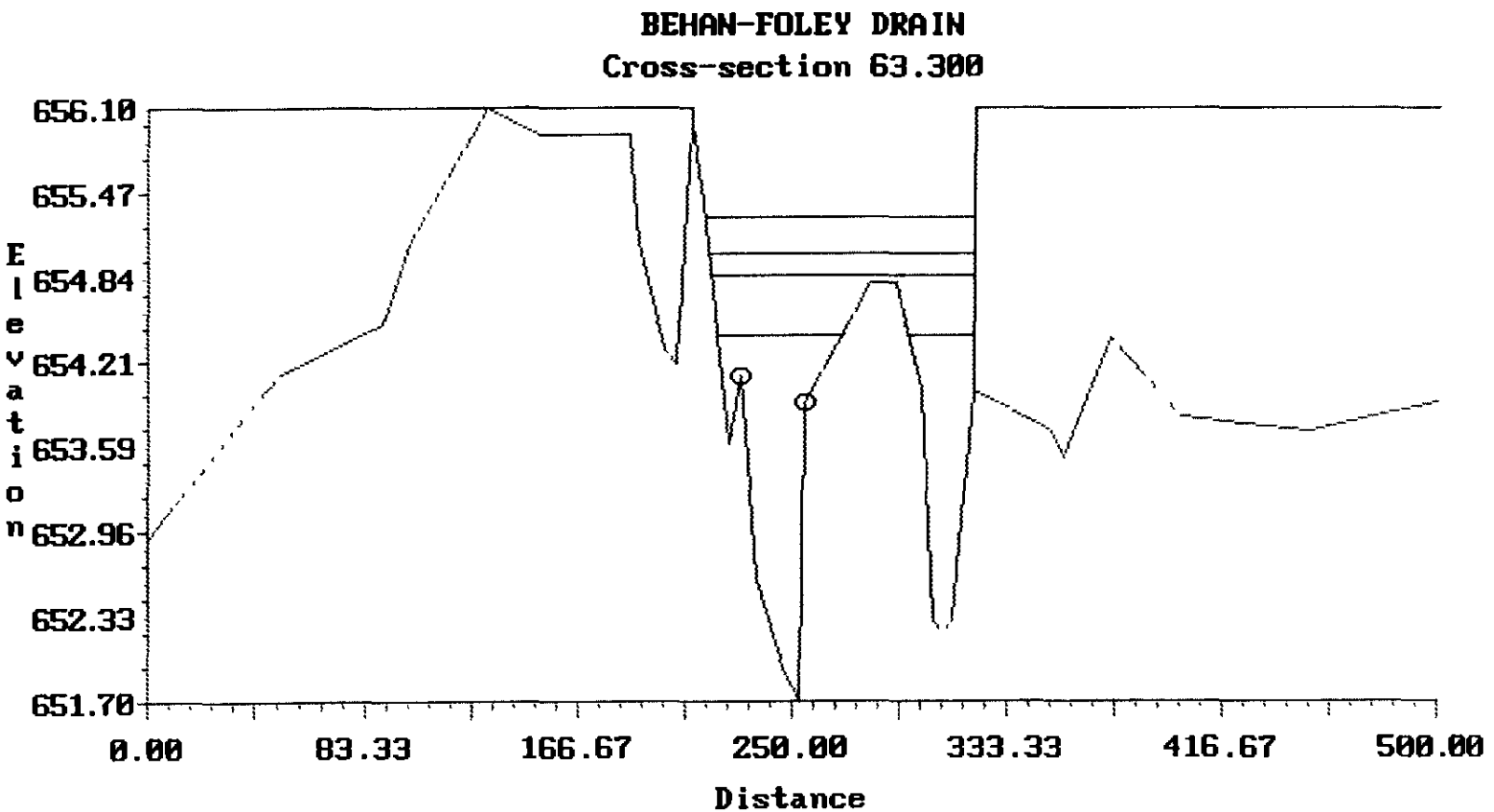

BEHAN-FOLEY DRAIN
Cross-section 43.500
654.50
652.77
651.04
649.31
647.59
645.86
644.13
642.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

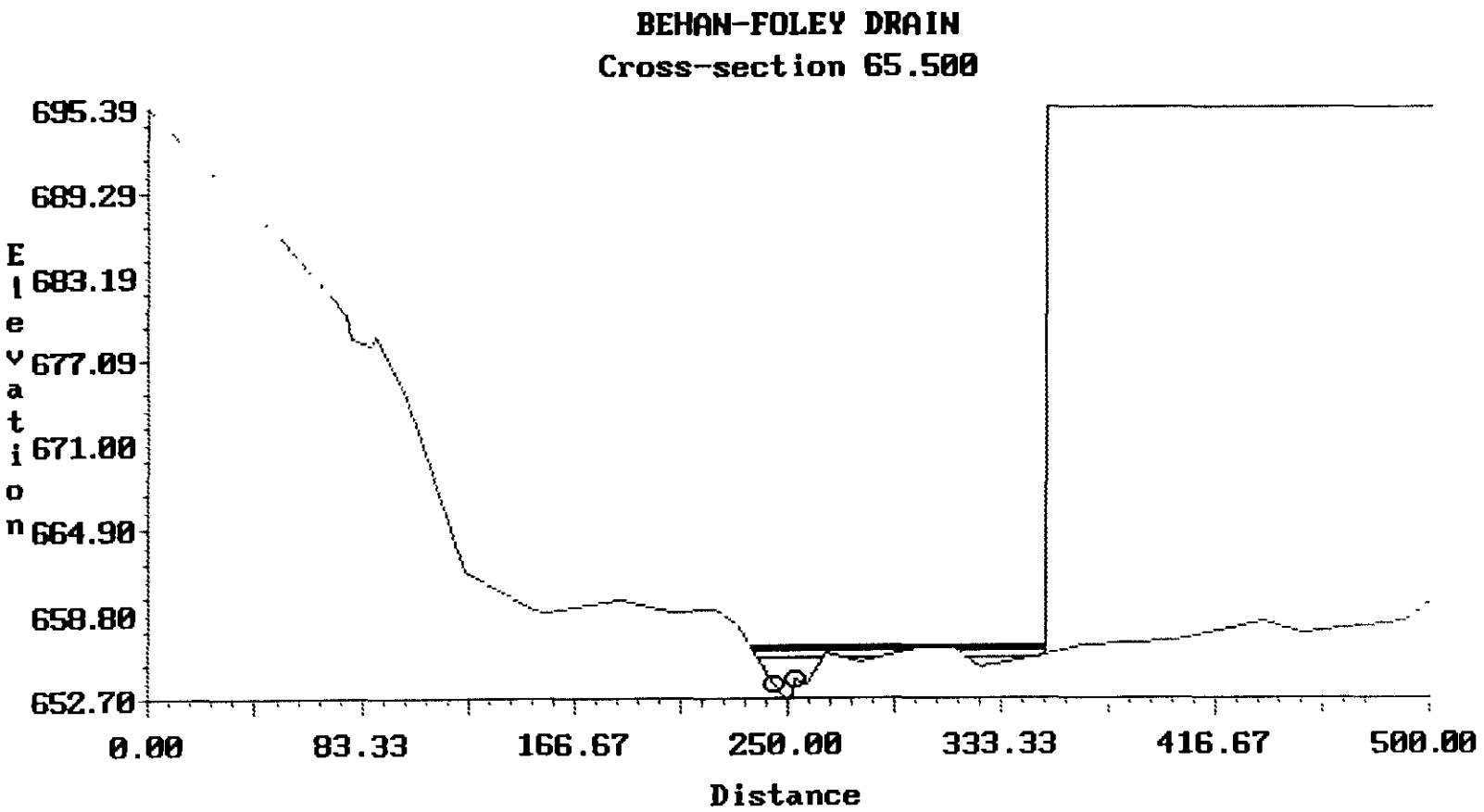

BEHAN-FOLEY DRAIN
Cross-section 50.000
666.10
663.27
660.44
657.61
654.79
651.96
649.13
646.30
Elevation
0.00
91.67
183.33
275.00
366.67
458.33
550.00
Distance

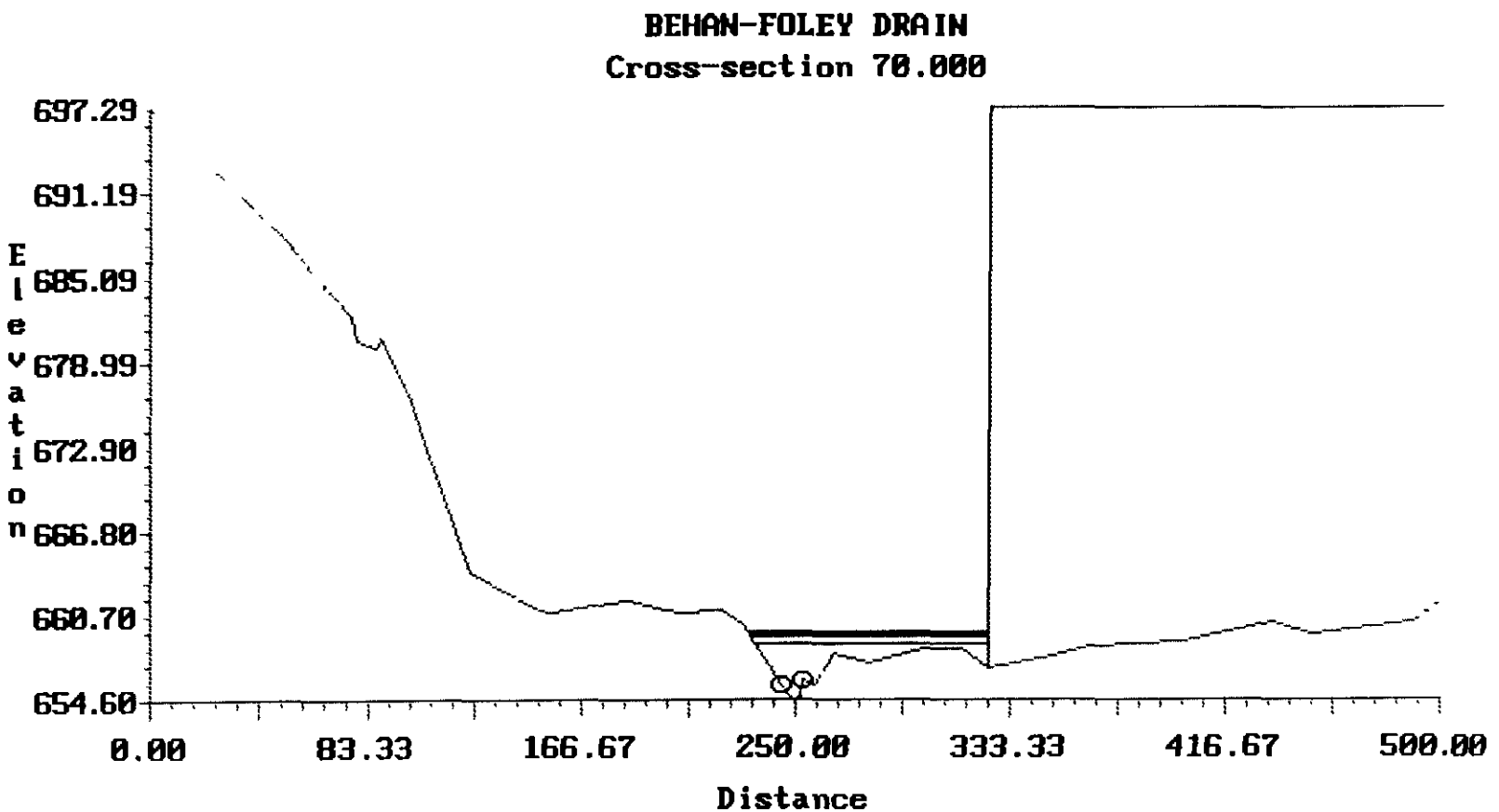

BEHAN-FOLEY DRAIN
Cross-section 52.500
667.10
664.27
661.44
658.61
655.79
652.96
650.13
647.30
Elevation
0.00
91.67
183.33
275.00
366.67
458.33
550.00
Distance

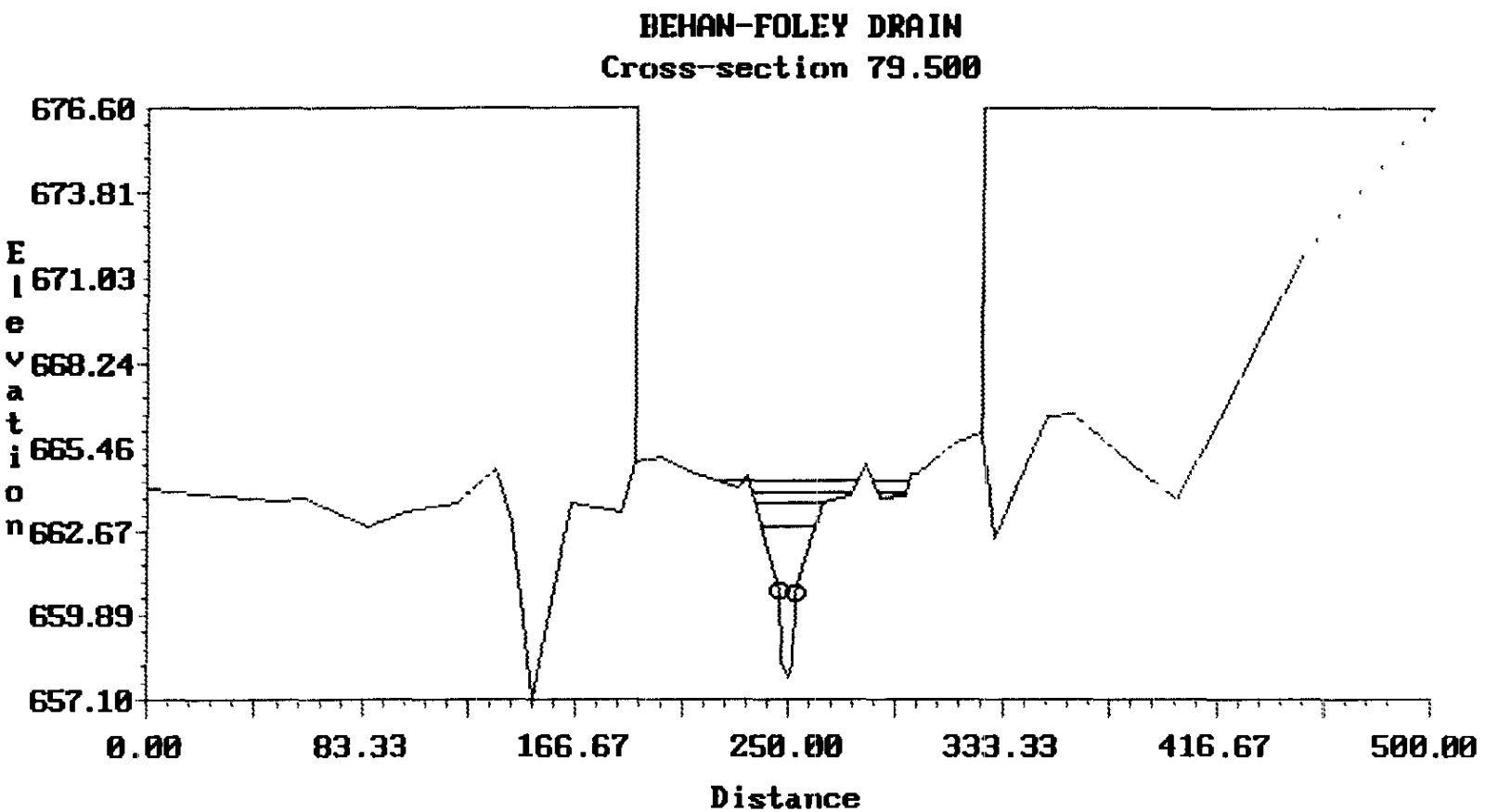

BEHAN-FOLEY DRAIN
Cross-section 55.000
665.40
662.97
660.54
658.11
655.69
653.26
650.83
648.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

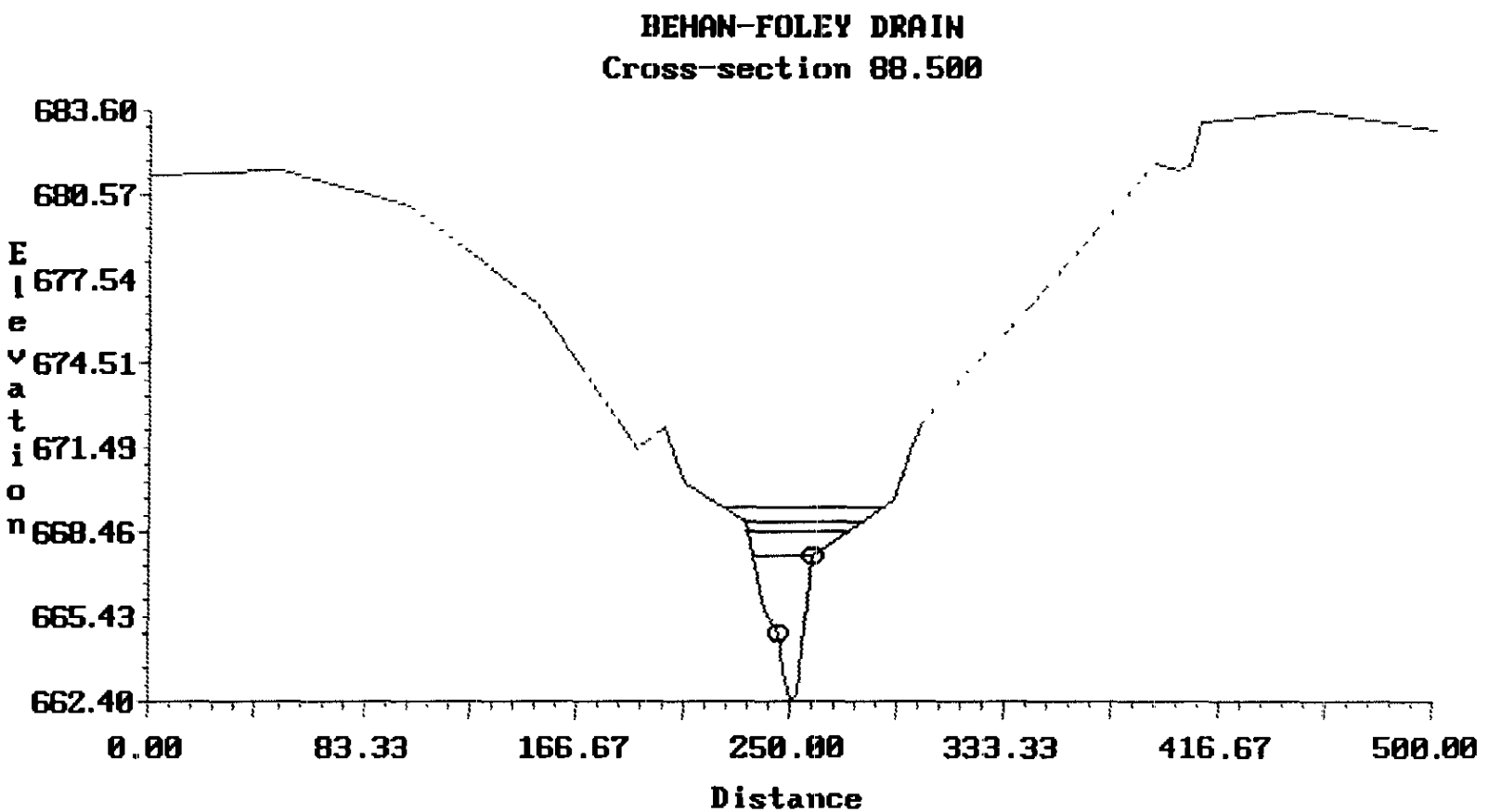

BEHAN-FOLEY DRAIN
Cross-section 61.000
655.10
654.47
653.84
653.21
652.59
651.96
651.33
650.70
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

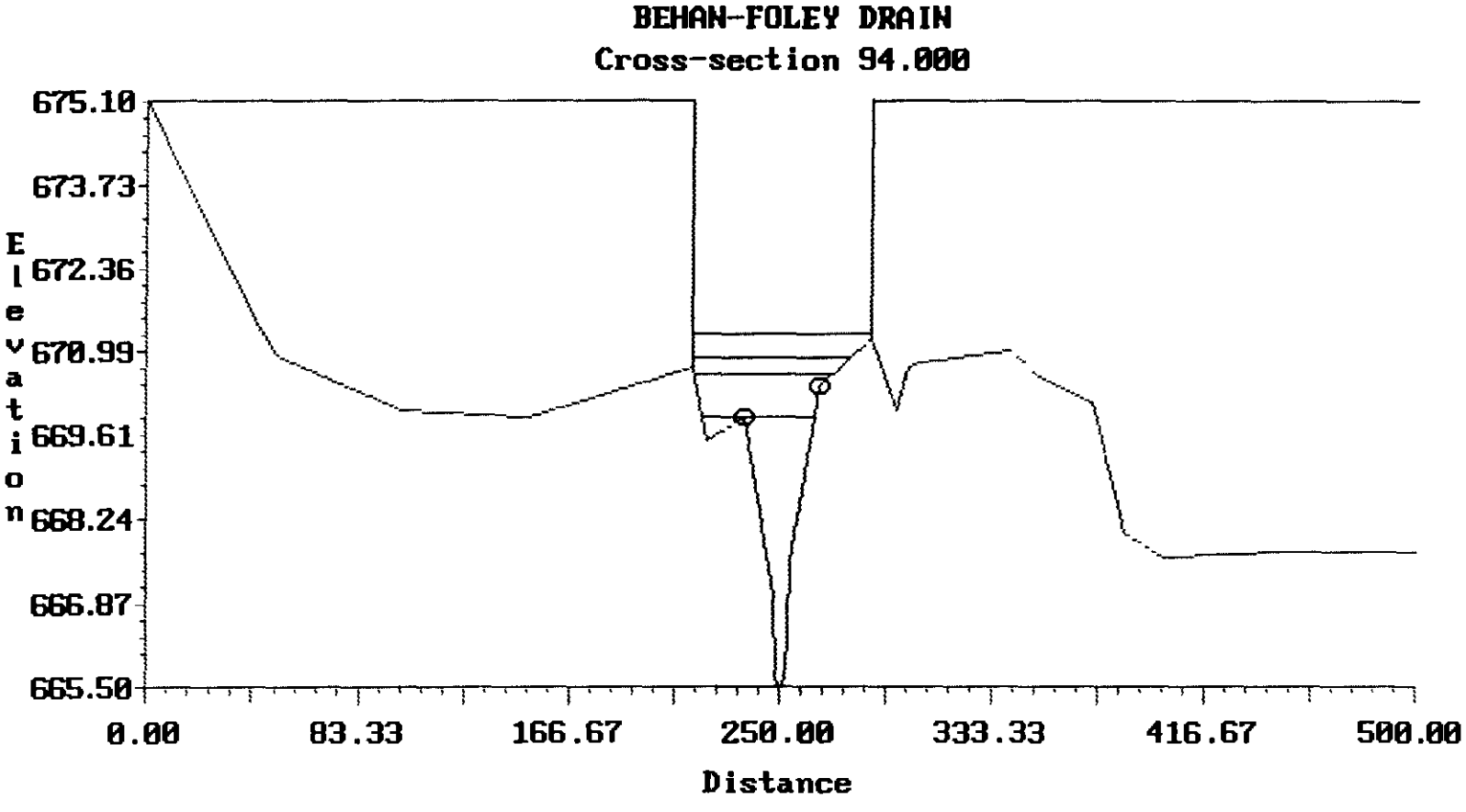

BEHAN-FOLEY DRAIN
Cross-section 63.300
656.10
655.47
654.84
654.21
653.59
652.96
652.33
651.70
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

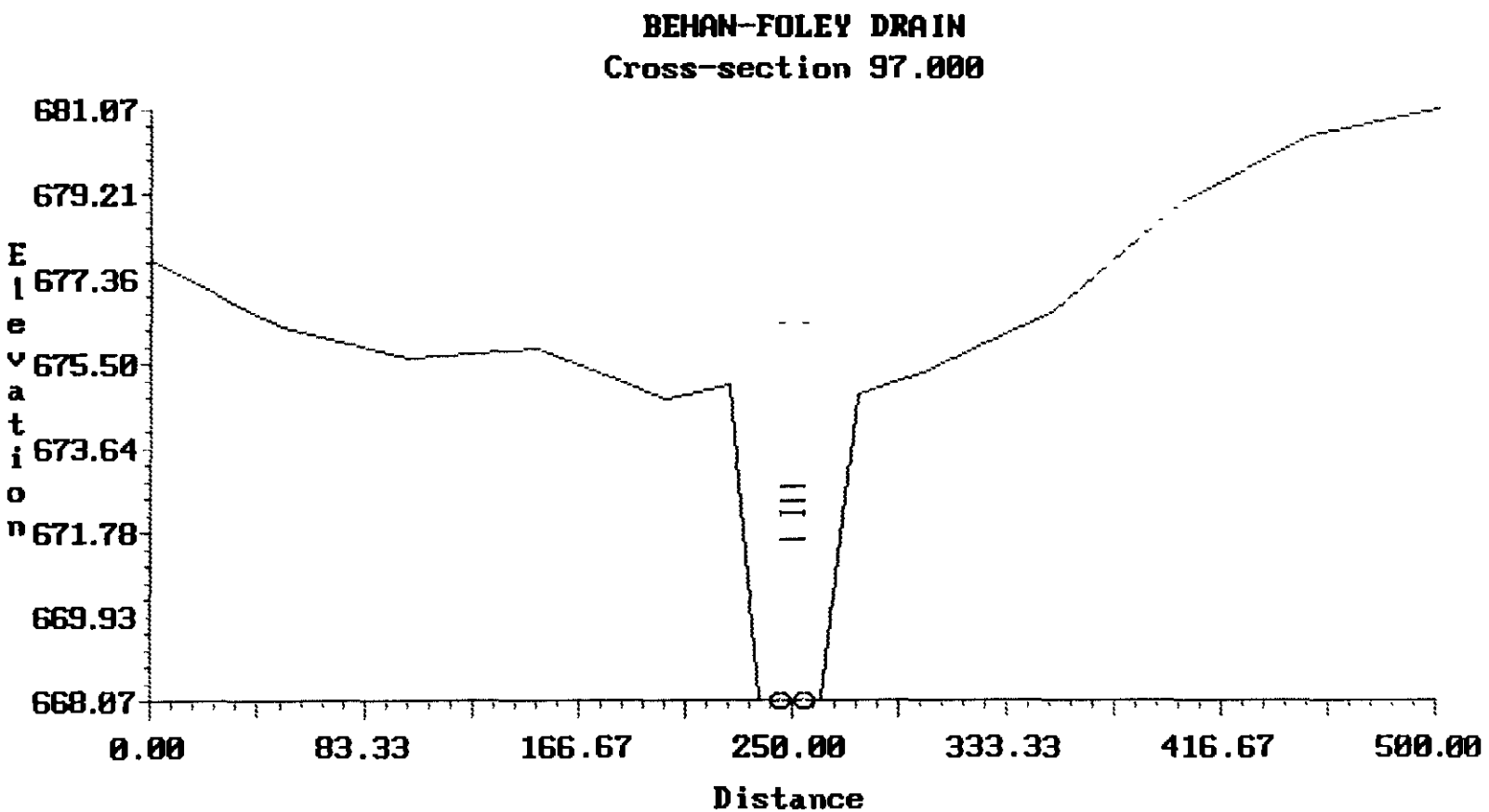

BEHAN-FOLEY DRAIN
Cross-section 65.500
695.39
689.29
683.19
677.09
671.00
664.90
658.80
652.70
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

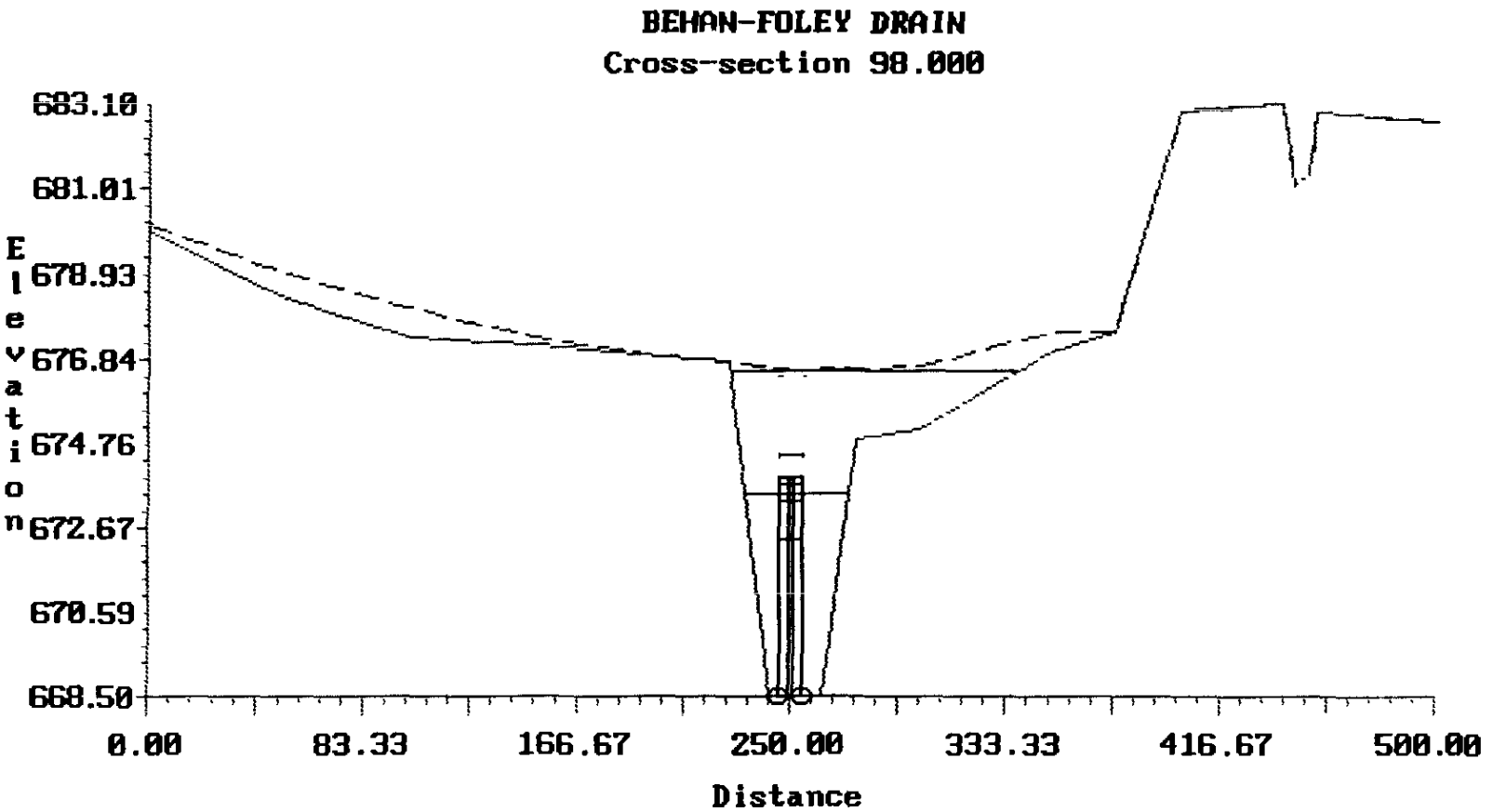

BEHAN-FOLEY DRAIN
Cross-section 70.000
697.29
691.19
685.09
678.99
672.90
666.80
660.70
654.60
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

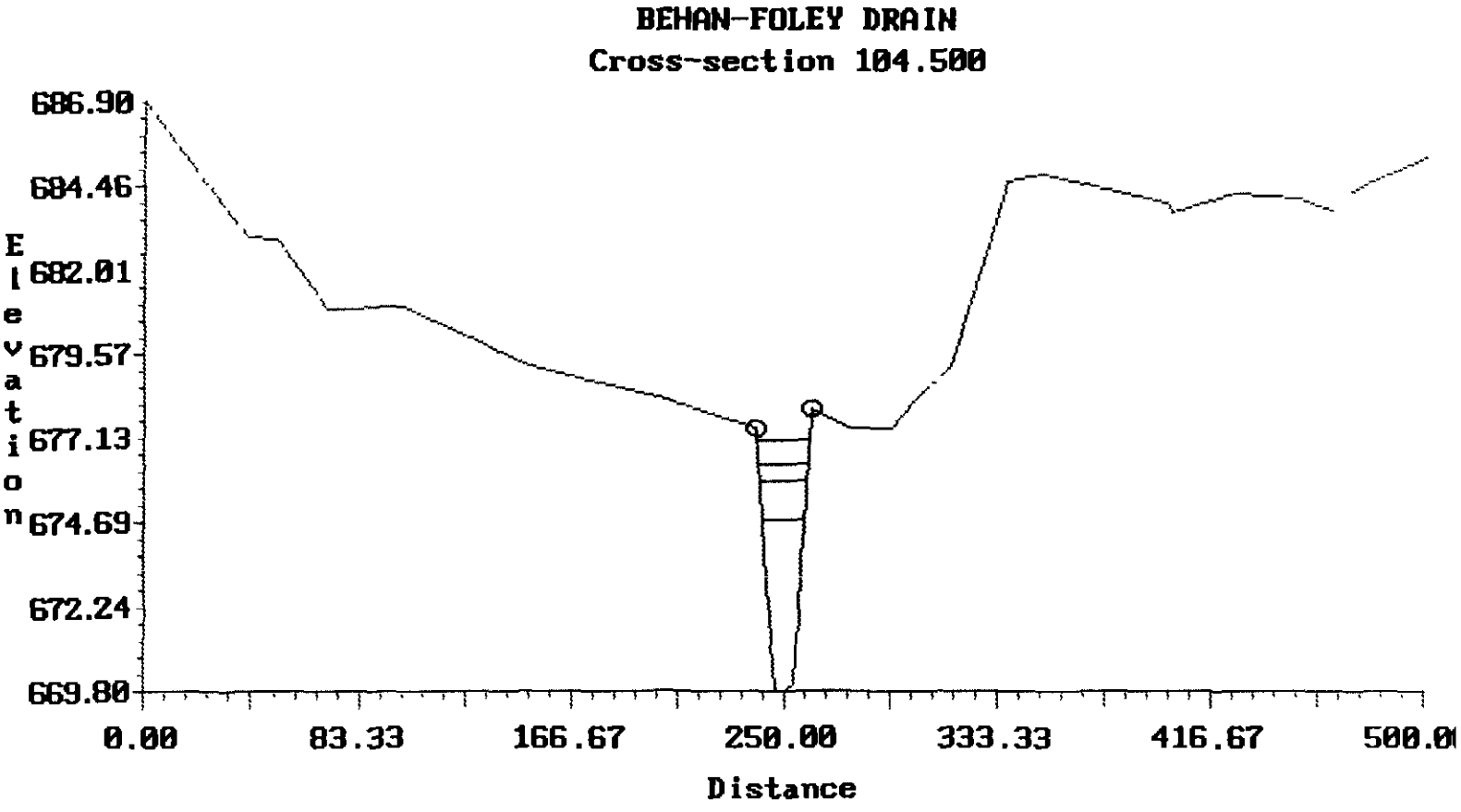

BEHAN-FOLEY DRAIN
Cross-section 79.500
676.60
673.81
671.03
668.24
665.46
662.67
659.89
657.10
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

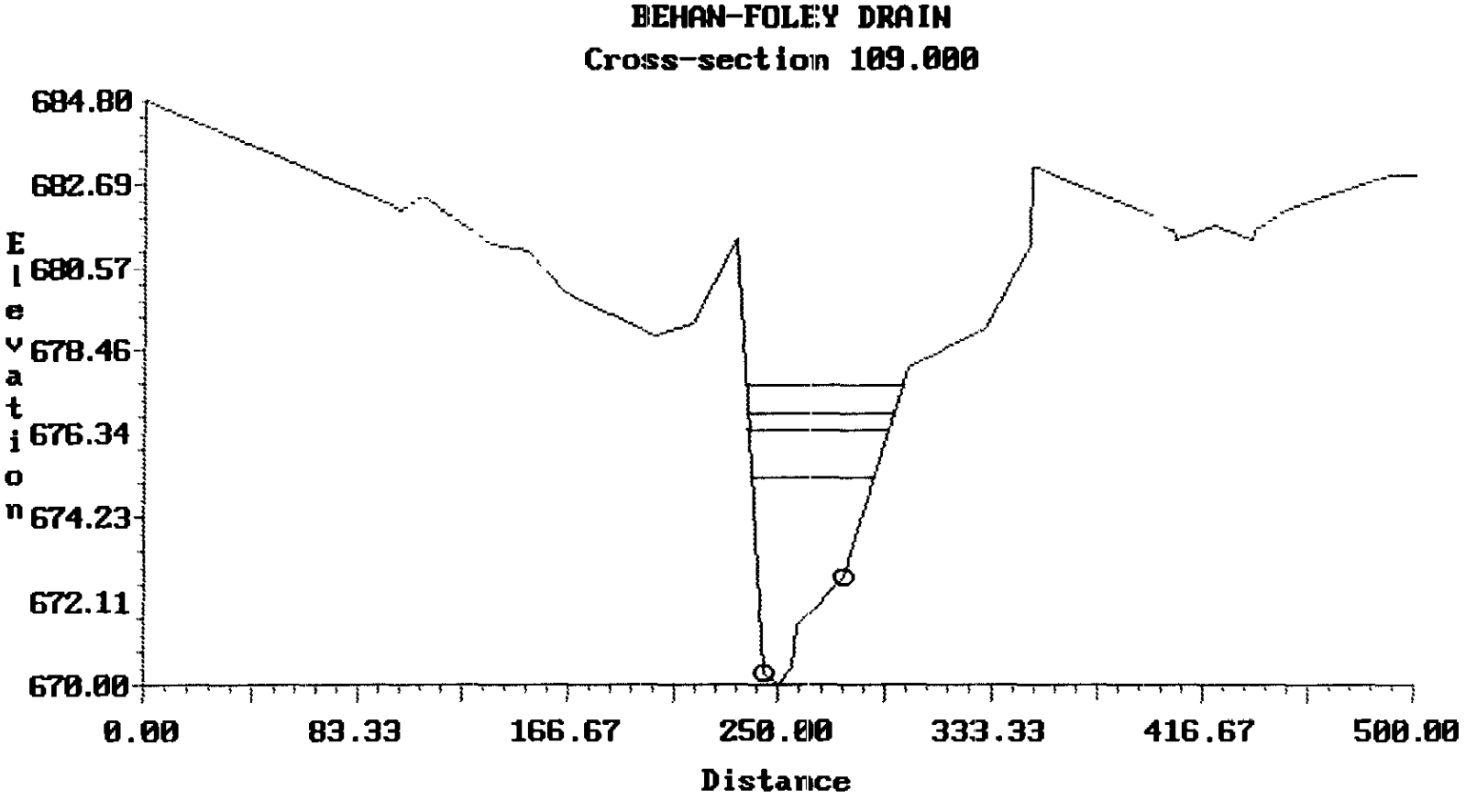

BEHAN-FOLEY DRAIN
Cross-section 88.500
683.60
680.57
677.54
674.51
671.49
668.46
665.43
662.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

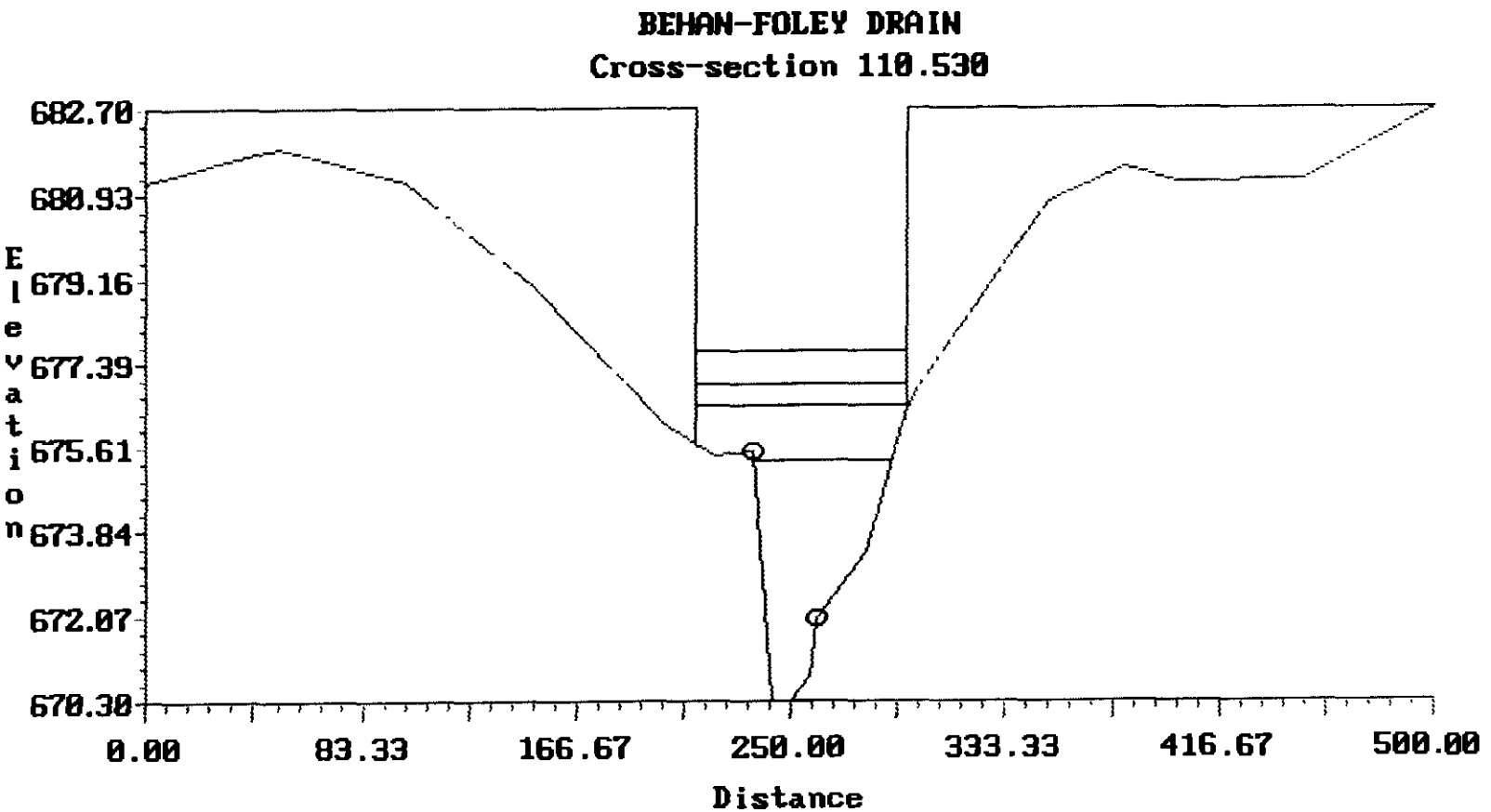

BEHAN-FOLEY DRAIN
Cross-section 94.000
675.10
673.73
672.36
670.99
669.61
668.24
666.87
665.50
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

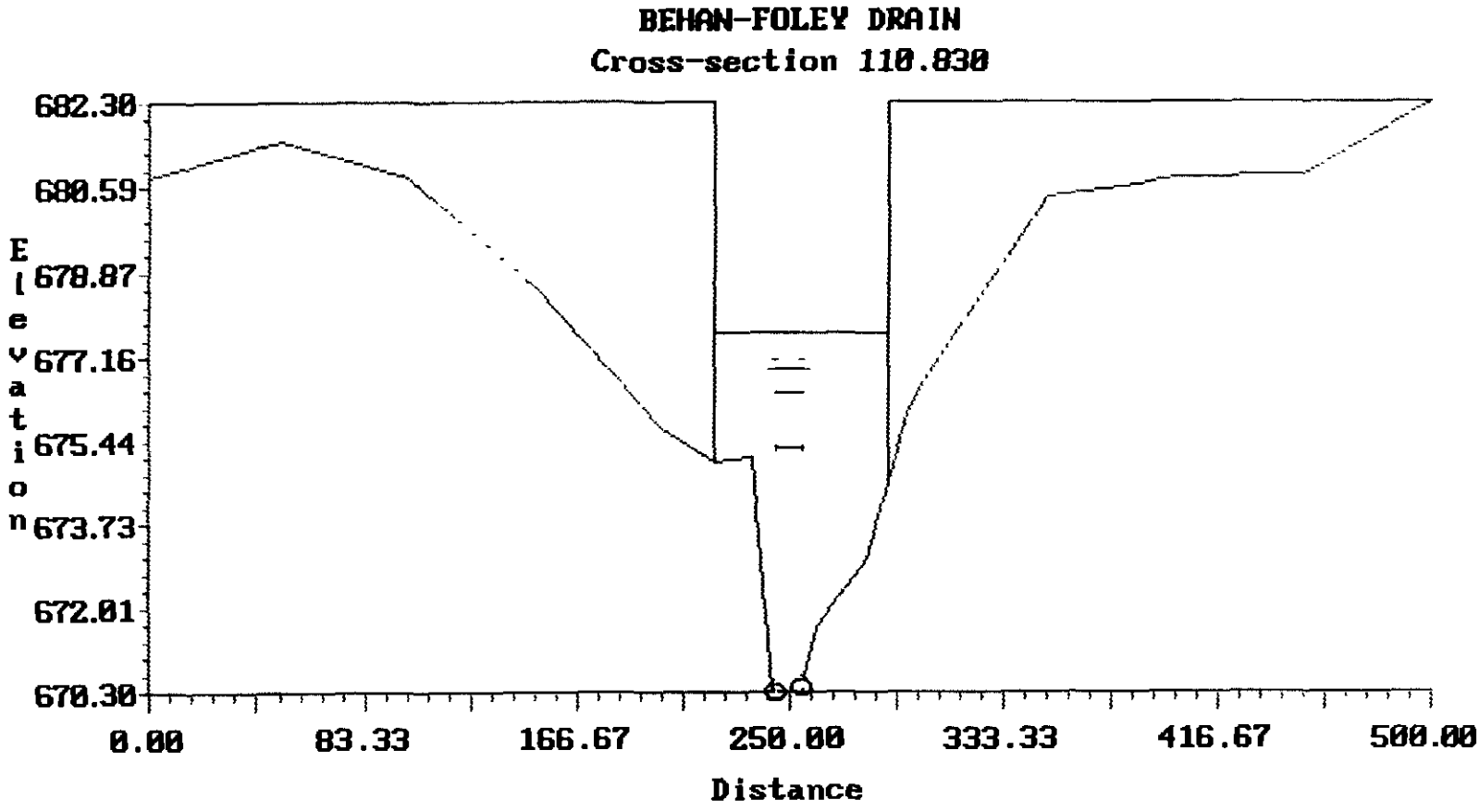

BEHAN-FOLEY DRAIN
Cross-section 97.000
681.07
679.21
677.36
675.50
673.64
671.78
669.93
668.07
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

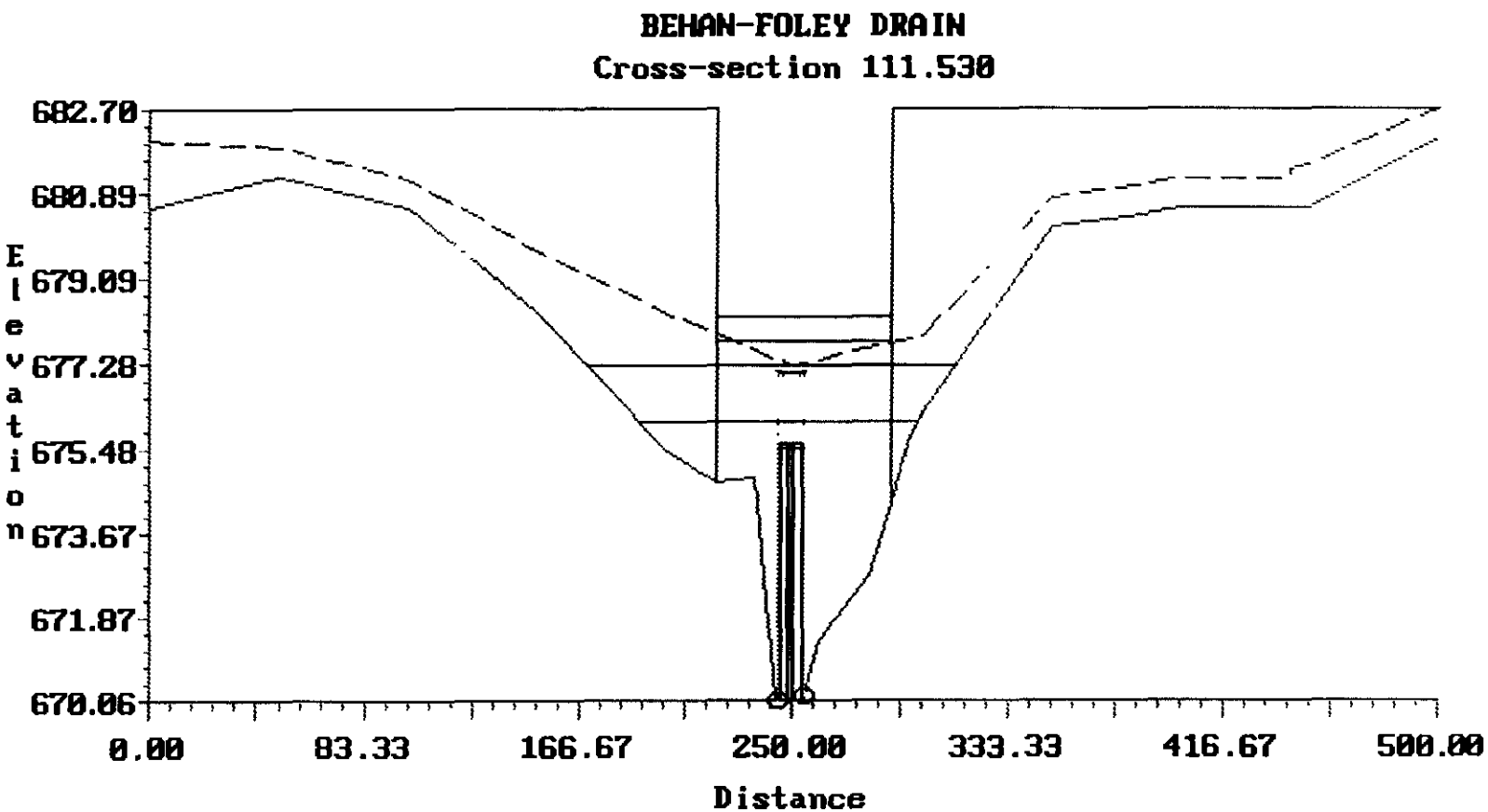

BEHAN-FOLEY DRAIN
Cross-section 98.000
683.10
681.01
678.93
676.84
674.76
672.67
670.59
668.50
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

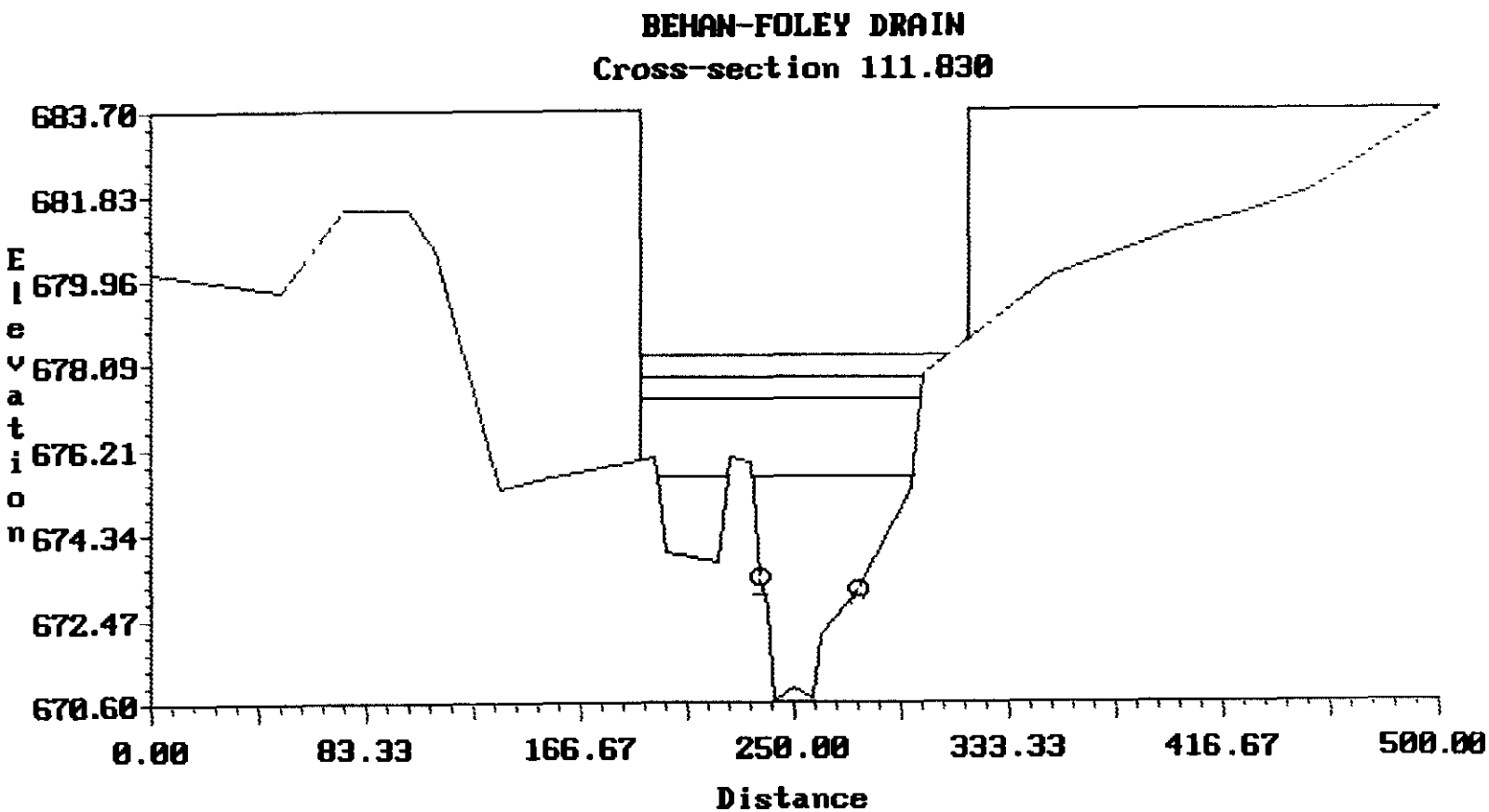

BEHAN-FOLEY DRAIN
Cross-section 104.500
686.90
684.46
682.01
679.57
677.13
674.69
672.24
669.80
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

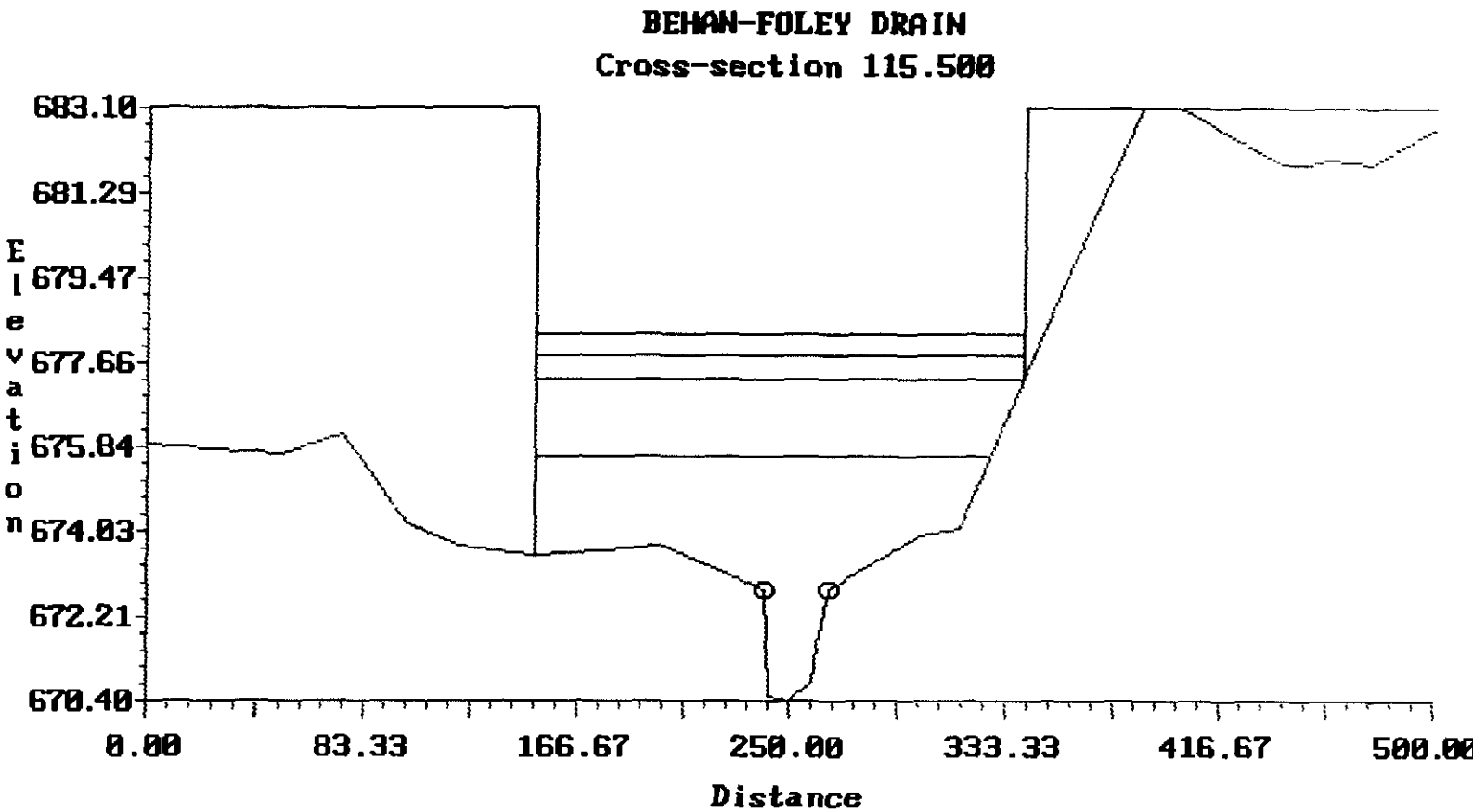

BEHAN-FOLEY DRAIN
Cross-section 109.000
684.80
682.69
680.57
678.46
676.34
674.23
672.11
670.00
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

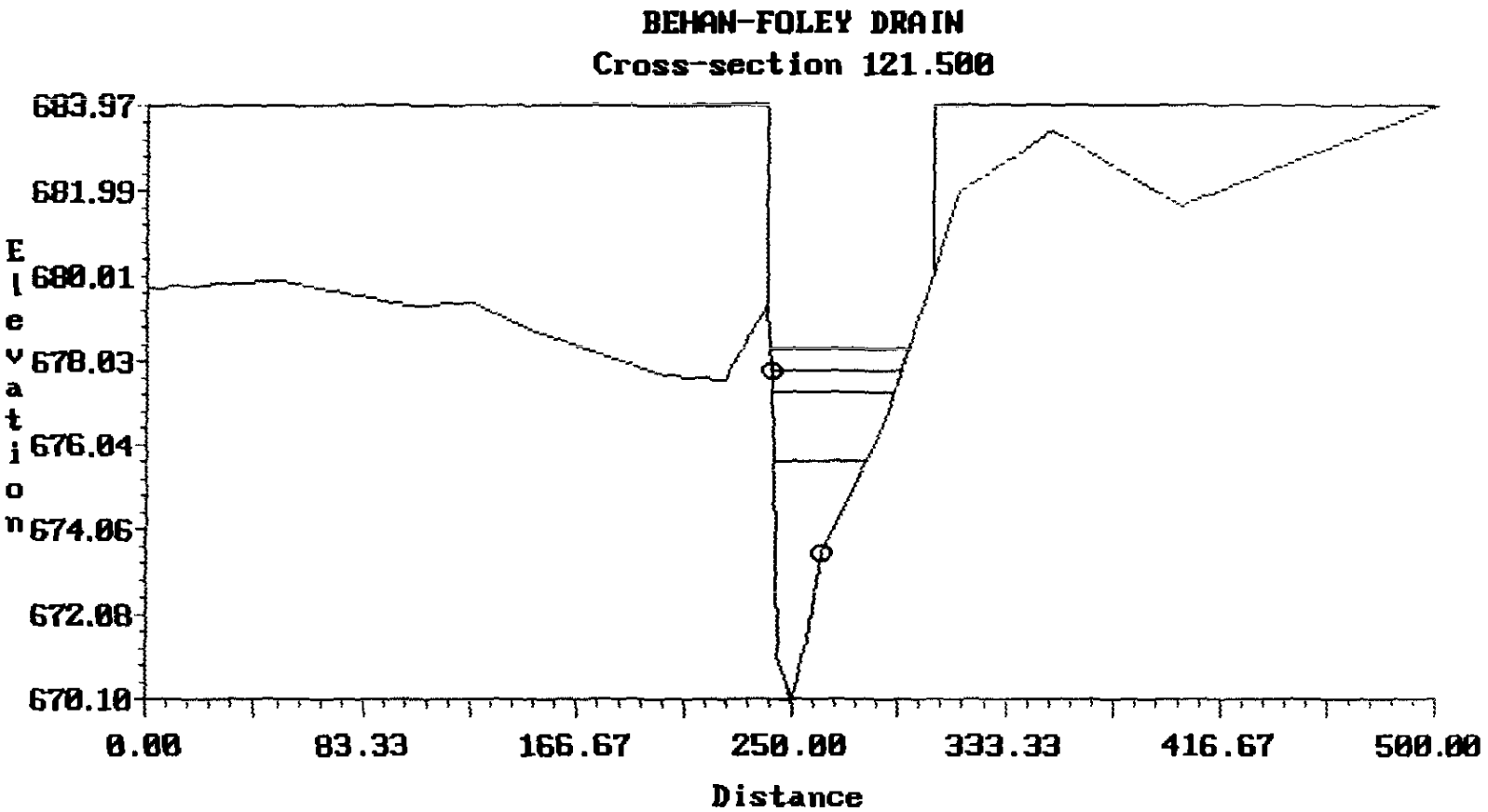

BEHAN-FOLEY DRAIN
Cross-section 110.530
682.70
680.93
679.16
677.39
675.61
673.84
672.07
670.30
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

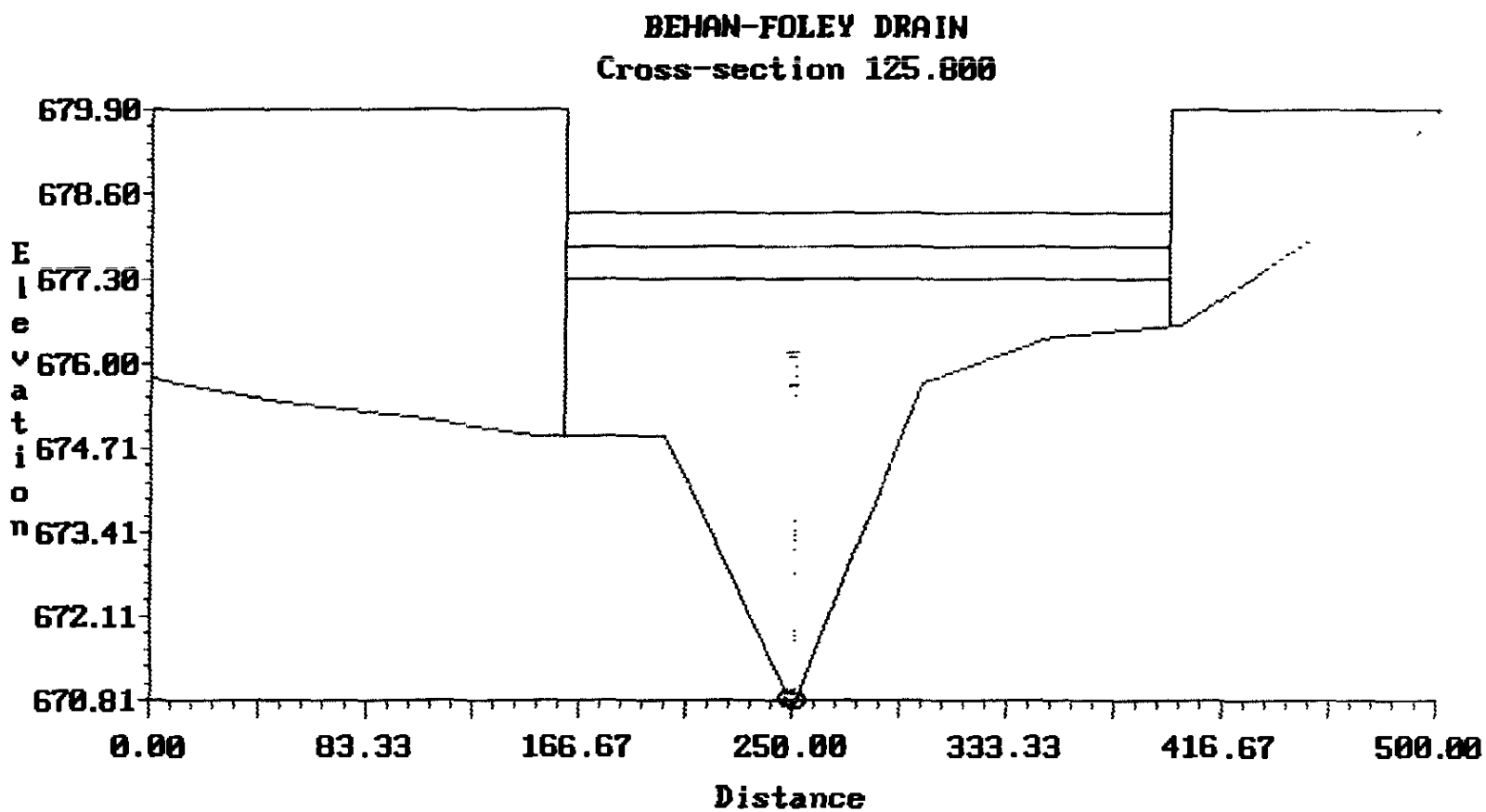

BEHAN-FOLEY DRAIN
Cross-section 110.830
682.30
680.59
678.87
677.16
675.44
673.73
672.01
670.30
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

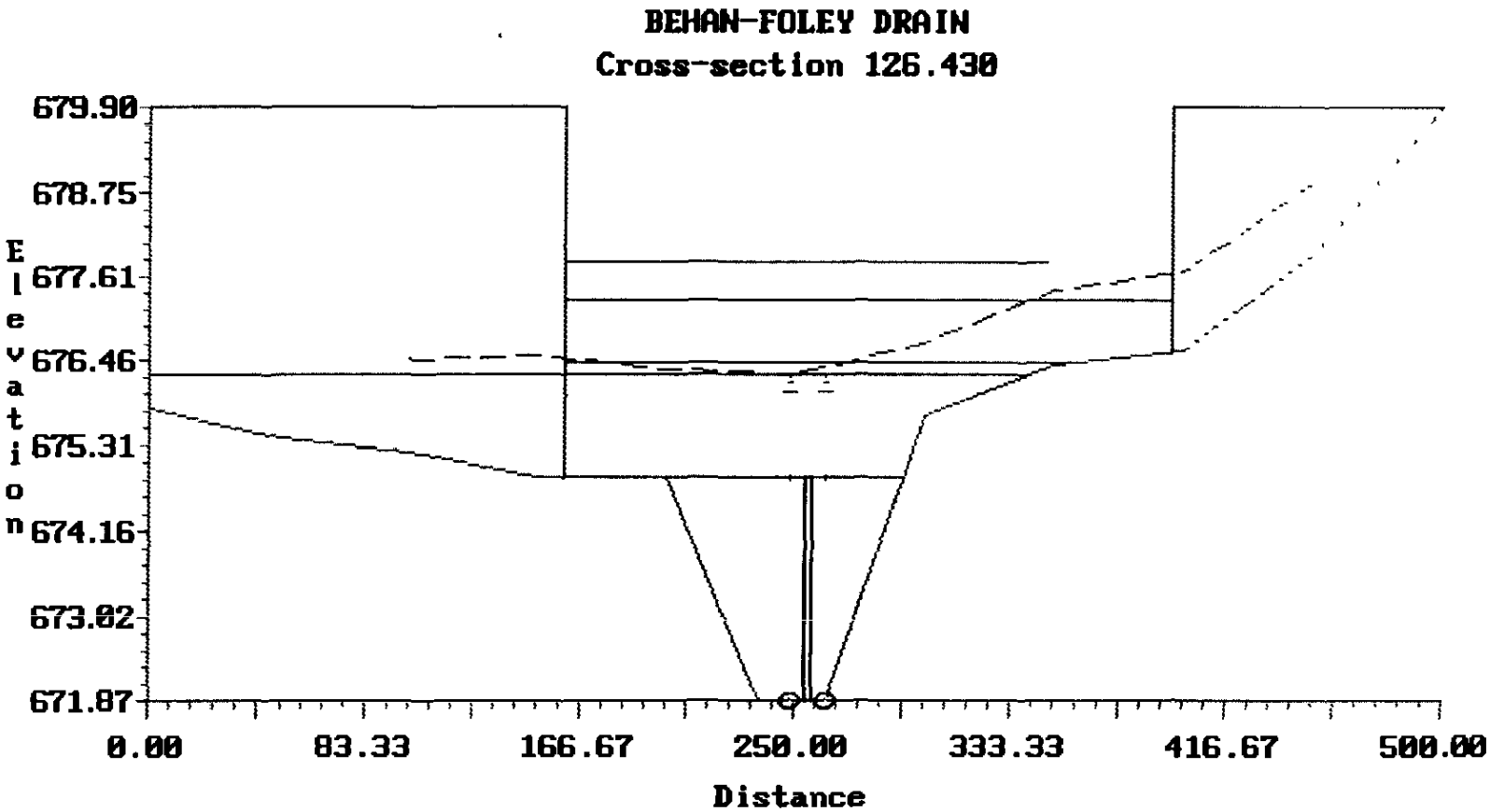

BEHAN-FOLEY DRAIN
Cross-section 111.530
682.70
680.89
679.09
677.28
675.48
673.67
671.87
670.06
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

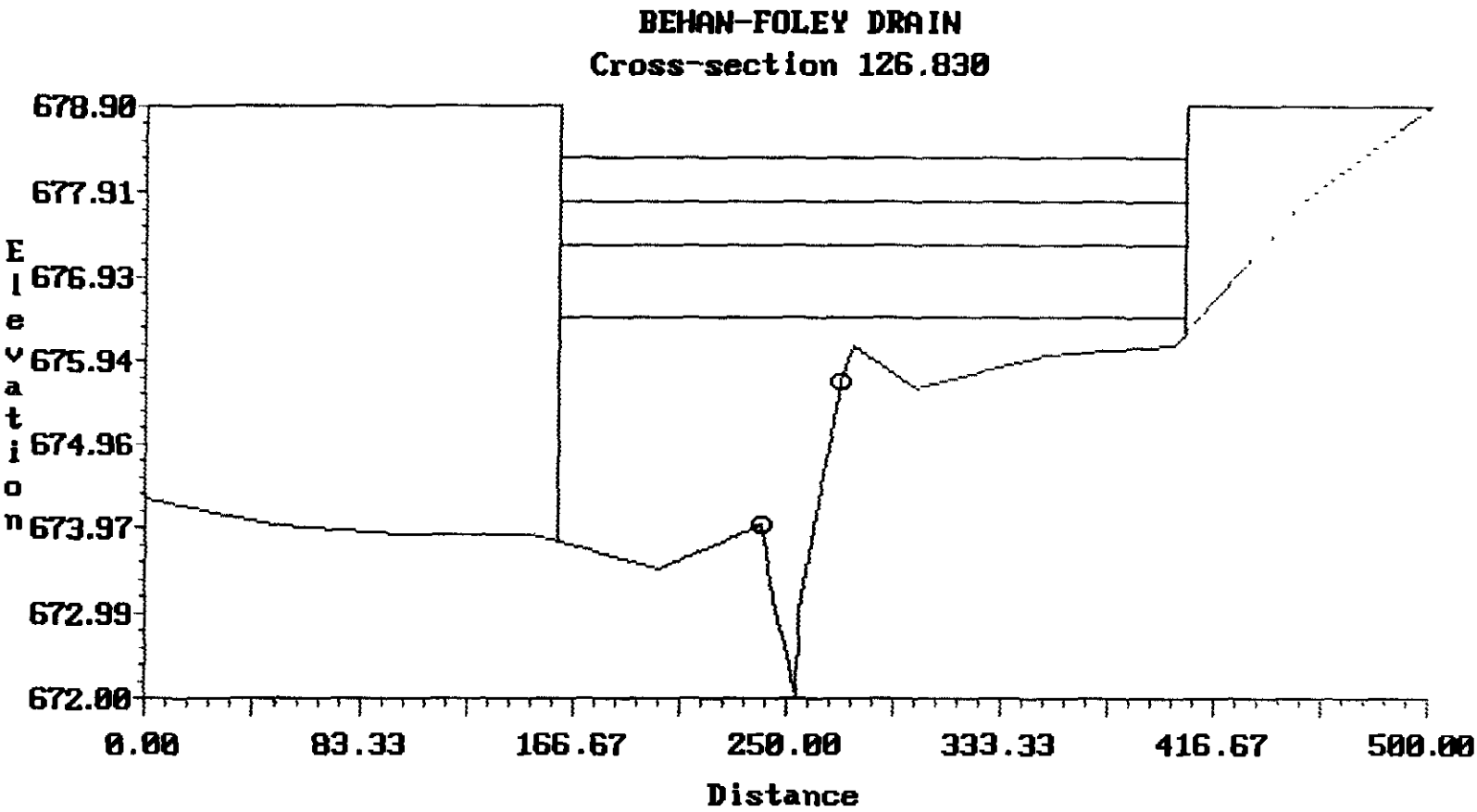

BEHAN-FOLEY DRAIN
Cross-section 111.830
683.70
681.83
679.96
678.09
676.21
674.34
672.47
670.60
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

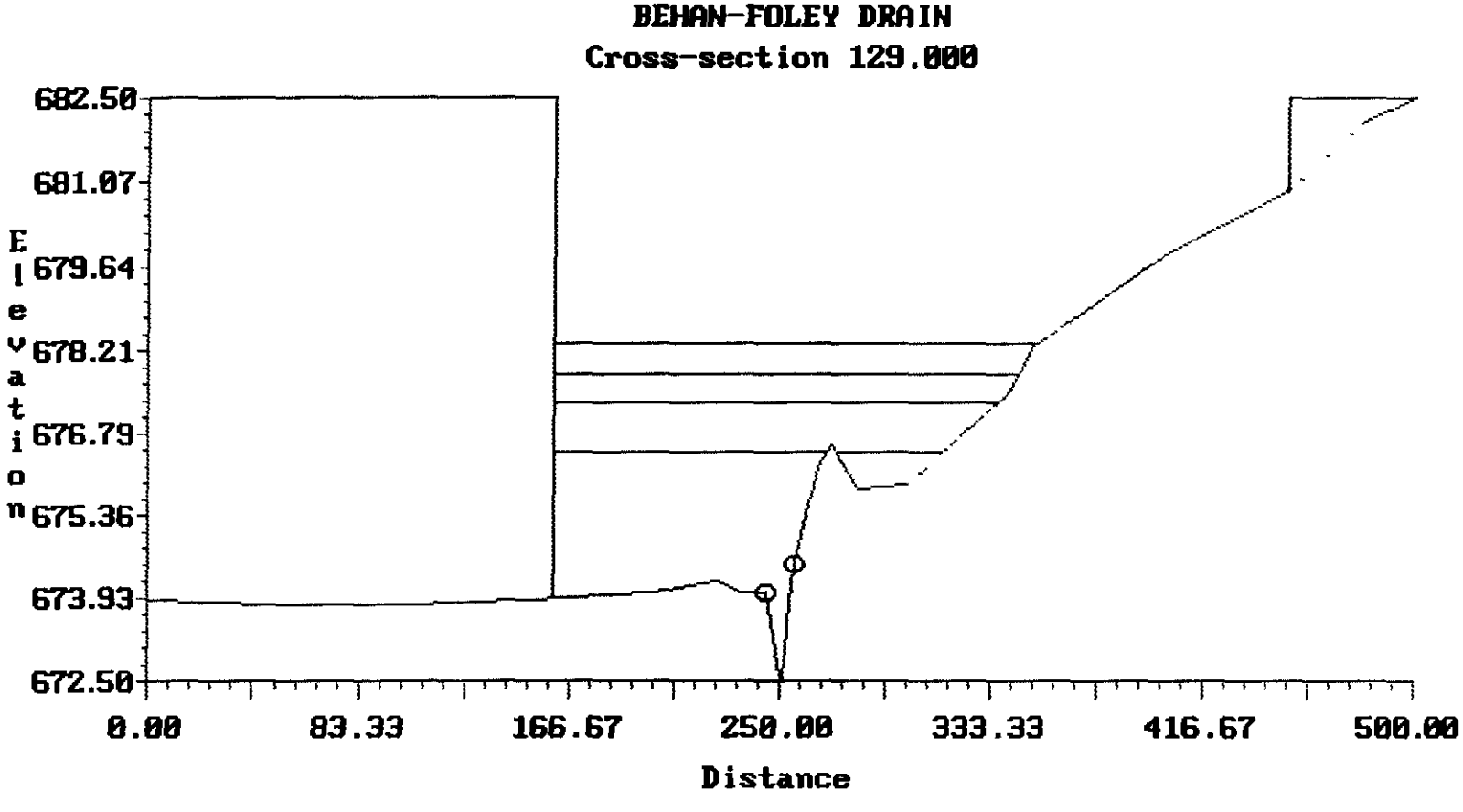

BEHAN-FOLEY DRAIN
Cross-section 115.500
683.10
681.29
679.47
677.66
675.84
674.03
672.21
670.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

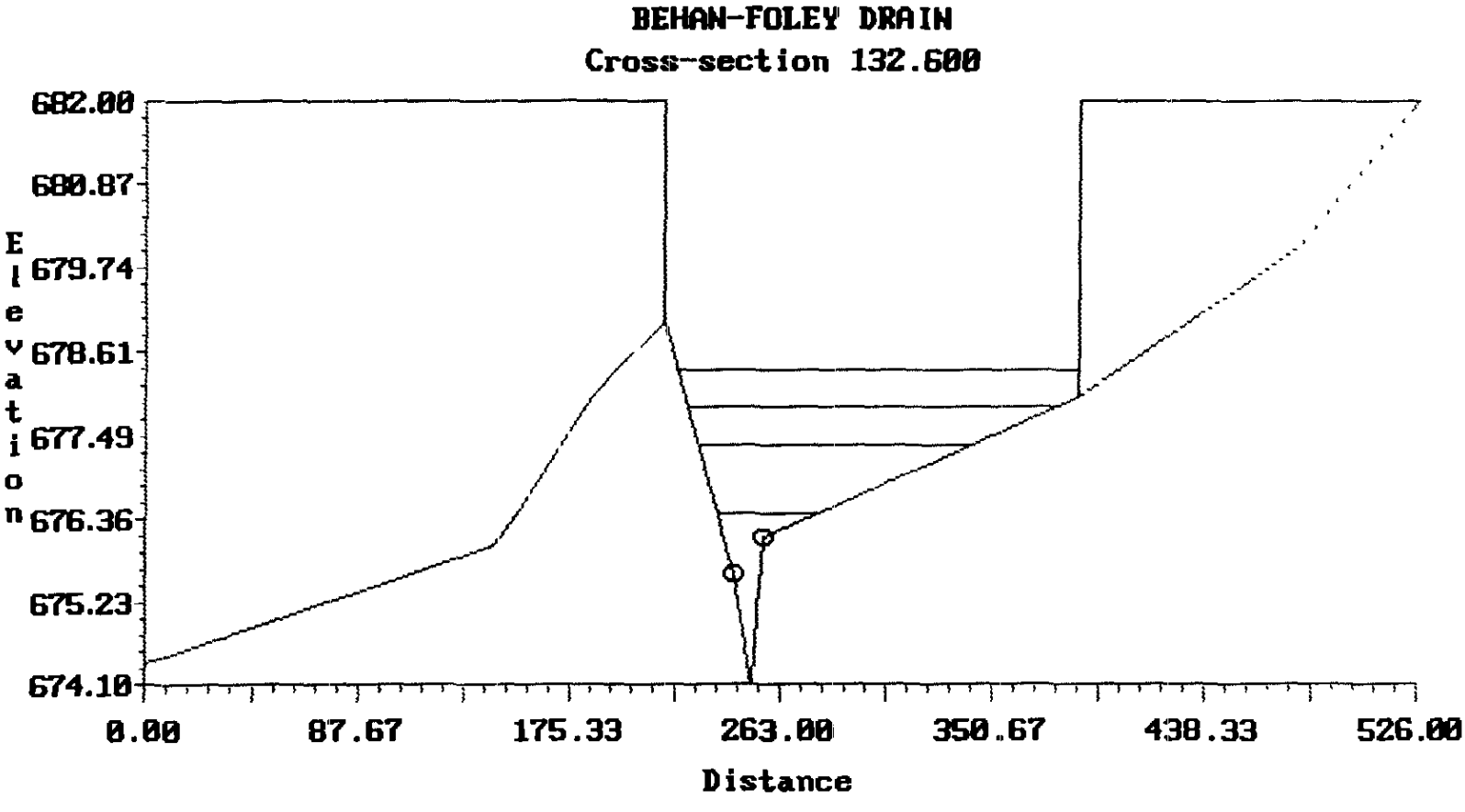

BEHAN-FOLEY DRAIN
Cross-section 121.500
683.97
681.99
680.01
678.03
676.04
674.06
672.08
670.10
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

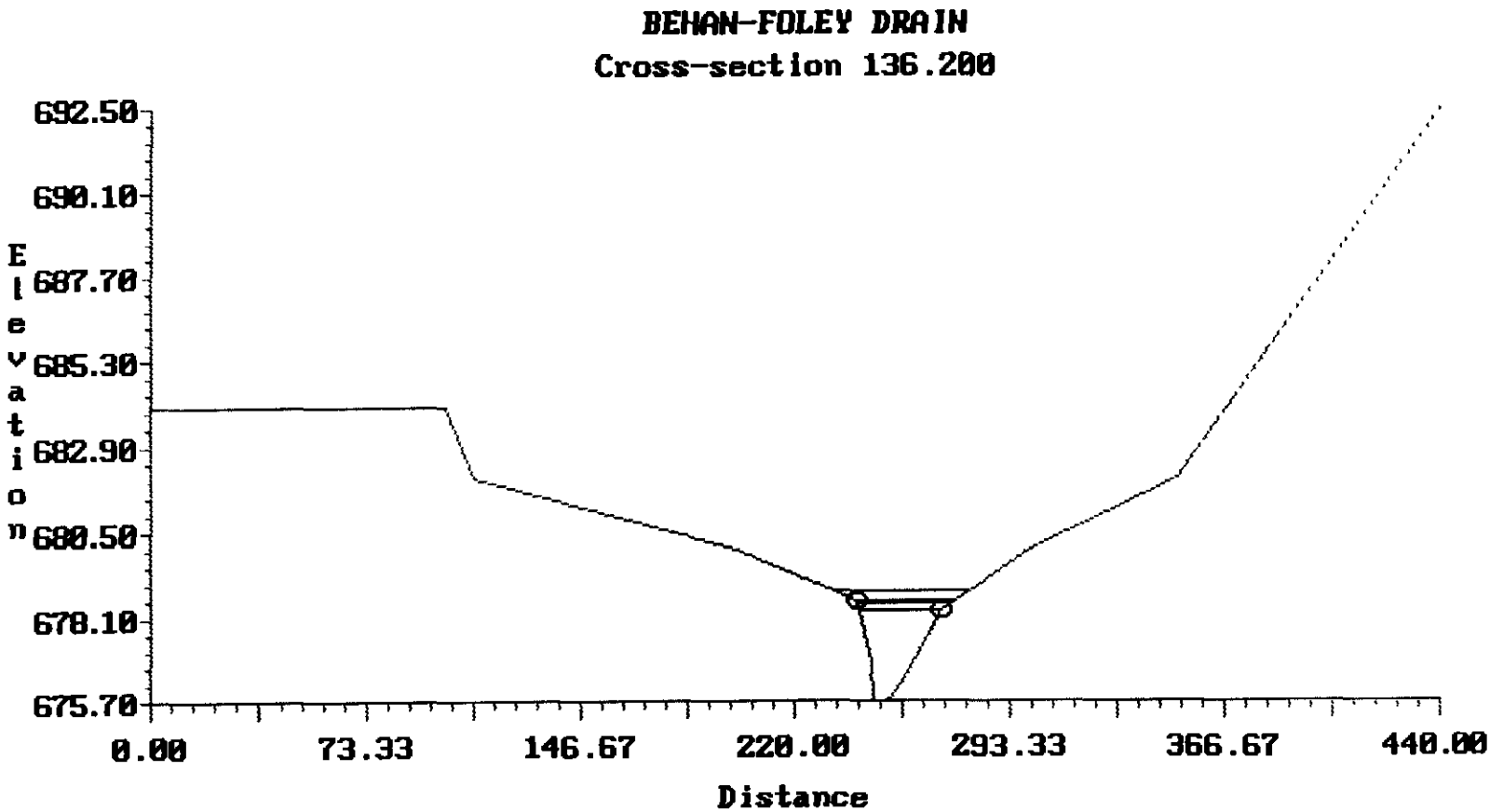

BEHAN-FOLEY DRAIN
Cross-section 125.800
679.90
678.60
677.30
676.00
674.71
673.41
672.11
670.81
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

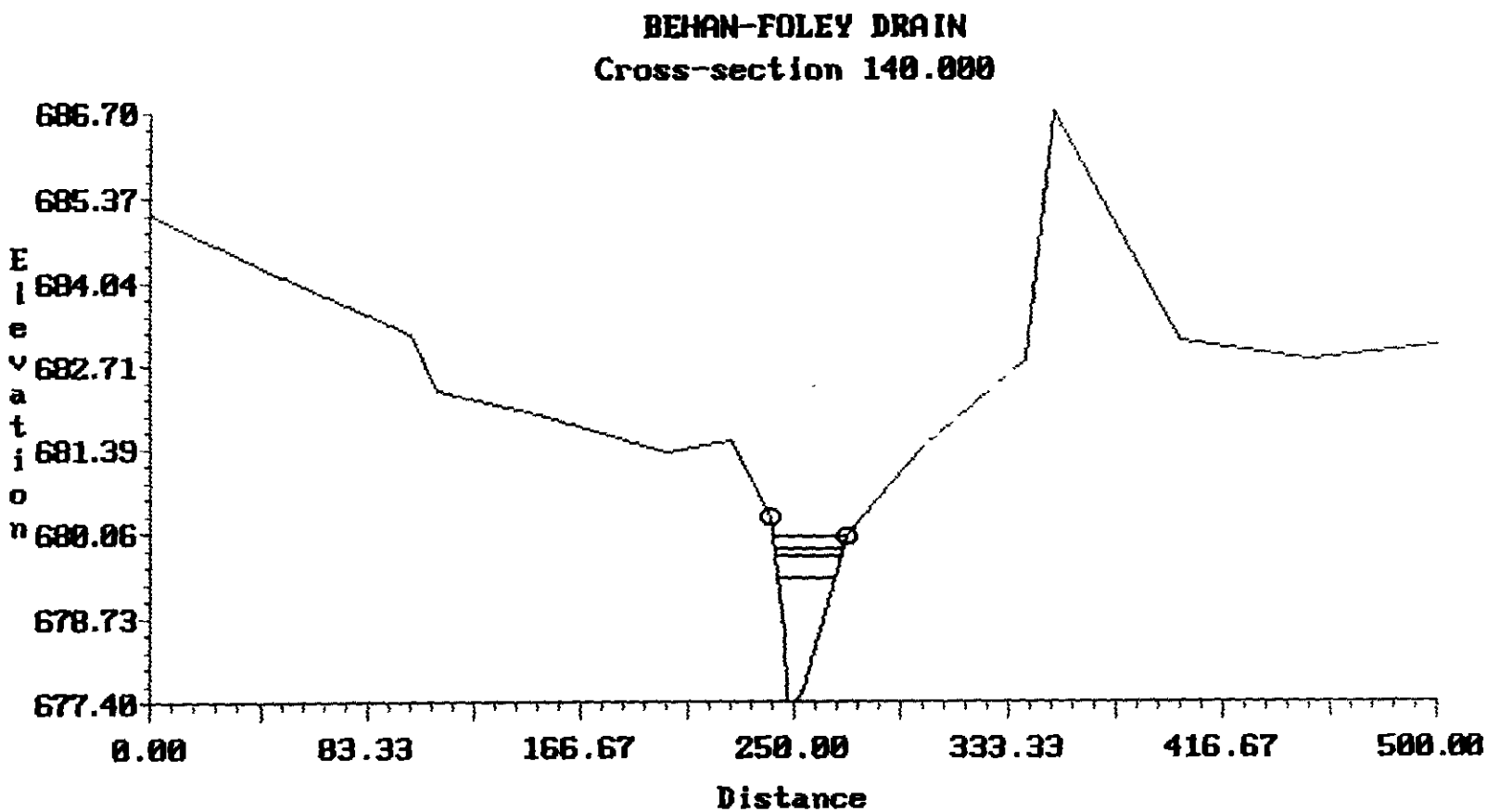

BEHAN-FOLEY DRAIN
Cross-section 126.430
679.90
678.75
677.61
676.46
675.31
674.16
673.02
671.87
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

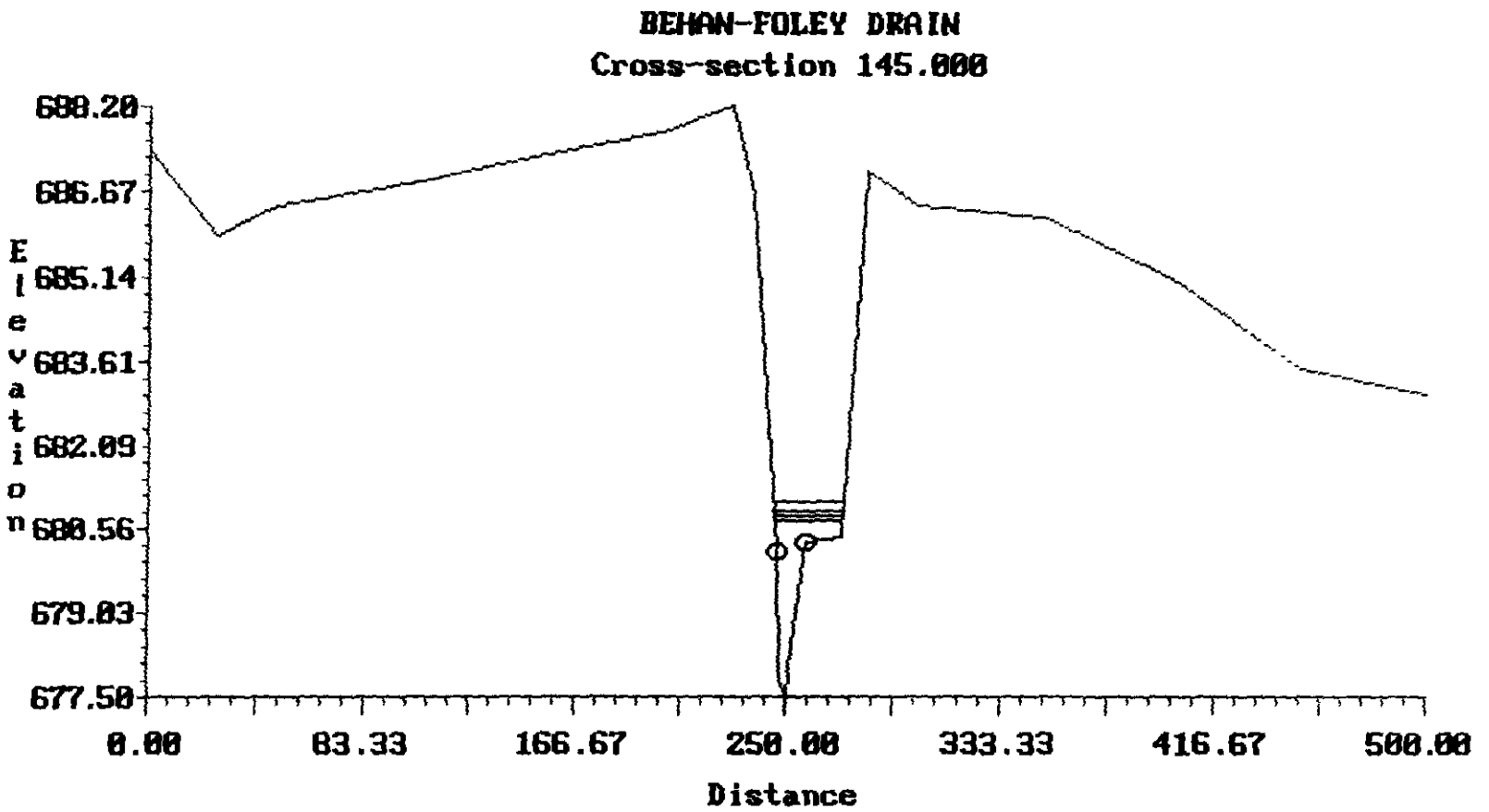

BEHAN-FOLEY DRAIN
Cross-section 126.830
678.90
677.91
676.93
675.94
674.96
673.97
672.99
672.00
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

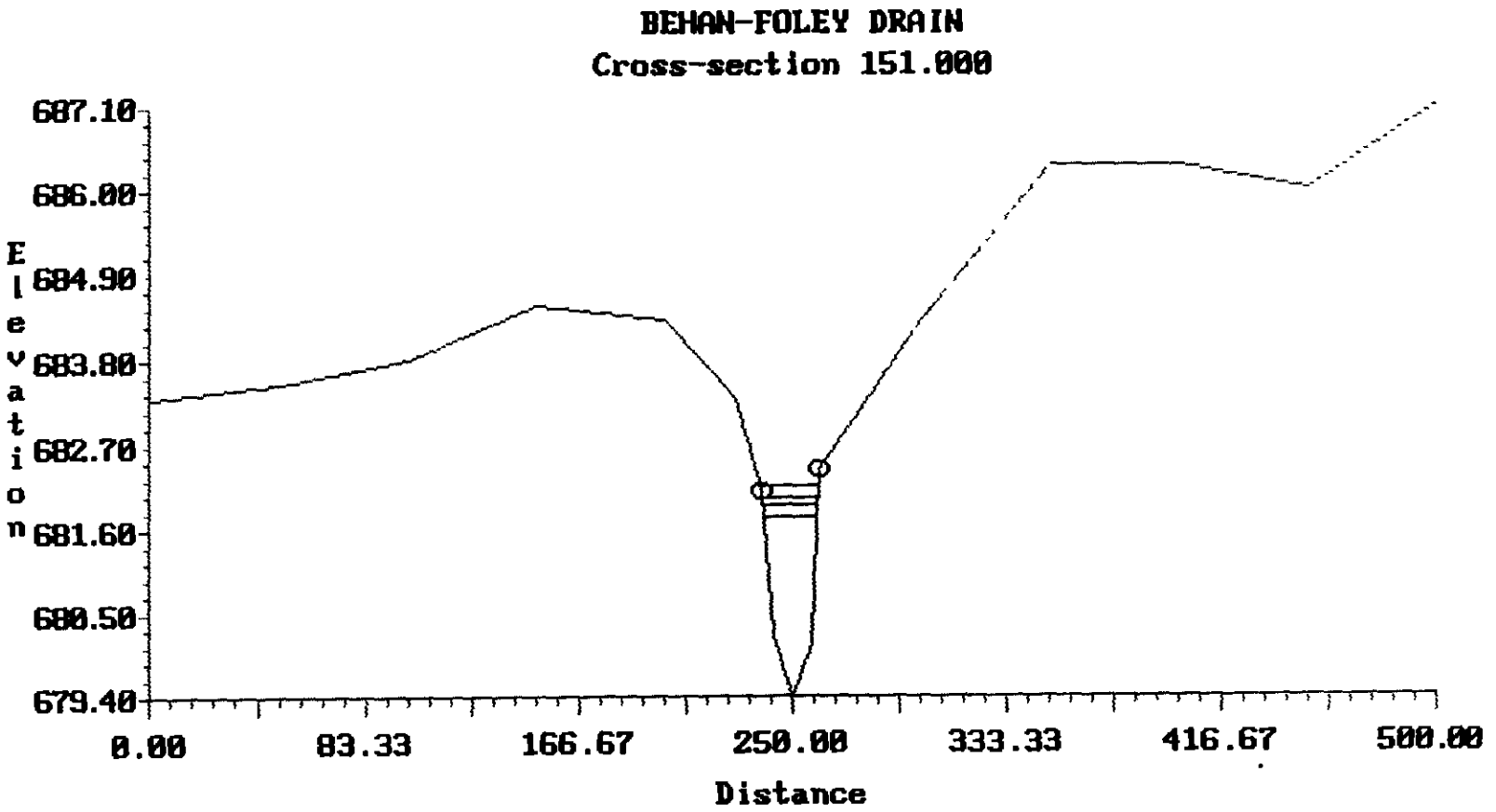

BEHAN-FOLEY DRAIN
Cross-section 129.000
682.50
681.07
679.64
678.21
676.79
675.36
673.93
672.50
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

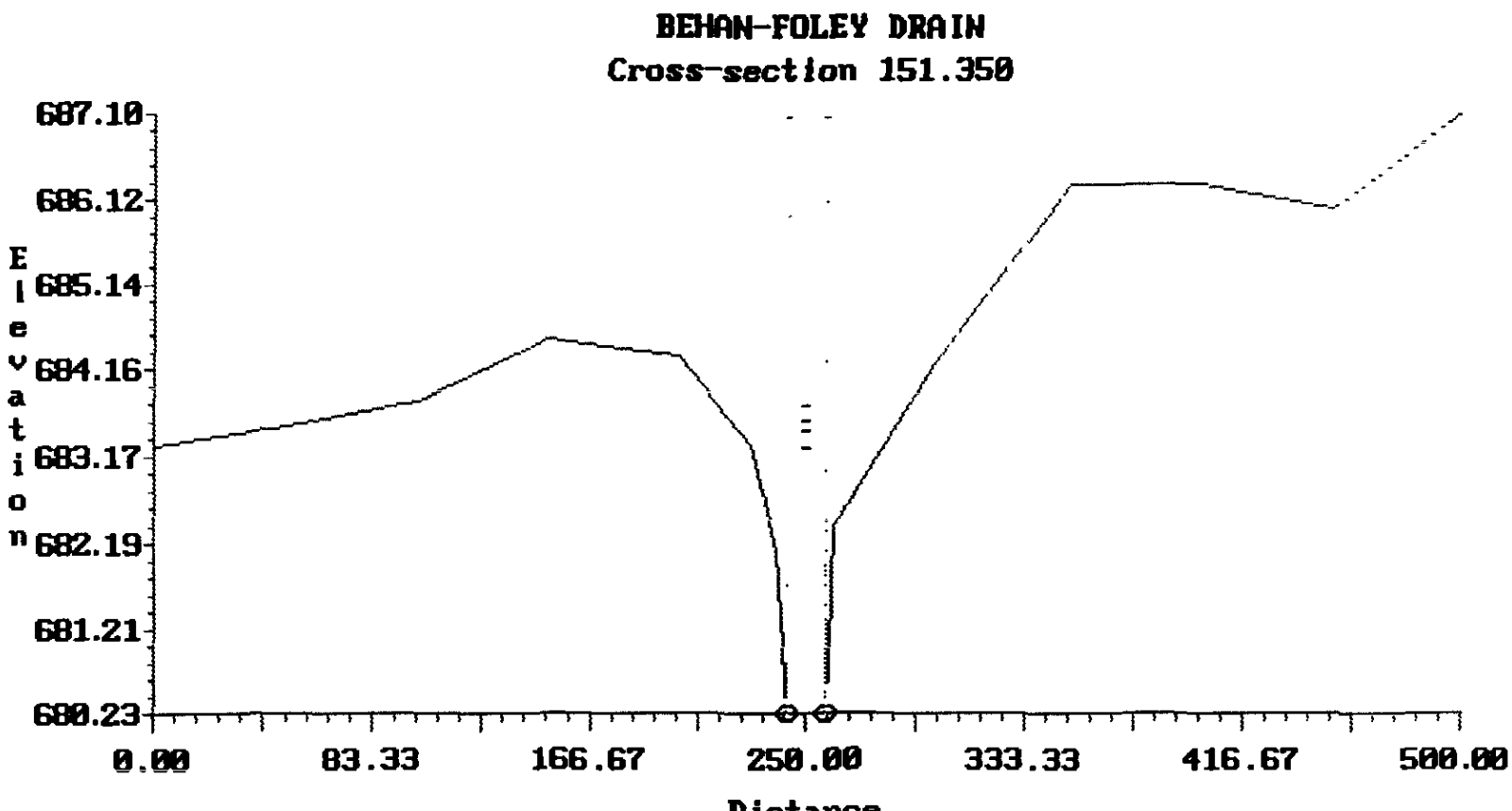

BEHAN-FOLEY DRAIN
Cross-section 132.600
682.00
680.87
679.74
678.61
677.49
676.36
675.23
674.10
Elevation
0.00
87.67
175.33
263.00
350.67
438.33
526.00
Distance

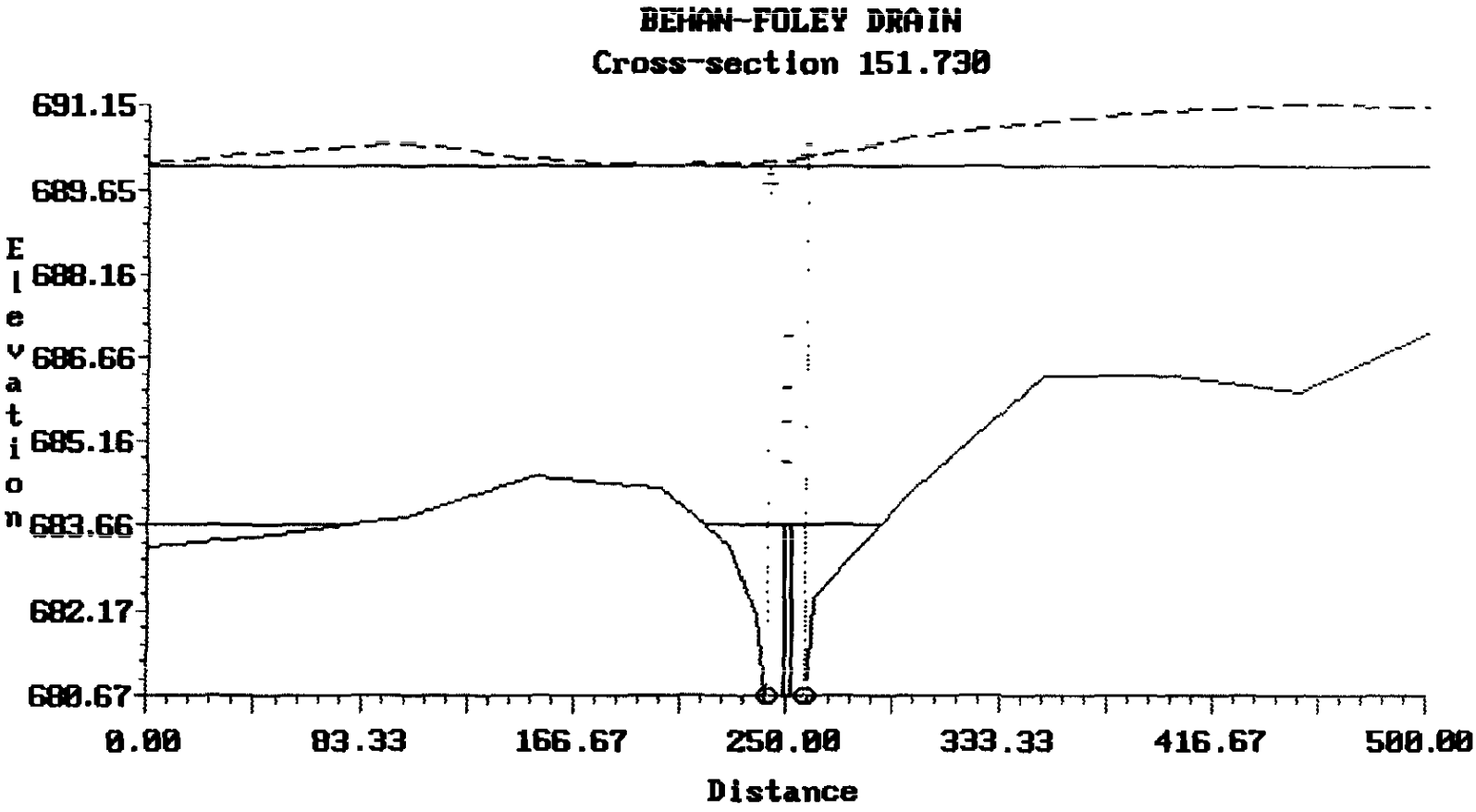

BEHAN-FOLEY DRAIN
Cross-section 136.200
692.50
690.10
687.70
685.30
682.90
680.50
678.10
675.70
Elevation
0.00
73.33
146.67
220.00
293.33
366.67
440.00
Distance

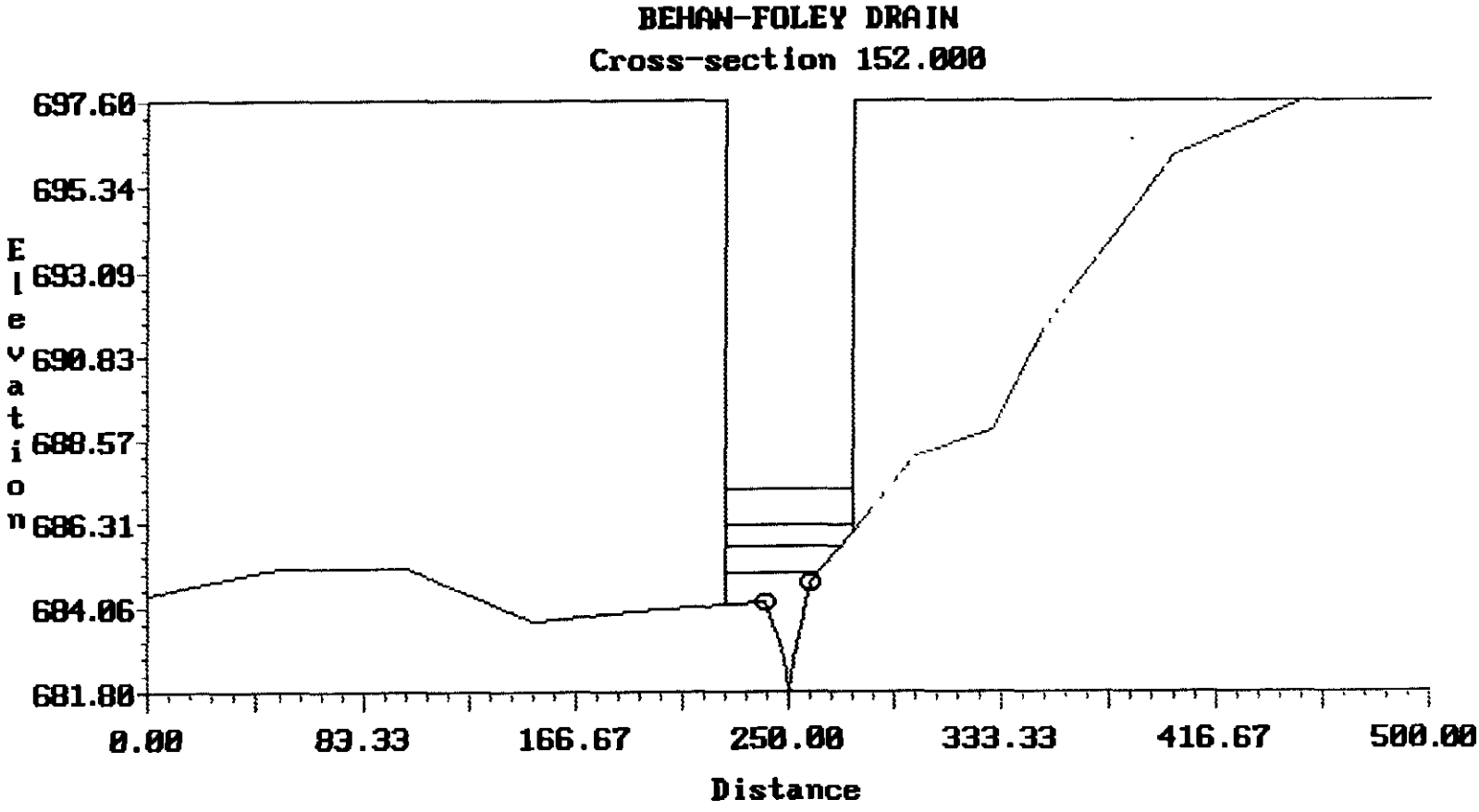

BEHAN-FOLEY DRAIN
Cross-section 140.000
686.70
685.37
684.04
682.71
681.39
680.06
678.73
677.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

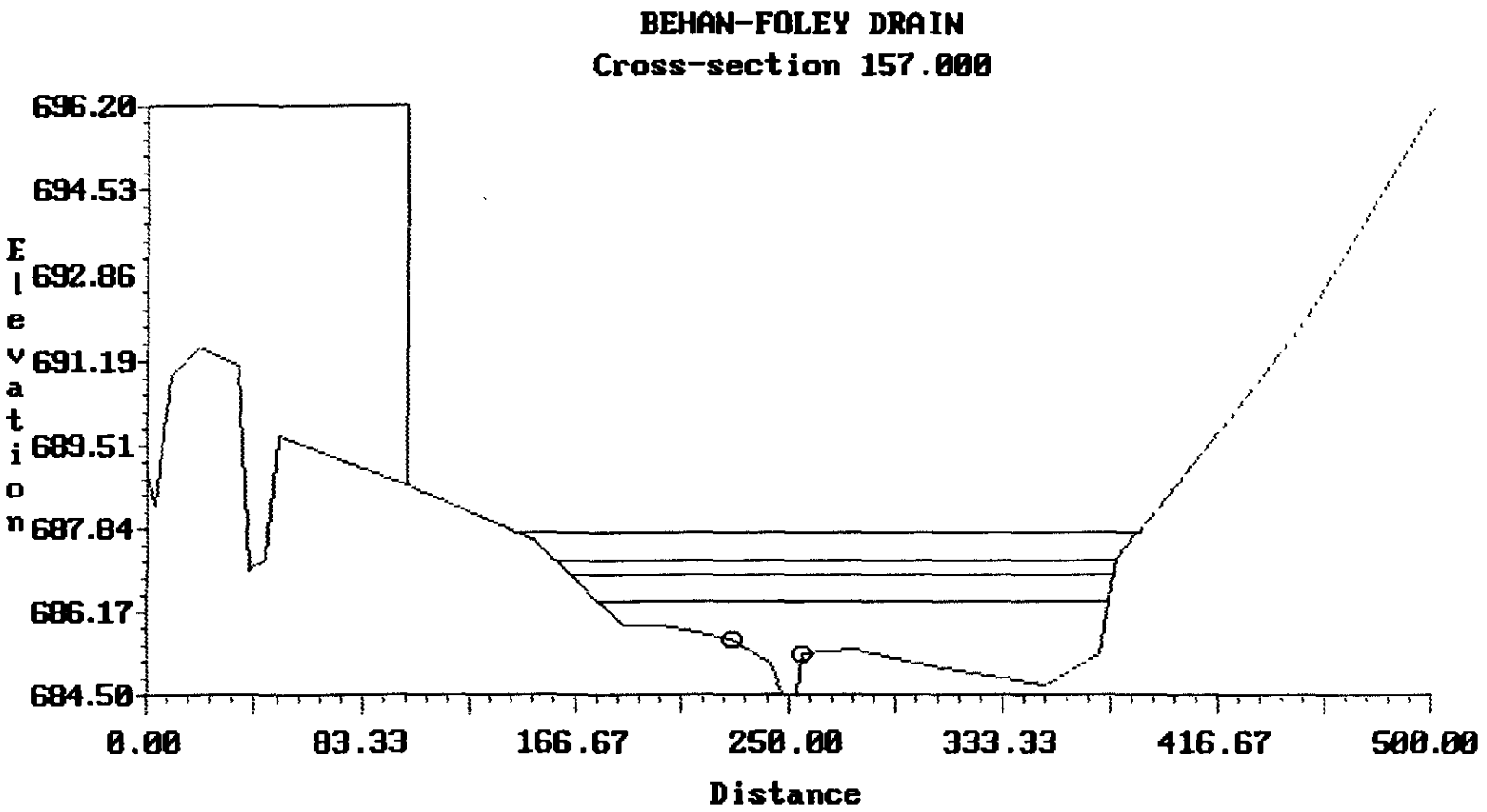

BEHAN-FOLEY DRAIN
Cross-section 145.000
688.20
686.67
685.14
683.61
682.09
680.56
679.03
677.50
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance


BEHAN-FOLEY DRAIN
Cross-section 151.000
687.10
686.00
684.90
683.80
682.70
681.60
680.50
679.40
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance


BEHAN-FOLEY DRAIN
Cross-section 151.350
687.10
686.12
685.14
684.16
683.17
682.19
681.21
680.23
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance


BEHAN-FOLEY DRAIN
Cross-section 151.730
691.15
689.65
688.16
686.66
685.16
683.66
682.17
680.67
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance


BEHAN-FOLEY DRAIN
Cross-section 152.000
697.60
695.34
693.09
690.83
688.57
686.31
684.06
681.80
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance


BEHAN-FOLEY DRAIN
Cross-section 157.000
696.20
694.53
692.86
691.19
689.51
687.84
686.17
684.50
Elevation
0.00
83.33
166.67
250.00
333.33
416.67
500.00
Distance

Appendix B

Exhibit B-1 & B-2: These two exhibits include the Soil Conservation Service curve number tables 9-1 and 2-2. Each land usage and its respective curve number is listed in each table and the values used for the Behan-Foley Drain Analysis are identified by a box.

Exhibit B-1

Table 9.1.--Runoff curve numbers for hydrologic soil-cover complexes

(Antecedent moisture condition II, and $I_a = 0.2S$)

Land use	Cover: Treatment or practice	Cover: Hydrologic condition	Hydrologic soil group A	B	C	D
Fallow	Straight row	----	77	86	91	94
Row crops	"	Poor	72	81	88	91
	"	Good	67	78	85	89
	Contoured	Poor	70	79	84	88
	"	Good	65	75	82	86
	"and terraced	Poor	66	74	80	82
	" " "	Good	62	71	78	81
Small grain	Straight row	Poor	65	76	84	88
		Good	63	75	83	87
	Contoured	Poor	63	74	82	85
		Good	61	73	81	84
	"and terraced	Poor	61	72	79	82
		Good	59	70	78	81
Close-seeded legumes 1/ or rotation meadow	Straight row	Poor	66	77	85	89
	" "	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	"	Good	55	69	78	83
	"and terraced	Poor	63	73	80	83
	"and terraced	Good	51	67	76	80
Pasture or range		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
	Contoured	Poor	47	67	81	88
	"	Fair	25	59	75	83
	"	Good	6	35	70	79
Meadow		Good	30	58	71	78
Woods		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	25	55	70	77
Farmsteads		----	59	74	82	86
Roads (dirt) 2/		----	72	82	87	89
(hard surface) 2/		---	74	84	90	92

1/ Close-drilled or broadcast.
2/ Including right-of-way.

Exhibit B-2

Table 2-2.--Runoff curve numbers for selected agricultural, suburban, and urban land use. (Antecedent moisture condition II, and $I_a = 0.2S$)

LAND USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	C	D
Cultivated land[1]: without conservation treatment	72	81	88	91
: with conservation treatment	62	71	78	81
Pasture or range land: poor condition	68	79	86	89
good condition	39	61	74	80
Meadow: good condition	30	58	71	78
Wood or Forest land: thin stand, poor cover, no mulch	45	66	77	83
good cover[2]	25	55	70	77
Open Spaces, lawns, parks, golf courses, cemeteries, etc.				
good condition: grass cover on 75% or more of the area	39	61	74	80
fair condition: grass cover on 50% to 75% of the area	49	69	79	84
Commercial and business areas (85% impervious)	89	92	94	95
Industrial districts (72% impervious).	81	88	91	93
Residential:[3]				
Average lot size — Average % Impervious[4]				
1/8 acre or less — 65	77	85	90	92
1/4 acre — 38	61	75	83	87
1/3 acre — 30	57	72	81	86
1/2 acre — 25	54	70	80	85
1 acre — 20	51	68	79	84
Paved parking lots, roofs, driveways, etc.[5]	98	98	98	98
Streets and roads:				
paved with curbs and storm sewers[6]	98	98	98	98
gravel	76	85	89	91
dirt	72	82	87	89

1/ For a more detailed description of agricultural land use curve numbers refer to National Engineering Handbook, Section 4, Hydrology, Chapter 9, Aug. 1972.

2/ Good cover is protected from grazing and litter and brush cover soil.

3/ Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.

4/ The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

5/ In some warmer climates of the country a curve number of 95 may be used.

Appendix C

This Appendix includes the six culvert rating curves developed using the Federal Highway Administration's HY8 culvert program. Each of these rating curves is used as input into the computer model HEC-1 for flood routing and attenuation purposes. These six rating curves are input into HEC-1's Modified Puls routing option and are identified in HEC-1 as:

DB100
DB200
DB400
DB600
SR700
SR900

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:18:58

FILE DATE: 6-2-92
FILE NAME: DB100

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	680.67	680.23	38.00	1 RCP	2.50	2.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

FILE: DB100 CULVERT HEADWATER ELEVATION (FT) DATE: 6-2-92

DISCHARGE	1	2	3	4	5	6	ROADWAY
0	680.67	0.00	0.00	0.00	0.00	0.00	690.14
15	682.60	0.00	0.00	0.00	0.00	0.00	690.19
30	683.82	0.00	0.00	0.00	0.00	0.00	690.21
45	685.65	0.00	0.00	0.00	0.00	0.00	690.24
50	686.44	0.00	0.00	0.00	0.00	0.00	690.24
75	691.84	0.00	0.00	0.00	0.00	0.00	690.28
90	696.21	0.00	0.00	0.00	0.00	0.00	690.29
105	701.37	0.00	0.00	0.00	0.00	0.00	690.31
120	707.33	0.00	0.00	0.00	0.00	0.00	690.33
135	714.08	0.00	0.00	0.00	0.00	0.00	690.34
150	721.62	0.00	0.00	0.00	0.00	0.00	690.35

CURRENT DATE: 10-01-1992 FILE DATE: 6-2-92
CURRENT TIME: 10:18:58 FILE NAME: DB100

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	680.67	680.23	0.00	-0.44	0-NF	0.00	680.67	0.00	0.00
15	682.60	680.23	1.93	1.72	6-FF	0.00	0.00	0.00	7.76
30	683.82	680.23	3.15	2.78	6-FF	0.00	0.00	0.00	9.35
45	685.65	680.23	4.98	4.26	6-FF	0.00	0.00	0.00	10.60
50	686.44	680.23	5.77	4.87	6-FF	0.00	0.00	0.00	11.01
75	691.84	680.23	11.17	8.57	4-FF	0.00	0.00	0.00	15.28
90	696.21	680.23	15.54	11.44	4-FF	0.00	0.00	0.00	18.33
105	701.37	680.23	20.70	14.83	4-FF	0.00	0.00	0.00	21.39
120	707.33	680.23	26.66	18.74	4-FF	0.00	0.00	0.00	24.45
135	714.08	680.23	33.41	23.17	4-FF	0.00	0.00	0.00	27.50
150	721.62	680.23	40.95	28.12	4-FF	0.00	0.00	0.00	30.56

El. inlet face invert 680.67 ft El. outlet invert 680.23 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	680.67
OUTLET STATION (FT)	38.00
OUTLET ELEVATION (FT)	680.23
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0116
CULVERT LENGTH ALONG SLOPE (FT)	38.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	2.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:18:58

FILE DATE: 6-2-92
FILE NAME: DB100

TAILWATER

CONSTANT WATER SURFACE ELEVATION
680.23

ROADWAY OVERTOPPING DATA

WEIR COEFFICIENT	3.00
EMBANKMENT TOP WIDTH (FT)	40.00
CREST LENGTH (FT)	500.00
OVERTOPPING CREST ELEVATION (FT)	690.14

URRENT DATE: 10-01-1992
URRENT TIME: 10:21:05

FILE DATE: 6-8-92
FILE NAME: DB200

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	671.87	670.83	204.00	1 RCP	3.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

FILE: DB200 CULVERT HEADWATER ELEVATION (FT) DATE: 6-8-92

DISCHARGE	1	2	3	4	5	6	ROADWAY
0	671.87	0.00	0.00	0.00	0.00	0.00	676.27
15	673.62	0.00	0.00	0.00	0.00	0.00	676.46
30	674.56	0.00	0.00	0.00	0.00	0.00	676.52
35	674.86	0.00	0.00	0.00	0.00	0.00	676.53
60	676.71	0.00	0.00	0.00	0.00	0.00	676.59
75	678.52	0.00	0.00	0.00	0.00	0.00	676.62
90	680.76	0.00	0.00	0.00	0.00	0.00	676.65
105	683.25	0.00	0.00	0.00	0.00	0.00	676.67
120	686.14	0.00	0.00	0.00	0.00	0.00	676.70
135	689.41	0.00	0.00	0.00	0.00	0.00	676.72
150	693.06	0.00	0.00	0.00	0.00	0.00	676.74

CURRENT DATE: 10-01-1992 FILE DATE: 6-8-92
CURRENT TIME: 10:21:05 FILE NAME: DB200

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	671.87	670.83	0.00	-1.04	0-NF	0.00	671.87	0.00	0.00
15	673.62	670.83	1.75	1.27	6-FF	0.00	0.00	0.00	6.37
30	674.56	670.83	2.69	2.11	6-FF	0.00	0.00	0.00	7.59
35	674.86	670.83	2.99	2.47	6-FF	0.00	0.00	0.00	7.85
60	676.71	670.83	4.84	4.77	7-FF	0.00	0.00	0.00	9.61
75	678.52	670.83	6.45	6.65	7-FF	0.00	0.00	0.00	11.10
90	680.76	670.83	8.44	8.89	7-FF	0.00	0.00	0.00	12.81
105	683.25	670.83	10.89	11.38	4-FF	0.00	0.00	0.00	14.85
120	686.14	670.83	13.77	14.27	4-FF	0.00	0.00	0.00	16.98
135	689.41	670.83	17.03	17.54	4-FF	0.00	0.00	0.00	19.10
150	693.06	670.83	20.67	21.19	4-FF	0.00	0.00	0.00	21.22

El. inlet face invert 671.87 ft El. outlet invert 670.83 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	671.87
OUTLET STATION (FT)	204.00
OUTLET ELEVATION (FT)	670.83
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0051
CULVERT LENGTH ALONG SLOPE (FT)	204.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:21:05

FILE DATE: 6-8-92
FILE NAME: DB200

TAILWATER

CONSTANT WATER SURFACE ELEVATION
670.83

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE PAVED
EMBANKMENT TOP WIDTH (FT) 30.00
***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	676.50
2	50.00	676.65
3	100.00	676.45
4	150.00	676.52
5	200.00	676.33
6	250.00	676.27
7	300.00	676.48
8	350.00	676.87
9	400.00	677.67
10	450.00	678.82
11	500.00	680.01
12	550.00	681.06
13	600.00	682.42
14	650.00	683.66

URRENT DATE: 10-01-1992
URRENT TIME: 10:28:57

FILE DATE: 6-2-92
FILE NAME: DB400

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	678.80	678.20	300.00	1 RCP	3.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

FILE: DB400 CULVERT HEADWATER ELEVATION (FT) DATE: 6-2-92

DISCHARGE	1	2	3	4	5	6	ROADWAY
0	678.80	0.00	0.00	0.00	0.00	0.00	700.00
7	679.99	0.00	0.00	0.00	0.00	0.00	700.03
14	680.55	0.00	0.00	0.00	0.00	0.00	700.05
20	680.91	0.00	0.00	0.00	0.00	0.00	700.06
28	681.42	0.00	0.00	0.00	0.00	0.00	700.07
35	681.83	0.00	0.00	0.00	0.00	0.00	700.08
42	682.31	0.00	0.00	0.00	0.00	0.00	700.09
49	683.10	0.00	0.00	0.00	0.00	0.00	700.10
56	683.89	0.00	0.00	0.00	0.00	0.00	700.11
63	684.77	0.00	0.00	0.00	0.00	0.00	700.12
70	685.71	0.00	0.00	0.00	0.00	0.00	700.13

CURRENT DATE: 10-01-1992 FILE DATE: 6-2-92
CURRENT TIME: 10:28:57 FILE NAME: DB400

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	678.80	678.20	0.00	-0.60	0-NF	0.00	678.80	0.00	0.00
7	679.99	678.20	1.13	1.19	2-M2	0.00	0.00	0.00	4.42
14	680.55	678.20	1.66	1.75	2-M2	0.00	0.00	0.00	5.36
20	680.91	678.20	2.04	2.11	2-M2	0.00	0.00	0.00	6.05
28	681.42	678.20	2.47	2.62	2-M2	0.00	0.00	0.00	6.76
35	681.83	678.20	2.83	3.03	2-M2	0.00	0.00	0.00	7.35
42	682.31	678.20	3.19	3.51	2-M2	0.00	0.00	0.00	7.91
49	683.10	678.20	3.59	4.30	7-FF	0.00	0.00	0.00	8.56
56	683.89	678.20	4.05	5.09	7-FF	0.00	0.00	0.00	9.15
63	684.77	678.20	4.57	5.97	7-FF	0.00	0.00	0.00	9.93
70	685.71	678.20	5.17	6.91	7-FF	0.00	0.00	0.00	10.63

El. inlet face invert 678.80 ft El. outlet invert 678.20 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	678.80
OUTLET STATION (FT)	300.00
OUTLET ELEVATION (FT)	678.20
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0020
CULVERT LENGTH ALONG SLOPE (FT)	300.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	GROOVED END PROJECTION
INLET DEPRESSION	NONE

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:28:57

FILE DATE: 6-2-92
FILE NAME: DB400

TAILWATER

CONSTANT WATER SURFACE ELEVATION
678.20

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	40.00
CREST LENGTH (FT)	500.00
OVERTOPPING CREST ELEVATION (FT)	700.00

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:30:20

FILE DATE: 6-3-92
FILE NAME: DB600

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	659.40	658.90	50.00	1 RCP	3.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

FILE: DB600 CULVERT HEADWATER ELEVATION (FT) DATE: 6-3-92

DISCHARGE	1	2	3	4	5	6	ROADWAY
0	659.40	0.00	0.00	0.00	0.00	0.00	681.50
10	660.95	0.00	0.00	0.00	0.00	0.00	681.54
20	661.49	0.00	0.00	0.00	0.00	0.00	681.56
30	662.09	0.00	0.00	0.00	0.00	0.00	681.57
40	662.69	0.00	0.00	0.00	0.00	0.00	681.59
50	663.39	0.00	0.00	0.00	0.00	0.00	681.60
60	664.24	0.00	0.00	0.00	0.00	0.00	681.62
70	665.26	0.00	0.00	0.00	0.00	0.00	681.63
80	666.47	0.00	0.00	0.00	0.00	0.00	681.64
90	667.83	0.00	0.00	0.00	0.00	0.00	681.65
100	669.41	0.00	0.00	0.00	0.00	0.00	681.66

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:30:20

FILE DATE: 6-3-92
FILE NAME: DB600

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	659.40	658.90	0.00	-0.50	0-NF	0.00	659.40	0.00	0.00
10	660.95	658.90	1.37	1.55	6-FF	0.00	0.00	0.00	4.89
20	661.49	658.90	2.09	1.94	6-FF	0.00	0.00	0.00	8.09
30	662.09	658.90	2.69	2.39	6-FF	0.00	0.00	0.00	8.85
40	662.69	658.90	3.29	2.93	6-FF	0.00	0.00	0.00	9.54
50	663.39	658.90	3.99	3.55	6-FF	0.00	0.00	0.00	10.17
60	664.24	658.90	4.84	4.26	6-FF	0.00	0.00	0.00	10.76
70	665.26	658.90	5.86	5.07	6-FF	0.00	0.00	0.00	11.34
80	666.47	658.90	7.07	6.03	7-FF	0.00	0.00	0.00	11.71
90	667.83	658.90	8.43	7.05	7-FF	0.00	0.00	0.00	12.81
100	669.41	658.90	10.01	8.11	4-FF	0.00	0.00	0.00	14.15

El. inlet face invert 659.40 ft El. outlet invert 658.90 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	659.40
OUTLET STATION (FT)	50.00
OUTLET ELEVATION (FT)	658.90
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0100
CULVERT LENGTH ALONG SLOPE (FT)	50.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:30:20

FILE DATE: 6-3-92
FILE NAME: DB600

TAILWATER

CONSTANT WATER SURFACE ELEVATION
658.90

ROADWAY OVERTOPPING DATA

WEIR COEFFICIENT	3.00
EMBANKMENT TOP WIDTH (FT)	50.00
CREST LENGTH (FT)	500.00
OVERTOPPING CREST ELEVATION (FT)	681.50

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:31:29

FILE DATE: 6-3-92
FILE NAME: SR700

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	650.80	650.00	80.00	1 RCP	3.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

FILE: SR700 CULVERT HEADWATER ELEVATION (FT) DATE: 6-3-92

DISCHARGE	1	2	3	4	5	6	ROADWAY
0	650.80	0.00	0.00	0.00	0.00	0.00	680.00
10	652.17	0.00	0.00	0.00	0.00	0.00	680.04
20	652.89	0.00	0.00	0.00	0.00	0.00	680.06
25	653.19	0.00	0.00	0.00	0.00	0.00	680.06
40	654.09	0.00	0.00	0.00	0.00	0.00	680.09
50	654.79	0.00	0.00	0.00	0.00	0.00	680.10
60	655.64	0.00	0.00	0.00	0.00	0.00	680.12
70	656.66	0.00	0.00	0.00	0.00	0.00	680.13
80	657.87	0.00	0.00	0.00	0.00	0.00	680.14
90	659.23	0.00	0.00	0.00	0.00	0.00	680.15
100	660.81	0.00	0.00	0.00	0.00	0.00	680.16

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:31:29

FILE DATE: 6-3-92
FILE NAME: SR700

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	650.80	650.00	0.00	-0.80	0-NF	0.00	650.80	0.00	0.00
10	652.17	650.00	1.37	1.26	6-FF	0.00	0.00	0.00	7.30
20	652.89	650.00	2.09	1.66	6-FF	0.00	0.00	0.00	8.80
25	653.19	650.00	2.39	1.89	6-FF	0.00	0.00	0.00	8.69
40	654.09	650.00	3.29	2.72	6-FF	0.00	0.00	0.00	9.93
50	654.79	650.00	3.99	3.39	6-FF	0.00	0.00	0.00	10.45
60	655.64	650.00	4.84	4.17	6-FF	0.00	0.00	0.00	10.95
70	656.66	650.00	5.86	5.05	6-FF	0.00	0.00	0.00	11.36
80	657.87	650.00	7.07	6.09	7-FF	0.00	0.00	0.00	11.71
90	659.23	650.00	8.43	7.21	7-FF	0.00	0.00	0.00	12.81
100	660.81	650.00	10.01	8.39	4-FF	0.00	0.00	0.00	14.15

El. inlet face invert 650.80 ft El. outlet invert 650.00 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	650.80
OUTLET STATION (FT)	80.00
OUTLET ELEVATION (FT)	650.00
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0100
CULVERT LENGTH ALONG SLOPE (FT)	80.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:32:29

FILE DATE: 6-9-92
FILE NAME: SR900

FHWA CULVERT ANALYSIS
HY-8, VERSION 3.2

CULV	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	649.00	644.50	450.02	1 RCP	3.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

FILE: SR900 CULVERT HEADWATER ELEVATION (FT) DATE: 6-9-92

DISCHARGE	1	2	3	4	5	6	ROADWAY
0	649.00	0.00	0.00	0.00	0.00	0.00	680.00
10	650.37	0.00	0.00	0.00	0.00	0.00	680.04
20	651.09	0.00	0.00	0.00	0.00	0.00	680.06
25	651.39	0.00	0.00	0.00	0.00	0.00	680.06
40	652.29	0.00	0.00	0.00	0.00	0.00	680.09
50	652.99	0.00	0.00	0.00	0.00	0.00	680.10
60	653.84	0.00	0.00	0.00	0.00	0.00	680.12
70	654.86	0.00	0.00	0.00	0.00	0.00	680.13
80	656.07	0.00	0.00	0.00	0.00	0.00	680.14
90	658.25	0.00	0.00	0.00	0.00	0.00	680.15
100	660.73	0.00	0.00	0.00	0.00	0.00	680.16

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:32:29

FILE DATE: 6-9-92
FILE NAME: SR900

CULVERT # 1

PERFORMANCE CURVE FOR 1 BARREL(S)

Q (cfs)	HWE (ft)	TWE (ft)	ICH (ft)	OCH (ft)	FLOW TYPE	CCE (ft)	FCE (ft)	TCE (ft)	VO (fps)
0	649.00	644.50	0.00	-4.50	0-NF	0.00	649.00	0.00	0.00
10	650.37	644.50	1.37	-2.37	6-FF	0.00	0.00	0.00	7.30
20	651.09	644.50	2.09	-1.76	6-FF	0.00	0.00	0.00	8.80
25	651.39	644.50	2.39	-1.37	6-FF	0.00	0.00	0.00	9.31
40	652.29	644.50	3.29	0.14	6-FF	0.00	0.00	0.00	10.40
50	652.99	644.50	3.99	1.45	6-FF	0.00	0.00	0.00	10.83
60	653.84	644.50	4.84	3.01	6-FF	0.00	0.00	0.00	11.45
70	654.86	644.50	5.86	4.81	6-FF	0.00	0.00	0.00	11.73
80	656.07	644.50	7.07	6.92	7-FF	0.00	0.00	0.00	11.71
90	658.25	644.50	8.43	9.25	7-FF	0.00	0.00	0.00	12.81
100	660.73	644.50	10.01	11.73	4-FF	0.00	0.00	0.00	14.15

El. inlet face invert 649.00 ft El. outlet invert 644.50 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	649.00
OUTLET STATION (FT)	450.00
OUTLET ELEVATION (FT)	644.50
NUMBER OF BARRELS	1.00
SLOPE (V-FT/H-FT)	0.0100
CULVERT LENGTH ALONG SLOPE (FT)	450.02

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-01-1992
CURRENT TIME: 10:32:29

FILE DATE: 6-9-92
FILE NAME: SR900

TAILWATER

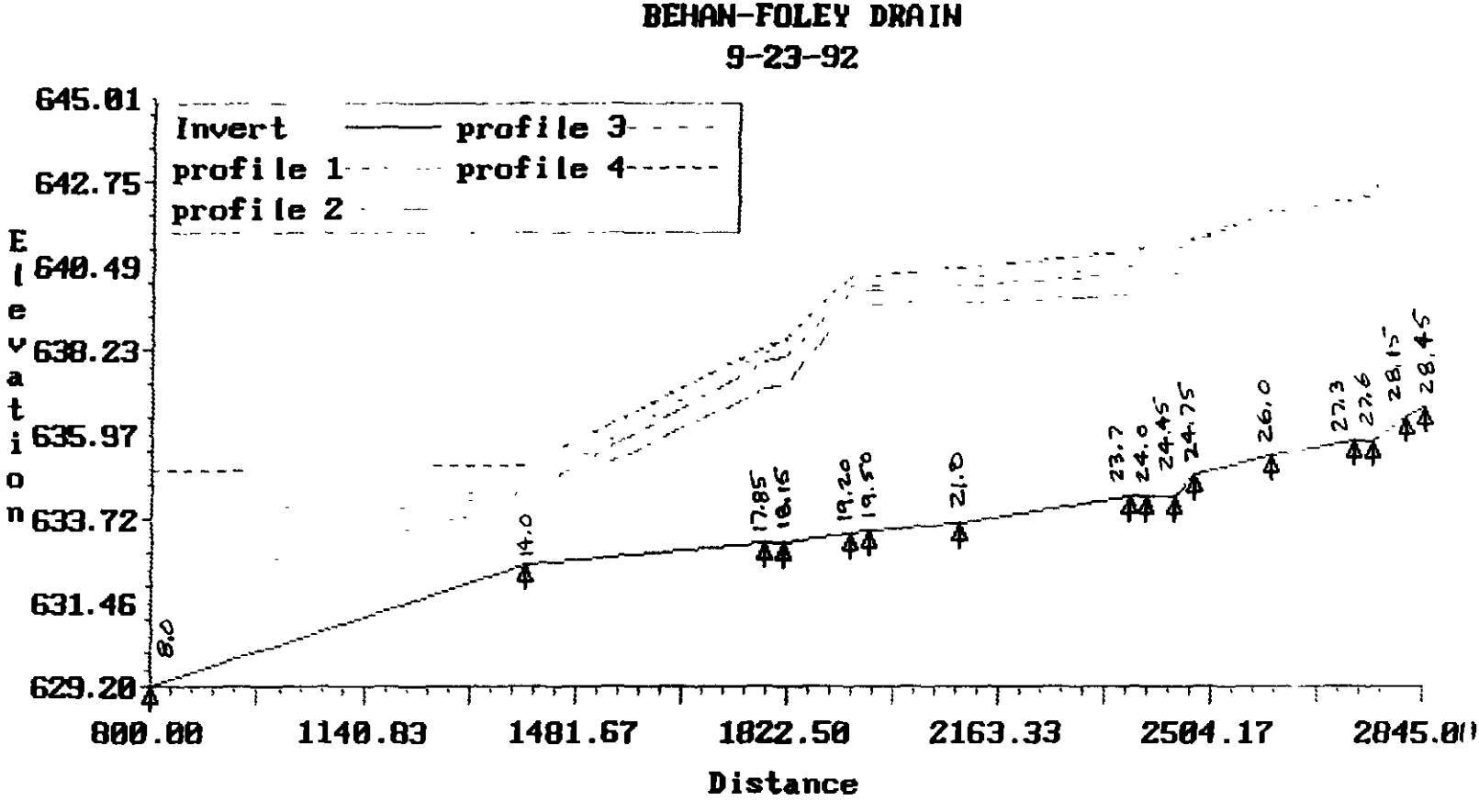
CONSTANT WATER SURFACE ELEVATION
644.50

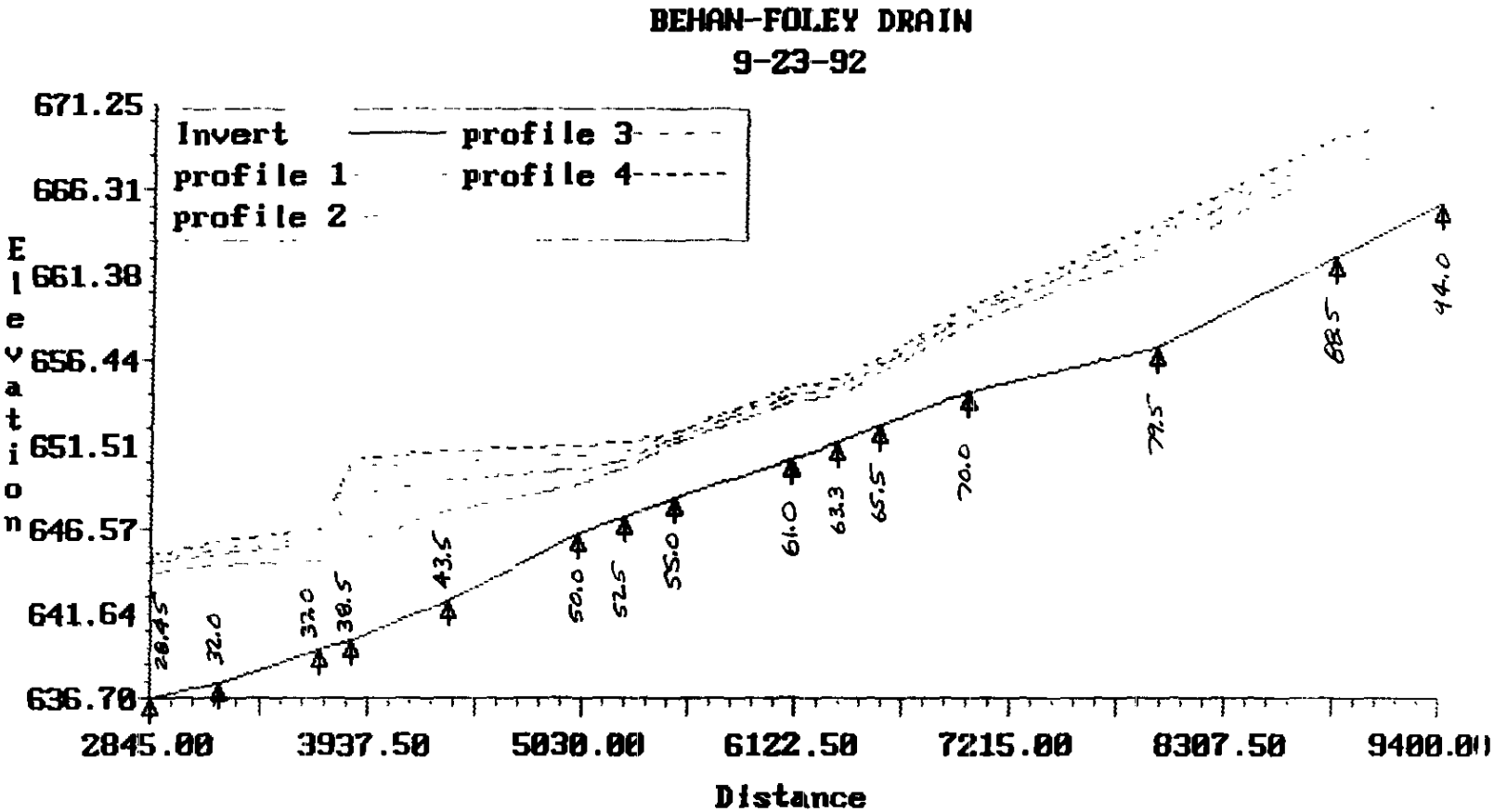
ROADWAY OVERTOPPING DATA

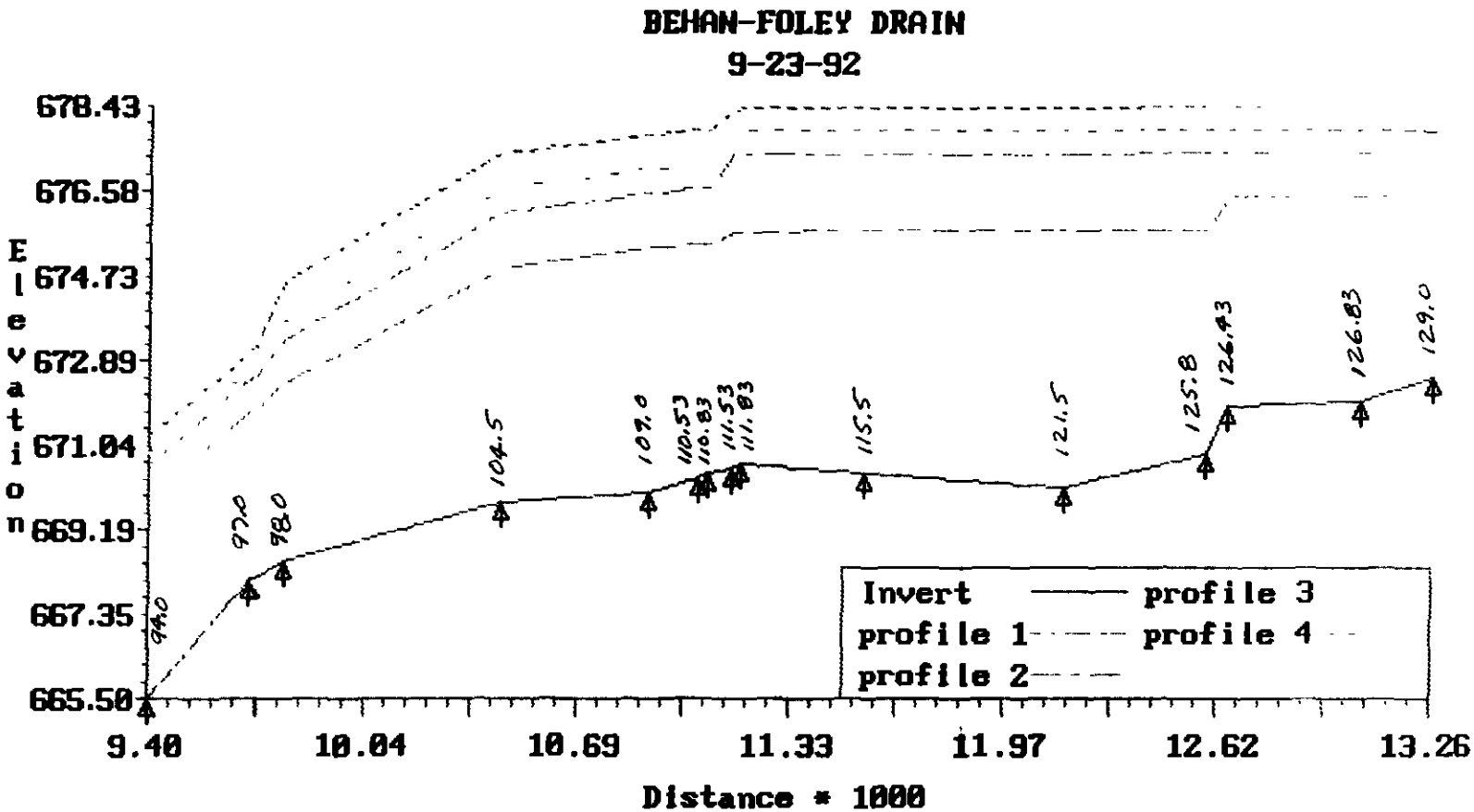
WEIR COEFFICIENT	3.00
EMBANKMENT TOP WIDTH (FT)	50.00
CREST LENGTH (FT)	500.00
OVERTOPPING CREST ELEVATION (FT)	680.00

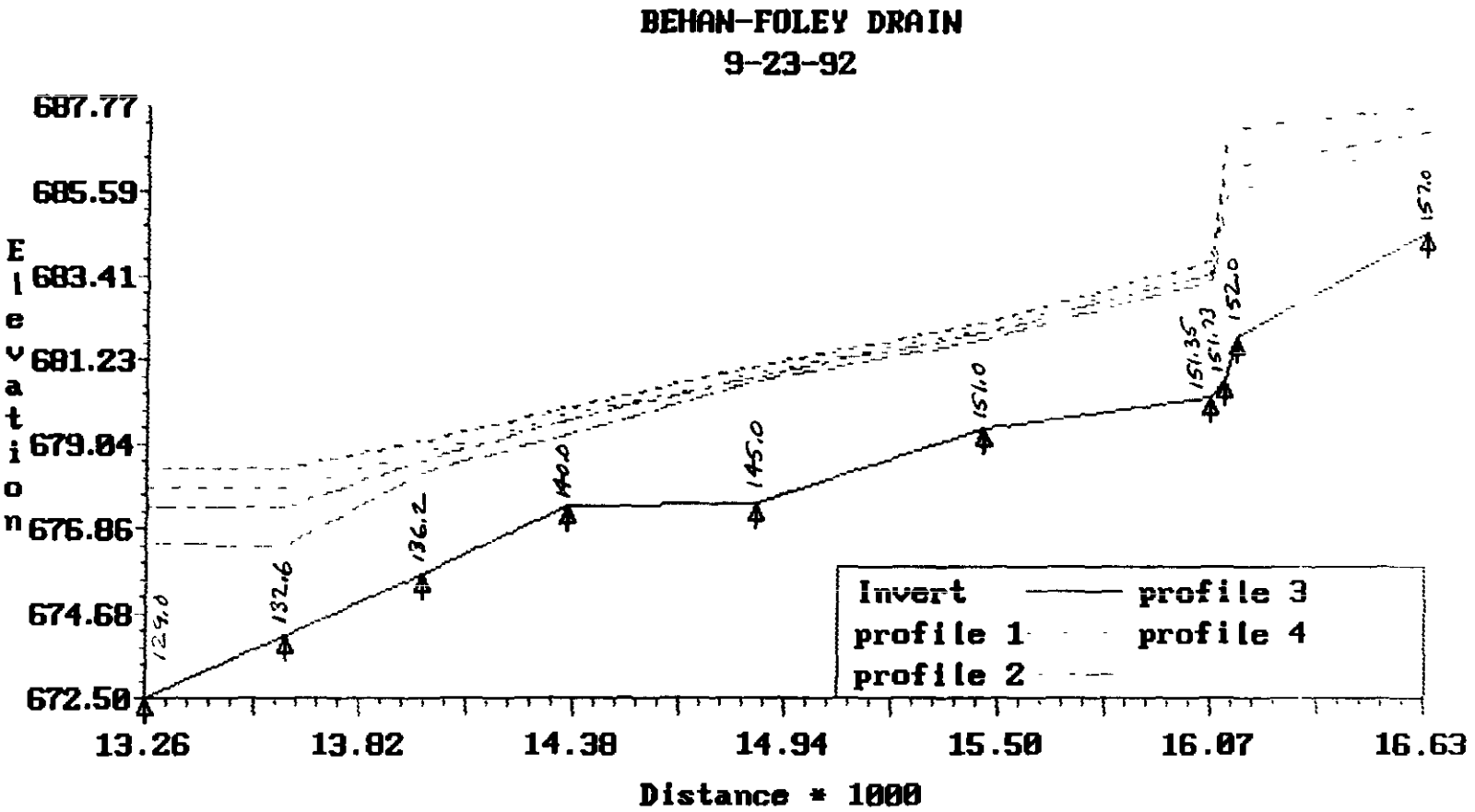
Appendix D

This Appendix includes the flood profiles for the entire reach of the Behan-Foley Drain. Profiles include the 10, 50, 100, and 500 year storm events.


BEHAN-FOLEY DRAIN
9-23-92
Invert
profile 1
profile 2
profile 3
profile 4
Elevation
645.01
642.75
640.49
638.23
635.97
633.72
631.46
629.20
800.00
1140.83
1481.67
1822.50
2163.33
2504.17
2845.00
Distance
8.0
14.0
17.85
18.15
19.20
19.50
21.0
23.7
24.0
24.45
24.75
26.0
27.3
27.6
28.15
28.45


BEHAN-FOLEY DRAIN
9-23-92
Invert
profile 1
profile 2
profile 3
profile 4
Elevation
671.25
666.31
661.38
656.44
651.51
646.57
641.64
636.70
2845.00
3937.50
5030.00
6122.50
7215.00
8307.50
9400.00
Distance
28.45
32.0
32.0
38.5
43.5
50.0
52.5
55.0
61.0
63.3
65.5
70.0
79.5
88.5
94.0


BEHAN-FOLEY DRAIN
9-23-92
Elevation
678.43
676.58
674.73
672.89
671.04
669.19
667.35
665.50
9.40
10.04
10.69
11.33
11.97
12.62
13.26
Distance * 1000
94.0
97.0
98.0
104.5
107.0
110.53
110.83
111.53
111.83
115.5
121.5
125.8
126.43
126.83
129.0
Invert
profile 1
profile 2
profile 3
profile 4


BEHAN-FOLEY DRAIN
9-23-92
687.77
685.59
683.41
681.23
679.04
676.86
674.68
672.50
Elevation
13.26
13.82
14.38
14.94
15.50
16.07
16.63
Distance * 1000
Invert
profile 1
profile 2
profile 3
profile 4
129.0
132.6
136.2
140.0
145.0
151.0
151.35
151.23
152.0
157.0

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  07/14/1992  TIME  16:13:21 *
*                                      *
****************************************
```

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

10-YEAR (1B10.OUT)

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

* * * * I M P O R T A N T * * * *

Dimensionless SCS unit hydrograph has been modified to have a peak rate factor of 368 as used by the Michigan Department of Natural Resources

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

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


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

  1           ID   CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
  2           ID   BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
  3           ID   10 YEAR STORM, TYPE II DISTRIBUTION
              *DIAGRAM
  4           IT       5                    300
  5           IO       4       0       0
  6           IN      30

  7           KK     100
  8           KM   INFLOW FROM BASIN 100
```

```
 9          BA     .29
10          PB     3.9
11          PC   0.000 0.00533 0.01085 0.01655 0.02247 0.02861 0.03501 0.04168 0.04866 0.05598
12          PC  0.0637 0.07181 0.08044 0.08963 0.09949 0.11014 0.12174 0.13453 0.14882 0.16511
13          PC  0.1842 0.20757 0.23839 0.28659 0.66651 0.73839 0.77568 0.80217 0.82315 0.84071
14          PC  0.8559 0.86942 0.88158 0.89268 0.90292 0.91243 0.92133 0.92971 0.93762 0.94512
15          PC  0.9523 0.95908 0.96661 0.97188 0.97791 0.98372 0.98933 0.99475  1.0000  1.0000
16          LS     0.0    76.0
17          UD      .6

18          KK   DB100
19          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100
20          RS       1    FLOW      -1
21          SA    0.10     .43     1.7     3.8     6.9    11.0    15.7
22          SE  680.67   682.0   684.0   686.0   688.0   690.0   692.0
23          SQ     0.0     9.0    32.0    47.0    55.0    78.0   400.0

24          KK   CR100
25          KM   CHANNEL ROUTING TO 56TH STREET
26          RS       1    FLOW      -1
27          RC      .1     .05      .1    2600   .0035
28          RX       0      50     100     110     150     200     225     241     246     248
29          RX     250     253     256     270     300     340     350     400     450     500
30          RY   685.1   684.1   683.2   682.3   681.9   681.3   681.5   680.3   678.5   677.4
31          RY   677.4   677.5   677.9     680   681.4   682.8   686.7   683.1   682.8   683.0

32          KK     200
33          KM   INFLOW FROM BASIN 200
34          BA     .18
35          PB     3.9
36          LS     0.0    68.0
37          UD     .90

38          KK    C200
39          KM   COMBINE HYDROGRAPHS CR100 & 200
40          HC       2

41          KK   DB200
42          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200
43          RS       1    FLOW      -1
44          SA     0.0     .30     8.8     9.0    10.3    11.0
45          SE  671.87   673.0   674.0   675.0   676.0  676.65
46          SQ     0.0     7.0    21.0    37.0    54.0   150.0
```



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


47          KK  CRC200
48          KM   CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300
49          RS       1    FLOW      -1
50          RC      .1     .05      .1    1300   .0035
51          RX       0      50     100     125     150     200     223     240     242     244
52          RX     250     256     261     285     300     315     350     400     450     500
53          RY   679.7   679.9   679.3   679.4   678.7   677.7   677.6   679.3   677.8   671.1
54          RY   670.1   671.5   673.5   676.5   679.2   682.0   683.4  681.64  682.85  683.97

55          KK     300
56          KM   INFLOW FROM BASIN 300
57          BA     .53
```

```
 58          PB     3.9
 59          LS     0.0    73.0
 60          UD     1.3

 61          KK    C300
 62          KM   COMBINE HYDROGRAPHS CRC200 & 300
 63          HC       2

 64          KK     400
 65          KM   INFLOW FROM BASIN 400
 66          BA     .65
 67          PB     3.9
 68          LS            68.0
 69          UD      .5

 70          KK   DB400
 71          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400
 72          RS       1    FLOW      -1
 73          SV     0.0     3.1     6.9     9.2    10.0    10.5    50.0
 74          SE   678.8   680.0   681.0   682.0   683.0   684.0   685.0
 75          SQ     0.0     7.0    21.0    36.0    49.0    57.0    65.0

 76          KK    C400
 77          KM   COMBINE HYDROGRAPHS C300 & DB400
 78          HC       2

 79          KK  CRC400
 80          KM   CHANNEL ROUTE C400 TO CONFLUENCE WITH 500
 81          RS       1    FLOW      -1
 82          RC      .1     .05      .1    3850    .004
 83          RX     0.0      50     100     150     190     200     208     232     240     245
 84          RX     247     250     253     258     290     300     350     391     400     404
 85          RY   681.3   681.4   680.1   676.7   671.4   672.2   670.2   668.8   665.6   664.8
 86          RY   663.5   662.4   662.7   667.6   669.6   672.3   677.4   681.7   681.4   681.6

 87          KK     500
 88          KM   INFLOW FROM BASIN 500
 89          BA     .15
 90          PB     3.9
 91          LS     0.0    61.0
 92          UD      .5
```



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

 93          KK    C500
 94          KM   COMBINE HYDROGRAPHS CRC400 & 500
 95          HC       2

 96          KK   CR500
 97          KM   CHANNEL ROUTING C500 TO CONFLUENCE WITH C700
 98          RS       1    FLOW      -1
 99          RC      .1     .05      .1    1150    .004
100          RX       0      50     100     125     150     175     190     200     242     244
101          RX     250     256     261     300     350     400     424     450     500       0
102          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
103          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7

104          KK     600
```

```
105          KM   INFLOW FROM BASIN 600
106          BA     .36
107          PB    3.9
108          LS            62.0
109          UD      .8

110          KK   DB600
111          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)
112          RS       1    FLOW      -1
113          SA    0.10    0.34     2.2     3.7     5.6     8.3
114          SE   659.4   660.0   662.0   664.0   666.0   668.0
115          SQ     0.0     4.0    30.0    55.0    75.0    92.0

116          KK     700
117          KM   INFLOW FROM BASIN 700
118          BA     .24
119          PB    3.9
120          LS              74
121          UD     .50

122          KK   SR700
123          KM   MODIFIED PULS STORM SEWER ROUTING
124          RS       1    FLOW      -1
125          SV     0.0   0.016   0.032   0.048   0.064    0.08     2.1     5.8    11.5
126          SE   650.8     652     653     654     655     656     657     658     659
127          SQ     0.0     8.0    22.0    39.0    52.0    65.0    73.0    82.0    87.0

128          KK    C700
129          KM   COMBINE HYDROGRAPHS CR500, DB600, & SR700
130          HC       3

131          KK   CRC700
132          KM   CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000
133          RS       1    FLOW      -1
134          RC      .1     .05      .1    1150    .004
135          RX       0      50     100     125     150     175     190     200     242     244
136          RX     250     256     261     300     350     400     424     450     500       0
137          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
138          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7
```



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


139          KK     800
140          KM   INFLOW FROM BASIN 800
141          BA     .12
142          PB    3.9
143          LS            53.0
144          UD     .30

145          KK     900
146          KM   INFLOW FROM BASIN 900
147          BA     .24
148          PB    3.9
149          LS            68.0
150          UD     .80

151          KK   SR900
152          KM   MODIFIED PULS STORM SEWER ROUTING
```

```
153          RS       1    FLOW      -1
154          SV    .016    .032    .048    .064     .08     .10     .11     .13     .14
155          SE   649.0   650.0   651.0   652.0   653.0   654.0   656.0   658.0   660.0
156          SQ     0.0     8.0    20.0    37.0    50.0    64.0    80.0    87.0    94.0

157          KK    1000
158          KM   INFLOW FROM BASIN 1000
159          BA     .23
160          PB     3.9
161          LS            73.0
162          UD     .60

163          KK   C1000
164          KM   COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.
165          HC       4

166          KK  CRC100
167          KM   CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100
168          RS       1    FLOW      -1
169          RC      .1     .05      .1    2900    .004
170          RX     0.0      50     100     125     150     200     240     245     250     255
171          RX     260     300     350     400     450     500     501     502     503     504
172          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
173          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

174          KK    1100
175          KM   INFLOW FROM BASIN 1100
176          BA     .12
177          PB     3.9
178          LS            70.0
179          UD     .40

180          KK   C1100
181          KM   COMBINE HYDROGRAPHS CRC1000 & 1100
182          HC       2
```



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


183          KK  CRC110
184          KM   CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK
185          RS       1    FLOW      -1
186          RC      .1     .05      .1    1500    .004
187          RX     0.0      50     100     125     150     200     240     245     250     255
188          RX     260     300     350     400     450     500     501     502     503     504
189          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
190          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

191          KK    1200
192          KM   INFLOW FROM BASIN 1200
193          BA     .14
194          PB     3.9
195          LS            69.0
196          UD     .90

197          KK   C1200
198          KM   COMBINE HYDROGRAPHS CRC1100 & 1200
199          HC       2
200          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   7          100
                V
                V
  18        DB100
                V
                V
  24        CR100
                .
                .
  32            .          200
                .            .
                .            .
  38         C200............
                V
                V
  41        DB200
                V
                V
  47       CRC200
                .
                .
  55            .          300
                .            .
                .            .
  61         C300............
                .
                .
  64            .          400
                .            V
                .            V
  70            .        DB400
                .            .
                .            .
  76         C400............
                V
                V
  79       CRC400
                .
                .
  87            .          500
                .            .
                .            .
  93         C500............
                V
                V
  96        CR500
                .
                .
 104            .          600
                .            V
                .            V
 110            .        DB600
                .            .
```

```
                .          .
  116           .          .        700
                .          .          V
                .          .          V
  122           .          .       SR700
                .          .          .
                .          .          .
  128        C700.......................
                V
                V
  131       CRC70
                .
                .
  139           .        800
                .          .
                .          .
  145           .          .        900
                .          .          V
                .          .          V
  151           .          .       SR900
                .          .          .
                .          .          .
  157           .          .          .       1000
                .          .          .          .
                .          .          .          .
  163       C1000.................................
                V
                V
  166      CRC100
                .
                .
  174           .       1100
                .          .
                .          .
  180       C1100............
                V
                V
  183      CRC110
                .
                .
  191           .       1200
                .          .
                .          .
  197       C1200............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*           SEPTEMBER 1990             *                    *   HYDROLOGIC ENGINEERING CENTER      *
*            VERSION 4.0               *                    *         609 SECOND STREET            *
*                                      *                    *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  07/14/1992  TIME  16:13:21 *                    *          (916) 756-1104              *
*                                      *                    *                                      *
****************************************                    ****************************************
```

```
                    CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
                    BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
                    10 YEAR STORM, TYPE II DISTRIBUTION

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

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

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT


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


          **************
          *            *
  7 KK    *       100  *
          *            *
          **************
                    INFLOW FROM BASIN 100

  6 IN        TIME DATA FOR INPUT TIME SERIES
                    JXMIN         30  TIME INTERVAL IN MINUTES
                   JXDATE      1   0  STARTING DATE
                   JXTIME          0  STARTING TIME

             SUBBASIN RUNOFF DATA

  9 BA        SUBBASIN CHARACTERISTICS
                    TAREA        .29  SUBBASIN AREA

             PRECIPITATION DATA

 10 PB              STORM       3.90  BASIN TOTAL PRECIPITATION

 11 PI          INCREMENTAL PRECIPITATION PATTERN
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

16 LS SCS LOSS RATE

STRTL	.63	INITIAL ABSTRACTION
CRVNBR	76.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

17 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.60	LAG

***

UNIT HYDROGRAPH
38 END-OF-PERIOD ORDINATES

22.	43.	65.	87.	108.	130.	152.	164.	156.	147.
138.	130.	121.	112.	104.	95.	86.	78.	69.	60.
52.	43.	34.	26.	17.	8.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.		

*** ***

```
**************
*            *
*     DB100  *
*            *
**************
```

18 KK

MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100

HYDROGRAPH ROUTING DATA

20 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES

```
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

 21 SA             AREA          .1        .4       1.7       3.8       6.9      11.0      15.7

 22 SE        ELEVATION      680.67    682.00    684.00    686.00    688.00    690.00    692.00

 23 SQ        DISCHARGE          0.        9.       32.       47.       55.       78.      400.

                                                          ***

                                          COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00       .33      2.32      7.68     18.23     35.97     62.53
        ELEVATION     680.67    682.00    684.00    686.00    688.00    690.00    692.00


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


          **************
          *            *
 24 KK    *     CR10D  *
          *            *
          **************
                         CHANNEL ROUTING TO 56TH STREET

            HYDROGRAPH ROUTING DATA

 26 RS        STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

 27 RC        NORMAL DEPTH CHANNEL
                     ANL       .100  LEFT OVERBANK N-VALUE
                    ANCH       .050  MAIN CHANNEL N-VALUE
                     ANR       .100  RIGHT OVERBANK N-VALUE
                   RLNTH      2600.  REACH LENGTH
                     SEL      .0035  ENERGY SLOPE
                   ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                        CROSS-SECTION DATA
                        --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 31 RY       ELEVATION    677.40    677.50    677.90    680.00    681.40    682.80    686.70    683.10
 29 RX       DISTANCE     250.00    253.00    256.00    270.00    300.00    340.00    350.00    400.00

                                                          ***

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00       .11       .33       .65      1.06      1.57      2.22      3.17      4.42      6.02
          OUTFLOW        .00       .77      4.18     11.47     23.87     42.45     64.19     98.94    151.52    221.18
        ELEVATION     677.40    677.89    678.38    678.87    679.36    679.85    680.34    680.83    681.32    681.81

          STORAGE       8.02     10.44     13.10     15.95     19.04     22.36     25.92     29.72     33.75     38.01
          OUTFLOW     317.47    445.17    645.76    880.39   1147.92   1448.41   1782.00   2148.88   2549.32   2983.65
```

```
        ELEVATION     682.30    682.78    683.27    683.76    684.25    684.74    685.23    685.72    686.21    686.70



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


          **************
          *            *
 32 KK    *       200  *
          *            *
          **************
                         INFLOW FROM BASIN 200

             SUBBASIN RUNOFF DATA

 34 BA         SUBBASIN CHARACTERISTICS
                     TAREA          .18  SUBBASIN AREA

               PRECIPITATION DATA

 35 PB               STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI           INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                    .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00

 36 LS         SCS LOSS RATE
                     STRTL         .94  INITIAL ABSTRACTION
                    CRVNBR       68.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA
```

```
37 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .90  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            56 END-OF-PERIOD ORDINATES
              6.       12.       19.       25.       31.       37.       44.       50.       56.       62.
             69.       69.       66.       64.       61.       59.       56.       54.       51.       49.
             46.       44.       41.       39.       36.       34.       31.       29.       26.       24.
             21.       19.       16.       14.       11.        9.        6.        4.        1.        0.
              0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
              0.        0.        0.        0.        0.        0.

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

          **************
          *            *
38 KK     *     C200   *
          *            *
          **************
                       COMBINE HYDROGRAPHS CR100 & 200

40 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***

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

          **************
          *            *
41 KK     *    DB200   *
          *            *
          **************
                       MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200

             HYDROGRAPH ROUTING DATA

43 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

44 SA              AREA          .0        .3       8.8       9.0      10.3      11.0

45 SE          ELEVATION      671.87    673.00    674.00    675.00    676.00    676.65

46 SQ          DISCHARGE          0.        7.       21.       37.       54.      150.

                                                    ***

                                        COMPUTED STORAGE-ELEVATION DATA
```

STORAGE	.00	.11	3.69	12.59	22.23	29.15
ELEVATION	671.87	673.00	674.00	675.00	676.00	676.65

*** ***

```
              **************
              *            *
47 KK         *    CRC200  *
              *            *
              **************
```

CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300

HYDROGRAPH ROUTING DATA

```
49 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC      -1.00  INITIAL CONDITION
                        X        .00 WORKING R AND D COEFFICIENT

50 RC          NORMAL DEPTH CHANNEL
                      ANL       .100  LEFT OVERBANK N-VALUE
                     ANCH       .050  MAIN CHANNEL N-VALUE
                      ANR       .100  RIGHT OVERBANK N-VALUE
                    RLNTH      1300.  REACH LENGTH
                      SEL      .0035  ENERGY SLOPE
                    ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---			+ ------ MAIN CHANNEL -------			+ --- RIGHT OVERBANK ---	
54 RY	ELEVATION	670.10	671.50	673.50	676.50	679.20	682.00	683.40	681.64
52 RX	DISTANCE	250.00	256.00	261.00	285.00	300.00	315.00	350.00	400.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.03	.13	.27	.45	.67	.97	1.39	1.93	2.59
OUTFLOW	.00	.45	2.87	8.57	17.50	30.50	52.42	86.17	135.89	205.04
ELEVATION	670.10	670.80	671.50	672.20	672.90	673.60	674.30	675.00	675.70	676.40
STORAGE	3.35	4.19	5.11	6.12	7.20	8.36	9.60	10.98	12.94	15.68
OUTFLOW	299.49	417.51	559.96	728.30	924.94	1150.12	1405.19	1692.00	2078.70	2526.57
ELEVATION	677.10	677.80	678.50	679.20	679.90	680.60	681.30	682.00	682.70	683.40

*** ***

```
              **************
              *            *
55 KK         *       300  *
              *            *
              **************
```

INFLOW FROM BASIN 300

SUBBASIN RUNOFF DATA

57 BA SUBBASIN CHARACTERISTICS

TAREA .53 SUBBASIN AREA

PRECIPITATION DATA

58 PB STORM 3.90 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

59 LS SCS LOSS RATE

STRTL .74 INITIAL ABSTRACTION

CRVNBR 73.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

60 UD SCS DIMENSIONLESS UNITGRAPH

TLAG 1.30 LAG

***

UNIT HYDROGRAPH

80 END-OF-PERIOD ORDINATES

9.	18.	27.	36.	45.	54.	63.	72.	81.	90.
100.	109.	118.	127.	136.	145.	142.	139.	135.	132.
128.	124.	121.	117.	113.	110.	106.	103.	99.	95.
92.	88.	85.	81.	77.	74.	70.	66.	63.	59.
56.	52.	48.	45.	41.	37.	34.	30.	27.	23.
19.	16.	12.	9.	5.	1.	0.	0.	0.	0.

```
              0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
              0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


          **************
          *            *
 61 KK    *      C300  *
          *            *
          **************
                       COMBINE HYDROGRAPHS CRC200 & 300

 63 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


          **************
          *            *
 64 KK    *       400  *
          *            *
          **************
                       INFLOW FROM BASIN 400

             SUBBASIN RUNOFF DATA

 66 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .65  SUBBASIN AREA

               PRECIPITATION DATA

 67 PB               STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .01      .01      .06      .06
                     .06      .06      .06      .06      .01      .01      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

```
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00

68 LS        SCS LOSS RATE
                STRTL        .94  INITIAL ABSTRACTION
               CRVNBR      68.00  CURVE NUMBER
                RTIMP        .00  PERCENT IMPERVIOUS AREA

69 UD        SCS DIMENSIONLESS UNITGRAPH
                TLAG        .50  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                          32 END-OF-PERIOD ORDINATES
          68.     136.     205.     273.     341.     409.     430.     402.     375.     348.
         321.     293.     266.     239.     211.     184.     157.     130.     102.      75.
          48.      20.       0.       0.       0.       0.       0.       0.       0.       0.
           0.       0.

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

         **************
         *            *
70 KK    *     DB400  *
         *            *
         **************
                   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400

            HYDROGRAPH ROUTING DATA

72 RS        STORAGE ROUTING
               NSTPS         1  NUMBER OF SUBREACHES
                ITYP      FLOW  TYPE OF INITIAL CONDITION
              RSVRIC     -1.00  INITIAL CONDITION
                   X       .00 WORKING R AND O COEFFICIENT

73 SV          STORAGE       .0      3.1      6.9      9.2     10.0     10.5     50.0

74 SE        ELEVATION   678.80   680.00   681.00   682.00   683.00   684.00   685.00

75 SQ        DISCHARGE       0.       7.      21.      36.      49.      57.      65.

                                                  ***

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

```
          **************
          *            *
 76 KK    *      C400  *
          *            *
          **************
                         COMBINE HYDROGRAPHS C300 & DB400

 78 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***



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


          **************
          *            *
 79 KK    *    CRC400  *
          *            *
          **************
                         CHANNEL ROUTE C400 TO CONFLUENCE WITH 500

            HYDROGRAPH ROUTING DATA

 81 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 82 RC          NORMAL DEPTH CHANNEL
                        ANL        .100  LEFT OVERBANK N-VALUE
                       ANCH        .050  MAIN CHANNEL N-VALUE
                        ANR        .100  RIGHT OVERBANK N-VALUE
                      RLNTH       3850.  REACH LENGTH
                        SEL       .0040  ENERGY SLOPE
                      ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 86 RY        ELEVATION    663.50    662.40    662.70    667.60    669.60    672.30    677.40    681.70
 84 RX        DISTANCE     247.00    250.00    253.00    258.00    290.00    300.00    350.00    391.00

                                                                  ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .00       .38      1.03      1.77      2.61      3.54      5.09      8.09     12.09     16.43
          OUTFLOW       .00      3.09     15.23     36.05     65.79    104.99    147.82    251.32    448.50    712.59
        ELEVATION    662.40    663.42    664.43    665.45    666.46    667.48    668.49    669.51    670.53    671.54

          STORAGE     21.12     26.55     32.88     40.10     48.22     57.22     67.11     77.86     89.49    101.98
          OUTFLOW   1049.87   1484.92   1996.43   2588.28   3264.00   4027.15   4881.24   5828.66   6872.46   8015.70
        ELEVATION    672.56    673.57    674.59    675.61    676.62    677.64    678.65    679.67    680.68    681.70
```

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


          **************
          *            *
87 KK     *       500  *
          *            *
          **************
                         INFLOW FROM BASIN 500

             SUBBASIN RUNOFF DATA

89 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .15  SUBBASIN AREA

               PRECIPITATION DATA

90 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                     .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00

91 LS          SCS LOSS RATE
                     STRTL        1.28  INITIAL ABSTRACTION
                    CRVNBR       61.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

92 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .50  LAG
```

***

UNIT HYDROGRAPH
32 END-OF-PERIOD ORDINATES

16.	31.	47.	63.	79.	94.	99.	93.	87.	80.
74.	68.	61.	55.	49.	42.	36.	30.	24.	17.
11.	5.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.								

*** ***

```
              **************
              *            *
 93 KK        *     C500   *
              *            *
              **************
```

COMBINE HYDROGRAPHS CRC400 & 500

```
 95 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

*** ***

```
              **************
              *            *
 96 KK        *    CR500   *
              *            *
              **************
```

CHANNEL ROUTING C500 TO CONFLUENCE WITH C700

```
            HYDROGRAPH ROUTING DATA

 98 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC       -1.00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

 99 RC          NORMAL DEPTH CHANNEL
                       ANL        .100  LEFT OVERBANK N-VALUE
                      ANCH        .050  MAIN CHANNEL N-VALUE
                       ANR        .100  RIGHT OVERBANK N-VALUE
                     RLNTH       1150.  REACH LENGTH
                       SEL       .0040  ENERGY SLOPE
                     ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---		+ ------ MAIN CHANNEL		------- +	--- RIGHT OVERBANK ---		
103 RY	ELEVATION	648.40	648.60	651.70	651.90	651.20	651.80	652.10	658.60
101 RX	DISTANCE	250.00	256.00	261.00	300.00	350.00	400.00	424.00	450.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.07	.17	.28	.41	.54	1.05	3.02	5.50	8.02
OUTFLOW	.00	1.41	5.43	11.54	19.63	29.73	51.03	158.43	394.91	724.38
ELEVATION	648.40	648.94	649.47	650.01	650.55	651.08	651.62	652.16	652.69	653.23
STORAGE	10.56	13.14	15.74	18.38	21.05	23.75	26.47	29.23	32.02	34.84
OUTFLOW	1135.12	1620.10	2174.48	2794.66	3477.84	4221.74	5024.49	5884.51	6800.46	7771.17
ELEVATION	653.77	654.31	654.84	655.38	655.92	656.45	656.99	657.53	658.06	658.60

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 4222. TO 7771.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** ***

```
              **************
              *            *
104 KK        *       600  *
              *            *
              **************
                             INFLOW FROM BASIN 600

                 SUBBASIN RUNOFF DATA

106 BA             SUBBASIN CHARACTERISTICS
                        TAREA          .36  SUBBASIN AREA

                   PRECIPITATION DATA

107 PB                  STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI               INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                        .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
108 LS          SCS LOSS RATE
                     STRTL        1.23  INITIAL ABSTRACTION
                    CRVNBR       62.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

109 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .80  LAG
```

***

UNIT HYDROGRAPH
50 END-OF-PERIOD ORDINATES

16.	31.	47.	62.	78.	94.	109.	125.	141.	156.
152.	146.	140.	133.	127.	121.	115.	108.	102.	96.
90.	83.	77.	71.	65.	58.	52.	46.	40.	33.
27.	21.	15.	8.	2.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

*** ***

```
          **************
          *            *
110 KK    *     DB600  *
          *            *
          **************
```

MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)

```
            HYDROGRAPH ROUTING DATA

112 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC       -1.00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

113 SA              AREA          .1       .3      2.2      3.7      5.6      8.3

114 SE          ELEVATION      659.40   660.00   662.00   664.00   666.00   668.00

115 SQ          DISCHARGE          0.       4.      30.      55.      75.      92.
```

***

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.12	2.39	8.23	17.46	31.28
ELEVATION	659.40	660.00	662.00	664.00	666.00	668.00

*** ***

```
          **************
          *            *
116 KK    *       700  *
          *            *
          **************
                    INFLOW FROM BASIN 700

             SUBBASIN RUNOFF DATA

118 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .24  SUBBASIN AREA

                PRECIPITATION DATA

119 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00
120 LS          SCS LOSS RATE
                      STRTL         .70  INITIAL ABSTRACTION
                     CRVNBR       74.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

121 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .50  LAG
```

***

```
                                    UNIT HYDROGRAPH
                                 32 END-OF-PERIOD ORDINATES
      25.      50.      76.     101.     126.     151.     159.     149.     139.     128.
     118.     108.      98.      88.      78.      68.      58.      48.      38.      28.
      18.       8.       0.       0.       0.       0.       0.       0.       0.       0.
       0.       0.

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

          **************
          *            *
 122 KK   *     SR700  *
          *            *
          **************
                    MODIFIED PULS STORM SEWER ROUTING

        HYDROGRAPH ROUTING DATA

 124 RS       STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       FLOW  TYPE OF INITIAL CONDITION
                 RSVRIC      -1.00  INITIAL CONDITION
                      X        .00 WORKING R AND D COEFFICIENT

 125 SV         STORAGE        .0       .0       .0       .0       .1       .1      2.1      5.8     11.5

 126 SE       ELEVATION     650.80   652.00   653.00   654.00   655.00   656.00   657.00   658.00   659.00

 127 SQ       DISCHARGE        0.       8.      22.      39.      52.      65.      73.      82.      87.

                                                          ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       0. TO      65.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

          **************
          *            *
 128 KK   *      C700  *
          *            *
          **************
                    COMBINE HYDROGRAPHS CR500, DB600, & SR700

 130 HC       HYDROGRAPH COMBINATION
                 ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

```
          **************
          *            *
131 KK    *     CRC70  *     0
          *            *
          **************
                    CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000

             HYDROGRAPH ROUTING DATA

133 RS         STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC      -1.00  INITIAL CONDITION
                        X        .00 WORKING R AND D COEFFICIENT

134 RC         NORMAL DEPTH CHANNEL
                      ANL       .100  LEFT OVERBANK N-VALUE
                     ANCH       .050  MAIN CHANNEL N-VALUE
                      ANR       .100  RIGHT OVERBANK N-VALUE
                    RLNTH      1150.  REACH LENGTH
                      SEL      .0040  ENERGY SLOPE
                    ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                      --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
138 RY       ELEVATION   648.40   648.60   651.70   651.90   651.20   651.80   652.10   658.60
136 RX       DISTANCE    250.00   256.00   261.00   300.00   350.00   400.00   424.00   450.00

                                                  ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .00      .07      .17      .28      .41      .54     1.05     3.02     5.50     8.02
          OUTFLOW       .00     1.41     5.43    11.54    19.63    29.73    51.03   158.43   394.91   724.38
        ELEVATION    648.40   648.94   649.47   650.01   650.55   651.08   651.62   652.16   652.69   653.23

          STORAGE     10.56    13.14    15.74    18.38    21.05    23.75    26.47    29.23    32.02    34.84
          OUTFLOW   1135.12  1620.10  2174.48  2794.66  3477.84  4221.74  5024.49  5884.51  6800.46  7771.17
        ELEVATION    653.77   654.31   654.84   655.38   655.92   656.45   656.99   657.53   658.06   658.60


*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN     4222. TO     7771.
               THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
               THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)


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


          **************
          *            *
139 KK    *       800  *
          *            *
          **************
                    INFLOW FROM BASIN 800

             SUBBASIN RUNOFF DATA
```

```
141 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .12  SUBBASIN AREA

                PRECIPITATION DATA

142 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00

143 LS          SCS LOSS RATE
                      STRTL        1.77  INITIAL ABSTRACTION
                     CRVNBR       53.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

144 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .30  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                          20 END-OF-PERIOD ORDINATES
            32.       63.       95.      126.      118.      106.       93.       80.       68.       55.
            42.       30.       17.        4.        0.        0.        0.        0.        0.        0.


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


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

```
          *            *
145 KK    *       900  *
          *            *
          **************
                    INFLOW FROM BASIN 900

             SUBBASIN RUNOFF DATA

147 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .24  SUBBASIN AREA

                PRECIPITATION DATA

148 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .01      .01      .06      .06
                     .06      .06      .06      .06      .01      .01      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00

149 LS          SCS LOSS RATE
                      STRTL          .94  INITIAL ABSTRACTION
                     CRVNBR        68.00  CURVE NUMBER
                      RTIMP          .00  PERCENT IMPERVIOUS AREA

150 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG          .80  LAG

                                                 ***

                                          UNIT HYDROGRAPH
                                     50 END-OF-PERIOD ORDINATES
            10.      21.      31.      42.      52.      62.      73.      83.      94.     104.
           101.      97.      93.      89.      85.      81.      76.      72.      68.      64.
```

```
          60.      56.      51.      47.      43.      39.      35.      31.      26.      22.
          18.      14.      10.       6.       1.       0.       0.       0.       0.       0.
           0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


        **************
        *            *
151 KK  *     SR900  *
        *            *
        **************
                    MODIFIED PULS STORM SEWER ROUTING

           HYDROGRAPH ROUTING DATA

153 RS       STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       FLOW  TYPE OF INITIAL CONDITION
                RSVRIC      -1.00  INITIAL CONDITION
                     X        .00 WORKING R AND D COEFFICIENT

154 SV         STORAGE        .0       .0       .0       .1       .1       .1       .1       .1       .1

155 SE       ELEVATION     649.00   650.00   651.00   652.00   653.00   654.00   656.00   658.00   660.00

156 SQ       DISCHARGE        0.       8.      20.      37.      50.      64.      80.      87.      94.

                                                          ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       0. TO      94.
               THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
               THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)


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


        **************
        *            *
157 KK  *      1000  *
        *            *
        **************
                    INFLOW FROM BASIN 1000

           SUBBASIN RUNOFF DATA

159 BA       SUBBASIN CHARACTERISTICS
                 TAREA         .23  SUBBASIN AREA

             PRECIPITATION DATA

160 PB           STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI         INCREMENTAL PRECIPITATION PATTERN
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
161 LS          SCS LOSS RATE
                     STRTL         .74  INITIAL ABSTRACTION
                    CRVNBR       73.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

162 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .60  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                          38 END-OF-PERIOD ORDINATES
            17.      34.      52.      69.      86.     103.     120.     130.     123.     117.
           110.     103.      96.      89.      82.      75.      68.      62.      55.      48.
            41.      34.      27.      20.      13.       7.       0.       0.       0.       0.
             0.       0.       0.       0.       0.       0.       0.       0.


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


          **************
          *            *
163 KK    *     C1000  *
          *            *
          **************
                     COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.

165 HC          HYDROGRAPH COMBINATION
                     ICOMP           4  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

*** ***

```
          ***************
          *             *
166 KK    *    CRC100   *
          *             *
          ***************
                    CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100

             HYDROGRAPH ROUTING DATA

168 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC      -1.00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

169 RC          NORMAL DEPTH CHANNEL
                       ANL       .100  LEFT OVERBANK N-VALUE
                      ANCH       .050  MAIN CHANNEL N-VALUE
                       ANR       .100  RIGHT OVERBANK N-VALUE
                     RLNTH      2900.  REACH LENGTH
                       SEL      .0040  ENERGY SLOPE
                     ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                  CROSS-SECTION DATA
                      --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
173 RY       ELEVATION   633.30   638.10   640.00   644.10   644.90   644.90   645.00   645.00
171 RX       DISTANCE    260.00   300.00   350.00   400.00   450.00   500.00   501.00   502.00

                                                  ***

                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .00      .11      .42      .95     1.68     2.63     3.79     5.15     6.74     8.85
          OUTFLOW       .00      .68     4.29    12.65    27.24    49.39    80.31   121.15   167.32   213.29
        ELEVATION    633.30   633.92   634.53   635.15   635.76   636.38   636.99   637.61   638.23   638.84

          STORAGE     11.62    15.06    18.94    23.13    27.62    32.43    37.54    42.96    48.82    56.39
          OUTFLOW    286.28   392.89   568.83   778.53  1025.68  1313.44  1644.72  2022.24  2403.71  2772.33
        ELEVATION    639.46   640.07   640.69   641.31   641.92   642.54   643.15   643.77   644.38   645.00
```

*** ***

```
          ***************
          *             *
174 KK    *      1100   *
          *             *
          ***************
                    INFLOW FROM BASIN 1100
```

SUBBASIN RUNOFF DATA

176 BA SUBBASIN CHARACTERISTICS

TAREA .12 SUBBASIN AREA

PRECIPITATION DATA

177 PB STORM 3.90 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

178 LS SCS LOSS RATE

STRTL .86 INITIAL ABSTRACTION

CRVNBR 70.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

179 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .40 LAG

***

UNIT HYDROGRAPH

26 END-OF-PERIOD ORDINATES

19.	38.	57.	76.	95.	95.	88.	80.	72.	65.
57.	50.	42.	34.	27.	19.	12.	4.	0.	0.
0.	0.	0.	0.	0.	0.				

*** ***

```
          **************
          *            *
180 KK    *    C1100   *
          *            *
          **************
                    COMBINE HYDROGRAPHS CRC1000 & 1100

182 HC        HYDROGRAPH COMBINATION
                   ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***


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


          **************
          *            *
183 KK    *   CRC110   *
          *            *
          **************
                    CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK

            HYDROGRAPH ROUTING DATA

185 RS        STORAGE ROUTING
                  NSTPS           1  NUMBER OF SUBREACHES
                   ITYP        FLOW  TYPE OF INITIAL CONDITION
                 RSVRIC       -1.00  INITIAL CONDITION
                      X         .00 WORKING R AND D COEFFICIENT

186 RC        NORMAL DEPTH CHANNEL
                    ANL        .100  LEFT OVERBANK N-VALUE
                   ANCH        .050  MAIN CHANNEL N-VALUE
                    ANR        .100  RIGHT OVERBANK N-VALUE
                  RLNTH       1500.  REACH LENGTH
                    SEL       .0040  ENERGY SLOPE
                  ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                     --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
190 RY      ELEVATION   633.30   638.10   640.00   644.10   644.90   644.90   645.00   645.00
188 RX      DISTANCE    260.00   300.00   350.00   400.00   450.00   500.00   501.00   502.00

                                                    ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE       .00      .05      .22      .49      .87     1.36     1.96     2.67     3.49     4.58
        OUTFLOW       .00      .68     4.29    12.65    27.24    49.39    80.31   121.15   167.32   213.29
      ELEVATION    633.30   633.92   634.53   635.15   635.76   636.38   636.99   637.61   638.23   638.84

        STORAGE      6.01     7.79     9.79    11.96    14.29    16.77    19.42    22.22    25.25    29.17
        OUTFLOW    286.28   392.89   568.83   778.53  1025.68  1313.44  1644.72  2022.24  2403.71  2772.33
      ELEVATION    639.46   640.07   640.69   641.31   641.92   642.54   643.15   643.77   644.38   645.00
```

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

          **************
          *            *
191 KK    *      1200  *
          *            *
          **************
                         INFLOW FROM BASIN 1200

             SUBBASIN RUNOFF DATA

193 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .14  SUBBASIN AREA

                PRECIPITATION DATA

194 PB                STORM        3.90  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00

195 LS          SCS LOSS RATE
                      STRTL         .90  INITIAL ABSTRACTION
                     CRVNBR       69.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

196 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .90  LAG

                                                                                                                  ***
```

UNIT HYDROGRAPH
56 END-OF-PERIOD ORDINATES

5.	10.	15.	19.	24.	29.	34.	39.	44.	49.
53.	53.	52.	50.	48.	46.	44.	42.	40.	38.
36.	34.	32.	30.	28.	26.	24.	22.	20.	19.
17.	15.	13.	11.	9.	7.	5.	3.	1.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.				

*** ***

```
          **************
          *            *
197 KK    *     C1200  *
          *            *
          **************
```

COMBINE HYDROGRAPHS CRC1100 & 1200

199 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

1

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	100	123.	12.58	42.	13.	12.	.29		
+	ROUTED TO	DB100	48.	13.83	39.	13.	12.	.29		
+									686.23	13.83
+	ROUTED TO	CR100	47.	14.42	39.	13.	12.	.29		
+									679.96	14.42
+	HYDROGRAPH AT	200	36.	13.00	17.	5.	5.	.18		
+	2 COMBINED AT	C200	78.	13.50	55.	18.	17.	.47		
+	ROUTED TO	DB200	38.	17.58	36.	16.	15.	.47		
+									675.03	17.58
+	ROUTED TO	CRC200	38.	17.75	36.	16.	15.	.47		
+									673.83	17.75

	HYDROGRAPH AT								
+	300	110.	13.42	64.	20.	20.	.53		
	2 COMBINED AT								
+	C300	132.	13.67	93.	36.	35.	1.00		
	HYDROGRAPH AT								
+	400	194.	12.50	63.	20.	19.	.65		
	ROUTED TO								
+	DB400	58.	13.83	49.	18.	17.	.65		
+								684.13	13.83
	2 COMBINED AT								
+	C400	190.	13.67	142.	53.	52.	1.65		
	ROUTED TO								
+	CRC400	186.	14.25	141.	52.	51.	1.65		
+								668.87	14.25
	HYDROGRAPH AT								
+	500	26.	12.58	9.	3.	3.	.15		
	2 COMBINED AT								
+	C500	193.	14.17	148.	56.	53.	1.80		
	ROUTED TO								
+	CR500	193.	14.25	147.	55.	53.	1.80		
+								652.24	14.25
	HYDROGRAPH AT								
+	600	50.	13.00	24.	8.	7.	.36		
	ROUTED TO								
+	DB600	33.	14.17	23.	8.	7.	.36		
+								662.26	14.17
	HYDROGRAPH AT								
+	700	103.	12.50	32.	10.	9.	.24		
	ROUTED TO								
+	SR700	72.	13.08	32.	10.	9.	.24		
+								656.90	13.08
	3 COMBINED AT								
+	C700	288.	13.92	194.	72.	70.	2.40		
	ROUTED TO								
+	CRC70	284.	13.92	194.	72.	69.	2.40		
+								652.44	13.92
	HYDROGRAPH AT								
+	800	11.	12.50	4.	1.	1.	.12		
	HYDROGRAPH AT								
+	900	52.	12.83	23.	7.	7.	.24		
	ROUTED TO								
+	SR900	52.	12.83	23.	7.	7.	.24		
+								653.14	12.83

```
        HYDROGRAPH AT
+                    1000      83.  12.58      29.       9.       9.     .23

        4 COMBINED AT
+                   C1000     361.  13.67     244.      89.      86.    2.99

        ROUTED TO
+                  CRC100     341.  14.00     240.      88.      85.    2.99
+                                                                          639.77      14.00

        HYDROGRAPH AT
+                    1100      47.  12.33      13.       4.       4.     .12

        2 COMBINED AT
+                   C1100     350.  14.00     249.      92.      88.    3.11

        ROUTED TO
+                  CRC110     343.  14.17     248.      91.      88.    3.11
+                                                                          639.79      14.17

        HYDROGRAPH AT
+                    1200      30.  13.00      14.       4.       4.     .14

        2 COMBINED AT
+                   C1200     364.  14.17     261.      95.      92.    3.25


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

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  07/08/1992  TIME  16:04:01 *
*                                      *
****************************************
```

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

50-YEAR (1B50.OUT)

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

* * * * I M P O R T A N T * * * *

Dimensionless SCS unit hydrograph has been modified to have a peak rate factor of 368 as used by the Michigan Department of Natural Resources

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

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

```
1                                    HEC-1 INPUT                                    PAGE  1

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

  1           ID   CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
  2           ID   BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
  3           ID   50 YEAR STORM, TYPE II DISTRIBUTION
              *DIAGRAM
  4           IT       5                    300
  5           IO       4       0       0
  6           IN      30

  7           KK     100
  8           KM   INFLOW FROM BASIN 100
```

```
 9          BA     .29
10          PB     5.2
11          PC   0.000 0.00533 0.01085 0.01655 0.02247 0.02861 0.03501 0.04168 0.04866 0.05598
12          PC  0.0637 0.07181 0.08044 0.08963 0.09949 0.11014 0.12174 0.13453 0.14882 0.16511
13          PC  0.1842 0.20757 0.23839 0.28659 0.66651 0.73839 0.77568 0.80217 0.82315 0.84071
14          PC  0.8559 0.86942 0.88158 0.89268 0.90292 0.91243 0.92133 0.92971 0.93762 0.94512
15          PC  0.9523 0.95908 0.96661 0.97188 0.97791 0.98372 0.98933 0.99475  1.0000  1.0000
16          LS     0.0    76.0
17          UD      .6

18          KK   DB100
19          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100
20          RS       1    FLOW      -1
21          SA    0.10     .43     1.7     3.8     6.9    11.0    15.7
22          SE  680.67   682.0   684.0   686.0   688.0   690.0   692.0
23          SQ     0.0     9.0    32.0    47.0    55.0    78.0   400.0

24          KK   CR100
25          KM   CHANNEL ROUTING TO 56TH STREET
26          RS       1    FLOW      -1
27          RC      .1     .05      .1    2600   .0035
28          RX       0      50     100     110     150     200     225     241     246     248
29          RX     250     253     256     270     300     340     350     400     450     500
30          RY   685.1   684.1   683.2   682.3   681.9   681.3   681.5   680.3   678.5   677.4
31          RY   677.4   677.5   677.9     680   681.4   682.8   686.7   683.1   682.8   683.0

32          KK     200
33          KM   INFLOW FROM BASIN 200
34          BA     .18
35          PB     5.2
36          LS     0.0    68.0
37          UD     .90

38          KK    C200
39          KM   COMBINE HYDROGRAPHS CR100 & 200
40          HC       2

41          KK   DB200
42          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200
43          RS       1    FLOW      -1
44          SA     0.0     .30     8.8     9.0    10.3    11.0
45          SE  671.87   673.0   674.0   675.0   676.0  676.65
46          SQ     0.0     7.0    21.0    37.0    54.0   150.0
```



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


47          KK  CRC200
48          KM   CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300
49          RS       1    FLOW      -1
50          RC      .1     .05      .1    1300   .0035
51          RX       0      50     100     125     150     200     223     240     242     244
52          RX     250     256     261     285     300     315     350     400     450     500
53          RY   679.7   679.9   679.3   679.4   678.7   677.7   677.6   679.3   677.8   671.1
54          RY   670.1   671.5   673.5   676.5   679.2   682.0   683.4  681.64  682.85  683.97

55          KK     300
56          KM   INFLOW FROM BASIN 300
57          BA     .53
```

```
 58          PB     5.2
 59          LS     0.0    73.0
 60          UD     1.3

 61          KK    C300
 62          KM   COMBINE HYDROGRAPHS CRC200 & 300
 63          HC       2

 64          KK     400
 65          KM   INFLOW FROM BASIN 400
 66          BA     .65
 67          PB     5.2
 68          LS            68.0
 69          UD      .5

 70          KK   DB400
 71          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400
 72          RS       1    FLOW      -1
 73          SV     0.0     3.1     6.9     9.2    10.0    10.5    50.0
 74          SE   678.8   680.0   681.0   682.0   683.0   684.0   685.0
 75          SQ     0.0     7.0    21.0    36.0    49.0    57.0    65.0

 76          KK    C400
 77          KM   COMBINE HYDROGRAPHS C300 & DB400
 78          HC       2

 79          KK  CRC400
 80          KM   CHANNEL ROUTE C400 TO CONFLUENCE WITH 500
 81          RS       1    FLOW      -1
 82          RC      .1     .05      .1    3850    .004
 83          RX     0.0      50     100     150     190     200     208     232     240     245
 84          RX     247     250     253     258     290     300     350     391     400     404
 85          RY   681.3   681.4   680.1   676.7   671.4   672.2   670.2   668.8   665.6   664.8
 86          RY   663.5   662.4   662.7   667.6   669.6   672.3   677.4   681.7   681.4   681.6

 87          KK     500
 88          KM   INFLOW FROM BASIN 500
 89          BA     .15
 90          PB     5.2
 91          LS     0.0    61.0
 92          UD      .5
```



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

 93          KK    C500
 94          KM   COMBINE HYDROGRAPHS CRC400 & 500
 95          HC       2

 96          KK   CR500
 97          KM   CHANNEL ROUTING C500 TO CONFLUENCE WITH C700
 98          RS       1    FLOW      -1
 99          RC      .1     .05      .1    1150    .004
100          RX       0      50     100     125     150     175     190     200     242     244
101          RX     250     256     261     300     350     400     424     450     500       0
102          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
103          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7

104          KK     600
```

```
105          KM   INFLOW FROM BASIN 600
106          BA     .36
107          PB     5.2
108          LS            62.0
109          UD      .8

110          KK   DB600
111          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)
112          RS       1    FLOW      -1
113          SA    0.10    0.34     2.2     3.7     5.6     8.3
114          SE   659.4   660.0   662.0   664.0   666.0   668.0
115          SQ     0.0     4.0    30.0    55.0    75.0    92.0

116          KK     700
117          KM   INFLOW FROM BASIN 700
118          BA     .24
119          PB     5.2
120          LS              74
121          UD     .50

122          KK   SR700
123          KM   MODIFIED PULS STORM SEWER ROUTING
124          RS       1    FLOW      -1
125          SV     0.0   0.016   0.032   0.048   0.064    0.08     2.1     5.8    11.5
126          SE   650.8     652     653     654     655     656     657     658     659
127          SQ     0.0     8.0    22.0    39.0    52.0    65.0    73.0    82.0    87.0

128          KK    C700
129          KM   COMBINE HYDROGRAPHS CR500, DB600, & SR700
130          HC       3

131          KK   CRC700
132          KM   CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000
133          RS       1    FLOW      -1
134          RC      .1     .05      .1    1150    .004
135          RX       0      50     100     125     150     175     190     200     242     244
136          RX     250     256     261     300     350     400     424     450     500       0
137          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
138          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7
```



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


139          KK     800
140          KM   INFLOW FROM BASIN 800
141          BA     .12
142          PB     5.2
143          LS            53.0
144          UD     .30

145          KK     900
146          KM   INFLOW FROM BASIN 900
147          BA     .24
148          PB     5.2
149          LS            68.0
150          UD     .80

151          KK   SR900
152          KM   MODIFIED PULS STORM SEWER ROUTING
```

```
153          RS       1    FLOW      -1
154          SV    .016    .032    .048    .064     .08     .10     .11     .13     .14
155          SE   649.0   650.0   651.0   652.0   653.0   654.0   656.0   658.0   660.0
156          SQ     0.0     8.0    20.0    37.0    50.0    64.0    80.0    87.0    94.0

157          KK    1000
158          KM   INFLOW FROM BASIN 1000
159          BA     .23
160          PB     5.2
161          LS            73.0
162          UD     .60

163          KK   C1000
164          KM   COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.
165          HC       4

166          KK  CRC100
167          KM   CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100
168          RS       1    FLOW      -1
169          RC      .1     .05      .1    2900    .004
170          RX     0.0      50     100     125     150     200     240     245     250     255
171          RX     260     300     350     400     450     500     501     502     503     504
172          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
173          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

174          KK    1100
175          KM   INFLOW FROM BASIN 1100
176          BA     .12
177          PB     5.2
178          LS            70.0
179          UD     .40

180          KK   C1100
181          KM   COMBINE HYDROGRAPHS CRC1000 & 1100
182          HC       2
```



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


183          KK  CRC110
184          KM   CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK
185          RS       1    FLOW      -1
186          RC      .1     .05      .1    1500    .004
187          RX     0.0      50     100     125     150     200     240     245     250     255
188          RX     260     300     350     400     450     500     501     502     503     504
189          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
190          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

191          KK    1200
192          KM   INFLOW FROM BASIN 1200
193          BA     .14
194          PB     5.2
195          LS            69.0
196          UD     .90

197          KK   C1200
198          KM   COMBINE HYDROGRAPHS CRC1100 & 1200
199          HC       2
200          ZZ
```

```
                    SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    7         100
                V
                V
   18       DB100
                V
                V
   24       CR100
                .
                .
   32           .         200
                .           .
                .           .
   38        C200............
                V
                V
   41       DB200
                V
                V
   47      CRC200
                .
                .
   55           .         300
                .           .
                .           .
   61        C300............
                .
                .
   64           .         400
                .           V
                .           V
   70           .       DB400
                .           .
                .           .
   76        C400............
                V
                V
   79      CRC400
                .
                .
   87           .         500
                .           .
                .           .
   93        C500............
                V
                V
   96       CR500
                .
                .
  104           .         600
                .           V
                .           V
  110           .       DB600
                .           .
```

```
                .          .
  116           .          .        700
                .          .          V
                .          .          V
  122           .          .      SR700
                .          .          .
                .          .          .
  128        C700.......................
                V
                V
  131       CRC70
                .
                .
  139           .        800
                .          .
                .          .
  145           .          .        900
                .          .          V
                .          .          V
  151           .          .      SR900
                .          .          .
                .          .          .
  157           .          .          .       1000
                .          .          .          .
                .          .          .          .
  163       C1000.................................
                V
                V
  166      CRC100
                .
                .
  174           .       1100
                .          .
                .          .
  180       C1100............
                V
                V
  183      CRC110
                .
                .
  191           .       1200
                .          .
                .          .
  197       C1200............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  07/08/1992  TIME  16:04:01 *
*                                      *
****************************************
```

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

```
                    CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
                    BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
                    50 YEAR STORM, TYPE II DISTRIBUTION

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

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

              COMPUTATION INTERVAL     .08 HOURS
                   TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT


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


          **************
          *            *
  7 KK    *       100  *
          *            *
          **************
                    INFLOW FROM BASIN 100

  6 IN        TIME DATA FOR INPUT TIME SERIES
                    JXMIN         30  TIME INTERVAL IN MINUTES
                   JXDATE      1   0  STARTING DATE
                   JXTIME          0  STARTING TIME

             SUBBASIN RUNOFF DATA

  9 BA        SUBBASIN CHARACTERISTICS
                    TAREA        .29  SUBBASIN AREA

             PRECIPITATION DATA

 10 PB              STORM       5.20  BASIN TOTAL PRECIPITATION

 11 PI         INCREMENTAL PRECIPITATION PATTERN
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

16 LS SCS LOSS RATE

STRTL	.63	INITIAL ABSTRACTION
CRVNBR	76.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

17 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.60	LAG

***

UNIT HYDROGRAPH
38 END-OF-PERIOD ORDINATES

22.	43.	65.	87.	108.	130.	152.	164.	156.	147.
138.	130.	121.	112.	104.	95.	86.	78.	69.	60.
52.	43.	34.	26.	17.	8.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.		

*** ***

```
**************
*            *
18 KK  *   DB100  *
*            *
**************
```

MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100

HYDROGRAPH ROUTING DATA

20 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES

```
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

 21 SA             AREA          .1        .4       1.7       3.8       6.9      11.0      15.7

 22 SE        ELEVATION      680.67    682.00    684.00    686.00    688.00    690.00    692.00

 23 SQ        DISCHARGE          0.        9.       32.       47.       55.       78.      400.

                                                          ***

                                          COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00       .33      2.32      7.68     18.23     35.97     62.53
        ELEVATION     680.67    682.00    684.00    686.00    688.00    690.00    692.00


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


          **************
          *            *
 24 KK    *     CR100  *
          *            *
          **************
                    CHANNEL ROUTING TO 56TH STREET

             HYDROGRAPH ROUTING DATA

 26 RS        STORAGE ROUTING
                  NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC      -1.00  INITIAL CONDITION
                       X        .00 WORKING R AND D COEFFICIENT

 27 RC        NORMAL DEPTH CHANNEL
                     ANL       .100  LEFT OVERBANK N-VALUE
                    ANCH       .050  MAIN CHANNEL N-VALUE
                     ANR       .100  RIGHT OVERBANK N-VALUE
                   RLNTH      2600.  REACH LENGTH
                     SEL      .0035  ENERGY SLOPE
                   ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                        CROSS-SECTION DATA
                      --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 31 RY       ELEVATION    677.40    677.50    677.90    680.00    681.40    682.80    686.70    683.10
 29 RX       DISTANCE     250.00    253.00    256.00    270.00    300.00    340.00    350.00    400.00

                                                          ***

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00       .11       .33       .65      1.06      1.57      2.22      3.17      4.42      6.02
          OUTFLOW        .00       .77      4.18     11.47     23.87     42.45     64.19     98.94    151.52    221.18
        ELEVATION     677.40    677.89    678.38    678.87    679.36    679.85    680.34    680.83    681.32    681.81

          STORAGE       8.02     10.44     13.10     15.95     19.04     22.36     25.92     29.72     33.75     38.01
          OUTFLOW     317.47    445.17    645.76    880.39   1147.92   1448.41   1782.00   2148.88   2549.32   2983.65
```

```
      ELEVATION     682.30    682.78    683.27    683.76    684.25    684.74    685.23    685.72    686.21    686.70



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


            **************
            *            *
  32 KK     *      200   *
            *            *
            **************
                          INFLOW FROM BASIN 200

               SUBBASIN RUNOFF DATA

  34 BA          SUBBASIN CHARACTERISTICS
                       TAREA          .18  SUBBASIN AREA

                 PRECIPITATION DATA

  35 PB                STORM         5.20  BASIN TOTAL PRECIPITATION

  11 PI            INCREMENTAL PRECIPITATION PATTERN
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                         .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                         .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                         .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                         .00       .00       .00       .00       .00       .00       .00       .00

  36 LS          SCS LOSS RATE
                       STRTL          .94  INITIAL ABSTRACTION
                      CRVNBR        68.00  CURVE NUMBER
                       RTIMP          .00  PERCENT IMPERVIOUS AREA
```

```
37 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .90  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            56 END-OF-PERIOD ORDINATES
              6.       12.       19.       25.       31.       37.       44.       50.       56.       62.
             69.       69.       66.       64.       61.       59.       56.       54.       51.       49.
             46.       44.       41.       39.       36.       34.       31.       29.       26.       24.
             21.       19.       16.       14.       11.        9.        6.        4.        1.        0.
              0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
              0.        0.        0.        0.        0.        0.

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

          **************
          *            *
38 KK     *      C200  *
          *            *
          **************
                       COMBINE HYDROGRAPHS CR100 & 200

40 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***

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

          **************
          *            *
41 KK     *     DB200  *
          *            *
          **************
                       MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200

             HYDROGRAPH ROUTING DATA

43 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

44 SA              AREA          .0        .3       8.8       9.0      10.3      11.0

45 SE          ELEVATION      671.87    673.00    674.00    675.00    676.00    676.65

46 SQ          DISCHARGE          0.        7.       21.       37.       54.      150.

                                                    ***

                                            COMPUTED STORAGE-ELEVATION DATA
```

STORAGE	.00	.11	3.69	12.59	22.23	29.15
ELEVATION	671.87	673.00	674.00	675.00	676.00	676.65

*** ***

```
              **************
              *            *
47 KK         *    CRC200  *
              *            *
              **************
```

CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300

HYDROGRAPH ROUTING DATA

```
49 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC      -1.00  INITIAL CONDITION
                        X        .00 WORKING R AND D COEFFICIENT

50 RC          NORMAL DEPTH CHANNEL
                      ANL       .100  LEFT OVERBANK N-VALUE
                     ANCH       .050  MAIN CHANNEL N-VALUE
                      ANR       .100  RIGHT OVERBANK N-VALUE
                    RLNTH      1300.  REACH LENGTH
                      SEL      .0035  ENERGY SLOPE
                    ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---			+ ------ MAIN CHANNEL -------			+ --- RIGHT OVERBANK ---	
54 RY	ELEVATION	670.10	671.50	673.50	676.50	679.20	682.00	683.40	681.64
52 RX	DISTANCE	250.00	256.00	261.00	285.00	300.00	315.00	350.00	400.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.03	.13	.27	.45	.67	.97	1.39	1.93	2.59
OUTFLOW	.00	.45	2.87	8.57	17.50	30.50	52.42	86.17	135.89	205.04
ELEVATION	670.10	670.80	671.50	672.20	672.90	673.60	674.30	675.00	675.70	676.40
STORAGE	3.35	4.19	5.11	6.12	7.20	8.36	9.60	10.98	12.94	15.68
OUTFLOW	299.49	417.51	559.96	728.30	924.94	1150.12	1405.19	1692.00	2078.70	2526.57
ELEVATION	677.10	677.80	678.50	679.20	679.90	680.60	681.30	682.00	682.70	683.40

*** ***

```
              **************
              *            *
55 KK         *       300  *
              *            *
              **************
```

INFLOW FROM BASIN 300

SUBBASIN RUNOFF DATA

57 BA SUBBASIN CHARACTERISTICS

TAREA	.53	SUBBASIN AREA

PRECIPITATION DATA

58 PB

STORM	5.20	BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

59 LS SCS LOSS RATE

STRTL	.74	INITIAL ABSTRACTION
CRVNBR	73.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

60 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	1.30	LAG

***

UNIT HYDROGRAPH

80 END-OF-PERIOD ORDINATES

9.	18.	27.	36.	45.	54.	63.	72.	81.	90.
100.	109.	118.	127.	136.	145.	142.	139.	135.	132.
128.	124.	121.	117.	113.	110.	106.	103.	99.	95.
92.	88.	85.	81.	77.	74.	70.	66.	63.	59.
56.	52.	48.	45.	41.	37.	34.	30.	27.	23.
19.	16.	12.	9.	5.	1.	0.	0.	0.	0.

```
              0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
              0.        0.        0.        0.        0.        0.        0.        0.        0.        0.


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


          **************
          *            *
 61 KK    *      C300  *
          *            *
          **************
                         COMBINE HYDROGRAPHS CRC200 & 300

 63 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


          **************
          *            *
 64 KK    *       400  *
          *            *
          **************
                         INFLOW FROM BASIN 400

             SUBBASIN RUNOFF DATA

 66 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .65  SUBBASIN AREA

                PRECIPITATION DATA

 67 PB                STORM        5.20  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
68 LS          SCS LOSS RATE
                    STRTL        .94  INITIAL ABSTRACTION
                   CRVNBR      68.00  CURVE NUMBER
                    RTIMP        .00  PERCENT IMPERVIOUS AREA

69 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG        .50  LAG
```

***

UNIT HYDROGRAPH
32 END-OF-PERIOD ORDINATES

68.	136.	205.	273.	341.	409.	430.	402.	375.	348.
321.	293.	266.	239.	211.	184.	157.	130.	102.	75.
48.	20.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.								

*** ***

```
          **************
          *            *
70 KK     *     DB400  *
          *            *
          **************
                    MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400

             HYDROGRAPH ROUTING DATA

72 RS          STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC      -1.00  INITIAL CONDITION
                       X        .00 WORKING R AND D COEFFICIENT

73 SV            STORAGE         .0       3.1       6.9       9.2      10.0      10.5      50.0

74 SE          ELEVATION     678.80    680.00    681.00    682.00    683.00    684.00    685.00

75 SQ          DISCHARGE         0.        7.       21.       36.       49.       57.       65.
```

***

*** ***

```
          **************
          *            *
 76 KK    *      C400  *
          *            *
          **************
                         COMBINE HYDROGRAPHS C300 & DB400

 78 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***



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


          **************
          *            *
 79 KK    *    CRC400  *
          *            *
          **************
                         CHANNEL ROUTE C400 TO CONFLUENCE WITH 500

            HYDROGRAPH ROUTING DATA

 81 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 82 RC          NORMAL DEPTH CHANNEL
                        ANL        .100  LEFT OVERBANK N-VALUE
                       ANCH        .050  MAIN CHANNEL N-VALUE
                        ANR        .100  RIGHT OVERBANK N-VALUE
                      RLNTH       3850.  REACH LENGTH
                        SEL       .0040  ENERGY SLOPE
                      ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                       CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 86 RY        ELEVATION    663.50    662.40    662.70    667.60    669.60    672.30    677.40    681.70
 84 RX        DISTANCE     247.00    250.00    253.00    258.00    290.00    300.00    350.00    391.00

                                                                  ***

                                       COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00       .38      1.03      1.77      2.61      3.54      5.09      8.09     12.09     16.43
          OUTFLOW        .00      3.09     15.23     36.05     65.79    104.99    147.82    251.32    448.50    712.59
        ELEVATION     662.40    663.42    664.43    665.45    666.46    667.48    668.49    669.51    670.53    671.54

          STORAGE      21.12     26.55     32.88     40.10     48.22     57.22     67.11     77.86     89.49    101.98
          OUTFLOW    1049.87   1484.92   1996.43   2588.28   3264.00   4027.15   4881.24   5828.66   6872.46   8015.70
        ELEVATION     672.56    673.57    674.59    675.61    676.62    677.64    678.65    679.67    680.68    681.70
```

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


          **************
          *            *
87 KK     *       500  *
          *            *
          **************
                         INFLOW FROM BASIN 500

             SUBBASIN RUNOFF DATA

89 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .15  SUBBASIN AREA

               PRECIPITATION DATA

90 PB                STORM        5.20  BASIN TOTAL PRECIPITATION

11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                     .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00

91 LS          SCS LOSS RATE
                     STRTL        1.28  INITIAL ABSTRACTION
                    CRVNBR       61.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

92 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .50  LAG
```

```
                                                  ***

                                              UNIT HYDROGRAPH
                                          32 END-OF-PERIOD ORDINATES
            16.      31.      47.      63.      79.      94.      99.      93.      87.      80.
            74.      68.      61.      55.      49.      42.      36.      30.      24.      17.
            11.       5.       0.       0.       0.       0.       0.       0.       0.       0.
             0.       0.


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


          **************
          *            *
 93 KK    *     C500   *
          *            *
          **************
                         COMBINE HYDROGRAPHS CRC400 & 500

 95 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***


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


          **************
          *            *
 96 KK    *    CR500   *
          *            *
          **************
                         CHANNEL ROUTING C500 TO CONFLUENCE WITH C700

            HYDROGRAPH ROUTING DATA

 98 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 99 RC          NORMAL DEPTH CHANNEL
                        ANL        .100  LEFT OVERBANK N-VALUE
                       ANCH        .050  MAIN CHANNEL N-VALUE
                        ANR        .100  RIGHT OVERBANK N-VALUE
                      RLNTH       1150.  REACH LENGTH
                        SEL       .0040  ENERGY SLOPE
                      ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                       CROSS-SECTION DATA
                         --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
103 RY        ELEVATION   648.40   648.60   651.70   651.90   651.20   651.80   652.10   658.60
101 RX        DISTANCE    250.00   256.00   261.00   300.00   350.00   400.00   424.00   450.00

                                                  ***
```

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.07	.17	.28	.41	.54	1.05	3.02	5.50	8.02
OUTFLOW	.00	1.41	5.43	11.54	19.63	29.73	51.03	158.43	394.91	724.38
ELEVATION	648.40	648.94	649.47	650.01	650.55	651.08	651.62	652.16	652.69	653.23
STORAGE	10.56	13.14	15.74	18.38	21.05	23.75	26.47	29.23	32.02	34.84
OUTFLOW	1135.12	1620.10	2174.48	2794.66	3477.84	4221.74	5024.49	5884.51	6800.46	7771.17
ELEVATION	653.77	654.31	654.84	655.38	655.92	656.45	656.99	657.53	658.06	658.60

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 4222. TO 7771.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** ***

```
              **************
              *            *
104 KK        *       600  *
              *            *
              **************
```

INFLOW FROM BASIN 600

SUBBASIN RUNOFF DATA

106 BA SUBBASIN CHARACTERISTICS

TAREA .36 SUBBASIN AREA

PRECIPITATION DATA

107 PB STORM 5.20 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

```
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00

108 LS        SCS LOSS RATE
                 STRTL      1.23  INITIAL ABSTRACTION
                CRVNBR     62.00  CURVE NUMBER
                 RTIMP       .00  PERCENT IMPERVIOUS AREA

109 UD        SCS DIMENSIONLESS UNITGRAPH
                  TLAG       .80  LAG

                                          ***

                                   UNIT HYDROGRAPH
                              50 END-OF-PERIOD ORDINATES
          16.      31.      47.      62.      78.      94.     109.     125.     141.     156.
         152.     146.     140.     133.     127.     121.     115.     108.     102.      96.
          90.      83.      77.      71.      65.      58.      52.      46.      40.      33.
          27.      21.      15.       8.       2.       0.       0.       0.       0.       0.
           0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


        **************
        *            *
110 KK  *    DB600   *
        *            *
        **************
                 MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)

           HYDROGRAPH ROUTING DATA

112 RS        STORAGE ROUTING
                NSTPS         1  NUMBER OF SUBREACHES
                 ITYP      FLOW  TYPE OF INITIAL CONDITION
                RSVRIC     -1.00  INITIAL CONDITION
                     X       .00 WORKING R AND D COEFFICIENT

113 SA          AREA        .1       .3      2.2      3.7      5.6      8.3

114 SE       ELEVATION   659.40   660.00   662.00   664.00   666.00   668.00

115 SQ       DISCHARGE       0.       4.      30.      55.      75.      92.

                                          ***

                          COMPUTED STORAGE-ELEVATION DATA

        STORAGE      .00      .12     2.39     8.23    17.46    31.28
      ELEVATION   659.40   660.00   662.00   664.00   666.00   668.00
```

*** ***

```
          **************
          *            *
116 KK    *       700  *
          *            *
          **************
                         INFLOW FROM BASIN 700

             SUBBASIN RUNOFF DATA

118 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .24  SUBBASIN AREA

                PRECIPITATION DATA

119 PB                STORM        5.20  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00

120 LS          SCS LOSS RATE
                      STRTL          .70  INITIAL ABSTRACTION
                     CRVNBR        74.00  CURVE NUMBER
                      RTIMP          .00  PERCENT IMPERVIOUS AREA

121 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG          .50  LAG
```

***

```
                                        UNIT HYDROGRAPH
                                    32 END-OF-PERIOD ORDINATES
      25.      50.      76.     101.     126.     151.     159.     149.     139.     128.
     118.     108.      98.      88.      78.      68.      58.      48.      38.      28.
      18.       8.       0.       0.       0.       0.       0.       0.       0.       0.
       0.       0.

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

          **************
          *            *
 122 KK   *     SR700  *
          *            *
          **************
                    MODIFIED PULS STORM SEWER ROUTING

        HYDROGRAPH ROUTING DATA

 124 RS       STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       FLOW  TYPE OF INITIAL CONDITION
                RSVRIC      -1.00  INITIAL CONDITION
                     X        .00 WORKING R AND D COEFFICIENT

 125 SV        STORAGE        .0       .0       .0       .0       .1       .1      2.1      5.8     11.5

 126 SE      ELEVATION     650.80   652.00   653.00   654.00   655.00   656.00   657.00   658.00   659.00

 127 SQ      DISCHARGE        0.       8.      22.      39.      52.      65.      73.      82.      87.

                                                          ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       0. TO      65.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

          **************
          *            *
 128 KK   *     C700   *
          *            *
          **************
                    COMBINE HYDROGRAPHS CR500, DB600, & SR700

 130 HC       HYDROGRAPH COMBINATION
                 ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

```
          **************
          *            *
131 KK    *     CRC70  *     0
          *            *
          **************
                    CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000

             HYDROGRAPH ROUTING DATA

133 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC      -1.00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

134 RC          NORMAL DEPTH CHANNEL
                       ANL       .100  LEFT OVERBANK N-VALUE
                      ANCH       .050  MAIN CHANNEL N-VALUE
                       ANR       .100  RIGHT OVERBANK N-VALUE
                     RLNTH      1150.  REACH LENGTH
                       SEL      .0040  ENERGY SLOPE
                     ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                      --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
138 RY       ELEVATION   648.40   648.60   651.70   651.90   651.20   651.80   652.10   658.60
136 RX       DISTANCE    250.00   256.00   261.00   300.00   350.00   400.00   424.00   450.00

                                                  ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .00      .07      .17      .28      .41      .54     1.05     3.02     5.50     8.02
          OUTFLOW       .00     1.41     5.43    11.54    19.63    29.73    51.03   158.43   394.91   724.38
        ELEVATION    648.40   648.94   649.47   650.01   650.55   651.08   651.62   652.16   652.69   653.23

          STORAGE     10.56    13.14    15.74    18.38    21.05    23.75    26.47    29.23    32.02    34.84
          OUTFLOW   1135.12  1620.10  2174.48  2794.66  3477.84  4221.74  5024.49  5884.51  6800.46  7771.17
        ELEVATION    653.77   654.31   654.84   655.38   655.92   656.45   656.99   657.53   658.06   658.60


*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN     4222. TO     7771.
               THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
               THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)


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


          **************
          *            *
139 KK    *       800  *
          *            *
          **************
                    INFLOW FROM BASIN 800

             SUBBASIN RUNOFF DATA
```

141 BA SUBBASIN CHARACTERISTICS

TAREA .12 SUBBASIN AREA

PRECIPITATION DATA

142 PB STORM 5.20 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

143 LS SCS LOSS RATE

STRTL 1.77 INITIAL ABSTRACTION

CRVNBR 53.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

144 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .30 LAG

***

UNIT HYDROGRAPH

20 END-OF-PERIOD ORDINATES

32.	63.	95.	126.	118.	106.	93.	80.	68.	55.
42.	30.	17.	4.	0.	0.	0.	0.	0.	0.

*** ***

****

```
          *            *
145 KK    *       900  *
          *            *
          **************
                    INFLOW FROM BASIN 900

            SUBBASIN RUNOFF DATA

147 BA        SUBBASIN CHARACTERISTICS
                  TAREA          .24  SUBBASIN AREA

              PRECIPITATION DATA

148 PB            STORM         5.20  BASIN TOTAL PRECIPITATION

 11 PI          INCREMENTAL PRECIPITATION PATTERN
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .01      .01      .01      .01
                  .01      .01      .01      .01      .01      .01      .01      .01      .06      .06
                  .06      .06      .06      .06      .01      .01      .01      .01      .01      .01
                  .01      .01      .01      .01      .01      .01      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00
```

```
149 LS        SCS LOSS RATE
                  STRTL          .94  INITIAL ABSTRACTION
                 CRVNBR        68.00  CURVE NUMBER
                  RTIMP          .00  PERCENT IMPERVIOUS AREA

150 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG          .80  LAG

                                          ***

                                     UNIT HYDROGRAPH
                                 50 END-OF-PERIOD ORDINATES
          10.      21.      31.      42.      52.      62.      73.      83.      94.     104.
         101.      97.      93.      89.      85.      81.      76.      72.      68.      64.
```

```
          60.      56.      51.      47.      43.      39.      35.      31.      26.      22.
          18.      14.      10.       6.       1.       0.       0.       0.       0.       0.
           0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


        **************
        *            *
151 KK  *     SR900  *
        *            *
        **************
                    MODIFIED PULS STORM SEWER ROUTING

           HYDROGRAPH ROUTING DATA

153 RS        STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       FLOW  TYPE OF INITIAL CONDITION
                RSVRIC      -1.00  INITIAL CONDITION
                     X        .00 WORKING R AND D COEFFICIENT

154 SV          STORAGE        .0       .0       .0       .1       .1       .1       .1       .1       .1

155 SE        ELEVATION     649.00   650.00   651.00   652.00   653.00   654.00   656.00   658.00   660.00

156 SQ        DISCHARGE        0.       8.      20.      37.      50.      64.      80.      87.      94.

                                                          ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       0. TO       94.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

WARNING --- ROUTED OUTFLOW (     97.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     99.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     99.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     99.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     98.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     96.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     94.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE


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


        **************
        *            *
157 KK  *      1000  *
        *            *
        **************
```

INFLOW FROM BASIN 1000

SUBBASIN RUNOFF DATA

159 BA SUBBASIN CHARACTERISTICS

TAREA .23 SUBBASIN AREA

PRECIPITATION DATA

160 PB STORM 5.20 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

161 LS SCS LOSS RATE

STRTL .74 INITIAL ABSTRACTION

CRVNBR 73.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

162 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .60 LAG

***

UNIT HYDROGRAPH

38 END-OF-PERIOD ORDINATES

17.	34.	52.	69.	86.	103.	120.	130.	123.	117.
110.	103.	96.	89.	82.	75.	68.	62.	55.	48.
41.	34.	27.	20.	13.	7.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.		

*** ***

```
          **************
          *            *
163 KK    *    C1000   *
          *            *
          **************
                    COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.

165 HC        HYDROGRAPH COMBINATION
                   ICOMP          4  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***
```

*** ***

```
          **************
          *            *
166 KK    *   CRC100   *
          *            *
          **************
                    CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100

            HYDROGRAPH ROUTING DATA

168 RS        STORAGE ROUTING
                  NSTPS          1  NUMBER OF SUBREACHES
                   ITYP       FLOW  TYPE OF INITIAL CONDITION
                 RSVRIC      -1.00  INITIAL CONDITION
                      X        .00 WORKING R AND D COEFFICIENT

169 RC        NORMAL DEPTH CHANNEL
                    ANL       .100  LEFT OVERBANK N-VALUE
                   ANCH       .050  MAIN CHANNEL N-VALUE
                    ANR       .100  RIGHT OVERBANK N-VALUE
                  RLNTH      2900.  REACH LENGTH
                    SEL      .0040  ENERGY SLOPE
                  ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                  CROSS-SECTION DATA
                     --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
173 RY      ELEVATION   633.30   638.10   640.00   644.10   644.90   644.90   645.00   645.00
171 RX      DISTANCE    260.00   300.00   350.00   400.00   450.00   500.00   501.00   502.00

                                                    ***

                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE       .00      .11      .42      .95     1.68     2.63     3.79     5.15     6.74     8.85
        OUTFLOW       .00      .68     4.29    12.65    27.24    49.39    80.31   121.15   167.32   213.29
      ELEVATION    633.30   633.92   634.53   635.15   635.76   636.38   636.99   637.61   638.23   638.84

        STORAGE     11.62    15.06    18.94    23.13    27.62    32.43    37.54    42.96    48.82    56.39
        OUTFLOW    286.28   392.89   568.83   778.53  1025.68  1313.44  1644.72  2022.24  2403.71  2772.33
      ELEVATION    639.46   640.07   640.69   641.31   641.92   642.54   643.15   643.77   644.38   645.00
```

*** ***

```
        **************
        *            *
174 KK  *     1100   *
        *            *
        **************
```

INFLOW FROM BASIN 1100

SUBBASIN RUNOFF DATA

176 BA SUBBASIN CHARACTERISTICS

TAREA .12 SUBBASIN AREA

PRECIPITATION DATA

177 PB STORM 5.20 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

178 LS SCS LOSS RATE

STRTL .86 INITIAL ABSTRACTION
CRVNBR 70.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

179 UD SCS DIMENSIONLESS UNITGRAPH

```
                TLAG        .40  LAG

                                                    ***

                                              UNIT HYDROGRAPH
                                          26 END-OF-PERIOD ORDINATES
            19.      38.      57.      76.      95.      95.      88.      80.      72.      65.
            57.      50.      42.      34.      27.      19.      12.       4.       0.       0.
             0.       0.       0.       0.       0.       0.


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


          **************
          *            *
 180 KK   *     C1100  *
          *            *
          **************
                     COMBINE HYDROGRAPHS CRC1000 & 1100

 182 HC        HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***


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


          **************
          *            *
 183 KK   *    CRC110  *
          *            *
          **************
                     CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK

            HYDROGRAPH ROUTING DATA

 185 RS        STORAGE ROUTING
                   NSTPS           1  NUMBER OF SUBREACHES
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

 186 RC        NORMAL DEPTH CHANNEL
                     ANL        .100  LEFT OVERBANK N-VALUE
                    ANCH        .050  MAIN CHANNEL N-VALUE
                     ANR        .100  RIGHT OVERBANK N-VALUE
                   RLNTH       1500.  REACH LENGTH
                     SEL       .0040  ENERGY SLOPE
                   ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                        CROSS-SECTION DATA
                        --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 190 RY       ELEVATION   633.30   638.10   640.00   644.10   644.90   644.90   645.00   645.00
 188 RX       DISTANCE    260.00   300.00   350.00   400.00   450.00   500.00   501.00   502.00
```

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.05	.22	.49	.87	1.36	1.96	2.67	3.49	4.58
OUTFLOW	.00	.68	4.29	12.65	27.24	49.39	80.31	121.15	167.32	213.29
ELEVATION	633.30	633.92	634.53	635.15	635.76	636.38	636.99	637.61	638.23	638.84
STORAGE	6.01	7.79	9.79	11.96	14.29	16.77	19.42	22.22	25.25	29.17
OUTFLOW	286.28	392.89	568.83	778.53	1025.68	1313.44	1644.72	2022.24	2403.71	2772.33
ELEVATION	639.46	640.07	640.69	641.31	641.92	642.54	643.15	643.77	644.38	645.00

*** ***

```
            **************
            *            *
191 KK      *      1200  *
            *            *
            **************
                      INFLOW FROM BASIN 1200

          SUBBASIN RUNOFF DATA

193 BA          SUBBASIN CHARACTERISTICS
                     TAREA          .14  SUBBASIN AREA

                PRECIPITATION DATA

194 PB               STORM        5.20  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                     .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

```
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00

195 LS        SCS LOSS RATE
                STRTL        .90  INITIAL ABSTRACTION
               CRVNBR      69.00  CURVE NUMBER
                RTIMP        .00  PERCENT IMPERVIOUS AREA

196 UD        SCS DIMENSIONLESS UNITGRAPH
                 TLAG        .90  LAG

                                          ***

                                     UNIT HYDROGRAPH
                                 56 END-OF-PERIOD ORDINATES
            5.      10.      15.      19.      24.      29.      34.      39.      44.      49.
           53.      53.      52.      50.      48.      46.      44.      42.      40.      38.
           36.      34.      32.      30.      28.      26.      24.      22.      20.      19.
           17.      15.      13.      11.       9.       7.       5.       3.       1.       0.
            0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
            0.       0.       0.       0.       0.       0.

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

          **************
          *            *
197 KK    *     C1200  *
          *            *
          **************
                   COMBINE HYDROGRAPHS CRC1100 & 1200

199 HC        HYDROGRAPH COMBINATION
                ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                          ***
1
                                     RUNOFF SUMMARY
                                FLOW IN CUBIC FEET PER SECOND
                              TIME IN HOURS,  AREA IN SQUARE MILES

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

        HYDROGRAPH AT
+                         100     205.   12.58         68.         21.         20.       .29
        ROUTED TO
+                       DB100      55.   14.00         52.         21.         20.       .29
+                                                                                        687.94      14.00

        ROUTED TO
+                       CR100      54.   14.58         51.         21.         20.       .29
+                                                                                        680.12      14.58
```

	HYDROGRAPH AT								
+		200	69.	12.92	31.	10.	9.	.18	
	2 COMBINED AT								
+		C200	115.	13.25	80.	30.	29.	.47	
	ROUTED TO								
+		DB200	52.	19.25	50.	24.	23.	.47	
+									675.86 19.25
	ROUTED TO								
+		CRC200	52.	19.42	50.	23.	22.	.47	
+									674.27 19.42
	HYDROGRAPH AT								
+		300	193.	13.33	109.	34.	33.	.53	
	2 COMBINED AT								
+		C300	220.	13.50	147.	57.	55.	1.00	
	HYDROGRAPH AT								
+		400	369.	12.50	114.	35.	34.	.65	
	ROUTED TO								
+		DB400	62.	14.50	61.	31.	30.	.65	
+									684.62 14.50
	2 COMBINED AT								
+		C400	282.	13.58	208.	88.	85.	1.65	
	ROUTED TO								
+		CRC400	277.	14.00	205.	87.	84.	1.65	
+									669.64 14.00
	HYDROGRAPH AT								
+		500	58.	12.50	19.	6.	6.	.15	
	2 COMBINED AT								
+		C500	293.	13.83	220.	93.	89.	1.80	
	ROUTED TO								
+		CR500	292.	14.00	219.	92.	88.	1.80	
+									652.46 14.00
	HYDROGRAPH AT								
+		600	108.	12.83	47.	15.	14.	.36	
	ROUTED TO								
+		DB600	56.	14.33	44.	15.	14.	.36	
+									664.11 14.33
	HYDROGRAPH AT								
+		700	177.	12.42	53.	16.	16.	.24	
	ROUTED TO								
+		SR700	83.	13.33	53.	16.	16.	.24	
+									658.28 13.33
	3 COMBINED AT								
+		C700	430.	14.00	308.	123.	118.	2.40	

```
        ROUTED TO
+                    CRC70      429.   14.08       308.       122.       117.      2.40
+                                                                                          652.75      14.08

        HYDROGRAPH AT
+                      800       34.   12.25         9.         3.         3.       .12

        HYDROGRAPH AT
+                      900       99.   12.75        42.        13.        12.       .24

        ROUTED TO
+                    SR900       99.   12.83        42.        13.        12.       .24
+                                                                                          661.57      12.83

        HYDROGRAPH AT
+                     1000      145.   12.58        49.        15.        14.       .23

        4 COMBINED AT
+                    C1000      580.   13.50       398.       153.       147.      2.99

        ROUTED TO
+                   CRC100      567.   13.75       391.       150.       144.      2.99
+                                                                                          640.68      13.75

        HYDROGRAPH AT
+                     1100       86.   12.33        23.         7.         7.       .12

        2 COMBINED AT
+                    C1100      584.   13.67       408.       157.       151.      3.11

        ROUTED TO
+                   CRC110      581.   13.83       406.       155.       150.      3.11
+                                                                                          640.72      13.83

        HYDROGRAPH AT
+                     1200       56.   12.92        25.         8.         8.       .14

        2 COMBINED AT
+                    C1200      626.   13.75       429.       163.       157.      3.25


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

```
1****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*           SEPTEMBER 1990             *                    *   HYDROLOGIC ENGINEERING CENTER      *
*            VERSION 4.0               *                    *         609 SECOND STREET            *
*                                      *                    *      DAVIS, CALIFORNIA 95616         *
* RUN DATE  07/08/1992  TIME  15:46:01 *                    *          (916) 756-1104              *
*                                      *                    *                                      *
****************************************                    ****************************************
```

100-YEAR (1B100.OUT)

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

* * * * I M P O R T A N T * * * *

Dimensionless SCS unit hydrograph has been modified to have a peak rate factor of 368 as used by the Michigan Department of Natural Resources

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

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

```
1                                          HEC-1 INPUT                                          PAGE  1

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

  1           ID   CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
  2           ID   BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
  3           ID   100 YEAR STORM, TYPE II DISTRIBUTION
              *DIAGRAM
  4           IT       5                    300
  5           IO       4       0       0
  6           IN      30

  7           KK     100
  8           KM   INFLOW FROM BASIN 100
```

```
 9          BA     .29
10          PB    5.75
11          PC   0.000 0.00533 0.01085 0.01655 0.02247 0.02861 0.03501 0.04168 0.04866 0.05598
12          PC  0.0637 0.07181 0.08044 0.08963 0.09949 0.11014 0.12174 0.13453 0.14882 0.16511
13          PC  0.1842 0.20757 0.23839 0.28659 0.66651 0.73839 0.77568 0.80217 0.82315 0.84071
14          PC  0.8559 0.86942 0.88158 0.89268 0.90292 0.91243 0.92133 0.92971 0.93762 0.94512
15          PC  0.9523 0.95908 0.96661 0.97188 0.97791 0.98372 0.98933 0.99475  1.0000  1.0000
16          LS     0.0    76.0
17          UD      .6

18          KK   DB100
19          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100
20          RS       1    FLOW      -1
21          SA    0.10     .43     1.7     3.8     6.9    11.0    15.7
22          SE  680.67   682.0   684.0   686.0   688.0   690.0   692.0
23          SQ     0.0     9.0    32.0    47.0    55.0    78.0   400.0

24          KK   CR100
25          KM   CHANNEL ROUTING TO 56TH STREET
26          RS       1    FLOW      -1
27          RC      .1     .05      .1    2600   .0035
28          RX       0      50     100     110     150     200     225     241     246     248
29          RX     250     253     256     270     300     340     350     400     450     500
30          RY   685.1   684.1   683.2   682.3   681.9   681.3   681.5   680.3   678.5   677.4
31          RY   677.4   677.5   677.9     680   681.4   682.8   686.7   683.1   682.8   683.0

32          KK     200
33          KM   INFLOW FROM BASIN 200
34          BA     .18
35          PB    5.75
36          LS     0.0    68.0
37          UD     .90

38          KK    C200
39          KM   COMBINE HYDROGRAPHS CR100 & 200
40          HC       2

41          KK   DB200
42          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200
43          RS       1    FLOW      -1
44          SA     0.0     .30     8.8     9.0    10.3    11.0
45          SE  671.87   673.0   674.0   675.0   676.0  676.65
46          SQ     0.0     7.0    21.0    37.0    54.0   150.0
```



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


47          KK  CRC200
48          KM   CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300
49          RS       1    FLOW      -1
50          RC      .1     .05      .1    1300   .0035
51          RX       0      50     100     125     150     200     223     240     242     244
52          RX     250     256     261     285     300     315     350     400     450     500
53          RY   679.7   679.9   679.3   679.4   678.7   677.7   677.6   679.3   677.8   671.1
54          RY   670.1   671.5   673.5   676.5   679.2   682.0   683.4  681.64  682.85  683.97

55          KK     300
56          KM   INFLOW FROM BASIN 300
57          BA     .53
```

```
 58          PB    5.75
 59          LS     0.0    73.0
 60          UD     1.3

 61          KK    C300
 62          KM   COMBINE HYDROGRAPHS CRC200 & 300
 63          HC       2

 64          KK     400
 65          KM   INFLOW FROM BASIN 400
 66          BA     .65
 67          PB    5.75
 68          LS           68.0
 69          UD      .5

 70          KK   DB400
 71          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400
 72          RS       1    FLOW      -1
 73          SV     0.0     3.1     6.9     9.2    10.0    10.5    50.0
 74          SE   678.8   680.0   681.0   682.0   683.0   684.0   685.0
 75          SQ     0.0     7.0    21.0    36.0    49.0    57.0    65.0

 76          KK    C400
 77          KM   COMBINE HYDROGRAPHS C300 & DB400
 78          HC       2

 79          KK  CRC400
 80          KM   CHANNEL ROUTE C400 TO CONFLUENCE WITH 500
 81          RS       1    FLOW      -1
 82          RC      .1     .05      .1    3850    .004
 83          RX     0.0      50     100     150     190     200     208     232     240     245
 84          RX     247     250     253     258     290     300     350     391     400     404
 85          RY   681.3   681.4   680.1   676.7   671.4   672.2   670.2   668.8   665.6   664.8
 86          RY   663.5   662.4   662.7   667.6   669.6   672.3   677.4   681.7   681.4   681.6

 87          KK     500
 88          KM   INFLOW FROM BASIN 500
 89          BA     .15
 90          PB    5.75
 91          LS     0.0    61.0
 92          UD      .5
```



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

 93          KK    C500
 94          KM   COMBINE HYDROGRAPHS CRC400 & 500
 95          HC       2

 96          KK   CR500
 97          KM   CHANNEL ROUTING C500 TO CONFLUENCE WITH C700
 98          RS       1    FLOW      -1
 99          RC      .1     .05      .1    1150    .004
100          RX       0      50     100     125     150     175     190     200     242     244
101          RX     250     256     261     300     350     400     424     450     500       0
102          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
103          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7

104          KK     600
```

```
105          KM   INFLOW FROM BASIN 600
106          BA     .36
107          PB    5.75
108          LS            62.0
109          UD      .8

110          KK   DB600
111          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)
112          RS       1    FLOW      -1
113          SA    0.10    0.34     2.2     3.7     5.6     8.3
114          SE   659.4   660.0   662.0   664.0   666.0   668.0
115          SQ     0.0     4.0    30.0    55.0    75.0    92.0

116          KK     700
117          KM   INFLOW FROM BASIN 700
118          BA     .24
119          PB    5.75
120          LS              74
121          UD     .50

122          KK   SR700
123          KM   MODIFIED PULS STORM SEWER ROUTING
124          RS       1    FLOW      -1
125          SV     0.0   0.016   0.032   0.048   0.064    0.08     2.1     5.8    11.5
126          SE   650.8     652     653     654     655     656     657     658     659
127          SQ     0.0     8.0    22.0    39.0    52.0    65.0    73.0    82.0    87.0

128          KK    C700
129          KM   COMBINE HYDROGRAPHS CR500, DB600, & SR700
130          HC       3

131          KK   CRC700
132          KM   CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000
133          RS       1    FLOW      -1
134          RC      .1     .05      .1    1150    .004
135          RX       0      50     100     125     150     175     190     200     242     244
136          RX     250     256     261     300     350     400     424     450     500       0
137          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
138          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7
```



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


139          KK     800
140          KM   INFLOW FROM BASIN 800
141          BA     .12
142          PB    5.75
143          LS            53.0
144          UD     .30

145          KK     900
146          KM   INFLOW FROM BASIN 900
147          BA     .24
148          PB    5.75
149          LS            68.0
150          UD     .80

151          KK   SR900
152          KM   MODIFIED PULS STORM SEWER ROUTING
```

```
153          RS       1    FLOW      -1
154          SV    .016    .032    .048    .064     .08     .10     .11     .13     .14
155          SE   649.0   650.0   651.0   652.0   653.0   654.0   656.0   658.0   660.0
156          SQ     0.0     8.0    20.0    37.0    50.0    64.0    80.0    87.0    94.0

157          KK    1000
158          KM   INFLOW FROM BASIN 1000
159          BA     .23
160          PB    5.75
161          LS            73.0
162          UD     .60

163          KK   C1000
164          KM   COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.
165          HC       4

166          KK  CRC100
167          KM   CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100
168          RS       1    FLOW      -1
169          RC      .1     .05      .1    2900    .004
170          RX     0.0      50     100     125     150     200     240     245     250     255
171          RX     260     300     350     400     450     500     501     502     503     504
172          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
173          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

174          KK    1100
175          KM   INFLOW FROM BASIN 1100
176          BA     .12
177          PB    5.75
178          LS            70.0
179          UD     .40

180          KK   C1100
181          KM   COMBINE HYDROGRAPHS CRC1000 & 1100
182          HC       2
```



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


183          KK  CRC110
184          KM   CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK
185          RS       1    FLOW      -1
186          RC      .1     .05      .1    1500    .004
187          RX     0.0      50     100     125     150     200     240     245     250     255
188          RX     260     300     350     400     450     500     501     502     503     504
189          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
190          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

191          KK    1200
192          KM   INFLOW FROM BASIN 1200
193          BA     .14
194          PB    5.75
195          LS            69.0
196          UD     .90

197          KK   C1200
198          KM   COMBINE HYDROGRAPHS CRC1100 & 1200
199          HC       2
200          ZZ
```

```
                    SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

     7         100
                V
                V
    18       DB100
                V
                V
    24       CR100
                .
                .
    32          .         200
                .           .
                .           .
    38       C200............
                V
                V
    41       DB200
                V
                V
    47      CRC200
                .
                .
    55          .         300
                .           .
                .           .
    61       C300............
                .
                .
    64          .         400
                .           V
                .           V
    70          .       DB400
                .           .
                .           .
    76       C400............
                V
                V
    79      CRC400
                .
                .
    87          .         500
                .           .
                .           .
    93       C500............
                V
                V
    96       CR500
                .
                .
   104          .         600
                .           V
                .           V
   110          .       DB600
                .           .
```

```
                .          .
  116           .          .        700
                .          .          V
                .          .          V
  122           .          .      SR700
                .          .          .
                .          .          .
  128        C700.......................
                V
                V
  131       CRC70
                .
                .
  139           .        800
                .          .
                .          .
  145           .          .        900
                .          .          V
                .          .          V
  151           .          .      SR900
                .          .          .
                .          .          .
  157           .          .          .       1000
                .          .          .          .
                .          .          .          .
  163       C1000.................................
                V
                V
  166      CRC100
                .
                .
  174           .       1100
                .          .
                .          .
  180       C1100............
                V
                V
  183      CRC110
                .
                .
  191           .       1200
                .          .
                .          .
  197       C1200............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*           SEPTEMBER 1990             *
*            VERSION 4.0               *
*                                      *
*  RUN DATE  07/08/1992  TIME  15:46:01 *
*                                      *
****************************************
```

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

```
                    CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
                    BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
                    100 YEAR STORM, TYPE II DISTRIBUTION

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

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

                COMPUTATION INTERVAL     .08 HOURS
                     TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT


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


          **************
          *            *
  7 KK    *       100  *
          *            *
          **************
                     INFLOW FROM BASIN 100

  6 IN        TIME DATA FOR INPUT TIME SERIES
                    JXMIN         30  TIME INTERVAL IN MINUTES
                   JXDATE      1   0  STARTING DATE
                   JXTIME          0  STARTING TIME

             SUBBASIN RUNOFF DATA

  9 BA        SUBBASIN CHARACTERISTICS
                    TAREA        .29  SUBBASIN AREA

             PRECIPITATION DATA

 10 PB              STORM       5.75  BASIN TOTAL PRECIPITATION

 11 PI          INCREMENTAL PRECIPITATION PATTERN
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

16 LS SCS LOSS RATE

STRTL	.63	INITIAL ABSTRACTION
CRVNBR	76.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

17 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.60	LAG

***

UNIT HYDROGRAPH
38 END-OF-PERIOD ORDINATES

22.	43.	65.	87.	108.	130.	152.	164.	156.	147.
138.	130.	121.	112.	104.	95.	86.	78.	69.	60.
52.	43.	34.	26.	17.	8.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.		

*** ***

```
          **************
          *            *
18 KK     *     DB100  *
          *            *
          **************
```

MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100

HYDROGRAPH ROUTING DATA

20 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES

```
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

21 SA              AREA          .1        .4       1.7       3.8       6.9      11.0      15.7

22 SE         ELEVATION      680.67    682.00    684.00    686.00    688.00    690.00    692.00

23 SQ         DISCHARGE          0.        9.       32.       47.       55.       78.      400.

                                                          ***

                                          COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00       .33      2.32      7.68     18.23     35.97     62.53
        ELEVATION     680.67    682.00    684.00    686.00    688.00    690.00    692.00


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


          **************
          *            *
24 KK     *     CR100  *
          *            *
          **************
                         CHANNEL ROUTING TO 56TH STREET

             HYDROGRAPH ROUTING DATA

26 RS          STORAGE ROUTING
                   NSTPS           1  NUMBER OF SUBREACHES
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

27 RC          NORMAL DEPTH CHANNEL
                     ANL        .100  LEFT OVERBANK N-VALUE
                    ANCH        .050  MAIN CHANNEL N-VALUE
                     ANR        .100  RIGHT OVERBANK N-VALUE
                   RLNTH       2600.  REACH LENGTH
                     SEL       .0035  ENERGY SLOPE
                   ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                         --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
31 RY        ELEVATION    677.40    677.50    677.90    680.00    681.40    682.80    686.70    683.10
29 RX        DISTANCE     250.00    253.00    256.00    270.00    300.00    340.00    350.00    400.00

                                                          ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00       .11       .33       .65      1.06      1.57      2.22      3.17      4.42      6.02
          OUTFLOW        .00       .77      4.18     11.47     23.87     42.45     64.19     98.94    151.52    221.18
        ELEVATION     677.40    677.89    678.38    678.87    679.36    679.85    680.34    680.83    681.32    681.81

          STORAGE       8.02     10.44     13.10     15.95     19.04     22.36     25.92     29.72     33.75     38.01
          OUTFLOW     317.47    445.17    645.76    880.39   1147.92   1448.41   1782.00   2148.88   2549.32   2983.65
```

ELEVATION	682.30	682.78	683.27	683.76	684.25	684.74	685.23	685.72	686.21	686.70

*** ***

```
          **************
          *            *
 32 KK    *       200  *
          *            *
          **************
                    INFLOW FROM BASIN 200

             SUBBASIN RUNOFF DATA

 34 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .18  SUBBASIN AREA

                PRECIPITATION DATA

 35 PB                STORM         5.75  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00

 36 LS          SCS LOSS RATE
                      STRTL          .94  INITIAL ABSTRACTION
                     CRVNBR        68.00  CURVE NUMBER
                      RTIMP          .00  PERCENT IMPERVIOUS AREA
```

```
 37 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .90  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            56 END-OF-PERIOD ORDINATES
                 6.       12.       19.       25.       31.       37.       44.       50.       56.       62.
                69.       69.       66.       64.       61.       59.       56.       54.       51.       49.
                46.       44.       41.       39.       36.       34.       31.       29.       26.       24.
                21.       19.       16.       14.       11.        9.        6.        4.        1.        0.
                 0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                 0.        0.        0.        0.        0.        0.

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

          **************
          *            *
 38 KK    *     C200   *
          *            *
          **************
                       COMBINE HYDROGRAPHS CR100 & 200

 40 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***

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

          **************
          *            *
 41 KK    *    DB200   *
          *            *
          **************
                       MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200

             HYDROGRAPH ROUTING DATA

 43 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC       -1.00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

 44 SA              AREA          .0        .3       8.8       9.0      10.3      11.0

 45 SE          ELEVATION      671.87    673.00    674.00    675.00    676.00    676.65

 46 SQ          DISCHARGE          0.        7.       21.       37.       54.      150.

                                                    ***

                                        COMPUTED STORAGE-ELEVATION DATA
```

STORAGE	.00	.11	3.69	12.59	22.23	29.15
ELEVATION	671.87	673.00	674.00	675.00	676.00	676.65

*** ***

```
              **************
              *            *
47 KK         *    CRC200  *
              *            *
              **************
```

CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300

HYDROGRAPH ROUTING DATA

```
49 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC      -1.00  INITIAL CONDITION
                        X        .00 WORKING R AND D COEFFICIENT

50 RC          NORMAL DEPTH CHANNEL
                      ANL       .100  LEFT OVERBANK N-VALUE
                     ANCH       .050  MAIN CHANNEL N-VALUE
                      ANR       .100  RIGHT OVERBANK N-VALUE
                    RLNTH      1300.  REACH LENGTH
                      SEL      .0035  ENERGY SLOPE
                    ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---		+ ------ MAIN CHANNEL		------- +	--- RIGHT OVERBANK ---		
54 RY	ELEVATION	670.10	671.50	673.50	676.50	679.20	682.00	683.40	681.64
52 RX	DISTANCE	250.00	256.00	261.00	285.00	300.00	315.00	350.00	400.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.03	.13	.27	.45	.67	.97	1.39	1.93	2.59
OUTFLOW	.00	.45	2.87	8.57	17.50	30.50	52.42	86.17	135.89	205.04
ELEVATION	670.10	670.80	671.50	672.20	672.90	673.60	674.30	675.00	675.70	676.40
STORAGE	3.35	4.19	5.11	6.12	7.20	8.36	9.60	10.98	12.94	15.68
OUTFLOW	299.49	417.51	559.96	728.30	924.94	1150.12	1405.19	1692.00	2078.70	2526.57
ELEVATION	677.10	677.80	678.50	679.20	679.90	680.60	681.30	682.00	682.70	683.40

*** ***

```
              **************
              *            *
55 KK         *       300  *
              *            *
              **************
```

INFLOW FROM BASIN 300

SUBBASIN RUNOFF DATA

57 BA SUBBASIN CHARACTERISTICS

TAREA .53 SUBBASIN AREA

PRECIPITATION DATA

58 PB STORM 5.75 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

59 LS SCS LOSS RATE

STRTL .74 INITIAL ABSTRACTION

CRVNBR 73.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

60 UD SCS DIMENSIONLESS UNITGRAPH

TLAG 1.30 LAG

***

UNIT HYDROGRAPH

80 END-OF-PERIOD ORDINATES

9.	18.	27.	36.	45.	54.	63.	72.	81.	90.
100.	109.	118.	127.	136.	145.	142.	139.	135.	132.
128.	124.	121.	117.	113.	110.	106.	103.	99.	95.
92.	88.	85.	81.	77.	74.	70.	66.	63.	59.
56.	52.	48.	45.	41.	37.	34.	30.	27.	23.
19.	16.	12.	9.	5.	1.	0.	0.	0.	0.

```
            0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
            0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


          **************
          *            *
 61 KK    *      C300  *
          *            *
          **************
                       COMBINE HYDROGRAPHS CRC200 & 300

 63 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


          **************
          *            *
 64 KK    *       400  *
          *            *
          **************
                       INFLOW FROM BASIN 400

            SUBBASIN RUNOFF DATA

 66 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .65  SUBBASIN AREA

               PRECIPITATION DATA

 67 PB               STORM        5.75  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .01      .01      .06      .06
                     .06      .06      .06      .06      .01      .01      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
68 LS        SCS LOSS RATE
                  STRTL        .94  INITIAL ABSTRACTION
                 CRVNBR      68.00  CURVE NUMBER
                  RTIMP        .00  PERCENT IMPERVIOUS AREA

69 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG        .50  LAG
```

***

UNIT HYDROGRAPH
32 END-OF-PERIOD ORDINATES

68.	136.	205.	273.	341.	409.	430.	402.	375.	348.
321.	293.	266.	239.	211.	184.	157.	130.	102.	75.
48.	20.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.								

*** ***

```
          **************
          *            *
70 KK     *     DB400  *
          *            *
          **************
                    MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400

             HYDROGRAPH ROUTING DATA

72 RS        STORAGE ROUTING
                  NSTPS           1  NUMBER OF SUBREACHES
                   ITYP        FLOW  TYPE OF INITIAL CONDITION
                 RSVRIC       -1.00  INITIAL CONDITION
                      X         .00 WORKING R AND D COEFFICIENT

73 SV          STORAGE          .0       3.1       6.9       9.2      10.0      10.5      50.0

74 SE        ELEVATION      678.80    680.00    681.00    682.00    683.00    684.00    685.00

75 SQ        DISCHARGE          0.        7.       21.       36.       49.       57.       65.
```

***

*** ***

```
          **************
          *            *
 76 KK    *      C400  *
          *            *
          **************
                         COMBINE HYDROGRAPHS C300 & D8400

 78 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***



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


          **************
          *            *
 79 KK    *    CRC400  *
          *            *
          **************
                         CHANNEL ROUTE C400 TO CONFLUENCE WITH 500

            HYDROGRAPH ROUTING DATA

 81 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC       -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 82 RC          NORMAL DEPTH CHANNEL
                        ANL        .100  LEFT OVERBANK N-VALUE
                       ANCH        .050  MAIN CHANNEL N-VALUE
                        ANR        .100  RIGHT OVERBANK N-VALUE
                      RLNTH       3850.  REACH LENGTH
                        SEL       .0040  ENERGY SLOPE
                      ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                         CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 86 RY        ELEVATION    663.50    662.40    662.70    667.60    669.60    672.30    677.40    681.70
 84 RX        DISTANCE     247.00    250.00    253.00    258.00    290.00    300.00    350.00    391.00

                                                                  ***

                                         COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .00       .38      1.03      1.77      2.61      3.54      5.09      8.09     12.09     16.43
          OUTFLOW       .00      3.09     15.23     36.05     65.79    104.99    147.82    251.32    448.50    712.59
        ELEVATION    662.40    663.42    664.43    665.45    666.46    667.48    668.49    669.51    670.53    671.54

          STORAGE     21.12     26.55     32.88     40.10     48.22     57.22     67.11     77.86     89.49    101.98
          OUTFLOW   1049.87   1484.92   1996.43   2588.28   3264.00   4027.15   4881.24   5828.66   6872.46   8015.70
        ELEVATION    672.56    673.57    674.59    675.61    676.62    677.64    678.65    679.67    680.68    681.70
```

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


          **************
          *            *
87 KK     *       500  *
          *            *
          **************
                         INFLOW FROM BASIN 500

             SUBBASIN RUNOFF DATA

89 BA          SUBBASIN CHARACTERISTICS
                     TAREA          .15  SUBBASIN AREA

               PRECIPITATION DATA

90 PB                STORM        5.75  BASIN TOTAL PRECIPITATION

11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                     .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00

91 LS          SCS LOSS RATE
                     STRTL        1.28  INITIAL ABSTRACTION
                    CRVNBR       61.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

92 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .50  LAG
```

***

UNIT HYDROGRAPH
32 END-OF-PERIOD ORDINATES

16.	31.	47.	63.	79.	94.	99.	93.	87.	80.
74.	68.	61.	55.	49.	42.	36.	30.	24.	17.
11.	5.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.								

*** ***

```
          ***************
          *             *
 93 KK    *      C500   *
          *             *
          ***************
```

COMBINE HYDROGRAPHS CRC400 & 500

```
 95 HC        HYDROGRAPH COMBINATION
                   ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

*** ***

```
          ***************
          *             *
 96 KK    *     CR500   *
          *             *
          ***************
```

CHANNEL ROUTING C500 TO CONFLUENCE WITH C700

```
            HYDROGRAPH ROUTING DATA

 98 RS        STORAGE ROUTING
                   NSTPS           1  NUMBER OF SUBREACHES
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

 99 RC        NORMAL DEPTH CHANNEL
                     ANL        .100  LEFT OVERBANK N-VALUE
                    ANCH        .050  MAIN CHANNEL N-VALUE
                     ANR        .100  RIGHT OVERBANK N-VALUE
                   RLNTH       1150.  REACH LENGTH
                     SEL       .0040  ENERGY SLOPE
                   ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---		+ ------ MAIN CHANNEL		------- +	--- RIGHT OVERBANK ---		
103 RY	ELEVATION	648.40	648.60	651.70	651.90	651.20	651.80	652.10	658.60
101 RX	DISTANCE	250.00	256.00	261.00	300.00	350.00	400.00	424.00	450.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.07	.17	.28	.41	.54	1.05	3.02	5.50	8.02
OUTFLOW	.00	1.41	5.43	11.54	19.63	29.73	51.03	158.43	394.91	724.38
ELEVATION	648.40	648.94	649.47	650.01	650.55	651.08	651.62	652.16	652.69	653.23
STORAGE	10.56	13.14	15.74	18.38	21.05	23.75	26.47	29.23	32.02	34.84
OUTFLOW	1135.12	1620.10	2174.48	2794.66	3477.84	4221.74	5024.49	5884.51	6800.46	7771.17
ELEVATION	653.77	654.31	654.84	655.38	655.92	656.45	656.99	657.53	658.06	658.60

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 4222. TO 7771.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** ***

```
          **************
          *            *
104 KK    *       600  *
          *            *
          **************
```

INFLOW FROM BASIN 600

SUBBASIN RUNOFF DATA

106 BA SUBBASIN CHARACTERISTICS

TAREA .36 SUBBASIN AREA

PRECIPITATION DATA

107 PB STORM 5.75 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

```
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00

108 LS        SCS LOSS RATE
                 STRTL       1.23  INITIAL ABSTRACTION
                CRVNBR      62.00  CURVE NUMBER
                 RTIMP        .00  PERCENT IMPERVIOUS AREA

109 UD        SCS DIMENSIONLESS UNITGRAPH
                  TLAG        .80  LAG

                                          ***

                                     UNIT HYDROGRAPH
                                 50 END-OF-PERIOD ORDINATES
          16.      31.      47.      62.      78.      94.     109.     125.     141.     156.
         152.     146.     140.     133.     127.     121.     115.     108.     102.      96.
          90.      83.      77.      71.      65.      58.      52.      46.      40.      33.
          27.      21.      15.       8.       2.       0.       0.       0.       0.       0.
           0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


        **************
        *            *
110 KK  *    DB600   *
        *            *
        **************
                 MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)

           HYDROGRAPH ROUTING DATA

112 RS        STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       FLOW  TYPE OF INITIAL CONDITION
                RSVRIC      -1.00  INITIAL CONDITION
                     X        .00 WORKING R AND D COEFFICIENT

113 SA           AREA         .1       .3      2.2      3.7      5.6      8.3

114 SE       ELEVATION     659.40   660.00   662.00   664.00   666.00   668.00

115 SQ       DISCHARGE         0.       4.      30.      55.      75.      92.

                                          ***

                              COMPUTED STORAGE-ELEVATION DATA

        STORAGE       .00      .12     2.39     8.23    17.46    31.28
      ELEVATION    659.40   660.00   662.00   664.00   666.00   668.00
```

*** ***

```
          **************
          *            *
116 KK    *       700  *
          *            *
          **************
                    INFLOW FROM BASIN 700

             SUBBASIN RUNOFF DATA

118 BA          SUBBASIN CHARACTERISTICS
                     TAREA          .24  SUBBASIN AREA

                PRECIPITATION DATA

119 PB               STORM         5.75  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                     .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00

120 LS          SCS LOSS RATE
                     STRTL          .70  INITIAL ABSTRACTION
                    CRVNBR        74.00  CURVE NUMBER
                     RTIMP          .00  PERCENT IMPERVIOUS AREA

121 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG          .50  LAG
```

***

```
                                    UNIT HYDROGRAPH
                                 32 END-OF-PERIOD ORDINATES
      25.      50.      76.     101.     126.     151.     159.     149.     139.     128.
     118.     108.      98.      88.      78.      68.      58.      48.      38.      28.
      18.       8.       0.       0.       0.       0.       0.       0.       0.       0.
       0.       0.

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

          **************
          *            *
 122 KK   *     SR700  *
          *            *
          **************
                    MODIFIED PULS STORM SEWER ROUTING

        HYDROGRAPH ROUTING DATA

 124 RS       STORAGE ROUTING
                 NSTPS          1  NUMBER OF SUBREACHES
                  ITYP       FLOW  TYPE OF INITIAL CONDITION
                 RSVRIC      -1.00  INITIAL CONDITION
                      X        .00 WORKING R AND D COEFFICIENT

 125 SV        STORAGE        .0       .0       .0       .0       .1       .1      2.1      5.8     11.5

 126 SE      ELEVATION     650.80   652.00   653.00   654.00   655.00   656.00   657.00   658.00   659.00

 127 SQ      DISCHARGE        0.       8.      22.      39.      52.      65.      73.      82.      87.

                                                          ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       65.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

          **************
          *            *
 128 KK   *     C700   *
          *            *
          **************
                    COMBINE HYDROGRAPHS CR500, DB600, & SR700

 130 HC       HYDROGRAPH COMBINATION
                 ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

```
          **************
          *            *
131 KK    *     CRC70  *     0
          *            *
          **************
                    CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000

             HYDROGRAPH ROUTING DATA

133 RS          STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       FLOW  TYPE OF INITIAL CONDITION
                     RSVRIC      -1.00  INITIAL CONDITION
                          X        .00 WORKING R AND D COEFFICIENT

134 RC          NORMAL DEPTH CHANNEL
                        ANL       .100  LEFT OVERBANK N-VALUE
                       ANCH       .050  MAIN CHANNEL N-VALUE
                        ANR       .100  RIGHT OVERBANK N-VALUE
                      RLNTH      1150.  REACH LENGTH
                        SEL      .0040  ENERGY SLOPE
                      ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                        --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
138 RY       ELEVATION   648.40   648.60   651.70   651.90   651.20   651.80   652.10   658.60
136 RX       DISTANCE    250.00   256.00   261.00   300.00   350.00   400.00   424.00   450.00

                                                  ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE       .00      .07      .17      .28      .41      .54     1.05     3.02     5.50     8.02
          OUTFLOW       .00     1.41     5.43    11.54    19.63    29.73    51.03   158.43   394.91   724.38
        ELEVATION    648.40   648.94   649.47   650.01   650.55   651.08   651.62   652.16   652.69   653.23

          STORAGE     10.56    13.14    15.74    18.38    21.05    23.75    26.47    29.23    32.02    34.84
          OUTFLOW   1135.12  1620.10  2174.48  2794.66  3477.84  4221.74  5024.49  5884.51  6800.46  7771.17
        ELEVATION    653.77   654.31   654.84   655.38   655.92   656.45   656.99   657.53   658.06   658.60

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN     4222. TO     7771.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

          **************
          *            *
139 KK    *       800  *
          *            *
          **************
                    INFLOW FROM BASIN 800

             SUBBASIN RUNOFF DATA
```

141 BA SUBBASIN CHARACTERISTICS

TAREA .12 SUBBASIN AREA

PRECIPITATION DATA

142 PB STORM 5.75 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

143 LS SCS LOSS RATE

STRTL 1.77 INITIAL ABSTRACTION

CRVNBR 53.00 CURVE NUMBER

RTIMP .00 PERCENT IMPERVIOUS AREA

144 UD SCS DIMENSIONLESS UNITGRAPH

TLAG .30 LAG

***

UNIT HYDROGRAPH

20 END-OF-PERIOD ORDINATES

32.	63.	95.	126.	118.	106.	93.	80.	68.	55.
42.	30.	17.	4.	0.	0.	0.	0.	0.	0.

*** ***

****

```
          *            *
145 KK    *       900  *
          *            *
          **************
                    INFLOW FROM BASIN 900

            SUBBASIN RUNOFF DATA

147 BA        SUBBASIN CHARACTERISTICS
                  TAREA          .24  SUBBASIN AREA

              PRECIPITATION DATA

148 PB            STORM         5.75  BASIN TOTAL PRECIPITATION

 11 PI          INCREMENTAL PRECIPITATION PATTERN
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .01      .01      .01      .01
                  .01      .01      .01      .01      .01      .01      .01      .01      .06      .06
                  .06      .06      .06      .06      .01      .01      .01      .01      .01      .01
                  .01      .01      .01      .01      .01      .01      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00

149 LS        SCS LOSS RATE
                  STRTL          .94  INITIAL ABSTRACTION
                 CRVNBR        68.00  CURVE NUMBER
                  RTIMP          .00  PERCENT IMPERVIOUS AREA

150 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG          .80  LAG

                                          ***

                                     UNIT HYDROGRAPH
                                 50 END-OF-PERIOD ORDINATES
            10.      21.      31.      42.      52.      62.      73.      83.      94.     104.
           101.      97.      93.      89.      85.      81.      76.      72.      68.      64.
```

```
            60.      56.      51.      47.      43.      39.      35.      31.      26.      22.
            18.      14.      10.       6.       1.       0.       0.       0.       0.       0.
             0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


         **************
         *            *
151 KK   *     SR900  *
         *            *
         **************
                    MODIFIED PULS STORM SEWER ROUTING

            HYDROGRAPH ROUTING DATA

153 RS        STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC      -1.00  INITIAL CONDITION
                       X        .00 WORKING R AND D COEFFICIENT

154 SV          STORAGE         .0       .0       .0       .1       .1       .1       .1       .1       .1

155 SE        ELEVATION     649.00   650.00   651.00   652.00   653.00   654.00   656.00   658.00   660.00

156 SQ        DISCHARGE         0.       8.      20.      37.      50.      64.      80.      87.      94.

                                                         ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       0. TO       94.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

WARNING --- ROUTED OUTFLOW (     94.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    105.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    113.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    118.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    121.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    121.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    120.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    119.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    117.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    115.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    112.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    108.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE
```

```
WARNING --- ROUTED OUTFLOW (    105.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    101.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     97.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE


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


          **************
          *            *
157 KK    *      1000  *
          *            *
          **************
                         INFLOW FROM BASIN 1000

             SUBBASIN RUNOFF DATA

159 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .23  SUBBASIN AREA

                PRECIPITATION DATA

160 PB                STORM        5.75  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00

161 LS          SCS LOSS RATE
                      STRTL         .74  INITIAL ABSTRACTION
```

```
                 CRVNBR       73.00  CURVE NUMBER
                  RTIMP         .00  PERCENT IMPERVIOUS AREA

162 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG         .60  LAG

                                                    ***

                                              UNIT HYDROGRAPH
                                          38 END-OF-PERIOD ORDINATES
          17.      34.      52.      69.      86.     103.     120.     130.     123.     117.
         110.     103.      96.      89.      82.      75.      68.      62.      55.      48.
          41.      34.      27.      20.      13.       7.       0.       0.       0.       0.
           0.       0.       0.       0.       0.       0.       0.       0.

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

        **************
        *            *
163 KK  *     C1000  *
        *            *
        **************
                   COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.

165 HC        HYDROGRAPH COMBINATION
                 ICOMP           4  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***

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

        **************
        *            *
166 KK  *    CRC100  *
        *            *
        **************
                   CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100

           HYDROGRAPH ROUTING DATA

168 RS        STORAGE ROUTING
                 NSTPS           1  NUMBER OF SUBREACHES
                  ITYP        FLOW  TYPE OF INITIAL CONDITION
                RSVRIC       -1.00  INITIAL CONDITION
                     X         .00 WORKING R AND D COEFFICIENT

169 RC        NORMAL DEPTH CHANNEL
                   ANL        .100  LEFT OVERBANK N-VALUE
                  ANCH        .050  MAIN CHANNEL N-VALUE
                   ANR        .100  RIGHT OVERBANK N-VALUE
                 RLNTH       2900.  REACH LENGTH
                   SEL       .0040  ENERGY SLOPE
                 ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---		+ ------ MAIN CHANNEL		------- +		--- RIGHT OVERBANK ---	
173 RY	ELEVATION	633.30	638.10	640.00	644.10	644.90	644.90	645.00	645.00
171 RX	DISTANCE	260.00	300.00	350.00	400.00	450.00	500.00	501.00	502.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.11	.42	.95	1.68	2.63	3.79	5.15	6.74	8.85
OUTFLOW	.00	.68	4.29	12.65	27.24	49.39	80.31	121.15	167.32	213.29
ELEVATION	633.30	633.92	634.53	635.15	635.76	636.38	636.99	637.61	638.23	638.84
STORAGE	11.62	15.06	18.94	23.13	27.62	32.43	37.54	42.96	48.82	56.39
OUTFLOW	286.28	392.89	568.83	778.53	1025.68	1313.44	1644.72	2022.24	2403.71	2772.33
ELEVATION	639.46	640.07	640.69	641.31	641.92	642.54	643.15	643.77	644.38	645.00

*** ***

```
              **************
              *            *
174 KK        *      1100  *
              *            *
              **************
```

INFLOW FROM BASIN 1100

SUBBASIN RUNOFF DATA

176 BA SUBBASIN CHARACTERISTICS

TAREA .12 SUBBASIN AREA

PRECIPITATION DATA

177 PB STORM 5.75 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

```
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00

178 LS        SCS LOSS RATE
                  STRTL        .86  INITIAL ABSTRACTION
                 CRVNBR      70.00  CURVE NUMBER
                  RTIMP        .00  PERCENT IMPERVIOUS AREA

179 UD        SCS DIMENSIONLESS UNITGRAPH
                   TLAG        .40  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                          26 END-OF-PERIOD ORDINATES
            19.       38.       57.       76.       95.       95.       88.       80.       72.       65.
            57.       50.       42.       34.       27.       19.       12.        4.        0.        0.
             0.        0.        0.        0.        0.        0.


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


        **************
        *            *
180 KK  *    C11D0   *
        *            *
        **************
                   COMBINE HYDROGRAPHS CRC1000 & 1100

182 HC        HYDROGRAPH COMBINATION
                 ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***


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


        **************
        *            *
183 KK  *   CRC110   *
        *            *
        **************
                   CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK

           HYDROGRAPH ROUTING DATA

185 RS        STORAGE ROUTING
                 NSTPS           1  NUMBER OF SUBREACHES
                  ITYP        FLOW  TYPE OF INITIAL CONDITION
```

```
                RSVRIC       -1.00  INITIAL CONDITION
                     X         .00 WORKING R AND D COEFFICIENT

186 RC        NORMAL DEPTH CHANNEL
                   ANL        .100  LEFT OVERBANK N-VALUE
                  ANCH        .050  MAIN CHANNEL N-VALUE
                   ANR        .100  RIGHT OVERBANK N-VALUE
                 RLNTH       1500.  REACH LENGTH
                   SEL       .0040  ENERGY SLOPE
                 ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                   CROSS-SECTION DATA
                      --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
190 RY      ELEVATION   633.30   638.10   640.00   644.10   644.90   644.90   645.00   645.00
188 RX      DISTANCE    260.00   300.00   350.00   400.00   450.00   500.00   501.00   502.00

                                                  ***

                                   COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE       .00      .05      .22      .49      .87     1.36     1.96     2.67     3.49     4.58
        OUTFLOW       .00      .68     4.29    12.65    27.24    49.39    80.31   121.15   167.32   213.29
      ELEVATION    633.30   633.92   634.53   635.15   635.76   636.38   636.99   637.61   638.23   638.84

        STORAGE      6.01     7.79     9.79    11.96    14.29    16.77    19.42    22.22    25.25    29.17
        OUTFLOW    286.28   392.89   568.83   778.53  1025.68  1313.44  1644.72  2022.24  2403.71  2772.33
      ELEVATION    639.46   640.07   640.69   641.31   641.92   642.54   643.15   643.77   644.38   645.00


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


        **************
        *            *
191 KK  *      1200  *
        *            *
        **************
                     INFLOW FROM BASIN 1200

           SUBBASIN RUNOFF DATA

193 BA        SUBBASIN CHARACTERISTICS
                 TAREA         .14  SUBBASIN AREA

              PRECIPITATION DATA

194 PB           STORM        5.75  BASIN TOTAL PRECIPITATION

 11 PI          INCREMENTAL PRECIPITATION PATTERN
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                  .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
195 LS          SCS LOSS RATE
                     STRTL         .90  INITIAL ABSTRACTION
                    CRVNBR       69.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

196 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .90  LAG

                                                  ***

                                          UNIT HYDROGRAPH
                                     56 END-OF-PERIOD ORDINATES
                 5.      10.      15.      19.      24.      29.      34.      39.      44.      49.
                53.      53.      52.      50.      48.      46.      44.      42.      40.      38.
                36.      34.      32.      30.      28.      26.      24.      22.      20.      19.
                17.      15.      13.      11.       9.       7.       5.       3.       1.       0.
                 0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
                 0.       0.       0.       0.       0.       0.

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

          **************
          *            *
197 KK    *     C1200  *
          *            *
          **************
                     COMBINE HYDROGRAPHS CRC1100 & 1200

199 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***
1
                                          RUNOFF SUMMARY
                                     FLOW IN CUBIC FEET PER SECOND
                                  TIME IN HOURS,  AREA IN SQUARE MILES
```

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	100	241.	12.50	79.	25.	24.	.29		
+	ROUTED TO	DB100	60.	14.08	55.	24.	23.	.29		
+									688.43	14.08
+	ROUTED TO	CR100	59.	14.58	55.	24.	23.	.29		
+									680.23	14.58
+	HYDROGRAPH AT	200	84.	12.92	37.	12.	11.	.18		
+	2 COMBINED AT	C200	131.	13.17	90.	36.	34.	.47		
+	ROUTED TO	DB200	63.	17.83	58.	27.	26.	.47		
+									676.06	17.83
+	ROUTED TO	CRC200	63.	18.00	58.	27.	26.	.47		
+									674.51	18.00
+	HYDROGRAPH AT	300	230.	13.33	129.	40.	39.	.53		
+	2 COMBINED AT	C300	260.	13.50	173.	67.	65.	1.00		
+	HYDROGRAPH AT	400	451.	12.42	138.	42.	41.	.65		
+	ROUTED TO	DB400	64.	14.83	63.	33.	32.	.65		
+									684.86	14.83
+	2 COMBINED AT	C400	324.	13.50	235.	100.	96.	1.65		
+	ROUTED TO	CRC400	318.	13.92	233.	98.	94.	1.65		
+									669.86	13.92
+	HYDROGRAPH AT	500	74.	12.50	24.	7.	7.	.15		
+	2 COMBINED AT	C500	341.	13.58	252.	105.	102.	1.80		
+	ROUTED TO	CR500	339.	13.75	251.	104.	100.	1.80		
+									652.57	13.75

```
        HYDROGRAPH AT
+                   600      136.  12.83      59.      18.      18.      .36
        ROUTED TO
+                 DB600       63.  14.42      52.      18.      17.      .36
+                                                                     664.80    14.42
        HYDROGRAPH AT
+                   700      210.  12.42      62.      19.      18.      .24
        ROUTED TO
+                 SR700       86.  13.42      62.      19.      18.      .24
+                                                                     658.79    13.42
        3 COMBINED AT
+                   C700      486.  13.83     358.     141.     136.     2.40
        ROUTED TO
+                 CRC70      485.  13.92     357.     140.     135.     2.40
+                                                                     652.84    13.92
        HYDROGRAPH AT
+                   800       47.  12.25      12.       4.       4.      .12
        HYDROGRAPH AT
+                   900      122.  12.75      50.      16.      15.      .24
        ROUTED TO
+                 SR900      121.  12.83      50.      16.      15.      .24
+                                                                     667.84    12.83
        HYDROGRAPH AT
+                  1000      173.  12.58      58.      18.      17.      .23
        4 COMBINED AT
+                  C1000      682.  13.33     466.     177.     171.     2.99
        ROUTED TO
+                 CRC100      668.  13.58     459.     174.     168.     2.99
+                                                                     640.98    13.58
        HYDROGRAPH AT
+                  1100      104.  12.33      27.       8.       8.      .12
        2 COMBINED AT
+                  C1100      690.  13.58     479.     182.     176.     3.11
        ROUTED TO
+                 CRC110      686.  13.67     477.     181.     174.     3.11
+                                                                     641.03    13.67
        HYDROGRAPH AT
+                  1200       68.  12.92      30.       9.       9.      .14
        2 COMBINED AT
+                  C1200      743.  13.67     505.     190.     183.     3.25
```

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

```
1****************************************                    ****************************************
*                                      *                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *   U.S. ARMY CORPS OF ENGINEERS       *
*            SEPTEMBER 1990            *                    *   HYDROLOGIC ENGINEERING CENTER      *
*             VERSION 4.0              *                    *         609 SECOND STREET            *
*                                      *                    *      DAVIS, CALIFORNIA 95616         *
*  RUN DATE  07/08/1992  TIME  15:46:29 *                    *          (916) 756-1104              *
*                                      *                    *                                      *
****************************************                    ****************************************
```

500-YEAR (1B500.OUT)

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

* * * * I M P O R T A N T * * * *

Dimensionless SCS unit hydrograph has been modified to have a peak rate factor of 368 as used by the Michigan Department of Natural Resources

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

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

```
1                                          HEC-1 INPUT                                          PAGE  1

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

  1           ID   CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
  2           ID   BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
  3           ID   500 YEAR STORM, TYPE II DISTRIBUTION
              *DIAGRAM
  4           IT       5                    300
  5           IO       4       0       0
  6           IN      30

  7           KK     100
  8           KM   INFLOW FROM BASIN 100
```

```
 9          BA     .29
10          PB     6.6
11          PC   0.000 0.00533 0.01085 0.01655 0.02247 0.02861 0.03501 0.04168 0.04866 0.05598
12          PC  0.0637 0.07181 0.08044 0.08963 0.09949 0.11014 0.12174 0.13453 0.14882 0.16511
13          PC  0.1842 0.20757 0.23839 0.28659 0.66651 0.73839 0.77568 0.80217 0.82315 0.84071
14          PC  0.8559 0.86942 0.88158 0.89268 0.90292 0.91243 0.92133 0.92971 0.93762 0.94512
15          PC  0.9523 0.95908 0.96661 0.97188 0.97791 0.98372 0.98933 0.99475  1.0000  1.0000
16          LS     0.0    76.0
17          UD      .6

18          KK   DB100
19          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100
20          RS       1    FLOW      -1
21          SA    0.10     .43     1.7     3.8     6.9    11.0    15.7
22          SE  680.67   682.0   684.0   686.0   688.0   690.0   692.0
23          SQ     0.0     9.0    32.0    47.0    55.0    78.0   400.0

24          KK   CR100
25          KM   CHANNEL ROUTING TO 56TH STREET
26          RS       1    FLOW      -1
27          RC      .1     .05      .1    2600   .0035
28          RX       0      50     100     110     150     200     225     241     246     248
29          RX     250     253     256     270     300     340     350     400     450     500
30          RY   685.1   684.1   683.2   682.3   681.9   681.3   681.5   680.3   678.5   677.4
31          RY   677.4   677.5   677.9     680   681.4   682.8   686.7   683.1   682.8   683.0

32          KK     200
33          KM   INFLOW FROM BASIN 200
34          BA     .18
35          PB     6.6
36          LS     0.0    68.0
37          UD     .90

38          KK    C200
39          KM   COMBINE HYDROGRAPHS CR100 & 200
40          HC       2

41          KK   DB200
42          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200
43          RS       1    FLOW      -1
44          SA     0.0     .30     8.8     9.0    10.3    11.0
45          SE  671.87   673.0   674.0   675.0   676.0  676.65
46          SQ     0.0     7.0    21.0    37.0    54.0   150.0
```



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

47          KK  CRC200
48          KM   CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300
49          RS       1    FLOW      -1
50          RC      .1     .05      .1    1300   .0035
51          RX       0      50     100     125     150     200     223     240     242     244
52          RX     250     256     261     285     300     315     350     400     450     500
53          RY   679.7   679.9   679.3   679.4   678.7   677.7   677.6   679.3   677.8   671.1
54          RY   670.1   671.5   673.5   676.5   679.2   682.0   683.4  681.64  682.85  683.97

55          KK     300
56          KM   INFLOW FROM BASIN 300
57          BA     .53
```

```
 58          PB     6.6
 59          LS     0.0    73.0
 60          UD     1.3

 61          KK    C300
 62          KM   COMBINE HYDROGRAPHS CRC200 & 300
 63          HC       2

 64          KK     400
 65          KM   INFLOW FROM BASIN 400
 66          BA     .65
 67          PB     6.6
 68          LS            68.0
 69          UD      .5

 70          KK   DB400
 71          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400
 72          RS       1    FLOW      -1
 73          SV     0.0     3.1     6.9     9.2    10.0    10.5    50.0
 74          SE   678.8   680.0   681.0   682.0   683.0   684.0   685.0
 75          SQ     0.0     7.0    21.0    36.0    49.0    57.0    65.0

 76          KK    C400
 77          KM   COMBINE HYDROGRAPHS C300 & DB400
 78          HC       2

 79          KK  CRC400
 80          KM   CHANNEL ROUTE C400 TO CONFLUENCE WITH 500
 81          RS       1    FLOW      -1
 82          RC      .1     .05      .1    3850    .004
 83          RX     0.0      50     100     150     190     200     208     232     240     245
 84          RX     247     250     253     258     290     300     350     391     400     404
 85          RY   681.3   681.4   680.1   676.7   671.4   672.2   670.2   668.8   665.6   664.8
 86          RY   663.5   662.4   662.7   667.6   669.6   672.3   677.4   681.7   681.4   681.6

 87          KK     500
 88          KM   INFLOW FROM BASIN 500
 89          BA     .15
 90          PB     6.6
 91          LS     0.0    61.0
 92          UD      .5
```



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

 93          KK    C500
 94          KM   COMBINE HYDROGRAPHS CRC400 & 500
 95          HC       2

 96          KK   CR500
 97          KM   CHANNEL ROUTING C500 TO CONFLUENCE WITH C700
 98          RS       1    FLOW      -1
 99          RC      .1     .05      .1    1150    .004
100          RX       0      50     100     125     150     175     190     200     242     244
101          RX     250     256     261     300     350     400     424     450     500       0
102          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
103          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7

104          KK     600
```

```
105          KM   INFLOW FROM BASIN 600
106          BA     .36
107          PB     6.6
108          LS            62.0
109          UD      .8

110          KK   DB600
111          KM   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)
112          RS       1    FLOW      -1
113          SA    0.10    0.34     2.2     3.7     5.6     8.3
114          SE   659.4   660.0   662.0   664.0   666.0   668.0
115          SQ     0.0     4.0    30.0    55.0    75.0    92.0

116          KK     700
117          KM   INFLOW FROM BASIN 700
118          BA     .24
119          PB     6.6
120          LS              74
121          UD     .50

122          KK   SR700
123          KM   MODIFIED PULS STORM SEWER ROUTING
124          RS       1    FLOW      -1
125          SV     0.0   0.016   0.032   0.048   0.064    0.08     2.1     5.8    11.5
126          SE   650.8     652     653     654     655     656     657     658     659
127          SQ     0.0     8.0    22.0    39.0    52.0    65.0    73.0    82.0    87.0

128          KK    C700
129          KM   COMBINE HYDROGRAPHS CR500, DB600, & SR700
130          HC       3

131          KK   CRC700
132          KM   CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000
133          RS       1    FLOW      -1
134          RC      .1     .05      .1    1150    .004
135          RX       0      50     100     125     150     175     190     200     242     244
136          RX     250     256     261     300     350     400     424     450     500       0
137          RY   665.4   665.1   663.5   663.4   663.9   663.3   653.3   650.7   651.6   648.9
138          RY   648.4   648.6   651.7   651.9   651.2   651.8   652.1   658.6   658.7
```



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


139          KK     800
140          KM   INFLOW FROM BASIN 800
141          BA     .12
142          PB     6.6
143          LS            53.0
144          UD     .30

145          KK     900
146          KM   INFLOW FROM BASIN 900
147          BA     .24
148          PB     6.6
149          LS            68.0
150          UD     .80

151          KK   SR900
152          KM   MODIFIED PULS STORM SEWER ROUTING
```

```
153          RS       1    FLOW      -1
154          SV    .016    .032    .048    .064     .08     .10     .11     .13     .14
155          SE   649.0   650.0   651.0   652.0   653.0   654.0   656.0   658.0   660.0
156          SQ     0.0     8.0    20.0    37.0    50.0    64.0    80.0    87.0    94.0

157          KK    1000
158          KM   INFLOW FROM BASIN 1000
159          BA     .23
160          PB     6.6
161          LS            73.0
162          UD     .60

163          KK   C1000
164          KM   COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.
165          HC       4

166          KK  CRC100
167          KM   CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100
168          RS       1    FLOW      -1
169          RC      .1     .05      .1    2900    .004
170          RX     0.0      50     100     125     150     200     240     245     250     255
171          RX     260     300     350     400     450     500     501     502     503     504
172          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
173          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

174          KK    1100
175          KM   INFLOW FROM BASIN 1100
176          BA     .12
177          PB     6:6
178          LS            70.0
179          UD     .40

180          KK   C1100
181          KM   COMBINE HYDROGRAPHS CRC1000 & 1100
182          HC       2
```



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


183          KK  CRC110
184          KM   CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK
185          RS       1    FLOW      -1
186          RC      .1     .05      .1    1500    .004
187          RX     0.0      50     100     125     150     200     240     245     250     255
188          RX     260     300     350     400     450     500     501     502     503     504
189          RY   644.0   643.3   642.0   638.5   639.6   639.0   637.6   634.0   633.6   634.0
190          RY   633.3   638.1   640.0   644.1   644.9   644.9   645.0   645.0   645.0   645.0

191          KK    1200
192          KM   INFLOW FROM BASIN 1200
193          BA     .14
194          PB     6.6
195          LS            69.0
196          UD     .90

197          KK   C1200
198          KM   COMBINE HYDROGRAPHS CRC1100 & 1200
199          HC       2
200          ZZ
```

```
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   7          100
               V
               V
  18        DB100
               V
               V
  24        CR100
               .
               .
  32            .          200
                .            .
                .            .
  38         C200............
               V
               V
  41        DB200
               V
               V
  47       CRC200
               .
               .
  55            .          300
                .            .
                .            .
  61         C300............
               .
               .
  64            .          400
                .            V
                .            V
  70            .        DB400
                .            .
                .            .
  76         C400............
               V
               V
  79       CRC400
               .
               .
  87            .          500
                .            .
                .            .
  93         C500............
               V
               V
  96        CR500
               .
               .
 104            .          600
                .            V
                .            V
 110            .        DB600
                .            .
```

```
                .          .
  116           .          .        700
                .          .          V
                .          .          V
  122           .          .      SR700
                .          .          .
                .          .          .
  128        C700.......................
                V
                V
  131       CRC70
                .
                .
  139           .        800
                .          .
                .          .
  145           .          .        900
                .          .          V
                .          .          V
  151           .          .      SR900
                .          .          .
                .          .          .
  157           .          .          .       1000
                .          .          .          .
                .          .          .          .
  163       C1000.................................
                V
                V
  166      CRC100
                .
                .
  174           .       1100
                .          .
                .          .
  180       C1100............
                V
                V
  183      CRC110
                .
                .
  191           .       1200
                .          .
                .          .
  197       C1200............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            SEPTEMBER 1990            *
*             VERSION 4.0              *
*                                      *
*  RUN DATE  07/08/1992  TIME  15:46:29 *
*                                      *
****************************************
```

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

```
                    CITY OF WYOMING, MICHIGAN, FLOOD INSURANCE STUDY
                    BEHAN-FOLEY DRAIN TRIBUTARY TO BUCK CREEK
                    500 YEAR STORM, TYPE II DISTRIBUTION

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

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

                COMPUTATION INTERVAL     .08 HOURS
                     TOTAL TIME BASE   24.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA         SQUARE MILES
             PRECIPITATION DEPTH   INCHES
             LENGTH, ELEVATION     FEET
             FLOW                  CUBIC FEET PER SECOND
             STORAGE VOLUME        ACRE-FEET
             SURFACE AREA          ACRES
             TEMPERATURE           DEGREES FAHRENHEIT


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


          **************
          *            *
  7 KK    *       100  *
          *            *
          **************
                    INFLOW FROM BASIN 100

  6 IN        TIME DATA FOR INPUT TIME SERIES
                    JXMIN         30  TIME INTERVAL IN MINUTES
                   JXDATE      1   0  STARTING DATE
                   JXTIME          0  STARTING TIME

             SUBBASIN RUNOFF DATA

  9 BA        SUBBASIN CHARACTERISTICS
                    TAREA        .29  SUBBASIN AREA

             PRECIPITATION DATA

 10 PB              STORM       6.60  BASIN TOTAL PRECIPITATION

 11 PI          INCREMENTAL PRECIPITATION PATTERN
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                   .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

16 LS SCS LOSS RATE

STRTL	.63	INITIAL ABSTRACTION
CRVNBR	76.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

17 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.60	LAG

***

UNIT HYDROGRAPH
38 END-OF-PERIOD ORDINATES

22.	43.	65.	87.	108.	130.	152.	164.	156.	147.
138.	130.	121.	112.	104.	95.	86.	78.	69.	60.
52.	43.	34.	26.	17.	8.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.		

*** ***

```
**************
*            *
*     DB100  *
*            *
**************
```

18 KK

MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB100

HYDROGRAPH ROUTING DATA

20 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES

```
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

21 SA              AREA          .1        .4       1.7       3.8       6.9      11.0      15.7

22 SE         ELEVATION      680.67    682.00    684.00    686.00    688.00    690.00    692.00

23 SQ         DISCHARGE          0.        9.       32.       47.       55.       78.      400.

                                                          ***

                                          COMPUTED STORAGE-ELEVATION DATA

          STORAGE        .00       .33      2.32      7.68     18.23     35.97     62.53
        ELEVATION     680.67    682.00    684.00    686.00    688.00    690.00    692.00


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


          **************
          *            *
24 KK     *     CR100  *
          *            *
          **************
                         CHANNEL ROUTING TO 56TH STREET

             HYDROGRAPH ROUTING DATA

26 RS         STORAGE ROUTING
                   NSTPS           1  NUMBER OF SUBREACHES
                    ITYP        FLOW  TYPE OF INITIAL CONDITION
                  RSVRIC       -1.00  INITIAL CONDITION
                       X         .00 WORKING R AND D COEFFICIENT

27 RC         NORMAL DEPTH CHANNEL
                     ANL        .100  LEFT OVERBANK N-VALUE
                    ANCH        .050  MAIN CHANNEL N-VALUE
                     ANR        .100  RIGHT OVERBANK N-VALUE
                   RLNTH       2600.  REACH LENGTH
                     SEL       .0035  ENERGY SLOPE
                   ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                         --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
31 RY       ELEVATION    677.40    677.50    677.90    680.00    681.40    682.80    686.70    683.10
29 RX       DISTANCE     250.00    253.00    256.00    270.00    300.00    340.00    350.00    400.00

                                                          ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00       .11       .33       .65      1.06      1.57      2.22      3.17      4.42      6.02
          OUTFLOW        .00       .77      4.18     11.47     23.87     42.45     64.19     98.94    151.52    221.18
        ELEVATION     677.40    677.89    678.38    678.87    679.36    679.85    680.34    680.83    681.32    681.81

          STORAGE       8.02     10.44     13.10     15.95     19.04     22.36     25.92     29.72     33.75     38.01
          OUTFLOW     317.47    445.17    645.76    880.39   1147.92   1448.41   1782.00   2148.88   2549.32   2983.65
```

ELEVATION	682.30	682.78	683.27	683.76	684.25	684.74	685.23	685.72	686.21	686.70

*** ***

```
          **************
          *            *
 32 KK    *       200  *
          *            *
          **************
                    INFLOW FROM BASIN 200

             SUBBASIN RUNOFF DATA

 34 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .18  SUBBASIN AREA

                PRECIPITATION DATA

 35 PB                STORM        6.60  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00

 36 LS          SCS LOSS RATE
                      STRTL         .94  INITIAL ABSTRACTION
                     CRVNBR       68.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA
```

```
37 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG          .90  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            56 END-OF-PERIOD ORDINATES
              6.       12.       19.       25.       31.       37.       44.       50.       56.       62.
             69.       69.       66.       64.       61.       59.       56.       54.       51.       49.
             46.       44.       41.       39.       36.       34.       31.       29.       26.       24.
             21.       19.       16.       14.       11.        9.        6.        4.        1.        0.
              0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
              0.        0.        0.        0.        0.        0.

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

          **************
          *            *
38 KK     *      C200  *
          *            *
          **************
                       COMBINE HYDROGRAPHS CR100 & 200

40 HC          HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***

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

          **************
          *            *
41 KK     *     DB200  *
          *            *
          **************
                       MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB200

             HYDROGRAPH ROUTING DATA

43 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

44 SA              AREA          .0        .3       8.8       9.0      10.3      11.0

45 SE          ELEVATION      671.87    673.00    674.00    675.00    676.00    676.65

46 SQ          DISCHARGE          0.        7.       21.       37.       54.      150.

                                                    ***

                                        COMPUTED STORAGE-ELEVATION DATA
```

STORAGE	.00	.11	3.69	12.59	22.23	29.15
ELEVATION	671.87	673.00	674.00	675.00	676.00	676.65

*** ***

```
              **************
              *            *
47 KK         *    CRC200  *
              *            *
              **************
```

CHANNEL ROUTE C200 TO CONFLUENCE WITH BASIN 300

HYDROGRAPH ROUTING DATA

```
49 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC      -1.00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

50 RC          NORMAL DEPTH CHANNEL
                       ANL       .100  LEFT OVERBANK N-VALUE
                      ANCH       .050  MAIN CHANNEL N-VALUE
                       ANR       .100  RIGHT OVERBANK N-VALUE
                     RLNTH      1300.  REACH LENGTH
                       SEL      .0035  ENERGY SLOPE
                     ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---			+ ------ MAIN CHANNEL -------			+ --- RIGHT OVERBANK ---	
54 RY	ELEVATION	670.10	671.50	673.50	676.50	679.20	682.00	683.40	681.64
52 RX	DISTANCE	250.00	256.00	261.00	285.00	300.00	315.00	350.00	400.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.03	.13	.27	.45	.67	.97	1.39	1.93	2.59
OUTFLOW	.00	.45	2.87	8.57	17.50	30.50	52.42	86.17	135.89	205.04
ELEVATION	670.10	670.80	671.50	672.20	672.90	673.60	674.30	675.00	675.70	676.40
STORAGE	3.35	4.19	5.11	6.12	7.20	8.36	9.60	10.98	12.94	15.68
OUTFLOW	299.49	417.51	559.96	728.30	924.94	1150.12	1405.19	1692.00	2078.70	2526.57
ELEVATION	677.10	677.80	678.50	679.20	679.90	680.60	681.30	682.00	682.70	683.40

*** ***

```
              **************
              *            *
55 KK         *       300  *
              *            *
              **************
```

INFLOW FROM BASIN 300

SUBBASIN RUNOFF DATA

57 BA SUBBASIN CHARACTERISTICS

TAREA	.53	SUBBASIN AREA

PRECIPITATION DATA

58 PB

STORM	6.60	BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

59 LS SCS LOSS RATE

STRTL	.74	INITIAL ABSTRACTION
CRVNBR	73.00	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

60 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	1.30	LAG

***

UNIT HYDROGRAPH

80 END-OF-PERIOD ORDINATES

9.	18.	27.	36.	45.	54.	63.	72.	81.	90.
100.	109.	118.	127.	136.	145.	142.	139.	135.	132.
128.	124.	121.	117.	113.	110.	106.	103.	99.	95.
92.	88.	85.	81.	77.	74.	70.	66.	63.	59.
56.	52.	48.	45.	41.	37.	34.	30.	27.	23.
19.	16.	12.	9.	5.	1.	0.	0.	0.	0.

```
            0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
            0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


          **************
          *            *
 61 KK    *      C300  *
          *            *
          **************
                        COMBINE HYDROGRAPHS CRC200 & 300

 63 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


          **************
          *            *
 64 KK    *       400  *
          *            *
          **************
                        INFLOW FROM BASIN 400

             SUBBASIN RUNOFF DATA

 66 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .65  SUBBASIN AREA

               PRECIPITATION DATA

 67 PB               STORM        6.60  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .01      .01      .06      .06
                     .06      .06      .06      .06      .01      .01      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

```
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00

 68 LS        SCS LOSS RATE
                STRTL        .94  INITIAL ABSTRACTION
               CRVNBR      68.00  CURVE NUMBER
                RTIMP        .00  PERCENT IMPERVIOUS AREA

 69 UD        SCS DIMENSIONLESS UNITGRAPH
                 TLAG        .50  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                          32 END-OF-PERIOD ORDINATES
            68.     136.     205.     273.     341.     409.     430.     402.     375.     348.
           321.     293.     266.     239.     211.     184.     157.     130.     102.      75.
            48.      20.       0.       0.       0.       0.       0.       0.       0.       0.
             0.       0.


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


         **************
         *            *
 70 KK   *     DB400  *
         *            *
         **************
                   MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB400

            HYDROGRAPH ROUTING DATA

 72 RS        STORAGE ROUTING
               NSTPS          1  NUMBER OF SUBREACHES
                ITYP       FLOW  TYPE OF INITIAL CONDITION
              RSVRIC      -1.00  INITIAL CONDITION
                   X        .00 WORKING R AND D COEFFICIENT

 73 SV          STORAGE       .0      3.1      6.9      9.2     10.0     10.5     50.0

 74 SE        ELEVATION   678.80   680.00   681.00   682.00   683.00   684.00   685.00

 75 SQ        DISCHARGE       0.       7.      21.      36.      49.      57.      65.

                                                  ***

WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
```

```
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
```

```
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     67.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
```

```
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     66.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE
```

```
WARNING --- ROUTED OUTFLOW (     65.) IS GREATER THAN MAXIMUM OUTFLOW (     65.) IN STORAGE-OUTFLOW TABLE


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


          **************
          *            *
 76 KK    *      C400  *
          *            *
          **************
                        COMBINE HYDROGRAPHS C300 & DB400

 78 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


          **************
          *            *
 79 KK    *    CRC400  *
          *            *
          **************
                        CHANNEL ROUTE C400 TO CONFLUENCE WITH 500

             HYDROGRAPH ROUTING DATA

 81 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        FLOW  TYPE OF INITIAL CONDITION
                      RSVRIC       -1.00  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT

 82 RC          NORMAL DEPTH CHANNEL
                        ANL        .100  LEFT OVERBANK N-VALUE
                       ANCH        .050  MAIN CHANNEL N-VALUE
                        ANR        .100  RIGHT OVERBANK N-VALUE
                      RLNTH       3850.  REACH LENGTH
                        SEL       .0040  ENERGY SLOPE
                      ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                          CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
 86 RY        ELEVATION    663.50    662.40    662.70    667.60    669.60    672.30    677.40    681.70
 84 RX        DISTANCE     247.00    250.00    253.00    258.00    290.00    300.00    350.00    391.00

                                                                  ***

                                          COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

          STORAGE        .00       .38      1.03      1.77      2.61      3.54      5.09      8.09     12.09     16.43
          OUTFLOW        .00      3.09     15.23     36.05     65.79    104.99    147.82    251.32    448.50    712.59
        ELEVATION     662.40    663.42    664.43    665.45    666.46    667.48    668.49    669.51    670.53    671.54
```

```
          STORAGE      21.12     26.55     32.88     40.10     48.22     57.22     67.11     77.86     89.49    101.98
          OUTFLOW    1049.87   1484.92   1996.43   2588.28   3264.00   4027.15   4881.24   5828.66   6872.46   8015.70
        ELEVATION     672.56    673.57    674.59    675.61    676.62    677.64    678.65    679.67    680.68    681.70



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


          ***************
          *             *
 87 KK    *      500    *
          *             *
          ***************
                    INFLOW FROM BASIN 500

            SUBBASIN RUNOFF DATA

 89 BA        SUBBASIN CHARACTERISTICS
                   TAREA          .15  SUBBASIN AREA

             PRECIPITATION DATA

 90 PB             STORM         6.60  BASIN TOTAL PRECIPITATION

 11 PI           INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                    .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                    .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00

 91 LS         SCS LOSS RATE
                   STRTL         1.28  INITIAL ABSTRACTION
```

```
                CRVNBR       61.00  CURVE NUMBER
                 RTIMP         .00  PERCENT IMPERVIOUS AREA

 92 UD        SCS DIMENSIONLESS UNITGRAPH
                  TLAG         .50  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                          32 END-OF-PERIOD ORDINATES
            16.      31.      47.      63.      79.      94.      99.      93.      87.      80.
            74.      68.      61.      55.      49.      42.      36.      30.      24.      17.
            11.       5.       0.       0.       0.       0.       0.       0.       0.       0.
             0.       0.


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


        **************
        *            *
 93 KK  *      C500  *
        *            *
        **************
                     COMBINE HYDROGRAPHS CRC400 & 500

 95 HC        HYDROGRAPH COMBINATION
                ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***


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


        **************
        *            *
 96 KK  *     CR500  *
        *            *
        **************
                     CHANNEL ROUTING C500 TO CONFLUENCE WITH C700

           HYDROGRAPH ROUTING DATA

 98 RS        STORAGE ROUTING
                NSTPS           1  NUMBER OF SUBREACHES
                 ITYP        FLOW  TYPE OF INITIAL CONDITION
                RSVRIC       -1.00  INITIAL CONDITION
                    X         .00 WORKING R AND O COEFFICIENT

 99 RC        NORMAL DEPTH CHANNEL
                  ANL        .100  LEFT OVERBANK N-VALUE
                 ANCH        .050  MAIN CHANNEL N-VALUE
                  ANR        .100  RIGHT OVERBANK N-VALUE
                RLNTH       1150.  REACH LENGTH
                  SEL       .0040  ENERGY SLOPE
                ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION
```

CROSS-SECTION DATA

		--- LEFT OVERBANK ---		+ ------ MAIN CHANNEL		------- +	--- RIGHT OVERBANK ---		
103 RY	ELEVATION	648.40	648.60	651.70	651.90	651.20	651.80	652.10	658.60
101 RX	DISTANCE	250.00	256.00	261.00	300.00	350.00	400.00	424.00	450.00

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.07	.17	.28	.41	.54	1.05	3.02	5.50	8.02
OUTFLOW	.00	1.41	5.43	11.54	19.63	29.73	51.03	158.43	394.91	724.38
ELEVATION	648.40	648.94	649.47	650.01	650.55	651.08	651.62	652.16	652.69	653.23
STORAGE	10.56	13.14	15.74	18.38	21.05	23.75	26.47	29.23	32.02	34.84
OUTFLOW	1135.12	1620.10	2174.48	2794.66	3477.84	4221.74	5024.49	5884.51	6800.46	7771.17
ELEVATION	653.77	654.31	654.84	655.38	655.92	656.45	656.99	657.53	658.06	658.60

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 4222. TO 7771.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** ***

```
              **************
              *            *
104 KK        *       600  *
              *            *
              **************
```

INFLOW FROM BASIN 600

SUBBASIN RUNOFF DATA

106 BA SUBBASIN CHARACTERISTICS

TAREA .36 SUBBASIN AREA

PRECIPITATION DATA

107 PB STORM 6.60 BASIN TOTAL PRECIPITATION

11 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
108 LS          SCS LOSS RATE
                     STRTL        1.23  INITIAL ABSTRACTION
                    CRVNBR       62.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

109 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .80  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                         50 END-OF-PERIOD ORDINATES
            16.      31.      47.      62.      78.      94.     109.     125.     141.     156.
           152.     146.     140.     133.     127.     121.     115.     108.     102.      96.
            90.      83.      77.      71.      65.      58.      52.      46.      40.      33.
            27.      21.      15.       8.       2.       0.       0.       0.       0.       0.
             0.       0.       0.       0.       0.       0.       0.       0.       0.       0.


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


          **************
          *            *
110 KK    *     DB600  *
          *            *
          **************
                    MODIFIED PULS ROUTING THROUGH DETENTION BASIN DB600 (RAMBLEWOOD)

             HYDROGRAPH ROUTING DATA

112 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC       -1.00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

113 SA               AREA          .1       .3      2.2      3.7      5.6      8.3

114 SE          ELEVATION      659.40   660.00   662.00   664.00   666.00   668.00

115 SQ          DISCHARGE          0.       4.      30.      55.      75.      92.

                                                  ***
```

COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.12	2.39	8.23	17.46	31.28
ELEVATION	659.40	660.00	662.00	664.00	666.00	668.00

*** ***

```
              **************
              *            *
116 KK        *       700  *
              *            *
              **************
                        INFLOW FROM BASIN 700

           SUBBASIN RUNOFF DATA

118 BA          SUBBASIN CHARACTERISTICS
                     TAREA          .24  SUBBASIN AREA

                PRECIPITATION DATA

119 PB               STORM         6.60  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                     .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00

120 LS          SCS LOSS RATE
                     STRTL         .70  INITIAL ABSTRACTION
                    CRVNBR       74.00  CURVE NUMBER
```

```
                    RTIMP        .00  PERCENT IMPERVIOUS AREA

 121 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG        .50  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                           32 END-OF-PERIOD ORDINATES
              25.      50.      76.     101.     126.     151.     159.     149.     139.     128.
             118.     108.      98.      88.      78.      68.      58.      48.      38.      28.
              18.       8.       0.       0.       0.       0.       0.       0.       0.       0.
               0.       0.


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


          **************
          *            *
 122 KK   *     SR700  *
          *            *
          **************
                     MODIFIED PULS STORM SEWER ROUTING

             HYDROGRAPH ROUTING DATA

 124 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

 125 SV            STORAGE         .0       .0       .0       .0       .1       .1      2.1      5.8     11.5

 126 SE          ELEVATION     650.80   652.00   653.00   654.00   655.00   656.00   657.00   658.00   659.00

 127 SQ          DISCHARGE         0.       8.      22.      39.      52.      65.      73.      82.      87.

                                                    ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       65.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

WARNING --- ROUTED OUTFLOW (     88.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     88.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     89.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     89.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE
```

```
WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     90.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     89.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     89.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     89.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     88.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     88.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     88.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     88.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     87.) IS GREATER THAN MAXIMUM OUTFLOW (     87.) IN STORAGE-OUTFLOW TABLE


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


          ***************
          *             *
 128 KK   *      C700   *
          *             *
          ***************
                         COMBINE HYDROGRAPHS CR500, DB600, & SR700

 130 HC          HYDROGRAPH COMBINATION
                       ICOMP          3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


          ***************
          *             *
 131 KK   *     CRC70   *     0
          *             *
          ***************
                         CHANNEL ROUTING C700 TO CONFLUENCE WITH C1000

             HYDROGRAPH ROUTING DATA

 133 RS          STORAGE ROUTING
```

```
                NSTPS          1  NUMBER OF SUBREACHES
                 ITYP       FLOW  TYPE OF INITIAL CONDITION
               RSVRIC      -1.00  INITIAL CONDITION
                    X        .00 WORKING R AND D COEFFICIENT

134 RC        NORMAL DEPTH CHANNEL
                  ANL       .100  LEFT OVERBANK N-VALUE
                 ANCH       .050  MAIN CHANNEL N-VALUE
                  ANR       .100  RIGHT OVERBANK N-VALUE
                RLNTH      1150.  REACH LENGTH
                  SEL      .0040  ENERGY SLOPE
                ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                  CROSS-SECTION DATA
                      --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
138 RY      ELEVATION   648.40   648.60   651.70   651.90   651.20   651.80   652.10   658.60
136 RX      DISTANCE    250.00   256.00   261.00   300.00   350.00   400.00   424.00   450.00

                                                  ***

                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE      .00      .07      .17      .28      .41      .54     1.05     3.02     5.50     8.02
        OUTFLOW      .00     1.41     5.43    11.54    19.63    29.73    51.03   158.43   394.91   724.38
      ELEVATION   648.40   648.94   649.47   650.01   650.55   651.08   651.62   652.16   652.69   653.23

        STORAGE    10.56    13.14    15.74    18.38    21.05    23.75    26.47    29.23    32.02    34.84
        OUTFLOW  1135.12  1620.10  2174.48  2794.66  3477.84  4221.74  5024.49  5884.51  6800.46  7771.17
      ELEVATION   653.77   654.31   654.84   655.38   655.92   656.45   656.99   657.53   658.06   658.60

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN     4222. TO     7771.
               THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
               THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)


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


          **************
          *            *
139 KK    *       800  *
          *            *
          **************
                     INFLOW FROM BASIN 800

             SUBBASIN RUNOFF DATA

141 BA         SUBBASIN CHARACTERISTICS
                    TAREA        .12  SUBBASIN AREA

               PRECIPITATION DATA

142 PB              STORM       6.60  BASIN TOTAL PRECIPITATION

 11 PI           INCREMENTAL PRECIPITATION PATTERN
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                    .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
143 LS          SCS LOSS RATE
                     STRTL        1.77  INITIAL ABSTRACTION
                    CRVNBR       53.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

144 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .30  LAG

                                                  ***

                                            UNIT HYDROGRAPH
                                        20 END-OF-PERIOD ORDINATES
             32.      63.      95.     126.     118.     106.      93.      80.      68.      55.
             42.      30.      17.       4.       0.       0.       0.       0.       0.       0.


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


          **************
          *            *
145 KK    *       900  *
          *            *
          **************
                    INFLOW FROM BASIN 900

             SUBBASIN RUNOFF DATA

147 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .24  SUBBASIN AREA

                PRECIPITATION DATA
```

```
148 PB              STORM       6.60  BASIN TOTAL PRECIPITATION

 11 PI           INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                     .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00

149 LS          SCS LOSS RATE
                      STRTL        .94  INITIAL ABSTRACTION
                     CRVNBR      68.00  CURVE NUMBER
                      RTIMP        .00  PERCENT IMPERVIOUS AREA

150 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG        .80  LAG

                                                 ***

                                              UNIT HYDROGRAPH
                                          50 END-OF-PERIOD ORDINATES
                 10.       21.       31.       42.       52.       62.       73.       83.       94.      104.
                101.       97.       93.       89.       85.       81.       76.       72.       68.       64.
                 60.       56.       51.       47.       43.       39.       35.       31.       26.       22.
                 18.       14.       10.        6.        1.        0.        0.        0.        0.        0.
                  0.        0.        0.        0.        0.        0.        0.        0.        0.        0.

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

          **************
          *            *
151 KK    *     SR900  *
```

```
*            *
**************
                MODIFIED PULS STORM SEWER ROUTING

            HYDROGRAPH ROUTING DATA

153 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       FLOW  TYPE OF INITIAL CONDITION
                    RSVRIC      -1.00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

154 SV            STORAGE        .0       .0       .0       .1       .1       .1       .1       .1       .1

155 SE          ELEVATION     649.00   650.00   651.00   652.00   653.00   654.00   656.00   658.00   660.00

156 SQ          DISCHARGE        0.       8.      20.      37.      50.      64.      80.      87.      94.

                                                          ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN       0. TO       94.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

WARNING --- ROUTED OUTFLOW (     94.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    112.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    125.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    138.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    147.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    154.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    157.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    157.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    155.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    153.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    150.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    147.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    143.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    139.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    134.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    129.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    124.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    118.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE
```

```
WARNING --- ROUTED OUTFLOW (    113.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    107.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (    101.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (     95.) IS GREATER THAN MAXIMUM OUTFLOW (     94.) IN STORAGE-OUTFLOW TABLE


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


          **************
          *            *
157 KK    *      1000  *
          *            *
          **************
                         INFLOW FROM BASIN 1000

             SUBBASIN RUNOFF DATA

159 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .23  SUBBASIN AREA

                PRECIPITATION DATA

160 PB                STORM        6.60  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .01       .01       .06       .06
                      .06       .06       .06       .06       .01       .01       .01       .01       .01       .01
                      .01       .01       .01       .01       .01       .01       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00
```

```
161 LS          SCS LOSS RATE
                     STRTL         .74  INITIAL ABSTRACTION
                    CRVNBR       73.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

162 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .60  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                          38 END-OF-PERIOD ORDINATES
              17.      34.      52.      69.      86.     103.     120.     130.     123.     117.
             110.     103.      96.      89.      82.      75.      68.      62.      55.      48.
              41.      34.      27.      20.      13.       7.       0.       0.       0.       0.
               0.       0.       0.       0.       0.       0.       0.       0.

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

          **************
          *            *
163 KK    *     C1000  *
          *            *
          **************
                        COMBINE HYDROGRAPHS CRC700, 800,SR900, & 1000.

165 HC          HYDROGRAPH COMBINATION
                     ICOMP           4  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***

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

          **************
          *            *
166 KK    *    CRC100  *
          *            *
          **************
                        CHANNEL ROUTE C1000 TO CONFLUENCE WITH 1100

             HYDROGRAPH ROUTING DATA

168 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        FLOW  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

169 RC          NORMAL DEPTH CHANNEL
                      ANL        .100  LEFT OVERBANK N-VALUE
                     ANCH        .050  MAIN CHANNEL N-VALUE
                      ANR        .100  RIGHT OVERBANK N-VALUE
                    RLNTH       2900.  REACH LENGTH
                      SEL       .0040  ENERGY SLOPE
```

```
                ELMAX          .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                        CROSS-SECTION DATA
                          --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
173 RY      ELEVATION   633.30   638.10   640.00   644.10   644.90   644.90   645.00   645.00
171 RX      DISTANCE    260.00   300.00   350.00   400.00   450.00   500.00   501.00   502.00

                                                  ***

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE       .00      .11      .42      .95     1.68     2.63     3.79     5.15     6.74     8.85
        OUTFLOW       .00      .68     4.29    12.65    27.24    49.39    80.31   121.15   167.32   213.29
      ELEVATION    633.30   633.92   634.53   635.15   635.76   636.38   636.99   637.61   638.23   638.84

        STORAGE     11.62    15.06    18.94    23.13    27.62    32.43    37.54    42.96    48.82    56.39
        OUTFLOW    286.28   392.89   568.83   778.53  1025.68  1313.44  1644.72  2022.24  2403.71  2772.33
      ELEVATION    639.46   640.07   640.69   641.31   641.92   642.54   643.15   643.77   644.38   645.00


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


          ***************
          *             *
174 KK    *      1100   *
          *             *
          ***************
                     INFLOW FROM BASIN 1100

            SUBBASIN RUNOFF DATA

176 BA          SUBBASIN CHARACTERISTICS
                     TAREA          .12  SUBBASIN AREA

                PRECIPITATION DATA

177 PB               STORM         6.60  BASIN TOTAL PRECIPITATION

 11 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .01      .01      .06      .06
                     .06      .06      .06      .06      .01      .01      .01      .01      .01      .01
                     .01      .01      .01      .01      .01      .01      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                     .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

```
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                .00      .00      .00      .00      .00      .00      .00      .00

178 LS        SCS LOSS RATE
                   STRTL        .86  INITIAL ABSTRACTION
                  CRVNBR      70.00  CURVE NUMBER
                   RTIMP        .00  PERCENT IMPERVIOUS AREA

179 UD        SCS DIMENSIONLESS UNITGRAPH
                    TLAG        .40  LAG

                                          ***

                                     UNIT HYDROGRAPH
                                 26 END-OF-PERIOD ORDINATES
            19.      38.      57.      76.      95.      95.      88.      80.      72.      65.
            57.      50.      42.      34.      27.      19.      12.       4.       0.       0.
             0.       0.       0.       0.       0.       0.


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


        ***************
        *             *
180 KK  *     C1100   *
        *             *
        ***************
                 COMBINE HYDROGRAPHS CRC1000 & 1100

182 HC        HYDROGRAPH COMBINATION
                  ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                          ***


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


        ***************
        *             *
183 KK  *    CRC110   *
        *             *
        ***************
                 CHANNEL ROUTE CRC1100 TO CONFLUENCE WITH BUCK CREEK

           HYDROGRAPH ROUTING DATA

185 RS        STORAGE ROUTING
```

```
                NSTPS          1  NUMBER OF SUBREACHES
                 ITYP       FLOW  TYPE OF INITIAL CONDITION
               RSVRIC      -1.00  INITIAL CONDITION
                    X        .00 WORKING R AND D COEFFICIENT

186 RC      NORMAL DEPTH CHANNEL
                  ANL       .100  LEFT OVERBANK N-VALUE
                 ANCH       .050  MAIN CHANNEL N-VALUE
                  ANR       .100  RIGHT OVERBANK N-VALUE
                RLNTH      1500.  REACH LENGTH
                  SEL      .0040  ENERGY SLOPE
                ELMAX         .0  MAX. ELEV. FOR STORAGE/OUTFLOW CALCULATION

                                  CROSS-SECTION DATA
                     --- LEFT OVERBANK --- + ------ MAIN CHANNEL ------- + --- RIGHT OVERBANK ---
190 RY     ELEVATION   633.30   638.10   640.00   644.10   644.90   644.90   645.00   645.00
188 RX     DISTANCE    260.00   300.00   350.00   400.00   450.00   500.00   501.00   502.00

                                                  ***

                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

        STORAGE      .00      .05      .22      .49      .87     1.36     1.96     2.67     3.49     4.58
        OUTFLOW      .00      .68     4.29    12.65    27.24    49.39    80.31   121.15   167.32   213.29
      ELEVATION   633.30   633.92   634.53   635.15   635.76   636.38   636.99   637.61   638.23   638.84

        STORAGE     6.01     7.79     9.79    11.96    14.29    16.77    19.42    22.22    25.25    29.17
        OUTFLOW   286.28   392.89   568.83   778.53  1025.68  1313.44  1644.72  2022.24  2403.71  2772.33
      ELEVATION   639.46   640.07   640.69   641.31   641.92   642.54   643.15   643.77   644.38   645.00


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


        **************
        *            *
191 KK  *      1200  *
        *            *
        **************
                     INFLOW FROM BASIN 1200

           SUBBASIN RUNOFF DATA

193 BA       SUBBASIN CHARACTERISTICS
                TAREA        .14  SUBBASIN AREA

             PRECIPITATION DATA

194 PB          STORM       6.60  BASIN TOTAL PRECIPITATION

 11 PI         INCREMENTAL PRECIPITATION PATTERN
                 .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                 .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                 .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                 .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                 .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                 .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                 .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.06	.06
.06	.06	.06	.06	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00		

```
195 LS          SCS LOSS RATE
                     STRTL         .90  INITIAL ABSTRACTION
                    CRVNBR       69.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

196 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .90  LAG
```

***

UNIT HYDROGRAPH
56 END-OF-PERIOD ORDINATES

5.	10.	15.	19.	24.	29.	34.	39.	44.	49.
53.	53.	52.	50.	48.	46.	44.	42.	40.	38.
36.	34.	32.	30.	28.	26.	24.	22.	20.	19.
17.	15.	13.	11.	9.	7.	5.	3.	1.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.				

*** ***

```
          **************
          *            *
197 KK    *     C1200  *
          *            *
          **************
                    COMBINE HYDROGRAPHS CRC1100 & 1200

199 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
```

***

1

RUNOFF SUMMARY

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	100	299.	12.50	98.	30.	29.	.29		
+	ROUTED TO	DB100	68.	14.08	62.	30.	28.	.29		
+									689.17	14.08
+	ROUTED TO	CR100	68.	14.58	62.	29.	28.	.29		
+									680.39	14.58
+	HYDROGRAPH AT	200	108.	12.92	48.	15.	14.	.18		
+	2 COMBINED AT	C200	159.	13.17	106.	44.	42.	.47		
+	ROUTED TO	DB200	85.	15.83	75.	33.	32.	.47		
+									676.21	15.83
+	ROUTED TO	CRC200	85.	16.00	75.	33.	32.	.47		
+									674.98	16.00
+	HYDROGRAPH AT	300	290.	13.25	161.	50.	48.	.53		
+	2 COMBINED AT	C300	325.	13.42	220.	83.	80.	1.00		
+	HYDROGRAPH AT	400	583.	12.42	175.	54.	52.	.65		
+	ROUTED TO	DB400	67.	15.25	67.	35.	34.	.65		
+									685.28	15.33
+	2 COMBINED AT	C400	391.	13.50	286.	118.	114.	1.65		
+	ROUTED TO	CRC400	384.	13.83	284.	116.	112.	1.65		
+									670.20	13.83
+	HYDROGRAPH AT	500	101.	12.50	31.	10.	9.	.15		
+	2 COMBINED AT	C500	417.	13.50	309.	126.	121.	1.80		
+	ROUTED TO	CR500	416.	13.58	308.	124.	120.	1.80		

```
+                                                                                                  652.73      13.58

      HYDROGRAPH AT
+                        600      184.  12.75        77.       24.       23.       .36

      ROUTED TO
+                      DB600       75.  14.50        64.       24.       23.       .36
+                                                                                                  666.01      14.50

      HYDROGRAPH AT
+                        700      263.  12.42        77.       24.       23.       .24

      ROUTED TO
+                      SR700       90.  13.50        77.       24.       23.       .24
+                                                                                                  659.64      13.50

      3 COMBINED AT
+                      C700      576.  13.67       442.      172.      166.      2.40

      ROUTED TO
+                     CRC70      575.  13.83       442.      170.      164.      2.40
+                                                                                                  652.99      13.83

      HYDROGRAPH AT
+                        800       71.  12.25        17.        5.        5.       .12

      HYDROGRAPH AT
+                        900      158.  12.75        64.       20.       19.       .24

      ROUTED TO
+                      SR900      157.  12.75        64.       20.       19.       .24
+                                                                                                  678.07      12.75

      HYDROGRAPH AT
+                       1000      217.  12.50        72.       22.       21.       .23

      4 COMBINED AT
+                     C1000      840.  13.25       582.      218.      210.      2.99

      ROUTED TO
+                    CRC100      827.  13.50       573.      214.      206.      2.99
+                                                                                                  641.42      13.50

      HYDROGRAPH AT
+                       1100      133.  12.33        34.       11.       10.       .12

      2 COMBINED AT
+                     C1100      856.  13.42       600.      225.      216.      3.11

      ROUTED TO
+                    CRC110      853.  13.58       597.      223.      214.      3.11
+                                                                                                  641.49      13.58

      HYDROGRAPH AT
+                       1200       87.  12.83        38.       12.       11.       .14

      2 COMBINED AT
+                     C1200      930.  13.50       633.      235.      226.      3.25
```

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

```
            455.00    648.93    465.00    648.73    475.00    649.43
            485.00    650.03    490.00    656.23    520.00    671.23
ENDTABLE
REACH       12.79     1.0       800.0     760.0                         12791
REACH 2     12.70     +2.06                                             12792
REACH       12.90     1.0       960.0     800.0                         12901
SEGMENT     12.90     1         N         26.0                          12902
VALUE       0.10                                                        12903
SEGMENT     12.90     2         C         104.0                         12904
VALUE       .06       2.5       .04       6.        .03                 12905
SEGMENT     12.90     3         N         519.0                         12906
VALUE       0.15                                                        12907
SECTION       12.90                                                     1290-8
              0.00    668.21      7.00    663.52     22.00    655.61
             26.00    654.02     32.00    652.52     38.00    652.42
             42.00    653.11     51.00    653.32     58.00    653.42
             64.00    652.82     74.00    652.52     85.00    652.52
             94.00    653.21    104.00    654.61    116.00    658.20
            169.00    659.59    269.00    660.50    369.00    661.80
            469.00    666.20    519.00    670.09
ENDTABLE
ROAD        13.00     2.6       85.0      85.0                          13001
PR          13.00     A         1.0       3.0                           13002
PIER        656.8     2.7       652.0     2.7                           13003
GIRDER      672.5     672.3     0.0       0.6       2.6                 13004
            36.0      678.8     36.5      674.3     79.0      671.7     13005
            122.0     669.1     162.5     666.6     163.0     671.1     1300-6
ENDTABLE                                                                13007
SECTION       13.00                                                     1300-8
            0.00      678.56    35.9      676.46    36.0      678.8     13009
            37.5      671.4     40.0      671.4     69.0      659.4     130010
            75.0      658.3     80.0      653.7     85.0      652.5     130011
            90.0      652.3     109.0     652.0     114.0     652.3     130012
            120.0     652.4     123.5     652.6     128.0     653.2     130013
            136.0     655.9     141.0     658.1     160.0     663.9     130014
            162.5     663.9     163.0     671.1     163.1     668.69    130015
            163.5     668.67    164.0     668.66    200.0     667.16    130016
              217.00    666.56    300.00    664.46    400.00    665.26
              500.00    670.36    565.00    676.56
ENDTABLE
REACH       13.01     1.0       100.0     100.0                         13011
SEGMENT     13.01     1.0       N         -43.0                         13012
VALUE       0.10                                                        13013
SEGMENT     13.01     2.0       C         35.0                          13014
VALUE       .06       2.5       .04       6.        .03                 13015
SEGMENT     13.01     3.0       N         280.0                         13016
VALUE       0.12                                                        13017
SECTION     13.01                                                       13018
            -69.0     668.2     -62.0     663.5     -47.0     655.6     13019
            -43.0     654.0     -37.0     652.5     -31.0     652.42    130110
            -27.0     653.11    -18.0     653.3     -11.0     653.4     130111
            -5.0      652.8     5.0       652.5     16.0      652.5     130112
            25.0      653.2     35.0      654.6     47.0      658.2     130113
            60.0      665.1     110.0     666.5     280.0     668.3     130114
ENDTABLE                                                                130115
REACH       13.04     1.0       200.0     200.0                         13041
SEGMENT     13.04     1         N         -43.0                         13042
VALUE       0.12                                                        13043
SEGMENT     13.04     2         C         -17.0                         13044
VALUE       .06       2.5       .04       6.        .03                 13045
```

```
SEGMENT   13.04    3       N       55.0
VALUE     0.10
SEGMENT   13.04    4       C       95.0
VALUE     .06      2.5     .04     6.       .03
SEGMENT   13.04    5       N       122.0
VALUE     0.12
SECTION   13.04
          -69.0    669.3   -62.0   664.5    -47.0    656.7
          -43.0    655.1   -37.0   653.6    -21.0    653.5
          -17.0    654.2   8.0     654.4    43.0     654.5
          55.0     653.8   65.0    653.6    76.0     653.6
          85.0     654.3   95.0    655.7    107.0    659.2
          122.0    667.3
ENDTABLE
REACH     13.09    1.0     200.0   200.0
SEGMENT   13.09    1       N       -43.0
VALUE     0.12
SEGMENT   13.09    2       C       0.0
VALUE     .06      2.5     .04     .6       .03
SEGMENT   13.09    3       N       100.0
VALUE     0.10
SEGMENT   13.09    4       C       190.0
VALUE     .06      2.5     .04     6.       .03
SEGMENT   13.09    5       N       237.0
VALUE     0.12
SECTION   13.09
          -69.0    670.2   -62.0   665.5    -47.0    657.6
          -43.0    656.0   -37.0   654.5    -7.0     654.4
          0.0      655.1   40.0    655.3    90.0     655.4
          100.0    654.8   120.0   654.5    170.0    654.5
          190.0    655.2   210.0   656.6    222.0    656.6
          237.0    668.2
ENDTABLE
REACH     13.11    1.0     70.0    70.0
REACH 2   13.09    +0.1
REACH     14.00    1.0     20.0    20.0
SEGMENT   14.00    1       N       -100.0
VALUE     0.12
SEGMENT   14.00    2       N       -0.1
VALUE     0.08
SEGMENT   14.00    3       C       70.5
VALUE     .06      2.5     .04     6.       .03
SEGMENT   14.00    4       N       106.0
VALUE     0.09     1.3     0.06
SEGMENT   14.00    5       N       322.9
VALUE     0.09
SEGMENT   14.00    6       N       524.0
VALUE     0.09     1.3     0.07
SECTION   14.00
          -250.0   692.7   -240.0  680.1    -217.0   675.3
          -200.0   674.4   -170.0  676.6    -100.0   677.2
          -0.1     676.5   0.0     667.7    24.9     667.9
          25.0     676.6   26.8    676.6    26.9     667.9
          42.9     666.0   43.0    676.7    44.5     676.7
          44.6     672.1   49.0    668.0    66.0     668.3
          70.5     672.1   70.6    676.5    106.0    675.4
          106.1    684.4   170.0   684.4    170.1    689.4
          322.9    684.4   323.0   677.6    423.0    679.1
          523.0    682.3   524.0   701.0
ENDTABLE
```

```
COMPUTE   9.29      14.00     9.29
LINK
TITLE     FINAL TR20 DISCHARGES ------ TO ROCKFORD DAM
CHANGE    DISCHARGE
DISCHARGE -1.       1100.     2285.     3305.     3825.     5130.
END
REACH     14.01     1.0       20.0      20.0                          14011
REACH 2   14.10     -1.2                                              14012
REACH     14.02     1.0       20.0      20.0                          14021
REACH 2   14.10     -1.1                                              14022
REACH     14.03     1.0       50.0      50.0                          14031
REACH 2   14.10     -1.0                                              14032
REACH     14.10     1.0       710.0     710.0                         1410-1
SEGMENT   14.10     1         N         115.0                         14101
NVALUE    0.10                                                        14102
SEGMENT   14.10     2         C         474.0                         14103
NVALUE    .06       2.5       .04       6.        .03                 14104
SEGMENT   14.10     3         N         504.0                         14105
NVALUE    0.10      2.0       0.07                                    14106
SEGMENT   14.10     4         N         700.0                         14107
NVALUE    0.08      1.0       0.05                                    14108
SEGMENT   14.10     5         N         800.0                         14109
NVALUE    0.09                                                        141010
SECTION     14.10                                                     141011
                                                                      1410-12
            0.00    683.36    16.0      676.97    23.00     672.27
          100.00    669.67    115.0     668.86    125.00    668.17
          135.00    667.97    154.0     668.36    190.00    667.86
          219.00    666.97    260.0     665.67    288.00    665.07
          325.00    664.17    354.0     666.36    382.00    667.36
          404.00    667.36    431.0     668.07    474.00    668.97
          504.00    674.67    600.0     675.17    700.00    676.86
          725.00    660.97    800.0     682.77
ENDTABLE
REACH     14.11     1.0       480.0     480.0                         14111
REACH 2   14.10     0.0                                               14112
REACH     14.50     1.0       960.0     640.0                         14501
SEGMENT   14.50     1         N         36.0                          14502
NVALUE    0.10                                                        14503
SEGMENT   14.50     2         C         136.0                         14504
NVALUE    .06       2.5       .04       6.        .03                 14505
SEGMENT   14.50     3         N         400.0                         14506
NVALUE    0.09      2.0       0.06                                    14507
SEGMENT   14.50     4         N         854.0                         14508
NVALUE    0.12                                                        14509
SECTION     14.50                                                     1450-10
            0.00    688.85    36.0      669.35    46.00     666.66
           56.00    665.35    66.0      665.08    86.00     664.46
          106.00    666.06    116.0     667.35    133.00    667.85
          136.00    669.66    200.0     669.96    213.00    669.85
          219.00    668.66    300.0     668.85    316.00    669.66
          400.00    669.96    500.0     669.46    551.00    670.96
          600.00    673.96    700.0     677.84    800.00    683.94
          840.00    686.15    854.0     690.54
ENDTABLE
REACH     14.53     1.0       800.0     800.0                         14531
REACH 2   14.50     +0.8                                              14532
REACH     14.90     1.0       2480.0    2480.0                        14901
SEGMENT   14.90     1         N         171.0                         14902
NVALUE    0.10                                                        14903
SEGMENT   14.90     2         C         269.0                         14904
```

```
VALUE     .06       2.5       .04       6.        .03                    149 03
SEGMENT   14.90     3         N         518.0                            149 06
VALUE     0.10                                                           149 07
SECTION     14.90                                                       1490-8
              0.00    690.71     18.00    684.21     51.00    680.81
            118.00    675.91    164.00    674.51    171.00    670.91
            178.00    670.11    188.00    670.11    198.00    668.91
            218.00    668.51    228.00    669.21    235.00    668.31
            248.00    667.81    255.00    667.91    264.00    669.41
            269.00    670.31    272.00    673.61    295.00    682.21
            418.00    684.91    518.00    687.01
ENDTABLE
ROAD      15.00     2.7       110.0     110.0                            150 01
PR        15.00     A         1.0       3.0                              150 02
PIER      669.6     2.7       668.8     2.7                              150 03
GIRDER    687.3     687.1     20.0      0.6       2.7                   1500-4
          -77.0     691.7     -77.0     687.2     -29.3     686.7        150 05
          20.7      686.2     68.4      685.6     68.4      690.1        150 06
ENDTABLE                                                                 150 07
SECTION   15.00                                                          150 08
          -220.0    696.1     -200.0    694.6     -193.0    694.3        150 09
          -83.1     691.7     -77.0     691.7     -76.5     684.9       150 10
          -73.0     684.7     -39.0     670.9     -33.0     670.0       150 11
          -26.0     669.5     -20.0     668.9     -10.0     668.2       150 12
          0.0       668.7     10.0      669.7     20.0      668.8       150 13
          30.0      669.1     36.0      670.0     64.0      683.1       150 14
          68.0      683.3     68.4      690.1     74.5      690.1       150 15
          134.5     687.2     200.0     687.3     300.0     688.7       150 16
          400.0     689.8     500.0     690.9     600.0     692.3       150 17
          700.0     694.1     760.0     695.2
ENDTABLE
REACH     15.01     1.0       50.0      50.0                             150 11
REACH 2   15.10     0.0                                                  150 12
REACH     15.10     1.0       1310.0    1200.0                           151 01
SEGMENT   15.10     1         N         30.0                             151 02
VALUE     0.11                                                           151 03
SEGMENT   15.10     2         C         135.0                            151 04
VALUE     .06       2.5       .04       6.        .03                    151 05
SEGMENT   15.10     3         N         574.0                            151 06
VALUE     0.13                                                           151 07
SECTION     15.10                                                       1510-8
              0.00    689.19      3.00    685.80     11.00    685.69
             30.00    672.80     40.00    672.09     50.00    671.69
             70.00    671.40     90.00    671.50    110.00    671.50
            120.00    671.59    130.00    671.69    135.00    672.40
            140.00    676.90    200.00    677.30    300.00    679.69
            400.00    681.30    500.00    685.40    574.00    688.59
ENDTABLE
REACH     15.50     1.0       1240.0    1120.0                           1 01
SEGMENT   15.50     1         N         106.0                            15 02
VALUE     0.09                                                           15503
SEGMENT   15.50     2         C         192.0                            15504
VALUE     .06       2.5       .04       6.        .03                    15505
SEGMENT   15.50     3         N         202.0                            15506
VALUE     0.12                                                           15507
SEGMENT   15.50     4         N         395.0                            15508
VALUE     0.09      1.3       0.06                                       15509
SECTION     15.50                                                       1550-10
              0.00    693.15    100.00    679.45    106.00    677.75
            116.00    674.05    126.00    672.15    136.00    671.55
```

```
VALUE     0.08                                                                  169011
SECTION     16.90                                                               690-12
              0.00     691.96    100.00    689.46    139.00    688.16
            158.00     680.76    165.00    679.16    170.00    677.86
            180.00     677.56    190.00    678.46    200.00    677.06
            205.00     677.16    210.00    676.46    215.00    675.96
            226.00     676.16    233.00    677.36    236.00    679.26
            242.00     681.56    255.00    682.36    270.00    691.76
            300.00     692.26    370.00    693.66    380.00    697.76
ENDTABLE                                                                        170001
ROAD      17.00      2.7       40.0      40.0                                   170002
PR        17.00      A         3.0                                              170003
GIRDER    688.3      688.2     0.0       0.9       2.8                          170004
          -34.9      697.2     -34.8     687.2     0.0       687.8              170005
          34.8       688.2     34.9      698.2                                  170006
ENDTABLE                                                                        170007
SECTION   17.00                                                                 170008
          -491.0     699.2     -400.0    697.5     -300.0    695.5              170009
          -240.0     695.3     -200.0    695.2     -100.0    693.2              170010
          -60.0      693.3     -59.9     697.0     -34.9     697.2              170011
          -34.8      678.8     -21.0     678.2     -9.0      677.8              170012
          -1.0       676.8     11.0      676.4     21.0      676.9              170013
          30.0       678.6     34.7      679.2     34.9      698.2              170014
          60.0       698.4     60.1      694.6     80.0      694.7              170015
          80.1       696.7     100.0     696.8     100.1     694.8              170016
          120.0      695.6     120.1     697.6     140.0     698.0              170017
          140.1      696.0     160.0     697.0     160.1     699.0              170018
ENDTABLE                                                                        170011
REACH     17.01      1.0       40.0      40.0                                   170012
REACH 2   16.90      0.0                                                        1707-1
REACH     17.07      1.0       120.0     120.0                                  170172
SEGMENT   17.07      1         N         -92.0                                  170173
VALUE     0.09                                                                  170174
SEGMENT   17.07      2         C         97.0                                   170175
VALUE     .06        2.5       .04       6.        .03                          170176
SEGMENT   17.07      3         N         245.0                                  170177
VALUE     0.08                                                                  170178
SECTION   17.07                                                                 170179
          -250.0     693.0     -150.0    690.5     -111.0    689.2              170710
          -92.0      681.8     -75.0     680.2     -60.0     678.9              170711
          -40.0      678.6     -20.0     679.5     0.0       678.1              170712
          15.0       678.2     30.0      677.5     45.0      677.0              170713
          66.0       677.2     84.0      678.4     97.0      680.3              170714
          113.0      682.6     120.0     683.4     135.0     692.8              170715
          165.0      693.3     285.0     694.7     245.0     698.8              170716
ENDTABLE                                                                        180001
ROAD      18.00      2.7       75.0      75.0                                   180002
PR        18.00      A         3.0       7.0                                    180003
PIER      690.5      11.1      690.6     18.5                                   180004
GIRDER    692.7      692.6     0.0       0.6       2.5                          180005
          95.5       693.3     95.6      692.6     173.0     692.6              180006
          173.1      693.2     210.0     693.0     244.0     692.0              180007
          281.0      692.0     281.1     692.7                                  180008
ENDTABLE                                                                        180009
SECTION   18.00                                                                 180010
          -100.0     710.4     -99.0     696.4     -84.0     696.4              180011
          -83.9      710.4     -55.1     710.4     -55.0     692.4              180012
          -25.0      692.8     0.0       693.2     32.4      693.1              180013
          62.4       693.6     95.4      693.8     95.5      693.3              180014
          103.8      693.2     103.9     691.3     110.70    691.3
```

```
          1 0.8      690.5      157.6      690.6      157.7      690.4          180015
          1 4.8      690.4      164.9      691.8      172.3      691.8          180016
          172.4      690.6      183.3      690.7      183.4      691.0          180017
          189.1      691.0      189.2      690.6      281.0      690.6          180018
          281.1      692.7      300.0      693.5      350.0      692.7          180019
          400.0      697.9      410.0      710.4                                180020
ENDTABLE                                                                       180021
COMMENT   SECTION 18.01 IS SECTION 18.10
REACH     18.01      1.0        20.0       20.0                                 18011
SEGMENT   18.01      1          N          343.0
VALUE     0.08
SEGMENT   18.01      2          C          651.0
VALUE     .06        2.5        .04        6.         .03
SEGMENT   18.01      3          N          711.0
VALUE     0.08
SECTION   18.01
            0.00     704.01     100.00     701.91     200.00     699.41
          300.00     694.71     343.00     692.71     348.00     690.41
          358.00     687.71     388.00     687.31     428.00     688.81
          463.00     688.01     503.00     687.11     553.00     687.41
          603.00     689.11     623.00     689.41     651.00     690.51
          661.00     692.47     711.00     702.86
ENDTABLE
COMPUTE   14.01      18.01      14.00
LINK
TITLE     FINAL TR20 DISCHARGES ------ TO SHAW CREEK
CHANGE    DISCHARGE
DISCHARGE -1.        1085.      2265.      3280.      3800.      5105.
END
REACH     18.03      1.0        20.0       20.0                                 18031
REACH 2   18.10      0.0                                                        18032
REACH     18.10      1.0        150.0      150.0                                18101
SEGMENT   18.10      1          N          343.0                               1810-2
VALUE     0.08                                                                 18103
SEGMENT   18.10      2          C          651.0                                18104
VALUE     .06        2.5        .04        6.         .03                      18105
SEGMENT   18.10      3          N          711.0                                18106
VALUE     0.08                                                                 18107
SECTION     18.10                                                             1810-8
            0.00     704.01     100.00     701.91     200.00     699.41
          300.00     694.71     343.00     692.71     348.00     690.41
          358.00     687.71     388.00     687.31     428.00     688.81
          463.00     688.01     503.00     687.11     553.00     687.41
          603.00     689.11     623.00     689.41     651.00     690.51
          661.00     692.47     711.00     702.86
ENDTABLE
REACH     18.13      1.0        540.0      540.0                                18151
REACH 2   18.10      -2.9                                                       18142
REACH     18.15      1.0        260.0      260.0                                18151
SEGMENT   18.15      1          N          1068.0                               18152
VALUE     0.09                                                                 18153
SEGMENT   18.15      2          C          1227.0                               18154
VALUE     .06        2.5        .04        6.         .03                      18155
SEGMENT   18.15      3          N          1250.0                               18156
VALUE     0.11                                                                 18157
SECTION   18.15                                                                18158
          713.0      709.0      714.0      697.3      800.0      694.9          18159
          900.00     693.20     1000.00    693.20     1060.00    692.40
         1068.00     690.01     1078.00    686.41     1102.00    684.31
         1135.00     686.20     1150.00    688.70     1175.00    669.81
```

```
          1210.00    688.91   1227.00    690.41   1250.00    708.31
ENDTABLE
REACH     18.17      1.0      300.0      300.0                          16171
REACH 2   18.15      +0.8                                               16172
REACH     18.20      1.0      340.0      340.0                          18201
SEGMENT   18.20      1        N          500.0                          18202
N VALUE   0.09                                                          18203
SEGMENT   18.20      2        N          535.0                          18204
N VALUE   0.15                                                          18205
SEGMENT   18.20      3        C          752.0                          18206
N VALUE   .06        2.5      .04        6.         .03                 18207
SEGMENT   18.20      4        N          881.0                          18208
N VALUE   0.10                                                          18209
SECTION      18.20                                                      20-10
             0.00    704.38   100.00    700.08   200.00    699.02
           300.00    696.92   400.00    696.32   500.00    693.52
           535.00    692.52   540.00    690.82   550.00    687.52
           560.00    686.11   597.00    689.11   620.00    688.61
           645.00    688.42   685.00    688.11   715.00    688.11
           740.00    688.32   752.00    689.61   755.00    691.92
           800.00    696.22   881.00    702.22
ENDTABLE
REACH     18.23      1.0      400.0      370.0                          18231
REACH 2   18.20      0.0                                                18232
REACH     18.30      1.0      1440.0     1300.0                         18301
SEGMENT   18.30      1        N          415.0                          18302
N VALUE   0.15       2.0      0.08                                       18303
SEGMENT   18.30      2        N          435.0                          18304
N VALUE   0.13                                                          18305
SEGMENT   18.30      3        C          555.0                          18306
N VALUE   .06        2.5      .04        6.         .03                 18307
SEGMENT   18.30      4        N          800.0                          18308
N VALUE   0.13       2.0      0.07                                       18309
SECTION      18.30                                                      30-10
          178.0      710.0    178.5      702.0      179.0     699.3     183011
          196.0      692.2    300.0      691.0      400.0     691.0     183012
          415.0      691.4    432.0      691.9      435.0     689.8     183013
           445.00    687.56   455.00    687.36   465.00    687.46
           475.00    687.46   485.00    687.27   505.00    685.96
           525.00    688.46   535.00    689.46   544.00    490.46
           555.00    695.18   600.00    698.18   700.00    698.78
          800.0      700.8    801.0      710.0                          183018
ENDTABLE
REACH     18.33      1.0      320.0      250.0                          18301
REACH 2   18.30      +0.3                                               18302
REACH     18.40      1.0      1360.0     550.0                          18401
SEGMENT   18.40      1        N          1570.0                         18402
N VALUE   0.18                                                          18403
SEGMENT   18.40      2        C          1650.0                         18404
N VALUE   .06        2.5      .04        6.         .03                 18405
SEGMENT   18.40      3        N          2067.0                         40-6
N VALUE   0.13                                                          18407
SECTION      18.40                                                      40-8
           900.00    703.27   950.00    704.17   957.00    703.87
           977.00    693.67  1000.00    695.47  1100.00    693.47
          1200.00    691.47  1300.00    692.74  1400.00    692.54
          1500.00    691.24  1567.00    693.72  1570.00    690.72
          1580.00    688.63  1590.00    688.13  1600.00    687.22
          1610.00    687.22  1620.00    687.72  1630.00    687.43
          1640.00    689.22  1650.00    690.43  1657.00    692.13
```

```
          1700.00    691.32   1800.00    690.93   1900.00    691.32
          2000.00    691.32   2042.00    691.13   2067.00    705.43
ENDTABLE
REACH     18.46      1.0      1600.0     880.0.                          18461
REACH 2   18.40      +1.6                                                18462
REACH     16.50      1.0      640.0      560.0                           1850-1
SEGMENT   18.50      1        N          636.0                           18502
NVALUE    0.18                                                           18503
SEGMENT   18.50      2        C          705.0                           18504
NVALUE    0.045                                                          18505
SEGMENT   18.50      3        N          1035.0                          18506
NVALUE    0.20                                                           18507
SECTION      18.50                                                       1850-8
             0.00    712.73     19.0     709.04     100.00    707.23
           200.00    706.94    300.0     702.44     349.00    701.59
           375.00    692.09    400.0     692.40     500.00    694.00
           600.00    694.30    635.0     693.73     636.00    690.73
           655.00    689.63    670.0     689.33     680.00    689.33
           695.00    689.63    705.0     691.03     707.00    692.93
           800.00    692.33    900.0     695.53    1000.00    702.43
          1035.00    705.85
ENDTABLE
REACH     18.57      1.0      1680.0     1520.0                          18571
REACH 2   18.50      +0.5                                                18572
REACH     18.60      1.0      800.0      800.0                           18601
SEGMENT   18.60      1        N          685.0                           18602
NVALUE    0.18                                                           18603
SEGMENT   18.60      2        C          770.0                           18604
NVALUE    .06        2.5      .04        6.        .03                   18605
SEGMENT   18.60      3        N          927.0                           18606
NVALUE    0.13                                                           18607
SECTION      18.60                                                       1860-8
             0.00    715.75     27.0     708.25      55.00    699.55
           127.00    699.75    227.0     699.45     327.00    699.86
           427.00    698.56    527.0     696.38     627.00    695.06
           682.00    697.56    685.0     693.06     687.00    692.96
           697.00    691.06    707.0     691.06     717.00    690.36
           727.00    691.06    737.0     691.06     747.00    690.96
           757.00    691.56    770.0     693.46     772.00    704.16
           827.00    705.86    927.0     708.46
ENDTABLE
REACH     18.64      1.0      680.0      560.0                           18641
REACH 2   18.60      +1.8                                                18642
REACH     18.70      1.0      920.0      640.0                           18701
SEGMENT   18.70      1        N.         467.0                           18702
NVALUE    0.20                                                           18703
SEGMENT   18.70      2        C          541.0                           18704
NVALUE    .06        2.5      .04        6.        .03                   18705
SEGMENT   18.70      3        N          600.0                           18706
NVALUE    0.20                                                           18707
SEGMENT   18.70      4        N          1400.0                          18708
NVALUE    0.20       2.0      0.10                                       18709
SECTION      18.70                                                       1870-10
             0.00    718.20      6.0     718.01      23.00    709.10
           100.00    708.41    200.0     709.80     300.00    708.70
           400.00    706.30    450.0     705.69     467.00    695.29
           477.00    693.69    487.0     693.09     507.00    693.09
           527.00    693.39    537.0     694.59     541.00    694.98
           557.00    697.09    600.0     696.79     700.00    697.59
           800.00    698.09    900.0     698.29    1000.00    695.35
```

```
          1100.00    700.15   1200.00    700.85   1233.00    701.65
          1287.00    712.35   1300.00    712.85   1400.00    715.25
ENDTABLE
REACH     18.73      1.0      560.0      480.0                         18731
REACH 2   18.70      +0.4                                              18732
REACH     18.90      1.0      1520.0     1360.0                        18901
SEGMENT   18.90      1        N          939.0                         18902
NVALUE    0.20                                                         18903
SEGMENT   18.90      2        C          1009.0                        18904
NVALUE    .06        2.5      .04        6.         .03                18905
SEGMENT   18.90      3        N          1175.0                        18906
NVALUE    0.09                                                         18907
SECTION     18.90                                                     1890-8
            0.00     711.82     75.00    709.82     175.00    705.13
          245.00     702.22    265.00    698.82     375.00    698.42
          475.00     698.03    575.00    699.65     675.00    699.45
          775.00     699.45    875.00    699.65     937.00    698.25
          939.00     697.25    947.00    696.45     955.00    695.95
          966.00     695.05    975.00    695.15     985.00    695.15
          995.00     695.34   1005.00    696.65    1009.00    697.45
         1013.00     700.34   1075.00    709.75    1140.00    714.95
         1175.00     715.95
ENDTABLE
ROAD      19.00      2.7      65.0       65.0                          19001
DPR       19.00      A        1.0        3.0                           19002
PIER      694.0      2.7      694.0      2.7                           19003
CIRCLER   705.7      705.4    20.0       0.6        2.7                19004
          -56.4      708.6    -56.3      704.5      -16.0     704.9    19005
          28.0       705.3    69.5       705.6      69.6      706.7    19006
ENDTABLE                                                               19007
SECTION   19.00                                                          8
          -1000.0    712.6    -900.0     709.0      -800.0    703.9      9
          -700.0     702.0    -600.0     702.1      -500.0    702.1     10
          -400.0     702.0    -300.0     702.1      -300.0    702.1     11
          -200.0     703.0    -122.0     705.5      -100.0    705.9     12
          -56.4      708.6    -56.3      702.5      -53.0     702.4     13
          -44.0      699.1    -40.0      697.7      -27.0     695.9     14
          -17.0      695.1    -14.0      694.9      -4.0      694.8     15
          7.0        695.7    19.0       695.9      27.0      695.1     16
          30.0       695.3    49.0       697.3      52.0      698.4    190017
          66.0       703.4    69.5       703.5      69.6      706.7    190018
          94.5       707.8    200.0      708.9      375.0     716.2    190019
ENDTABLE                                                               190020
REACH     19.01      1.0      50.0       50.0                          19011
REACH 2   19.10      0.0                                               19012
REACH     19.10      1.0      1510.0     1470.0                        19101
SEGMENT   19.10      1        N          290.0                         19102
NVALUE    0.10       1.3      0.07                                     19103
SEGMENT   19.10      2        N          302.0                         19104
NVALUE    0.12                                                         19105
SEGMENT   19.10      3        C          369.0                         19106
NVALUE    .06        2.5      .04        6.         .03                19107
SEGMENT   19.10      4        N          385.0                         19108
NVALUE    0.12                                                         19109
SEGMENT   19.10      5        N          776.0                        191010
NVALUE    0.10       1.3      0.07                                    191011
SECTION     19.10                                                     1910-12
            0.00     716.51    100.00    704.31     200.00    701.31
          302.00     699.91    305.00    697.11     310.00    697.01
          330.00     696.51    350.00    696.31     360.00    696.51
```

```
            369.00     698.31     372.00     699.61     400.00     699.31
            500.00     701.41     600.00     704.31     700.00     709.91
            776.00     713.91   290.0    700.0      385.0      699.4          1910-19
ENDTABLE
COMMENT    POINTS ADDED TO 19.10 FOR N-VALUES                                 1910-20
REACH      19.14      1.0        1160.0     1120.0                             19141
REACH 2    19.10      0.7                                                      19142
REACH      19.70      1.0        1560.0     1360.0                             19701
SEGMENT    19.70      1          N          400.0                              19702
NVALUE     0.13                                                                19703
SEGMENT    19.70      2          C          505.0                              19704
NVALUE     .06        2.5        .04        6.         .03                     19705
SEGMENT    19.70      3          N          1050.0                             19706
NVALUE     0.20                                                                19707
SECTION      19.70                                                             1970-8
              0.00     716.08     100.00     713.89     200.00     714.18
            273.00     713.48     314.00     704.39     400.00     702.39
            403.00     699.28     410.00     698.98     430.00     698.98
            450.00     697.98     460.00     697.98     480.00     698.39
            490.00     698.58     505.00     699.89     509.00     702.58
            600.00     703.68     700.00     704.80     800.00     703.80
            900.00     705.70    1000.00     711.70    1050.00     714.80
ENDTABLE
COMPUTE    18.03      19.70      18.01
TITLE      FINAL TR20 DISCHARGES ------ TO GRANGE AVE
CHANGE     DISCHARGE
DISCHARGE  -1.        1065.      2225.      3240.      3760.      5060.
END
REACH      19.76      1.0        1120.0     1040.0                             19761
REACH 2    19.70      +0.8                                                     19762
REACH      19.90      1.0        880.0                                         19901
SEGMENT    19.90      1          N          1700.0                             19902
NVALUE     0.12                                                                19903
SEGMENT    19.90      2          N          1970.0                             19904
NVALUE     0.18                                                                19905
SEGMENT    19.90      3          C          2036.0                             19906
NVALUE     .06        2.5        .04        6.         .03                     19907
SEGMENT    19.90      4          N          2100.0                             19908
NVALUE     0.18                                                                19909
SEGMENT    19.90      5          N          2670.0                             199010
NVALUE     0.10                                                                199011
SECTION      19.90                                                             90-12
              0.00     715.36     100.00     714.17     200.00     712.17
            300.00     710.96     400.00     710.56     500.00     712.06
            600.00     711.67     700.00     710.96     800.00     710.17
            900.00     709.86    1000.00     710.06    1100.00     709.06
           1200.00     707.77    1300.00     708.46    1400.00     709.46
           1500.00     709.06    1600.00     706.56    1700.00     704.36
           1800.00     703.46    1900.00     702.77    1964.00     702.56
           1970.00     700.96    1981.00     700.56    1990.00     699.56
           2000.00     699.56    2010.00     699.36    2020.00     699.77
           2032.00     699.46    2036.00     704.27    2100.00     704.27
           2200.00     706.36    2300.00     707.17    2400.00     708.46
           2500.00     711.56    2600.00     713.67    2670.00     715.17
ENDTABLE
ROAD       20.00      2.7        80.0       80.0                               20001
CPR        20.00      8          1.0        3.0                                20002
PIER       701.0      1.0        700.0      1.0                                20003
GIRDER     717.9      717.7      0.0        0.6        2.7                     20004
           -68.0      721.9      -67.9      717.3      -23.0      717.5        20005
```

	23.0	717.6	67.9	717.8	68.0	722.4	20006
ENDTABLE							20007
SECTION	20.00						20008
	-100.0	721.9	-68.0	721.9	-67.9	713.6	20009
	-62.0	713.0	-39.0	702.1	-25.0	701.6	200010
	-6.0	699.7	0.0	699.5	10.0	699.2	200011
	21.0	699.2	26.0	699.5	35.0	700.0	200012
	40.0	702.7	62.0	713.3	67.9	714.0	200013
	68.0	722.4	100.0	722.4			200014
ENDTABLE							200015
REACH	20.01	1.0	50.0	50.0			20011
REACH 2	19.90	0.0					20012
REACH	20.09	1.0	630.0	440.0			20091
REACH 2	19.90	0.0					20092
ROAD	21.00	2.7	40.0	40.0			21001
PR	21.00	B	1.0	3.0			21002
PIER	699.0	1.0	702.0	1.0			21003
GIRDER	717.3	717.1	30.0	0.6	2.7		21004
	-72.2	721.3	-72.1	716.4	-27.0	716.7	21005
	19.0	716.9	64.1	717.2	64.2	722.1	21006
ENDTABLE							21007
SECTION	21.00						21008
	-100.0	721.3	-72.2	721.3	-72.0	713.2	21009
	-67.0	712.6	-45.0	702.0	-40.0	700.4	210010
	-28.0	698.9	-20.0	697.5	-10.0	698.5	210011
	0.0	698.9	10.0	700.0	18.0	701.9	210012
	25.0	703.8	36.0	704.8	58.0	713.3	210013
	64.0	713.6	64.2	722.1	100.0	722.1	210014
ENDTABLE							210015
REACH	21.01	1.0	30.0	30.0			21011
REACH 2	19.90	0.0					21015
REACH	21.09	1.0	80.0	80.0			21091
REACH 2	19.90	0.0					21092
ROAD	22.00	2.7	30.0	30.0			22001
PR	22.00	A	1.0	3.0			22002
PIER	700.0	3.2					22003
GIRDER	713.5	713.3	20.0	0.6	2.7		22004
	-52.2	719.0	-52.1	713.4	-4.4	712.8	22005
	61.1	712.1	61.2	718.7			22006
ENDTABLE							22007
SECTION	22.00						22008
	-300.0	718.9	-193.0	717.9	-117.0	716.9	22009
	-52.2	719.0	-52.0	711.0	-31.0	702.8	220010
	-29.0	701.2	-20.0	700.6	-7.0	699.9	220011
	2.5	700.0	5.5	699.6	12.0	699.7	220012
	21.0	700.4	27.0	700.9	40.0	701.4	220013
	42.0	703.1	61.0	709.6	61.2	718.7	220014
	126.0	714.2	200.0	713.3	300.0	712.0	220015
	400.0	711.0	500.0	709.9	600.0	709.3	220016
	700.0	709.5	800.0	710.2	900.0	711.1	220017
	1000.0	712.0					220018
ENDTABLE							220019
REACH	22.01	1.0	50.0	50.0			22011
REACH 2	19.90	+0.3					22012
REACH	22.05	1.0	1270.0	1150.0			22051
REACH 2	19.90	+1.5					22052
REACH	22.10	1.0	1160.0	1120.0			22101
SEGMENT	22.10	1	N	290.0			22102
VALUE	0.15						22103
SEGMENT	22.10	2	C	411.0			22104

```
VALUE     .16       2.5       .04       6.        .03                          221,05
SEGMENT   22.10     3         N         1400.0                                 22106
VALUE     0.08                                                                 221,07
SECTION     22.10                                                              2210-8
              0.00     718.39    100.00    713.69    200.00    711.39
            289.00     705.19    290.00    703.29    300.00    702.39
            320.00     702.39    340.00    702.09    350.00    702.89
            360.00     702.39    380.00    702.09    390.00    702.29
            400.00     702.59    411.00    703.79    414.00    707.39
            470.00     710.52    480.00    708.52    500.00    707.12
            600.00     707.22    700.00    707.32    800.00    708.22
            900.00     708.52   1000.00    709.22   1100.00    711.02
           1200.00     713.92   1300.00    716.52   1400.00    717.62
ENDTABLE
EACH      22.15     1.0       640.0     640.0                                  22151
REACH 2   22.10     0.0                                                        22152
EACH      22.50     1.0       840.0     640.0                                  22501
SEGMENT   22.50     1         N         200.0                                  22502
VALUE     0.20                                                                 22503
SEGMENT   22.50     2         N         645.0                                  22504
VALUE     0.15      1.3       0.08                                             22505
SEGMENT   22.50     3         N         663.0                                  22506
VALUE     0.18                                                                 22507
SEGMENT   22.50     4         C         747.0                                  22508
VALUE     .06       2.5       .04       6.        .03                          22509
SEGMENT   22.50     5         N         760.0                                  225010
VALUE     0.18                                                                 225011
SEGMENT   22.50     6         N         895.0                                  225012
VALUE     0.12      1.3       0.08                                             225013
SECTION     22.50                                                              2250-14
              0.00     718.46    100.00    715.36    200.00    712.36
            300.00     710.17    400.00    709.07    500.00    708.57
            600.00     703.77    655.00    710.17    663.00    705.07
            680.00     702.11    691.00    702.11    706.00    701.82
            720.00     701.82    736.00    702.02    743.00    704.02
            753.00     706.32    800.00    710.42    895.00    721.21
645.0       710.0     747.0     705.1     760.0     707.0                      225021
ENDTABLE
EACH      22.56     1.0       1920.0    1640.0                                 22561
REACH 2   22.50     +1.1                                                       22562
EACH      22.50     1.0       1680.0    1440.0                                 22901
SEGMENT   22.90     1         N         956.0                                  22902
VALUE     0.13      1.3       0.08                                             22903
SEGMENT   22.90     2         N         969.0                                  22904
VALUE     0.15                                                                 22905
SEGMENT   22.90     3         C         1027.0                                 22906
VALUE     .06       2.5       .04       6.        .03                          22907
SEGMENT   22.90     4         N         1150.0                                 [illegible]
VALUE     0.18                                                                 [illegible]
SECTION     22.90                                                              [illegible]-10
              0.00     720.35    100.00    718.75    200.00    715.95
            300.00     714.45    400.00    713.55    495.00    709.35
            507.00     706.05    522.00    709.95    600.00    709.15
            700.00     709.60    800.00    710.81    900.00    709.60
            969.00     706.21    976.00    706.21    984.00    704.41
            992.00     704.31   1000.00    704.10   1010.00    704.51
           1020.00     704.71   1027.00    705.31   1031.00    705.51
           1039.00     710.10   1051.00    717.10   1075.00    721.10
           1100.00     721.71   1150.00    722.2 956.0     708.[illegible]      2290-20
ENDTABLE
```

```
ROAD      23.00     2.7       50.0      50.0                                  23001
LPR       23.00     B         1.0       3.0                                   23002
PIER      705.0     2.6                                                       23003
GIRDER    717.5     717.3     0.0       0.6       2.7                         23004
          -53.6     718.0     -53.5     715.5     0.0       716.4             23005
          53.5      717.4     53.6      719.9                                 23006
ENDTABLE                                                                      23007
SECTION   23.00                                                               23008
          -1000.0   719.2     -900.0    718.2     -800.0    715.9             23009
          -700.0    714.3     -600.0    713.0     -500.0    712.8             230010
          -400.0    713.0     -300.0    714.2     -200.0    715.5             230011
          -100.0    717.3     -93.5     717.4     -53.7     720.5             230012
          -53.6     718.0     -53.5     713.2     -50.0     713.1             230013
          -35.0     706.4     -34.0     706.0     -30.0     705.0             230014
          -21.0     703.6     -7.0      704.9     -1.0      704.9             230015
          1.0       705.2     10.0      705.7     21.0      706.2             230016
          32.0      705.9     33.0      706.5     50.0      714.9             230017
          53.5      715.0     53.6      719.9     53.7      722.4             230018
          88.5      720.6     100.0     720.8     200.0     723.4             230019
          290.0     726.4                                                     230020
ENDTABLE                                                                      230021
REACH     23.01     1.0       50.0      50.0                                  23011
REACH 2   22.90     0.0                                                       23012
REACH     23.05     1.0       1230.0    1150.0                                23051
REACH 2   22.90     0.0                                                       23052
REACH     23.50     1.0       2400.0    1920.0                                23501
SEGMENT   23.50     1         N         818.0                                 23502
NVALUE    0.15      1.3       0.07                                            23503
SEGMENT   23.50     2         N         1051.0                                23504
NVALUE    0.20                                                                23505
SEGMENT   23.50     3         C         1111.0                                23506
NVALUE    .06       2.5       .04       6.0       .03                         23507
SEGMENT   23.50     4         N         1313.0                                23508
NVALUE    0.20                                                                23509
SECTION      23.50                                                            50-10
              0.00     727.48    100.00    726.09    200.00    725.98
            300.00     723.19    400.00    721.59    500.00    720.29
            600.00     716.09    700.00    713.59    800.00    714.48
            818.00     714.29    830.00    710.07    900.00    710.17
           1000.00     711.47   1048.00    711.47   1051.00    708.30
           1061.00     706.00   1075.00    705.20   1090.00    705.30
           1100.00     706.50   1111.00    707.30   1115.00    712.50
           1200.00     711.30   1282.00    712.10   1313.00    726.50
ENDTABLE
REACH     23.55     1.0       1200.0    1200.0                                23551
REACH 2   23.50     +0.6                                                      23552
REACH     23.90     1.0       1280.0    1200.0                                23901
SEGMENT   23.90     1         N         700.0                                 23902
NVALUE    0.15      1.3       0.08                                            23903
SEGMENT   23.90     2         N         971.0                                 23904
NVALUE    0.15                                                                23905
SEGMENT   23.90     3         C         1030.0                                23906
NVALUE    .06       2.5       .04       6.        .03                         23907
SEGMENT   23.90     4         N         1220.0                                23908
NVALUE    0.18                                                                23909
SEGMENT   23.90     5         N         1300.0                                239010
NVALUE    0.15      1.3       0.08                                            239011
SECTION      23.90                                                            50-12
              0.00     725.22    100.00    721.02    170.00    721.52
            200.00     718.82    300.00    718.50    400.00    717.59
```

```
          500.00    713.59    600.00    713.90    700.00    713.19
          800.00    713.40    938.00    714.19    952.00    711.00
          968.00    711.00    971.00    708.89    973.00    706.79
          988.00    707.00    995.00    706.59   1000.00    706.59
         1007.00    707.79   1012.00    707.29   1018.00    707.50
         1026.00    708.09   1030.00    709.50   1032.00    712.09
         1050.00    713.50   1100.00    713.59   1153.00    714.90
         1185.00    721.00   1220.00    722.19   1300.00    722.69
ENDTABLE
ROAD     24.00      2.7      50.0      50.0                          24001
RR       24.00      A        3.0       7.0                           24002
PIER     707.8      2.5                                              24003
GIRDER   719.5      719.3    30.0      0.6       2.7                 24004
         -62.4      722.4    -62.3     718.9     -12.3     719.1     24005
         37.7       719.3    37.8      722.8                         2400-6
ENDTABLE                                                             24007
SECTION  24.00                                                       24008
         -1000.0    725.2    -900.0    723.7     -800.0    722.4     24009
         -700.0     721.3    -600.0    720.7     -500.0    720.2     240010
         -400.0     720.0    -300.0    720.4     -200.0    720.9     240011
         -100.0     721.7    -62.5     724.4     -62.4     722.4     240012
         -62.0      708.1    -58.0     707.7     -47.0     706.9     240013
         -33.0      706.4    -22.0     706.7     -13.5     708.1     240014
         -10.5      707.8    0.0       707.5     6.0       707.5     240015
         15.0       708.0    25.0      708.3     37.3      709.3     240016
         37.8       722.8    37.9      724.8     100.0     722.3     240017
         200.0      722.7    300.0     723.5     400.0     724.4     240018
         500.0      726.2    571.0     727.9                         240019
ENDTABLE                                                             240020
REACH    24.01      1.0      55.0      55.0                          24011
REACH 2  23.90      0.0                                              24012
REACH    24.08      1.0      1860.0    1550.0                        24081
REACH 2  23.90      0.8                                              24082
REACH    24.10      1.0      440.0     380.0                         24101
SEGMENT  24.10      1        N         903.0                         24102
NVALUE   0.20                                                        24103
SEGMENT  24.10      2        C         945.0                         24104
NVALUE   0.050                                                       24103
SEGMENT  24.10      3        N         1150.0                        24104
NVALUE   0.20                                                        24105
SECTION     24.10                                                    2410-6
            0.00    738.01    50.0      736.30    103.00    716.70
          200.00    714.42    300.0     714.11    400.00    713.71
          500.00    713.11    600.00    713.02    700.00    712.49
          800.00    712.39    900.00    713.99    903.00    709.83
          913.00    708.04    923.0     707.73    935.00    709.43
          945.00    711.23    947.00    712.54   1000.00    712.14
         1076.00    713.43   1097.00    725.73   1150.00    726.04
ENDTABLE
REACH    24.70      1.0      2720.0    2160.0                        24701
SEGMENT  24.70      1        N         185.0                         24702
NVALUE   0.15                                                        24703
SEGMENT  24.70      2        C         230.0                         24704
NVALUE   0.050                                                       24705
SEGMENT  24.70      3        N         1200.0                        24706
NVALUE   0.20                                                        24708
SECTION     24.70                                                    2470-9
            0.00    735.16    100.00    734.56    136.00    719.09
          181.00    714.89    185.0     710.59    192.00    709.69
          202.00    709.79    210.0     709.29    221.00    709.09
```

```
          24. 230.00    711.59    231.00    714.39    278.00    718.40
              300.00    717.70    400.00    717.10    500.00    715.40
              600.00    715.40    700.00    715.68    800.00    716.97
              900.00    716.07   1000.00    715.97   1100.00    715.22
             1170.00    714.02   1200.00    728.13
ENDTABLE
REACH     24.73     1.0       1000.0    800.0                          24731
REACH 2   24.70     1.1                                                24732
REACH     24.90     1.0       2400.0    2240.0                         24901
SEGMENT   24.90     1         N         195.0                          24902
VALUE     0.16      1.3       0.08                                     24903
SEGMENT   24.90     2         N         272.0                          24904
VALUE     0.18                                                         24905
SEGMENT   24.90     3         C         332.0                          24906
VALUE     .050                                                         24907
SEGMENT   24.90     4         N         400.0                          24908
~~VALUE~~  ~~0.18~~                                                    ~~24909~~
VALUE     0.16      1.3       0.08                                     249011
SEGMENT   24.90     5         N         740.0                          2490-10
VALUE     0.16      1.3       0.08                                     2490-11
SECTION   24.90                                                        2490-12
              0.00    726.87    100.00    723.37    195.00    718.87
            245.00    716.47    268.00    714.67    272.00    712.87
            280.00    711.97    290.00    711.87    300.00    711.67
            310.00    711.67    320.00    711.67    329.00    711.77
            332.00    714.47    340.00    714.77    357.00    719.87
          400.0     719.9     500.0     719.7     600.0     721.3      249018
          700.0     725.2     740.0     727.1                          249019
ENDTABLE
ROAD      25.00     2.4       45.0      45.0                           2500-1
PR        25.00     B         3.0       5.0                            2500-2
PIER      713.6     2.5       712.8     2.5                            2500-3
GIRDER    722.2     722.0     10.0      0.60      2.6                  2500-4
          -54.0     725.1     -53.8     722.0     -30.0     722.1      2500-5
          30.0      722.1     53.8      721.9     54.0      724.9      2500-6
ENDTABLE                                                               2500-7
SECTION   25.00                                                        2500-8
          -380.0    729.2     -300.0    727.4     -200.0    723.0      2500-9
          -100.0    723.3     -81.0     723.2     -54.0     725.1      2500-10
          -53.7     716.6     -40.0     714.7     -31.3     713.7      2500-11
          -28.7     713.2     -20.0     712.3     -10.0     712.2      2500-12
          0.0       713.2     10.0      712.2     20.0      712.0      2500-13
          28.7      712.6     31.3      713.0     37.0      713.2      2500-14
          53.7      718.1     54.0      724.9     80.0      721.9      2500-15
          100.0     721.1     200.0     721.3     300.0     720.8      2500-16
          400.0     723.1     500.0     727.4                          00-17
ENDTABLE                                                               0-18
REACH     25.01     1.0       50.0      50.0                           1-1
REACH 2   24.90     0.0                                                1-2
COMPUTE   19.76     25.01     19.70
LINK
TITLE     FINAL TR20 DISCHARGES ---- TO DIVISION AVE
CHANGE    DISCHARGE
DISCHARGE -1.       1060.     2255.     3305.     3820.     5180.
END
REACH     25.10     1.0       1630.0    1470.0                         2510-1
SEGMENT   25.10     1         N         956.0                          2510-2
VALUE     0.20                                                         2510-3
SEGMENT   25.10     2         C         1001.0                         2510-4
VALUE     0.055                                                        2510-5
```

```
SEGMENT   25.10     3          N          1900.0                                  2510-6
.VALUE    0.18                                                                     2510-7
SECTION      25.10                                                                 2510-8
                0.00     736.71     100.00     731.71     200.00     727.32
              300.00     725.61     400.00     724.92     500.00     726.52
              600.00     725.61     660.00     724.82     720.00     718.16
              800.00     716.36     900.00     716.06     956.00     716.77
              960.00     713.11     970.00     708.31     980.00     710.61
              990.00     712.11    1001.00     716.11    1010.00     716.21
             1100.00     716.81    1200.00     716.02    1300.00     717.21
             1400.00     719.31    1500.00     721.46    1600.00     721.36
          1700.0     723.5      1800.0     724.3      1900.0     736.2          510-17
ENDTABLE
EACH      25.80     1.0        10000.0    4160.0                                  2580-1
SEGMENT   25.80     1          N          1264.0                                  2580-2
.VALUE    0.20                                                                     2580-3
SEGMENT   25.80     2          C          1303.0                                  2580-4
.VALUE    0.055                                                                    2580-5
SEGMENT   25.80     3          N          2400.0                                  2580-6
.VALUE    0.20                                                                     2580-7
SEGMENT   25.80     4          N          2800.0                                  2580-8
.VALUE    0.18      1.6        0.09                                                2580-9
SEGMENT   25.80     5          N          3600.0                                  2580-10
.VALUE    0.20                                                                     2580-11
SECTION      25.80                                                                 2580-12
             1100.00     740.26    1200.00     739.65    1233.00     737.85
             1253.00     718.26    1264.00     718.35    1273.00     715.76
             1283.00     715.66    1293.00     716.85    1303.00     718.35
             1313.00     718.45    1315.00     719.75    1400.00     720.25
             1500.00     720.05    1600.00     719.34    1700.00     719.65
             1800.00     720.29    1900.00     719.89    2000.00     718.58
             2100.00     719.98    2102.00     717.89    2109.00     715.89
             2117.00     715.89    2121.00     718.39    2122.00     719.58
             2200.00     719.79    2300.00     718.54    2394.00     718.44
             2400.00     721.64    2500.00     722.44    2600.00     723.04
             2700.00     722.44    2800.00     719.89    2900.00     719.29
             3000.00     719.48    3100.00     719.69    3200.00     720.08
             3300.00     721.08    3353.00     722.19    3384.00     730.79
             3400.00     730.50    3500.00     733.50    3600.00     737.00
ENDTABLE
EACH      25.90     1.0        4800.0     1840.0                                  2590-1
SEGMENT   25.90     1          N          473.0                                   2590-2
.VALUE    0.20                                                                     2590-3
SEGMENT   25.90     2          C          532.0                                   2590-4
.VALUE    .055                                                                     2590-5
SEGMENT   25.90     3          N          1835.0                                  2590-6
.VALUE    0.20                                                                     2590-7
SECTION      25.90                                                                 2590-8
                0.00     733.06      20.00     730.27     105.00     730.56
              180.00     727.66     205.00     721.06     305.00     721.16
              405.00     721.16     469.00     721.56     473.00     717.46
              479.00     714.77     485.00     713.56     494.00     713.46
              500.00     713.16     505.00     715.86     515.00     716.86
              525.00     717.77     532.00     718.86     541.00     721.65
              605.00     721.79     705.00     720.79     805.00     721.50
              905.00     720.59    1005.00     721.29    1105.00     720.69
             1205.00     721.09    1305.00     721.26    1405.00     720.66
             1505.00     720.85    1605.00     721.16    1705.00     720.76
             1765.00     721.16    1805.00     726.35    1835.00     729.85
ENDTABLE
```

```
ROAD      26.00     2.6       60.0      60.0                                  2600-1
 PR       26.00     B         3.0                                             2600-2
CIRDER    725.3     723.1     30.0      0.6       2.5                         2600-3
          -46.4     734.3     -46.3     723.2     -31.6     725.6             2600-4
          -31.5     725.3     31.5      725.3     31.6      725.6             2600-5
          46.3      723.1     46.4      734.4                                 2600-6
ENDTABLE                                                                      2600-7
SECTION   26.00                                                               2600-8
          -750.0    734.2     -700.0    733.4     -600.0    731.5             2600-9
          -500.0    730.3     -400.0    730.1     -300.0    729.4             2600-10
          -299.0    730.9     -200.0    730.3     -100.0    729.8             2600-11
          -57.1     730.0     -57.0     731.5     -50.1     731.5             2600-12
          -50.0     733.3     -46.4     734.3     -46.2     719.6             2600-13
          -26.0     719.6     -22.0     717.3     -16.0     716.2             2600-14
          -12.0     714.5     0.0       714.2     9.0       713.2             2600-15
          20.0      713.8     30.0      718.7     35.0      719.6             2600-16
          42.0      717.2     46.2      718.6     46.4      734.4             2600-17
          50.0      732.5     57.0      732.5     57.1      728.2             2600-18
          100.0     727.9     200.0     726.9     300.0     726.2             2600-19
          400.0     725.7     500.0     725.5     600.0     725.4             2600-20
          1000.0    725.4     1001.0    734.0                                 2601-1
ENDTABLE                                                                      2601-2
REACH     26.01     1.0       40.0      40.0                                  2610-1
REACH 2   25.90     0.0                                                       2610-2
REACH     26.10     1.0       6120.0    2800.0                                2610-3
SEGMENT   26.10     1         N         1253.0                                2610-4
NVALUE    0.20                                                                2610-5
SEGMENT   26.10     2         C         1283.0                                2610-6
NVALUE    0.055                                                               2610-7
SEGMENT   26.10     3         N         2385.0                                2610-8
NVALUE    0.20
SECTION      26.10
                0.00      745.11    100.00    738.92    200.00    735.71
              300.00      735.32    400.00    735.71    500.00    734.32
              570.00      722.95    600.00    722.76    700.00    722.95
              800.00      722.89    900.00    722.98   1000.00    722.79
             1100.00      722.58   1200.00    722.19   1252.00    722.08
             1253.00      721.27   1268.00    717.36   1283.00    718.96
             1285.00      722.67   1300.00    723.27   1400.00    722.86
             1500.00      722.67   1600.00    722.17   1700.00    721.96
             1800.00      722.27   1900.00    722.56   1930.00    720.77
             2000.00      722.16   2100.00    723.77   2200.00    724.06
          2300.0    724.2     2365.0    724.7     2385.0    735.7             2610-19
ENDTABLE
REACH     26.70     1.0       6000.0    2400.0                                2670-1
SEGMENT   26.70     1         N         275.0                                 2670-2
NVALUE    0.20                                                                2670-3
SEGMENT   26.70     2         C         321.0                                 2670-4
NVALUE    .055                                                                2670-5
SEGMENT   26.70     3         N         1802.0                                2670-6
NVALUE    0.20                                                                2670-7
SECTION      26.70                                                            2670-8
                0.00      743.78    93.00     739.28    135.00    725.18
              200.00      724.39    273.00    725.28    275.00    723.09
              285.00      721.59    295.00    721.59    305.00    721.20
              315.00      721.50    321.00    722.90    323.00    725.50
              400.00      725.09    500.00    724.80    600.00    725.20
              807.00      725.63    900.00    724.83   1000.00    724.63
             1100.00      724.33   1200.00    724.72   1300.00    724.63
             1400.00      724.35   1500.00    724.72   1600.00    724.63
```

```
          1800.0    725.6     1800.0    725.2     1802.0    740.0          2670-18
ENDTABLE
COMPUTE   25.10     26.70     25.01
LINK
TITLE     FINAL TR20 DISCHARGES ------ TO NASH CREEK
CHANGE    DISCHARGE
DISCHARGE -1.       1100.     2370.     3470.     4000.     5410.
END
REACH     26.90     1.0       5300.0    2260.0                           2690-1
SEGMENT   26.90     1         N         1901.0                           2690-2
N VALUE   0.20                                                           2690-3
SEGMENT   26.90     2         C         1960.0                           2690-4
N VALUE   0.055                                                          2690-5
SEGMENT   26.90     3         N         3230.0                           2690-6
N VALUE   0.20                                                           2690-7
SECTION      26.90                                                       2690-8
          1230.0    743.0     1231.0    726.2     1430.0    726.8        2690-9
             1530.00    726.51    1630.00    727.10    1656.00    725.81
             1730.00    726.70    1830.00    726.81    1898.00    727.51
             1901.00    725.00    1914.00    725.09    1922.00    723.30
             1930.00    722.80    1935.00    721.50    1940.00    720.30
             1945.00    718.69    1953.00    719.90    1960.00    723.80
             1962.00    727.40    2030.00    727.00    2130.00    726.90
             2230.00    726.80    2330.00    726.59    2430.00    725.80
             2530.00    726.69    2630.00    726.69    2730.00    728.80
             2830.00    727.55    2930.00    727.55    3030.00    728.05
             3130.00    729.94    3180.00    732.65    3230.00    733.15
ENDTABLE
ROAD      27.00     2.7       70.0      70.0                             2700-1
SPR       27.00     A         3.0       3.0                              2700-2
PIER      722.1     2.6       722.8     2.4                              2700-3
GIRDER    731.3     731.1     30.0      0.6       2.7                    2700-4
          943.0     735.5     943.1     731.1     984.7     731.1        2700-5
          1035.5    731.1     1075.1    731.1     1075.2    735.5        2700-6
ENDTABLE                                                                 2700-7
SECTION      27.00                                                       2700-8
          0.00      745.0     1.00      729.4     58.0      729.3        2700-9
             64.00      729.32    100.00    729.22    200.00    729.13
            300.00      729.22    376.00    729.32    382.00    729.42
            400.00      729.52    500.00    729.92    600.00    730.72
            700.00      731.72    800.00    732.63    900.00    733.13
          938.0     734.3     938.1     735.5     943.0     735.5        2700-14
          943.2     729.1     950.0     729.4     959.0     728.0        2700-15
          967.0     725.5     976.0     724.7     984.0     722.2        2700-16
          985.5     721.6     993.0     720.4     1000.0    720.9        2700-17
          1011.0    721.5     1025.0    722.3     1034.7    722.4        2700-18
          1036.3    723.3     1042.0    722.9     1049.0    725.0        2700-19
          1060.0    728.5     1075.0    729.0     1075.2    735.5        2700-20
          1080.0    734.3     1125.0    732.9     1300.0    732.2        2700-21
          1500.0    731.0     1900.0    731.6     1901.0    745.0        2700-22
ENDTABLE
REACH     27.01     1.0       50.0      50.0                             2701-1
REACH 2   26.90     0.0                                                  2701-2
REACH     27.10     1.0       6430.0    3600.0                           2710-1
SEGMENT   27.10     1         N         803.0                            2710-2
N VALUE   0.20                                                           2710-3
SEGMENT   27.10     2         C         848.0                            2710-4
N VALUE   0.055                                                          2710-5
SEGMENT   27.10     3         N         3400.0                           2710-6
N VALUE   0.20                                                           2710-7
```

```
ECTION      27.10                                                          2710-8
              0.00     747.50    100.00    745.70    200.00    744.80
            266.00     743.80    314.00    730.20    400.00    729.40
            500.00     729.82    600.00    729.52    700.00    729.61
            800.00     729.02    803.00    728.68    810.00    727.98
            820.00     726.98    830.00    726.08    845.00    727.58
            848.00     729.68    900.00    729.39   1000.00    728.89
           1100.00     728.98   1200.00    728.18   1300.00    727.79
           1400.00     728.51   1500.00    728.51   1600.00    727.80
           1700.00     728.70   1800.00    728.40   1873.00    728.80
           1875.00     728.08   1889.00    726.88   1903.00    727.38
           1906.00     728.18   2000.00    728.18   2100.00    727.68
           2200.00     728.58   2300.00    728.18   2400.00    727.97
           2700.00     727.18   2733.00    728.18   2793.00    734.56
           2900.00     733.35   3000.00    734.45   3100.00    737.03
           3200.00     736.73   3300.00    738.03   3400.00    740.03
NDTABLE
EACH        27.90      1.0      4320.0     1680.0                          2790-1
EGMENT      27.90      1        N          1554.0                          2790-2
VALUE       0.20                                                           2790-3
EGMENT      27.90      2        C          1604.0                          2790-4
VALUE       0.055                                                          2790-5
EGMENT      27.90      3        N          2901.0                          2790-6
VALUE       0.20                                                           2790-7
ECTION      27.90                                                          2790-8
            0.0        752.8    100.0      748.8     200.0     743.6       2790-9
            281.0      730.4    300.0      728.5     400.0     730.6       790-10
            700.0      730.5    800.0      733.9     880.0     730.4       790-11
            900.0      729.7    1300.0     731.5     1500.0    731.0       790-12
            1552.0     731.1    1554.0     729.0     1564.0    727.8       790-13
            1574.0     728.3    1589.0     728.0     1604.0    728.9       790-14
            1607.0     731.5    1700.0     730.0     1900.0    729.2       790-15
            2000.0     730.1    2600.0     730.8     2715.0    730.8       790-16
            2800.0     731.9    2900.0     737.7     2901.0    752.0       790-17
NDTABLE                                                                    790-18
EACH        27.99      1.0      3360.0     2400.0                          2799-1
EACH 2      27.90      -1.6                                                2799-2
OAD         28.00      2.7      50.0       50.0                            2800-1
PR          28.00      A        3.0        7.0                             2800-2
PIER        727.5      2.5                                                 2800-3
IRDER       736.8      736.6    0.0        0.6       2.7                   2800-4
            -42.5      741.4    -42.4      736.6     0.0       736.5       2800-5
            64.0       736.4    64.1       741.2                           2800-6
NDTABLE                                                                    2800-7
ECTION      28.00                                                          2800-8
            -728.0     744.7    -700.0     744.3     -600.0    741.7       2800-9
            -500.0     740.7    -300.0     739.9     -200.0    739.5       800-10
            -107.0     739.2    -42.5      741.4     -42.3     728.1       800-11
            -35.0      727.6    -25.0      727.6     -5.0      727.6       800-12
            -1.3       727.9    1.3        728.6     5.0       729.0       800-13
            10.0       731.4    13.0       729.2     15.0      727.7       800-14
            25.0       725.8    30.0       725.3     40.0      726.1       800-15
            42.4       726.4    42.5       731.0     63.9      731.1       800-16
            64.1       741.2    100.0      740.3     100.1     738.5       800-17
            140.0      738.3    140.1      740.1     200.0     740.0       800-18
            300.0      739.8    400.0      739.4     400.0     737.4       800-19
            600.0      737.6    800.0      737.6     800.2     754.0       800-20
NDTABLE                                                                    800-21
EACH        28.10      1.0      100.0      100.0                           2810-1
EGMENT      28.10      1        N          657.0                           2810-2
```

```
NVALUE    0.20                                                          2810-3
SEGMENT   28.10     2          C          743.0                         2810-4
NVALUE    .055                                                          2810-5
SEGMENT   28.10     3          N          1900.1                        2810-6
NVALUE    0.20                                                          2810-7
SECTION   28.10                                                         2810-8
              0.00     744.47     100.00     743.28     160.00     739.88
            185.00     734.88     230.00     732.68     270.00     734.38
            290.00     732.38     400.00     733.08     500.00     732.08
            600.00     734.08     640.0      733.89     653.00     732.58
            657.00     730.28     660.0      728.68     674.00     729.78
            680.00     727.18     690.00     728.48     700.00     727.58
            710.00     726.98     720.00     726.18     730.00     726.58
            740.00     729.18     743.00     730.68     747.00     732.79
            800.00     732.79     900.0      731.00     1000.00    730.79
           1100.00     731.59    1200.00     731.90     1300.00    731.90
           1400.00     731.60    1440.00     731.40     1500.00    732.30
           1545.00     730.70    1600.00     732.40     1700.00    732.60
        1800.0     732.4      1900.0     733.0      1900.1     751.0      2810-21
ENDTABLE
REACH     28.14     1.0        960.0      480.0                         2814-1
REACH 2   28.10     0.0                                                  2814-2
SEGMENT   28.14     1          N          657.0                         2814-3
NVALUE    0.20                                                          2814-4
SEGMENT   28.14     2          C          743.0                         2814-5
NVALUE    .055                                                          2814-6
SEGMENT   28.14     3          N          1900.1                        2814-7
NVALUE    0.20      1.3        0.11                                     2814-9
REACH     28.17     1.0        880.0      480.0                         2817-1
REACH 2   28.31     0.0                                                  2817-2
SEGMENT   28.17     1          N          874.0                         2817-3
NVALUE    0.20                                                          2817-4
SEGMENT   28.17     2          C          918.0                         2817-5
NVALUE    .055                                                          2817-6
SEGMENT   28.17     3          N          2100.0                        2817-7
NVALUE    0.20                                                          2817-8
REACH     28.31     1.0        800.0      720.0                         2831-1
SEGMENT   28.31     1          N          874.0                         2831-2
NVALUE    0.20                                                          2830-3
SEGMENT   28.31     2          C          918.0                         2831-4
NVALUE    .055                                                          2830-5
SEGMENT   28.31     3          N          994.0                         2831-6
NVALUE    0.20                                                          2830-7
SEGMENT   28.31     4          N          1500.0                        2831-8
NVALUE    0.02                                                          2830-9
SEGMENT   28.31     5          N          2100.0                        2831-10
NVALUE    0.20                                                          2830-11
SECTION   28.31                                                         2831-12
              0.00     745.51     100.00     743.70     200.00     742.10
            226.00     741.70     284.00     733.01     300.00     732.60
            400.00     732.73     500.00     732.83     600.00     733.23
            700.00     733.43     800.00     733.43     872.00     733.14
            874.00     731.27     882.00     727.97     888.00     725.47
            902.00     725.27     916.00     728.47     918.00     733.07
            970.00     733.17     978.00     734.97     994.00     734.67
        1300.0     733.1      1500.0     733.0      1700.0     732.90     2830-20
           1800.00     733.81    1900.00     736.51     1971.00    737.21
           1994.00     748.01    2100.00     748.31
ENDTABLE
REACH     28.38     1.0        2880.0     2160.0                        2838-1
```

27 60 / 16 20

```
REACH 2    28.31      3.0
SEGMENT    28.38      1          N          874.0
NVALUE     0.20
SEGMENT    28.38      2          C          918.0
NVALUE     0.055
SEGMENT    28.38      3          N          2100.0
NVALUE     0.20
REACH      28.60      1.0        640.0      480.0
SEGMENT    28.60      1          N          616.0
NVALUE     0.20
SEGMENT    28.60      2          C          656.0
NVALUE     0.055
SEGMENT    28.60      3          N          1400.1
NVALUE     0.20
SECTION       28.60
                0.00     762.19     22.00     756.59    100.00    755.29
              200.00     754.19    300.00     753.59    400.00    749.59
              500.00     745.82    578.00     742.71    614.00    735.11
              616.00     733.20    627.00     730.90    637.00    729.00
              647.00     728.90    656.00     732.80    660.00    735.80
              700.00     736.20    800.00     735.70    900.00    736.00
             1000.00     735.81   1100.00     735.31   1200.00    735.81
           1300.0     734.8      1400.0     735.1      1400.1     753.0
ENDTABLE
COMPUTE    26.90      28.60      26.70
LINK
TITLE      FINAL TR20 DISCHARGES ------ TO BALL CREEK
CHANGE     DISCHARGE
DISCHARGE  -1.        1100.      2390.      3525.      4070.      5515.
END
REACH      28.90      1.0        960.0      880.0
SEGMENT    28.90      1          N          300.0
NVALUE     0.18       1.5        0.09
SEGMENT    28.90      2          N          379.0
NVALUE     0.20
SEGMENT    28.90      3          C          423.0
NVALUE     0.055
SEGMENT    28.90      4          N          700.0
NVALUE     0.20
SEGMENT    28.90      5          N          1200.1
NVALUE     0.20       1.3        0.10
SECTION       28.90
                0.00     746.42    100.00     744.21    200.00    742.92
              300.00     741.92    355.00     736.61    372.00    736.31
              379.00     732.21    385.00     730.92    390.00    730.61
              400.00     729.92    405.00     729.52    410.00    730.02
              415.00     731.11    423.00     732.81    427.00    736.11
              500.00     736.42    600.00     735.92    700.00    735.[illegible]
              800.00     735.92    900.00     736.21   1000.00    735.7[illegible]
           1100.0     736.4      1200.0     736.9      1200.1     746.0
ENDTABLE
ROAD       29.00      2.7        65.0       65.0
SPR        29.00      A          3.0
BORDER     741.0      740.8      15.0       0.6        2.7
           -20.5      746.9      -20.4      740.8      6.5        740.8
           33.5       740.5      33.6       746.6
ENDTABLE
SECTION    29.00
           -400.0     748.2      -300.0     746.6      -200.0     745.3
           -100.0     744.6      -88.5      744.5      -23.5      746.9
```

28

```
          -20.5     746.9     -20.3     731.3     -15.0     730.6      2900-10
          -10.0     729.7     0.0       729.6     10.0      730.0      2900-11
          20.0      730.3     27.0      730.2     33.4      731.1      2900-12
          33.5      746.6     36.1      746.6     101.0     743.8      2900-13
          200.0     743.5     300.0     743.3     400.0     743.1      2900-14
          500.0     742.8     600.0     742.5     700.0     742.2      2900-15
          800.0     741.9     1000.0    741.3     1001.0    750.0      2900-16
ENDTABLE                                                              2900-17
REACH     29.01     1.0       50.0      50.0                           2901-1
REACH 2   28.90     0.0                                               2901-2
REACH     29.10     1.0       2240.0    1760.0                         2910-1
SEGMENT   29.10     1         N         2208.0                         2910-2
NVALUE    0.20                                                        2910-3
SEGMENT   29.10     2         C         2240.0                         2910-4
NVALUE    .055                                                        2910-5
SEGMENT   29.10     3         N         3600.0                         2910-6
NVALUE    0.20                                                        2910-7
SECTION     29.10                                                     2910-8
             300.00    748.36    400.00    747.77    500.00    747.28
             600.00    747.07    700.00    744.88    800.00    743.57
             900.00    743.13   1000.00    740.33   1100.00    738.63
            1200.00    738.03   1300.00    737.33   1400.00    735.83
            1500.00    734.97   1600.00    734.57   1700.00    735.07
            1800.00    735.17   1900.00    734.86   2000.00    734.36
            2100.00    735.36   2200.00    734.47   2206.00    733.97
            2210.00    731.97   2220.00    730.27   2230.00    727.64
            2235.00    729.14   2240.00    730.14   2245.00    734.64
            2300.00    735.64   2400.00    735.84   2500.00    735.94
            2600.00    736.21   2700.00    736.60   2800.00    737.51
            2900.00    736.51   3000.00    737.01   3100.00    737.21
            3200.00    738.31   3300.00    737.60   3400.00    736.30
            3500.00    737.80   3563.00    751.10   3600.00    752.20
ENDTABLE
REACH     29.30     1.0       4320.0    2040.0                         2930-1
SEGMENT   29.30     1         N         2067.0                         2930-2
NVALUE    0.20                                                        2930-3
SEGMENT   29.30     2         C         2104.0                         2930-4
NVALUE    0.055                                                       2930-5
SEGMENT   29.30     3         N         3300.0                         2930-6
NVALUE    0.20                                                        2930-7
SECTION     29.30                                                     2930-7*
          999.0     748.0     1000.0    739.0     1100.0    739.1      2930-8
            1200.00    738.91   1300.00    738.41   1400.00    738.10
            1500.00    737.20   1600.00    737.13   1700.00    736.93
            1800.00    737.13   1900.00    737.13   2000.00    736.93
            2067.00    736.96   2070.00    734.85   2080.00    732.56
            2090.00    732.85   2100.00    735.16   2104.00    735.35
            2108.00    737.56   2200.00    737.16   2300.00    736.85
            2400.00    736.55   2500.00    736.76   2600.00    737.16
            2670.00    739.16   2700.00    739.95   2800.00    738.85
            2900.00    738.95   3000.00    740.26   3100.00    743.35
            3200.00    748.56   3300.00    750.46
ENDTABLE
REACH     29.32     1.0       590.0     510.0                          2932-1
REACH 2   29.30     0.0                                               2932-2
REACH     29.33     1.0       50.0      50.0                           2933-1
SEGMENT   29.33     1         N         2067.0                         2933-2
NVALUE    0.20                                                        2933-3
SEGMENT   29.33     2         C         2104.0                         2933-4
NVALUE    0.055                                                       2933-5
```

```
SEGMENT   29.33     3        N        2901.0                                  2933-5
VALUE     0.20                                                                2933-6
SECTION   29.33                                                               2933-7
          999.0     748.0    1000.0   745.5    2030.0   745.0                2933-8
          2067.0    737.0    2070.0   734.9    2080.0   732.8                2933-9
          2090.0    732.9    2100.0   735.2    2104.0   735.4                2933-10
          2140.0    745.0    2900.0   745.0    2901.0   750.0                2933-11
ENDTABLE                                                                      2933-12
REACH     29.49     1.0      50.      50.                                     2933-13
REACH2    29.50
REACH     29.50     1.0      6950.    2830.                                   2950-1
SEGMENT   29.50     1        N        3196.0                                  2950-2
VALUE     0.20                                                                2950-3
SEGMENT   29.50     2        C        3300.0                                  2950-4
VALUE     0.055                                                               2950-5
SEGMENT   29.50     3        N        3538.0                                  2950-6
VALUE     0.20                                                                2950-7
SECTION      29.50                                                            2950-8
             1200.00   749.93   1300.00  747.03   1400.00  746.28            2950-9
             1500.00   745.68   1600.00  745.08   1700.00  744.92
             1800.00   744.11   1900.00  742.22   2000.00  742.42
             2100.00   742.32   2200.00  741.95   2300.00  742.05
             2400.00   740.59   2500.00  740.09   2600.00  739.50
             2700.00   740.80   2800.00  740.09   2900.00  740.31
             3000.00   740.42   3100.0   739.81   3192.00  741.17
             3196.00   738.07   3208.00  737.77   3220.00  738.57
             3232.00   734.38   3248.00  736.17   3250.00  740.07
             3300.00   741.04   3400.00  743.34   3420.00  744.94
             3450.00   747.84   3500.00  748.54   3538.00  749.14
ENDTABLE
COMPUTE   28.90     29.50    28.60
TITLE     FINAL TR20 DISCHARGES ------ TO INDIAN LAKES ROAD
CHANGE    DISCHARGES
DISCHARGE -1.       1075.    2355.    3470.    4000.    5425.
END
REACH     29.70     1.0      6320.0   3600.0                                  2970-1
SEGMENT   29.70     1        N        2517.0                                  2970-2
VALUE     0.20                                                                2970-3
SEGMENT   29.70     2        C        2564.0                                  2970-4
VALUE     0.055                                                               2970-5
SEGMENT   29.70     3        N        4100.0                                  2970-6
VALUE     0.20                                                                2970-7
SECTION      29.70                                                            2970-8
             1200.00   752.80   1300.00  751.80   1400.00  752.15
             1500.00   751.75   1600.00  752.25   1700.00  751.65
             1800.00   750.75   1900.00  750.85   2000.00  749.25
             2100.00   748.25   2200.00  748.45   2300.00  748.75
             2325.00   743.21   2400.00  742.01   2500.00  742.71
             2515.00   742.11   2517.00  741.30   2530.00  738.10
             2540.00   739.40   2550.00  739.60   2560.00  739.70
             2564.00   741.90   2600.00  743.10   2700.00  742.64
             2800.00   743.33   2900.00  743.55   3000.00  742.95
             3100.00   743.25   3200.00  743.45   3267.00  744.76
             3272.00   742.26   3277.00  744.56   3300.00  744.56
             3400.00   744.66   3500.00  744.96   3600.00  745.46
             3700.00   745.16   3780.00  745.06   3900.00  746.36
             4000.00   746.72   4100.00  761.61
ENDTABLE
REACH     29.80     1.0      6000.0   2560.0                                  2980-1
SEGMENT   29.80     1        N        1766.0                                  2980-2
```

(173, N)

60
30
1800

35

```
NVALUE     0.20                                                          2960-3
SEGMENT    29.80     2         C         1834.0                          2980-4
NVALUE     0.055                                                         2980-5
SEGMENT    29.80     3         N         3800.0                          2980-6
NVALUE     0.20                                                          2980-7
SECTION      29.80                                                       2980-8
              900.00    756.72   1000.00    755.53   1100.00    755.03
             1200.00    754.82   1300.00    755.02   1328.00    754.92
             1370.00    745.92   1400.00    746.02   1500.00    745.61
             1600.00    745.11   1700.00    745.31   1766.00    746.11
             1772.00    743.58   1782.00    742.68   1802.00    742.68
             1814.00    743.28   1829.00    743.88   1834.00    745.97
             1900.00    745.18   2000.00    745.18   2100.00    744.78
             2300.00    745.13   2400.00    744.53   2500.00    744.63
             2600.00    744.63   2700.00    744.82   2800.00    744.78
             2900.00    745.28   3000.00    745.07   3017.00    745.17
             3056.00    751.28   3100.00    751.28   3200.00    750.28
             3300.00    749.77   3400.00    749.46   3500.00    747.86
             3600.00    750.57   3600.00    750.46   3733.00    760.36
             3800.00    760.06
ENDTABLE
COMPUTE    29.70     29.80     29.50
LINK
TITLE      FINAL TR20 DISCHARGES -------TO DUK CREEK
DISCHARGE  -1.       1065.     2290.     3350.     3865.     5245.
END
REACH      29.90     1.0       2720.0    2080.0                          2990-1
SEGMENT    29.90     1         N         570.0                           2990-2
NVALUE     0.20                                                          2990-3
SEGMENT    29.90     2         C         630.0                           2990-4
NVALUE     0.055                                                         2990-5
SEGMENT    29.90     3         N         1300.0                          2990-6
NVALUE     0.20                                                          2990-7
SECTION      29.90                                                       2990-8
                0.00    757.23     22.00    756.63     40.00    750.83
               50.00    750.53     56.00    747.63     70.00    747.33
               85.00    745.53    115.00    745.83    130.00    747.53
              200.00    747.53    300.00    746.83    365.00    746.03
              410.00    745.43    424.00    747.13    500.00    747.63
              550.00    748.13    566.00    748.23    570.00    744.83
              575.00    743.33    580.00    742.93    590.00    742.53
              600.00    741.23    610.00    739.23    615.00    740.23
              624.00    742.43    630.00    745.23    634.00    748.83
              642.00    749.43    660.00    751.03    700.00    751.43
              800.00    752.23    900.00    752.83   1000.00    752.33
             1100.00    753.23   1200.00    751.14   1300.00    757.94
ENDTABLE
ROAD       30.00     2.7       80.0      80.0                            3000-1
LFR        30.00     A         1.0       3.0                             3000-2
PIER       737.9     2.4                                                 3000-3
GIRDER     751.9     751.7     15.0      0.6       2.7                   3000-4
           -37.5     755.7     -37.4     751.5     4.5       751.7       3000-5
           46.5      751.9     46.4      756.1                           3000-6
ENDTABLE                                                                 3000-7
SECTION    30.00                                                         3000-8
           -1000.0   756.1     -900.0    754.9     -800.0    755.8       3000-9
           -760.0    755.9     -700.0    755.0     -600.0    752.6       3000-10
           -511.0    751.2     -500.0    751.1     -400.0    750.9       3000-11
           -300.0    750.9     -247.0    750.8     -200.0    750.6       3000-12
           -190.0    750.6     -100.0    752.8     -80.0     753.0       3000-13
```

```
          -37.5     755.7     -36.8     749.2     -33.5     749.1      3000-14
          -26.0     745.7     -20.0     742.7     -10.0     741.9      3000-15
          0.0       738.7     3.5       738.1     5.5       737.9      3000-16
          15.0      741.1     25.0      742.5     33.0      744.7      3000-17
          33.5      746.1     42.0      749.6     45.7      749.8      3000-18
          46.4      756.1     82.0      753.8     100.0     753.8      3000-19
          200.0     753.5     300.0     753.7     400.0     754.0      3000-20
          500.0     754.7     600.0     757.3                          3000-21
ENDTABLE                                                               3000-22
REACH     30.01     1.0       55.0      55.0                           3001-1
REACH 2   29.90     0.0                                                3001-2
REACH     30.10     1.0       9200.0    3440.0                         3010-1
SEGMENT   30.10     1         N         510.0                          3010-2
NVALUE    0.20                                                         3010-3
SEGMENT   30.10     2         C         548.0                          3010-4
NVALUE    0.055                                                        3010-5
SEGMENT   30.10     3         N         1301.0                         3010-6
NVALUE    0.20                                                         3010-7
SECTION      30.10                                                     3010-8
                0.00      762.88    100.00    761.07    200.00    759.27
              300.00      758.33    400.00    758.73    424.00    757.94
              451.00      749.94    510.00    749.54    512.00    746.33
              520.00      745.94    530.00    746.54    548.00    748.73
              553.00      749.83    600.00    749.23    700.00    749.33
              800.00      748.89    900.00    750.29    932.00    750.09
              936.00      749.49    947.00    748.29    956.00    748.89
              969.00      749.69    974.00    750.49   1000.00    750.19
             1100.00      749.19   1200.00    750.60   1300.00    750.21
          1301.0    760.0                                            3010-17
ENDTABLE
REACH     30.50     1.0       4720.0    2000.0                         3050-1
SEGMENT   30.50     1         N         1290.0                         3050-2
NVALUE    0.20                                                         3050-3
SEGMENT   30.50     2         C         1335.0                         3050-4
NVALUE    0.055                                                        3050-5
SEGMENT   30.50     3         N         1470.0                         3050-6
NVALUE    0.20                                                         3050-7
SECTION      30.50                                                     3050-8
                0.00      765.16    100.00    763.45    144.00    751.55
              200.00      752.66    300.00    752.17    400.00    751.97
              500.00      751.87    600.00    751.77    700.00    751.77
              800.00      751.77    900.00    751.02   1000.00    751.13
             1100.00      751.13   1200.00    751.63   1290.00    752.13
             1297.00      748.13   1308.00    748.13   1320.00    747.72
             1329.00      748.92   1335.00    749.53   1340.00    750.32
             1400.00      751.32   1425.00    753.63   1470.00    765.42
ENDTABLE
REACH     30.55     1.0       3520.0    1760.0                         3055-1
REACH2    30.50     0.
COMPUTE   29.90     30.55     29.80
TITLE     FINAL TR20 DISCHARGES ------ TO 18-MILE ROAD
CHANGE    DISCHARGE
DISCHARGE -1.       810.      1780.     2585.     2980.     4030.
END
REACH     30.57     1.0       2080.0    1120.0                         3057-1
REACH2    30.50     2.5
COMMENT   F. P. LENGTH TO CHANNEL LENGTH RATIO CHANGES                 3057-2
REACH     30.90     1.0       3120.0    1120.0                         3090-1
SEGMENT   30.90     1         N         532.0                          3090-2
NVALUE    0.20                                                         3090-3
```

```
SEGMENT   30.90     2         C         571.0                                  3090-3
NVALUE    .055                                                                 3090-4
SEGMENT   30.90     3         N         607.0                                  3090-5
NVALUE    0.18                                                                 3090-6
SEGMENT   30.90     4         N         850.0                                  3090-7
NVALUE    0.18      1.3       0.08                                             3090-8
SECTION      30.90                                                             3090-9
                                                                               3090-10
             0.00    767.18    13.00    766.18    25.00    765.08
            50.00    759.08    70.00    755.08   150.00    755.89
           250.00    755.98   350.00    756.68   450.00    755.68
           500.00    756.68   527.00    756.68   532.00    752.34
           537.00    750.14   542.00    748.34   550.00    747.14
      558.        748.44    567.        751.34    571.        754.24
           572.00    757.64   586.00    758.24   607.00    762.24
           650.00    764.14   703.00    766.04   713.00    767.84
           750.00    769.94   850.00    773.04
ENDTABLE
ROAD      31.00     2.7       60.0      60.0                                   3100-1
CFR       31.00     8         3.0                                              3100-2
GIRDER    760.2     760.1     0.0       0.6       2.7                          3100-3
          -22.6     768.1     -22.5     760.1     0.0       760.1              3100-4
          22.5      760.1     22.6      768.1                                  3100-5
ENDTABLE                                                                       3100-6
SECTION   31.00                                                                3100-7
          -1000.0   762.9     -900.0    763.0     -800.0    762.7              3100-8
          -700.0    762.3     -600.0    762.2     -500.0    761.9              3100-9
          -453.0    761.9     -400.0    761.9     -300.0    762.2              3100-10
          -200.0    762.7     -110.0    763.2     -25.1     767.4              3100-11
          -25.0     768.1     -22.6     768.1     -22.4     755.3              3100-12
          -15.0     754.1     -8.0      753.1     0.0       752.2              3100-13
          7.0       751.9     15.0      752.7     22.4      755.6              3100-14
          22.6      768.1     25.0      768.1     25.1      767.4              3100-15
          110.0     764.1     200.0     765.3     300.0     767.9              3100-16
          400.0     770.5     425.0     771.2                                  3100-17
ENDTABLE                                                                       3100-18
REACH     31.01     1.0       55.0      55.0                                   3101-1
REACH 2   30.90     0.0                                                        3101-2
REACH     31.10     1.0       3220.0    2660.0                                 3110-1
SEGMENT   31.10     1         N         1403.0                                 3110-2
NVALUE    0.20                                                                 3110-3
SEGMENT   31.10     2         C         1438.0                                 3110-4
NVALUE    0.055                                                                3110-5
SEGMENT   31.10     3         N         1611.0                                 3110-6
NVALUE    0.15                                                                 3110-7
SECTION      31.10                                                             3110-8
             0.00    772.14   100.00    772.34   200.00    772.64
           300.00    771.24   400.00    770.64   500.00    770.84
           600.00    770.84   622.00    769.90   665.00    759.70
           700.00    758.50   795.00    757.09   900.00    758.01
          1000.00    757.31  1100.00    756.61  1200.00    756.61
          1300.00    756.01  1400.00    757.81  1403.00    755.41
          1417.00    754.01  1428.00    752.71  1438.00    755.11
          1440.00    757.41  1500.00    756.51  1548.00    757.91
          1611.00    772.61
ENDTABLE
REACH     31.90     1.0       5040.0    3520.0                                 3190-1
SEGMENT   31.90     1         N         433.0                                  3190-2
NVALUE    0.20                                                                 3190-3
SEGMENT   31.90     2         C         470.0                                  3190-4
NVALUE    0.055                                                                3190-5
```

```
SEGMENT   31.90     3          N          700.0                                  3190-6
VALUE     0.20                                                                    3190-7
SECTION     31.90                                                                 3190-8
              0.00     772.04     14.00     770.64     53.00     760.54
            150.00     759.94    250.00     759.94    350.00     759.54
            400.00     760.24    426.00     760.65    433.00     757.65
            438.00     756.55    445.00     755.85    450.00     755.05
            455.00     755.05    465.00     755.65    470.00     757.55
            474.00     760.55    500.00     760.45    550.00     759.45
            600.00     761.65    644.00     779.67    700.00     781.07
ENDTABLE
ROAD      32.00      2.7        50.0       50.0                                  3200-1
SPR       32.00      8          3.0        1.0                                   3200-2
PIER      756.0      0.7                                                         3200-3
GIRDER    763.6      763.4      0.0        0.6        2.7                        3200-4
          -22.9      768.1      -22.8      763.3      0.0        763.4           3200-5
          22.5       763.4      22.6       768.1                                 3200-6
ENDTABLE                                                                         3200-7
SECTION   32.00                                                                  3200-8
          -600.0     772.3      -500.0     768.6      -400.0     764.8           3200-9
          -300.0     763.6      -200.0     763.7      -100.0     764.1           3200-10
          -23.0      764.8      -22.9      768.1      -22.7      757.6           3200-11
          -15.0      755.6      -7.0       756.1      0.0        757.1           3200-12
          6.0        756.8      14.0       754.50     22.5       756.8           3200-13
          22.6       766.1      23.5       765.0      100.0      766.8           3200-14
          150.0      769.2      200.0      772.2                                 3200-15
ENDTABLE                                                                         3200-16
REACH     32.01      1.0        100.0      100.0                                 3201-1
 EACH 2   31.90      0.0                                                         3201-2
COMPUTE   30.57      32.01      30.55
ENDJOB
ENDRUN
/*
//
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
WSP2      10.                                                                  R0
TITLE     ROGUE RIVER FLOOD HAZARD STUDY, KENT CO. MICH. 7/17/81
TITLE     FINAL TR20 DISCHARGES ----- GRAND RIVER TO CHILDSDALE DAM
DISCHARGE -1.       1105.     2295.     3315.     3835.     5140.
STARTS    9.29      .00175    .00175    .00175    .00175    .00175
TRIB      14.00     18.01     19.70     25.01     26.70     28.60
TRIB      29.50     29.80     30.55
OUTPUT    SK                                                                    6
REACH     9.29      1.0       0.0       0.0                                  9291
REACH 2   9.30      0.0                                                        9293
REACH     9.30      1.0       200.0     200.0                                9301
SEGMENT   9.30      1         N         913.00                               9302
VALUE     0.075                                                              9303
SEGMENT   9.30      2         C         1123.00                              9304
VALUE     .06       2.5       .04       6.        .03                        9305
SEGMENT   9.30      3         N         2301.00                              9306
VALUE     0.080                                                              9306
SECTION       9.30                                                         9300-7
          399.0     640.0     399.5     625.0     400.0     617.64          9300-8
              500.00    616.53    600.00    615.93    700.00    616.64
              800.00    617.05    900.00    617.26    913.00    617.45
              933.00    609.85   1000.00    608.45   1012.00    605.26
             1020.00    604.95   1040.00    604.65   1060.00    604.35
             1080.00    604.05   1090.00    604.45   1100.00    605.15
             1105.00    605.85   1123.00    613.15   1200.00    611.53
             1300.00    611.64   1400.00    613.33   1500.00    611.83
             1600.00    611.67   1700.00    609.78   1800.00    610.38
             1900.00    609.78   2000.00    608.48   2100.00    611.89
          2200.0    614.39    2300.0    616.18    2301.0    635.0          9300-18
ENDTABLE                                                                     93019
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 9.30   EXCEEDS  10. FEET-------------
REACH     9.90      1.0       2335.0    1400.0                               9901
SEGMENT   9.90      1         N         1800.0                               9902
VALUE     0.09      1.3       0.07                                           9903
SEGMENT   9.90      2         N         1955.0                               9904
VALUE     0.08                                                               9905
SEGMENT   9.90      3         C         2045.0                               9906
VALUE     .06       2.5       .04       6.        .03                        9907
SEGMENT   9.90      4         N         2200.0                               9908
VALUE     0.10                                                               9909
SEGMENT   9.90      5         N         3201.0                              99010
VALUE     0.09      1.3       0.05                                          99011
SECTION       9.90                                                        9900-12
          699.0     634.0     700.0     615.86    800.0     616.76         9900-13
              900.00    616.86   1000.00    616.26   1100.00    616.56
             1200.00    616.16   1300.00    616.26   1400.00    616.81
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
            1500.00    617.11    1600.00    616.41    1650.00    620.41
            1700.00    620.31    1800.00    616.21    1900.00    615.21
            1955.00    611.21    1960.00    609.10    1970.00    608.00
            1979.00    607.20    1988.00    607.80    2000.00    608.40
            2016.00    608.00    2030.00    607.90    2040.00    608.80
            2044.00    609.20    2045.00    611.50    2100.00    615.40
            2200.00    618.90    2300.00    618.40    2400.00    617.00
            2500.00    615.30    2600.00    617.33    2720.00    620.64
            2800.00    617.33    2900.00    616.14    3000.00    617.64
        3100.0     618.83     3200.0     619.14     3201.0     634.0          9900-25
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 9.90   EXCEEDS  10. FEET-------------
ROAD      10.00      2.7        65.0       65.0                                 10001
DR        10.00      A          3.0        7.0                                 1000-2
RIER      609.7      4.4        608.4      4.4                                  10003
GIRDER    619.1      618.9      30.0       0.6        2.7                       10004
        -- 951.1      626.4      951.2      618.9      1104.2     618.9          10005
        -- 1104.3     626.4                                                     10006
ENDTABLE                                                                        10007
SECTION     10.00                                                              1000-8
        0.00       627.0      1.00       620.63     100.0      620.32          10009
            200.00     620.03     300.00     620.13     400.00     620.32
            500.00     620.92     600.00     621.41     700.00     621.81
            800.00     622.31     900.00     622.41     951.00     623.10
        -- 951.1      626.4      955.6      609.9      965.0      608.8          100013
        980.0      608.5      990.0      608.1      996.0      607.2           100014
        1000.0     607.5      1000.5     611.8      1005.5     611.8           100015
        1017.0     611.9      1035.0     610.6      1043.0     608.8           100016
        1050.0     608.2      1056.0     608.4      1061.0     608.8           100017
        1076.0     608.1      1090.0     609.0      1099.8     609.5           100018
        -- 1104.3     626.4      1105.0     623.19     1200.0     621.99          100019
            1300.00    621.59     1400.00    620.99     1500.00    620.49
            1600.00    620.11     1700.00    620.01     1800.00    620.61
        1900.0     620.91     2000.0     621.21     2001.0     627.0           100022
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 10.00  EXCEEDS  10. FEET-------------
REACH     10.01      1.0        50.0       50.0                                 10011
REACH 2   9.90       0.0                                                        10012
REACH     10.04      1.0        1070.0     890.0
REACH 2   9.90       +2.8
REACH     10.10      1.0        880.0      860.0                                10101
SEGMENT   10.10      1          N          265.0                                10102
N VALUE   0.08       2.0        0.05                                            1010-3
SEGMENT   10.10      2          C          350.0                                10104
N VALUE   .06        2.5        .04        6.         .03                       10105
SEGMENT   10.10      3          N          600.0                                10106
N VALUE   0.10                                                                  10107
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
SECTION      10.10                                                        -010-8
                0.00     632.04     80.00     620.23    100.00     619.73
              200.00     619.04    250.00     616.44    265.00     613.73
              270.00     613.34    280.00     612.64    290.00     612.84
              300.00     612.44    310.00     612.34    320.00     612.23
              330.00     613.23    340.00     613.34    344.00     613.14
              350.00     617.73    400.00     617.23    500.00     617.73
              517.00     613.34    573.00     625.84    588.00     627.94
              600.00     630.44
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 10.10  EXCEEDS  10. FEET-------------
REACH      10.13      1.0        800.0      680.0                                  10131
REACH 2    10.10      +2.1                                                         10132
REACH      10.90      1.0        480.0      480.0                                  10901
SEGMENT    10.90      1          N          200.0                                  10902
NVALUE     0.10                                                                    10903
SEGMENT    10.90      2          N          500.0                                  10904
NVALUE     0.09       1.3        0.07                                              10905
SEGMENT    10.90      3          N          1025.0                                 10906
NVALUE     0.15                                                                    10907
SEGMENT    10.90      4          C          1135.0                                 10908
NVALUE     .06        2.5        .04        6.         .03                         10909
SEGMENT    10.90      5          N          1165.0                                 109010
NVALUE     0.12                                                                    109011
SECTION      10.90                                                        1090-12
                0.00     641.70     35.00     624.20     50.00     623.20
               70.00     619.70    100.00     620.10    200.00     620.81
              300.00     622.83    400.00     622.03    500.00     621.23
              600.00     622.13    652.00     619.53    677.00     617.50
              684.00     616.80    692.00     618.00    700.00     619.90
              800.00     619.70    900.00     620.59   1000.00     619.70
             1025.00     620.58   1030.00     617.08   1040.00     616.58
             1060.00     616.48   1080.00     616.78   1100.00     616.48
             1120.00     615.78   1130.00     616.39   1135.00     617.39
             1160.00     630.28   1165.00     633.39
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 10.90  EXCEEDS  10. FEET-------------
REACH      10.93      1.0        130.0      130.0                                  10931
REACH 2    10.90      0.0                                                          10932
ROAD       11.00      2.60       50.0       50.0                                   11001
DPR        11.00      A          I,0        3.0                                    11002
PIER       615.3      2.3        616.9      2.3                                    11003
GIRDER     629.0      626.8      28.0       0.6        2.6                         11004
           1317.7     629.8      1317.9     625.2      1464.9     630.0            11005
           1471.7     634.6                                                        11006
ENDTABLE                                                                           11007
SECTION      11.00                                                        1100-8
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
          0.00      639.0     1.0       629.57    100.0     628.27          11009
              200.00    626.97    300.00    626.27    400.00    625.17
              500.00    624.29    559.00    623.79    566.00    623.79
              572.00    623.69    600.00    623.19    700.00    622.69
              800.00    622.79    900.00    622.79   1000.00    623.09
          1100.00   623.69    1200.0    624.58    1277.0    626.5          110014
          1317.7    629.8     1320.5    623.3     1323.9    623.1          110015
          1339.0    616.9     1342.0    616.1     1358.0    615.7          110016
          1369.0    614.9     1385.0    614.2     1397.0    615.1          110017
          1415.0    616.5     1419.0    617.3     1438.0    618.1          110018
          1461.0    628.0     1464.0    628.1     1471.7    634.6          110019
          1512.0    633.7     1550.0    635.8                              110020
ENDTABLE
REACH     11.01     1.0       50.0      50.0                                11011
REACH 2   10.90     0.0                                                     11012
REACH     A-11.01   1.0       400.      400.                                   R1
REACH 2   10.90     0.5                                                        R2
REACH     11.02     1.0       300.0     100.0                                  R3
SEGMENT   11.02     1         N         -29.0                                  R4
NVALUE    0.09                                                                 R5
SEGMENT   11.02     2         C         35.0                                   R6
NVALUE    .06       2.5       .04       6.        .03                          R7
SEGMENT   11.02     3         N         190.0                                  R8
NVALUE    0.09                                                                 R9
SECTION   11.02                                                               R10
          -780.     638.00    -720.     623.80    -680.     623.80          R10A
          -580.     623.40    -480.     624.20    -380.     624.20           R11
          -280.     624.00    -180.     625.60    -80.      625.50           R12
          -29       624.20    -20.      617.20    -10.      616.80           R13
          0.        616.00    20.       616.80    29.       619.00           R14
          35.       624.00    120.      623.30    140.      623.50           R15
          190.      640.00                                                   R16
ENDTABLE                                                                     R17
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 11.02  EXCEEDS  10. FEET------------
REACH     11.03     1.0       290.0     290.0                                 R18
REACH 2   10.90     +1.0                                                    11032
REACH     11.05     1.0       450.      450.                                  R19
REACH 2   10.90     1.50                                                      R20
REACH     11.06     1.0       100.      100.                                  R21
SEGMENT   11.06     1         N         746.0                                 R22
NVALUE    0.09                                                                R23
SEGMENT   11.06     2         C         820.0                                 R24
NVALUE    .06       2.5       .04       6.        .03                         R25
SEGMENT   11.06     3         N         970.0                                 R26
NVALUE    0.09                                                                R27
SECTION   11.06                                                               R28
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
          0.        637.90    60.       623.70    100.      623.60          R29
          200.      624.20    300.      626.10    400.      625.20          R30
          500.      624.60    600.      623.80    700.      624.60          R31
          746.      624.80    750.      622.90    760.      620.00          R32
          780.      618.60    800.      619.20    810.      619.80          R33
          820.      623.50    900.      622.90    918.      623.80          R34
          970.      640.00                                                  R35
ENDTABLE                                                                   R35A
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 11.06  EXCEEDS  10. FEET-------------
REACH     11.10     1.0       550.0     400.0                              11101
SEGMENT   11.10     1         N         100.0                              11102
NVALUE    0.09      1.3       0.07                                         11103
SEGMENT   11.10     2         N         200.0                              11104
NVALUE    0.09                                                             11105
SEGMENT   11.10     3         N         500.0                              11106
NVALUE    0.09      1.3       0.07                                         11107
SEGMENT   11.10     4         N         746.0                              11108
NVALUE    0.15                                                             11109
SEGMENT   11.10     5         C         833.0                             111010
NVALUE    .06       2.5       .04       6.        .03                     111011
SEGMENT   11.10     6         N         1000.0                            111012
NVALUE    0.09                                                            111013
SECTION      11.10                                                       1110-14
              0.00     637.93     60.00     623.72    100.00    623.63
            200.00     624.22    300.00     626.13    400.00    625.22
            500.00     624.63    600.00     623.77    700.00    624.56
            746.00     624.36    750.00     621.17    760.00    619.96
            780.00     618.56    800.00     619.17    810.00    619.77
            820.00     620.36    830.00     621.27    833.00    623.46
            900.00     622.86    918.00     623.77    970.00    639.96
           1000.00     642.06
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 11.10  EXCEEDS  10. FEET-------------
REACH     11.13     1.0       800.0     660.0                              11131
REACH 2   11.10     +1.1                                                   11132
REACH     11.60     1.0       1360.0    1280.0                             11601
SEGMENT   11.60     1         N         377.0                              11602
NVALUE    0.09                                                             11603
SEGMENT   11.60     2         C         477.0                              11604
NVALUE    .06       2.5       .04       6.        .03                     11605
SEGMENT   11.60     3         N         700.0                              11606
NVALUE    0.09      1.3       0.07                                         11607
SEGMENT   11.60     4         N         901.0                              11608
NVALUE    0.15                                                             11609
SECTION      11.60                                                       1160-10
              0.00     644.19     46.00     630.79    100.00    629.69
            200.00     629.09    300.00     630.09    377.00    627.48
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
              380.00    625.06    390.00    623.56    400.00    623.77
              420.00    622.66    440.00    621.96    450.00    622.16
              460.00    622.56    470.00    623.86    472.00    625.06
              477.00    627.77    500.00    629.66    600.00    630.06
              700.00    627.96    800.00    629.19    900.00    629.57
          901.00    646.0                                                116019
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 11.60  EXCEEDS  10. FEET-------------
REACH     11.63     1.0       800.0     800.0                            11631
REACH 2   11.60     +1.0                                                 11632
REACH     11.81     1.0       930.      800.                               R36
REACH 2   11.90     -0.50                                                  R37
REACH     11.83     1.0       100.      100.                               R38
SEGMENT   11.83     1         N         260.                               R39
N VALUE   0.09                                                             R40
SEGMENT   11.83     2         C         330.0                              R41
N VALUE   .06       2.5       .04       6.        .03                      R42
SEGMENT   11.83     3         N         890.                               R43
N VALUE   0.09                                                             R44
SECTION   11.83                                                            R45
          0.        640.00    20.       632.00    190.      631.00         R46
          250.      631.00    260.      627.80    290.      624.80         R47
          300.      624.30    310.      625.00    325.      626.00         R48
          330.      628.10    350.      629.20    360.      631.50         R49
          440.      632.00    590.      632.00    690.      631.00         R50
          790.      631.00    890.      632.40    970.      636.10        R51.1
ENDTABLE                                                                   R51A
REACH     11.90     1.0       810.      700.                               R52
SEGMENT   11.90     1         N         188.0                             11902
N VALUE   0.15                                                            11903
SEGMENT   11.90     2         C         300.0                             11904
N VALUE   .06       2.5       .04       6.        .03                     11905
SEGMENT   11.90     3         N         730.0                             11906
N VALUE   0.10                                                            11907
SEGMENT   11.90     4         N         1306.0                            11908
N VALUE   0.15                                                            11909
SECTION      11.90                                                        90-10
              0.00    641.22     17.00    633.42    130.00    631.22
            188.00    633.32    200.00    628.72    210.00    627.22
            220.00    626.42    230.00    625.52    240.00    625.22
            250.00    626.32    263.00    627.52    269.00    628.63
            272.00    629.82    300.00    630.32    311.00    633.63
            330.00    634.02    430.00    633.31    530.00    633.31
            630.00    632.61    730.00    632.21    830.00    633.44
            930.00    637.75   1030.00    636.44   1130.00    632.95
           1230.00    638.51   1306.00    640.51
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
ENDTABLE
ROAD      12.00     2.7       50.0      50.0                                12001
BPR       12.00     A         3.0       3.0                                 12002
PIER      625.3     2.7       628.1     2.7                                 12003
GIRDER    636.8     636.7     0.0       0.6       2.7                       12004
          270.00    640.3     270.5     636.1     312.0     636.3           1200-5
          356.0     636.6     397.5     636.8     398.0     641.0           1200-6
ENDTABLE                                                                    12007
SECTION      12.00                                                         1200-8
          0.0       650.0     1.0       644.7     34.0      642.6           12009
          134.0     639.4     170.0     639.0     270.0     640.3           120010
          271.0     634.5     273.0     634.1     280.0     630.1           120011
          285.0     629.5     291.0     627.9     303.0     625.6           120012
          317.0     625.1     331.0     625.9     343.0     627.3           120013
          354.0     627.8     377.0     628.7     387.0     629.7           120014
          395.0     633.2     397.0     633.2     398.0     641.0           120015
          433.0     638.1     433.5     638.0     434.0     637.8           120016
              534.00    636.83    634.00    635.50    734.00    635.59
              834.00    635.79    934.00    635.79   1034.00    635.79
             1134.00    635.90   1234.00    635.79   1334.00    635.69
          1550.0    636.2     1550.1    650.0                               120020
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 12.00  EXCEEDS  10. FEET-------------
REACH     12.03     1.0       50.0      50.0                                12031
REACH 2   12.10     0.0                                                     12032
REACH     12.10     1.0       1110.0    1100.0                              12101
SEGMENT   12.10     1         N         438.0                               12102
N VALUE   0.12                                                              12103
SEGMENT   12.10     2         C         538.0                               12104
N VALUE   .06       2.5       .04       6.        .03                       12105
SEGMENT   12.10     3         N         985.0                               12106
N VALUE   0.12                                                              12107
SECTION      12.10                                                         1210-8
             0.00    644.72     85.00    633.83    185.00    632.93
           285.00    633.53    385.00    634.43    438.00    635.30
           445.00    630.90    450.00    628.80    455.00    628.20
           470.00    627.01    485.00    628.30    495.00    627.38
           505.00    628.18    515.00    629.68    525.00    630.97
           532.00    633.57    538.00    636.18    545.00    633.68
           585.00    633.88    635.00    636.18    685.00    635.47
           785.00    640.55    885.00    642.35    985.00    644.35
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 12.10  EXCEEDS  10. FEET-------------
REACH     12.13     1.0       1240.0    1120.0                              12131
REACH 2   12.10     +2.8                                                    12132
REACH     12.30     1.0       1120.0    960.0                               12301
SEGMENT   12.30     1         N         62.0                                12302
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
.VALUE    0.12                                                          12303
SEGMENT   12.30     2         C         160.0                           12304
.VALUE    0.06      2.5       .04       6.0       .03                   12305
SEGMENT   12.30     3         N         500.0                           12306
.VALUE    0.15                                                          12307
SECTION      12.30                                                     1230-8
              0.00    653.65     10.00    648.75     35.00    648.75
             55.00    638.15     62.00    633.85     63.00    633.45
             70.00    632.35     90.00    632.05    110.00    632.45
            130.00    632.95    140.00    633.05    150.00    633.25
            160.00    633.65    167.00    638.95    200.00    639.75
            300.00    641.85    400.00    646.75    500.00    647.75
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 12.30  EXCEEDS  10. FEET-------------
REACH     12.33     1.0       840.0     800.0                           12331
REACH 2   12.30     +0.6                                              12332
REACH     12.50     1.0       720.0     480.0                           12501
SEGMENT   12.50     1         N         880.0                           12502
.VALUE    0.12                                                          12503
SEGMENT   12.50     2         C         930.0                           12504
.VALUE    .04       2.5       .04       6.        .03                   12505
SEGMENT   12.50     3         N         983.0                           12506
.VALUE    0.12                                                          12507
SECTION      12.50                                                     1250-8
              0.00    657.85     67.00    653.65    100.00    648.75  1250-9
            200.00    646.25    300.00    643.45    400.00    643.35
            500.00    642.83    600.00    641.43    700.00    643.33
            800.00    642.22    823.00    642.83    867.00    638.29
            870.00    636.18    880.00    634.18    890.00    633.58
            900.00    633.39    913.00    634.58    927.00    634.48
            930.00    636.08    933.00    636.39    983.00    656.98
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 12.50  EXCEEDS  10. FEET-------------
COMMENT   20 FT NOTE IS DUE TO SIDEBOARD                            1250-17
REACH     12.57     1.0       2400.0    1760.0                          12571
REACH 2   12.50     +8.2                                              12572
REACH     12.70     1.0       2080.0    1840.0                          12701
SEGMENT   12.70     1         N         355.0                           12702
.VALUE    0.15                                                          12703
SEGMENT   12.70     2         C         485.0                           12704
.VALUE    .06       2.5       .04       6.        .03                   12705
SEGMENT   12.70     3         N         520.0                           12706
.VALUE    0.09                                                          12707
SECTION      12.70                                                     1270-8
              0.00    665.53    100.00    661.64    200.00    655.43
            300.00    654.43    344.00    654.93    355.00    650.03
            365.00    649.64    375.00    649.23    395.00    648.53
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
                415.00    648.83    435.00    648.93    445.00    648.93
                455.00    648.93    465.00    648.73    475.00    649.43
                485.00    650.03    490.00    656.23    520.00    671.23
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 12.70  EXCEEDS  10. FEET-------------
REACH     12.79     1.0       800.0     760.0                                  12791
REACH 2   12.70     +2.06                                                      12792
REACH     12.90     1.0       960.0     800.0                                  12901
SEGMENT   12.90     1         N         26.0                                   12902
.VALUE    0.10                                                                 12903
SEGMENT   12.90     2         C         104.0                                  12904
N VALUE   .06       2.5       .04       6.        .03                          12905
SEGMENT   12.90     3         N         519.0                                  12906
N VALUE   0.15                                                                 12907
SECTION     12.90                                                             1290-8
                0.00    668.21      7.00    663.52     22.00    655.61
               26.00    654.02     32.00    652.52     38.00    652.42
               42.00    653.11     51.00    653.32     58.00    653.42
               64.00    652.82     74.00    652.52     85.00    652.52
               94.00    653.21    104.00    654.61    116.00    658.20
              169.00    659.59    269.00    660.50    369.00    661.80
              469.00    666.20    519.00    670.09
ENDTABLE
ROAD      13.00     2.6       85.0      85.0                                   13001
DFR       13.00     A         1.0       3.0                                    13002
PIER      656.8     2.7       652.0     2.7                                    13003
GIRDER    672.5     672.3     0.0       0.6       2.6                          13004
          36.0      678.8     36.5      674.3     79.0      671.7              13005
          122.0     669.1     162.5     666.6     163.0     671.1             1300-6
ENDTABLE                                                                       13007
SECTION     13.00                                                             1300-8
          0.00      678.56    35.9      676.46    36.0      678.8              13009
          37.5      671.4     40.0      671.4     69.0      659.4             130010
          75.0      658.3     80.0      653.7     85.0      652.5             130011
          90.0      652.3     109.0     652.0     114.0     652.3             130012
          120.0     652.4     123.5     652.6     128.0     653.2             130013
          136.0     655.9     141.0     658.1     160.0     663.9             130014
          162.5     663.9     163.0     671.1     163.1     668.69            130015
          163.5     668.67    164.0     668.66    200.0     667.16            130016
              217.00    666.56    300.00    664.46    400.00    665.26
              500.00    670.36    565.00    676.56
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 13.00  EXCEEDS  10. FEET-------------
REACH     13.01     1.0       100.0     100.0                                  13011
SEGMENT   13.01     1.0       N         -43.0                                  13012
N VALUE   0.10                                                                 13013
SEGMENT   13.01     2.0       C         35.0                                   13014
```

----------80/80 LIST OF INPUT DATA----------

```
NVALUE    .06       2.5       .04       6.        .03                         13015
SEGMENT   13.01     3.0       N         280.0                                 13016
 VALUE    0.12                                                                13017
SECTION   13.01                                                               13018
          -69.0     668.2     -62.0     663.5     -47.0     655.6             13019
          -43.0     654.0     -37.0     652.5     -31.0     652.42           130110
          -27.0     653.11    -18.0     653.3     -11.0     653.4            130111
          -5.0      652.8     5.0       652.5     16.0      652.5            130112
          25.0      653.2     35.0      654.6     47.0      658.2            130113
          60.0      665.1     110.0     666.5     280.0     668.3            130114
ENDTABLE                                                                      130115
REACH     13.04     1.0       200.0     200.0                                  13041
SEGMENT   13.04     1         N         -43.0                                  13042
NVALUE    0.12                                                                13043
SEGMENT   13.04     2         C         -17.0                                  13044
NVALUE    .06       2.5       .04       6.        .03                         13045
SEGMENT   13.04     3         N         55.0                                   13046
NVALUE    0.10                                                                13047
SEGMENT   13.04     4         C         95.0                                   13048
NVALUE    .06       2.5       .04       6.        .03                         13049
SEGMENT   13.04     5         N         122.0                                 130410
NVALUE    0.12                                                               130411
SECTION   13.04                                                              130412
          -69.0     669.3     -62.0     664.5     -47.0     656.7            130413
          -43.0     655.1     -37.0     653.6     -21.0     653.5            130414
          -17.0     654.2     8.0       654.4     43.0      654.5            130415
          55.0      653.8     65.0      653.6     76.0      653.6            130416
          85.0      654.3     95.0      655.7     107.0     659.2            130417
          122.0     667.3                                                    130418
ENDTABLE                                                                     130419
REACH     13.09     1.0       200.0     200.0                                  13091
SEGMENT   13.09     1         N         -43.0                                  13092
NVALUE    0.12                                                                13093
SEGMENT   13.09     2         C         0.0                                    13094
NVALUE    .06       2.5       .04       .6        .03                         13095
SEGMENT   13.09     3         N         100.0                                  13096
NVALUE    0.10                                                                13097
SEGMENT   13.09     4         C         190.0                                  13098
NVALUE    .06       2.5       .04       6.        .03                         13099
SEGMENT   13.09     5         N         237.0                                 130910
NVALUE    0.12                                                               130911
SECTION   13.09                                                              130912
          -69.0     670.2     -62.0     665.5     -47.0     657.6            130913
          -43.0     656.0     -37.0     654.5     -7.0      654.4            130914
          0.0       655.1     40.0      655.3     90.0      655.4            130915
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
          100.0     654.8     120.0     654.5     170.0     654.5          130916
          190.0     655.2     210.0     656.6     222.0     656.6          130917
          237.0     668.2                                                  130918
ENDTABLE                                                                   130919
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 13.09  EXCEEDS  10. FEET-------------
REACH     13.11     1.0       70.0      70.0                               13111
REACH 2   13.09     +0.1                                                   13112
REACH     14.00     1.0       20.0      20.0                               14001
SEGMENT   14.00     1         N         -100.0                             14002
NVALUE    0.12                                                             14003
SEGMENT   14.00     2         N         -0.1                               14004
NVALUE    0.08                                                             14005
SEGMENT   14.00     3         C         70.5                               14006
NVALUE    .06       2.5       .04       6.        .03                      14007
SEGMENT   14.00     4         N         106.0                              14008
NVALUE    0.09      1.3       0.06                                         14009
SEGMENT   14.00     5         N         322.9                              140010
NVALUE    0.09                                                             140011
SEGMENT   14.00     6         N         524.0                              140012
NVALUE    0.09      1.3       0.07                                         140013
SECTION   14.00                                                            140014
          -250.0    692.7     -240.0    680.1     -217.0    675.3          140015
          -200.0    674.4     -170.0    676.6     -100.0    677.2          140016
          -0.1      676.5     0.0       667.7     24.9      667.9          140017
          25.0      676.6     26.8      676.6     26.9      667.9          140018
          42.9      668.0     43.0      676.7     44.5      676.7          140019
          44.6      672.1     49.0      668.0     66.0      668.3          140020
          70.5      672.1     70.6      676.5     106.0     675.4          140021
          106.1     684.4     170.0     684.4     170.1     689.4          140022
          322.9     684.4     323.0     677.8     423.0     679.1          140023
          523.0     682.3     524.0     701.0                              140024
ENDTABLE                                                                   140025
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 14.00  EXCEEDS  10. FEET-------------
COMPUTE   9.29      14.00     9.29
-----------------------------END OF 80/80 LIST----------------------------
```

COMPUTE 9.29 14.00 9.29

----------STARTING DATA FROM GIVEN SLOPES----------

RATING TABLE FOR SECTION 9.29 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	604.0	0.0	0.0						
1	609.0	465.6	1105.0	0.0	0.0	0.0	1105.00	606.2	0.00174
2	610.6	1036.7	2295.0	0.0	0.0	0.0	2295.00	607.3	0.00174
3	611.2	1407.4	3315.0	0.0	0.0	0.0	3315.00	608.0	0.00174
4	611.4	1608.0	3835.0	0.0	0.0	0.0	3835.00	608.5	0.00174
5	612.0	2077.3	5140.0	0.0	0.0	0.0	5140.00	609.6	0.00175

SEGMENT TABLE FOR SECTION 9.29

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	0.	1098.	7.
1105.	VELOCITY FPS	2.44	0.0	2.44	0.43
2	DISCHARGE CFS	2295.	0.	2078.	217.
2295.	VELOCITY FPS	2.79	0.0	2.89	0.68
3	DISCHARGE CFS	3315.	0.	2787.	528.
3315.	VELOCITY FPS	3.12	0.0	3.35	0.92
4	DISCHARGE CFS	3835.	0.	3152.	683.
3835.	VELOCITY FPS	3.29	0.0	3.57	0.94
5	DISCHARGE CFS	5140.	0.	4082.	1058.
5140.	VELOCITY FPS	3.68	0.0	4.09	0.98
1 ELEV 609.0 KD		26394.	1.	26325.	68.
2 ELEV 610.6 KD		54804.	1.	50064.	4739.
3 ELEV 611.2 KD		79115.	1.	66999.	12115.
4 ELEV 611.4 KD		91906.	1.	75840.	16065.
5 ELEV 612.0 KD		122909.	1.	97661.	25248.

KD TABLE FOR CROSS SECTION 9.29

ELEVATION	AREA	KD	KD BY SEGMENT		
604.05	0.				
605.	41.	624.	1.	622.	1.
606.	130.	3940.	1.	3938.	1.
607.	230.	9699.	1.	9697.	1.
608.	335.	18488.	1.	18486.	1.
609.	475.	26855.	1.	26661.	81.
610.	779.	40384.	1.	38311.	1822.
611.	1312.	72488.	1.	62307.	9588.
612.	2058.	121498.	1.	96669.	24791.
613.	3116.	199401.	1.	143195.	56057.
614.	4346.	294070.	1.	185325.	108516.
615.	5633.	407882.	1.	230442.	177287.
616.	6978.	539410.	5.	279518.	259788.
617.	8546.	697359.	856.	332372.	362188.
618.	10359.	886369.	11075.	391024.	480317.
619.	12254.	1104569.	35419.	454604.	612178.
620.	14155.	1346888.	68701.	522290.	756640.
621.	16055.	1616680.	109484.	593690.	912970.
622.	17956.	1905254.	156064.	668569.	1079690.
623.	19856.	2214357.	209126.	746945.	1257222.
624.	21757.	2545005.	269145.	828912.	1446373.
625.	23658.	2895614.	335062.	914310.	1646132.
626.	25559.	3262079.	404735.	1002749.	1854056.
627.	27460.	3647764.	480270.	1094535.	2072412.
628.	29361.	4053479.	562000.	1189723.	2301682.
629.	31263.	4472514.	646458.	1287706.	2537882.
630.	33164.	4911075.	737014.	1389017.	2784786.
631.	35065.	5365605.	831777.	1493329.	3040290.
632.	36967.	5835028.	930351.	1600537.	3303832.
633.	38869.	6322336.	1034214.	1710881.	3577145.
634.	40770.	6822353.	1140862.	1823914.	3857277.
635.	42672.	7339839.	1252678.	1940023.	4146977.
636.	44574.	7871126.	1367884.	2056885.	4444159.
637.	46476.	8417253.	1487063.	2180576.	4749439.
638.	48378.	8978519.	1610388.	2305120.	5063037.
639.	50280.	9559479.	1739906.	2432849.	5387324.

RATING TABLE FOR SECTION 9.30 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	604.0	0.0	0.0						
1	609.3	537.4	1105.0	0.0	0.0	0.0	1105.00	606.2	0.00142
2	610.8	1213.0	2295.0	0.0	0.0	0.0	2295.00	607.3	0.00122
3	611.5	1626.3	3315.0	0.0	0.0	0.0	3315.00	608.0	0.00127
4	611.7	1846.0	3835.0	0.0	0.0	0.0	3835.00	608.5	0.00129
5	612.3	2401.6	5140.0	0.0	0.0	0.0	5140.00	609.6	0.00127

SEGMENT TABLE FOR SECTION 9.30

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1105.	0.	1086.	19.
1105.	VELOCITY FPS	2.18	0.0	2.19	0.47
2	DISCHARGE CFS	2295.	0.	1994.	301.
2295.	VELOCITY FPS	2.47	0.0	2.58	0.68
3	DISCHARGE CFS	3315.	0.	2720.	595.
3315.	VELOCITY FPS	2.82	0.0	3.06	0.81
4	DISCHARGE CFS	3835.	0.	3091.	744.
3835.	VELOCITY FPS	3.00	0.0	3.28	0.82
5	DISCHARGE CFS	5140.	0.	3918.	1222.
5140.	VELOCITY FPS	3.32	0.0	3.70	0.91
1 ELEV	609.3 KD	29030.	1.	28800.	229.
2 ELEV	610.8 KD	65175.	1.	57692.	7483.
3 ELEV	611.5 KD	92983.	1.	76620.	16362.
4 ELEV	611.7 KD	106724.	1.	86429.	20294.
5 ELEV	612.3 KD	143517.	1.	110758.	32757.

KD TABLE FOR CROSS SECTION 9.30

ELEVATION	AREA	KD	KD BY SEGMENT		
604.05	0.				
605.	41.	624.	1.	622.	1.
606.	130.	3940.	1.	3938.	1.
607.	230.	9699.	1.	9697.	1.
608.	335.	18488.	1.	18486.	1.
609.	475.	26855.	1.	26661.	81.
610.	779.	40384.	1.	38311.	1822.
611.	1312.	72488.	1.	62307.	9588.
612.	2058.	121498.	1.	96669.	24791.
613.	3116.	199401.	1.	143195.	56057.
614.	4346.	294070.	1.	185325.	108516.
615.	5633.	407882.	1.	230442.	177287.
616.	6978.	539410.	5.	279518.	259788.
617.	8546.	697359.	856.	332372.	362188.
618.	10359.	886369.	11075.	391024.	480317.
619.	12254.	1104569.	35419.	454604.	612178.
620.	14155.	1348888.	68701.	522290.	756640.
621.	16055.	1616680.	109484.	593690.	912970.
622.	17956.	1905254.	156064.	668569.	1079690.
623.	19856.	2214357.	209126.	746945.	1257222.
624.	21757.	2545005.	269145.	828912.	1446373.
625.	23658.	2895614.	335062.	914310.	1646132.
626.	25559.	3262079.	404735.	1002749.	1854056.
627.	27460.	3647764.	480270.	1094535.	2072412.
628.	29361.	4053479.	562000.	1189723.	2301662.
629.	31263.	4472514.	646458.	1287706.	2537882.
630.	33164.	4911075.	737014.	1389017.	2784786.
631.	35065.	5365605.	831777.	1493329.	3040290.
632.	36967.	5835028.	930351.	1600537.	3303832.
633.	38869.	6322336.	1034214.	1710881.	3577145.
634.	40770.	6822353.	1140862.	1823914.	3857277.
635.	42672.	7339839.	1252678.	1940023.	4146977.
636.	44574.	7871126.	1367684.	2058885.	4444159.
637.	46476.	8417253.	1487063.	2180576.	4749439.
638.	48378.	8978519.	1610388.	2305120.	5063037.
639.	50280.	9559479.	1739906.	2432849.	5387324.

RATING TABLE FOR SECTION 9.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	607.2	0.0	0.0						
BANK FULL	611.2	267.4	844.4	0.0	0.0	0.0			
1	612.4	397.6	1105.0	0.0	0.0	0.0	1105.00	609.8	0.00148
2	613.9	607.2	2295.0	0.0	0.0	0.0	2295.00	611.0	0.00153
3	614.9	779.2	3315.0	0.0	0.0	0.0	3315.00	611.8	0.00157
4	615.4	889.6	3835.0	0.0	0.0	0.0	3835.00	612.3	0.00163
5	616.2	1153.1	5140.0	0.0	0.0	0.0	5140.00	613.1	0.00194

SEGMENT TABLE FOR SECTION 9.90

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1105.	0.	9.	1093.	4.	0.
1105.	VELOCITY FPS	2.90	0.0	0.73	2.89	0.52	0.0
2	DISCHARGE CFS	2295.	0.	61.	2197.	37.	0.
2295.	VELOCITY FPS	4.24	0.0	1.17	4.29	0.87	0.0
3	DISCHARGE CFS	3315.	0.	138.	3086.	91.	0.
3315.	VELOCITY FPS	4.98	0.0	1.45	5.14	1.10	0.0
4	DISCHARGE CFS	3835.	0.	184.	3519.	129.	4.
3835.	VELOCITY FPS	5.27	0.20	1.43	5.47	1.19	0.48
5	DISCHARGE CFS	5140.	6.	284.	4605.	220.	25.
5140.	VELOCITY FPS	6.10	0.43	1.32	6.42	1.37	0.54
1	ELEV 612.4 KD	28669.	1.	163.	28445.	58.	1.
2	ELEV 613.9 KD	58683.	1.	1476.	56312.	892.	1.
3	ELEV 614.9 KD	83487.	1.	3382.	77875.	2228.	1.
4	ELEV 615.4 KD	94891.	2.	4511.	87254.	3119.	4.
5	ELEV 616.2 KD	116672.	32.	6418.	104687.	5003.	533.

KD TABLE FOR CROSS SECTION 9.90

ELEVATION	AREA	KD	KD BY SEGMENT				
607.20	0.						
608.	9.	96.	1.	1.	91.	1.	1.
609.	76.	1776.	1.	1.	1770.	1.	1.
610.	161.	5931.	1.	1.	5926.	1.	1.
611.	249.	12300.	1.	2.	12295.	1.	1.
612.	344.	22526.	1.	55.	22455.	13.	1.
613.	468.	37981.	1.	475.	37215.	240.	1.
614.	618.	60519.	1.	1575.	57916.	959.	1.
615.	795.	85625.	1.	3600.	79555.	2385.	1.
616.	1079.	110931.	17.	5862.	100133.	4457.	167.
617.	2077.	155258.	3211.	13236.	122570.	7755.	3235.
618.	3749.	247317.	41341.	25253.	146783.	12826.	14831.
619.	5808.	410879.	110909.	40061.	172711.	20515.	60909.
620.	8137.	635488.	194772.	57245.	200281.	31675.	146459.
621.	10589.	927481.	304856.	76989.	229477.	45536.	267074.
622.	13089.	1286067.	442552.	99045.	260248.	61365.	420987.
623.	15590.	1698850.	600468.	123280.	292552.	79027.	602774.
624.	18090.	2160198.	776740.	149590.	326352.	98423.	809082.
625.	20591.	2657026.	965829.	177485.	361575.	119095.	1031939.
626.	23092.	3203020.	1174173.	207531.	398253.	141578.	1280602.
627.	25593.	3794453.	1400026.	239587.	436353.	165736.	1552433.
628.	28094.	4421783.	1639369.	273289.	475815.	191233.	1841737.
629.	30596.	5085132.	1892417.	306648.	516623.	218082.	2148864.
630.	33097.	5788868.	2161022.	345835.	558776.	246442.	2476417.
631.	35599.	6530255.	2444042.	384750.	602249.	276221.	2822763.
632.	38100.	7301621.	2738380.	425099.	646993.	307152.	3183600.
633.	40602.	8120564.	3051267.	467549.	693066.	339852.	3569065.
634.	43104.	8994837.	3385946.	512381.	740480.	374589.	3983855.
635.	45606.	9926038.	3743035.	559632.	789222.	411408.	4428974.
636.	48107.	10915602.	4123147.	609336.	839279.	450351.	4905420.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.1162	0.0	0.1232	0.9989	0.0	-0.0070	0.9999	1.0000	1.0000	464.5310	413.6274	408.9783
DCRIT	610.13	KBCRIT=									
0.1223	0.0110	0.1187	0.9980	0.0	-0.0074	0.9887	1.0000	1.0000	682.1958	629.8088	623.4194
DCRIT	611.17	KBCRIT=									
0.1232	0.0138	0.1170	0.9978	0.0	-0.0075	0.9864	1.0000	1.0000	827.4546	810.1089	799.1738
DCRIT	611.92	KBCRIT=									
0.1252	0.0165	0.1163	0.9976	0.0	-0.0076	0.9841	1.0000	1.0000	897.3511	942.3113	924.1462
DCRIT	612.27	KBCRIT=									
0.1770	0.0731	0.1146	0.9919	0.0	-0.0107	0.9425	1.0000	1.0000	1024.4812	1536.5381	1328.1357
DCRIT	612.90	KBCRIT=									

ROAD SECTION 10.00

NO.	HW	CFS	HL	TW	CSM
0	607.20	0.00	0.00	0.00	0.00
1	612.56	1105.00	0.02	612.54	1105.00
2	614.05	2295.00	0.02	614.03	2295.00
3	615.06	3315.00	0.04	615.02	3315.00
4	615.54	3835.00	0.04	615.50	3835.00
5	616.52	5140.00	0.16	616.36	5140.00

→ MIN ROAD ELEVATION 620.01

BRIDGE TYPE 2 → GIRDER BOTTOM ELEVATION = 618.90 OPENING NO.= 1

RATING TABLE FOR SECTION 10.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	607.2	0.0	0.0						
BANK FULL	611.2	267.4	816.3	0.0	0.0	0.0			
1	612.6	419.1	1105.0	0.0	0.0	0.0	1105.00	609.8	0.00124
2	614.1	638.0	2295.0	0.0	0.0	0.0	2295.00	611.0	0.00132
3	615.1	820.2	3315.0	0.0	0.0	0.0	3315.00	611.8	0.00144
4	615.6	960.2	3835.0	0.0	0.0	0.0	3835.00	612.3	0.00151
5	616.6	1609.0	5140.0	0.0	0.0	0.0	5140.00	613.1	0.00156

SEGMENT TABLE FOR SECTION 10.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1105.	0.	8.	1093.	4.	0.
1105.	VELOCITY FPS	2.77	0.0	0.54	2.77	0.38	0.0
2	DISCHARGE CFS	2295.	0.	52.	2211.	32.	0.
2295.	VELOCITY FPS	4.13	0.0	0.87	4.18	0.66	0.0
3	DISCHARGE CFS	3315.	0.	117.	3119.	79.	0.
3315.	VELOCITY FPS	4.89	0.0	1.11	5.03	0.84	0.0
4	DISCHARGE CFS	3835.	0.	152.	3566.	111.	6.
3835.	VELOCITY FPS	5.20	0.13	0.99	5.37	0.90	0.36
5	DISCHARGE CFS	5140.	117.	307.	4451.	195.	70.
5140.	VELOCITY FPS	5.58	0.48	1.11	5.92	0.99	0.50
1	ELEV 612.6 KD	31386.	1.	190.	31115.	79.	1.
2	ELEV 614.1 KD	63135.	1.	1369.	60919.	845.	1.
3	ELEV 615.1 KD	87371.	1.	3073.	82243.	2053.	1.
4	ELEV 615.6 KD	98583.	4.	3859.	91941.	2766.	13.
5	ELEV 616.6 KD	126605.	252.	7156.	113343.	4831.	1023.

KD TABLE FOR CROSS SECTION 10.01

ELEVATION	AREA	KD	KD BY SEGMENT				
607.20	0.						
608.	9.	95.	1.	1.	91.	1.	1.
609.	76.	1775.	1.	1.	1770.	1.	1.
610.	161.	5930.	1.	1.	5926.	1.	1.
611.	249.	12299.	1.	1.	12295.	1.	1.
612.	344.	22510.	1.	43.	22455.	10.	1.
613.	468.	37808.	1.	368.	37215.	186.	1.
614.	618.	59932.	1.	1219.	57916.	742.	1.
615.	795.	84256.	1.	2788.	79555.	1847.	1.
616.	1079.	106495.	13.	4539.	100133.	3451.	130.
617.	2077.	147925.	2487.	10249.	122570.	6005.	2505.
618.	3749.	224855.	32011.	19554.	146783.	9932.	11484.
619.	5808.	357480.	85879.	31020.	172711.	15885.	47163.
620.	8137.	537764.	150816.	44326.	200281.	24526.	113406.
621.	10589.	770392.	236056.	59614.	229477.	35261.	206801.
622.	13089.	1054818.	342677.	76693.	260248.	47517.	325979.
623.	15590.	1381586.	464955.	95458.	292552.	61192.	466740.
624.	18090.	1746336.	601446.	115831.	326352.	76211.	626489.
625.	20591.	2139154.	747861.	137431.	361575.	92218.	799052.
626.	23092.	2570182.	909186.	160695.	398253.	109627.	991597.
627.	25593.	3036648.	1084068.	185517.	436353.	128333.	1202081.
628.	28094.	3531312.	1269397.	211613.	475815.	148075.	1426096.
629.	30596.	4054198.	1465337.	238993.	516623.	168865.	1663911.
630.	33097.	4608603.	1673323.	267787.	558776.	190825.	1917542.
631.	35599.	5192459.	1892473.	297920.	602249.	213884.	2185722.
632.	38100.	5799870.	2120383.	329162.	646993.	237834.	2465126.
633.	40602.	6444285.	2362658.	362033.	693066.	263154.	2763600.
634.	43104.	7131670.	2621806.	396748.	740480.	290052.	3084780.
635.	45606.	7863128.	2898305.	433335.	789222.	318562.	3429444.
636.	48107.	8639730.	3192630.	471822.	839279.	346716.	3798366.

RATING TABLE FOR SECTION 10.04 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	610.0	0.0	0.0						
BANK FULL	614.0	267.4	909.5	0.0	0.0	0.0			
1	614.9	352.9	1105.0	0.0	0.0	0.0	1105.00	612.6	0.00222
2	616.4	553.6	2295.0	0.0	0.0	0.0	2295.00	613.8	0.00208
3	617.2	689.0	3315.0	0.0	0.0	0.0	3315.00	614.6	0.00212
4	617.8	794.8	3835.0	0.0	0.0	0.0	3835.00	615.1	0.00205
5	618.8	1076.3	5140.0	0.0	0.0	0.0	5140.00	615.9	0.00222

SEGMENT TABLE FOR SECTION 10.04

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1105.	0.	3.	1101.	1.	0.
1105.	VELOCITY FPS	3.20	0.0	0.60	3.19	0.41	0.0
2	DISCHARGE CFS	2295.	0.	41.	2230.	24.	0.
2295.	VELOCITY FPS	4.56	0.0	1.05	4.62	0.77	0.0
3	DISCHARGE CFS	3315.	0.	92.	3164.	59.	0.
3315.	VELOCITY FPS	5.56	0.0	1.29	5.68	0.97	0.0
4	DISCHARGE CFS	3835.	0.	141.	3600.	94.	0.
3835.	VELOCITY FPS	5.75	0.0	1.42	5.92	1.08	0.0
5	DISCHARGE CFS	5140.	1.	235.	4707.	180.	16.
5140.	VELOCITY FPS	6.48	0.17	1.23	6.75	1.23	0.47
1	ELEV 614.9 KD	23427.	1.	56.	23354.	14.	1.
2	ELEV 616.4 KD	50277.	1.	905.	48845.	526.	1.
3	ELEV 617.2 KD	71941.	1.	1987.	68685.	1267.	1.
4	ELEV 617.8 KD	84599.	1.	3053.	79522.	2022.	1.
5	ELEV 618.8 KD	108771.	14.	4956.	99906.	3762.	134.

KD TABLE FOR CROSS SECTION 10.04

ELEVATION	AREA	KD	KD BY SEGMENT				
610.00	0.						
610.	0.	0.	1.	1.	0.	1.	1.
611.	20.	222.	1.	1.	216.	1.	1.
612.	92.	2427.	1.	1.	2423.	1.	1.
613.	178.	7042.	1.	1.	7038.	1.	1.
614.	267.	14001.	1.	2.	13996.	1.	1.
615.	368.	25165.	1.	77.	25027.	22.	1.
616.	496.	41715.	1.	532.	40836.	282.	1.
617.	651.	65584.	1.	1616.	62913.	1006.	1.
618.	833.	89444.	1.	3527.	83548.	2367.	1.
619.	1143.	114633.	26.	5406.	104506.	4227.	443.
620.	2313.	160432.	8173.	13363.	127300.	7315.	4227.
621.	4110.	253812.	49574.	23994.	151858.	11975.	16349.
622.	6233.	411949.	109737.	36972.	178120.	19055.	68024.
623.	8614.	616470.	182507.	51907.	206010.	29216.	143762.
624.	11090.	880716.	280902.	68977.	235515.	41237.	251004.
625.	13590.	1197936.	400676.	88017.	266588.	54933.	385669.
626.	16090.	1560548.	537465.	108906.	299189.	70187.	543639.
627.	18591.	1963886.	689572.	131533.	333277.	86892.	722032.
628.	21092.	2403777.	855305.	155756.	368815.	104912.	918352.
629.	23593.	2877830.	1033914.	181495.	405765.	124181.	1131617.
630.	26094.	3390906.	1227574.	208954.	444135.	144885.	1364847.
631.	28595.	3940470.	1435177.	238037.	483892.	166937.	1616425.
632.	31096.	4514463.	1651674.	268280.	524959.	189905.	1879243.
633.	33598.	5122689.	1881318.	300067.	567368.	214152.	2159333.
634.	36099.	5768384.	2125430.	333524.	611118.	239792.	2458522.
635.	38601.	6433809.	2376665.	367972.	656109.	266199.	2766508.
636.	41103.	7145313.	2645968.	404415.	702451.	294305.	3098688.
637.	43605.	7904171.	2933885.	442887.	750133.	324149.	3455943.
638.	46107.	8711570.	3240928.	483418.	799139.	355767.	3839114.

RATING TABLE FOR SECTION 10.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	612.2	0.0	0.0						
BANK FULL	613.7	74.6	368.6	0.0	0.0	0.0			
1	616.7	393.3	1105.0	0.0	0.0	0.0	1105.00	614.6	0.00227
2	618.2	739.8	2295.0	0.0	0.0	0.0	2295.00	615.7	0.00213
3	619.1	1021.6	3315.0	0.0	0.0	0.0	3315.00	616.4	0.00205
4	619.6	1218.3	3835.0	0.0	0.0	0.0	3835.00	616.7	0.00184
5	620.5	1656.6	5140.0	0.0	0.0	0.0	5140.00	617.9	0.00168

SEGMENT TABLE FOR SECTION 10.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	27.	1029.	48.
1105.	VELOCITY FPS	3.15	1.04	3.23	1.00
2	DISCHARGE CFS	2295.	94.	2032.	168.
2295.	VELOCITY FPS	4.35	1.18	4.55	0.79
3	DISCHARGE CFS	3315.	144.	2775.	396.
3315.	VELOCITY FPS	4.97	1.08	5.37	1.07
4	DISCHARGE CFS	3835.	186.	3100.	549.
3835.	VELOCITY FPS	5.01	1.00	5.53	1.16
5	DISCHARGE CFS	5140.	548.	3689.	903.
5140.	VELOCITY FPS	5.00	1.56	5.74	1.36
1 ELEV	616.7 KD	23207.	569.	21637.	1002.
2 ELEV	618.2 KD	49377.	1986.	44224.	3166.
3 ELEV	619.1 KD	72996.	3182.	61409.	8406.
4 ELEV	619.6 KD	89181.	4189.	72366.	12625.
5 ELEV	620.5 KD	124064.	11314.	90868.	21882.

KD TABLE FOR CROSS SECTION 10.10

ELEVATION	AREA	KD	KD BY SEGMENT		
612.23	0.				
613.	23.	335.	1.	333.	1.
614.	98.	2638.	3.	2621.	12.
615.	193.	7441.	59.	7225.	147.
616.	303.	15152.	287.	14335.	525.
617.	429.	26777.	685.	24857.	1235.
618.	663.	43732.	1639.	39738.	2185.
619.	998.	71146.	3103.	59963.	7927.
620.	1403.	102812.	6076.	80148.	16354.
621.	1870.	148558.	20067.	100090.	26963.
622.	2352.	202417.	40604.	121773.	39700.
623.	2846.	262958.	63211.	145122.	54393.
624.	3350.	331056.	89642.	170081.	70965.
625.	3867.	406284.	120176.	196588.	89287.
626.	4395.	488481.	154503.	224620.	109172.
627.	4935.	577363.	192639.	254132.	130466.
628.	5488.	673124.	234522.	285066.	153455.
629.	6054.	776469.	280066.	317445.	178947.
630.	6634.	886312.	328915.	351157.	206115.
631.	7223.	1004350.	381717.	386235.	236271.
632.	7816.	1130759.	438655.	422665.	269516.
633.	8410.	1265652.	500640.	460480.	305448.
634.	9004.	1409149.	567842.	499660.	344139.

RATING TABLE FOR SECTION 10.13 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	614.3	0.0	0.0						
BANK FULL	615.8	74.6	382.1	0.0	0.0	0.0			
1	618.7	372.1	1105.0	0.0	0.0	0.0	1105.00	616.7	0.00268
2	620.2	679.5	2295.0	0.0	0.0	0.0	2295.00	617.8	0.00257
3	620.9	939.9	3315.0	0.0	0.0	0.0	3315.00	618.5	0.00244
4	621.3	1078.5	3835.0	0.0	0.0	0.0	3835.00	618.8	0.00235
5	622.2	1468.9	5140.0	0.0	0.0	0.0	5140.00	620.0	0.00220

SEGMENT TABLE FOR SECTION 10.13

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	28.	1027.	49.
1105.	VELOCITY FPS	3.27	1.23	3.36	1.13
2	DISCHARGE CFS	2295.	95.	2052.	148.
2295.	VELOCITY FPS	4.57	1.34	4.77	0.83
3	DISCHARGE CFS	3315.	154.	2784.	376.
3315.	VELOCITY FPS	5.19	1.34	5.60	1.15
4	DISCHARGE CFS	3835.	175.	3144.	516.
3835.	VELOCITY FPS	5.42	1.21	5.93	1.28
5	DISCHARGE CFS	5140.	351.	3886.	903.
5140.	VELOCITY FPS	5.61	1.27	6.38	1.55
1 ELEV 618.7 KD		21357.	544.	19869.	945.
2 ELEV 620.2 KD		45041.	1832.	40670.	2539.
3 ELEV 620.9 KD		66977.	3125.	56507.	7345.
4 ELEV 621.3 KD		78936.	3620.	64364.	10351.
5 ELEV 622.2 KD		109526.	7393.	82982.	19150.

KD TABLE FOR CROSS SECTION 10.13

ELEVATION	AREA	KD	KD BY SEGMENT		
614.33	0.				
615.	18.	228.	1.	226.	1.
616.	89.	2285.	3.	2274.	8.
617.	183.	6879.	50.	6685.	134.
618.	291.	14254.	273.	13468.	510.
619.	416.	25567.	687.	23649.	1228.
620.	631.	41631.	1617.	37938.	1995.
621.	963.	68966.	3203.	57842.	7779.
622.	1359.	101011.	5971.	78251.	16504.
623.	1823.	146466.	19003.	98014.	27631.
624.	2304.	202324.	41281.	119528.	41079.
625.	2796.	264735.	65091.	142714.	56633.
626.	3300.	335169.	93232.	167514.	74207.
627.	3815.	413184.	125383.	193870.	93674.
628.	4342.	498655.	161834.	221755.	114881.
629.	4880.	591156.	202361.	251123.	137566.
630.	5431.	690816.	246898.	281937.	161951.
631.	5997.	798403.	295170.	314147.	189034.
632.	6576.	913073.	347214.	347726.	217992.
633.	7163.	1036224.	403493.	382674.	249938.
634.	7757.	1168252.	464015.	418966.	285303.
635.	8351.	1309288.	529929.	456643.	323540.
636.	8945.	1459474.	601421.	495687.	364728.

RATING TABLE FOR SECTION 10.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	615.8	0.0	0.0						
BANK FULL	617.4	96.9	438.6	0.0	0.0	0.0			
1	619.8	465.7	1105.0	0.0	0.0	0.0	1105.00	618.0	0.00262
2	621.2	1225.6	2295.0	0.0	0.0	0.0	2295.00	618.8	0.00192
3	621.9	1785.6	3315.0	0.0	0.0	0.0	3315.00	620.0	0.00181
4	622.3	2126.1	3835.0	0.0	0.0	0.0	3835.00	620.2	0.00164
5	623.1	3003.9	5140.0	0.0	0.0	0.0	5140.00	620.6	0.00132

SEGMENT TABLE FOR SECTION 10.90

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	0.	0.	36.	1064.	4.
1105.	VELOCITY FPS	2.95	0.21	0.0	0.36	2.99	0.67
2	DISCHARGE CFS	2295.	81.	2.	303.	1898.	11.
2295.	VELOCITY FPS	3.43	0.64	0.25	0.53	3.72	0.77
3	DISCHARGE CFS	3315.	191.	33.	546.	2527.	17.
3315.	VELOCITY FPS	3.63	0.86	0.46	0.62	4.32	0.84
4	DISCHARGE CFS	3835.	255.	69.	689.	2803.	20.
3835.	VELOCITY FPS	3.87	0.92	0.52	0.64	4.47	0.84
5	DISCHARGE CFS	5140.	410.	267.	1093.	3344.	27.
5140.	VELOCITY FPS	3.82	1.03	0.76	0.73	4.66	0.84
1	ELEV 619.8 KD	21582.	7.	1.	710.	20788.	75.
2	ELEV 621.2 KD	52026.	1589.	28.	6574.	43581.	254.
3	ELEV 621.9 KD	77363.	4249.	449.	12587.	59704.	393.
4	ELEV 622.3 KD	94582.	6209.	1436.	16825.	69626.	486.
5	ELEV 623.1 KD	140862.	11231.	6481.	29916.	92496.	738.

KD TABLE FOR CROSS SECTION 10.90

ELEVATION	AREA	KD	KD BY SEGMENT				
615.78	0.						
616.	1.	11.	1.	1.	1.	6.	1.
617.	54.	863.	1.	1.	2.	858.	1.
618.	172.	5183.	1.	1.	83.	5092.	3.
619.	311.	12536.	1.	1.	436.	12068.	24.
620.	507.	23764.	14.	1.	756.	22882.	90.
621.	1067.	45217.	892.	9.	4698.	38843.	213.
622.	1850.	81123.	4633.	595.	13372.	61699.	411.
623.	2863.	133892.	10458.	5289.	27842.	89503.	695.
624.	3965.	200143.	17553.	20446.	46587.	113950.	1076.
625.	5079.	279150.	26853.	40271.	69316.	140824.	1567.
626.	6197.	370889.	38148.	64982.	95484.	169879.	2178.
627.	7319.	474152.	50987.	94135.	124879.	201072.	2920.
628.	8446.	588220.	65281.	127362.	157303.	234329.	3802.
629.	9576.	713104.	81065.	164767.	192811.	269613.	4836.
630.	10710.	847310.	98084.	205412.	230876.	306815.	6027.
631.	11848.	991291.	116449.	249685.	271695.	345924.	7414.
632.	12990.	1144775.	136131.	297464.	315194.	386895.	8980.
633.	14135.	1307372.	157073.	348531.	361240.	429681.	10747.
634.	15283.	1479406.	179338.	403102.	409947.	474268.	12747.
635.	16434.	1659135.	202655.	460179.	460737.	520554.	14932.
636.	17586.	1847627.	227233.	520503.	514019.	568567.	17230.
637.	18741.	2044663.	253043.	583964.	569722.	618275.	19626.
638.	19897.	2249481.	279980.	650156.	627609.	669627.	22082.
639.	21056.	2461729.	308006.	718914.	687573.	722583.	24585.
640.	22217.	2682466.	337284.	790845.	749954.	777173.	27164.
641.	23379.	2910315.	367621.	865200.	814317.	833322.	29814.
642.	24542.	3147518.	399347.	943241.	881377.	891106.	32582.
643.	25705.	3394093.	432470.	1025005.	951138.	950510.	35488.

RATING TABLE FOR SECTION 10.93 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	615.8	0.0	0.0						
BANK FULL	617.4	96.9	409.9	0.0	0.0	0.0			
1	620.1	564.4	1105.0	0.0	0.0	0.0	1105.00	618.0	0.00185
2	621.5	1395.3	2295.0	0.0	0.0	0.0	2295.00	618.8	0.00146
3	622.1	1976.9	3315.0	0.0	0.0	0.0	3315.00	620.0	0.00143
4	622.5	2342.7	3835.0	0.0	0.0	0.0	3835.00	620.2	0.00132
5	623.3	3195.8	5140.0	0.0	0.0	0.0	5140.00	620.6	0.00114

SEGMENT TABLE FOR SECTION 10.93

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	3.	0.	48.	1049.	4.
1105.	VELOCITY FPS	2.66	0.30	0.0	0.31	2.71	0.61
2	DISCHARGE CFS	2295.	98.	7.	333.	1846.	11.
2295.	VELOCITY FPS	3.13	0.62	0.33	0.50	3.45	0.70
3	DISCHARGE CFS	3315.	208.	41.	569.	2480.	17.
3315.	VELOCITY FPS	3.54	0.82	0.42	0.57	4.06	0.77
4	DISCHARGE CFS	3835.	271.	99.	729.	2717.	20.
3835.	VELOCITY FPS	3.59	0.89	0.53	0.62	4.18	0.77
5	DISCHARGE CFS	5140.	420.	335.	1120.	3238.	27.
5140.	VELOCITY FPS	3.56	0.99	0.83	0.70	4.39	0.79
1	ELEV 620.1 KD	25595.	27.	1.	980.	24485.	101.
2	ELEV 621.5 KD	59976.	2465.	77.	8599.	48539.	257.
3	ELEV 622.1 KD	87674.	5469.	1020.	15019.	65718.	448.
4	ELEV 622.5 KD	104823.	7288.	2140.	19637.	75216.	542.
5	ELEV 623.3 KD	151224.	12353.	8501.	32925.	96646.	799.

KD TABLE FOR CROSS SECTION 10.93

ELEVATION	AREA	KD	KD BY SEGMENT				
615.78	0.						
616.	1.	11.	1.	1.	1.	6.	1.
617.	54.	863.	1.	1.	2.	858.	1.
618.	172.	5183.	1.	1.	83.	5092.	3.
619.	311.	12536.	1.	1.	436.	12068.	24.
620.	507.	23764.	14.	1.	756.	22862.	90.
621.	1067.	45217.	892.	9.	4698.	38843.	213.
622.	1850.	81123.	4633.	595.	13372.	61699.	411.
623.	2863.	133892.	10458.	5289.	27842.	89503.	695.
624.	3965.	200143.	17553.	20446.	46587.	113950.	1076.
625.	5079.	279150.	26853.	40271.	69316.	140824.	1567.
626.	6197.	370889.	38148.	64982.	95484.	169879.	2178.
627.	7319.	474152.	50987.	94135.	124879.	201072.	2920.
628.	8446.	586220.	65281.	127362.	157303.	234329.	3802.
629.	9576.	713104.	81065.	164767.	192811.	269613.	4836.
630.	10710.	847310.	98084.	205412.	230876.	306815.	6027.
631.	11848.	991291.	116449.	249685.	271695.	345924.	7414.
632.	12990.	1144775.	136131.	297464.	315194.	386895.	8980.
633.	14135.	1307372.	157073.	348531.	361240.	429681.	10747.
634.	15283.	1479406.	179338.	403102.	409947.	474268.	12747.
635.	16434.	1659135.	202655.	460179.	460737.	520554.	14932.
636.	17586.	1847627.	227233.	520503.	514019.	568567.	17230.
637.	18741.	2044663.	253043.	583964.	569722.	618275.	19626.
638.	19897.	2245481.	279980.	650156.	627609.	669627.	22082.
639.	21056.	2461729.	308006.	718914.	687573.	722583.	24585.
640.	22217.	2682466.	337284.	790845.	749954.	777173.	27184.
641.	23379.	2910315.	367621.	865200.	814317.	833322.	29814.
642.	24542.	3147518.	399347.	943241.	881377.	891106.	32582.
643.	25705.	3394093.	432470.	1025005.	951138.	950510.	35488.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.4269	0.3393	0.1325	0.9116	0.0	-0.0448	0.7596	1.0000	1.0000	450.4016	1790.7834	1671.9194
DCRIT	617.26	KBCRIT=									
0.7392	0.7243	0.1148	0.8036	0.0	-0.0998	0.6169	1.0000	1.0000	608.9480	3419.1738	3046.8350
DCRIT	618.48	KBCRIT=									
0.9377	0.9724	0.1035	0.7337	0.0	-0.1382	0.5422	1.0000	1.0000	694.9163	4477.2656	3634.4595
DCRIT	619.20	KBCRIT=									
0.9986	1.0494	0.0997	0.7121	0.0	-0.1505	0.5206	1.0000	1.0000	738.8284	4920.6094	4232.3086
DCRIT	619.33	KBCRIT=									
1.1064	1.1864	0.0927	0.6737	0.0	-0.1727	0.4839	1.0000	1.0000	838.6553	5735.7812	5112.1250
DCRIT	619.39	KBCRIT=									

ROAD SECTION 11.00

ND.	HW	CFS	HL	TW	CSM
0	614.20	0.00	0.00	0.00	0.00
1	620.33	1105.00	0.12	620.21	1105.00
2	621.91	2295.00	0.32	621.59	2295.00
3	622.86	3315.00	0.56	622.30	3315.00
4	623.26	3835.00	0.60	622.66	3835.00
5	623.99	5140.00	0.54	623.45	5140.00

⇒ MIN ROAD ELEVATION 622.69

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 626.80 OPENING NO.= 1

RATING TABLE FOR SECTION 11.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	615.8	0.0	0.0						
BANK FULL	617.4	96.9	390.6	0.0	0.0	0.0			
1	620.3	668.2	1105.0	0.0	0.0	0.0	1105.00	618.0	0.00140
2	621.9	1741.9	2295.0	0.0	0.0	0.0	2295.00	618.8	0.00092
3	622.8	2670.1	3315.0	0.0	0.0	0.0	3315.00	620.0	0.00073
4	623.2	3101.6	3835.0	0.0	0.0	0.0	3835.00	620.2	0.00068
5	624.0	3910.2	5140.0	0.0	0.0	0.0	5140.00	620.6	0.00068

SEGMENT TABLE FOR SECTION 11.01

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	7.	0.	66.	1028.	5.
1105.	VELOCITY FPS	2.44	0.28	0.0	0.29	2.50	0.56
2	DISCHARGE CFS	2295.	129.	22.	374.	1758.	12.
2295.	VELOCITY FPS	2.70	0.60	0.32	0.44	3.03	0.59
3	DISCHARGE CFS	3315.	251.	115.	671.	2261.	17.
3315.	VELOCITY FPS	2.77	0.71	0.44	0.50	3.31	0.60
4	DISCHARGE CFS	3835.	310.	226.	826.	2453.	20.
3835.	VELOCITY FPS	2.75	0.75	0.60	0.53	3.37	0.61
5	DISCHARGE CFS	5140.	451.	531.	1197.	2933.	28.
5140.	VELOCITY FPS	2.80	0.86	0.89	0.62	3.63	0.66
1	ELEV 620.3 KD	29282.	86.	1.	1534.	27537.	124.
2	ELEV 621.9 KD	75220.	4006.	371.	12079.	58382.	381.
3	ELEV 622.8 KD	122399.	9199.	3824.	24586.	84154.	636.
4	ELEV 623.2 KD	146026.	11792.	7447.	31421.	94598.	768.
5	ELEV 624.0 KD	196231.	17158.	19694.	45600.	112725.	1054.

KD TABLE FOR CROSS SECTION 11.01

ELEVATION	AREA	KD	KD BY SEGMENT				
615.78	0.						
616.	1.	11.	1.	1.	1.	6.	1.
617.	54.	863.	1.	1.	2.	858.	1.
618.	172.	5183.	1.	1.	83.	5092.	3.
619.	311.	12536.	1.	1.	436.	12068.	24.
620.	507.	23764.	14.	1.	756.	22882.	90.
621.	1067.	45217.	892.	9.	4698.	38843.	213.
622.	1850.	81123.	4633.	595.	13372.	61699.	411.
623.	2863.	133892.	10458.	5289.	27842.	89503.	695.
624.	3965.	200143.	17553.	20446.	46587.	113990.	1076.
625.	5079.	279150.	26853.	40271.	69316.	140824.	1567.
626.	6197.	370889.	38148.	64982.	95484.	169879.	2178.
627.	7319.	474152.	50987.	94135.	124879.	201072.	2920.
628.	8446.	588220.	65281.	127362.	157303.	234329.	3802.
629.	9576.	713104.	81065.	164767.	192811.	269613.	4836.
630.	10710.	847310.	98084.	205412.	230876.	306815.	6027.
631.	11848.	991291.	116449.	249685.	271695.	345924.	7414.
632.	12990.	1144775.	136131.	297464.	315194.	386855.	8980.
633.	14135.	1307372.	157073.	348531.	361240.	429681.	10747.
634.	15283.	1479406.	179338.	403102.	409947.	474268.	12747.
635.	16434.	1659135.	202655.	460179.	460737.	520554.	14932.
636.	17586.	1847627.	227233.	520503.	514019.	568567.	17230.
637.	18741.	2044663.	253043.	583964.	569722.	618275.	19626.
638.	19897.	2249481.	279980.	650156.	627609.	669627.	22082.
639.	21056.	2461729.	308006.	718914.	687573.	722583.	24585.
640.	22217.	2682466.	337284.	790845.	749954.	777173.	27184.
641.	23379.	2910315.	367621.	865200.	814317.	833322.	29814.
642.	24542.	3147518.	399347.	943241.	881377.	891106.	32582.
643.	25705.	3394093.	432470.	1025005.	951138.	950510.	35488.

RATING TABLE FOR SECTION A-11.0 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	616.3	0.0	0.0						
BANK FULL	617.9	96.9	387.6	0.0	0.0	0.0			
1	620.9	685.5	1105.0	0.0	0.0	0.0	1105.00	618.5	0.00134
2	622.3	1670.7	2295.0	0.0	0.0	0.0	2295.00	619.3	0.00101
3	623.2	2509.6	3315.0	0.0	0.0	0.0	3315.00	620.5	0.00084
4	623.5	2900.3	3835.0	0.0	0.0	0.0	3835.00	620.7	0.00080
5	624.3	3691.7	5140.0	0.0	0.0	0.0	5140.00	621.1	0.00079

SEGMENT TABLE FOR SECTION A-11.0

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	7.	0.	68.	1025.	5.
1105.	VELOCITY FPS	2.40	0.28	0.0	0.29	2.47	0.55
2	DISCHARGE CFS	2295.	124.	19.	367.	1773.	12.
2295.	VELOCITY FPS	2.78	0.61	0.33	0.45	3.11	0.61
3	DISCHARGE CFS	3315.	244.	102.	652.	2300.	17.
3315.	VELOCITY FPS	2.93	0.74	0.45	0.52	3.45	0.63
4	DISCHARGE CFS	3835.	302.	168.	803.	2543.	20.
3835.	VELOCITY FPS	2.96	0.79	0.52	0.55	3.59	0.64
5	DISCHARGE CFS	5140.	440.	474.	1174.	3025.	27.
5140.	VELOCITY FPS	2.99	0.89	0.88	0.64	3.84	0.70
1	ELEV 620.9 KD	29946.	104.	1.	1649.	28064.	128.
2	ELEV 622.3 KD	71819.	3635.	271.	11285.	56265.	363.
3	ELEV 623.2 KD	113439.	8217.	2886.	22049.	79697.	588.
4	ELEV 623.5 KD	135619.	10659.	5583.	28380.	90291.	706.
5	ELEV 624.3 KD	182788.	15640.	16658.	41760.	107757.	973.

KD TABLE FOR CROSS SECTION A-11.0

ELEVATION	AREA	KD	KD BY SEGMENT				
616.28	0.						
617.	13.	129.	1.	1.	1.	125.	1.
618.	110.	2610.	1.	1.	19.	2586.	1.
619.	239.	8442.	1.	1.	216.	8209.	9.
620.	394.	17616.	2.	1.	682.	16874.	51.
621.	749.	32662.	203.	1.	2141.	30047.	144.
622.	1422.	61250.	2564.	87.	8838.	49269.	303.
623.	2339.	105212.	7269.	2126.	19588.	75121.	541.
624.	3413.	165276.	13719.	11465.	36596.	101438.	872.
625.	4522.	237916.	21922.	29488.	57423.	127117.	1306.
626.	5638.	323432.	32269.	51901.	81922.	155073.	1856.
627.	6758.	421027.	44354.	78919.	109741.	185208.	2532.
628.	7882.	529811.	57941.	110194.	140693.	217444.	3343.
629.	9011.	648935.	72910.	145262.	174521.	251702.	4298.
630.	10143.	778538.	89324.	184340.	211333.	287952.	5410.
631.	11279.	918079.	107099.	227101.	250942.	326133.	6695.
632.	12418.	1067220.	126190.	273373.	293242.	366196.	8179.
633.	13561.	1225357.	146517.	322850.	338049.	408083.	9832.
634.	14709.	1391987.	168001.	375234.	385182.	451741.	11719.
635.	15858.	1567895.	190796.	431077.	434939.	497181.	13811.
636.	17009.	1752700.	214851.	490173.	487202.	544364.	16089.
637.	18163.	1945190.	240000.	551900.	541603.	593216.	18420.
638.	19319.	2145809.	266326.	616553.	598299.	643734.	20832.
639.	20477.	2354659.	293854.	684205.	657326.	695904.	23327.
640.	21636.	2571226.	322515.	754586.	718522.	749683.	25881.
641.	22798.	2795224.	352280.	827564.	781800.	805043.	28482.
642.	23961.	3027750.	383310.	903758.	847511.	862011.	31181.
643.	25123.	3269638.	415734.	983657.	915920.	920608.	34018.

RATING TABLE FOR SECTION 11.02 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	616.0	0.0	0.0						
1	621.6	253.6	1105.0	0.0	0.0	0.0	1105.00	619.3	0.00324
2	623.1	339.2	2295.0	0.0	0.0	0.0	2295.00	620.8	0.00457
3	623.8	476.1	3315.0	0.0	0.0	0.0	3315.00	621.9	0.00532
BANK FULL	624.0	510.9	3570.5	0.0	0.0	0.0			
4	624.2	619.1	3835.0	0.0	0.0	0.0	3835.00	622.4	0.00521
5	624.8	1034.1	5140.0	0.0	0.0	0.0	5140.00	624.4	0.00471

SEGMENT TABLE FOR SECTION 11.02

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	0.	1105.	0.
1105.	VELOCITY FPS	4.36	0.0	4.36	0.0
2	DISCHARGE CFS	2295.	0.	2295.	0.
2295.	VELOCITY FPS	6.78	0.0	6.77	0.0
3	DISCHARGE CFS	3315.	55.	3223.	37.
3315.	VELOCITY FPS	8.24	0.98	8.33	1.12
4	DISCHARGE CFS	3835.	238.	3494.	103.
3835.	VELOCITY FPS	8.35	1.59	8.55	1.70
5	DISCHARGE CFS	5140.	846.	3987.	307.
5140.	VELOCITY FPS	7.96	1.88	8.84	2.32
1	ELEV 621.6 KD	19418.	2.	19415.	2.
2	ELEV 623.1 KD	33962.	2.	33958.	2.
3	ELEV 623.8 KD	44732.	272.	44260.	199.
4	ELEV 624.2 KD	51604.	1571.	49084.	949.
5	ELEV 624.8 KD	72153.	9646.	58686.	3821.

KD TABLE FOR CROSS SECTION 11.02

ELEVATION	AREA	KD	KD BY SEGMENT		
616.00	0.				
617.	19.	298.	2.	294.	2.
618.	61.	1834.	2.	1831.	2.
619.	110.	4479.	2.	4475.	2.
620.	163.	8604.	2.	8601.	2.
621.	218.	14618.	2.	14614.	2.
622.	275.	22673.	2.	22670.	2.
623.	335.	33195.	2.	33192.	2.
624.	511.	48356.	955.	46736.	647.
625.	1137.	81237.	14733.	61200.	5289.
626.	1939.	134946.	45880.	75989.	13064.
627.	2619.	216572.	101068.	92032.	23464.
628.	3707.	317953.	172426.	109281.	36240.
629.	4603.	436131.	256916.	127671.	51055.
630.	5505.	571674.	355877.	147205.	68118.
631.	6415.	723537.	468034.	167847.	87301.
632.	7332.	890860.	592545.	189565.	108525.
633.	8256.	1072820.	728654.	212329.	131715.
634.	9187.	1268379.	875376.	236105.	156768.
635.	10126.	1476928.	1032227.	260865.	183646.
636.	11072.	1699973.	1200657.	286627.	212567.
637.	12023.	1936866.	1380030.	313367.	243470.
638.	12985.	2185466.	1568399.	341003.	275960.
639.	13950.	2449212.	1769076.	365581.	310423.
640.	14918.	2728966.	1982859.	399113.	346993.
641.	15885.	3027276.	2212151.	429655.	386113.

RATING TABLE FOR SECTION 11.03 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	616.8	0.0	0.0						
BANK FULL	618.4	96.9	337.9	0.0	0.0	0.0			
1	622.0	1096.8	1105.0	0.0	0.0	0.0	1105.00	619.0	0.00056
2	623.8	2681.3	2295.0	0.0	0.0	0.0	2295.00	619.8	0.00035
3	624.9	3678.2	3315.0	0.0	0.0	0.0	3315.00	621.0	0.00029
4	625.3	4287.7	3835.0	0.0	0.0	0.0	3835.00	621.2	0.00030
5	625.9	4921.2	5140.0	0.0	0.0	0.0	5140.00	621.6	0.00037

SEGMENT TABLE FOR SECTION 11.03

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	33.	1.	132.	934.	5.
1105.	VELOCITY FPS	1.79	0.33	0.13	0.27	1.91	0.40
2	DISCHARGE CFS	2295.	174.	80.	465.	1563.	12.
2295.	VELOCITY FPS	1.91	0.49	0.30	0.35	2.28	0.41
3	DISCHARGE CFS	3315.	290.	338.	770.	1900.	18.
3315.	VELOCITY FPS	1.83	0.56	0.57	0.40	2.36	0.43
4	DISCHARGE CFS	3835.	349.	459.	917.	2089.	21.
3835.	VELOCITY FPS	1.88	0.60	0.66	0.43	2.47	0.45
5	DISCHARGE CFS	5140.	490.	724.	1270.	2628.	29.
5140.	VELOCITY FPS	2.13	0.73	0.83	0.53	2.89	0.53
1	ELEV 622.0 KD	45947.	996.	11.	5010.	39709.	221.
2	ELEV 623.8 KD	123052.	9271.	3899.	24772.	84471.	639.
3	ELEV 624.9 KD	194266.	16931.	19267.	45033.	111992.	1042.
4	ELEV 625.3 KD	220738.	19998.	25347.	52669.	121518.	1206.
5	ELEV 625.9 KD	267266.	25451.	37395.	66015.	136915.	1491.

KD TABLE FOR CROSS SECTION 11.03

ELEVATION	AREA	KD	KD BY SEGMENT				
616.78	0.						
617.	1.	11.	1.	1.	1.	6.	1.
618.	54.	863.	1.	1.	2.	858.	1.
619.	172.	5183.	1.	1.	83.	5092.	3.
620.	311.	12536.	1.	1.	436.	12068.	24.
621.	507.	23764.	14.	1.	756.	22882.	90.
622.	1067.	45217.	692.	9.	4698.	38843.	213.
623.	1850.	81123.	4633.	595.	13372.	61699.	411.
624.	2863.	133892.	10458.	5289.	27842.	89503.	695.
625.	3965.	200143.	17553.	20446.	46587.	113990.	1076.
626.	5079.	279150.	26853.	40271.	69316.	140824.	1567.
627.	6197.	370889.	38148.	64982.	95484.	169679.	2178.
628.	7319.	474152.	50987.	94135.	124879.	201072.	2920.
629.	8446.	588220.	65281.	127362.	157303.	234329.	3802.
630.	9576.	713104.	81065.	164767.	192611.	269613.	4836.
631.	10710.	847310.	98084.	205412.	230876.	306815.	6027.
632.	11848.	991291.	116449.	249685.	271695.	345924.	7414.
633.	12990.	1144775.	136131.	297464.	315194.	386895.	8980.
634.	14135.	1307372.	157073.	348531.	361240.	429681.	10747.
635.	15283.	1479406.	179338.	403102.	409947.	474268.	12747.
636.	16434.	1659135.	202655.	460179.	460737.	520554.	14932.
637.	17586.	1847627.	227233.	520503.	514019.	568567.	17230.
638.	18741.	2044663.	253043.	583964.	569722.	618275.	19626.
639.	19897.	2249481.	279980.	650156.	627609.	669627.	22082.
640.	21056.	2461729.	308006.	718914.	687573.	722583.	24585.
641.	22217.	2682466.	337284.	790845.	749954.	777173.	27184.
642.	23379.	2910315.	367621.	865200.	814317.	833322.	29814.
643.	24542.	3147518.	399347.	943241.	881377.	891106.	32582.
644.	25705.	3394093.	432470.	1025005.	951138.	950510.	35488.

RATING TABLE FOR SECTION 11.05 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	617.3	0.0	0.0						
BANK FULL	618.9	96.9	349.3	0.0	0.0	0.0			
1	622.4	981.8	1105.0	0.0	0.0	0.0	1105.00	619.5	0.00070
2	624.0	2372.6	2295.0	0.0	0.0	0.0	2295.00	620.3	0.00046
3	625.1	3502.4	3315.0	0.0	0.0	0.0	3315.00	621.5	0.00038
4	625.5	3912.1	3835.0	0.0	0.0	0.0	3835.00	621.7	0.00038
5	626.1	4581.3	5140.0	0.0	0.0	0.0	5140.00	622.1	0.00045

SEGMENT TABLE FOR SECTION 11.05

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	26.	1.	117.	957.	5.
1105.	VELOCITY FPS	1.94	0.33	0.15	0.28	2.04	0.44
2	DISCHARGE CFS	2295.	164.	61.	439.	1619.	12.
2295.	VELOCITY FPS	2.12	0.53	0.32	0.37	2.48	0.46
3	DISCHARGE CFS	3315.	279.	275.	745.	1998.	18.
3315.	VELOCITY FPS	2.06	0.60	0.57	0.43	2.60	0.47
4	DISCHARGE CFS	3835.	337.	397.	893.	2188.	21.
3835.	VELOCITY FPS	2.09	0.64	0.66	0.46	2.71	0.49
5	DISCHARGE CFS	5140.	478.	668.	1250.	2716.	28.
5140.	VELOCITY FPS	2.32	0.77	0.86	0.55	3.10	0.57
1	ELEV 622.4 KD	41185.	647.	5.	3899.	36441.	194.
2	ELEV 624.0 KD	106315.	7448.	2259.	20052.	76006.	550.
3	ELEV 625.1 KD	169814.	14316.	12945.	38200.	103450.	904.
4	ELEV 625.5 KD	196348.	17171.	19719.	45634.	112768.	1055.
5	ELEV 626.1 KD	241651.	22435.	30633.	58685.	128566.	1333.

KD TABLE FOR CROSS SECTION 11.05

ELEVATION	AREA	KD	KD BY SEGMENT				
617.28	0.						
618.	13.	129.	1.	1.	1.	125.	1.
619.	110.	2610.	1.	1.	19.	2586.	1.
620.	239.	8442.	1.	1.	216.	8209.	9.
621.	394.	17616.	2.	1.	682.	16874.	51.
622.	749.	32662.	203.	1.	2141.	30047.	144.
623.	1422.	61250.	2564.	87.	8838.	49269.	303.
624.	2339.	105212.	7269.	2126.	19588.	75121.	541.
625.	3413.	165276.	13719.	11465.	36596.	101438.	872.
626.	4522.	237916.	21922.	29488.	57423.	127117.	1306.
627.	5638.	323432.	32269.	51901.	81922.	155073.	1856.
628.	6758.	421027.	44354.	78919.	109741.	185208.	2532.
629.	7882.	529811.	57941.	110194.	140693.	217444.	3343.
630.	9011.	648935.	72910.	145262.	174521.	251702.	4298.
631.	10143.	778538.	89324.	184340.	211333.	287952.	5410.
632.	11279.	918079.	107099.	227101.	250942.	326133.	6695.
633.	12419.	1067220.	126190.	273373.	293242.	366196.	8179.
634.	13561.	1225357.	146517.	322850.	338049.	408083.	9832.
635.	14709.	1391987.	166001.	375234.	385162.	451741.	11719.
636.	15858.	1567895.	190796.	431077.	434939.	497181.	13811.
637.	17009.	1752700.	214851.	490173.	487202.	544364.	16089.
638.	18163.	1945190.	240000.	551900.	541603.	593216.	18420.
639.	19319.	2145809.	266326.	616553.	598299.	643734.	20832.
640.	20477.	2354659.	293854.	684205.	657326.	695904.	23327.
641.	21636.	2571226.	322515.	754586.	718522.	749683.	25881.
642.	22798.	2795224.	352280.	827564.	781800.	805043.	28482.
643.	23961.	3027750.	383310.	903758.	847511.	862011.	31181.
644.	25123.	3269638.	415734.	983657.	915920.	920608.	34018.

RATING TABLE FOR SECTION 11.06 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	618.6	0.0	0.0						
1	622.9	215.7	1105.0	0.0	0.0	0.0	1105.00	621.6	0.00878
BANK FULL	623.5	293.4	1638.6	0.0	0.0	0.0			
2	624.3	502.7	2295.0	0.0	0.0	0.0	2295.00	623.6	0.00777
3	625.1	1004.6	3315.0	0.0	0.0	0.0	3315.00	624.3	0.0051[illegible]
4	625.4	1244.8	3835.0	0.0	0.0	0.0	3835.00	624.4	0.00456
5	626.0	1686.6	5140.0	0.0	0.0	0.0	5140.00	624.8	0.00417

SEGMENT TABLE FOR SECTION 11.06

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1105.	0.	1103.	2.
1105.	VELOCITY FPS	5.19	0.0	5.18	0.64
2	DISCHARGE CFS	2295.	73.	2073.	150.
2295.	VELOCITY FPS	6.43	0.79	6.69	1.48
3	DISCHARGE CFS	3315.	479.	2500.	336.
3315.	VELOCITY FPS	5.95	1.08	6.69	1.78
4	DISCHARGE CFS	3835.	740.	2688.	407.
3835.	VELOCITY FPS	5.86	1.18	6.77	1.84
5	DISCHARGE CFS	5140.	1347.	3227.	567.
5140.	VELOCITY FPS	6.01	1.39	7.36	2.03
1 ELEV	622.9 KD	11780.	1.	11777.	2.
2 ELEV	624.3 KD	25900.	625.	23628.	1647.
3 ELEV	625.1 KD	45749.	6075.	35054.	4620.
4 ELEV	625.4 KD	56148.	9784.	40415.	5948.
5 ELEV	626.0 KD	79225.	19978.	50486.	8762.

KD TABLE FOR CROSS SECTION 11.06

ELEVATION	AREA	KD	KD BY SEGMENT		
618.60	0.				
619.	4.	34.	1.	32.	1.
620.	41.	887.	1.	885.	1.
621.	95.	3286.	1.	3284.	1.
622.	155.	6942.	1.	6940.	1.
623.	227.	12562.	1.	12525.	5.
624.	422.	22428.	122.	20959.	852.
625.	912.	42340.	5028.	33128.	4180.
626.	1689.	79741.	20038.	50538.	8777.
627.	2563.	131343.	47713.	68228.	14733.
628.	3448.	194446.	86623.	85445.	21988.
629.	4342.	268863.	134027.	104174.	30409.
630.	5243.	353757.	189270.	124356.	39955.
631.	6151.	448367.	251692.	145932.	50579.
632.	7066.	552854.	321566.	168890.	62324.
633.	7989.	666502.	398191.	193173.	75137.
634.	8920.	788186.	480496.	218703.	88928.
635.	9858.	918606.	569251.	245496.	103787.
636.	10804.	1057336.	664050.	273514.	119689.
637.	11756.	1204874.	765396.	302760.	136685.
638.	12717.	1360446.	872562.	333162.	154688.
639.	13682.	1525124.	986642.	364703.	173717.
640.	14648.	1699974.	1108673.	397465.	193937.
641.	15615.	1885499.	1239180.	431471.	215425.

RATING TABLE FOR SECTION 11.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	618.6	0.0	0.0						
BANK FULL	623.5	344.3	999.5	0.0	0.0	0.0			
1	624.0	471.5	1105.0	0.0	0.0	0.0	1105.00	621.4	0.00159
2	625.4	1269.5	2295.0	0.0	0.0	0.0	2295.00	622.6	0.00118
3	626.1	1832.7	3315.0	0.0	0.0	0.0	3315.00	624.1	0.00112
4	626.4	2095.1	3835.0	0.0	0.0	0.0	3835.00	624.3	0.00111
5	627.0	2610.4	5140.0	0.0	0.0	0.0	5140.00	624.6	0.00117

SEGMENT TABLE FOR SECTION 11.10

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 N	5 C	6 N
1	DISCHARGE CFS	1105.	7.	6.	0.	2.	1042.	48.
1105.	VELOCITY FPS	2.87	0.46	0.32	0.0	0.15	2.92	0.72
2	DISCHARGE CFS	2295.	81.	127.	46.	129.	1704.	207.
2295.	VELOCITY FPS	3.17	1.09	0.87	0.47	0.46	3.56	1.09
3	DISCHARGE CFS	3315.	151.	236.	169.	271.	2165.	323.
3315.	VELOCITY FPS	3.35	1.39	1.09	0.66	0.59	4.01	1.27
4	DISCHARGE CFS	3835.	185.	292.	253.	345.	2380.	381.
3835.	VELOCITY FPS	3.41	1.49	1.18	0.74	0.65	4.20	1.34
5	DISCHARGE CFS	5140.	264.	425.	599.	526.	2810.	516.
5140.	VELOCITY FPS	3.55	1.70	1.39	1.16	0.78	4.55	1.52
1	ELEV 624.0 KD	27261.	75.	64.	1.	30.	26188.	904.
2	ELEV 625.4 KD	65794.	2151.	3450.	740.	3288.	50221.	5944.
3	ELEV 626.1 KD	98260.	4443.	6862.	4215.	7788.	65341.	9591.
4	ELEV 626.4 KD	114344.	5481.	8636.	6932.	10147.	71760.	11388.
5	ELEV 627.0 KD	148894.	7676.	12301.	15229.	15134.	83451.	15103.

KD TABLE FOR CROSS SECTION 11.10

ELEVATION	AREA	KD	KD BY SEGMENT					
618.56	0.							
619.	5.	47.	1.	1.	1.	1.	41.	1.
620.	44.	929.	1.	1.	1.	1.	923.	1.
621.	109.	3446.	1.	1.	1.	1.	3440.	1.
622.	189.	8109.	1.	1.	1.	1.	8103.	1.
623.	279.	15587.	1.	1.	1.	1.	15539.	8.
624.	477.	28046.	87.	73.	1.	33.	26483.	968.
625.	984.	52283.	1268.	2156.	207.	1787.	42359.	4370.
626.	1756.	94699.	4170.	6427.	3628.	7192.	63523.	9108.
627.	2627.	151770.	7751.	12425.	15575.	15303.	83815.	15227.
628.	3513.	225220.	12347.	20001.	39364.	25836.	104372.	22677.
629.	4406.	310401.	17907.	28916.	66756.	38402.	126651.	31330.
630.	5307.	407974.	24442.	39085.	99471.	52850.	150703.	41150.
631.	6215.	517038.	31958.	50400.	136965.	69021.	176343.	52092.
632.	7131.	637762.	40526.	62903.	179432.	86976.	203592.	64206.
633.	8053.	769376.	50143.	76490.	226339.	106551.	232389.	77444.
634.	8984.	910798.	60793.	91020.	276993.	127529.	262656.	91734.
635.	9923.	1062442.	72549.	106552.	331710.	150001.	294388.	107138.
636.	10869.	1224038.	85439.	123049.	390306.	173909.	327553.	123653.
637.	11821.	1396149.	99614.	140567.	453080.	199346.	362150.	141331.
638.	12781.	1577920.	115286.	158964.	519326.	226087.	398109.	160104.
639.	13746.	1770202.	133631.	178194.	588841.	254062.	435395.	179969.
640.	14716.	1969659.	153501.	198356.	662121.	283427.	474026.	198121.
641.	15691.	2174282.	174444.	219432.	739091.	314156.	513984.	213193.
642.	16666.	2389836.	197141.	241682.	821061.	346656.	555346.	228679.
643.	17641.	2616406.	221656.	265115.	908123.	380949.	598100.	244573.

RATING TABLE FOR SECTION 11.13 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	619.7	0.0	0.0						
BANK FULL	624.6	344.3	980.6	0.0	0.0	0.0			
1	625.2	497.2	1105.0	0.0	0.0	0.0	1105.00	622.5	0.00143
2	626.4	1236.9	2295.0	0.0	0.0	0.0	2295.00	623.7	0.00129
3	627.0	1710.2	3315.0	0.0	0.0	0.0	3315.00	625.2	0.00135
4	627.4	1983.6	3835.0	0.0	0.0	0.0	3835.00	625.4	0.00152
5	628.0	2531.3	5140.0	0.0	0.0	0.0	5140.00	625.7	0.00133

SEGMENT TABLE FOR SECTION 11.13

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 N	5 C	6 N
1	DISCHARGE CFS	1105.	7.	6.	0.	2.	1040.	50.
1105.	VELOCITY FPS	2.78	0.41	0.28	0.0	0.14	2.85	0.65
2	DISCHARGE CFS	2295.	76.	119.	41.	119.	1744.	197.
2295.	VELOCITY FPS	3.30	1.04	0.84	0.46	0.44	3.67	1.05
3	DISCHARGE CFS	3315.	140.	217.	135.	244.	2274.	306.
3315.	VELOCITY FPS	3.66	1.38	1.07	0.63	0.58	4.31	1.26
4	DISCHARGE CFS	3835.	174.	273.	221.	320.	2484.	363.
3835.	VELOCITY FPS	3.71	1.48	1.17	0.72	0.64	4.47	1.34
5	DISCHARGE CFS	5140.	253.	406.	539.	500.	2944.	498.
5140.	VELOCITY FPS	3.82	1.68	1.37	1.10	0.76	4.83	1.51
1	ELEV 625.2 KD	29000.	135.	112.	1.	46.	27548.	1157.
2	ELEV 626.4 KD	63133.	1904.	3074.	603.	2884.	49276.	5393.
3	ELEV 627.0 KD	89874.	3771.	5793.	3115.	6439.	62464.	8292.
4	ELEV 627.4 KD	104825.	4712.	7370.	5281.	8525.	68990.	9948.
5	ELEV 628.0 KD	139488.	6876.	11001.	12819.	13460.	81707.	13625.

KD TABLE FOR CROSS SECTION 11.13

ELEVATION	AREA	KD	KD BY SEGMENT					
619.66	0.							
620.	3.	28.	1.	1.	1.	1.	21.	1.
621.	39.	777.	1.	1.	1.	1.	771.	1.
622.	102.	3106.	1.	1.	1.	1.	3101.	1.
623.	181.	7545.	1.	1.	1.	1.	7539.	1.
624.	268.	14683.	1.	1.	1.	1.	14655.	4.
625.	453.	26423.	43.	37.	1.	19.	25212.	672.
626.	922.	48608.	1003.	1632.	119.	1263.	40508.	3700.
627.	1670.	88270.	3645.	5585.	2875.	6170.	61526.	8065.
628.	2539.	141368.	6906.	11051.	12950.	13528.	81867.	13676.
629.	3424.	210474.	11129.	18026.	34781.	23208.	102244.	20552.
630.	4316.	290594.	16257.	26274.	59950.	34817.	124389.	28563.
631.	5217.	382529.	22300.	35704.	90171.	48208.	148235.	37674.
632.	6124.	485454.	29265.	46225.	124950.	63236.	173715.	47845.
633.	7039.	599491.	37216.	57870.	164441.	79954.	200812.	59119.
634.	7961.	723592.	46132.	70497.	207921.	98137.	229445.	71423.
635.	8891.	857144.	56023.	84031.	255030.	117670.	259558.	84728.
636.	9829.	1000598.	66962.	98534.	306092.	138651.	291151.	99095.
637.	10774.	1153514.	78963.	113946.	360815.	160986.	324178.	114504.
638.	11725.	1316375.	92134.	130321.	419473.	184761.	358642.	131006.
639.	12685.	1488043.	106712.	147472.	481153.	209684.	394451.	148506.
640.	13650.	1669912.	123651.	165460.	546167.	235651.	431609.	167060.
641.	14619.	1859425.	142248.	184321.	614707.	263321.	470114.	184626.
642.	15594.	2052955.	161750.	204001.	686511.	292007.	509931.	198738.
643.	16569.	2256817.	182893.	224780.	763000.	322355.	551153.	213239.
644.	17544.	2471090.	205737.	246671.	844262.	354385.	593770.	228124.

RATING TABLE FOR SECTION 11.60 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	622.0	0.0	0.0						
1	627.2	393.2	1105.0	0.0	0.0	0.0	1105.00	624.6	0.00156
BANK FULL	627.5	421.9	1347.7	0.0	0.0	0.0			
2	628.6	599.0	2295.0	0.0	0.0	0.0	2295.00	625.7	0.00175
3	629.4	877.4	3315.0	0.0	0.0	0.0	3315.00	626.4	0.00187
4	629.7	1040.1	3835.0	0.0	0.0	0.0	3835.00	626.8	0.00202
5	630.5	1652.2	5140.0	0.0	0.0	0.0	5140.00	628.3	0.00194

SEGMENT TABLE FOR SECTION 11.60

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1105.	0.	1105.	0.	0.
1105.	VELOCITY FPS	2.83	0.0	2.81	0.0	0.0
2	DISCHARGE CFS	2295.	10.	2270.	9.	6.
2295.	VELOCITY FPS	4.25	0.48	4.24	0.46	0.27
3	DISCHARGE CFS	3315.	49.	3186.	41.	39.
3315.	VELOCITY FPS	5.11	0.56	5.18	0.56	0.38
4	DISCHARGE CFS	3835.	82.	3624.	63.	66.
3835.	VELOCITY FPS	5.50	0.59	5.63	0.59	0.43
5	DISCHARGE CFS	5140.	318.	4338.	293.	192.
5140.	VELOCITY FPS	5.59	0.88	5.98	1.13	0.62
1	ELEV 627.2 KD	27958.	2.	27554.	1.	1.
2	ELEV 628.6 KD	54639.	188.	54297.	93.	61.
3	ELEV 629.4 KD	76312.	866.	73920.	827.	698.
4	ELEV 629.7 KD	84714.	1516.	80726.	1256.	1217.
5	ELEV 630.5 KD	114222.	5855.	99534.	4982.	3851.

KD TABLE FOR CROSS SECTION 11.60

ELEVATION	AREA	KD	KD BY SEGMENT			
621.96	0.					
622.	0.	3.	1.	3.	1.	1.
623.	32.	572.	1.	568.	1.	1.
624.	97.	2665.	1.	2662.	1.	1.
625.	185.	7274.	1.	7271.	1.	1.
626.	278.	14519.	1.	14516.	1.	1.
627.	375.	25463.	1.	25460.	1.	1.
628.	487.	41222.	20.	41137.	8.	6.
629.	696.	65166.	391.	63973.	340.	244.
630.	1222.	95059.	2640.	88073.	1955.	2080.
631.	2058.	140318.	11607.	110932.	11039.	6547.
632.	2914.	199958.	26668.	135854.	24529.	12786.
633.	3774.	271689.	46341.	162754.	41964.	20546.
634.	4638.	354378.	70151.	191564.	62925.	29668.
635.	5505.	447018.	97601.	222205.	86971.	39976.
636.	6376.	549298.	128736.	254644.	114124.	51466.
637.	7250.	660960.	163461.	288840.	144285.	64095.
638.	8127.	781590.	201586.	324747.	177277.	77785.
639.	9008.	910762.	242929.	362320.	212928.	92462.
640.	9893.	1048141.	287357.	401518.	251108.	108067.
641.	10781.	1193004.	334553.	442284.	291524.	124477.
642.	11673.	1346175.	384995.	484640.	334579.	141843.
643.	12567.	1507338.	438542.	528551.	380129.	160104.
644.	13466.	1675276.	494729.	573922.	427536.	179001.
645.	14366.	1851847.	554983.	620787.	477244.	198701.
646.	15267.	2037510.	619448.	669167.	529580.	219332.
647.	16168.	2233076.	686313.	719116.	585169.	241131.

RATING TABLE FOR SECTION 11.63 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	623.0	0.0	0.0						
1	628.3	402.7	1105.0	0.0	0.0	0.0	1105.00	625.6	0.00142
BANK FULL	628.5	421.9	1261.3	0.0	0.0	0.0			
2	629.8	637.2	2295.0	0.0	0.0	0.0	2295.00	626.7	0.00153
3	630.6	1010.3	3315.0	0.0	0.0	0.0	3315.00	627.4	0.00158
4	631.0	1227.0	3835.0	0.0	0.0	0.0	3835.00	627.8	0.00163
5	631.8	1904.0	5140.0	0.0	0.0	0.0	5140.00	629.3	0.00156

SEGMENT TABLE FOR SECTION 11.63

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1105.	0.	1105.	0.	0.
1105.	VELOCITY FPS	2.76	0.0	2.74	0.0	0.0
2	DISCHARGE CFS	2295.	12.	2263.	12.	9.
2295.	VELOCITY FPS	4.12	0.45	4.11	0.44	0.26
3	DISCHARGE CFS	3315.	65.	3147.	51.	52.
3315.	VELOCITY FPS	4.83	0.50	4.93	0.51	0.37
4	DISCHARGE CFS	3835.	113.	3550.	87.	85.
3835.	VELOCITY FPS	5.09	0.56	5.27	0.60	0.41
5	DISCHARGE CFS	5140.	379.	4185.	358.	218.
5140.	VELOCITY FPS	5.05	0.83	5.54	1.10	0.59
1	ELEV 628.3 KD	29295.	2.	29291.	1.	1.
2	ELEV 629.8 KD	58491.	245.	57991.	152.	103.
3	ELEV 630.6 KD	82977.	1329.	79451.	1130.	1068.
4	ELEV 631.0 KD	94727.	2584.	88194.	1917.	2032.
5	ELEV 631.8 KD	128844.	8860.	106568.	8147.	5270.

KD TABLE FOR CROSS SECTION 11.63

ELEVATION	AREA	KD	KD BY SEGMENT			
622.96	0.					
623.	0.	3.	1.	3.	1.	1.
624.	32.	571.	1.	568.	1.	1.
625.	97.	2665.	1.	2662.	1.	1.
626.	185.	7274.	1.	7271.	1.	1.
627.	278.	14519.	1.	14516.	1.	1.
628.	375.	25463.	1.	25460.	1.	1.
629.	487.	41219.	19.	41137.	8.	6.
630.	696.	65131.	380.	63973.	330.	236.
631.	1222.	94852.	2561.	88073.	1897.	2018.
632.	2058.	139442.	11260.	110932.	10709.	6351.
633.	2914.	198046.	25871.	135854.	23796.	12404.
634.	3774.	268438.	44957.	162754.	40711.	19933.
635.	4638.	349518.	68056.	191564.	61047.	28782.
636.	5505.	440310.	94687.	222205.	84375.	38782.
637.	6376.	540505.	124893.	254644.	110716.	49930.
638.	7250.	649854.	158581.	288840.	139977.	62181.
639.	8127.	767954.	195567.	324747.	171985.	75463.
640.	9008.	894389.	235676.	362320.	206571.	89701.
641.	9893.	1028836.	278777.	401518.	243611.	104840.
642.	10781.	1170594.	324564.	442284.	282820.	120761.
643.	11673.	1320455.	373501.	484640.	324590.	137608.
644.	12567.	1478115.	425449.	528551.	368779.	155323.
645.	13466.	1642394.	479958.	573922.	414772.	173656.
646.	14366.	1815094.	538413.	620787.	462995.	192769.
647.	15267.	1996655.	600953.	669167.	513768.	212783.
648.	16168.	2187864.	667763.	719116.	567696.	233932.

RATING TABLE FOR SECTION 11.81 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	624.7	0.0	0.0						
BANK FULL	629.8	270.2	950.0	0.0	0.0	0.0			
1	630.7	360.1	1105.0	0.0	0.0	0.0	1105.00	628.1	0.00272
2	632.2	677.8	2295.0	0.0	0.0	0.0	2295.00	629.5	0.00239
3	632.8	1002.5	3315.0	0.0	0.0	0.0	3315.00	630.5	0.00261
4	633.3	1327.1	3835.0	0.0	0.0	0.0	3835.00	631.0	0.00225
5	633.9	1858.6	5140.0	0.0	0.0	0.0	5140.00	632.2	0.00219

SEGMENT TABLE FOR SECTION 11.81

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1105.	1.	1104.	1.	0.
1105.	VELOCITY FPS	3.14	0.20	3.10	0.55	0.0
2	DISCHARGE CFS	2295.	41.	2224.	25.	5.
2295.	VELOCITY FPS	4.24	0.45	4.26	0.51	0.29
3	DISCHARGE CFS	3315.	108.	3067.	115.	25.
3315.	VELOCITY FPS	5.02	0.60	5.15	0.69	0.41
4	DISCHARGE CFS	3835.	170.	3369.	240.	56.
3835.	VELOCITY FPS	5.04	0.68	5.25	0.76	0.47
5	DISCHARGE CFS	5140.	295.	4197.	523.	125.
5140.	VELOCITY FPS	5.39	0.82	5.88	0.93	0.56
1	ELEV 630.7 KD	21193.	4.	21160.	8.	1.
2	ELEV 632.2 KD	46541.	692.	45627.	204.	18.
3	ELEV 632.8 KD	64506.	1964.	60405.	1782.	355.
4	ELEV 633.3 KD	79530.	3199.	71727.	3782.	823.
5	ELEV 633.9 KD	109138.	6135.	90265.	10280.	2458.

KD TABLE FOR CROSS SECTION 11.81

ELEVATION	AREA	KD	KD BY SEGMENT			
624.72	0.					
625.	2.	16.	1.	11.	1.	1.
626.	24.	489.	1.	485.	1.	1.
627.	69.	1977.	1.	1973.	1.	1.
628.	130.	4969.	1.	4965.	1.	1.
629.	200.	9635.	1.	9631.	1.	1.
630.	289.	15067.	1.	15063.	2.	1.
631.	401.	25766.	15.	25719.	23.	1.
632.	599.	42709.	498.	41977.	100.	7.
633.	1125.	70584.	2368.	64520.	2379.	490.
634.	1952.	114415.	6595.	92626.	11469.	2742.
635.	2900.	167247.	12484.	117741.	29235.	7167.
636.	3925.	232079.	19755.	145202.	52705.	14009.
637.	5043.	308482.	28275.	174893.	81149.	23657.
638.	6245.	398843.	38084.	206828.	114677.	39116.
639.	7489.	500825.	48928.	240786.	152117.	58770.
640.	8775.	614308.	60834.	276754.	193560.	82780.
641.	10066.	743046.	74448.	315197.	241864.	113555.
642.	11357.	888624.	90019.	356206.	298233.	152863.

RATING TABLE FOR SECTION 11.83 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	624.3	0.0	0.0						
BANK FULL	627.8	147.6	597.9	0.0	0.0	0.0			
1	630.8	427.5	1105.0	0.0	0.0	0.0	1105.00	627.6	0.00097
2	632.3	1185.5	2295.0	0.0	0.0	0.0	2295.00	629.1	0.00102
3	633.1	1869.4	3315.0	0.0	0.0	0.0	3315.00	629.9	0.00102
4	633.5	2252.6	3835.0	0.0	0.0	0.0	3835.00	630.2	0.00094
5	634.2	2882.1	5140.0	0.0	0.0	0.0	5140.00	631.7	0.00097

SEGMENT TABLE FOR SECTION 11.83

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	10.	1060.	35.
1105.	VELOCITY FPS	2.94	0.52	2.99	0.65
2	DISCHARGE CFS	2295.	137.	1931.	226.
2295.	VELOCITY FPS	3.84	0.55	4.16	0.48
3	DISCHARGE CFS	3315.	347.	2302.	666.
3315.	VELOCITY FPS	3.78	0.79	4.44	0.73
4	DISCHARGE CFS	3835.	471.	2428.	936.
3835.	VELOCITY FPS	3.61	0.87	4.42	0.81
5	DISCHARGE CFS	5140.	745.	2861.	1535.
5140.	VELOCITY FPS	3.65	1.04	4.79	0.98
1 ELEV	630.8 KD	35446.	294.	34018.	1133.
2 ELEV	632.3 KD	71599.	4190.	60597.	6812.
3 ELEV	633.1 KD	102438.	10286.	72858.	19294.
4 ELEV	633.5 KD	124438.	14959.	80020.	29460.
5 ELEV	634.2 KD	164989.	23797.	92227.	48965.

KD TABLE FOR CROSS SECTION 11.83

ELEVATION	AREA	KD	KD BY SEGMENT		
624.30	0.				
625.	8.	107.	1.	104.	1.
626.	43.	1001.	1.	999.	1.
627.	96.	3248.	1.	3246.	1.
628.	162.	6976.	2.	6972.	1.
629.	241.	13734.	24.	13631.	64.
630.	337.	24265.	128.	23607.	521.
631.	488.	39485.	393.	37771.	1300.
632.	955.	61987.	2154.	54899.	4026.
633.	1774.	98891.	9114.	71071.	16769.
634.	2671.	150900.	20441.	88038.	41461.
635.	3593.	215718.	34883.	106424.	73847.
636.	4538.	292487.	52182.	126177.	113749.
637.	5497.	381397.	72004.	147237.	161686.
638.	6461.	461964.	94517.	169595.	217542.
639.	7427.	592661.	119484.	193205.	279803.
640.	8396.	713571.	146979.	216054.	348631.
641.	9364.	849352.	178503.	244266.	428531.
642.	10332.	1000778.	214351.	271828.	520456.

RATING TABLE FOR SECTION 11.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	625.2	0.0	0.0						
BANK FULL	630.3	270.2	854.0	0.0	0.0	0.0			
1	631.8	452.1	1105.0	0.0	0.0	0.0	1105.00	628.6	0.00131
2	633.4	1022.9	2295.0	0.0	0.0	0.0	2295.00	630.0	0.00122
3	634.0	1557.0	3315.0	0.0	0.0	0.0	3315.00	631.0	0.00125
4	634.4	1887.8	3835.0	0.0	0.0	0.0	3835.00	631.5	0.00119
5	635.2	2557.3	5140.0	0.0	0.0	0.0	5140.00	632.7	0.00121

SEGMENT TABLE FOR SECTION 11.90

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1105.	4.	1099.	2.	0.
1105.	VELOCITY FPS	2.58	0.24	2.57	0.29	0.0
2	DISCHARGE CFS	2295.	77.	2115.	85.	18.
2295.	VELOCITY FPS	3.45	0.42	3.54	0.48	0.29
3	DISCHARGE CFS	3315.	166.	2838.	252.	60.
3315.	VELOCITY FPS	3.95	0.55	4.21	0.59	0.37
4	DISCHARGE CFS	3835.	222.	3115.	401.	96.
3835.	VELOCITY FPS	3.97	0.61	4.35	0.70	0.42
5	DISCHARGE CFS	5140.	362.	3782.	804.	192.
5140.	VELOCITY FPS	4.10	0.74	4.74	0.51	0.50
1	ELEV 631.8 KD	30430.	49.	30339.	40.	2.
2	ELEV 633.4 KD	65337.	2022.	61075.	1866.	373.
3	ELEV 634.0 KD	92806.	4447.	80013.	6292.	1454.
4	ELEV 634.4 KD	110416.	6262.	91001.	10615.	2538.
5	ELEV 635.2 KD	147181.	10329.	108802.	22640.	5409.

KD TABLE FOR CROSS SECTION 11.90

ELEVATION	AREA	KD	KD BY SEGMENT			
625.22	0.					
626.	10.	156.	1.	153.	1.	1.
627.	44.	1063.	1.	1059.	1.	1.
628.	98.	3283.	1.	3279.	1.	1.
629.	164.	7092.	1.	7089.	1.	1.
630.	238.	11817.	1.	11814.	1.	1.
631.	342.	19412.	2.	19398.	5.	1.
632.	486.	33426.	97.	33187.	48.	2.
633.	811.	54655.	1174.	52236.	646.	91.
634.	1519.	91413.	4211.	79076.	5784.	1323.
635.	2416.	139257.	9322.	104890.	19384.	4632.
636.	3400.	198168.	15915.	131191.	40168.	10289.
637.	4468.	268374.	23820.	159788.	66216.	18167.
638.	5642.	351455.	32875.	190536.	96749.	30586.
639.	6867.	447341.	43165.	223470.	132110.	48012.
640.	8129.	555245.	54590.	258492.	171804.	69964.
641.	9421.	675758.	67250.	295355.	216250.	96973.
642.	10712.	812557.	81791.	335379.	266373.	131738.
643.	12003.	966676.	98355.	377675.	328920.	175820.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.2093	0.0	0.2093	1.0002	0.0	0.0	0.9999	1.0000	1.0000	501.5447	589.5347	486.3757
DCRIT	628.59	KBCRIT=									
0.3707	0.1796	0.1910	0.9720	0.0	0.0	0.8793	1.0000	1.0000	685.8521	1345.4692	1170.2627
DCRIT	629.78	KBCRIT=									
0.5042	0.3237	0.1804	0.9408	0.0	0.0	0.8102	1.0000	1.0000	770.5281	1802.3467	1713.3813
DCRIT	630.53	KBCRIT=									
0.5762	0.4015	0.1747	0.9226	0.0	0.0	0.7776	1.0000	1.0000	818.4312	2072.4556	2068.3726
DCRIT	630.86	KBCRIT=									
0.7130	0.5487	0.1643	0.8866	0.0	0.0	0.7218	1.0000	1.0000	909.6240	2639.0459	2747.8711
DCRIT	631.63	KBCRIT=									

ROAD SECTION 12.00

NO.	HW	CFS	HL	TW	CSM
0	625.10	0.00	0.00	0.00	0.00
1	631.90	1105.00	0.02	631.88	1105.00
2	633.54	2295.00	0.10	633.44	2295.00
3	634.32	3315.00	0.20	634.12	3315.00
4	634.74	3835.00	0.24	634.51	3835.00
5	635.61	5140.00	0.38	635.23	5140.00

→ MIN ROAD ELEVATION 635.50

BRIDGE TYPE 2 → GIRDER BOTTOM ELEVATION = 636.70 OPENING NO.= 1

RATING TABLE FOR SECTION 12.03 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	627.0	0.0	0.0						
1	632.0	289.9	1105.0	0.0	0.0	0.0	1105.00	630.1	0.00392
2	633.4	455.3	2295.0	0.0	0.0	0.0	2295.00	631.3	0.00424
3	634.1	680.8	3315.0	0.0	0.0	0.0	3315.00	632.2	0.00480
4	634.5	841.8	3835.0	0.0	0.0	0.0	3835.00	632.6	0.00457
5	635.3	1246.1	5140.0	0.0	0.0	0.0	5140.00	634.1	0.00410

SEGMENT TABLE FOR SECTION 12.03

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	0.	1105.	0.
1105.	VELOCITY FPS	3.83	0.0	3.81	0.0
2	DISCHARGE CFS	2295.	13.	2281.	0.
2295.	VELOCITY FPS	5.45	0.36	5.45	0.55
3	DISCHARGE CFS	3315.	127.	3180.	7.
3315.	VELOCITY FPS	6.51	0.69	6.62	0.45
4	DISCHARGE CFS	3835.	248.	3564.	23.
3835.	VELOCITY FPS	6.73	0.85	6.91	0.67
5	DISCHARGE CFS	5140.	621.	4445.	73.
5140.	VELOCITY FPS	7.04	1.11	7.49	0.80
1	ELEV 632.0 KD	17650.	1.	17648.	1.
2	ELEV 633.4 KD	35199.	164.	35034.	1.
3	ELEV 634.1 KD	47532.	1519.	45946.	68.
4	ELEV 634.5 KD	56362.	3177.	52952.	234.
5	ELEV 635.3 KD	79885.	9016.	69819.	1051.

KD TABLE FOR CROSS SECTION 12.03

ELEVATION	AREA	KD	KD BY SEGMENT		
627.01	0.				
628.	17.	231.	1.	228.	1.
629.	70.	1883.	1.	1881.	1.
630.	135.	5151.	1.	5149.	1.
631.	211.	10076.	1.	10076.	1.
632.	293.	18023.	1.	18021.	1.
633.	396.	29226.	13.	29160.	1.
634.	646.	45719.	1092.	44136.	37.
635.	1087.	71560.	6808.	63956.	772.
636.	1642.	104983.	17232.	85621.	2110.
637.	2281.	145694.	31807.	107894.	5972.
638.	2950.	194216.	49835.	132455.	11913.
639.	3646.	249778.	71070.	156993.	19707.
640.	4372.	311944.	95120.	187382.	29256.
641.	5133.	379354.	122244.	217645.	39308.
642.	5948.	453182.	152285.	249718.	51013.
643.	6821.	534537.	185143.	283545.	65676.
644.	7737.	624160.	221063.	319161.	84100.
645.	8653.	722375.	261287.	356826.	106180.
646.	9569.	829463.	306052.	396536.	132377.

RATING TABLE FOR SECTION 12.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	627.0	0.0	0.0						
1	633.3	428.7	1105.0	0.0	0.0	0.0	1105.00	630.1	0.00114
2	634.9	1056.7	2295.0	0.0	0.0	0.0	2295.00	631.3	0.00109
BANK FULL	635.3	1252.9	2720.1	0.0	0.0	0.0			
3	635.8	1536.1	3315.0	0.0	0.0	0.0	3315.00	632.2	0.00114
4	636.2	1776.3	3835.0	0.0	0.0	0.0	3835.00	632.6	0.00115
5	637.1	2338.9	5140.0	0.0	0.0	0.0	5140.00	634.1	0.00118

SEGMENT TABLE FOR SECTION 12.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	4.	1101.	0.
1105.	VELOCITY FPS	2.74	0.16	2.73	0.0
2	DISCHARGE CFS	2295.	213.	2058.	24.
2295.	VELOCITY FPS	3.50	0.49	3.68	0.39
3	DISCHARGE CFS	3315.	515.	2737.	63.
3315.	VELOCITY FPS	3.89	0.69	4.24	0.45
4	DISCHARGE CFS	3835.	689.	3048.	99.
3835.	VELOCITY FPS	4.01	0.77	4.45	0.51
5	DISCHARGE CFS	5140.	1148.	3768.	223.
5140.	VELOCITY FPS	4.21	0.94	4.88	0.66
1 ELEV	633.3 KD	32654.	62.	32591.	1.
2 ELEV	634.9 KD	69434.	6240.	62522.	672.
3 ELEV	635.8 KD	97620.	14636.	81214.	1769.
4 ELEV	636.2 KD	112609.	19837.	90109.	2663.
5 ELEV	637.1 KD	149629.	33305.	109925.	6399.

KD TABLE FOR CROSS SECTION 12.10

ELEVATION	AREA	KD	KD BY SEGMENT		
627.01	0.				
628.	17.	231.	1.	228.	1.
629.	70.	1883.	1.	1881.	1.
630.	135.	5151.	1.	5149.	1.
631.	211.	10078.	1.	10076.	1.
632.	293.	18023.	1.	18021.	1.
633.	396.	29226.	13.	29160.	1.
634.	646.	45726.	1097.	44136.	37.
635.	1087.	71595.	6839.	63956.	776.
636.	1642.	105071.	17310.	85621.	2120.
637.	2281.	145865.	31951.	107894.	6000.
638.	2950.	194496.	50061.	132455.	11967.
639.	3646.	250190.	71392.	158993.	19796.
640.	4372.	312509.	95551.	187382.	29388.
641.	5133.	380087.	122798.	217645.	39487.
642.	5948.	454105.	152976.	249718.	51244.
643.	6821.	535675.	185982.	283545.	65974.
644.	7737.	625543.	222065.	319161.	84482.
645.	8653.	724036.	262473.	356826.	106662.
646.	9569.	831433.	307440.	396536.	132977.

RATING TABLE FOR SECTION 12.13 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	629.8	0.0	0.0						
1	635.6	366.2	1105.0	0.0	0.0	0.0	1105.00	632.9	0.00176
2	637.1	755.6	2295.0	0.0	0.0	0.0	2295.00	634.1	0.00193
3	637.9	1155.2	3315.0	0.0	0.0	0.0	3315.00	635.0	0.00192
BANK FULL	638.1	1252.9	3513.6	0.0	0.0	0.0			
4	638.4	1410.8	3835.0	0.0	0.0	0.0	3835.00	635.4	0.00179
5	639.2	1908.7	5140.0	0.0	0.0	0.0	5140.00	636.9	0.00177

SEGMENT TABLE FOR SECTION 12.13

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	1.	1104.	0.
1105.	VELOCITY FPS	3.08	0.21	3.07	0.0
2	DISCHARGE CFS	2295.	120.	2166.	9.
2295.	VELOCITY FPS	4.25	0.51	4.35	0.38
3	DISCHARGE CFS	3315.	371.	2901.	43.
3315.	VELOCITY FPS	4.73	0.74	5.02	0.57
4	DISCHARGE CFS	3835.	567.	3199.	68.
3835.	VELOCITY FPS	4.76	0.85	5.14	0.57
5	DISCHARGE CFS	5140.	1023.	3954.	163.
5140.	VELOCITY FPS	4.99	1.05	5.60	0.72
1	ELEV 635.6 KD	26314.	3.	26310.	1.
2	ELEV 637.1 KD	52076.	2524.	49393.	158.
3	ELEV 637.9 KD	75504.	8111.	66459.	934.
4	ELEV 638.4 KD	90159.	12505.	76166.	1488.
5	ELEV 639.2 KD	121721.	23638.	94609.	3474.

KD TABLE FOR CROSS SECTION 12.13

ELEVATION	AREA	KD	KD BY SEGMENT		
629.81	0.				
630.	0.	5.	1.	3.	1.
631.	25.	404.	1.	402.	1.
632.	82.	2413.	1.	2411.	1.
633.	150.	5966.	1.	5964.	1.
634.	227.	11357.	1.	11355.	1.
635.	310.	19987.	1.	19985.	1.
636.	421.	31920.	46.	31806.	1.
637.	713.	49964.	2157.	47652.	123.
638.	1198.	78061.	8728.	68011.	1011.
639.	1769.	113604.	20636.	89873.	2756.
640.	2415.	156871.	36767.	112599.	7266.
641.	3089.	208125.	56458.	137569.	13924.
642.	3791.	266599.	79440.	164489.	22509.
643.	4517.	332359.	105808.	193352.	33192.
644.	5288.	402495.	134828.	223952.	43610.
645.	6117.	479911.	166940.	256356.	56459.
646.	7004.	565442.	202024.	290511.	72700.
647.	7920.	659661.	240707.	326537.	92819.
648.	8836.	762900.	283968.	364612.	116879.
649.	9752.	875458.	332054.	404731.	145371.

*****SECT.12.30 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 648.85 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 12.30 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	632.0	0.0	0.0						
BANK FULL	633.6	94.8	366.5	0.0	0.0	0.0			
1	636.9	425.0	1105.0	0.0	0.0	0.0	1105.00	634.3	0.00122
2	638.5	600.8	2295.0	0.0	0.0	0.0	2295.00	635.3	0.00119
3	639.4	718.5	3315.0	0.0	0.0	0.0	3315.00	636.0	0.00139
4	639.9	784.8	3835.0	0.0	0.0	0.0	3835.00	636.3	0.00149
5	640.9	964.1	5140.0	0.0	0.0	0.0	5140.00	637.1	0.00171

CSM TABLE FOR SECTION 12.30

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	4.	1098.	3.
1105.	VELOCITY FPS	2.67	0.55	2.67	0.44
2	DISCHARGE CFS	2295.	13.	2274.	9.
2295.	VELOCITY FPS	3.99	0.72	4.00	0.56
3	DISCHARGE CFS	3315.	23.	3280.	12.
3315.	VELOCITY FPS	4.93	0.88	4.95	0.40
4	DISCHARGE CFS	3835.	29.	3788.	18.
3835.	VELOCITY FPS	5.32	0.96	5.35	0.39
5	DISCHARGE CFS	5140.	47.	5033.	60.
5140.	VELOCITY FPS	6.20	1.14	6.25	0.51
1 ELEV	636.9 KD	31671.	118.	31467.	87.
2 ELEV	638.5 KD	66399.	365.	65784.	251.
3 ELEV	639.4 KD	88939.	607.	88029.	303.
4 ELEV	639.9 KD	99453.	752.	98241.	460.
5 ELEV	640.9 KD	124157.	1136.	121655.	1365.

KO TABLE FOR CROSS SECTION 12.30

ELEVATION	AREA	KO	KO BY SEGMENT		
632.05	0.				
633.	40.	659.	1.	656.	1.
634.	129.	3830.	2.	3826.	2.
635.	229.	9845.	9.	9827.	8.
636.	333.	19484.	47.	19399.	37.
637.	439.	33809.	131.	33581.	96.
638.	548.	54227.	273.	53760.	192.
639.	661.	78457.	485.	77718.	251.
640.	798.	101624.	783.	100339.	498.
641.	983.	126956.	1183.	124226.	1526.
642.	1218.	155631.	1696.	150112.	3789.
643.	1484.	188011.	2333.	177921.	7717.
644.	1772.	223763.	3106.	207590.	13035.
645.	2086.	262900.	4024.	239048.	19685.
646.	2420.	305421.	5099.	272267.	27880.
647.	2791.	349108.	6340.	307159.	35541.
648.	3210.	396231.	7238.	343802.	44856.
649.	3680.	451685.	7531.	382035.	61937.
650.	4172.	513394.	9670.	421854.	81568.
651.	4665.	579612.	12677.	463235.	103273.
652.	5161.	650033.	16392.	506163.	127232.
653.	5658.	724321.	20534.	550604.	153137.
654.	6156.	803034.	25454.	596602.	182729.
655.	6653.	886220.	31253.	644136.	216330.

*****SECT.12.33 KO VALUES REVERSED ON SEGMENT 1 AT ELEVATION 649.45 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 12.33 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	632.6	0.0	0.0						
BANK FULL	634.2	94.8	350.6	0.0	0.0	0.0			
1	637.7	448.7	1105.0	0.0	0.0	0.0	1105.00	634.9	0.00097
2	639.3	630.6	2295.0	0.0	0.0	0.0	2295.00	635.9	0.00101
3	640.5	779.6	3315.0	0.0	0.0	0.0	3315.00	636.6	0.00113
4	641.0	867.0	3835.0	0.0	0.0	0.0	3835.00	636.9	0.00120
5	642.1	1102.8	5140.0	0.0	0.0	0.0	5140.00	637.7	0.00133

SEGMENT TABLE FOR SECTION 12.33

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	4.	1098.	3.
1105.	VELOCITY FPS	2.55	0.49	2.54	0.39
2	DISCHARGE CFS	2295.	13.	2275.	8.
2295.	VELOCITY FPS	3.83	0.66	3.83	0.42
3	DISCHARGE CFS	3315.	24.	3277.	15.
3315.	VELOCITY FPS	4.63	0.79	4.65	0.33
4	DISCHARGE CFS	3835.	31.	3776.	29.
3835.	VELOCITY FPS	4.98	0.86	5.01	0.37
5	DISCHARGE CFS	5140.	50.	4997.	93.
5140.	VELOCITY FPS	5.70	1.01	5.77	0.50
1	ELEV 637.7 KD	35413.	134.	35181.	98.
2	ELEV 639.3 KD	72195.	400.	71558.	238.
3	ELEV 640.5 KD	98551.	702.	97427.	423.
4	ELEV 641.0 KD	110730.	874.	109129.	727.
5	ELEV 642.1 KD	140980.	1357.	137278.	2345.

KD TABLE FOR CROSS SECTION 12.33

ELEVATION	AREA	KD	KD BY SEGMENT		
632.65	0.				
633.	7.	60.	1.	57.	1.
634.	72.	1499.	1.	1496.	1.
635.	169.	5967.	3.	5961.	3.
636.	270.	13195.	18.	13159.	16.
637.	375.	24592.	71.	24467.	54.
638.	482.	41121.	171.	40826.	123.
639.	592.	64431.	331.	63868.	231.
640.	712.	87842.	562.	86996.	275.
641.	871.	111341.	882.	109631.	745.
642.	1076.	137883.	1302.	134331.	2114.
643.	1323.	167832.	1835.	160997.	4833.
644.	1599.	201302.	2490.	189560.	9113.
645.	1897.	238058.	3277.	219953.	14670.
646.	2216.	278087.	4208.	252140.	21665.
647.	2557.	321449.	5291.	286058.	30072.
648.	2949.	364358.	6532.	321652.	36155.
649.	3397.	414787.	6867.	358902.	48640.
650.	3877.	471850.	7910.	397768.	65727.
651.	4369.	534149.	10172.	438234.	85592.
652.	4863.	600851.	13408.	480234.	106961.
653.	5360.	671257.	17040.	523758.	130136.
654.	5857.	745711.	21254.	568825.	156075.
655.	6355.	824443.	26244.	615439.	185633.

RATING TABLE FOR SECTION 12.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	633.4	0.0	0.0						
BANK FULL	634.2	13.4	161.4	0.0	0.0	0.0			
1	638.8	292.9	1105.0	0.0	0.0	0.0	1105.00	636.5	0.00183
2	640.7	460.2	2295.0	0.0	0.0	0.0	2295.00	637.8	0.00243
3	641.9	627.4	3315.0	0.0	0.0	0.0	3315.00	638.9	0.00279
4	642.5	749.3	3835.0	0.0	0.0	0.0	3835.00	639.3	0.00294
5	643.7	1293.3	5140.0	0.0	0.0	0.0	5140.00	640.4	0.00285

SEGMENT TABLE FOR SECTION 12.50

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	47.	1044.	13.
1105.	VELOCITY FPS	4.33	1.11	4.44	0.89
2	DISCHARGE CFS	2295.	130.	2115.	50.
2295.	VELOCITY FPS	6.17	1.38	6.41	1.38
3	DISCHARGE CFS	3315.	197.	3024.	94.
3315.	VELOCITY FPS	7.38	1.09	7.71	1.71
4	DISCHARGE CFS	3835.	239.	3477.	119.
3835.	VELOCITY FPS	7.91	0.90	8.27	1.85
5	DISCHARGE CFS	5140.	739.	4227.	174.
5140.	VELOCITY FPS	8.11	1.01	8.83	2.00
1	ELEV 638.8 KD	25798.	1108.	24389.	301.
2	ELEV 640.7 KD	46557.	2627.	42926.	1005.
3	ELEV 641.9 KD	62727.	3736.	57235.	1756.
4	ELEV 642.5 KD	70590.	4241.	64167.	2182.
5	ELEV 643.7 KD	95276.	12329.	79688.	3259.

KD TABLE FOR CROSS SECTION 12.50

ELEVATION	AREA	KD	KD BY SEGMENT		
633.39	0.				
634.	9.	167.	1.	164.	1.
635.	48.	1694.	14.	1679.	1.
636.	104.	5536.	117.	5416.	1.
637.	167.	11344.	389.	10926.	29.
638.	234.	18824.	803.	17877.	140.
639.	308.	27697.	1184.	26158.	355.
640.	394.	38209.	1884.	35629.	688.
641.	491.	50451.	3027.	46245.	1163.
642.	637.	63503.	3749.	57938.	1798.
643.	952.	80129.	6548.	70669.	2611.
644.	1516.	107172.	17774.	84390.	3618.
645.	2206.	145932.	41074.	99068.	4835.
646.	2936.	193784.	71926.	114667.	6276.
647.	3704.	250042.	110369.	131172.	7960.
648.	4511.	314649.	155925.	148556.	9899.
649.	5358.	388480.	209558.	166794.	12108.
650.	6229.	474379.	273669.	185857.	14596.
651.	7110.	568151.	344586.	205735.	17379.
652.	7997.	670381.	423210.	226423.	20475.
653.	8893.	780595.	508787.	247902.	23897.
654.	9803.	894749.	596774.	270137.	27646.
655.	10728.	1015345.	690294.	293136.	31745.
656.	11668.	1142445.	789233.	316885.	36241.
657.	12630.	1276284.	893522.	341362.	41257.
658.	13592.	1419263.	1006395.	366596.	46715.
659.	14554.	1571599.	1128168.	392579.	52635.

RATING TABLE FOR SECTION 12.57 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	641.6	0.0	0.0						
BANK FULL	642.4	13.4	182.5	0.0	0.0	0.0			
1	646.4	246.4	1105.0	0.0	0.0	0.0	1105.00	644.7	0.00298
2	648.4	415.4	2295.0	0.0	0.0	0.0	2295.00	646.0	0.00317
3	649.8	559.8	3315.0	0.0	0.0	0.0	3315.00	647.1	0.00333
4	650.5	689.0	3835.0	0.0	0.0	0.0	3835.00	647.5	0.00325
5	651.6	1104.6	5140.0	0.0	0.0	0.0	5140.00	648.6	0.00348

SEGMENT TABLE FOR SECTION 12.57

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	46.	1050.	9.
1105.	VELOCITY FPS	5.03	1.41	5.15	0.92
2	DISCHARGE CFS	2295.	114.	2138.	43.
2295.	VELOCITY FPS	6.75	1.46	6.97	1.42
3	DISCHARGE CFS	3315.	200.	3032.	83.
3315.	VELOCITY FPS	7.80	1.44	8.13	1.71
4	DISCHARGE CFS	3835.	208.	3517.	110.
3835.	VELOCITY FPS	8.23	0.95	8.57	1.82
5	DISCHARGE CFS	5140.	504.	4468.	167.
5140.	VELOCITY FPS	8.99	0.90	9.63	2.07
1 ELEV 646.4 KD		20238.	848.	19227.	163.
2 ELEV 648.4 KD		40731.	2010.	37974.	747.
3 ELEV 649.8 KD		57460.	3473.	52563.	1424.
4 ELEV 650.5 KD		67213.	3641.	61643.	1929.
5 ELEV 651.6 KD		87108.	8531.	75745.	2832.

KD TABLE FOR CROSS SECTION 12.57

ELEVATION	AREA	KD	KD BY SEGMENT		
641.59	0.				
642.	5.	68.	1.	65.	1.
643.	38.	1130.	7.	1122.	1.
644.	92.	4621.	81.	4538.	1.
645.	154.	10006.	303.	9683.	12.
646.	221.	17161.	676.	16376.	105.
647.	293.	25739.	1057.	24391.	287.
648.	375.	35859.	1625.	33650.	583.
649.	471.	47684.	2629.	44037.	1007.
650.	603.	60642.	3530.	55515.	1580.
651.	871.	75905.	5265.	68043.	2320.
652.	1383.	99705.	13642.	81569.	3242.
653.	2065.	135443.	34134.	96058.	4361.
654.	2787.	180204.	62268.	111476.	5692.
655.	3545.	233142.	97756.	127806.	7251.
656.	4342.	293879.	139792.	145017.	9051.
657.	5189.	363093.	188651.	163076.	11101.
658.	6055.	443498.	247697.	181976.	13418.
659.	6933.	532541.	314393.	201695.	16016.
660.	7818.	629749.	388448.	222227.	18910.
661.	8714.	733820.	468011.	243542.	22106.
662.	9621.	842959.	551488.	265627.	25617.
663.	10541.	958231.	640153.	288479.	29460.
664.	11476.	1079314.	733578.	312083.	33647.
665.	12438.	1206344.	831413.	336407.	38348.
666.	13399.	1342063.	937373.	361491.	43466.
667.	14361.	1486670.	1051757.	387324.	49021.

RATING TABLE FOR SECTION 12.70 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	648.5	0.0	0.0						
BANK FULL	650.0	127.9	462.2	0.0	0.0	0.0			
1	652.1	405.3	1105.0	0.0	0.0	0.0	1105.00	650.4	0.00230
2	653.5	599.7	2295.0	0.0	0.0	0.0	2295.00	651.2	0.00225
3	654.4	736.6	3315.0	0.0	0.0	0.0	3315.00	651.8	0.00202
4	655.0	831.9	3835.0	0.0	0.0	0.0	3835.00	652.0	0.00173
5	656.0	1120.2	5140.0	0.0	0.0	0.0	5140.00	652.7	0.00170

SEGMENT TABLE FOR SECTION 12.70

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	2.	1101.	1.
1105.	VELOCITY FPS	2.76	0.51	2.76	0.66
2	DISCHARGE CFS	2295.	9.	2281.	4.
2295.	VELOCITY FPS	3.94	0.68	3.93	0.89
3	DISCHARGE CFS	3315.	14.	3294.	8.
3315.	VELOCITY FPS	4.74	0.45	4.72	0.98
4	DISCHARGE CFS	3835.	15.	3810.	10.
3835.	VELOCITY FPS	4.95	0.28	4.96	0.98
5	DISCHARGE CFS	5140.	106.	5018.	16.
5140.	VELOCITY FPS	5.51	0.52	5.57	1.09
1	ELEV 652.1 KD	22095.	50.	22022.	23.
2	ELEV 653.5 KD	48406.	196.	48120.	91.
3	ELEV 654.4 KD	73684.	310.	73206.	169.
4	ELEV 655.0 KD	92225.	343.	91652.	230.
5	ELEV 656.0 KD	124459.	2350.	121730.	378.

KO TABLE FOR CROSS SECTION 12.70

ELEVATION	AREA	KO	KO BY SEGMENT		
648.53	0.				
649.	16.	124.	1.	121.	1.
650.	124.	3011.	2.	3008.	2.
651.	255.	9797.	6.	9786.	5.
652.	390.	20487.	42.	20424.	20.
653.	527.	37098.	127.	36910.	59.
654.	668.	60858.	277.	60452.	129.
655.	844.	93541.	378.	92875.	235.
656.	1126.	125209.	2401.	122259.	381.
657.	1434.	160094.	6344.	152963.	572.
658.	1760.	199312.	11929.	186374.	845.
659.	2104.	242759.	19018.	222373.	1235.
660.	2466.	290360.	27618.	260870.	1759.
661.	2847.	342037.	37694.	301779.	2433.
662.	3247.	397536.	49145.	345052.	3273.
663.	3669.	456425.	61490.	390616.	4296.
664.	4122.	519682.	75730.	438398.	5513.
665.	4604.	587359.	91974.	488357.	6941.
666.	5106.	662003.	112676.	540449.	8592.
667.	5616.	742675.	137382.	594653.	10486.
668.	6128.	828087.	164466.	650902.	12631.
669.	6643.	917474.	193092.	709152.	15035.
670.	7160.	1010987.	223720.	769396.	17720.
671.	7678.	1108597.	256329.	831605.	20703.
672.	8196.	1210763.	291956.	895807.	24024.
673.	8714.	1317487.	330736.	961974.	27706.

RATING TABLE FOR SECTION 12.79 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	650.6	0.0	0.0						
BANK FULL	652.1	127.9	468.0	0.0	0.0	0.0			
1	654.1	399.3	1105.0	0.0	0.0	0.0	1105.00	652.4	0.00265
2	655.5	592.4	2295.0	0.0	0.0	0.0	2295.00	653.2	0.00237
3	656.3	700.6	3315.0	0.0	0.0	0.0	3315.00	653.8	0.00244
4	656.7	765.8	3835.0	0.0	0.0	0.0	3835.00	654.1	0.00234
5	657.6	999.9	5140.0	0.0	0.0	0.0	5140.00	654.7	0.00214

SEGMENT TABLE FOR SECTION 12.79

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	2.	1102.	1.
1105.	VELOCITY FPS	2.81	0.50	2.80	0.65
2	DISCHARGE CFS	2295.	9.	2282.	4.
2295.	VELOCITY FPS	3.98	0.67	3.97	0.87
3	DISCHARGE CFS	3315.	14.	3293.	7.
3315.	VELOCITY FPS	4.91	0.65	4.91	1.00
4	DISCHARGE CFS	3835.	15.	3812.	9.
3835.	VELOCITY FPS	5.31	0.39	5.29	1.04
5	DISCHARGE CFS	5140.	64.	5062.	14.
5140.	VELOCITY FPS	5.94	0.46	5.97	1.13
1	ELEV 654.1 KD	21471.	45.	21405.	21.
2	ELEV 655.5 KD	47165.	182.	46898.	85.
3	ELEV 656.3 KD	67043.	293.	66607.	143.
4	ELEV 656.7 KD	79321.	303.	78838.	180.
5	ELEV 657.6 KD	111008.	1208.	109498.	303.

KD TABLE FOR CROSS SECTION 12.79

ELEVATION	AREA	KD	KD BY SEGMENT		
650.59	0.				
651.	11.	75.	1.	73.	1.
652.	117.	2734.	2.	2731.	2.
653.	247.	9311.	5.	9302.	4.
654.	381.	19683.	37.	19626.	17.
655.	519.	35916.	116.	35744.	54.
656.	659.	59205.	256.	58828.	119.
657.	827.	91752.	320.	91203.	220.
658.	1108.	123164.	2156.	120513.	358.
659.	1415.	157644.	5856.	151050.	539.
660.	1740.	196406.	11156.	184303.	796.
661.	2083.	239346.	17907.	220150.	1166.
662.	2444.	286385.	26117.	258499.	1663.
663.	2824.	337448.	35758.	299267.	2304.
664.	3222.	392328.	46767.	342402.	3105.
665.	3642.	450493.	58575.	387832.	4082.
666.	4095.	512974.	72200.	435475.	5244.
667.	4575.	579766.	87757.	485306.	6609.
668.	5076.	653124.	107389.	537274.	8189.
669.	5585.	732591.	131111.	591354.	10003.
670.	6098.	816701.	157047.	647479.	12057.
671.	6613.	904776.	184607.	705611.	14362.
672.	7129.	996904.	214092.	765739.	16937.
673.	7647.	1093005.	245388.	827828.	19797.
674.	8165.	1193565.	279590.	891911.	22981.
675.	8683.	1298588.	316825.	957963.	26512.

RATING TABLE FOR SECTION 12.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	652.4	0.0	0.0						
BANK FULL	654.0	78.8	407.2	0.0	0.0	0.0			
1	656.8	308.3	1105.0	0.0	0.0	0.0	1105.00	654.9	0.00309
2	658.3	457.7	2295.0	0.0	0.0	0.0	2295.00	656.0	0.00289
3	659.1	553.9	3315.0	0.0	0.0	0.0	3315.00	656.8	0.00319
4	659.4	600.8	3835.0	0.0	0.0	0.0	3835.00	657.2	0.00345
5	660.5	818.2	5140.0	0.0	0.0	0.0	5140.00	658.1	0.00351

SEGMENT TABLE FOR SECTION 12.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	10.	1090.	5.
1105.	VELOCITY FPS	3.73	1.10	3.74	0.62
2	DISCHARGE CFS	2295.	30.	2248.	17.
2295.	VELOCITY FPS	5.45	1.42	5.46	0.69
3	DISCHARGE CFS	3315.	48.	3234.	32.
3315.	VELOCITY FPS	6.76	1.67	6.82	0.64
4	DISCHARGE CFS	3835.	59.	3730.	46.
3835.	VELOCITY FPS	7.37	1.81	7.46	0.68
5	DISCHARGE CFS	5140.	94.	4914.	133.
5140.	VELOCITY FPS	8.23	2.04	8.40	0.71
1 ELEV	656.8 KD	19868.	178.	19606.	85.
2 ELEV	658.3 KD	42664.	548.	41790.	326.
3 ELEV	659.1 KD	58657.	846.	57275.	536.
4 ELEV	659.4 KD	65277.	995.	63526.	756.
5 ELEV	660.5 KD	86692.	1577.	83001.	2114.

KD TABLE FOR CROSS SECTION 12.90

ELEVATION	AREA	KD	KD BY SEGMENT		
652.42	0.				
653.	15.	190.	1.	188.	1.
654.	77.	1971.	1.	1969.	1.
655.	156.	5976.	11.	5960.	3.
656.	240.	12493.	77.	12390.	27.
657.	330.	22643.	220.	22308.	112.
658.	425.	37159.	457.	36413.	288.
659.	539.	56690.	803.	55390.	480.
660.	703.	76162.	1274.	73543.	1294.
661.	956.	97571.	1884.	91949.	3476.
662.	1285.	123416.	2649.	111972.	8451.
663.	1659.	153906.	3579.	133541.	16487.
664.	2060.	188666.	4707.	156603.	27124.
665.	2486.	227429.	6035.	181106.	40020.
666.	2934.	270352.	7551.	207021.	55575.
667.	3402.	317690.	9258.	234307.	74018.
668.	3885.	369399.	11163.	262929.	95294.
669.	4385.	425013.	13397.	292839.	118669.
670.	4885.	484992.	15909.	324099.	145848.
671.	5385.	549406.	18713.	356689.	177218.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.5585	0.3671	0.1914	0.9039	0.0	0.0	0.7475	1.0000	1.0000	245.5069	392.1624	366.0486
DCRIT	655.05	KBCRIT=									
0.3860	0.1463	0.2397	0.9639	0.0	0.0	0.8589	1.0000	1.0000	347.9585	566.1838	534.0659
DCRIT	656.60	KBCRIT=									
0.3410	0.0907	0.2503	0.9781	0.0	0.0	0.8964	1.0000	1.0000	412.7527	678.8667	673.4661
DCRIT	657.65	KBCRIT=									
0.3229	0.0702	0.2527	0.9831	0.0	0.0	0.9123	1.0000	1.0000	442.7847	732.0620	751.8298
DCRIT	658.18	KBCRIT=									
0.2800	0.0248	0.2552	0.9936	0.0	0.0	0.9538	1.0000	1.0000	538.1270	866.2612	1072.6167
DCRIT	659.47	KBCRIT=									

ROAD SECTION 13.00

NO.	HW	CFS	HL	TW	CSM
0	652.00	0.00	0.00	0.00	0.00
1	657.20	1105.00	0.24	656.96	1105.00
2	658.94	2295.00	0.40	658.54	2295.00
3	660.01	3315.00	0.58	659.44	3315.00
4	660.50	3835.00	0.68	659.82	3835.00
5	661.70	5140.00	0.72	660.99	5140.00

MIN ROAD ELEVATION 664.46

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 672.30 OPENING NO.= 1

RATING TABLE FOR SECTION 13.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	652.4	0.0	0.0						
BANK FULL	654.0	78.5	354.2	0.0	0.0	0.0			
1	657.4	364.4	1105.0	0.0	0.0	0.0	1105.00	654.9	0.00163
2	659.1	533.4	2295.0	0.0	0.0	0.0	2295.00	656.0	0.00155
3	660.1	646.1	3315.0	0.0	0.0	0.0	3315.00	656.8	0.00177
4	660.6	699.3	3835.0	0.0	0.0	0.0	3835.00	657.2	0.00188
5	661.9	833.3	5140.0	0.0	0.0	0.0	5140.00	658.1	0.00204

SEGMENT TABLE FOR SECTION 13.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1105.	11.	1086.	8.
1105.	VELOCITY FPS	3.20	0.83	3.21	0.61
2	DISCHARGE CFS	2295.	30.	2237.	28.
2295.	VELOCITY FPS	4.69	1.06	4.74	0.85
3	DISCHARGE CFS	3315.	53.	3211.	52.
3315.	VELOCITY FPS	5.69	1.28	5.77	1.06
4	DISCHARCE CFS	3635.	66.	3703.	66.
3635.	VELOCITY FPS	6.13	1.39	6.22	1.17
5	DISCHARGE CFS	5140.	105.	4927.	107.
5140.	VELOCITY FPS	7.01	1.60	7.15	1.37
1 ELEV 657.4 KD		27376.	269.	26521.	187.
2 ELEV 659.1 KD		58288.	761.	56831.	695.
3 ELEV 660.1 KD		78829.	1242.	76367.	1220.
4 ELEV 660.6 KD		88435.	1512.	85412.	1511.
5 ELEV 661.9 KD		113889.	2315.	109210.	2364.

KD TABLE FOR CROSS SECTION 13.01

ELEVATION	AREA	KD	KD BY SEGMENT		
652.42	0.				
653.	16.	203.	1.	201.	1.
654.	78.	2019.	2.	2016.	1.
655.	157.	6052.	11.	6037.	3.
656.	241.	12615.	71.	12512.	31.
657.	332.	22821.	203.	22487.	129.
658.	427.	37416.	421.	36664.	330.
659.	527.	57122.	738.	55710.	670.
660.	631.	76126.	1169.	73807.	1141.
661.	739.	95719.	1728.	92238.	1742.
662.	850.	117206.	2428.	112284.	2483.
663.	965.	140536.	3280.	133876.	3370.
664.	1084.	165696.	4313.	156961.	4411.
665.	1209.	191938.	5528.	181484.	4900.
666.	1352.	219397.	6915.	207421.	5052.
667.	1538.	249044.	8476.	234727.	5790.
668.	1803.	282228.	10219.	263368.	8635.
669.	2067.	317352.	12176.	293393.	12562.
670.	2332.	354405.	14361.	324781.	17879.

RATING TABLE FOR SECTION 13.04 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	653.5	0.0	0.0						
BANK FULL	653.8	8.1	77.2	0.0	0.0	0.0			
1	657.8	517.8	1105.0	0.0	0.0	0.0	1105.00	655.4	0.00178
2	659.5	785.6	2295.0	0.0	0.0	0.0	2295.00	656.2	0.00160
3	660.7	970.8	3315.0	0.0	0.0	0.0	3315.00	656.8	0.00160
4	661.2	1060.2	3835.0	0.0	0.0	0.0	3835.00	657.0	0.00163
5	662.5	1280.0	5140.0	0.0	0.0	0.0	5140.00	657.7	0.00165

SEGMENT TABLE FOR SECTION 13.04

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	5.	318.	353.	425.	4.
1105.	VELOCITY FPS	2.54	0.63	3.05	1.43	2.84	0.53
2	DISCHARGE CFS	2295.	18.	671.	656.	931.	19.
2295.	VELOCITY FPS	3.80	0.82	4.51	1.77	4.27	0.76
3	DISCHARGE CFS	3315.	32.	952.	919.	1373.	38.
3315.	VELOCITY FPS	4.54	0.95	5.33	2.03	5.20	0.94
4	DISCHARGE CFS	3835.	41.	1092.	1066.	1585.	50.
3835.	VELOCITY FPS	4.83	1.02	5.67	2.16	5.55	1.02
5	DISCHARGE CFS	5140.	68.	1441.	1436.	2111.	84.
5140.	VELOCITY FPS	5.40	1.16	6.36	2.45	6.25	1.19
1	ELEV 657.8 KD	26225.	128.	7538.	8391.	10076.	92.
2	ELEV 659.5 KD	57443.	448.	16792.	16475.	23264.	464.
3	ELEV 660.7 KD	83002.	805.	23848.	23020.	34387.	943.
4	ELEV 661.2 KD	94931.	1018.	27049.	26392.	39250.	1222.
5	ELEV 662.5 KD	126415.	1668.	35444.	35308.	51528.	2066.

KD TABLE FOR CROSS SECTION 13.04

ELEVATION	AREA	KD	KD BY SEGMENT				
653.50	0.						
654.	17.	212.	1.	111.	3.	96.	1.
655.	118.	2482.	1.	900.	501.	1062.	1.
656.	256.	7888.	7.	2423.	2459.	2994.	3.
657.	400.	16575.	51.	4812.	5429.	6255.	25.
658.	550.	29247.	155.	8409.	9259.	11301.	119.
659.	705.	46517.	329.	13500.	13869.	18501.	313.
660.	865.	68980.	587.	20200.	19191.	28347.	651.
661.	1029.	90658.	939.	25899.	25177.	37518.	1118.
662.	1196.	114016.	1397.	32151.	31796.	46945.	1715.
663.	1368.	139599.	1973.	38934.	39025.	57205.	2451.
664.	1543.	167338.	2677.	46226.	46833.	68259.	3332.
665.	1721.	197201.	3532.	54011.	55201.	80081.	4365.
666.	1904.	229139.	4544.	62272.	64106.	92644.	5558.
667.	2089.	263126.	5697.	70999.	73542.	105933.	6943.
668.	2277.	299160.	6995.	80177.	83490.	119926.	8568.
669.	2467.	337150.	8439.	89796.	93932.	134601.	10378.
670.	2658.	377134.	10063.	99858.	104904.	149985.	12421.
671.	2846.	419087.	11875.	110356.	116398.	166066.	14710.

RATING TABLE FOR SECTION 13.09 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	654.4	0.0	0.0						
BANK FULL	654.8	30.7	122.6	0.0	0.0	0.0			
1	658.0	790.5	1105.0	0.0	0.0	0.0	1105.00	655.8	0.00076
2	659.8	1277.3	2295.0	0.0	0.0	0.0	2295.00	656.3	0.00061
3	661.0	1610.4	3315.0	0.0	0.0	0.0	3315.00	656.7	0.00055
4	661.5	1770.6	3835.0	0.0	0.0	0.0	3835.00	656.9	0.00055
5	662.9	2159.7	5140.0	0.0	0.0	0.0	5140.00	657.3	0.00053

SEGMENT TABLE FOR SECTION 13.09

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	2.	337.	220.	516.	30.
1105.	VELOCITY FPS	1.76	0.33	2.31	0.80	1.69	0.50
2	DISCHARGE CFS	2295.	8.	607.	452.	1146.	83.
2295.	VELOCITY FPS	2.29	0.46	2.73	1.00	2.46	0.68
3	DISCHARGE CFS	3315.	14.	818.	637.	1718.	127.
3315.	VELOCITY FPS	2.68	0.52	2.99	1.12	3.00	0.76
4	DISCHARGE CFS	3835.	19.	942.	745.	1977.	153.
3835.	VELOCITY FPS	2.82	0.56	3.16	1.19	3.17	0.81
5	DISCHARGE CFS	5140.	32.	1249.	1017.	2622.	220.
5140.	VELOCITY FPS	3.11	0.63	3.50	1.33	3.51	0.91
1	ELEV 658.0 KD	39997.	60.	12208.	7972.	18674.	1084.
2	ELEV 659.8 KD	92792.	303.	24596.	18303.	46256.	3334.
3	ELEV 661.0 KD	140882.	606.	34781.	27079.	73025.	5391.
4	ELEV 661.5 KD	163393.	797.	40119.	31732.	84234.	6511.
5	ELEV 662.9 KD	222740.	1390.	54128.	44035.	113650.	9537.

KD TABLE FOR CROSS SECTION 13.09

ELEVATION	AREA	KD	KD BY SEGMENT				
654.40	0.						
655.	55.	789.	1.	291.	1.	496.	1.
656.	263.	6612.	1.	1837.	890.	3854.	31.
657.	520.	18896.	9.	5242.	3698.	9605.	276.
658.	789.	39896.	60.	12182.	7951.	18624.	1080.
659.	1063.	66526.	169.	18741.	13353.	32030.	2222.
660.	1339.	101238.	351.	26391.	19849.	50952.	3695.
661.	1619.	142001.	615.	35046.	27309.	73582.	5445.
662.	1901.	182582.	974.	44659.	35700.	93767.	7476.
663.	2187.	227228.	1440.	55182.	44967.	115862.	9770.
664.	2477.	275801.	2023.	66578.	55075.	139792.	12325.
665.	2769.	328159.	2733.	78814.	65987.	165486.	15133.
666.	3064.	384213.	3594.	91862.	77672.	192685.	18192.
667.	3363.	443850.	4607.	105697.	90103.	221935.	21498.
668.	3664.	507025.	5762.	120299.	103267.	252597.	25090.
669.	3967.	573685.	7063.	135648.	117142.	284828.	28999.
670.	4272.	643718.	8516.	151725.	131708.	316589.	33180.
671.	4577.	717146.	10148.	168531.	147011.	353879.	37646.
672.	4881.	793918.	11969.	186051.	163040.	390671.	42400.

RATING TABLE FOR SECTION 13.11 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	654.5	0.0	0.0						
BANK FULL	654.9	30.7	124.1	0.0	0.0	0.0			
1	658.1	778.6	1105.0	0.0	0.0	0.0	1105.00	655.9	0.00080
2	659.8	1261.3	2295.0	0.0	0.0	0.0	2295.00	656.4	0.00064
3	661.0	1592.6	3315.0	0.0	0.0	0.0	3315.00	656.8	0.00057
4	661.6	1752.7	3835.0	0.0	0.0	0.0	3835.00	657.0	0.00057
5	662.9	2141.0	5140.0	0.0	0.0	0.0	5140.00	657.4	0.00055

SEGMENT TABLE FOR SECTION 13.11

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 C	5 N
1	DISCHARGE CFS	1105.	2.	338.	220.	516.	30.
1105.	VELOCITY FPS	1.79	0.34	2.35	0.82	1.71	0.50
2	DISCHARGE CFS	2295.	7.	609.	453.	1143.	82.
2295.	VELOCITY FPS	2.32	0.47	2.77	1.02	2.49	0.69
3	DISCHARGE CFS	3315.	14.	819.	637.	1719.	126.
3315.	VELOCITY FPS	2.70	0.53	3.02	1.13	3.03	0.77
4	DISCHARGE CFS	3835.	19.	942.	744.	1978.	152.
3835.	VELOCITY FPS	2.85	0.56	3.19	1.20	3.20	0.82
5	DISCHARGE CFS	5140.	32.	1249.	1016.	2623.	220.
5140.	VELOCITY FPS	3.14	0.64	3.53	1.34	3.54	0.92
1	ELEV 658.1 KD	38987.	56.	11944.	7755.	18194.	1038.
2	ELEV 659.8 KD	90670.	231.	24140.	17913.	45083.	3244.
3	ELEV 661.0 KD	138461.	587.	34210.	26585.	71825.	5274.
4	ELEV 661.6 KD	160806.	774.	39507.	31195.	82949.	6380.
5	ELEV 662.9 KD	219734.	1357.	53421.	43411.	112164.	9381.

KD TABLE FOR CROSS SECTION 13.11

ELEVATION	AREA	KD	KD BY SEGMENT				
654.50	0.						
655.	43.	530.	1.	206.	1.	320.	1.
656.	239.	5740.	1.	1632.	664.	3395.	20.
657.	493.	17083.	7.	4548.	3358.	8904.	228.
658.	762.	37631.	51.	11586.	7460.	17549.	976.
659.	1035.	63531.	155.	18036.	12762.	30477.	2092.
660.	1311.	97406.	329.	25579.	19147.	48811.	3530.
661.	1590.	138187.	585.	34139.	26524.	71677.	5260.
662.	1873.	178346.	934.	43658.	34823.	91664.	7261.
663.	2159.	222590.	1389.	54091.	44002.	113572.	9528.
664.	2448.	270778.	1959.	65402.	54029.	137322.	12058.
665.	2740.	322764.	2656.	77555.	64862.	162843.	14841.
666.	3035.	378451.	3501.	90523.	76471.	190073.	17875.
667.	3333.	437737.	4499.	104281.	88628.	218962.	21157.
668.	3633.	500560.	5641.	118807.	101922.	249466.	24716.
669.	3936.	566879.	6928.	134083.	115728.	281541.	28597.
670.	4241.	636570.	8363.	150087.	130220.	315148.	32749.
671.	4546.	709663.	9977.	166821.	145450.	350288.	37188.
672.	4851.	786104.	11779.	184270.	161407.	386930.	41913.

RATING TABLE FOR SECTION 14.00 DA= 1.0

EG	NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM		CRIT ELEV	FRICTION SLOPE
671.3	0	667.7	0.0	0.0							
673.2	1	670.2	133.1	1105.0	0.0	0.0	0.0	1105.00	C	670.2	0.05048
674.6	2	671.5	220.3	2295.0	0.0	0.0	0.0	2295.00	C	671.5	0.04637
	BANK FULL	672.1	258.6	2913.3	0.0	0.0	0.0				
	3	672.5	283.8	3315.0	0.0	0.0	0.0	3315.00	C	672.5	0.04094
675.9	4	672.9	312.3	3835.0	0.0	0.0	0.0	3835.00	C	672.9	0.03915
	5	673.9	380.2	5140.0	0.0	0.0	0.0	5140.00	C	673.9	0.03504

SEGMENT TABLE FOR SECTION 14.00

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N	6 N
1	DISCHARGE CFS	1105.	0.	0.	1105.	0.	0.	0.
1105.	VELOCITY FPS	8.30	0.0	0.0	8.30	0.0	0.0	0.0
2	DISCHARGE CFS	2295.	0.	0.	2295.	0.	0.	0.
2295.	VELOCITY FPS	10.43	0.0	0.0	10.42	0.0	0.0	0.0
3	DISCHARGE CFS	3315.	0.	0.	3315.	0.	0.	0.
3315.	VELOCITY FPS	11.69	0.0	0.0	11.68	0.0	0.0	0.0
4	DISCHARGE CFS	3835.	0.	0.	3835.	0.	0.	0.
3835.	VELOCITY FPS	12.31	0.0	0.0	12.28	0.0	0.0	0.0
5	DISCHARGE CFS	5140.	0.	0.	5140.	0.	0.	0.
5140.	VELOCITY FPS	13.54	0.0	0.0	13.52	0.0	0.0	0.0
1	ELEV 670.2 KD	4918.	1.	1.	4913.	1.	1.	1.
2	ELEV 671.5 KD	10658.	1.	1.	10653.	1.	1.	1.
3	ELEV 672.5 KD	16384.	1.	1.	16379.	2.	1.	1.
4	ELEV 672.9 KD	19381.	1.	1.	19374.	2.	1.	1.
5	ELEV 673.9 KD	27460.	1.	1.	27452.	4.	1.	1.

KD TABLE FOR CROSS SECTION 14.00

ELEVATION	AREA	KD	KD BY SEGMENT					
667.70	0.							
668.	6.	48.	1.	1.	41.	1.	1.	1.
669.	62.	1487.	1.	1.	1482.	1.	1.	1.
670.	123.	4356.	1.	1.	4351.	1.	1.	1.
671.	186.	8192.	1.	1.	8187.	1.	1.	1.
672.	252.	13345.	1.	1.	13340.	1.	1.	1.
673.	319.	20113.	1.	1.	20107.	3.	1.	1.
674.	386.	28220.	1.	1.	28212.	4.	1.	1.
675.	460.	37637.	28.	1.	37582.	5.	1.	1.
676.	571.	48530.	393.	2.	47975.	22.	2.	1.
677.	760.	62831.	1360.	51.	60203.	597.	3.	1.
678.	1080.	86248.	3793.	2114.	77118.	2625.	4.	6.
679.	1470.	115438.	8252.	6465.	94342.	5173.	5.	560.
680.	1924.	148903.	14002.	12376.	110036.	8330.	6.	3293.
681.	2412.	190170.	21200.	19832.	126693.	12107.	7.	10115.
682.	2934.	237726.	29493.	28443.	144267.	16364.	8.	18898.
683.	3479.	293445.	38773.	38184.	162735.	21092.	9.	32052.
684.	4031.	356015.	49089.	49113.	182088.	26316.	15.	48848.
685.	4628.	425468.	60341.	61112.	202301.	31991.	123.	68499.
686.	5272.	502344.	72618.	74287.	223370.	38159.	2506.	91172.
687.	5954.	586125.	85580.	88244.	245248.	44668.	6171.	115486.
688.	6668.	677125.	99404.	103193.	267939.	51598.	12013.	142133.
689.	7406.	775872.	114117.	119163.	291436.	58961.	20470.	171154.
690.	8172.	882740.	129605.	136026.	315716.	66707.	32316.	202118.
691.	8943.	997004.	145699.	153584.	340749.	74759.	46732.	234418.
692.	9715.	1119007.	162721.	172192.	366560.	83253.	64685.	269136.
693.	10489.	1247330.	180455.	191561.	393114.	92079.	84263.	305359.
694.	11262.	1381729.	198890.	211708.	420400.	101242.	105754.	343145.
695.	12036.	1523096.	218148.	232799.	448429.	110805.	129822.	382982.
696.	12810.	1669240.	237816.	254498.	477158.	120639.	154871.	423840.
697.	13583.	1821487.	256135.	277037.	506605.	130834.	182070.	466426.
698.	14357.	1979583.	279059.	300377.	536756.	141372.	211141.	510603.
699.	15131.	2142541.	300441.	324385.	567594.	152204.	241575.	555975.
700.	15905.	2311791.	322500.	349270.	599132.	163409.	274243.	603155.
701.	16679.	2488629.	345431.	375216.	631379.	175058.	310127.	652716.

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
LINK
TITLE      FINAL TR20 DISCHARGES ------ TO ROCKFORD DAM
CHANGE     DISCHARGE
DISCHARGE -1.        1100.      2285.      3305.      3825.      5130.
END
REACH      14.01      1.0        20.0       20.0                                  14011
REACH 2    14.10     -1.2                                                         14012
REACH      14.02      1.0        20.0       20.0                                  14021
REACH 2    14.10     -1.1                                                         14022
REACH      14.03      1.0        50.0       50.0                                  14031
REACH 2    14.10     -1.0                                                         14032
REACH      14.10      1.0        710.0      710.0                               1410-1
SEGMENT    14.10      1          N          115.0                                 14102
 VALUE     0.10                                                                   14103
 EGMENT    14.10      2          C          474.0                                 14104
NVALUE     .06        2.5        .04        6.         .03                        14105
SEGMENT    14.10      3          N          504.0                                 14106
NVALUE     0.10       2.0        0.07                                             14107
SEGMENT    14.10      4          N          700.0                                 14108
NVALUE     0.08       1.0        0.05                                             14109
SEGMENT    14.10      5          N          800.0                                141010
NVALUE     0.09                                                                  141011
SECTION      14.10                                                              1410-12
                0.00     683.36     16.00     676.97     23.00     672.27
              100.00     669.67    115.00     668.86    125.00     668.17
              135.00     667.97    154.00     668.36    190.00     667.86
              219.00     666.97    260.00     665.67    288.00     665.07
              325.00     664.17    354.00     666.36    382.00     667.36
              404.00     667.36    431.00     668.07    474.00     668.97
              504.00     674.67    600.00     675.17    700.00     676.86
              725.00     680.97    800.00     682.77
ENDTABLE
REACH      14.11      1.0        480.0      480.0                                 14111
REACH 2    14.10      0.0                                                          14112
REACH      14.50      1.0        960.0      640.0                                 14501
SEGMENT    14.50      1          N          36.0                                  14502
NVALUE     0.10                                                                   14503
SEGMENT    14.50      2          C          136.0                                 14504
NVALUE     .06        2.5        .04        6.         .03                        14505
SEGMENT    14.50      3          N          400.0                                 14506
NVALUE     0.09       2.0        0.06                                             14507
SEGMENT    14.50      4          N          854.0                                 14508
NVALUE     0.12                                                                   14509
SECTION      14.50                                                              1450-10
                0.00     688.85     36.00     669.35     46.00     666.66
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
                 56.00     665.35      66.00     665.06      86.00     664.46
                106.00     666.06     116.00     667.35     133.00     667.85
                136.00     669.66     200.00     669.96     213.00     669.85
                219.00     668.66     300.00     668.85     316.00     669.66
                400.00     669.96     500.00     669.46     551.00     670.96
                600.00     673.96     700.00     677.84     800.00     683.94
                840.00     686.15     854.00     690.54
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 14.50  EXCEEDS  10. FEET-------------
REACH     14.53     1.0       800.0     800.0                                14531
REACH 2   14.50     +0.8                                                     14532
REACH     14.90     1.0       2480.0    2480.0                               14901
SEGMENT   14.90     1         N         171.0                                14902
NVALUE    0.10                                                               14903
SEGMENT   14.90     2         C         269.0                                14904
NVALUE    .06       2.5       .04       6.        .03                        14905
SEGMENT   14.90     3         N         518.0                                14906
NVALUE    0.10                                                               14907
SECTION      14.90                                                          1490-8
                0.00     690.71      18.00     684.21      51.00     680.81
               118.00     675.91     164.00     674.51     171.00     670.91
               178.00     670.11     188.00     670.11     198.00     668.91
               216.00     668.51     228.00     669.21     235.00     668.31
               248.00     667.81     255.00     667.91     264.00     669.41
               269.00     670.31     272.00     673.81     295.00     682.21
               418.00     684.91     518.00     687.01
ENDTABLE
 CAD      15.00     2.7       110.0     110.0                                15001
SPR       15.00     A         1.0       3.0                                  15002
PIER      669.6     2.7       668.8     2.7                                  15003
GIRDER    687.3     687.1     20.0      0.6       2.7                        1500-4
          -77.0     691.7     -77.0     687.2     -29.3     686.7            15005
          20.7      686.2     68.4      685.6     68.4      690.1            15006
ENDTABLE                                                                     15007
SECTION   15.00                                                              15008
          -220.0    696.1     -200.0    694.6     -193.0    694.3            15009
          -83.1     691.7     -77.0     691.7     -76.5     684.9           150010
          -73.0     684.7     -39.0     670.9     -33.0     670.0           150011
          -26.0     669.5     -20.0     668.9     -10.0     668.2           150012
          0.0       668.7     10.0      669.7     20.0      668.8           150013
          30.0      669.1     36.0      670.0     64.0      683.1           150014
          68.0      683.3     68.4      690.1     74.5      690.1           150015
          134.5     687.2     200.0     687.3     300.0     688.7           150016
          400.0     689.8     500.0     690.9     600.0     692.3           150017
          700.0     694.1     760.0     695.2
ENDTABLE
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 15.00  EXCEEDS  10. FEET-------------
REACH     15.01     1.0       50.0      50.0                                  15011
REACH 2   15.10     0.0                                                         15012
REACH     15.10     1.0       1310.0    1200.0                                15101
SEGMENT   15.10     1         N         30.0                                  15102
 VALUE    0.11                                                                15103
SEGMENT   15.10     2         C         135.0                                 15104
VALUE     .06       2.5       .04       6.        .03                         15105
SEGMENT   15.10     3         N         574.0                                 15106
VALUE     0.13                                                                15107
SECTION      15.10                                                           1510-8
               0.00    689.19      3.00    685.80     11.00    685.69
              30.00    672.80     40.00    672.09     50.00    671.69
              70.00    671.40     90.00    671.50    110.00    671.50
             120.00    671.59    130.00    671.69    135.00    672.40
             140.00    676.90    200.00    677.30    300.00    679.69
             400.00    681.30    500.00    685.40    574.00    688.59
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 15.10  EXCEEDS  10. FEET-------------
REACH     15.50     1.0       1240.0    1120.0                                15501
SEGMENT   15.50     1         N         106.0                                 15502
VALUE     0.09                                                                15503
SEGMENT   15.50     2         C         192.0                                 15504
VALUE     .06       2.5       .04       6.        .03                         15505
SEGMENT   15.50     3         N         202.0                                 15506
VALUE     0.12                                                                15507
SEGMENT   15.50     4         N         395.0                                 15508
VALUE     0.09      1.3       0.06                                            15509
SECTION      15.50                                                           1550-10
               0.00    693.15    100.00    679.45    106.00    677.75
             116.00    674.05    126.00    672.15    136.00    671.95
             156.00    672.65    176.00    673.05    186.00    673.65
             192.00    674.15    202.00    678.95    300.00    677.15
             368.00    677.65    388.00    688.55    395.00    693.34
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 15.50  EXCEEDS  10. FEET-------------
REACH     15.90     1.0       1600.0    1600.0                                15901
SEGMENT   15.90     1         N         30.0                                  15902
VALUE     0.10                                                                15903
SEGMENT   15.90     2         C         138.0                                 15904
VALUE     .06       2.5       .04       6.        .03                         15905
SEGMENT   15.90     3         N         413.0                                 15906
VALUE     0.09                                                                15907
SECTION      15.90                                                           -590-8
               0.00    693.28     30.00    676.28     40.00    674.88
              50.00    674.57     70.00    674.38     90.00    675.78
             100.00    675.88    110.00    676.07    124.00    676.07
             138.00    680.86    200.00    680.17    300.00    680.78
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
              360.00    682.07    413.00    697.17
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 15.90  EXCEEDS  10. FEET-------------
ROAD      16.00     2.4       20.0      20.0                                  16001
PR        16.00     A         3.0       7.0                                   16002
PIER      675.0     3.0                                                       16003
GIRDER    694.4     693.3     40.0      0.6       2.4                         16004
          -74.1     698.6     -73.9     693.7     48.9      694.4             16005
          49.0      699.3                                                     16006
ENDTABLE                                                                      16007
SECTION   16.00                                                               16008
          -101.0    718.1     -100.0    698.1     -74.1     698.6             16009
          -72.0     676.9     -60.0     676.9     -50.0     676.9            160010
          -40.0     675.1     -30.0     674.9     -20.0     674.8            160011
          -10.0     674.8     0.0       675.9     10.0      675.5            160012
          20.0      676.2     30.0      676.8     40.0      676.3            160013
          47.0      676.7     49.0      699.3     100.0     699.3            160014
          200.0     700.3     201.0     720.0                                160015
ENDTABLE                                                                     160016
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 16.00  EXCEEDS  10. FEET-------------
COMMENT   20 FT NOTE IS DUE TO SIDEBOARD                                    1600-17
REACH     16.01     1.0       50.0      50.0                                  16011
SEGMENT   16.01     1         N         30.0                                  16012
NVALUE    0.10                                                                16013
SEGMENT   16.01     2         C         138.0                                 16014
NVALUE    .06       2.5       .04       6.        .03                         16015
SEGMENT   16.01     3         N         270.0                                 16016
NVALUE    0.09                                                                16017
SECTION   16.01                                                               16018
          0.0       693.7     30.0      676.7     40.0      675.2            160110
          50.0      675.0     70.0      674.8     90.0      676.2            160111
          100.0     676.3     110.0     676.5     124.0     676.5            160112
          138.0     681.3     200.0     680.6     270.0     695.7            160113
ENDTABLE                                                                     160114
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 16.01  EXCEEDS  10. FEET-------------
REACH     16.08     1.0       510.0     510.0                                 16081
REACH 2   16.01     +0.7                                                      16082
REACH     16.90     1.0       370.0     370.0                                 16901
SEGMENT   16.90     1         N         139.0                                 16902
NVALUE    0.15                                                                16903
SEGMENT   16.90     2         N         158.0                                 16904
NVALUE    0.12                                                                16905
SEGMENT   16.90     3         C         236.0                                 16906
NVALUE    .06       2.5       .04       6.        .03                         16907
SEGMENT   16.90     4         N         270.0                                 16908
NVALUE    0.12                                                                16909
SEGMENT   16.90     5         N         380.0                                169010
NVALUE    0.08                                                               169011
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
SECTION      16.90                                                        1690-12
                0.00     691.96    100.00    689.46    139.00    688.16
              158.00     680.76    165.00    679.16    170.00    677.86
              180.00     677.56    190.00    678.46    200.00    677.06
              205.00     677.16    210.00    676.46    215.00    675.96
              226.00     676.16    233.00    677.36    236.00    679.26
              242.00     681.56    255.00    682.36    270.00    691.76
              300.00     692.26    370.00    693.65    380.00    697.76
ENDTABLE
ROAD       17.00      2.7       40.0      40.0                              17001
 PR        17.00      A         3.0                                         17002
GIRDER     688.3      688.2     0.0       0.9       2.8                     17003
           -34.9      697.2     -34.8     687.2     0.0       687.8         17004
           34.8       688.2     34.9      698.2                             17005
ENDTABLE                                                                    17006
SECTION    17.00                                                            17007
           -491.0     699.2     -400.0    697.5     -300.0    695.5         17008
           -240.0     695.3     -200.0    695.2     -100.0    693.2         17009
           -60.0      693.3     -59.9     697.0     -34.9     697.2        170010
           -34.8      678.8     -21.0     678.2     -9.0      677.8        170011
           -1.0       676.8     11.0      676.4     21.0      676.9        170012
           30.0       678.6     34.7      679.2     34.9      698.2        170013
           60.0       698.4     60.1      694.6     80.0      694.7        170014
           80.1       696.7     100.0     696.8     100.1     694.8        170015
           120.0      695.6     120.1     697.6     140.0     698.0        170016
           140.1      695.0     160.0     697.0     160.1     699.0        170017
ENDTABLE                                                                    170018
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 17.00  EXCEEDS  10. FEET-------------
REACH      17.01      1.0       40.0      40.0                              17011
REACH 2    16.90      0.0                                                   17012
REACH      17.07      1.0       120.0     120.0                            1707-1
SEGMENT    17.07      1         N         -92.0                             17072
NVALUE     0.09                                                             17073
SEGMENT    17.07      2         C         97.0                              17074
NVALUE     .06        2.5       .04       6.        .03                     17075
SEGMENT    17.07      3         N         245.0                             17076
NVALUE     0.08                                                             17077
SECTION    17.07                                                            17078
           -250.0     693.0     -150.0    690.5     -111.0    689.2         17079
           -92.0      681.8     -75.0     680.2     -60.0     678.9        170710
           -40.0      678.6     -20.0     679.5     0.0       678.1        170711
           15.0       678.2     30.0      677.5     45.0      677.0        170712
           66.0       677.2     84.0      678.4     97.0      680.3        170713
           113.0      682.6     120.0     683.4     135.0     692.8        170714
           165.0      693.3     235.0     694.7     245.0     698.8        170715
ENDTABLE                                                                    170716
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
ROAD      18.00     2.7       75.0      75.0                                18001
RPR       18.00     A         3.0       7.0                                 18002
PIER      690.5     11.1      690.6     18.5                                18003
GIRDER    692.7     692.6     0.0       0.6       2.5                       18004
          95.5      693.3     95.6      692.6     173.0     692.6           18005
          173.1     693.2     210.0     693.0     244.0     692.0           18006
          281.0     692.0     281.1     692.7                               18007
ENDTABLE                                                                    18008
SECTION   18.00                                                             18009
          -100.0    710.4     -99.0     696.4     -84.0     696.4          180010
          -83.9     710.4     -55.1     710.4     -55.0     692.4          180011
          -25.0     692.8     0.0       693.2     32.4      693.1          180012
          62.4      693.6     95.4      693.8     95.5      693.3          180013
          103.8     693.2     103.9     691.3     110.70    691.3          180014
          110.8     690.5     157.6     690.6     157.7     690.4          180015
          164.8     690.4     164.9     691.8     172.3     691.8          180016
          172.4     690.6     183.3     690.7     183.4     691.0          180017
          189.1     691.0     189.2     690.6     281.0     690.6          180018
          281.1     692.7     300.0     693.5     350.0     692.7          180019
          400.0     697.9     410.0     710.4                              180020
ENDTABLE                                                                   180021
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 18.00  EXCEEDS  10. FEET-------------
COMMENT   SECTION 18.01 IS SECTION 18.10
REACH     18.01     1.0       20.0      20.0                                18011
SEGMENT   18.01     1         N         343.0
VALUE     0.08
SEGMENT   18.01     2         C         651.0
VALUE     .06       2.5       .04       6.        .03
SEGMENT   18.01     3         N         711.0
VALUE     0.08
SECTION   18.01
              0.00     704.01    100.00    701.91    200.00    699.41
            300.00     694.71    343.00    692.71    348.00    690.41
            356.00     687.71    388.00    687.31    428.00    688.81
            463.00     688.01    503.00    687.11    553.00    687.41
            603.00     689.11    623.00    689.41    651.00    690.51
            661.00     692.47    711.00    702.86
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 18.01  EXCEEDS  10. FEET-------------
COMPUTE   14.01     18.01     14.00
-----------------------------END OF 80/80 LIST-----------------------------
```

```
COMPUTE    14.01     18.01     14.00

----------------------------STARTING DATA FROM PREVIOUS COMPUTATIONS----------------------------
```

RATING TABLE FOR SECTION 14.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	663.0	0.0	0.0						
BANK FULL	667.7	692.9	624.7	0.0	0.0	0.0			
1	671.2	2164.1	1100.0	0.0	0.0	0.0	1100.00	665.5	0.00003
2	673.2	3109.3	2285.0	0.0	0.0	0.0	2285.00	666.4	0.00003
3	674.6	3873.9	3305.0	0.0	0.0	0.0	3305.00	666.9	0.00004
4	675.2	4291.4	3825.0	0.0	0.0	0.0	3825.00	667.2	0.00004
5	676.7	5313.2	5130.0	0.0	0.0	0.0	5130.00	667.5	0.00004

SEGMENT TABLE FOR SECTION 14.01

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N	5 N
1	DISCHARGE CFS	1100.	18.	1078.	4.	0.	0.
1100.	VELOCITY FPS	0.55	0.11	0.55	0.13	0.0	0.0
2	DISCHARGE CFS	2285.	70.	2196.	19.	0.	0.
2285.	VELOCITY FPS	0.81	0.20	0.82	0.24	0.04	0.0
3	DISCHARGE CFS	3305.	127.	3129.	39.	11.	0.
3305.	VELOCITY FPS	0.96	0.26	0.99	0.33	0.11	0.0
4	DISCHARGE CFS	3825.	157.	3580.	51.	37.	0.
3825.	VELOCITY FPS	1.02	0.29	1.05	0.37	0.19	0.0
5	DISCHARGE CFS	5130.	234.	4641.	83.	172.	0.
5130.	VELOCITY FPS	1.13	0.34	1.17	0.45	0.36	0.09
1	ELEV 671.2 KD	215175.	3359.	211089.	726.	1.	1.
2	ELEV 673.2 KD	395489.	11954.	380333.	3197.	4.	1.
3	ELEV 674.6 KD	532090.	20269.	504656.	6195.	969.	1.
4	ELEV 675.2 KD	605569.	24823.	568577.	8020.	4147.	1.
5	ELEV 676.7 KD	800526.	36459.	726113.	12839.	25091.	25.

KD TABLE FOR CROSS SECTION 14.01

ELEVATION	AREA	KD	KD BY SEGMENT				
662.97	0.						
663.	0.	2.	1.	2.	1.	1.	1.
664.	30.	462.	1.	457.	1.	1.	1.
665.	114.	2891.	1.	2887.	1.	1.	1.
666.	251.	8105.	1.	8101.	1.	1.	1.
667.	480.	16269.	1.	16265.	1.	1.	1.
668.	816.	34727.	6.	34707.	2.	1.	1.
669.	1197.	68918.	176.	68659.	37.	1.	1.
670.	1610.	121011.	959.	119809.	202.	1.	1.
671.	2057.	195467.	2757.	192132.	561.	1.	1.
672.	2528.	291904.	6269.	283992.	1627.	1.	1.
673.	3007.	377367.	10947.	363530.	2870.	1.	1.
674.	3518.	472393.	16618.	450730.	4788.	192.	1.
675.	4131.	578889.	23202.	545264.	7378.	2848.	1.
676.	4804.	702263.	30552.	646707.	10369.	13174.	4.
677.	5494.	838654.	38658.	755028.	13773.	29932.	50.
678.	6193.	987674.	47571.	870066.	17570.	51225.	280.
679.	6901.	1148855.	57294.	991608.	21737.	76803.	759.
680.	7624.	1321655.	67803.	1119431.	26250.	106242.	1534.
681.	8373.	1505572.	79082.	1253345.	31090.	139166.	2552.
682.	9123.	1703064.	91475.	1394746.	36487.	179657.	4131.
683.	9873.	1914335.	105023.	1543622.	42472.	228914.	6523.

RATING TABLE FOR SECTION 14.02 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	663.1	0.0	0.0						
BANK FULL	667.8	692.9	632.3	0.0	0.0	0.0			
1	671.2	2117.1	1100.0	0.0	0.0	0.0	1100.00	665.6	0.00003
2	673.2	3058.5	2285.0	0.0	0.0	0.0	2285.00	666.5	0.00003
3	674.6	3812.7	3305.0	0.0	0.0	0.0	3305.00	667.0	0.00004
4	675.2	4224.0	3825.0	0.0	0.0	0.0	3825.00	667.3	0.00004
5	676.7	5243.8	5130.0	0.0	0.0	0.0	5130.00	667.6	0.00004

SEGMENT TABLE FOR SECTION 14.02

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N	5 N
1	DISCHARGE CFS	1100.	17.	1079.	4.	0.	0.
1100.	VELOCITY FPS	0.56	0.11	0.56	0.12	0.0	0.0
2	DISCHARGE CFS	2285.	68.	2199.	18.	0.	0.
2285.	VELOCITY FPS	0.82	0.20	0.83	0.24	0.04	0.0
3	DISCHARGE CFS	3305.	125.	3133.	38.	9.	0.
3305.	VELOCITY FPS	0.98	0.27	1.00	0.33	0.11	0.0
4	DISCHARGE CFS	3825.	156.	3589.	50.	30.	0.
3825.	VELOCITY FPS	1.03	0.29	1.06	0.37	0.17	0.0
5	DISCHARGE CFS	5130.	233.	4651.	82.	164.	0.
5130.	VELOCITY FPS	1.14	0.34	1.19	0.45	0.35	0.09
1	ELEV 671.2 KD	206367.	3082.	202633.	649.	1.	1.
2	ELEV 673.2 KD	386441.	11447.	371960.	3032.	2.	1.
3	ELEV 674.6 KD	521427.	19603.	495153.	5932.	738.	1.
[illegible]	ELEV 675.2 KD	594132.	24132.	558710.	7745.	3544.	1.
[illegible]	ELEV 676.7 KD	786720.	35637.	715148.	12492.	23424.	19.

KD TABLE FOR CROSS SECTION 14.02

ELEVATION	AREA	KD	KD BY SEGMENT				
663.07	0.						
664.	25.	353.	1.	349.	1.	1.	1.
665.	103.	2523.	1.	2518.	1.	1.	1.
666.	234.	7443.	1.	7439.	1.	1.	1.
667.	453.	15304.	1.	15300.	1.	1.	1.
668.	779.	32172.	4.	32158.	2.	1.	1.
669.	1158.	64729.	141.	64517.	30.	1.	1.
670.	1568.	114889.	836.	113824.	177.	1.	1.
671.	2011.	186938.	2511.	183899.	508.	1.	1.
672.	2480.	281920.	5831.	274553.	1489.	1.	1.
673.	2958.	368317.	10408.	355153.	2719.	1.	1.
674.	3463.	462355.	15989.	441612.	4563.	125.	1.
675.	4068.	567553.	22492.	535438.	7090.	2265.	1.
676.	4737.	689281.	29751.	636138.	10034.	11363.	4.
677.	5424.	824386.	37802.	743837.	13408.	27979.	38.
678.	6123.	972203.	46645.	858263.	17175.	48939.	249.
679.	6830.	1132245.	56295.	979198.	21311.	74179.	702.
680.	7549.	1303985.	66734.	1106439.	25796.	103320.	1456.
681.	8298.	1486555.	77904.	1239603.	30581.	135549.	2429.
682.	9048.	1682679.	90183.	1380256.	35921.	175230.	3941.
683.	9798.	1892558.	103614.	1528382.	41845.	223552.	6238.

RATING TABLE FOR SECTION 14.03 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	663.2	0.0	0.0						
BANK FULL	667.9	692.9	640.1	0.0	0.0	0.0			
1	671.2	2070.4	1100.0	0.0	0.0	0.0	1100.00	665.7	0.00003
2	673.2	3008.3	2285.0	0.0	0.0	0.0	2285.00	666.6	0.00004
3	674.6	3752.3	3305.0	0.0	0.0	0.0	3305.00	667.1	0.00004
4	675.2	4157.7	3825.0	0.0	0.0	0.0	3825.00	667.4	0.00004
5	676.7	5175.3	5130.0	0.0	0.0	0.0	5130.00	667.7	0.00004

SEGMENT TABLE FOR SECTION 14.03

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N	5 N
1	DISCHARGE CFS	1100.	16.	1081.	3.	0.	0.
1100.	VELOCITY FPS	0.57	0.11	0.57	0.12	0.0	0.0
2	DISCHARGE CFS	2285.	66.	2201.	17.	0.	0.
2285.	VELOCITY FPS	0.83	0.20	0.84	0.24	0.05	0.0
3	DISCHARGE CFS	3305.	123.	3136.	37.	8.	0.
3305.	VELOCITY FPS	0.99	0.27	1.01	0.33	0.10	0.0
4	DISCHARGE CFS	3825.	154.	3598.	49.	23.	0.
3825.	VELOCITY FPS	1.05	0.30	1.08	0.37	0.14	0.0
5	DISCHARGE CFS	5130.	231.	4662.	81.	155.	0.
5130.	VELOCITY FPS	1.15	0.34	1.20	0.46	0.35	0.09
1	ELEV 671.2 KD	197887.	2828.	194477.	580.	1.	1.
2	ELEV 673.2 KD	377631.	10963.	363791.	2875.	1.	1.
3	ELEV 674.6 KD	511068.	18961.	485863.	5681.	562.	1.
4	ELEV 675.2 KD	583056.	23465.	549078.	7481.	3032.	1.
5	ELEV 676.7 KD	773285.	34857.	704402.	12156.	21875.	15.

KD TABLE FOR CROSS SECTION 14.03

ELEVATION	AREA	KD	KD BY SEGMENT				
663.17	0.						
664.	19.	262.	1.	258.	1.	1.	1.
665.	93.	2179.	1.	2175.	1.	1.	1.
666.	220.	6805.	1.	6801.	1.	1.	1.
667.	426.	14373.	1.	14369.	1.	1.	1.
668.	742.	29757.	2.	29750.	1.	1.	1.
669.	1118.	60729.	112.	60561.	23.	1.	1.
670.	1525.	108994.	727.	108058.	155.	1.	1.
671.	1966.	178563.	2280.	175782.	463.	1.	1.
672.	2433.	271173.	5386.	264346.	1342.	1.	1.
673.	2910.	359296.	9861.	346784.	2574.	1.	1.
674.	3413.	452408.	15354.	432507.	4342.	76.	1.
675.	4007.	556474.	21772.	525623.	6797.	1737.	1.
676.	4669.	676441.	28965.	625661.	9707.	9789.	3.
677.	5355.	810263.	36959.	732734.	13050.	26141.	29.
678.	6053.	956871.	45730.	846540.	16785.	46739.	221.
679.	6758.	1115771.	55307.	966865.	20890.	71625.	649.
680.	7474.	1286448.	65675.	1093522.	25346.	100462.	1381.
681.	8223.	1467675.	76737.	1225938.	30078.	132006.	2311.
682.	8973.	1662431.	88903.	1365840.	35361.	170890.	3759.
683.	9723.	1870926.	102216.	1513220.	41225.	218290.	5964.

RATING TABLE FOR SECTION 14.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	664.2	0.0	0.0						
BANK FULL	668.9	692.9	725.2	0.0	0.0	0.0			
1	671.3	1645.0	1100.0	0.0	0.0	0.0	1100.00	666.7	0.00008
2	673.2	2547.9	2285.0	0.0	0.0	0.0	2285.00	667.6	0.00006
3	674.6	3221.9	3305.0	0.0	0.0	0.0	3305.00	668.1	0.00006
4	675.3	3566.3	3825.0	0.0	0.0	0.0	3825.00	668.4	0.00006
5	676.8	4520.9	5130.0	0.0	0.0	0.0	5130.00	668.7	0.00006

SEGMENT TABLE FOR SECTION 14.10

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N	5 N
1	DISCHARGE CFS	1100.	10.	1068.	2.	0.	0.
1100.	VELOCITY FPS	0.70	0.14	0.70	0.14	0.0	0.0
2	DISCHARGE CFS	2285.	50.	2222.	13.	0.	0.
2285.	VELOCITY FPS	0.97	0.21	0.98	0.27	0.0	0.0
3	DISCHARGE CFS	3305.	106.	3169.	29.	1.	0.
3305.	VELOCITY FPS	1.13	0.29	1.15	0.35	0.06	0.0
4	DISCHARGE CFS	3825.	136.	3645.	40.	4.	0.
3825.	VELOCITY FPS	1.19	0.32	1.22	0.38	0.10	0.0
5	DISCHARGE CFS	5130.	217.	4763.	72.	78.	0.
5130.	VELOCITY FPS	1.31	0.38	1.35	0.48	0.30	0.0
1	ELEV 671.3 KD	126240.	1073.	124940.	225.	1.	1.
2	ELEV 673.2 KD	295207.	6426.	287110.	1668.	1.	1.
3	ELEV 674.6 KD	416011.	13140.	399270.	3589.	11.	1.
4	ELEV 675.3 KD	480168.	17084.	457881.	4963.	240.	1.
5	ELEV 676.8 KD	646236.	27285.	602913.	9016.	7020.	2.

KD TABLE FOR CROSS SECTION 14.10

ELEVATION	AREA	KD	KD BY SEGMENT				
664.17	0.						
665.	19.	262.	1.	258.	1.	1.	1.
666.	93.	2179.	1.	2175.	1.	1.	1.
667.	220.	6605.	1.	6801.	1.	1.	1.
668.	426.	14373.	1.	14369.	1.	1.	1.
669.	742.	29757.	2.	29750.	1.	1.	1.
670.	1118.	60729.	112.	60561.	23.	1.	1.
671.	1525.	108994.	727.	108056.	155.	1.	1.
672.	1966.	178563.	2280.	175782.	463.	1.	1.
673.	2433.	271173.	5386.	264346.	1342.	1.	1.
674.	2910.	359296.	9861.	346784.	2574.	1.	1.
675.	3413.	452406.	15354.	432507.	4342.	76.	1.
676.	4007.	556474.	21772.	525623.	6797.	1737.	1.
677.	4669.	676441.	28965.	625661.	9707.	9789.	3.
678.	5355.	810263.	36959.	732734.	13050.	26141.	29.
679.	6053.	956871.	45730.	846540.	16785.	46739.	221.
680.	6758.	1115771.	55307.	966865.	20890.	71629.	649.
681.	7474.	1286448.	65675.	1093522.	25346.	100462.	1381.
682.	8223.	1467675.	76737.	1225938.	30078.	132006.	2311.
683.	8973.	1662431.	88903.	1365840.	35361.	170890.	3759.
684.	9723.	1870926.	102216.	1513220.	41225.	218290.	5964.

RATING TABLE FOR SECTION 14.11 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	664.2	0.0	0.0						
BANK FULL	668.9	692.9	721.6	0.0	0.0	0.0			
1	671.3	1660.3	1100.0	0.0	0.0	0.0	1100.00	666.7	0.00007
2	673.3	2561.5	2285.0	0.0	0.0	0.0	2285.00	667.6	0.00006
3	674.7	3237.2	3305.0	0.0	0.0	0.0	3305.00	668.1	0.00006
4	675.3	3584.6	3825.0	0.0	0.0	0.0	3825.00	668.4	0.00006
5	676.8	4540.8	5130.0	0.0	0.0	0.0	5130.00	668.7	0.00006

SEGMENT TABLE FOR SECTION 14.11

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N	5 N
1	DISCHARGE CFS	1100.	10.	1088.	2.	0.	0.
1100.	VELOCITY FPS	0.69	0.14	0.69	0.14	0.0	0.0
2	DISCHARGE CFS	2285.	51.	2221.	13.	0.	0.
2285.	VELOCITY FPS	0.97	0.21	0.98	0.27	0.0	0.0
3	DISCHARGE CFS	3305.	106.	3169.	29.	1.	0.
3305.	VELOCITY FPS	1.12	0.29	1.14	0.34	0.06	0.0
4	DISCHARGE CFS	3825.	137.	3643.	40.	4.	0.
3625.	VELOCITY FPS	1.19	0.32	1.21	0.38	0.10	0.0
5	DISCHARGE CFS	5130.	218.	4760.	72.	80.	0.
5130.	VELOCITY FPS	1.30	0.38	1.34	0.48	0.30	0.0
1	ELEV 671.3 KD	128586.	1126.	127222.	236.	1.	1.
2	ELEV 673.3 KD	297457.	6534.	289225.	1696.	1.	1.
3	ELEV 674.7 KD	418836.	13307.	401871.	3645.	13.	1.
4	ELEV 675.3 KD	483157.	17263.	460602.	5030.	262.	1.
5	ELEV 676.8 KD	649892.	27506.	605935.	9106.	7342.	2.

KD TABLE FOR CROSS SECTION 14.11

ELEVATION	AREA	KD	KD BY SEGMENT				
664.17	0.						
665.	19.	262.	1.	258.	1.	1.	1.
666.	93.	2179.	1.	2175.	1.	1.	1.
667.	220.	6805.	I.	6801.	1.	1.	1.
668.	426.	14373.	1.	14369.	1.	1.	1.
669.	742.	29757.	2.	29750.	1.	1.	1.
670.	1118.	60729.	112.	60561.	23.	1.	1.
671.	1525.	108994.	727.	108058.	155.	1.	1.
672.	1966.	178563.	2280.	175782.	463.	1.	1.
673.	2433.	271173.	5386.	264346.	1342.	1.	1.
674.	2910.	359296.	9861.	346784.	2574.	1.	1.
675.	3413.	452408.	15354.	432507.	4342.	76.	1.
676.	4007.	556474.	21772.	525623.	6797.	1737.	1.
677.	4669.	676441.	28965.	625661.	9707.	9789.	3.
678.	5355.	810263.	36959.	732734.	13050.	26141.	29.
679.	6053.	956871.	45730.	846540.	16785.	46739.	221.
680.	6758.	1115771.	55307.	966865.	20890.	71629.	649.
681.	7474.	1286448.	65675.	1093522.	25346.	100462.	1381.
682.	8223.	1467675.	76737.	1225938.	30078.	132006.	2311.
683.	8973.	1662431.	86903.	1365840.	35361.	170890.	3759.
684.	9723.	1870926.	102216.	1513220.	41225.	218290.	5964.

RATING TABLE FOR SECTION 14.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	664.5	0.0	0.0						
BANK FULL	669.3	381.7	765.9	0.0	0.0	0.0			
1	671.5	1320.9	1100.0	0.0	0.0	0.0	1100.00	667.4	0.00017
2	673.4	2360.5	2285.0	0.0	0.0	0.0	2285.00	668.6	0.00013
3	674.8	3156.4	3305.0	0.0	0.0	0.0	3305.00	669.7	0.00012
4	675.4	3547.1	3825.0	0.0	0.0	0.0	3825.00	670.1	0.00012
5	676.9	4496.1	5130.0	0.0	0.0	0.0	5130.00	670.3	0.00011

SEGMENT TABLE FOR SECTION 14.50

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1100.	1.	705.	329.	65.
1100.	VELOCITY FPS	1.14	0.23	1.32	0.61	0.26
2	DISCHARGE CFS	2285.	5.	1155.	913.	213.
2285.	VELOCITY FPS	1.27	0.31	1.59	0.88	0.37
3	DISCHARGE CFS	3305.	10.	1486.	1448.	361.
3305.	VELOCITY FPS	1.36	0.36	1.72	1.03	0.42
4	DISCHARGE CFS	3825.	13.	1650.	1723.	439.
3825.	VELOCITY FPS	1.39	0.38	1.78	1.09	0.44
5	DISCHARGE CFS	5130.	23.	2039.	2411.	658.
5130.	VELOCITY FPS	1.47	0.43	1.89	1.22	0.47
1	ELEV 671.5 KD	82952.	71.	54456.	23642.	4783.
2	ELEV 673.4 KD	197507.	401.	99989.	78772.	18345.
3	ELEV 674.8 KD	296255.	876.	133594.	129578.	32208.
4	ELEV 675.4 KD	349644.	1190.	150692.	157452.	40111.
5	ELEV 676.9 KD	485571.	2133.	193463.	227967.	62007.

KD TABLE FOR CROSS SECTION 14.50

ELEVATION	AREA	KD	KD BY SEGMENT			
664.46	0.					
665.	7.	73.	1.	69.	1.	1.
666.	49.	1141.	1.	1137.	1.	1.
667.	112.	3763.	1.	3759.	1.	1.
668.	191.	7712.	1.	7708.	1.	1.
669.	310.	15205.	1.	14937.	43.	1.
670.	577.	29048.	4.	26581.	2138.	208.
671.	1068.	58800.	36.	43779.	11780.	2689.
672.	1597.	112850.	128.	67100.	37759.	7674.
673.	2144.	172231.	302.	91081.	65684.	14824.
674.	2708.	238847.	581.	114343.	99735.	23975.
675.	3296.	314827.	979.	139668.	139133.	34895.
676.	3911.	400114.	1515.	166975.	183545.	47956.
677.	4556.	494610.	2201.	196176.	232565.	63518.
678.	5224.	598999.	3059.	227264.	286360.	82189.
679.	5914.	713569.	4100.	260160.	344558.	104696.
680.	6623.	837128.	5335.	294794.	406852.	130120.
681.	7353.	969152.	6774.	331103.	472967.	158221.
682.	8102.	1109845.	8435.	369079.	543006.	189174.
683.	8865.	1259545.	10337.	408735.	617193.	223182.
684.	9645.	1417850.	12489.	450001.	695183.	260155.
685.	10451.	1583565.	14887.	492775.	776387.	299412.
686.	11272.	1760070.	17562.	537125.	861398.	343823.
687.	12106.	1947781.	20524.	583016.	950064.	394090.
688.	12949.	2146593.	23768.	630348.	1041817.	450430.
689.	13795.	2354181.	27464.	679172.	1137113.	510220.
690.	14645.	2570584.	31654.	729480.	1235953.	573462.
691.	15495.	2797416.	36286.	781368.	1339094.	641658.

RATING TABLE FOR SECTION 14.53 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	665.3	0.0	0.0						
BANK FULL	670.1	381.7	823.2	0.0	0.0	0.0			
1	671.8	1065.2	1100.0	0.0	0.0	0.0	1100.00	668.2	0.00039
2	673.6	2020.8	2285.0	0.0	0.0	0.0	2285.00	669.4	0.00025
3	674.9	2782.3	3305.0	0.0	0.0	0.0	3305.00	670.5	0.00022
4	675.6	3158.1	3825.0	0.0	0.0	0.0	3825.00	670.9	0.00021
5	677.0	4064.7	5130.0	0.0	0.0	0.0	5130.00	671.1	0.00019

SEGMENT TABLE FOR SECTION 14.53

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1100.	1.	849.	205.	45.
1100.	VELOCITY FPS	1.59	0.24	1.75	0.50	0.27
2	DISCHARGE CFS	2285.	3.	1346.	765.	171.
2285.	VELOCITY FPS	1.65	0.31	2.03	0.87	0.37
3	DISCHARGE CFS	3305.	8.	1726.	1264.	307.
3305.	VELOCITY FPS	1.70	0.36	2.16	1.02	0.42
4	DISCHARGE CFS	3825.	10.	1912.	1523.	379.
3825.	VELOCITY FPS	1.72	0.38	2.22	1.08	0.44
5	DISCHARGE CFS	5130.	19.	2365.	2172.	574.
5130.	VELOCITY FPS	1.79	0.42	2.34	1.21	0.47
1	ELEV 671.8 KD	55393.	29.	43654.	9531.	2179.
2	ELEV 673.6 KD	145336.	209.	86233.	48212.	10682.
3	ELEV 674.9 KD	224029.	511.	117499.	85372.	20647.
4	ELEV 675.6 KD	266605.	716.	133669.	105896.	26324.
5	ELEV 677.0 KD	376814.	1363.	173957.	159410.	42084.

KD TABLE FOR CROSS SECTION 14.53

ELEVATION	AREA	KD	KD BY SEGMENT			
665.26	0.					
666.	13.	163.	1.	160.	1.	1.
667.	61.	1539.	1.	1536.	1.	1.
668.	126.	4443.	1.	4440.	1.	1.
669.	209.	8845.	1.	8842.	1.	1.
670.	344.	17227.	1.	16845.	248.	1.
671.	665.	32717.	5.	29550.	2507.	360.
672.	1173.	64647.	39.	48020.	12920.	2802.
673.	1704.	114967.	128.	72335.	35036.	7309.
674.	2254.	168542.	286.	95584.	58915.	13514.
675.	2823.	228816.	532.	119264.	87608.	21258.
676.	3416.	297063.	879.	144990.	120608.	30478.
677.	4037.	373310.	1340.	172684.	157655.	41544.
678.	4687.	457360.	1926.	202252.	198380.	54670.
679.	5361.	549996.	2654.	233691.	242950.	70559.
680.	6056.	651065.	3534.	266932.	291109.	89391.
681.	6768.	759891.	4577.	301922.	342709.	110639.
682.	7499.	876088.	5791.	338602.	397533.	134140.
683.	8253.	999282.	7182.	376891.	455255.	159835.
684.	9021.	1130113.	8773.	416852.	516346.	188029.
685.	9805.	1268340.	10571.	458437.	580640.	218655.
686.	10613.	1413063.	12577.	501545.	647655.	251223.
687.	11439.	1567313.	14603.	546185.	717556.	288618.
688.	12275.	1730865.	17266.	592360.	790430.	330652.
689.	13117.	1903683.	19970.	640018.	866077.	377487.
690.	13965.	2083345.	23082.	689117.	944327.	426614.
691.	14815.	2271013.	26573.	739743.	1025732.	479050.
692.	15665.	2467461.	30429.	791945.	1110648.	535558.

*****SECT.14.90 KD VALUES REVERSED ON SEGMENT 3 AT ELEVATION 683.41 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

KD TABLE FOR CROSS SECTION 14.90

ELEVATION	AREA	KD	KD BY SEGMENT		
667.81	0.				
668.	2.	11.	1.	10.	1.
669.	33.	559.	1.	557.	1.
670.	105.	3000.	1.	2998.	1.
671.	197.	7751.	1.	7748.	3.
672.	297.	15984.	11.	15962.	12.
673.	401.	28715.	58.	28612.	42.
674.	507.	46910.	169.	46644.	95.
675.	620.	72509.	264.	72051.	194.
676.	766.	94633.	905.	93269.	384.
677.	936.	119820.	2563.	116497.	692.
678.	1121.	148064.	5117.	141743.	1140.
679.	1324.	179378.	8636.	168931.	1751.
680.	1543.	213818.	13212.	197989.	2544.
681.	1776.	251469.	19034.	228888.	3544.
682.	2026.	292617.	26264.	261507.	4757.
683.	2308.	335781.	34759.	295856.	5043.
684.	2638.	383386.	44780.	331892.	6494.
685.	3020.	436653.	56606.	369365.	10075.
686.	3442.	495417.	70505.	408872.	16030.
687.	3932.	560807.	85286.	449692.	25189.
688.	4434.	632580.	101437.	492079.	38184.
689.	4945.	710597.	118877.	536000.	55409.
690.	5460.	793538.	137372.	581391.	74409.
691.	5975.	881858.	157737.	628369.	98635.
692.	6489.	975650.	180066.	676919.	129201.

*****SECT.15.01 KD VALUES REVERSED ON SEGMENT 3 AT ELEVATION 677.00 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	BKS	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.2830	0.0311	0.2571	0.9922	0.0	-0.0052	0.9472	1.0000	1.0000	371.7229	595.8374	441.5581
DCRIT	671.15	KBCRIT=									
0.2502	0.0091	0.2456	0.9968	0.0	-0.0046	0.9716	1.0000	1.0000	530.1257	953.8621	630.4707
DCRIT	672.38	KBCRIT=									
0.2543	0.0243	0.2349	0.9937	0.0	-0.0049	0.9543	1.0000	1.0000	669.4387	1351.0098	841.6702
DCRIT	673.26	KBCRIT=									
0.2630	0.0388	0.2297	0.9905	0.0	-0.0054	0.9897	1.0000	1.0000	737.2878	1579.3467	953.0425
DCRIT	673.66	KBCRIT=									
0.2891	0.0783	0.2180	0.9812	0.0	-0.0073	0.9058	1.0000	1.0000	855.9839	2164.2517	1227.2202
DCRIT	674.58	KBCRIT=									

ROAD SECTION 15.00

NO.	HW	CFS	HL	TW	CSM
0	668.20	0.00	0.00	0.00	0.00
1	673.84	1100.00	0.06	673.78	1100.00
2	675.60	2285.00	0.14	675.47	2285.00
3	677.04	3305.00	0.20	676.84	3305.00
4	677.70	3825.00	0.22	677.49	3825.00
5	679.22	5130.00	0.30	678.92	5130.00

→ MIN ROAD ELEVATION 687.20

BRIDGE TYPE 2 → GIRDER BOTTOM ELEVATION = 687.10 OPENING NO.= 1

RATING TABLE FOR SECTION 15.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	671.4	0.0	0.0						
BANK FULL	672.4	78.2	410.8	0.0	0.0	0.0			
1	674.1	255.7	1100.0	0.0	0.0	0.0	1100.00	673.2	0.00934
2	675.6	420.2	2285.0	0.0	0.0	0.0	2285.00	674.1	0.00618
3	676.8	566.7	3305.0	0.0	0.0	0.0	3305.00	674.8	0.00370
4	677.4	662.7	3825.0	0.0	0.0	0.0	3825.00	675.1	0.00296
5	678.9	977.8	5130.0	0.0	0.0	0.0	5130.00	675.8	0.00220

SEGMENT TABLE FOR SECTION 15.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	1.	1098.	1.
1100.	VELOCITY FPS	4.36	0.90	4.34	0.83
2	DISCHARGE CFS	2285.	7.	2273.	6.
2285.	VELOCITY FPS	5.55	1.16	5.56	1.00
3	DISCHARGE CFS	3305.	14.	3284.	7.
3305.	VELOCITY FPS	6.06	1.16	6.05	0.61
4	DISCHARGE CFS	3825.	18.	3787.	20.
3825.	VELOCITY FPS	6.26	1.14	6.25	0.50
5	DISCHARGE CFS	5130.	33.	4969.	128.
5130.	VELOCITY FPS	6.44	1.18	6.53	0.68
1 ELEV	674.1 KD	11379.	10.	11356.	13.
2 ELEV	675.6 KD	29070.	83.	28916.	71.
3 ELEV	676.8 KD	54352.	229.	54008.	116.
4 ELEV	677.4 KD	70290.	331.	69668.	291.
5 ELEV	678.9 KD	109223.	693.	105958.	2573.

KD TABLE FOR CROSS SECTION 15.01

ELEVATION	AREA	KD	KD BY SEGMENT		
671.40	0.				
672.	40.	574.	1.	572.	1.
673.	140.	4188.	2.	4183.	3.
674.	247.	10741.	9.	10720.	11.
675.	357.	21051.	45.	20964.	42.
676.	470.	36487.	123.	36264.	100.
677.	585.	58245.	254.	57874.	117.
678.	768.	85817.	448.	84498.	785.
679.	998.	111518.	717.	107903.	2779.
680.	1274.	140913.	1068.	133541.	6146.
681.	1606.	174379.	1511.	161325.	11352.
682.	1988.	212983.	2054.	191169.	19493.
683.	2402.	256559.	2706.	223007.	30632.
684.	2843.	304563.	3472.	256772.	44053.
685.	3307.	356732.	4093.	292420.	60016.
686.	3799.	413130.	4572.	329901.	78537.
687.	4319.	475004.	6122.	369169.	99711.
688.	4869.	541447.	7844.	410174.	123317.
689.	5418.	612475.	9905.	452935.	150628.
690.	5968.	688114.	12348.	497419.	181963.

*****SECT.15.10 KD VALUES REVERSED ON SEGMENT 3 AT ELEVATION 677.00 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 15.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	671.4	0.0	0.0						
BANK FULL	672.4	78.2	254.7	0.0	0.0	0.0			
1	675.7	437.6	1100.0	0.0	0.0	0.0	1100.00	673.2	0.00121
2	677.3	638.8	2285.0	0.0	0.0	0.0	2285.00	674.1	0.00118
3	678.5	886.4	3305.0	0.0	0.0	0.0	3305.00	674.8	0.00110
4	679.1	1034.4	3825.0	0.0	0.0	0.0	3825.00	675.1	0.00109
5	680.5	1441.4	5130.0	0.0	0.0	0.0	5130.00	675.8	0.00104

SEGMENT TABLE FOR SECTION 15.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	4.	1094.	3.
1100.	VELOCITY FPS	2.57	0.56	2.57	0.48
2	DISCHARGE CFS	2285.	11.	2263.	10.
2285.	VELOCITY FPS	3.83	0.74	3.82	0.33
3	DISCHARGE CFS	3305.	20.	3223.	62.
3305.	VELOCITY FPS	4.41	0.84	4.46	0.44
4	DISCHARGE CFS	3825.	27.	3683.	116.
3825.	VELOCITY FPS	4.61	0.89	4.69	0.53
5	DISCHARGE CFS	5130.	44.	4788.	298.
5130.	VELOCITY FPS	4.98	0.99	5.14	0.64
1 ELEV	675.7 KD	31579.	100.	31395.	84.
2 ELEV	677.3 KD	66441.	319.	65891.	231.
3 ELEV	678.5 KD	99482.	612.	97050.	1820.
4 ELEV	679.1 KD	115659.	797.	111523.	3339.
5 ELEV	680.5 KD	158648.	1353.	148223.	9072.

KD TABLE FOR CROSS SECTION 15.10

ELEVATION	AREA	KD	KD BY SEGMENT		
671.40	0.				
672.	40.	574.	1.	572.	1.
673.	140.	4188.	2.	4183.	3.
674.	247.	10742.	9.	10720.	12.
675.	357.	21055.	47.	20964.	44.
676.	470.	36497.	128.	36264.	104.
677.	585.	58261.	265.	57874.	122.
678.	768.	85877.	468.	84498.	820.
679.	998.	111680.	749.	107903.	2903.
680.	1274.	141243.	1116.	133341.	6421.
681.	1606.	174963.	1579.	161325.	11861.
682.	1988.	213960.	2147.	191169.	20367.
683.	2402.	258062.	2827.	223007.	32005.
684.	2843.	306703.	3628.	256772.	46028.
685.	3307.	359614.	4277.	292420.	62706.
686.	3799.	416861.	4777.	329901.	82058.
687.	4319.	479748.	6397.	369169.	104181.
688.	4869.	547331.	8196.	410174.	128845.
689.	5418.	615638.	10349.	452935.	157380.
690.	5968.	696701.	12901.	497419.	190120.

RATING TABLE FOR SECTION 15.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	671.9	0.0	0.0						
BANK FULL	674.1	104.2	446.5	0.0	0.0	0.0			
1	677.4	386.4	1100.0	0.0	0.0	0.0	1100.00	674.6	0.00149
2	679.0	729.4	2285.0	0.0	0.0	0.0	2285.00	675.8	0.00126
3	680.0	1015.8	3305.0	0.0	0.0	0.0	3305.00	676.7	0.00116
4	680.5	1155.6	3825.0	0.0	0.0	0.0	3825.00	677.7	0.00112
5	681.8	1530.6	5130.0	0.0	0.0	0.0	5130.00	678.4	0.00097

SEGMENT TABLE FOR SECTION 15.50

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1100.	0.	1090.	7.	3.
1100.	VELOCITY FPS	3.00	0.0	3.00	0.65	0.23
2	DISCHARGE CFS	2285.	1.	2053.	19.	211.
2285.	VELOCITY FPS	3.93	0.46	4.10	0.79	1.05
3	DISCHARGE CFS	3305.	6.	2692.	33.	574.
3305.	VELOCITY FPS	4.16	0.58	4.54	0.95	1.52
4	DISCHARGE CFS	3825.	11.	2974.	41.	799.
3825.	VELOCITY FPS	4.22	0.65	4.67	1.03	1.71
5	DISCHARGE CFS	5130.	31.	3636.	61.	1401.
5130.	VELOCITY FPS	4.24	0.77	4.86	1.15	2.03
1 ELEV	677.4 KD	28502.	1.	28287.	179.	35.
2 ELEV	679.0 KD	63884.	29.	58080.	539.	5237.
3 ELEV	680.0 KD	96913.	162.	79150.	971.	16630.
4 ELEV	680.5 KD	113848.	294.	89183.	1215.	23156.
5 ELEV	681.8 KD	164356.	986.	116714.	1950.	44705.

KD TABLE FOR CROSS SECTION 15.50

ELEVATION	AREA	KD	KD BY SEGMENT			
671.95	0.					
672.	0.	4.	1.	3.	1.	1.
673.	29.	492.	1.	488.	1.	1.
674.	93.	2676.	1.	2672.	1.	1.
675.	171.	7020.	1.	7012.	5.	1.
676.	253.	13780.	1.	13737.	41.	1.
677.	346.	23870.	1.	23714.	129.	5.
678.	459.	39047.	3.	37954.	289.	465.
679.	737.	65325.	31.	58768.	548.	5525.
680.	1007.	96009.	156.	78548.	957.	16281.
681.	1288.	130951.	481.	98565.	1463.	30395.
682.	1578.	171387.	1117.	120358.	2052.	47824.
683.	1877.	217044.	2148.	143858.	2718.	68292.
684.	2185.	267734.	3648.	169004.	3457.	91597.
685.	2503.	323268.	5678.	195735.	4263.	117510.
686.	2830.	383598.	8312.	224013.	5135.	146010.
687.	3166.	448709.	11620.	253809.	6073.	177076.
688.	3511.	518547.	15663.	285083.	7074.	210618.
689.	3865.	593091.	20493.	317794.	8136.	246583.
690.	4227.	672393.	26163.	351912.	9256.	285004.
691.	4600.	756109.	32692.	387383.	10429.	325473.
692.	4980.	844485.	40197.	424227.	11661.	368288.
693.	5367.	937509.	48739.	462423.	12951.	413418.
694.	5754.	1035743.	58570.	502045.	14314.	461594.
695.	6140.	1139224.	69814.	543078.	15750.	512869.

RATING TABLE FOR SECTION 15.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	674.4	0.0	0.0						
BANK FULL	676.3	93.7	402.4	0.0	0.0	0.0			
1	679.6	430.6	1100.0	0.0	0.0	0.0	1100.00	676.9	0.00126
2	681.1	698.5	2285.0	0.0	0.0	0.0	2285.00	677.9	0.00137
3	682.0	988.4	3305.0	0.0	0.0	0.0	3305.00	678.6	0.00132
4	682.5	1155.9	3825.0	0.0	0.0	0.0	3825.00	679.0	0.00127
5	683.7	1561.1	5130.0	0.0	0.0	0.0	5130.00	679.7	0.00117

SEGMENT TABLE FOR SECTION 15.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	7.	1093.	0.
1100.	VELOCITY FPS	2.61	0.68	2.60	0.0
2	DISCHARGE CFS	2285.	18.	2218.	49.
2285.	VELOCITY FPS	3.81	0.89	3.83	0.49
3	DISCHARGE CFS	3305.	29.	3068.	208.
3305.	VELOCITY FPS	4.38	0.99	4.51	0.74
4	DISCHARGE CFS	3825.	35.	3455.	335.
3825.	VELOCITY FPS	4.50	1.03	4.71	0.86
5	DISCHARGE CFS	5130.	54.	4326.	750.
5130.	VELOCITY FPS	4.66	1.11	5.03	1.15
1 ELEV 679.6 KD		30928.	180.	30748.	1.
2 ELEV 681.1 KD		61340.	489.	60065.	786.
3 ELEV 682.0 KD		90524.	784.	84547.	5193.
4 ELEV 682.5 KD		107257.	982.	97167.	9108.
5 ELEV 683.7 KD		149709.	1556.	126687.	21466.

KD TABLE FOR CROSS SECTION 15.90

ELEVATION	AREA	KD	KD BY SEGMENT		
674.38	0.				
675.	16.	219.	1.	217.	1.
676.	69.	1604.	1.	1602.	1.
677.	163.	5617.	5.	5611.	1.
678.	263.	12342.	32.	12309.	1.
679.	368.	22939.	108.	22829.	1.
680.	479.	37857.	250.	37599.	1.
681.	678.	59732.	471.	58304.	651.
682.	990.	91078.	787.	84706.	5234.
683.	1331.	124878.	1209.	109533.	13705.
684.	1678.	163449.	1751.	135704.	25721.
685.	2031.	207166.	2424.	164065.	40487.
686.	2390.	255725.	3239.	194536.	57810.
687.	2754.	308844.	4206.	227028.	77452.
688.	3122.	366514.	5336.	261524.	99545.
689.	3496.	428549.	6639.	297951.	123901.
690.	3875.	494829.	8126.	336258.	150440.
691.	4260.	565079.	9802.	376352.	178884.
692.	4651.	639341.	11678.	416224.	209351.
693.	5046.	717795.	13814.	461886.	242030.
694.	5445.	800355.	16254.	507268.	276808.
695.	5849.	886539.	18912.	554311.	313261.
696.	6257.	976550.	21700.	603015.	351780.
697.	6666.	1070550.	24647.	653414.	392533.
698.	7075.	1168944.	27841.	705572.	435936.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.0335	0.0	0.0435	0.9989	0.0	-0.0100	0.9999	1.0000	1.0000	438.4207	388.6621	385.9775
DCRIT	677.34	KBCRIT=									
0.0294	0.0	0.0394	0.9989	0.0	-0.0100	0.9999	1.0000	1.0000	614.3640	567.1709	588.5896
DCRIT	678.22	KBCRIT=									
0.0424	0.0162	0.0378	0.9976	0.0	-0.0116	0.9844	1.0000	1.0000	722.5000	726.1853	838.7253
DCRIT	678.86	KBCRIT=									
0.0452	0.0201	0.0371	0.9973	0.0	-0.0119	0.9813	1.0000	1.0000	782.0027	819.4954	1002.5869
DCRIT	679.16	KBCRIT=									
0.0789	0.0595	0.0357	0.9934	0.0	-0.0163	0.9518	1.0000	1.0000	922.8689	1045.2549	1402.6003
DCRIT	679.86	KBCRIT=									

ROAD SECTION 16.00

NO.	HW	CFS	HL	TW	CSM
0	674.80	0.00	0.00	0.00	0.00
1	679.59	1100.00	0.0	679.59	1100.00
2	681.06	2285.00	0.0	681.06	2285.00
3	681.96	3305.00	0.0	681.96	3305.00
4	682.46	3825.00	0.0	682.46	3825.00
5	683.63	5130.00	0.0	683.63	5130.00

MIN ROAD ELEVATION 698.10

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 693.30 OPENING NO.= 1

RATING TABLE FOR SECTION 16.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	674.8	0.0	0.0						
BANK FULL	676.7	94.4	428.0	0.0	0.0	0.0			
1	679.7	397.0	1100.0	0.0	0.0	0.0	1100.00	677.3	0.00172
2	681.2	578.7	2285.0	0.0	0.0	0.0	2285.00	678.3	0.00168
3	682.1	740.5	3305.0	0.0	0.0	0.0	3305.00	679.1	0.00180
4	682.5	833.3	3825.0	0.0	0.0	0.0	3825.00	679.4	0.00175
5	683.7	1058.6	5130.0	0.0	0.0	0.0	5130.00	680.1	0.00170

SEGMENT TABLE FOR SECTION 16.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	6.	1094.	0.
1100.	VELOCITY FPS	2.82	0.74	2.81	0.0
2	DISCHARGE CFS	2285.	18.	2262.	5.
2285.	VELOCITY FPS	4.14	1.00	4.15	0.32
3	DISCHARGE CFS	3305.	28.	3222.	55.
3305.	VELOCITY FPS	4.97	1.11	5.02	0.74
4	DISCHARGE CFS	3825.	35.	3688.	101.
3825.	VELOCITY FPS	5.23	1.16	5.31	0.94
5	DISCHARGE CFS	5130.	56.	4828.	246.
5130.	VELOCITY FPS	5.72	1.29	5.88	1.27
1 ELEV 679.7 KD		26488.	138.	26349.	1.
2 ELEV 681.2 KD		52646.	406.	52139.	101.
3 ELEV 682.1 KD		77936.	661.	76029.	1246.
4 ELEV 682.5 KD		91199.	835.	88109.	2255.
5 ELEV 683.7 KD		124507.	1358.	117243.	5906.

KD TABLE FOR CROSS SECTION 16.01

ELEVATION	AREA	KD	KD BY SEGMENT		
674.80	0.				
675.	2.	14.	1.	12.	1.
676.	43.	948.	1.	946.	1.
677.	123.	3546.	2.	3542.	1.
678.	221.	9258.	15.	9242.	1.
679.	324.	18083.	65.	18012.	1.
680.	432.	31108.	180.	30925.	1.
681.	557.	49172.	367.	48717.	40.
682.	730.	76507.	643.	74702.	1161.
683.	919.	103969.	1018.	99366.	3505.
684.	1115.	133126.	1509.	124594.	6964.
685.	1317.	165598.	2126.	152053.	11375.
686.	1525.	201275.	2879.	181654.	16704.
687.	1740.	240069.	3781.	213316.	22931.
688.	1960.	281973.	4843.	247018.	30111.
689.	2188.	326829.	6070.	282606.	38118.
690.	2422.	374698.	7477.	320103.	47069.
691.	2663.	425550.	9072.	359459.	56969.
692.	2910.	479351.	10864.	400620.	67816.
693.	3161.	535129.	12866.	443587.	79675.
694.	3422.	595874.	15197.	488208.	92418.
695.	3682.	658735.	17798.	534710.	106394.
696.	3943.	724705.	20666.	583071.	121653.

RATING TABLE FOR SECTION 16.08 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	675.5	0.0	0.0						
BANK FULL	677.4	94.4	420.0	0.0	0.0	0.0			
1	680.5	407.2	1100.0	0.0	0.0	0.0	1100.00	678.0	0.00157
2	682.0	604.1	2285.0	0.0	0.0	0.0	2285.00	679.0	0.00164
3	682.9	768.1	3305.0	0.0	0.0	0.0	3305.00	679.8	0.00163
4	683.4	863.7	3825.0	0.0	0.0	0.0	3825.00	680.1	0.00159
5	684.6	1086.8	5130.0	0.0	0.0	0.0	5130.00	680.8	0.00158

SEGMENT TABLE FOR SECTION 16.08

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	6.	1094.	0.
1100.	VELOCITY FPS	2.75	0.72	2.74	0.0
2	DISCHARGE CFS	2285.	18.	2256.	11.
2285.	VELOCITY FPS	4.02	0.96	4.02	0.45
3	DISCHARGE CFS	3305.	29.	3211.	66.
3305.	VELOCITY FPS	4.83	1.08	4.88	0.78
4	DISCHARGE CFS	3825.	36.	3678.	111.
3825.	VELOCITY FPS	5.08	1.13	5.16	0.93
5	DISCHARGE CFS	5130.	57.	4814.	259.
5130.	VELOCITY FPS	5.59	1.26	5.76	1.26
1	ELEV 680.5 KD	27793.	150.	27642.	1.
2	ELEV 682.0 KD	56298.	443.	55683.	172.
3	ELEV 682.9 KD	81715.	710.	79513.	1492.
4	ELEV 683.4 KD	95899.	899.	92283.	2717.
5	ELEV 684.6 KD	128855.	1434.	120959.	6462.

KO TABLE FOR CROSS SECTION 16.08

ELEVATION	AREA	KO	KO BY SEGMENT		
675.50	0.				
676.	12.	134.	1.	132.	1.
677.	62.	1415.	1.	1413.	1.
678.	152.	5025.	4.	5020.	1.
679.	251.	11438.	26.	11410.	1.
680.	356.	21532.	96.	21435.	1.
681.	465.	35904.	229.	35674.	1.
682.	602.	56056.	440.	55390.	166.
683.	786.	84406.	744.	81877.	1679.
684.	976.	112340.	1152.	106669.	4384.
685.	1175.	142504.	1680.	132581.	8148.
686.	1379.	175949.	2336.	160694.	12845.
687.	1589.	212571.	3133.	190925.	18452.
688.	1806.	252282.	4081.	223189.	24941.
689.	2029.	295081.	5192.	257466.	32378.
690.	2257.	340901.	6474.	293678.	40733.
691.	2493.	389677.	7937.	331746.	49977.
692.	2736.	441395.	9589.	371631.	60136.
693.	2985.	496057.	11442.	413308.	71245.
694.	3240.	553728.	13538.	456777.	83372.
695.	3500.	614408.	15948.	501964.	96479.
696.	3760.	678202.	18634.	549026.	110835.
697.	4021.	745104.	21611.	597941.	126488.

RATING TABLE FOR SECTION 16.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	676.0	0.0	0.0						
BANK FULL	679.3	140.9	667.8	0.0	0.0	0.0			
1	681.4	309.0	1100.0	0.0	0.0	0.0	1100.00	679.2	0.00275
2	682.9	448.1	2285.0	0.0	0.0	0.0	2285.00	680.5	0.00287
3	683.7	536.9	3305.0	0.0	0.0	0.0	3305.00	681.4	0.00308
4	684.2	586.8	3825.0	0.0	0.0	0.0	3825.00	681.8	0.00310
5	685.2	707.2	5130.0	0.0	0.0	0.0	5130.00	682.7	0.00331

SEGMENT TABLE FOR SECTION 16.90

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1100.	0.	0.	1096.	4.	0.
1100.	VELOCITY FPS	3.64	0.0	0.35	3.63	0.66	0.0
2	DISCHARGE CFS	2285.	0.	4.	2260.	22.	0.
2285.	VELOCITY FPS	5.45	0.0	0.67	5.43	0.81	0.0
3	DISCHARGE CFS	3305.	0.	10.	3247.	48.	0.
3305.	VELOCITY FPS	6.71	0.0	0.86	6.74	1.10	0.0
4	DISCHARGE CFS	3825.	0.	14.	3745.	66.	0.
3825.	VELOCITY FPS	7.17	0.0	0.95	7.23	1.23	0.0
5	DISCHARGE CFS	5130.	0.	31.	4979.	121.	0.
5130.	VELOCITY FPS	8.16	0.0	1.18	8.26	1.54	0.0
1	ELEV 681.4 KD	20974.	1.	4.	20896.	72.	1.
2	ELEV 682.9 KD	42650.	1.	66.	42214.	368.	1.
3	ELEV 683.7 KD	59492.	1.	167.	58480.	842.	1.
4	ELEV 684.2 KD	68684.	1.	247.	67271.	1164.	1.
5	ELEV 685.2 KD	89193.	1.	520.	86598.	2074.	1.

KD TABLE FOR CROSS SECTION 16.90

ELEVATION	AREA	KD	KD BY SEGMENT				
675.96	0.						
676.	0.	3.	1.	1.	2.	1.	1.
677.	18.	321.	1.	1.	317.	1.	1.
678.	57.	1416.	1.	1.	1412.	1.	1.
679.	122.	4349.	1.	1.	4345.	1.	1.
680.	196.	9162.	1.	1.	9154.	5.	1.
681.	276.	16797.	1.	2.	16750.	41.	1.
682.	364.	28645.	1.	15.	28485.	137.	1.
683.	463.	45572.	1.	80.	45029.	445.	1.
684.	569.	65897.	1.	219.	64614.	1058.	1.
685.	679.	84396.	1.	450.	82083.	1858.	1.
686.	793.	104829.	1.	791.	101185.	2848.	1.
687.	912.	127143.	1.	1261.	121852.	4026.	1.
688.	1035.	151304.	1.	1879.	144026.	5390.	1.
689.	1173.	177469.	53.	2789.	167644.	6940.	1.
690.	1346.	205813.	417.	3875.	192679.	8683.	1.
691.	1557.	236584.	1503.	5117.	219102.	10625.	1.
692.	1813.	270445.	3736.	6496.	246874.	12908.	9.
693.	2120.	308218.	7572.	8003.	275956.	15629.	523.
694.	2475.	350512.	12610.	9631.	306322.	18617.	2765.
695.	2846.	397493.	18447.	11364.	337914.	21788.	7000.
696.	3220.	448390.	25294.	13224.	370762.	25180.	13344.
697.	3596.	503086.	33052.	15208.	404844.	28786.	21299.
698.	3973.	561448.	42655.	17376.	440258.	32703.	33268.
699.	4349.	623535.	54429.	19737.	476992.	36945.	50945.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.0	0.0	0.0	0.0	0.0	0.0	0.9919	1.0000	1.0000	271.2092	281.8335	281.8540
DCRIT	679.59	KBCRIT=									
0.2252	0.2252	0.0	0.0	0.0	0.0	0.8559	1.0000	1.0000	370.1348	419.6062	411.5276
DCRIT	680.83	KBCRIT=									
0.3018	0.3018	0.0	0.0	0.0	0.0	0.8199	1.0000	1.0000	426.8459	523.2383	495.8079
DCRIT	681.73	KBCRIT=									
0.3703	0.3703	0.0	0.0	0.0	0.0	0.7903	1.0000	1.0000	457.5583	587.7502	542.6394
DCRIT	682.16	KBCRIT=									
0.4085	0.4085	0.0	0.0	0.0	0.0	0.7747	1.0000	1.0000	532.4155	734.4897	660.0222
DCRIT	683.14	KBCRIT=									

ROAD SECTION 17.00

NO.	HW	CFS	HL	TW	CSM
0	676.40	0.00	0.00	0.00	0.00
1	681.51	1100.00	0.0	681.51	1100.00
2	682.99	2285.00	0.06	682.94	2285.00
3	683.99	3305.00	0.24	683.75	3305.00
4	684.59	3825.00	0.40	684.19	3825.00
5	685.91	5130.00	0.64	685.27	5130.00

MIN ROAD ELEVATION — 693.20

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 688.20 OPENING NO.= 1

RATING TABLE FOR SECTION 17.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	676.0	0.0	0.0						
BANK FULL	679.3	140.9	636.3	0.0	0.0	0.0			
1	681.7	332.6	1100.0	0.0	0.0	0.0	1100.00	679.2	0.00207
2	683.2	483.3	2285.0	0.0	0.0	0.0	2285.00	680.5	0.00214
3	684.2	593.9	3305.0	0.0	0.0	0.0	3305.00	681.4	0.00224
4	684.8	659.5	3825.0	0.0	0.0	0.0	3825.00	681.8	0.00223
5	686.1	810.7	5130.0	0.0	0.0	0.0	5130.00	682.7	0.00226

SEGMENT TABLE FOR SECTION 17.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1100.	0.	0.	1095.	5.	0.
1100.	VELOCITY FPS	3.40	0.0	0.35	3.39	0.57	0.0
2	DISCHARGE CFS	2265.	0.	5.	2254.	26.	0.
2285.	VELOCITY FPS	5.07	0.0	0.63	5.10	0.78	0.0
3	DISCHARGE CFS	3305.	0.	13.	3234.	59.	0.
3305.	VELOCITY FPS	6.13	0.0	0.82	6.18	1.06	0.0
4	DISCHARGE CFS	3825.	0.	19.	3725.	81.	0.
3825.	VELOCITY FPS	6.47	0.0	0.90	6.54	1.18	0.0
5	DISCHARGE CFS	5130.	0.	41.	4946.	144.	0.
5130.	VELOCITY FPS	7.23	0.0	1.09	7.35	1.43	0.0
1	ELEV 681.7 KD	24189.	1.	7.	24081.	99.	1.
2	ELEV 683.2 KD	49427.	1.	102.	48765.	557.	1.
3	ELEV 684.2 KD	69835.	1.	260.	68364.	1209.	1.
4	ELEV 684.8 KD	80932.	1.	399.	78837.	1694.	1.
5	ELEV 686.1 KD	107962.	1.	850.	104106.	3004.	1.

KD TABLE FOR CROSS SECTION 17.01

ELEVATION	AREA	KD	KD BY SEGMENT				
675.96	0.						
676.	0.	3.	1.	1.	2.	1.	1.
677.	18.	321.	1.	1.	317.	1.	1.
678.	57.	1416.	1.	1.	1412.	1.	1.
679.	122.	4349.	1.	1.	4345.	1.	1.
680.	196.	9162.	1.	1.	9154.	5.	1.
681.	276.	16797.	1.	2.	16750.	41.	1.
682.	364.	28645.	1.	15.	28485.	137.	1.
683.	463.	45572.	1.	80.	45029.	445.	1.
684.	569.	65897.	1.	219.	64614.	1058.	1.
685.	679.	84396.	1.	450.	82083.	1858.	1.
686.	793.	104829.	1.	791.	101185.	2848.	1.
687.	912.	127143.	1.	1261.	121852.	4026.	1.
688.	1035.	151304.	1.	1879.	144026.	5390.	1.
689.	1173.	177469.	53.	2789.	167644.	6940.	1.
690.	1346.	205613.	417.	3875.	192679.	8683.	1.
691.	1557.	236584.	1503.	5117.	219102.	10625.	1.
692.	1813.	270445.	3736.	6496.	246874.	12908.	9.
693.	2120.	308218.	7572.	8003.	275958.	15629.	523.
694.	2475.	350512.	12610.	9631.	306322.	18617.	2765.
695.	2846.	397493.	18447.	11364.	337914.	21788.	7000.
696.	3220.	448390.	25294.	13224.	370762.	25180.	13344.
697.	3596.	503086.	33052.	15208.	404844.	28786.	21299.
698.	3973.	561448.	42655.	17376.	440258.	32703.	33268.
699.	4349.	623535.	54429.	19737.	476992.	36945.	50945.

*****SECT.17.07 KD VALUES REVERSED ON SEGMENT 3 AT ELEVATION 693.80 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 17.07 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	677.0	0.0	0.0						
BANK FULL	680.3	337.4	739.7	0.0	0.0	0.0			
1	681.9	637.8	1100.0	0.0	0.0	0.0	1100.00	679.3	0.00085
2	683.6	987.1	2285.0	0.0	0.0	0.0	2285.00	680.1	0.00064
3	684.8	1243.9	3305.0	0.0	0.0	0.0	3305.00	680.6	0.00051
4	685.4	1388.4	3825.0	0.0	0.0	0.0	3825.00	680.9	0.00048
5	686.9	1719.9	5130.0	0.0	0.0	0.0	5130.00	681.4	0.00044

SEGMENT TABLE FOR SECTION 17.07

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	0.	1096.	4.
1100.	VELOCITY FPS	1.75	0.0	1.74	0.48
2	DISCHARGE CFS	2285.	2.	2258.	25.
2285.	VELOCITY FPS	2.39	0.38	2.39	0.65
3	DISCHARGE CFS	3305.	5.	3247.	53.
3305.	VELOCITY FPS	2.77	0.47	2.78	0.80
4	DISCHARGE CFS	3825.	9.	3744.	72.
3825.	VELOCITY FPS	2.88	0.52	2.91	0.86
5	DISCHARGE CFS	5130.	20.	4986.	124.
5130.	VELOCITY FPS	3.15	0.62	3.19	1.01
1	ELEV 681.9 KD	37691.	1.	37550.	140.
2	ELEV 683.6 KD	90663.	58.	89646.	960.
3	ELEV 684.8 KD	145640.	225.	143108.	2307.
4	ELEV 685.4 KD	175385.	382.	171759.	3244.
5	ELEV 686.9 KD	244271.	957.	237432.	5883.

KO TABLE FOR CROSS SECTION 17.07

ELEVATION	AREA	KO	KO BY SEGMENT		
677.00	0.				
678.	39.	650.	1.	648.	1.
679.	132.	3269.	1.	3267.	1.
680.	286.	10075.	1.	10073.	1.
681.	463.	21525.	1.	21505.	12.
682.	657.	39856.	2.	39685.	161.
683.	863.	68627.	18.	68035.	558.
684.	1079.	109713.	102.	108211.	1383.
685.	1299.	158450.	283.	155491.	2675.
686.	1524.	202803.	585.	197945.	4273.
687.	1753.	251624.	1034.	244400.	6189.
688.	1986.	304765.	1653.	294693.	8419.
689.	2223.	362104.	2462.	348661.	10961.
690.	2477.	422731.	2739.	406178.	13806.
691.	2763.	488326.	4093.	467179.	16977.
692.	3087.	559165.	6882.	531576.	20475.
693.	3455.	634440.	11972.	599278.	22734.
694.	3875.	713976.	20320.	670189.	23193.
695.	4345.	800964.	30936.	744214.	25504.
696.	4830.	899710.	43092.	821269.	34467.
697.	5319.	1006174.	57047.	901396.	47187.
698.	5810.	1118713.	72571.	984527.	61623.
699.	6302.	1237720.	91291.	1070919.	79482.
700.	6793.	1363245.	113674.	1160543.	101363.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	268.6462	734.4897	660.0222
DCRIT	-1.00	KBCRIT=									
.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	268.6462	734.4897	660.0222
DCRIT	-1.00	KBCRIT=									
.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	268.6462	734.4897	660.0222
DCRIT	-1.00	KBCRIT=									
.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	268.6462	734.4897	660.0222
DCRIT	-1.00	KBCRIT=									
.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	268.6462	734.4897	660.0222
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 18.00

NO.	HW	CFS	HL	TW	CSM
0	690.40	0.00	0.00	0.00	0.00
1	693.22	1100.00	0.50	692.72	1100.00
2	694.09	2285.00	0.60	693.49	2285.00
3	694.66	3305.00	0.64	694.02	3305.00
4	694.93	3825.00	0.68	694.25	3825.00
5	695.54	5130.00	0.74	694.80	5130.00

MIN ROAD ELEVATION 692.40

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 692.60 OPENING NO.= 1

RATING TABLE FOR SECTION 18.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	687.1	0.0	0.0						
BANK FULL	690.5	710.3	606.4	0.0	0.0	0.0			
1	693.3	1581.3	1100.0	0.0	0.0	0.0	1100.00	688.6	0.00005
2	694.2	1897.8	2285.0	0.0	0.0	0.0	2285.00	689.2	0.00011
3	694.8	2120.3	3305.0	0.0	0.0	0.0	3305.00	689.6	0.00015
4	695.1	2227.6	3825.0	0.0	0.0	0.0	3825.00	689.8	0.00018
5	695.7	2485.0	5130.0	0.0	0.0	0.0	5130.00	690.2	0.00024

SEGMENT TABLE FOR SECTION 18.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	0.	1096.	3.
1100.	VELOCITY FPS	0.71	0.07	0.70	0.17
2	DISCHARGE CFS	2285.	4.	2271.	10.
2285.	VELOCITY FPS	1.24	0.16	1.24	0.29
3	DISCHARGE CFS	3305.	12.	3275.	18.
3305.	VELOCITY FPS	1.61	0.25	1.62	0.39
4	DISCHARGE CFS	3825.	17.	3785.	23.
3825.	VELOCITY FPS	1.78	0.28	1.79	0.43
5	DISCHARGE CFS	5130.	39.	5054.	37.
5130.	VELOCITY FPS	2.17	0.39	2.18	0.54
1	ELEV 693.3 KD	150199.	22.	149737.	440.
2	ELEV 694.2 KD	222705.	341.	221416.	947.
3	ELEV 694.8 KD	265843.	865.	263565.	1413.
4	ELEV 695.1 KD	286205.	1263.	283256.	1686.
5	ELEV 695.7 KD	334148.	2361.	329402.	2385.

KD TABLE FOR CROSS SECTION 18.01

ELEVATION	AREA	KD	KD BY SEGMENT		
687.11	0.				
688.	82.	1285.	1.	1283.	1.
689.	289.	7904.	1.	7902.	1.
690.	559.	21426.	1.	21424.	1.
691.	859.	43681.	1.	43672.	6.
692.	1170.	79966.	1.	79878.	84.
693.	1490.	132084.	5.	131723.	331.
694.	1830.	205746.	221.	204646.	817.
695.	2195.	279981.	1127.	277208.	1599.
696.	2588.	354479.	2984.	348711.	2718.
697.	3006.	437018.	6075.	426647.	4228.
698.	3451.	527615.	10631.	510743.	6173.
699.	3921.	626318.	16870.	600783.	8596.
700.	4426.	732289.	24107.	696507.	11529.
701.	4971.	846712.	33576.	797867.	15026.
702.	5560.	969919.	45828.	904691.	19123.
703.	6195.	1102488.	61329.	1016835.	24051.
704.	6873.	1245252.	80854.	1134228.	30309.
705.	7550.	1396681.	104914.	1257245.	37690.
706.	8228.	1556777.	134218.	1385820.	46317.

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
LINK
TITLE      FINAL TR20 DISCHARGES ------ TO SHAW CREEK
CHANGE     DISCHARGE
DISCHARGE  -1.       1085.     2265.     3280.     3800.     5105.
END
REACH      18.03     1.0       20.0      20.0                                18031
REACH 2    18.10     0.0                                                     18032
REACH      18.10     1.0       150.0     150.0                               18101
SEGMENT    18.10     1         N         343.0                              1810-2
N VALUE    0.08                                                              18103
SEGMENT    18.10     2         C         651.0                               18104
N VALUE    .06       2.5       .04       6.        .03                       18105
SEGMENT    18.10     3         N         711.0                               18106
N VALUE    0.06                                                              18107
SECTION       18.10                                                         1810-8
                0.00     704.01    100.00    701.91    200.00    699.41
              300.00     694.71    343.00    692.71    348.00    690.41
              358.00     687.71    388.00    687.31    428.00    688.81
              463.00     688.01    503.00    687.11    553.00    687.41
              603.00     689.11    623.00    689.41    651.00    690.51
              661.00     692.47    711.00    702.86
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 18.10  EXCEEDS  10. FEET-------------
REACH      18.13     1.0       540.0     540.0                               18131
REACH 2    18.10     -2.9                                                    18132
REACH      18.15     1.0       260.0     260.0                               18151
SEGMENT    18.15     1         N         1068.0                              18152
N VALUE    0.09                                                              18153
SEGMENT    18.15     2         C         1227.0                              18154
N VALUE    .06       2.5       .04       6.        .03                       18155
SEGMENT    18.15     3         N         1250.0                              18156
N VALUE    0.11                                                              18157
SECTION    18.15                                                             18158
           713.0     709.0     714.0     697.3     800.0     694.9           18159
              900.00     693.20   1000.00    693.20   1060.00    692.40
             1068.00     690.01   1078.00    686.41   1102.00    684.31
             1135.00     686.20   1150.00    688.70   1175.00    689.81
             1210.00     688.91   1227.00    690.41   1250.00    708.31
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 18.15  EXCEEDS  10. FEET-------------
REACH      18.17     1.0       300.0     300.0                               18171
REACH 2    18.15     +0.8                                                    18172
REACH      18.20     1.0       340.0     340.0                               18201
SEGMENT    18.20     1         N         500.0                               18202
N VALUE    0.09                                                              18203
SEGMENT    18.20     2         N         535.0                               18204
N VALUE    0.15                                                              18205
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
SEGMENT   18.20     3         C         752.0                                18206
.VALUE    .06       2.5       .04       6.        .03                        18207
SEGMENT   18.20     4         N         881.0                                18208
.VALUE    0.10                                                               18209
S+CTION      18.20                                                         1820-10
             0.00     704.38    100.00    700.08    200.00    699.02
           300.00     696.92    400.00    696.32    500.00    693.52
           535.00     692.52    540.00    690.82    550.00    687.52
           560.00     686.11    597.00    689.11    620.00    688.61
           645.00     688.42    685.00    688.11    715.00    688.11
           740.00     688.32    752.00    689.61    755.00    691.92
           800.00     696.22    881.00    702.22
..OTABLE
*EACH     16.23     1.0       400.0     370.0                                18231
-EACH 2   18.20     0.0                                                      18232
'EACH     18.30     1.0       1440.0    1300.0                               18301
SEGMENT   18.30     1         N         415.0                                18302
.VALUE    0.15      2.0       0.08                                           18303
SEGMENT   18.30     2         N         435.0                                18304
.VALUE    0.13                                                               18305
SEGMENT   18.30     3         C         555.0                                18306
.VALUE    .06       2.5       .04       6.        .03                        18307
SEGMENT   18.30     4         N         800.0                                18308
.VALUE    0.13      2.0       0.07                                           18309
SECTION      18.30                                                         1830-10
          178.0     710.0     178.5     702.0     179.0     699.3            183011
          196.0     692.2     300.0     691.0     400.0     691.0            183012
          415.0     691.4     432.0     691.9     435.0     689.8            183013
           445.00    687.56    455.00    687.36    465.00    687.46
           475.00    687.46    485.00    687.27    505.00    685.96
           525.00    688.46    535.00    689.46    544.00    690.46
           555.00    695.18    600.00    698.18    700.00    698.78
          800.0     700.8     801.0     710.0                                183018
ENDTABLE
REACH     18.33     1.0       320.0     250.0                                18301
 EACH 2   18.30     +0.3                                                     18302
 EACH     18.40     1.0       1360.0    550.0                                18401
SEGMENT   18.40     1         N         1570.0                               18402
.VALUE    0.18                                                               18403
SEGMENT   18.40     2         C         1650.0                               18404
.VALUE    .06       2.5       .04       6.        .03                        18405
SEGMENT   18.40     3         N         2067.0                              1840-6
NVALUE    0.13                                                               18407
SECTION      18.40                                                         1840-8
           900.00    703.27    950.00    704.17    957.00    703.87
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
              977.00    693.67   1000.00    695.47   1100.00    693.47
             1200.00    691.47   1300.00    692.74   1400.00    692.54
             1500.00    691.24   1567.00    693.72   1570.00    690.72
             1580.00    688.63   1590.00    688.13   1600.00    687.22
             1610.00    687.22   1620.00    687.72   1630.00    687.43
             1640.00    689.22   1650.00    690.43   1657.00    692.13
             1700.00    691.32   1800.00    690.93   1900.00    691.32
             2000.00    691.32   2042.00    691.13   2067.00    705.43
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 18.40  EXCEEDS  10. FEET-------------
REACH     18.46     1.0       1600.0    880.0                                18461
REACH 2   18.40     +1.6                                                     18462
REACH     18.50     1.0       640.0     560.0                               11850-1
SEGMENT   18.50     1         N         636.0                                18502
NVALUE    0.18                                                               18503
SEGMENT   18.50     2         C         705.0                                18504
NVALUE    0.045                                                              18505
SEGMENT   18.50     3         N         1035.0                               18506
NVALUE    0.20                                                               18507
SECTION      18.50                                                          1850-8
               0.00    712.73     19.00    709.04    100.00    707.23
             200.00    706.94    300.00    702.44    349.00    701.59
             375.00    692.09    400.00    692.40    500.00    694.00
             600.00    694.30    635.00    693.73    636.00    690.73
             655.00    689.63    670.00    689.33    680.00    689.33
             695.00    689.63    705.00    691.03    707.00    692.93
             800.00    692.33    900.00    695.53   1000.00    702.43
            1035.00    705.83
ENDTABLE
REACH     18.57     1.0       1680.0    1520.0                               18571
REACH 2   18.50     +0.5                                                     18572
REACH     18.60     1.0       800.0     800.0                                18601
SEGMENT   18.60     1         N         685.0                                18602
NVALUE    0.18                                                               18603
SEGMENT   18.60     2         C         770.0                                18604
NVALUE    .06       2.5       .04       6.        .03                        18605
SEGMENT   18.60     3         N         927.0                                18606
NVALUE    0.13                                                               18607
SECTION      18.60                                                          1860-8
               0.00    715.75     27.00    708.25     55.00    699.55
             127.00    699.75    227.00    699.45    327.00    699.86
             427.00    698.56    527.00    696.36    627.00    695.06
             682.00    697.56    685.00    693.06    687.00    692.96
             697.00    691.06    707.00    691.06    717.00    690.36
             727.00    691.06    737.00    691.06    747.00    690.96
             757.00    691.56    770.00    693.46    772.00    704.16
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
              827.00     705.86     927.00     708.46
NDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 18.60  EXCEEDS  10. FEET-------------
EACH      18.64      1.0        680.0      560.0                                   18641
EACH 2    18.60      +1.8                                                          18642
EACH      18.70      1.0        920.0      640.0                                   18701
EGMENT    18.70      1          N          467.0                                   18702
VALUE     0.20                                                                     18703
EGMENT    18.70      2          C          541.0                                   18704
NVALUE    .06        2.5        .04        6.         .03                          18705
EGMENT    18.70      3          N          600.0                                   18706
VALUE     0.20                                                                     18707
EGMENT    18.70      4          N          1400.0                                  18708
VALUE     0.20       2.0        0.10                                               18709
ECTION       18.70                                                              1870-10
                0.00     718.20       6.00     718.01      23.00     709.10
              100.00     708.41     200.00     709.80     300.00     708.70
              400.00     706.30     450.00     705.89     467.00     695.29
              477.00     693.69     487.00     693.09     507.00     693.09
              527.00     693.39     537.00     694.59     541.00     694.98
              557.00     697.09     600.00     696.79     700.00     697.59
              800.00     698.09     900.00     698.29    1000.00     699.35
             1100.00     700.15    1200.00     700.85    1233.00     701.65
             1287.00     712.35    1300.00     712.85    1400.00     715.25
NDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 18.70  EXCEEDS  10. FEET-------------
EACH      18.73      1.0        560.0      480.0                                   18731
EACH 2    18.70      +0.4                                                          18732
EACH      18.90      1.0        1520.0     1360.0                                  18901
EGMENT    18.90      1          N          939.0                                   18902
VALUE     0.20                                                                     18903
EGMENT    18.90      2          C          1009.0                                  18904
VALUE     .06        2.5        .04        6.         .03                          18905
EGMENT    18.90      3          N          1175.0                                  18906
VALUE     0.09                                                                     18907
ECTION       18.90                                                              1890-8
                0.00     711.62      75.00     709.82     175.00     705.13
              245.00     702.22     265.00     698.82     375.00     698.42
              475.00     698.03     575.00     699.65     675.00     699.45
              775.00     699.45     875.00     699.65     937.00     698.25
              939.00     697.25     947.00     696.45     955.00     695.95
              966.00     695.05     975.00     695.15     985.00     695.15
              995.00     695.34    1005.00     696.65    1009.00     697.45
             1013.00     700.34    1075.00     709.75    1140.00     714.95
             1175.00     715.95
NDTABLE
OAD       19.00      2.7        65.0       65.0                                    19001
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
BPR       19.00     A         1.0       3.0                                  19002
PIER      694.0     2.7       694.0     2.7                                  19003
GIRDER    705.7     705.4     20.0      0.6       2.7                        19004
          -56.4     708.6     -56.3     704.5     -16.0     704.9            19005
          28.0      705.3     69.5      705.6     69.6      706.7            19006
ENDTABLE                                                                     19007
SECTION   19.00                                                                  8
          -1000.0   712.6     -900.0    709.0     -800.0    703.9                9
          -700.0    702.0     -600.0    702.1     -500.0    702.1               10
          -400.0    702.0     -300.0    702.1     -300.0    702.1               11
          -200.0    703.0     -122.0    705.5     -100.0    705.9               12
          -56.4     708.6     -56.3     702.5     -53.0     702.4               13
          -44.0     699.1     -40.0     697.7     -27.0     695.9               14
          -17.0     695.1     -14.0     694.9     -4.0      694.8               15
          7.0       695.7     19.0      695.9     27.0      695.1               16
          30.0      695.3     49.0      697.3     52.0      698.4           190017
          66.0      703.4     69.5      703.5     69.6      706.7           190018
          94.5      707.8     200.0     708.9     375.0     716.2           190019
ENDTABLE                                                                    190020
REACH     19.01     1.0       50.0      50.0                                 19011
REACH 2   19.10     0.0                                                      19012
REACH     19.10     1.0       1510.0    1470.0                               19101
SEGMENT   19.10     1         N         290.0                                19102
NVALUE    0.10      1.3       0.07                                           19103
SEGMENT   19.10     2         N         302.0                                19104
NVALUE    0.12                                                               19105
SEGMENT   19.10     3         C         369.0                                19106
NVALUE    .06       2.5       .04       6.        .03                        19107
SEGMENT   19.10     4         N         385.0                                19108
NVALUE    0.12                                                               19109
SEGMENT   19.10     5         N         776.0                               191010
NVALUE    0.10      1.3       0.07                                          191011
SECTION      19.10                                                         1910-12
               0.00     716.51    100.00    704.31    200.00    701.31
             302.00     699.91    305.00    697.11    310.00    697.01
             330.00     696.51    350.00    696.31    360.00    696.51
             365.00     698.31    372.00    699.61    400.00    699.31
             500.00     701.41    600.00    704.31    700.00    709.91
             776.00     713.91  290.0     700.0     385.0     699.4        1910-19
ENDTABLE
--------------------DATA POINTS ON SECTION 19.10  REORDERED BY PROGRAM ACCORDING TO X VALUES
                    DUPLICATE X POINTS NOT CHANGED--------------------
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 19.10  EXCEEDS  10. FEET-------------
COMMENT   POINTS ADDED TO 19.10 FOR N-VALUES                            1910-20
REACH     19.14     1.0       1160.0    1120.0                               19141
REACH 2   19.10     0.7                                                      19142
REACH     19.70     1.0       1560.0    1360.0                               19701
SEGMENT   19.70     1         N         400.0                                19702
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
.VALUE    0.13                                                                19703
.EGMENT   19.70     2         C         505.0                                 19704
.VALUE    .06       2.5       .04       6.        .03                         19705
.EGMENT   19.70     3         N         1050.0                                19706
.VALUE    0.20                                                                19707
ECTION      19.70                                                            1970-8
              0.00     716.08    100.00    713.89    200.00    714.18
            273.00     713.48    314.00    704.39    400.00    702.39
            403.00     699.28    410.00    698.98    430.00    698.98
            450.00     697.98    460.00    697.98    480.00    698.39
            490.00     698.58    505.00    699.89    509.00    702.58
            600.00     703.68    700.00    704.80    800.00    703.80
            900.00     705.70   1000.00    711.70   1050.00    714.80
NOTABLE
OMPUTE    18.03     19.70     18.01
-----------------------------END OF 80/80 LIST------------------------------
```

COMPUTE 18.03 19.70 18.01

----------STARTING DATA FROM PREVIOUS COMPUTATIONS----------

RATING TABLE FOR SECTION 18.03 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	687.1	0.0	0.0						
BANK FULL	690.5	710.3	598.0	0.0	0.0	0.0			
1	693.3	1581.6	1085.0	0.0	0.0	0.0	1085.00	688.6	0.00005
2	694.2	1898.6	2265.0	0.0	0.0	0.0	2265.00	689.2	0.00010
3	694.8	2121.5	3280.0	0.0	0.0	0.0	3280.00	689.6	0.00015
4	695.1	2229.1	3800.0	0.0	0.0	0.0	3800.00	689.8	0.00018
5	695.7	2487.0	5105.0	0.0	0.0	0.0	5105.00	690.2	0.00023

SEGMENT TABLE FOR SECTION 18.03

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	0.	1081.	3.
1085.	VELOCITY FPS	0.70	0.07	0.69	0.17
2	DISCHARGE CFS	2265.	4.	2251.	10.
2265.	VELOCITY FPS	1.22	0.16	1.22	0.28
3	DISCHARGE CFS	3280.	12.	3250.	18.
3280.	VELOCITY FPS	1.60	0.24	1.60	0.38
4	DISCHARGE CFS	3800.	17.	3761.	22.
3800.	VELOCITY FPS	1.77	0.28	1.78	0.43
5	DISCHARGE CFS	5105.	39.	5029.	37.
5105.	VELOCITY FPS	2.16	0.38	2.17	0.54
1	ELEV 693.3 KD	150265.	22.	149803.	440.
2	ELEV 694.2 KD	222903.	343.	221611.	949.
3	ELEV 694.8 KD	266079.	869.	263794.	1416.
4	ELEV 695.1 KD	286487.	1269.	283528.	1690.
5	ELEV 695.7 KD	334541.	2372.	329778.	2391.

KD TABLE FOR CROSS SECTION 18.03

ELEVATION	AREA	KD	KD BY SEGMENT		
687.11	0.				
688.	82.	1285.	1.	1283.	1.
689.	289.	7904.	1.	7902.	1.
690.	559.	21426.	1.	21424.	1.
691.	859.	43681.	1.	43672.	6.
692.	1170.	79966.	1.	79878.	84.
693.	1490.	132084.	5.	131723.	331.
694.	1830.	205746.	221.	204646.	817.
695.	2195.	279981.	1127.	277208.	1599.
696.	2588.	354479.	2984.	348711.	2716.
697.	3006.	437018.	6075.	426647.	4228.
698.	3451.	527615.	10631.	510743.	6173.
699.	3921.	626318.	16870.	600783.	8596.
700.	4426.	732289.	24107.	696507.	11529.
701.	4971.	846712.	33576.	797867.	15026.
702.	5560.	969919.	45828.	904691.	19123.
703.	6195.	1102488.	61329.	1016835.	24051.
704.	6873.	1245252.	80854.	1134228.	30309.
705.	7550.	1396681.	104914.	1257245.	37690.
706.	8228.	1556777.	134218.	1385820.	46317.

RATING TABLE FOR SECTION 18.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	687.1	0.0	0.0						
BANK FULL	690.5	710.3	597.3	0.0	0.0	0.0			
1	693.3	1584.1	1085.0	0.0	0.0	0.0	1085.00	688.6	0.00005
2	694.2	1903.9	2265.0	0.0	0.0	0.0	2265.00	689.2	0.00010
3	694.8	2129.9	3280.0	0.0	0.0	0.0	3280.00	689.6	0.00015
4	695.1	2239.0	3800.0	0.0	0.0	0.0	3800.00	689.8	0.00017
5	695.8	2500.6	5105.0	0.0	0.0	0.0	5105.00	690.2	0.00023

SEGMENT TABLE FOR SECTION 18.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	0.	1081.	3.
1085.	VELOCITY FPS	0.70	0.07	0.69	0.17
2	DISCHARGE CFS	2265.	4.	2251.	10.
2265.	VELOCITY FPS	1.22	0.16	1.22	0.28
3	DISCHARGE CFS	3280.	12.	3250.	18.
3280.	VELOCITY FPS	1.59	0.24	1.60	0.38
4	DISCHARGE CFS	3800.	17.	3760.	23.
3800.	VELOCITY FPS	1.76	0.26	1.77	0.43
5	DISCHARGE CFS	5105.	40.	5028.	38.
5105.	VELOCITY FPS	2.15	0.38	2.16	0.54
1 ELEV 693.3 KD		150782.	23.	150316.	444.
2 ELEV 694.2 KD		224272.	355.	222558.	959.
3 ELEV 694.8 KD		267632.	895.	265301.	1436.
4 ELEV 695.1 KD		288355.	1309.	285331.	1716.
5 ELEV 695.8 KD		337187.	2448.	332306.	2434.

KD TABLE FOR CROSS SECTION 18.10

ELEVATION	AREA	KD	KD BY SEGMENT		
687.11	0.				
688.	82.	1285.	1.	1283.	1.
689.	289.	7904.	1.	7902.	1.
690.	559.	21426.	1.	21424.	1.
691.	859.	43681.	1.	43672.	6.
692.	1170.	79966.	1.	79878.	84.
693.	1490.	132084.	5.	131723.	331.
694.	1830.	205746.	221.	204646.	817.
695.	2195.	279981.	1127.	277208.	1599.
696.	2588.	354479.	2984.	348711.	2718.
697.	3006.	437018.	6075.	426647.	4228.
698.	3451.	527615.	10631.	510743.	6173.
699.	3921.	626318.	16870.	600783.	8596.
700.	4426.	732289.	24107.	696607.	11529.
701.	4971.	846712.	33576.	797867.	15026.
702.	5560.	969919.	45628.	904691.	19123.
703.	6195.	1102488.	61329.	1016835.	24051.
704.	6873.	1245252.	80854.	1134228.	30309.
705.	7550.	1396681.	104914.	1257245.	37690.
706.	8228.	1556777.	134218.	1365820.	46317.

RATING TABLE FOR SECTION 18.13 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	684.2	0.0	0.0						
BANK FULL	687.6	710.3	406.0	0.0	0.0	0.0			
1	693.3	2667.2	1085.0	0.0	0.0	0.0	1085.00	685.7	0.00001
2	694.2	3065.1	2265.0	0.0	0.0	0.0	2265.00	686.3	0.00003
3	694.9	3347.4	3280.0	0.0	0.0	0.0	3280.00	686.7	0.00004
4	695.2	3482.7	3800.0	0.0	0.0	0.0	3800.00	686.9	0.00005
5	695.9	3806.0	5105.0	0.0	0.0	0.0	5105.00	687.3	0.00007

SEGMENT TABLE FOR SECTION 18.13

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	10.	1066.	9.
1085.	VELOCITY FPS	0.43	0.08	0.43	0.11
2	DISCHARGE CFS	2265.	34.	2209.	23.
2265.	VELOCITY FPS	0.80	0.16	0.80	0.21
3	DISCHARGE CFS	3280.	62.	3180.	37.
3280.	VELOCITY FPS	1.07	0.23	1.08	0.28
4	DISCHARGE CFS	3800.	79.	3676.	45.
3800.	VELOCITY FPS	1.19	0.26	1.21	0.32
5	DISCHARGE CFS	5105.	131.	4906.	68.
5105.	VELOCITY FPS	1.49	0.33	1.51	0.40
1 ELEV 693.3 KD		369932.	3494.	363455.	2983.
2 ELEV 694.2 KD		449031.	6633.	437925.	4473.
3 ELEV 694.9 KD		505807.	9404.	490725.	5677.
4 ELEV 695.2 KD		534365.	11035.	516997.	6333.
5 ELEV 695.9 KD		601329.	15147.	578229.	7953.

KD TABLE FOR CROSS SECTION 18.13

ELEVATION	AREA	KD	KD BY SEGMENT		
684.21	0.				
685.	66.	960.	1.	958.	1.
686.	264.	6903.	1.	6901.	1.
687.	531.	19728.	1.	19726.	1.
688.	829.	40767.	1.	40760.	4.
689.	1138.	75699.	1.	75627.	71.
690.	1457.	125919.	3.	125601.	298.
691.	1795.	197331.	176.	196338.	757.
692.	2158.	272961.	989.	270394.	1505.
693.	2548.	346659.	2729.	341234.	2586.
694.	2964.	428402.	5686.	418547.	4055.
695.	3406.	518199.	10085.	502043.	5955.
696.	3874.	616093.	16146.	591502.	8328.
697.	4375.	721358.	23310.	686670.	11209.
698.	4915.	834898.	32507.	787495.	14650.
699.	5499.	957204.	44472.	893795.	18687.
700.	6128.	1088708.	59602.	1005425.	23483.
701.	6805.	1230607.	78712.	1122253.	29635.
702.	7483.	1381171.	102288.	1244710.	36899.
703.	8160.	1540400.	131035.	1372732.	45396.

RATING TABLE FOR SECTION 18.15 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	684.3	0.0	0.0						
BANK FULL	690.0	373.9	687.5	0.0	0.0	0.0			
1	693.3	960.3	1085.0	0.0	0.0	0.0	1085.00	687.5	0.00012
2	694.2	1306.3	2265.0	0.0	0.0	0.0	2265.00	689.0	0.00026
3	694.9	1570.5	3280.0	0.0	0.0	0.0	3280.00	690.0	0.00038
4	695.2	1698.1	3800.0	0.0	0.0	0.0	3800.00	690.2	0.00044
5	695.9	2008.8	5105.0	0.0	0.0	0.0	5105.00	690.8	0.00056

SEGMENT TABLE FOR SECTION 18.15

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	5.	1079.	1.
1085.	VELOCITY FPS	1.20	0.09	1.20	0.16
2	DISCHARGE CFS	2265.	71.	2191.	3.
2265.	VELOCITY FPS	2.06	0.29	2.09	0.29
3	DISCHARGE CFS	3280.	184.	3091.	5.
3280.	VELOCITY FPS	2.63	0.45	2.70	0.39
4	DISCHARGE CFS	3800.	249.	3545.	6.
3800.	VELOCITY FPS	2.88	0.51	2.97	0.43
5	DISCHARGE CFS	5105.	469.	4625.	10.
5105.	VELOCITY FPS	3.40	0.68	3.55	0.54
1 ELEV 693.3 KD		99978.	463.	99435.	80.
2 ELEV 694.2 KD		139840.	4114.	135558.	168.
3 ELEV 694.9 KD		166913.	8481.	158182.	251.
4 ELEV 695.2 KD		181179.	11453.	169426.	300.
5 ELEV 695.9 KD		215002.	18986.	195590.	426.

KD TABLE FOR CROSS SECTION 18.15

ELEVATION	AREA	KD	KD BY SEGMENT		
684.31	0.				
685.	7.	86.	1.	84.	1.
686.	42.	917.	1.	915.	1.
687.	100.	3287.	1.	3285.	1.
688.	167.	7224.	1.	7222.	1.
689.	246.	11527.	1.	11525.	1.
690.	372.	16577.	1.	16574.	1.
691.	532.	31518.	14.	31496.	3.
692.	698.	54607.	102.	54483.	15.
693.	696.	87502.	336.	87094.	57.
694.	1215.	128562.	2357.	125274.	139.
695.	1622.	173085.	9589.	162683.	270.
696.	2076.	223179.	20910.	201387.	457.
697.	2570.	280907.	36411.	243231.	709.
698.	3085.	347161.	57308.	288281.	1036.
699.	3608.	421902.	83811.	336369.	1443.
700.	4133.	503464.	114055.	387392.	1938.
701.	4659.	591192.	147411.	441156.	2525.
702.	5187.	684684.	183636.	497563.	3209.
703.	5716.	784510.	223498.	556810.	4003.
704.	6246.	890366.	266623.	618789.	4913.
705.	6778.	1001162.	311947.	683160.	5934.
706.	7311.	1117454.	360140.	750096.	7081.
707.	7846.	1239252.	411218.	819590.	8361.
708.	8382.	1366013.	464675.	891474.	9773.
709.	8918.	1499693.	522437.	966299.	11351.
710.	9453.	1640362.	584652.	1044060.	13105.

RATING TABLE FOR SECTION 18.17 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	685.1	0.0	0.0						
BANK FULL	690.8	373.9	748.8	0.0	0.0	0.0			
1	693.4	804.4	1085.0	0.0	0.0	0.0	1085.00	688.3	0.00023
2	694.4	1052.2	2265.0	0.0	0.0	0.0	2265.00	689.8	0.00043
3	695.0	1294.2	3280.0	0.0	0.0	0.0	3280.00	690.8	0.00056
4	695.3	1422.5	3800.0	0.0	0.0	0.0	3800.00	691.0	0.00062
5	696.0	1724.9	5105.0	0.0	0.0	0.0	5105.00	691.6	0.00077

SEGMENT TABLE FOR SECTION 18.17

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	4.	1081.	1.
1085.	VELOCITY FPS	1.40	0.16	1.39	0.19
2	DISCHARGE CFS	2265.	31.	2232.	2.
2265.	VELOCITY FPS	2.38	0.28	2.38	0.33
3	DISCHARGE CFS	3280.	101.	3175.	4.
3280.	VELOCITY FPS	3.01	0.42	3.05	0.42
4	DISCHARGE CFS	3800.	162.	3633.	5.
3800.	VELOCITY FPS	3.27	0.51	3.33	0.47
5	DISCHARGE CFS	5105.	344.	4752.	9.
5105.	VELOCITY FPS	3.82	0.68	3.95	0.58
1	ELEV 693.4 KD	71930.	210.	71685.	35.
2	ELEV 694.4 KD	109273.	845.	108330.	98.
3	ELEV 695.0 KD	138155.	3825.	134167.	164.
4	ELEV 695.3 KD	151827.	5921.	145704.	202.
5	ELEV 696.0 KD	184341.	12186.	171845.	311.

KD TABLE FOR CROSS SECTION 18.17

ELEVATION	AREA	KD	KD BY SEGMENT		
685.11	0.				
686.	12.	167.	1.	165.	1.
687.	52.	1243.	1.	1241.	1.
688.	112.	3966.	1.	3964.	1.
689.	182.	8208.	1.	8206.	1.
690.	267.	12299.	1.	12297.	1.
691.	404.	19003.	2.	18999.	1.
692.	565.	35481.	23.	35448.	4.
693.	731.	60312.	134.	60151.	21.
694.	938.	95527.	415.	95034.	71.
695.	1288.	137769.	3691.	133490.	162.
696.	1707.	182527.	11701.	170258.	303.
697.	2169.	234178.	23866.	205608.	504.
698.	2672.	293441.	40173.	252046.	769.
699.	3190.	361539.	62213.	297656.	1110.
700.	3713.	437559.	89354.	346295.	1534.
701.	4239.	520335.	120220.	397862.	2046.
702.	4765.	609512.	154529.	452259.	2655.
703.	5293.	704327.	191507.	509251.	3360.
704.	5822.	805126.	231760.	568970.	4175.
705.	6353.	911949.	275310.	631422.	5106.
706.	6885.	1024250.	321614.	696429.	6156.
707.	7418.	1141429.	370160.	763813.	7327.
708.	7953.	1264077.	421582.	833744.	8631.
709.	8489.	1392220.	475890.	906219.	10076.
710.	9025.	1527292.	534531.	981633.	11688.
711.	9561.	1669369.	597655.	1059978.	13479.

RATING TABLE FOR SECTION 18.20 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	686.1	0.0	0.0						
BANK FULL	689.6	294.9	519.5	0.0	0.0	0.0			
1	693.4	1144.7	1085.0	0.0	0.0	0.0	1085.00	689.1	0.00010
2	694.5	1453.2	2265.0	0.0	0.0	0.0	2265.00	689.7	0.00019
3	695.2	1684.2	3280.0	0.0	0.0	0.0	3280.00	690.2	0.00026
4	695.5	1808.3	3800.0	0.0	0.0	0.0	3800.00	690.4	0.00030
5	696.3	2102.8	5105.0	0.0	0.0	0.0	5105.00	690.9	0.00038

SEGMENT TABLE FOR SECTION 18.20

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N
1	DISCHARGE CFS	1085.	0.	1.	1081.	3.
1085.	VELOCITY FPS	0.98	0.08	0.07	0.97	0.15
2	DISCHARGE CFS	2265.	4.	9.	2240.	13.
2265.	VELOCITY FPS	1.67	0.18	0.18	1.68	0.27
3	DISCHARGE CFS	3280.	12.	20.	3223.	25.
3280.	VELOCITY FPS	2.15	0.24	0.27	2.16	0.36
4	DISCHARGE CFS	3800.	23.	28.	3716.	34.
3800.	VELOCITY FPS	2.36	0.30	0.32	2.38	0.41
5	DISCHARGE CFS	5105.	55.	48.	4943.	59.
5105.	VELOCITY FPS	2.82	0.38	0.42	2.86	0.51
1	ELEV 693.4 KD	108227.	2.	77.	107856.	293.
2	ELEV 694.5 KD	164293.	121.	598.	162721.	853.
3	ELEV 695.2 KD	202756.	699.	1238.	199309.	1510.
4	ELEV 695.5 KD	220292.	1097.	1552.	215754.	1889.
5	ELEV 696.3 KD	263384.	2692.	2461.	255224.	3006.

KD TABLE FOR CROSS SECTION 18.20

ELEVATION	AREA	KD	KD BY SEGMENT			
686.11	0.					
687.	8.	114.	1.	1.	111.	1.
688.	34.	837.	1.	1.	834.	1.
689.	172.	3765.	1.	1.	3762.	1.
690.	376.	13573.	1.	1.	13569.	2.
691.	589.	29237.	1.	1.	29222.	12.
692.	806.	53634.	1.	1.	53581.	51.
693.	1038.	88997.	1.	13.	88785.	169.
694.	1307.	140112.	28.	311.	139168.	557.
695.	1625.	193226.	486.	1058.	190243.	1324.
696.	1988.	247675.	2051.	2123.	240807.	2576.
697.	2433.	307974.	4820.	3454.	295266.	4340.
698.	2974.	377946.	11778.	5027.	354075.	6810.
699.	3587.	456505.	22056.	6809.	416978.	10115.
700.	4282.	544571.	36657.	8816.	484014.	14379.
701.	5040.	643905.	57283.	11031.	555029.	19705.
702.	5842.	755183.	84871.	13443.	629904.	26421.
703.	6677.	877157.	117170.	16043.	708528.	35213.
704.	7540.	1009199.	153486.	18800.	790672.	45614.
705.	8403.	1152292.	198127.	21843.	877090.	58260.
706.	9266.	1306705.	252405.	25181.	967759.	73479.

RATING TABLE FOR SECTION 18.23 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	686.1	0.0	0.0						
BANK FULL	689.6	294.9	516.6	0.0	0.0	0.0			
1	693.5	1155.8	1085.0	0.0	0.0	0.0	1085.00	689.1	0.00010
2	694.5	1477.5	2265.0	0.0	0.0	0.0	2265.00	689.7	0.00018
3	695.3	1721.9	3280.0	0.0	0.0	0.0	3280.00	690.2	0.00025
4	695.6	1851.2	3800.0	0.0	0.0	0.0	3800.00	690.4	0.00028
5	696.4	2169.6	5105.0	0.0	0.0	0.0	5105.00	690.9	0.00035

SEGMENT TABLE FOR SECTION 18.23

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N
1	DISCHARGE CFS	1085.	0.	1.	1080.	3.
1085.	VELOCITY FPS	0.97	0.08	0.08	0.97	0.16
2	DISCHARGE CFS	2265.	4.	10.	2237.	14.
2265.	VELOCITY FPS	1.65	0.18	0.19	1.65	0.28
3	DISCHARGE CFS	3280.	15.	22.	3215.	27.
3280.	VELOCITY FPS	2.11	0.26	0.28	2.13	0.37
4	DISCHARGE CFS	3800.	26.	30.	3706.	37.
3800.	VELOCITY FPS	2.31	0.32	0.33	2.33	0.42
5	DISCHARGE CFS	5105.	63.	52.	4925.	65.
5105.	VELOCITY FPS	2.76	0.38	0.44	2.60	0.52
1	ELEV 693.5 KD	110238.	2.	88.	109829.	318.
2	ELEV 694.5 KD	168235.	154.	676.	166459.	945.
3	ELEV 695.3 KD	208133.	835.	1380.	204236.	1682.
4	ELEV 695.6 KD	226786.	1328.	1742.	221597.	2119.
5	ELEV 696.4 KD	272353.	3160.	2746.	263074.	3374.

KD TABLE FOR CROSS SECTION 18.23

ELEVATION	AREA	KD	KD BY SEGMENT			
686.11	0.					
687.	8.	114.	1.	1.	111.	1.
688.	34.	837.	1.	1.	834.	1.
689.	172.	3766.	1.	1.	3762.	1.
690.	376.	13573.	1.	1.	13569.	2.
691.	589.	29238.	1.	1.	29222.	13.
692.	806.	53636.	1.	1.	53581.	53.
693.	1038.	89006.	1.	13.	88785.	176.
694.	1307.	140150.	29.	324.	139168.	579.
695.	1625.	193344.	505.	1100.	190243.	1377.
696.	1988.	247948.	2132.	2208.	240807.	2681.
697.	2433.	308479.	5011.	3591.	295266.	4513.
698.	2974.	378894.	12247.	5226.	354075.	7081.
699.	3587.	458075.	22932.	7079.	416978.	10517.
700.	4282.	546976.	38115.	9167.	484014.	14951.
701.	5040.	647434.	59560.	11470.	555029.	20488.
702.	5842.	760159.	88245.	13978.	629904.	27471.
703.	6677.	883859.	121627.	16680.	708528.	36613.
704.	7540.	1017879.	159587.	19548.	790672.	47427.
705.	8403.	1163253.	206003.	22711.	877090.	60576.
706.	9266.	1320262.	262438.	26182.	967759.	76400.

RATING TABLE FOR SECTION 18.30 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	686.0	0.0	0.0						
BANK FULL	689.8	231.2	540.2	0.0	0.0	0.0			
1	693.7	1228.4	1085.0	0.0	0.0	0.0	1085.00	689.0	0.00014
2	694.9	1670.9	2265.0	0.0	0.0	0.0	2265.00	690.0	0.00025
3	695.7	1984.7	3280.0	0.0	0.0	0.0	3280.00	690.8	0.00032
4	696.1	2135.1	3800.0	0.0	0.0	0.0	3800.00	691.6	0.00035
5	697.0	2462.5	5105.0	0.0	0.0	0.0	5105.00	692.0	0.00041

SEGMENT TABLE FOR SECTION 18.30

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N
1	DISCHARGE CFS	1085.	192.	10.	883.	0.
1085.	VELOCITY FPS	1.23	0.37	0.24	1.33	0.0
2	DISCHARGE CFS	2265.	567.	28.	1670.	0.
2265.	VELOCITY FPS	1.82	0.71	0.42	2.07	0.0
3	DISCHARGE CFS	3280.	922.	46.	2312.	0.
3280.	VELOCITY FPS	2.20	0.93	0.55	2.54	0.12
4	DISCHARGE CFS	3800.	1111.	56.	2631.	1.
3800.	VELOCITY FPS	2.36	1.03	0.61	2.75	0.17
5	DISCHARGE CFS	5105.	1601.	82.	3416.	6.
5105.	VELOCITY FPS	2.72	1.25	0.75	3.21	0.24
1 ELEV	693.7 KD	89275.	14276.	821.	74177.	1.
2 ELEV	694.9 KD	144032.	35967.	1774.	106291.	1.
3 ELEV	695.7 KD	182859.	51122.	2574.	129148.	15.
4 ELEV	696.1 KD	202686.	59086.	2997.	140559.	44.
5 ELEV	697.0 KD	250640.	78538.	4033.	167781.	288.

KD TABLE FOR CROSS SECTION 18.30

ELEVATION	AREA	KD	KD BY SEGMENT			
685.96	0.					
686.	0.	2.	1.	1.	2.	1.
687.	13.	205.	1.	1.	201.	1.
688.	68.	1519.	1.	1.	1516.	1.
689.	153.	5289.	1.	1.	5285.	1.
690.	252.	11132.	1.	2.	11128.	1.
691.	384.	21121.	7.	6.	21006.	1.
692.	643.	37360.	1210.	59.	35822.	1.
693.	988.	62231.	5367.	429.	56302.	1.
694.	1346.	107249.	22314.	1060.	83845.	1.
695.	1709.	148740.	37790.	1870.	109058.	1.
696.	2081.	195834.	56384.	2854.	136544.	32.
697.	2470.	249009.	77873.	3998.	166843.	277.
698.	2879.	307818.	102088.	5289.	199521.	898.
699.	3357.	372168.	128815.	6716.	234461.	2084.
700.	3913.	444291.	158481.	8278.	271631.	5398.
701.	4513.	531385.	190736.	9973.	310986.	16524.
702.	5132.	629860.	225331.	11794.	352460.	39477.
703.	5754.	734072.	262098.	13735.	395989.	61780.
704.	6376.	846138.	300919.	15792.	441518.	87534.
705.	6998.	965236.	341558.	17954.	488950.	116154.
706.	7620.	1091753.	384284.	20234.	538358.	148470.
707.	8242.	1225401.	428981.	22628.	589691.	184059.
708.	8865.	1364848.	475173.	25112.	642773.	221499.
709.	9488.	1510733.	523159.	27702.	697692.	261818.
710.	10111.	1663711.	573166.	30409.	754512.	305672.
711.	10733.	1824993.	625622.	33254.	813361.	354626.
712.	11356.	1994668.	680540.	36238.	874225.	409034.
713.	11979.	2172826.	737936.	39362.	937091.	469260.

RATING TABLE FOR SECTION 18.33 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	686.3	0.0	0.0						
BANK FULL	690.1	231.2	557.7	0.0	0.0	0.0			
1	693.7	1141.6	1085.0	0.0	0.0	0.0	1085.00	689.3	0.00019
2	695.0	1593.5	2265.0	0.0	0.0	0.0	2265.00	690.3	0.00027
3	695.9	1913.5	3280.0	0.0	0.0	0.0	3280.00	691.1	0.00034
4	696.3	2064.4	3800.0	0.0	0.0	0.0	3800.00	691.9	0.00037
5	697.2	2418.3	5105.0	0.0	0.0	0.0	5105.00	692.3	0.00043

SEGMENT TABLE FOR SECTION 18.33

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N
1	DISCHARGE CFS	1085.	167.	10.	908.	0.
1085.	VELOCITY FPS	1.34	0.36	0.27	1.43	0.0
2	DISCHARGE CFS	2265.	580.	28.	1657.	0.
2265.	VELOCITY FPS	1.87	0.77	0.45	2.12	0.0
3	DISCHARGE CFS	3280.	949.	48.	2282.	0.
3280.	VELOCITY FPS	2.23	1.00	0.59	2.58	0.13
4	DISCHARGE CFS	3800.	1146.	58.	2596.	1.
3800.	VELOCITY FPS	2.38	1.10	0.65	2.78	0.13
5	DISCHARGE CFS	5105.	1661.	85.	3353.	5.
5105.	VELOCITY FPS	2.72	1.33	0.80	3.21	0.24
1 ELEV	693.7 KD	78625.	10590.	721.	67313.	1.
2 ELEV	695.0 KD	137039.	34665.	1695.	100679.	1.
3 ELEV	695.9 KD	177290.	50943.	2554.	123785.	8.
4 ELEV	696.3 KD	198068.	59718.	3021.	135298.	31.
5 ELEV	697.2 KD	247471.	80431.	4122.	162685.	234.

KO TABLE FOR CROSS SECTION 18.33

ELEVATION	AREA	KO	KD BY SEGMENT			
686.26	0.					
687.	6.	85.	1.	1.	81.	1.
688.	45.	763.	1.	1.	759.	1.
689.	126.	3919.	1.	1.	3916.	1.
690.	221.	9127.	1.	1.	9123.	1.
691.	328.	17531.	1.	4.	17524.	1.
692.	545.	31693.	682.	25.	30856.	1.
693.	882.	54063.	4083.	304.	49490.	1.
694.	1238.	92999.	16008.	903.	75002.	1.
695.	1600.	138030.	34991.	1712.	101148.	1.
696.	1969.	184889.	54061.	2719.	127970.	14.
697.	2353.	237920.	76288.	3901.	157445.	164.
698.	2754.	296960.	101488.	5244.	189428.	692.
699.	3214.	361758.	129396.	6734.	223686.	1753.
700.	3742.	433967.	160427.	8377.	260235.	4352.
701.	4328.	518388.	194420.	10163.	298978.	12377.
702.	4946.	619893.	230962.	12084.	339852.	36623.
703.	5567.	726139.	269798.	14133.	382770.	59246.
704.	6189.	840313.	310611.	16294.	427621.	84938.
705.	6811.	962742.	353813.	18589.	474515.	115193.
706.	7433.	1093108.	399244.	21010.	523387.	149288.
707.	8056.	1230244.	446466.	23536.	574086.	185838.
708.	8678.	1374279.	495618.	26178.	626638.	225449.
709.	9301.	1525349.	546772.	28935.	681054.	268325.
710.	9924.	1682927.	599742.	31801.	737264.	313895.
711.	10547.	1849270.	655341.	34814.	795507.	364837.
712.	11169.	2024476.	713581.	37977.	855767.	421526.
713.	11792.	2208648.	774480.	41290.	918034.	484349.

RATING TABLE FOR SECTION 18.40 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	687.2	0.0	0.0						
BANK FULL	690.4	173.6	519.9	0.0	0.0	0.0			
1	693.9	2273.0	1085.0	0.0	0.0	0.0	1085.00	690.0	0.00012
2	695.2	3611.4	2265.0	0.0	0.0	0.0	2265.00	691.6	0.00016
3	696.1	4579.8	3280.0	0.0	0.0	0.0	3280.00	691.9	0.00017
4	696.6	5036.1	3800.0	0.0	0.0	0.0	3800.00	692.0	0.00018
5	697.5	6061.5	5105.0	0.0	0.0	0.0	5105.00	692.2	0.00019

SEGMENT TABLE FOR SECTION 18.40

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	147.	544.	394.
1085.	VELOCITY FPS	0.90	0.19	1.20	0.37
2	DISCHARGE CFS	2265.	445.	939.	882.
2265.	VELOCITY FPS	1.15	0.30	1.68	0.56
3	DISCHARGE CFS	3280.	770.	1208.	1303.
3280.	VELOCITY FPS	1.26	0.38	1.92	0.67
4	DISCHARGE CFS	3800.	950.	1334.	1516.
3800.	VELOCITY FPS	1.30	0.42	2.01	0.72
5	DISCHARGE CFS	5105.	1412.	1643.	2049.
5105.	VELOCITY FPS	1.40	0.50	2.22	0.82
1	ELEV 693.9 KD	98766.	12862.	50122.	35782.
2	ELEV 695.2 KD	181629.	35583.	75340.	70706.
3	ELEV 696.1 KD	249914.	58409.	92251.	99254.
4	ELEV 696.6 KD	285186.	70733.	100635.	113818.
5	ELEV 697.5 KD	373263.	102846.	120535.	149881.

KD TABLE FOR CROSS SECTION 18.40

ELEVATION	AREA	KD	KD BY SEGMENT		
687.22	0.				
688.	22.	347.	2.	344.	2.
689.	74.	2088.	2.	2084.	2.
690.	141.	5371.	2.	5368.	2.
691.	243.	10878.	3.	10748.	11.
692.	643.	24742.	289.	20028.	4290.
693.	1410.	54718.	3479.	33357.	17532.
694.	2352.	103599.	13905.	51815.	37602.
695.	3363.	165318.	30502.	71051.	63516.
696.	4429.	238397.	54245.	89505.	94355.
697.	5508.	324797.	84983.	109632.	129981.
698.	6592.	422718.	121215.	131356.	170010.
699.	7679.	531318.	162373.	154627.	214222.
700.	8771.	649763.	207961.	179374.	262295.
701.	9865.	776271.	258220.	205584.	314361.
702.	10964.	916321.	312832.	233210.	370210.
703.	12068.	1061010.	369073.	262216.	429708.
704.	13187.	1201430.	416144.	292565.	492721.
705.	14351.	1364372.	481267.	324196.	558838.
706.	15516.	1538922.	552465.	357230.	629443.
707.	16681.	1724990.	629671.	391654.	704605.

RATING TABLE FOR SECTION 18.46 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	688.8	0.0	0.0						
BANK FULL	692.0	173.6	602.0	0.0	0.0	0.0			
1	694.6	1414.7	1085.0	0.0	0.0	0.0	1085.00	691.6	0.00044
2	695.9	2616.1	2265.0	0.0	0.0	0.0	2265.00	693.2	0.00042
3	696.8	3540.8	3280.0	0.0	0.0	0.0	3280.00	693.5	0.00041
4	697.2	3998.0	3800.0	0.0	0.0	0.0	3800.00	693.6	0.00040
5	698.1	4992.3	5105.0	0.0	0.0	0.0	5105.00	693.8	0.00040

SEGMENT TABLE FOR SECTION 18.46

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	73.	690.	321.
1085.	VELOCITY FPS	1.51	0.21	1.82	0.47
2	DISCHARGE CFS	2265.	320.	1171.	774.
2265.	VELOCITY FPS	1.82	0.34	2.44	0.65
3	DISCHARGE CFS	3280.	593.	1496.	1191.
3280.	VELOCITY FPS	1.90	0.41	2.71	0.77
4	DISCHARGE CFS	3800.	766.	1632.	1402.
3800.	VELOCITY FPS	1.92	0.45	2.78	0.81
5	DISCHARGE CFS	5105.	1199.	1982.	1923.
5105.	VELOCITY FPS	1.98	0.54	3.00	0.92
1	ELEV 694.6 KD	51542.	3008.	33434.	15099.
2	ELEV 695.9 KD	110913.	15346.	57703.	37865.
3	ELEV 696.8 KD	162280.	29260.	74127.	58693.
4	ELEV 697.2 KD	189044.	37425.	81896.	69723.
5	ELEV 698.1 KD	255794.	59603.	99819.	96373.

KD TABLE FOR CROSS SECTION 18.46

ELEVATION	AREA	KD	KD BY SEGMENT		
688.82	0.				
689.	2.	20.	1.	17.	1.
690.	40.	844.	1.	841.	1.
691.	99.	3238.	1.	3235.	1.
692.	171.	7163.	2.	7160.	1.
693.	329.	14490.	4.	14052.	384.
694.	934.	33253.	773.	24823.	7037.
695.	1778.	67623.	5803.	40120.	21230.
696.	2744.	118875.	17288.	60712.	40850.
697.	3784.	176472.	33459.	78232.	64578.
698.	4860.	246752.	56510.	97368.	92729.
699.	5941.	327914.	84873.	118142.	124799.
700.	7026.	418773.	117640.	140490.	160570.
701.	8115.	518765.	154501.	164358.	199839.
702.	9208.	627858.	195503.	189718.	242630.
703.	10304.	744807.	239844.	216480.	288422.
704.	11404.	870096.	287925.	244648.	337453.
705.	12516.	996157.	332345.	274185.	389605.
706.	13652.	1128331.	378474.	305054.	444742.
707.	14817.	1276713.	436503.	337246.	502959.
708.	15982.	1435083.	499599.	370839.	565062.
709.	17148.	1603536.	567904.	405814.	631086.

RATING TABLE FOR SECTION 18.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	689.3	0.0	0.0						
BANK FULL	690.7	66.6	268.8	0.0	0.0	0.0			
1	695.0	1072.6	1085.0	0.0	0.0	0.0	1085.00	691.8	0.00061
2	696.4	1815.0	2265.0	0.0	0.0	0.0	2265.00	693.2	0.00090
3	697.3	2345.2	3280.0	0.0	0.0	0.0	3280.00	693.6	0.00102
4	697.8	2598.9	3800.0	0.0	0.0	0.0	3800.00	693.8	0.00107
5	698.7	3155.5	5105.0	0.0	0.0	0.0	5105.00	694.2	0.00117

SEGMENT TABLE FOR SECTION 18.50

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	104.	881.	101.
1085.	VELOCITY FPS	2.22	0.27	2.45	0.30
2	DISCHARGE CFS	2265.	391.	1579.	295.
2265.	VELOCITY FPS	2.92	0.52	3.47	0.49
3	DISCHARGE CFS	3280.	678.	2114.	488.
3280.	VELOCITY FPS	3.28	0.67	4.06	0.60
4	DISCHARGE CFS	3800.	837.	2369.	594.
3800.	VELOCITY FPS	3.44	0.74	4.30	0.65
5	DISCHARGE CFS	5105.	1237.	3003.	865.
5105.	VELOCITY FPS	3.78	0.88	4.86	0.70
1 ELEV	695.0 KD	43775.	4118.	35625.	4033.
2 ELEV	696.4 KD	75479.	12908.	52604.	9769.
3 ELEV	697.3 KD	102604.	21214.	66141.	15249.
4 ELEV	697.8 KD	116198.	25413.	72713.	18072.
5 ELEV	698.7 KD	148895.	35937.	87819.	25139.

KD TABLE FOR CROSS SECTION 18.50

ELEVATION	AREA	KD	KD BY SEGMENT		
689.33	0.				
690.	24.	493.	1.	490.	1.
691.	85.	3211.	2.	3207.	1.
692.	156.	8626.	5.	8618.	4.
693.	300.	16401.	167.	16030.	261.
694.	606.	27711.	990.	25143.	1[illegible]2.
695.	1082.	44173.	4194.	35830.	[illegible]7.
696.	1614.	66185.	10150.	47965.	[illegible]40.
697.	2165.	92976.	18148.	61492.	1[illegible]238.
698.	2734.	124004.	27869.	76323.	19711.
699.	3320.	159132.	39256.	92413.	27392.
700.	3923.	198189.	52158.	109710.	36267.
701.	4543.	241075.	66504.	126173.	46355.
702.	5195.	283771.	78270.	147764.	57692.
703.	5886.	330118.	91050.	168459.	70559.
704.	6620.	383166.	107682.	190226.	85624.
705.	7384.	440353.	126504.	213040.	100797.
706.	8184.	502190.	147000.	236871.	118300.
707.	9039.	557493.	157278.	261697.	138[illegible]54.
708.	9957.	621323.	173697.	287511.	160[illegible]24.
709.	10939.	698388.	201060.	314292.	18[illegible]69.
710.	11958.	787750.	238709.	342009.	20[illegible]51.
711.	12982.	882457.	279693.	370658.	2[illegible]3.
712.	14008.	982944.	324610.	400237.	25[illegible]10.
713.	15034.	1089789.	374325.	430746.	28[illegible]00.

RATING TABLE FOR SECTION 18.57 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	689.8	0.0	0.0						
BANK FULL	691.2	66.6	55.0	0.0	0.0	0.0			
1	695.8	1233.2	1085.0	0.0	0.0	0.0	1085.00	692.3	0.00047
2	697.4	2130.5	2265.0	0.0	0.0	0.0	2265.00	693.7	0.00062
3	698.5	2749.6	3280.0	0.0	0.0	0.0	3280.00	694.1	0.00070
4	699.0	3037.1	3800.0	0.0	0.0	0.0	3800.00	694.3	0.00073
5	700.1	3683.0	5105.0	0.0	0.0	0.0	5105.00	694.7	0.00080

SEGMENT TABLE FOR SECTION 18.57

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	126.	849.	110.
1085.	VELOCITY FPS	2.00	0.27	2.23	0.25
2	DISCHARGE CFS	2265.	437.	1510.	318.
2265.	VELOCITY FPS	2.52	0.48	3.05	0.44
3	DISCHARGE CFS	3280.	737.	2023.	520.
3280.	VELOCITY FPS	2.83	0.61	3.55	0.54
4	DISCHARGE CFS	3800.	896.	2277.	627.
3800.	VELOCITY FPS	2.96	0.66	3.77	0.59
5	DISCHARGE CFS	5105.	1304.	2694.	907.
5105.	VELOCITY FPS	3.26	0.79	4.27	0.67
1 ELEV	695.8 KD	49579.	5484.	39157.	4937.
2 ELEV	697.4 KD	90574.	17303.	60611.	12659.
3 ELEV	698.5 KD	124006.	27692.	76740.	19574.
4 ELEV	699.0 KD	140882.	33107.	84572.	23203.
5 ELEV	700.1 KD	180993.	46140.	102758.	32095.

KD TABLE FOR CROSS SECTION 18.57

ELEVATION	AREA	KD	KD BY SEGMENT		
689.83	0.				
690.	3.	30.	1.	29.	1.
691.	52.	1518.	1.	1516.	1.
692.	119.	5647.	3.	5641.	2.
693.	209.	12168.	16.	12097.	12.
694.	436.	21614.	508.	20386.	690.
695.	833.	35174.	2042.	30288.	2578.
696.	1346.	54342.	6721.	41719.	5718.
697.	1886.	78687.	13784.	54571.	10311.
698.	2447.	107349.	22464.	68751.	16075.
699.	3024.	140169.	32868.	84218.	23040.
700.	3618.	176934.	44810.	100916.	31173.
701.	4230.	217528.	58209.	118801.	40491.
702.	4862.	260930.	72056.	137833.	51017.
703.	5527.	302834.	82010.	157984.	62835.
704.	6248.	353199.	97898.	179212.	76357.
705.	7000.	407744.	115032.	201500.	91166.
706.	7784.	466657.	134262.	224624.	107520.
707.	8607.	525610.	150418.	249156.	125902.
708.	9470.	580138.	158918.	274490.	146717.
709.	10447.	653039.	183718.	300780.	168454.
710.	11449.	735409.	215684.	328030.	192463.
711.	12469.	826630.	254654.	356222.	215666.
712.	13495.	922849.	296567.	385331.	240833.
713.	14521.	1025273.	343064.	415376.	267631.
714.	15548.	1134011.	394417.	446346.	293087.

RATING TABLE FOR SECTION 18.60 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	690.4	0.0	0.0						
BANK FULL	693.1	144.4	491.1	0.0	0.0	0.0			
1	696.3	511.2	1085.0	0.0	0.0	0.0	1085.00	693.0	0.00074
2	698.0	961.0	2265.0	0.0	0.0	0.0	2265.00	694.2	0.00084
3	699.1	1361.3	3280.0	0.0	0.0	0.0	3280.00	695.1	0.00096
4	699.7	1627.4	3800.0	0.0	0.0	0.0	3800.00	695.9	0.00101
5	700.8	2362.9	5105.0	0.0	0.0	0.0	5105.00	696.6	0.00108

SEGMENT TABLE FOR SECTION 18.60

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1085.	17.	1068.	0.
1085.	VELOCITY FPS	2.54	0.19	2.54	0.18
2	DISCHARGE CFS	2265.	135.	2130.	0.
2265.	VELOCITY FPS	3.68	0.34	3.78	0.19
3	DISCHARGE CFS	3280.	309.	2970.	0.
3280.	VELOCITY FPS	4.29	0.44	4.50	0.16
4	DISCHARGE CFS	3800.	411.	3388.	[illegible]
3800.	VELOCITY FPS	4.56	0.45	4.82	0.[illegible]
5	DISCHARGE CFS	5105.	784.	4319.	[illegible]
5105.	VELOCITY FPS	5.01	0.50	5.41	0.[illegible]
1	ELEV 696.3 KD	39840.	466.	39369.	[illegible]
2	ELEV 698.0 KD	78127.	4454.	73661.	1[illegible]
3	ELEV 699.1 KD	105761.	9793.	95945.	2[illegible]
4	ELEV 699.7 KD	119469.	12742.	106699.	2[illegible]
5	ELEV 700.8 KD	154424.	22853.	131528.	4[illegible]

KD TABLE FOR CROSS SECTION 18.60

ELEVATION	AREA	KD	KD BY SEGMENT		
690.36	0.				
691.	7.	7.	1.	6.	1.
692.	65.	155.	1.	1551.	1.
693.	140.	495.	1.	4948.	1.
694.	224.	1060.	3.	10603.	2.
695.	310.	2009.	4.	20090.	4.
696.	442.	3398.	231.	33737.	5.
697.	669.	5436.	1521.	52760.	6.
698.	960.	7818.	4441.	73597.	12.
699.	1309.	10219.	9004.	93032.	21.
700.	1847.	12929.	14906.	114260.	32.
701.	2536.	16456.	26751.	137197.	47.
702.	3259.	20787.	45649.	161779.	66.
703.	3985.	25650.	68061.	187944.	89.
704.	4717.	31026.	94206.	215670.	116.
705.	5463.	36896.	123669.	244905.	200.
706.	6239.	43269.	156269.	275612.	772.
707.	7061.	50150.	191498.	307729.	2098.
708.	7928.	57574.	229444.	341239.	4533.
709.	8816.	65585.	270484.	376144.	8702.
710.	9719.	74201.	314370.	412411.	15184.
711.	10628.	83295.	360351.	449964.	23314.
712.	11540.	92900.	405080.	488828.	30750.
713.	12455.	102995.	460484.	528981.	40315.
714.	13374.	113538.	514148.	570380.	50602.
715.	14293.	124656.	571451.	613101.	63919.
716.	15212.	136355.	632475.	657130.	77559.

RATING TABLE FOR SECTION 18.64 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	692.2	0.0	0.0						
BANK FULL	694.9	144.4	565.9	0.0	0.0	0.0			
1	697.3	375.4	1085.0	0.0	0.0	0.0	1085.00	694.8	0.00162
2	698.9	706.4	2265.0	0.0	0.0	0.0	2265.00	696.0	0.00153
3	700.1	1040.3	3280.0	0.0	0.0	0.0	3280.00	696.9	0.00150
4	700.6	1238.8	3800.0	0.0	0.0	0.0	3800.00	697.7	0.00150
5	701.7	1795.0	5105.0	0.0	0.0	0.0	5105.00	698.4	0.00158

SEGMENT TABLE FOR SECTION 18.64

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	4.	1081.	0.
1085.	VELOCITY FPS	3.08	0.21	3.05	0.01
2	DISCHARGE CFS	2265.	85.	2179.	0.
2265.	VELOCITY FPS	4.40	0.40	4.45	0.24
3	DISCHARGE CFS	3280.	241.	3038.	1.
3280.	VELOCITY FPS	5.01	0.53	5.20	0.28
4	DISCHARGE CFS	3800.	353.	3446.	1.
3800.	VELOCITY FPS	5.21	0.58	5.45	0.31
5	DISCHARGE CFS	5105.	639.	4465.	1.
5105.	VELOCITY FPS	5.77	0.60	6.15	0.35
1 ELEV	697.3 KD	26681.	34.	26843.	0.
2 ELEV	698.9 KD	57784.	1989.	55787.	0.
3 ELEV	700.1 KD	84491.	6099.	78377.	16.
4 ELEV	700.6 KD	98028.	8839.	89168.	21.
5 ELEV	701.7 KD	128315.	15834.	112447.	33.

KD TABLE FOR CROSS SECTION 18.64

ELEVATION	AREA	KD	KD BY SEGMENT		
692.16	0.				
693.	15.	151.	1.	149.	1.
694.	79.	2087.	1.	2084.	1.
695.	156.	5848.	2.	5845.	1.
696.	241.	12218.	3.	12212.	2.
697.	330.	22470.	6.	22452.	4.
698.	484.	37619.	394.	37133.	5.
699.	723.	59433.	2145.	57172.	8.
700.	1023.	83292.	5825.	77353.	15.
701.	1383.	108436.	11167.	97156.	25.
702.	1974.	136764.	17934.	118730.	39.
703.	2680.	175946.	33517.	141999.	156.
704.	3404.	222386.	55158.	166903.	76.
705.	4131.	274388.	80525.	193376.	104.
706.	4864.	331789.	109940.	221399.	135.
707.	5618.	394531.	143613.	250926.	291.
708.	6404.	462722.	179536.	281917.	1044.
709.	7227.	536515.	219339.	314337.	2778.
710.	8103.	615080.	261727.	348123.	[illegible]761.
711.	8996.	702114.	307380.	383290.	1[illegible]60.
712.	9901.	794400.	356211.	419816.	1[illegible]01.
713.	10810.	892127.	407764.	457650.	2[illegible]89.
714.	11723.	994906.	461887.	496764.	[illegible] 5.
715.	12639.	1102939.	518950.	537162.	4[illegible]29.
716.	13558.	1216136.	578880.	578626.	5[illegible]89.
717.	14477.	1335582.	642638.	621811.	7[illegible]47.
718.	15396.	1461338.	710914.	666101.	8[illegible]33.

*****SECT.18.70 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 706.29 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 18.70 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	693.1	0.0	0.0						
BANK FULL	695.0	104.6	993.0	0.0	0.0	0.0			
1	698.3	643.5	1085.0	0.0	0.0	0.0	1085.00	695.5	0.00104
2	699.9	1465.0	2265.0	0.0	0.0	0.0	2265.00	696.7	0.00097
3	701.0	2174.6	3280.0	0.0	0.0	0.0	3280.00	697.8	0.00073
4	701.5	2575.6	3800.0	0.0	0.0	0.0	3800.00	698.0	0.00063
5	702.6	3456.7	5105.0	0.0	0.0	0.0	5105.00	698.4	0.00053

SEGMENT TABLE FOR SECTION 18.70

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	1085.	3.	998.	36.	46.
1085.	VELOCITY FPS	2.77	0.34	2.85	0.40	0.24
2	DISCHARGE CFS	2265.	8.	1833.	115.	309.
2265.	VELOCITY FPS	3.54	0.44	3.91	0.60	0.35
3	DISCHARGE CFS	3280.	11.	2054.	158.	1057.
3280.	VELOCITY FPS	3.05	0.43	3.76	0.65	0.78
4	DISCHARGE CFS	3800.	13.	2148.	179.	1461.
3800.	VELOCITY FPS	2.85	0.42	3.67	0.65	0.87
5	DISCHARGE CFS	5105.	19.	2473.	234.	2379.
5105.	VELOCITY FPS	2.69	0.44	3.69	0.67	0.99
1	ELEV 698.3 KD	33337.	76.	31045.	1122.	1094.
2	ELEV 699.9 KD	72593.	238.	59129.	3650.	9576.
3	ELEV 701.0 KD	120089.	412.	76870.	5874.	36933.
4	ELEV 701.5 KD	150823.	522.	86278.	7134.	56694.
5	ELEV 702.6 KD	220960.	818.	107888.	10176.	102077.

KD TABLE FOR CROSS SECTION 18.70

ELEVATION	AREA	KD	KD BY SEGMENT			
693.09	0.					
694.	42.	828.	1.	824.	1.	1.
695.	106.	3401.	1.	3397.	2.	1.
696.	184.	8039.	2.	8012.	21.	1.
697.	288.	15818.	16.	15625.	144.	9.
698.	519.	28246.	57.	26731.	801.	563.
699.	958.	48551.	132.	42532.	2083.	3599.
700.	1520.	75256.	251.	60654.	3827.	10326.
701.	2204.	124495.	420.	77598.	5974.	39294.
702.	2970.	181265.	646.	95787.	8465.	76147.
703.	3751.	248095.	936.	115478.	11293.	120235.
704.	4540.	324716.	1296.	136615.	14437.	172267.
705.	5335.	410412.	1731.	159145.	17882.	231579.
706.	6144.	503971.	1774.	183032.	21504.	297385.
707.	7007.	606513.	2368.	208238.	25612.	370117.
708.	7923.	717894.	3699.	234732.	29892.	449376.
709.	8935.	838400.	6286.	262482.	34436.	534901.
710.	10103.	969233.	11724.	291459.	39234.	626461.
711.	11361.	1113375.	23087.	321629.	44266.	723407.
712.	12627.	1264841.	37998.	352978.	49541.	823367.
713.	13908.	1417996.	56103.	385490.	55061.	926834.
714.	15215.	1563080.	76695.	419139.	60812.	1006244.
715.	16578.	1724558.	99077.	453894.	66774.	1104283.
716.	17957.	1911506.	124123.	489753.	72564.	1224160.
717.	19348.	2126091.	151832.	526703.	79385.	1368043.
718.	20739.	2354484.	184201.	564756.	86072.	1521897.
719.	22130.	2596954.	221777.	603896.	93026.	1625960.

*****SECT.18.73 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 706.69 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 18.73 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	693.5	0.0	0.0						
BANK FULL	695.4	104.6	384.1	0.0	0.0	0.0			
1	698.8	692.4	1085.0	0.0	0.0	0.0	1085.00	695.9	0.00093
2	700.4	1541.0	2265.0	0.0	0.0	0.0	2265.00	697.1	0.00092
3	701.4	2190.5	3280.0	0.0	0.0	0.0	3280.00	698.2	0.00076
4	701.9	2559.1	3800.0	0.0	0.0	0.0	3800.00	698.4	0.00070
5	703.0	3400.3	5105.0	0.0	0.0	0.0	5105.00	698.8	0.00062

SEGMENT TABLE FOR SECTION 18.73

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N	SEG NO 4 N
1	DISCHARGE CFS	1085.	2.	999.	3[illegible].	47.
1085.	VELOCITY FPS	2.70	0.30	2.78	0.36	0.21
2	DISCHARGE CFS	2265.	7.	1852.	10[illegible].	299.
2265.	VELOCITY FPS	3.52	0.39	3.87	0.[illegible]4	0.35
3	DISCHARGE CFS	3280.	10.	2122.	14[illegible].	1000.
3280.	VELOCITY FPS	3.18	0.40	3.87	0.[illegible]	0.73
4	DISCHARGE CFS	3800.	12.	2251.	16[illegible]	1368.
3800.	VELOCITY FPS	3.05	0.40	3.85	0.[illegible]	0.82
5	DISCHARGE CFS	5105.	18.	2628.	2[illegible]	2236.
5105.	VELOCITY FPS	2.94	0.42	3.96	0.[illegible]	0.95
1 ELEV	698.8 KD	35335.	76.	32646.	114[illegible]	1206.
2 ELEV	700.4 KD	74531.	230.	61228.	350[illegible]	9565.
3 ELEV	701.4 KD	117361.	375.	77257.	534[illegible]	34589.
4 ELEV	701.9 KD	143341.	466.	85888.	637[illegible]	50612.
5 ELEV	703.0 KD	205218.	718.	106461.	898[illegible]	89057.

KD TABLE FOR CROSS SECTION 18.73

ELEVATION	AREA	KD	KD BY SEGMENT			
693.49	0.					
694.	20.	26.	1.	261.	1.	1.
695.	78.	217.	1.	2167.	1.	1.
696.	152.	593.	2.	5928.	5.	1.
697.	236.	1226.	8.	12190.	68.	1.
698.	404.	2246.	34.	21815.	370.	160.
699.	762.	3886.	88.	35507.	1568.	1789.
700.	1277.	6377.	179.	54094.	2788.	6650.
701.	1919.	9700.	311.	70751.	4564.	19282.
702.	2662.	15077.	493.	88315.	5675.	54707.
703.	3438.	20867.	731.	107418.	9106.	90567.
704.	4224.	27633.	1029.	127984.	11829.	135209.
705.	5017.	35251.	1394.	149966.	14827.	186121.
706.	5820.	43638.	1598.	173315.	18083.	243176.
707.	6654.	52819.	1818.	198004.	21603.	306639.
708.	7545.	62813.	2729.	223992.	25369.	375982.
709.	8491.	73581.	4453.	251241.	29366.	450696.
710.	9629.	85244.	8210.	279723.	33587.	530636.
711.	10858.	98050.	15936.	309415.	38031.	615874.
712.	12120.	111807.	28797.	340303.	42707.	705695.
713.	13388.	126205.	44071.	372357.	47598.	797810.
714.	14692.	139532.	61085.	405543.	51582.	875374.
715.	16031.	153784.	80814.	439860.	57980.	956714.
716.	17401.	169527.	102908.	475289.	63487.	1053452.
717.	18792.	188732.	126323.	511794.	69175.	1179549.
718.	20183.	209174.	153748.	549406.	79103.	1314532.
719.	21573.	230880.	185662.	586114.	81272.	1458630.

RATING TABLE FOR SECTION 18.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	695.0	0.0	0.0						
BANK FULL	697.2	104.9	456.5	0.0	0.0	0.0			
1	700.3	1177.0	1085.0	0.0	0.0	0.0	1085.00	697.7	0.00100
2	701.8	2339.6	2265.0	0.0	0.0	0.0	2265.00	698.9	0.00080
3	702.7	3008.8	3280.0	0.0	0.0	0.0	3280.00	699.3	0.00087
4	703.1	3396.8	3800.0	0.0	0.0	0.0	3800.00	699.5	0.00086
5	704.2	4277.5	5105.0	0.0	0.0	0.0	5105.00	695.8	0.00085

SEGMENT TABLE FOR SECTION 18.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	254.	828.	3.
1085.	VELOCITY FPS	2.35	0.30	2.61	0.56
2	DISCHARGE CFS	2265.	827.	1427.	11.
2265.	VELOCITY FPS	2.72	0.44	3.37	0.89
3	DISCHARGE CFS	3280.	1345.	1911.	24.
3280.	VELOCITY FPS	3.06	0.54	3.96	0.72
4	DISCHARGE CFS	3800.	1638.	2129.	33.
3800.	VELOCITY FPS	3.12	0.58	4.12	0.87
5	DISCHARGE CFS	5105.	2386.	2656.	63.
5105.	VELOCITY FPS	3.28	0.66	4.49	0.89
1	ELEV 700.3 KD	33875.	7262.	26514.	95.
2	ELEV 701.8 KD	79987.	28906.	50701.	380.
3	ELEV 702.7 KD	110800.	45209.	64816.	775.
4	ELEV 703.1 KD	129410.	55684.	72619.	1106.
5	ELEV 704.2 KD	174548.	81468.	90948.	2133.

KD TABLE FOR CROSS SECTION 18.90

ELEVATION	AREA	KD	KD BY SEGMENT		
695.05	0.				
696.	32.	602.	1.	600.	1.
697.	88.	2653.	1.	2651.	1.
698.	158.	6652.	3.	6648.	2.
699.	399.	14163.	734.	13229.	21.
700.	966.	28213.	4866.	23076.	78.
701.	1726.	53644.	16234.	37087.	84.
702.	2497.	87346.	32586.	54204.	456.
703.	3286.	124168.	52730.	70405.	1008.
704.	4106.	165570.	76299.	87341.	1905.
705.	4956.	212468.	103522.	105708.	3220.
706.	5836.	264991.	134511.	125450.	5114.
707.	6744.	322895.	165511.	146521.	7249.
708.	7682.	386022.	206616.	168671.	10268.
709.	8647.	454503.	248097.	192481.	13844.
710.	9643.	526735.	291548.	217315.	17822.
711.	10677.	602591.	336946.	243344.	22254.
712.	11755.	684771.	386542.	270537.	27636.
713.	12865.	761096.	447886.	298863.	34358.
714.	13988.	883311.	512708.	328304.	42349.
715.	15116.	992126.	582074.	356882.	52876.
716.	16243.	1108034.	656737.	390603.	61619.

TABLE OF VALUES FOR BRR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA1	ALPHA2	BRIDA	APPAR	AEXIT
0.4257	0.1255	0.3102	0.9693	0.0	-0.0100	0.8722	1.0000	1.0000	429.7117	724.1184	141[illegible].4[illegible]56
DCRIT	697.61	KBCRIT=									
0.5790	0.3504	0.2556	0.9086	0.0	-0.0270	0.7547	1.0000	1.0000	594.4258	1355.9429	2578.5894
DCRIT	698.74	KBCRIT=									
0.6945	0.5062	0.2289	0.8650	0.0	-0.0407	0.6921	1.0000	1.0000	694.7678	1776.6213	3259.9062
DCRIT	698.90	KBCRIT=									
0.7714	0.6071	0.2144	0.8367	0.0	-0.0501	[illegible]	1.0000	1.0000	753.4124	2014.9480	3655.3760
DCRIT	698.89	KBCRIT=									
0.9125	0.7920	0.1886	0.7845	0.0	-0.[illegible]681	0.6958	1.0000	1.0000	886.7004	2589.1445	4545.5781
DCRIT	699.05	KBCRIT=									

ROAD SECTION 19.00

1938 Hum - 703.5

NO.	HW	CFS	HL	TW	CSM
0	694.80	0.00	0.00	0.00	0.00
1	700.38	1085.00	0.04	700.34	1085.00
2	701.99	2265.00	0.14	701.85	2265.00
3	702.87	3280.00	0.16	702.71	3280.00
4	703.34	3800.00	0.14	703.20	3800.00
5	704.43	5105.00	0.16	704.27	5105.00

MIN ROAD ELEVATION 702.00

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 705.40 OPENING NO.= 1

RATING TABLE FOR SECTION 19.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	696.3	0.0	0.0						
BANK FULL	698.3	103.1	528.6	0.0	0.0	0.0			
1	700.4	318.2	1085.0	0.0	0.0	0.0	1085.00	698.8	0.00438
2	701.9	726.7	2265.0	0.0	0.0	0.0	2265.00	700.3	0.00294
3	702.8	1036.6	3280.0	0.0	0.0	0.0	3280.00	701.0	0.00241
4	703.2	1229.0	3800.0	0.0	0.0	0.0	3800.00	701.2	0.00219
5	704.3	1737.4	5105.0	0.0	0.0	0.0	5105.00	701.6	0.00177

SEGMENT TABLE FOR SECTION 19.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4	5 N
1	DISCHARGE CFS	1085.	3.	3.	1030.	14.	35.
1085.	VELOCITY FPS	4.16	0.39	0.55	4.24	0.83	0.77
2	DISCHARGE CFS	2265.	104.	25.	1786.	49.	301.
2265.	VELOCITY FPS	4.67	0.87	1.05	5.30	1.23	1.51
3	DISCHARGE CFS	3280.	325.	41.	2307.	72.	535.
3280.	VELOCITY FPS	4.92	1.44	1.21	5.[illegible]	1.35	1.65
4	DISCHARGE CFS	3800.	451.	50.	252[illegible]	85.	691.
3800.	VELOCITY FPS	4.90	1.53	1.28	5.[illegible]	1.40	1.71
5	DISCHARGE CFS	5105.	802.	73.	29[illegible]	118.	1116.
5105.	VELOCITY FPS	4.68	1.66	1.39	5.[illegible]	1.49	1.80
1 ELEV	700.4 KD	16324.	30.	31.	1558	191.	489.
2 ELEV	701.9 KD	41740.	1892.	458.	3294	912.	5530.
3 ELEV	702.8 KD	66838.	6572.	829.	4710	1475.	10855.
4 ELEV	703.2 KD	81021.	9406.	1062.	5416	1822.	14570.
5 ELEV	704.3 KD	121333.	19037.	1738.	7125	2795.	26508.

:D TABLE FOR CROSS SECTION 19.01

ELEVATION	AREA	.D	KD BY SEGMENT				
696.31	0.						
697.	23.	33 .	1.	1.	1331.	1.	1.
698.	83.	245 .	1.	1.	4453.	1.	1.
699.	149.	624 .	1.	1.	8241.	4.	1.
700.	249.	1249 .	2.	2.	12201.	78.	170.
701.	450.	2359 .	297.	153.	21302.	422.	1331.
702.	756.	4383 .	2156.	486.	34186.	958.	5927.
703.	1136.	7406 .	7935.	944.	50694.	1648.	12672.
704.	1581.	10854 .	15722.	1521.	66146.	2486.	22483.
705.	2082.	15202 .	27505.	2200.	82139.	3462.	36412.
706.	2613.	20460 .	43064.	2977.	99493.	4544.	54313.
707.	3170.	26499 .	61476.	3845.	118151.	5761.	75605.
708.	3753.	33309 .	82665.	4799.	130070.	7070.	100364.
709.	4364.	40882 .	106503.	5833.	159906.	8492.	128617.
710.	4999.	49231 .	133162.	6945.	181536.	10020.	160513.
711.	5660.	58350 .	162561.	8143.	203024.	11648.	196046.
712.	6347.	68257 .	194690.	9412.	223644.	13373.	235423.
713.	7064.	78959 .	229453.	10750.	255362.	15189.	278809.
714.	7810.	90826 .	266852.	12155.	282155.	17092.	329843.
715.	8567.	103849 .	307154.	13633.	310015.	19090.	388368.
716.	9332.	118060 .	350402.	15183.	338025.	21160.	454980.
717.	10098.	133370 .	397138.	16819.	364898.	23379.	528854.
718.	10863.	149801 .	447455.	18542.	399019.	25685.	610370.

RATING TABLE FOR SECTION 19.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	696.3	0.0	0.0						
BANK FULL	698.3	103.1	397.6	0.0	0.0	0.0			
1	701.8	679.2	1085.0	0.0	0.0	0.0	1065.00	698.8	0.00080
2	703.3	1248.2	2265.0	0.0	0.0	0.0	2265.00	700.3	0.00074
3	704.2	1655.0	3280.0	0.0	0.0	0.0	3280.00	701.0	0.00081
4	704.6	1880.7	3800.0	0.0	0.0	0.0	3800.00	701.2	0.00080
5	705.6	2414.0	5105.0	0.0	0.0	0.0	5105.00	701.6	0.00076

SEGMENT TABLE FOR SECTION 19.10

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1085.	46.	12.	860.	24.	136.
1085.	VELOCITY FPS	2.37	0.43	0.53	2.60	0.62	0.75
2	DISCHARGE CFS	2265.	275.	30.	1490.	51.	419.
2265.	VELOCITY FPS	2.86	0.91	0.76	3.43	0.83	1.02
3	DISCHARGE CFS	3280.	502.	47.	1949.	76.	706.
3280.	VELOCITY FPS	3.14	1.11	0.93	3.95	1.00	1.21
4	DISCHARGE CFS	3800.	650.	55.	2129.	88.	879.
3800.	VELOCITY FPS	3.18	1.21	0.99	4.06	1.05	1.29
5	DISCHARGE CFS	5105.	1041.	75.	2547.	115.	1328.
5105.	VELOCITY FPS	3.22	1.41	1.10	4.30	1.15	1.45
1	ELEV 701.8 KD	38005.	1475.	398.	30794.	826.	4511.
2	ELEV 703.3 KD	82938.	9867.	1103.	54893.	1884.	15190.
3	ELEV 704.2 KD	114985.	17466.	1644.	68550.	2665.	24659.
4	ELEV 704.6 KD	134066.	22567.	1947.	75700.	3099.	30753.
5	ELEV 705.6 KD	185314.	37510.	2716.	92933.	4183.	47972.

KD TABLE FOR CROSS SECTION 19.10

ELEVATION	AREA	KD	KD BY SEGMENT				
696.31	0.						
697.	23.	336.	1.	1.	531.	1.	1.
698.	83.	2457.	1.	1.	2453.	1.	1.
699.	149.	6249.	1.	1.	6241.	4.	1.
700.	249.	12494.	2.	2.	12401.	79.	173.
701.	450.	23623.	301.	155.	22902.	427.	1349.
702.	756.	43960.	2185.	493.	39286.	971.	6007.
703.	1136.	74382.	8043.	957.	58694.	1671.	12843.
704.	1581.	109118.	15934.	1542.	65346.	2519.	22787.
705.	2082.	152969.	27877.	2229.	82139.	3499.	36904.
706.	2613.	206028.	43646.	3017.	99493.	4605.	55047.
707.	3170.	266973.	62306.	3897.	118151.	5829.	76626.
708.	3753.	335730.	83782.	4864.	138070.	7165.	101720.
709.	4364.	412191.	107942.	5912.	159206.	8607.	130355.
710.	4999.	496512.	134962.	7043.	181536.	10165.	162682.
711.	5660.	588622.	164758.	8253.	205024.	11805.	198695.
712.	6347.	688692.	197321.	9539.	229644.	13553.	238605.
713.	7064.	796819.	232554.	10895.	255362.	15354.	282577.
714.	7810.	916725.	270458.	12319.	282155.	17323.	334300.
715.	8567.	1048298.	311305.	13817.	311315.	19348.	393616.
716.	9332.	1191977.	355137.	15388.	33[illegible]25.	21466.	461128.
717.	10098.	1346751.	402505.	17046.	3[illegible]86.	23695.	536000.
718.	10863.	1512878.	453503.	18793.	[illegible]19.	26033.	618619.

RATING TABLE FOR SECTION 19.14 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	697.0	0.0	0.0						
BANK FULL	699.0	103.1	189.1	0.0	0.0	0.0			
1	702.6	715.8	1185.0	0.0	0.0	0.0	1085.00	699.5	0.00070
2	704.1	1288.0	2265.0	0.0	0.0	0.0	2265.00	701.0	0.00069
3	705.0	1724.2	3280.0	0.0	0.0	0.0	3280.00	701.7	0.00073
4	705.5	1958.0	3800.0	0.0	0.0	0.0	3800.00	701.9	0.00072
5	706.5	2494.0	5105.0	0.0	0.0	0.0	5105.00	702.3	0.00069

SEGMENT TABLE FOR SECTION 19.14

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1085.	49.	12.	856.	24.	144.
1085.	VELOCITY FPS	2.25	0.42	0.52	2.51	0.60	0.74
2	DISCHARGE CFS	2265.	283.	31.	1474.	52.	427.
2265.	VELOCITY FPS	2.77	0.90	0.75	3.35	0.82	1.00
3	DISCHARGE CFS	3280.	517.	47.	1918.	76.	721.
3280.	VELOCITY FPS	3.01	1.08	0.91	3.61	0.97	1.18
4	DISCHARGE CFS	3800.	673.	55.	2084.	87.	900.
3800.	VELOCITY FPS	3.03	1.19	0.96	3.90	1.02	1.26
5	DISCHARGE CFS	5105.	1064.	75.	2501.	115.	1349.
5105.	VELOCITY FPS	3.09	1.39	1.07	4.16	1.12	1.42
1	ELEV 702.6 KD	41034.	1820.	451.	32455.	907.	5396.
2	ELEV 704.1 KD	86354.	10633.	1163.	56423.	1973.	16164.
3	ELEV 705.0 KD	121136.	19087.	1752.	70844.	2820.	26632.
4	ELEV 705.5 KD	141225.	24604.	2061.	78145.	3262.	33153.
5	ELEV 706.5 KD	193764.	40059.	2846.	95548.	4368.	50943.

KD TABLE FOR CROSS SECTION 19.14

ELEVATION	AREA	KD	KD BY SEGMENT				
697.01	0.						
698.	40.	761.	1.	1.	756.	1.	1.
699.	103.	3412.	1.	1.	3408.	1.	1.
700.	169.	7689.	1.	1.	7678.	8.	1.
701.	299.	15261.	15.	15.	14602.	153.	376.
702.	535.	28608.	627.	240.	24740.	572.	2187.
703.	865.	52431.	3507.	617.	39048.	1165.	7740.
704.	1262.	84322.	10149.	1126.	55410.	1919.	15558.
705.	1723.	121053.	19063.	1750.	70810.	2817.	26603.
706.	2236.	168606.	32695.	2472.	87218.	3840.	42369.
707.	2775.	224193.	49363.	3291.	104966.	4986.	61579.
708.	3340.	287651.	68920.	4200.	124006.	6249.	84271.
709.	3931.	358940.	91297.	5196.	144294.	7623.	110525.
710.	4550.	437916.	116321.	6271.	165787.	9100.	140334.
711.	5195.	524696.	144198.	7429.	188463.	10683.	173795.
712.	5866.	619396.	174886.	8665.	211290.	12368.	211067.
713.	6562.	722178.	208372.	9977.	237241.	14161.	252343.
714.	7285.	833912.	244642.	11362.	263289.	16029.	298507.
715.	8035.	957469.	283652.	12816.	290408.	17998.	352501.
716.	8797.	1093448.	325430.	14338.	318577.	20064.	414830.
717.	9562.	1240915.	370498.	15942.	347808.	22215.	484798.
718.	10327.	1399600.	419145.	17634.	378097.	24485.	562272.

****SECT.19.70 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 714.78 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 19.70 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	698.0	0.0	0.0						
BANK FULL	699.9	129.1	375.8	0.0	0.0	0.0			
1	703.5	578.0	1085.0	0.0	0.0	0.0	1085.00	700.1	0.00057
2	705.0	1191.6	2265.0	0.0	0.0	0.0	2265.00	701.1	0.00065
3	706.1	1784.2	3280.0	0.0	0.0	0.0	3280.00	701.8	0.00071
4	706.5	2073.5	3800.0	0.0	0.0	0.0	3800.00	702.1	0.00073
5	707.6	2720.2	5105.0	0.0	0.0	0.0	5105.00	703.4	0.00077

SEGMENT TABLE FOR SECTION 19.70

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1085.	6.	1073.	6.
1085.	VELOCITY FPS	2.12	0.20	2.13	0.13
2	DISCHARGE CFS	2265.	61.	2119.	8[illegible].
2265.	VELOCITY FPS	3.09	0.43	3.18	0.22
3	DISCHARGE CFS	3280.	143.	2860.	257.
3280.	VELOCITY FPS	3.50	0.61	3.72	0.[illegible]
4	DISCHARGE CFS	3800.	152.	3232.	37[illegible]
3800.	VELOCITY FPS	3.64	0.68	3.93	0.[illegible]
5	DISCHARGE CFS	5105.	319.	4094.	6[illegible]
5105.	VELOCITY FPS	3.96	0.83	4.39	0.[illegible]
1 ELEV	703.5 KD	45261.	156.	44859.	22[illegible]
2 ELEV	705.0 KD	88463.	2298.	83099.	306[illegible]
3 ELEV	706.1 KD	122640.	5309.	107866.	940[illegible]
4 ELEV	706.5 KD	139947.	6935.	119701.	1331[illegible]
5 ELEV	707.6 KD	183131.	11339.	147396.	2439[illegible]

KD TABLE FOR CROSS SECTION 19.70

ELEVATION	AREA	KD	KD BY SEGMENT		
697.98	0.				
698.	0.	1.	1.	2.	1.
699.	46.	781.	1.	779.	1.
700.	140.	4264.	1.	4263.	2.
701.	244.	10613.	1.	10613.	4.
702.	351.	20593.	1.	20564.	24.
703.	483.	35543.	32.	35384.	60.
704.	732.	57800.	554.	56523.	587.
705.	1178.	87820.	2228.	82380.	2945.
706.	1750.	120760.	5139.	106511.	9081.
707.	2359.	159030.	8880.	131694.	16238.
708.	2989.	202780.	13459.	159402.	29907.
709.	3640.	251750.	18847.	188955.	43941.
710.	4313.	305770.	25027.	220485.	60249.
711.	5008.	364650.	31964.	253920.	78679.
712.	5724.	428430.	39699.	289224.	99385.
713.	6460.	495830.	47033.	326351.	122347.
714.	7272.	564050.	51072.	365254.	147524.
715.	8172.	631900.	51073.	405923.	175109.
716.	9073.	703330.	51073.	448409.	205828.
717.	9974.	778320.	51074.	492686.	239033.

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
TITLE     FINAL TR20 DISCHARGES ------ TO GRANGE AVE
CHANGE    DISCHARGE
DISCHARGE -1.       1065.     2225.     3240.     3760.     5060.
END                                                                          19761
REACH     19.76     1.0       1120.0    1040.0                               19762
REACH 2   19.70     +0.8                                                     19901
REACH     19.90     1.0       880.0                                          19902
SEGMENT   19.90     1         N         1700.0                               19903
NVALUE    0.12                                                               19904
SEGMENT   19.90     2         N         1970.0                               19905
NVALUE    0.18                                                               19906
SEGMENT   19.90     3         C         2036.0                               19907
NVALUE    .06       2.5       .04       6.        .03                        19908
SEGMENT   19.90     4         N         2100.0                               19909
NVALUE    0.18                                                               199010
SEGMENT   19.90     5         N         2670.0                               199011
NVALUE    0.10                                                               190-12
SECTION     19.90
              0.00    715.36    100.00    714.17    200.00    712.17
            300.00    710.96    400.00    710.56    500.00    712.06
            600.00    711.67    700.00    710.96    800.00    710.17
            900.00    709.86   1000.00    710.06   1100.00    709.06
           1200.00    707.77   1300.00    708.46   1400.00    709.46
           1500.00    709.06   1600.00    706.56   1700.00    704.36
           1800.00    703.46   1900.00    702.77   1964.00    702.56
           1970.00    700.96   1981.00    700.56   1990.00    699.56
           2000.00    699.56   2010.00    699.36   2020.00    699.77
           2032.00    699.46   2036.00    704.27   2100.00    704.27
           2200.00    706.36   2300.00    707.17   2400.00    708.46
           2500.00    711.56   2600.00    713.67   2670.00    715.17
ENDTABLE
ROAD      20.00     2.7       80.0      80.0                                 20001
BPR       20.00     B         1.0       3.0                                  20002
PIER      701.0     1.0       700.0     1.0                                  20003
GIRDER    717.9     717.7     0.0       0.6       2.7                        20004
          -68.0     721.9     -67.9     717.3     -23.0     717.5            20005
          23.0      717.6     67.9      717.8     68.0      722.4            20006
ENDTABLE                                                                     20007
SECTION   20.00                                                              20008
          -100.0    721.9     -68.0     721.9     -67.9     713.6            20009
          -62.0     713.0     -39.0     702.1     -25.0     701.6            200010
          -6.0      699.7     0.0       699.5     10.0      699.2            200011
          21.0      699.2     26.0      699.5     35.0      700.0            200012
          40.0      702.7     62.0      713.3     67.9      714.0            [illegible]
          68.0      722.4     100.0     722.4                                [illegible]
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
ENDTABLE                                                                    200015
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 20.00  EXCEEDS  10. FEET----------
REACH      20.01      1.0        50.0       50.0                             20011
REACH 2    19.90      0.0                                                    20012
REACH      20.09      1.0        630.0      440.0                            20091
REACH 2    19.90      0.0                                                    20092
ROAD       21.00      2.7        40.0       40.0                             210001
BPR        21.00      B          1.0        3.0                              210002
PIER       699.0      1.0        702.0      1.0                              210003
GIRDER     717.3      717.1      30.0       0.6        2.7                   210004
           -72.2      721.3      -72.1      716.4      -27.0      716.7      210005
           19.0       716.9      64.1       717.2      64.2       722.1      210006
ENDTABLE                                                                    210007
SECTION    21.00                                                            210008
           -100.0     721.3      -72.2      721.3      -72.0      713.2      210009
           -67.0      712.6      -45.0      702.0      -40.0      700.4      210010
           -28.0      698.9      -20.0      697.5      -10.0      698.5      210011
           0.0        698.9      10.0       700.0      18.0       701.9      210012
           25.0       703.8      36.0       704.8      58.0       713.3      210013
           64.0       713.6      64.2       722.1      100.0      722.1      210014
ENDTABLE                                                                    210015
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 21.00  EXCEEDS  10. FEET----------
REACH      21.01      1.0        30.0       30.0                             21011
REACH 2    19.90      0.0                                                    21019
REACH      21.09      1.0        80.0       80.0                             21091
REACH 2    19.90      0.0                                                    21092
ROAD       22.00      2.7        30.0       30.0                             22001
BPR        22.00      A          1.0        3.0                              22002
PIER       700.0      3.2                                                    22003
GIRDER     713.5      713.3      20.0       0.6        2.7                   22004
           -52.2      719.0      -52.1      713.4      -4.4       712.8      22005
           61.1       712.1      61.2       718.7                            22006
ENDTABLE                                                                    22007
SECTION    22.00                                                            22008
           -300.0     718.9      -193.0     717.9      -117.0     716.9      22009
           -52.2      719.0      -52.0      711.0      -31.0      702.8      20010
           -29.0      701.2      -20.0      700.6      -7.0       699.9      20011
           2.5        700.0      5.5        699.6      12.0       699.7      220012
           21.0       700.4      27.0       700.9      40.0       701.4      220013
           42.0       703.1      61.0       709.6      61.2       718.7      220014
           126.0      714.2      200.0      713.3      300.0      712.0      220015
           400.0      711.0      500.0      709.9      600.0      709.3      220016
           700.0      709.5      800.0      710.2      900.0      711.1      220017
           1000.0     712.0                                                  220018
ENDTABLE                                                                    220019
REACH      22.01      1.0        50.0       50.0                             22011
REACH 2    19.90      +0.3                                                   22012
```

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
REACH      22.05      1.0        1270.0     1150.0                                 22051
REACH 2    19.90      +1.5                                                         22052
REACH      22.10      1.0        1160.0     1120.0                                 22101
SEGMENT    22.10      1          N          290.0                                  22102
NVALUE     0.15                                                                    22103
SEGMENT    22.10      2          C          411.0                                  22104
NVALUE     .06        2.5        .04        6.         .03                         22105
SEGMENT    22.10      3          N          1400.0                                 22106
NVALUE     0.08                                                                    22107
SECTION       22.10                                                                2210-8
              0.00     718.39     100.0      713.69     200.00     711.39
            289.00     705.19     290.0      703.29     300.00     702.39
            320.00     702.39     340.0      702.09     350.00     702.69
            360.00     702.39     380.0      702.09     390.00     702.29
            400.00     702.59     411.0      703.79     414.00     707.39
            470.00     710.52     480.0      708.52     500.00     707.12
            600.00     707.22     700.0      707.32     800.00     708.22
            900.00     708.52    1000.0      709.22    1100.00     711.02
           1200.00     713.92    1300.0      716.52    1400.00     717.62
ENDTABLE
REACH      22.15      1.0        640.0      640.0                                  22151
REACH 2    22.10      0.0                                                          22152
REACH      22.50      1.0        840.0      640.0                                  22501
SEGMENT    22.50      1          N          200.0                                  22502
NVALUE     0.20                                                                    22503
SEGMENT    22.50      2          N          645.0                                  22504
NVALUE     0.15       1.3        0.08                                              22505
SEGMENT    22.50      3          N          663.0                                  22506
NVALUE     0.18                                                                    22507
SEGMENT    22.50      4          C          747.0                                  22508
NVALUE     .06        2.5        .04        6.         .03                         22509
SEGMENT    22.50      5          N          760.0                                  225010
NVALUE     0.16                                                                    225011
SEGMENT    22.50      6          N          895.0                                  225012
NVALUE     0.12       1.3        0.08                                              225013
SECTION       22.50                                                                2250-14
              0.00     718.46     100.0      715.36     200.00     712.36
            300.00     710.17     400.0      709.07     500.00     708.57
            600.00     708.77     655.0      710.17     663.00     705.07
            680.00     702.11     691.0      702.11     706.00     701.82
            720.00     701.82     736.0      702.02     743.00     704.02
            753.00     706.32     800.0      710.42     895.00     721.21
         645.0      710.0      747.0      705.1      760.0      707.0              225021
ENDTABLE
-------------------DATA POINTS ON SECTION 22.50 REORDERED BY PROGRAM ACCORDING TO X VALUES
                   DUPLICATE X POINTS NOT CHANGED-----------------
---------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 22.50 EXCEEDS 10. FEET-----------
REACH      22.56      1.0        1920.0     1640.0                                 22561
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
REACH 2    22.50     +1.1                                                    22562
REACH      22.90     1.0       1680.0    1440.0                              22901
SEGMENT    22.90     1         N         956.0                               22902
NVALUE     0.15      1.3       0.08                                          22903
SEGMENT    22.90     2         N         969.0                               22904
NVALUE     0.15                                                              22905
SEGMENT    22.90     3         C         1027.0                              22906
NVALUE     .06       2.5       .04       6.        .03                       22907
SEGMENT    22.90     4         N         1150.0                              22908
NVALUE     0.18                                                              22909
SECTION       22.90                                                          2290-10
                0.00     720.35    100.00    718.75    200.00    715.95
              300.00     714.45    400.00    713.55    495.00    709.35
              507.00     706.05    522.00    709.95    600.00    709.15
              700.00     709.60    800.00    710.81    900.00    709.60
              969.00     708.21    976.00    706.21    984.00    704.41
              992.00     704.31   1000.00    704.10   1010.00    704.51
             1020.00     704.71   1027.00    705.31   1031.00    709.51
             1039.00     710.10   1051.00    717.10   1075.00    721.10
             1100.00     721.71   1150.00    722.2 956.0     708.6          2290-20
ENDTABLE
--------------------DATA POINTS ON SECTION 22.90  REORDERED BY PROGRAM ACCORDING TO X VALUES
                    DUPLICATE X POINTS NOT CHANGED--------------------
ROAD       23.00     2.7       50.0      50.0                                23001
EPR        23.00     8         1.0       3.0                                 23002
PIER       705.0     2.6                                                     23003
GIRDER     717.5     717.3     0.0       0.6       2.7                       23004
           -53.6     718.0     -53.5     715.5     0.0       716.4           23005
           53.5      717.4     53.6      719.9                               23006
ENDTABLE                                                                     23007
SECTION    23.00                                                             23008
           -1000.0   719.2     -900.0    716.2     -800.0    715.9           23009
           -700.0    714.3     -600.0    713.0     -500.0    712.8           230010
           -400.0    713.0     -300.0    714.2     -200.0    715.5           230011
           -100.0    717.3     -93.5     717.4     -53.7     720.5           230012
           -53.6     718.0     -53.5     713.2     -50.0     713.1           230013
           -35.0     706.4     -34.0     706.0     -30.0     705.0           230014
           -21.0     703.6     -7.0      704.9     -1.0      704.9           230015
           1.0       705.2     10.0      705.7     21.0      706.2           230016
           32.0      705.9     33.0      706.5     50.0      714.9           230017
           53.5      715.0     53.6      719.9     53.7      722.4           230018
           89.5      720.6     100.0     720.8     200.0     723.4           230019
           290.0     726.4                                                   230020
ENDTABLE                                                                     230021
REACH      23.01     1.0       50.0      50.0                                23011
REACH 2    22.90     0.0                                                     23012
REACH      23.05     1.0       1230.0    1150.0                              23051
```

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
REACH 2   22.90     0.0                                                    23052
REACH     23.50     1.0       2400.0    1920.0                             23501
SEGMENT   23.50     1         N         818.0                              23502
NVALUE    0.15      1.3       0.07                                         23503
SEGMENT   23.50     2         N         1051.0                             23504
NVALUE    0.20                                                             23505
SEGMENT   23.50     3         C         1111.0                             23506
NVALUE    .06       2.5       .04       6.0       .03                      23507
SEGMENT   23.50     4         N         1313.0                             23508
NVALUE    0.20                                                             23509
SECTION      23.50                                                         50-10
              0.00    727.48    100.00    726.09    200.00    725.98
            300.00    723.19    400.00    721.59    500.00    720.29
            600.00    716.09    700.00    713.59    800.00    714.48
            818.00    714.29    830.00    710.07    900.00    710.17
           1000.00    711.47   1048.00    711.47   1051.00    708.30
           1061.00    706.00   1075.00    705.20   1090.00    705.30
           1100.00    706.50   1111.00    707.30   1115.00    712.50
           1200.00    711.30   1282.00    712.10   1313.00    726.50
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 23.50  EXCEEDS  10. FEET----------
REACH     23.55     1.0       1200.0    1200.0                             23551
REACH 2   23.50     +0.6                                                   23552
REACH     23.90     1.0       1280.0    1200.0                             23901
SEGMENT   23.90     1         N         700.0                              23902
NVALUE    0.15      1.3       0.08                                         23903
SEGMENT   23.90     2         N         971.0                              23904
NVALUE    0.15                                                             23905
SEGMENT   23.90     3         C         1030.0                             23906
NVALUE    .06       2.5       .04       6.        .03                      23907
SEGMENT   23.90     4         N         1220.0                             23908
NVALUE    0.18                                                             23909
SEGMENT   23.90     5         N         1300.0                             239010
NVALUE    0.15      1.3       0.08                                         239011
SECTION      23.90                                                         50-12
              0.00    725.22    100.00    721.02    170.00    721.52
            200.00    716.82    300.00    718.50    400.00    717.59
            500.00    713.59    600.00    713.90    700.00    713.19
            800.00    713.40    938.00    714.19    952.00    711.00
            968.00    711.00    971.00    708.59    973.00    706.79
            988.00    707.00    995.00    706.59   1000.00    706.59
           1007.00    707.79   1012.00    707.29   1018.00    707.50
           1026.00    708.09   1030.00    709.50   1032.00    712.09
           1050.00    713.50   1100.00    713.59   1153.00    714.90
           1185.00    721.00   1220.00    722.19   1300.00    722.69
ENDTABLE
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
ROAD        24.00       2.7         50.0        50.0                                  24001
SPR         24.00       A           3.0         7.0                                   24002
PIER        707.8       2.5                                                           24003
GIRDER      719.5       719.3       30.0        0.6         2.7                       24004
            -62.4       722.4       -62.3       718.9       -12.3       719.1         24005
            37.7        719.3       37.8        722.8                                 2400-6
NOTABLE                                                                               24007
SECTION     24.00                                                                     24008
            -1000.0     725.2       -900.0      723.7       -800.0      722.4         24009
            -700.0      721.3       -600.0      720.7       -500.0      720.2         24010
            -400.0      720.0       -300.0      720.4       -200.0      720.9         24011
            -100.0      721.7       -62.5       724.4       -62.4       722.4         24012
            -62.0       708.1       -56.0       707.7       -47.0       706.9         24013
            -33.0       706.4       -22.0       706.7       -13.5       708.1         24014
            -10.5       707.8       0.0         707.5       6.0         707.5         24015
            15.0        708.0       25.0        708.3       37.3        709.3         24016
            37.8        722.8       37.9        724.8       100.0       722.3         24017
            200.0       722.7       300.0       723.5       400.0       724.4         24018
            500.0       726.2       571.0       727.9                                 24019
ENDTABLE                                                                              24020
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 24.00  EXCEEDS  10. FEET----------
REACH       24.01       1.0         55.0        55.0                                  24011
REACH 2     23.90       0.0                                                           24012
REACH       24.08       1.0         1860.0      1550.0                                24081
REACH 2     23.90       0.8                                                           24082
REACH       24.10       1.0         440.0       380.0                                 24101
SEGMENT     24.10       1           N           903.0                                 24102
NVALUE      0.20                                                                      24103
SEGMENT     24.10       2           C           945.0                                 24104
NVALUE      0.050                                                                     24103
SEGMENT     24.10       3           N           1150.0                                24104
NVALUE      0.20                                                                      24105
SECTION       24.10                                                                   2410-6
                0.00      738.01      50.0        736.30      103.00      716.70
              200.00      714.42      300.0       714.11      400.00      713.71
              500.00      713.11      600.0       713.02      700.00      712.49
              600.00      712.39      900.0       713.99      903.00      709.83
              913.00      708.04      923.0       707.73      985.00      709.43
              945.00      711.23      947.0       712.54     1000.00      712.14
             1076.00      713.43     1097.0       725.73     1150.00      726.04
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 24.10  EXCEEDS  10. FEET----------
REACH       24.70       1.0         2720.0      2160.0                                24701
SEGMENT     24.70       1           N           185.0                                 24702
NVALUE      0.15                                                                      24703
SEGMENT     24.70       2           C           230.0                                 24704
NVALUE      0.050                                                                     24705
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
SEGMENT   24.70     3         N         1200.0                                24706
NVALUE    0.20                                                                24708
SECTION     24.70                                                             2470-9
              0.00     735.16    100.00    734.56    136.00    719.09
            181.00     714.89    185.00    710.59    192.00    709.69
            202.00     709.79    210.00    709.29    221.00    709.09
            230.00     711.59    231.00    714.39    278.00    718.40
            300.00     717.70    400.00    717.10    500.00    715.40
            600.00     715.40    700.00    715.68    800.00    716.97
            900.00     716.07   1000.00    715.97   1100.00    715.22
           1170.00     714.02   1200.00    728.13
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 24.70  EXCEEDS  10. FEET------------
REACH     24.73     1.0       1000.0    800.0                                 24731
REACH 2   24.70     1.1                                                       24732
REACH     24.90     1.0       2400.0    2240.0                                24901
SEGMENT   24.90     1         N         195.0                                 24902
NVALUE    0.16      1.3       0.08                                            24903
SEGMENT   24.90     2         N         272.0                                 24904
NVALUE    0.18                                                                24905
SEGMENT   24.90     3         C         332.0                                 24906
NVALUE    .050                                                                24907
SEGMENT   24.90     4         N         400.0                                 24908
NVALUE    0.18                                                                24909
NVALUE    0.16      1.3       0.08                                            249011
SEGMENT   24.90     5         N         740.0                                 2490-10
NVALUE    0.16      1.3       0.08                                            2490-11
SECTION     24.90                                                             2490-12
              0.00     726.87    100.00    723.37    195.00    718.87
            245.00     716.47    268.00    714.67    272.00    712.87
            280.00     711.97    290.00    711.87    300.00    711.67
            310.00     711.67    320.00    711.67    329.00    711.77
            332.00     714.47    340.00    714.77    357.00    719.87
          400.0      719.9     500.0     719.7     600.0     721.3            249018
          700.0      725.2     740.0     727.1                                249019
ENDTABLE
ROAD      25.00     2.4       45.0      45.0                                  2500-1
PPR       25.00     B         3.0       5.0                                   2500-2
PIER      713.6     2.5       712.8     2.5                                   2500-3
GIRDER    722.2     722.0     10.0      0.60      2.6                         2500-4
          -54.0     725.1     -53.8     722.0     -30.0     722.1             2500-5
          30.0      722.1     53.8      721.9     54.0      724.9             2500-6
ENDTABLE                                                                      2500-7
SECTION   25.00                                                               2500-8
          -380.0    729.2     -300.0    727.4     -200.0    723.0             2500-9
          -100.0    723.3     -81.0     723.2     -54.0     725.1             2500-10
```

----------80/80 LIST OF INPUT DATA----------

	-53.7	718.6	-40.0	714.7	-31.3	713.7	2500-11
	-28.7	713.2	-20.0	712.3	-10.0	712.2	2500-12
	0.0	713.2	10.0	712.2	20.0	712.0	2500-13
	28.7	712.6	31.3	713.0	37.0	713.2	2500-14
	53.7	718.1	54.0	724.9	80.0	721.9	2500-15
	100.0	721.1	200.0	721.3	300.0	720.6	2500-16
	400.0	723.1	500.0	727.4			2500-17
NOTABLE							2500-18
REACH	25.01	1.0	50.0	50.0			2501-1
REACH 2	24.90	0.0					2501-2
COMPUTE	19.76	25.01	19.70				

----------END OF 80/80 LIST----------

```
COMPUTE   19.76     25.01     19.70

----------------------------STARTING DATA FROM PREVIOUS COMPUTATIONS-----------------------------

*****SECT.19.76 KD VALUES REVERSED ON SEGMENT 1  AT ELEVATION    715.58  VALUE CHANGED TO EQUAL PREVIOUS VALUE*****
```

RATING TABLE FOR SECTION 19.76 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	698.8	0.0	0.0						
BANK FULL	700.7	129.1	376.9	0.0	0.0	0.0			
1	704.2	555.5	1065.0	0.0	0.0	0.0	1065.00	700.9	0.00062
2	705.8	1152.4	2225.0	0.0	0.0	0.0	2225.00	701.9	0.00067
3	706.9	1782.1	3240.0	0.0	0.0	0.0	3240.00	702.6	0.00070
4	707.3	2082.9	3760.0	0.0	0.0	0.0	3760.00	702.9	0.00072
5	708.4	2755.4	5060.0	0.0	0.0	0.0	5060.00	704.2	0.00075

SEGMENT TABLE FOR SECTION 19.76

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	5.	1055.	5.
1065.	VELOCITY FPS	2.15	0.20	2.14	0.15
2	DISCHARGE CFS	2225.	56.	2092.	76.
2225.	VELOCITY FPS	3.10	0.42	3.18	0.21
3	DISCHARGE CFS	3240.	137.	2856.	247.
3240.	VELOCITY FPS	3.48	0.58	3.69	0.32
4	DISCHARGE CFS	3760.	186.	3210.	364.
3760.	VELOCITY FPS	3.62	0.66	3.89	0.37
5	DISCHARGE CFS	5060.	311.	4072.	677.
5060.	VELOCITY FPS	3.91	0.80	4.34	0.47
1 ELEV 704.2 KD		42778.	125.	42491.	161.
2 ELEV 705.8 KD		85727.	2037.	81044.	2646.
3 ELEV 706.9 KD		122065.	5134.	107783.	9148.
4 ELEV 707.3 KD		139906.	6776.	120093.	13037.
5 ELEV 708.4 KD		184486.	11243.	148947.	24297.

KD TABLE FOR CROSS SECTION 19.76

ELEVATION	AREA	KD	KD BY SEGMENT		
698.78	0.				
699.	4.	30.	1.	28.	1.
700.	61.	1155.	1.	1153.	1.
701.	161.	5334.	1.	5330.	3.
702.	266.	12290.	1.	12283.	6.
703.	373.	23114.	1.	23083.	29.
704.	521.	39328.	66.	39063.	201.
705.	798.	63300.	752.	61645.	794.
706.	1283.	94360.	2703.	87802.	3823.
707.	1872.	127433.	5587.	111398.	10152.
708.	2485.	166381.	9386.	137216.	19600.
709.	3119.	210660.	13988.	165141.	31198.
710.	3775.	260030.	19369.	195098.	43460.
711.	4452.	314313.	25506.	227014.	61589.
712.	5148.	373497.	32443.	260854.	80190.
713.	5868.	437324.	40080.	296522.	100649.
714.	6609.	504277.	46911.	334000.	123277.
715.	7432.	571010.	49486.	373249.	142056.
716.	8353.	638723.	49487.	414284.	174882.
717.	9254.	709960.	49487.	457131.	203173.
718.	10155.	784696.	49488.	501763.	233376.

RATING TABLE FOR SECTION 19.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	699.4	0.0	0.0						
BANK FULL	701.0	70.3	105.0	0.0	0.0	0.0			
1	704.9	843.9	1065.0	0.0	0.0	0.0	1065.00	701.9	0.00090
2	706.5	1672.9	2225.0	0.0	0.0	0.0	2225.00	703.5	0.00087
3	707.6	2497.4	3240.0	0.0	0.0	0.0	3240.00	703.9	0.00084
4	708.1	2900.0	3760.0	0.0	0.0	0.0	3760.00	704.1	0.00084
5	709.2	4055.9	5060.0	0.0	0.0	0.0	5060.00	704.5	0.00079

SEGMENT TABLE FOR SECTION 19.90

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	1.	158.	895.	8.	2.
1065.	VELOCITY FPS	2.50	0.17	0.35	2.72	0.19	0.22
2	DISCHARGE CFS	2225.	40.	464.	1608.	60.	53.
2225.	VELOCITY FPS	3.19	0.38	0.53	3.73	0.42	0.44
3	DISCHARGE CFS	3240.	116.	754.	2067.	117.	186.
3240.	VELOCITY FPS	3.30	0.45	0.64	4.04	0.54	0.55
4	DISCHARGE CFS	3760.	150.	897.	2285.	145.	279.
3760.	VELOCITY FPS	3.36	0.43	0.68	4.22	0.59	0.61
5	DISCHARGE CFS	5060.	321.	1212.	2721.	212.	588.
5060.	VELOCITY FPS	3.34	0.43	0.76	4.47	0.67	0.75
1	ELEV 704.9 KD	35450.	43.	5254.	29812.	264.	78.
2	ELEV 706.5 KD	75394.	1336.	15688.	54595.	2002.	1773.
3	ELEV 707.6 KD	111465.	3933.	25944.	71660.	3975.	5949.
4	ELEV 708.1 KD	129363.	5110.	30861.	79240.	4970.	9182.
5	ELEV 709.2 KD	179845.	11155.	43184.	97434.	7523.	20549.

KD TABLE FOR CROSS SECTION 19.90

ELEVATION	AREA	KD	KD BY SEGMENT				
699.36	0.						
700.	20.	278.	1.	1.	274.	1.	1.
701.	73.	1966.	1.	1.	1962.	1.	1.
702.	139.	5527.	1.	10.	5513.	1.	1.
703.	236.	11077.	1.	120.	10939.	1.	1.
704.	474.	20562.	1.	1502.	18950.	1.	1.
705.	869.	36544.	51.	5518.	30540.	305.	93.
706.	1385.	60939.	634.	11765.	46161.	1285.	909.
707.	2010.	90335.	2323.	19874.	64932.	2736.	3111.
708.	2798.	125047.	4789.	29562.	77289.	4703.	6246.
709.	3831.	170011.	9611.	40770.	94883.	7014.	17536.
710.	5199.	229069.	21035.	53361.	111956.	9673.	32099.
711.	6924.	305136.	42898.	67262.	131166.	12660.	50067.
712.	9024.	402153.	79251.	82379.	151568.	15947.	71084.
713.	11345.	523445.	134560.	98747.	173139.	19546.	95718.
714.	13800.	669999.	208898.	116289.	195847.	23434.	124778.
715.	16350.	835896.	295004.	134986.	219664.	27606.	158640.
716.	18901.	1026665.	407783.	155247.	244632.	32193.	199197.
717.	21451.	1250645.	553124.	177098.	270730.	37207.	246528.

TABLE OF VALUES FOR BHR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.2805	0.2254	0.0551	0.9428	0.0	0.0	0.8141	1.0000	1.0000	389.1052	986.3665	957.0969
DCRIT	702.02	KBCRIT=									
0.5075	0.4581	0.0494	0.8785	0.0	0.0	0.7104	1.0000	1.0000	534.5725	1951.6541	1828.7368
DCRIT	703.25	KBCRIT=									
0.7187	0.6744	0.0443	0.8177	0.0	0.0	0.6331	1.0000	1.0000	647.3850	2980.7734	2695.0945
DCRIT	704.10	KBCRIT=									
0.8376	0.7958	0.0417	0.7835	0.0	0.0	0.5944	1.0000	1.0000	696.2229	3596.6414	3097.9707
DCRIT	704.50	KBCRIT=									
1.1161	1.0801	0.0360	0.7035	0.0	0.0	0.5123	1.0000	1.0000	809.4404	5477.2148	4344.4883
DCRIT	705.40	KBCRIT=									

ROAD SECTION 20.00

NO.	HW	CFS	HL	TW	CSM
0	694.20	0.00	0.00	0.00	0.00
1	705.06	1065.00	0.04	705.02	1065.00
2	706.74	2225.00	0.16	706.58	2225.00
3	708.04	3240.00	0.32	707.72	3240.00
4	708.61	3760.00	0.42	708.20	3760.00
5	711.01	5060.00	0.74	709.27	5060.00

MIN ROAD ELEVATION 721.00

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 717.70 OPENING NO.= 1

RATING TABLE FOR SECTION 20.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	699.4	0.0	0.0						
BANK FULL	701.0	70.3	297.6	0.0	0.0	0.0			
1	705.1	912.0	1065.0	0.0	0.0	0.0	1065.00	701.9	0.00077
2	706.8	1844.0	2225.0	0.0	0.0	0.0	2225.00	703.5	0.00072
3	708.1	2847.1	3240.0	0.0	0.0	0.0	3240.00	703.9	0.00065
4	708.6	3413.5	3760.0	0.0	0.0	0.0	3760.00	704.1	0.00061
5	710.0	5230.5	5060.0	0.0	0.0	0.0	5060.00	704.5	0.00048

SEGMENT TABLE FOR SECTION 20.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	3.	168.	879.	11.	5.
1065.	VELOCITY FPS	2.39	0.21	0.34	2.60	0.21	0.26
2	DISCHARGE CFS	2225.	51.	479.	1561.	65.	68.
2225.	VELOCITY FPS	2.94	0.39	0.51	3.48	0.41	0.42
3	DISCHARGE CFS	3240.	128.	770.	1983.	124.	234.
3240.	VELOCITY FPS	2.94	0.38	0.60	3.71	0.51	0.53
4	DISCHARGE CFS	3760.	188.	903.	2160.	132.	356.
3760.	VELOCITY FPS	2.91	0.37	0.62	3.37	0.55	0.59
5	DISCHARGE CFS	5060.	493.	1175.	2454.	214.	724.
5060.	VELOCITY FPS	2.63	0.37	0.65	3.70	0.58	0.68
1	ELEV 705.1 KD	38239.	66.	5937.	31766.	352.	117.
2	ELEV 706.8 KD	82828.	1802.	17798.	58443.	2393.	2391.
3	ELEV 708.1 KD	126862.	4941.	30182.	78224.	4830.	8685.
4	ELEV 708.6 KD	151405.	7225.	36516.	67709.	6132.	13822.
5	ELEV 710.0 KD	229563.	21385.	53645.	112353.	9734.	32448.

KD TABLE FOR CROSS SECTION 20.01

ELEVATION	AREA	KD	KD BY SEGMENT				
699.36	0.						
700.	20.	278.	1.	1.	274.	1.	1.
701.	73.	1966.	1.	1.	1962.	1.	1.
702.	139.	5527.	1.	10.	5513.	1.	1.
703.	236.	11077.	1.	120.	11039.	1.	1.
704.	474.	20562.	1.	1502.	19060.	1.	1.
705.	869.	36544.	51.	5516.	30940.	305.	93.
706.	1385.	60939.	634.	11769.	48161.	1285.	909.
707.	2010.	90335.	2323.	19874.	67932.	2786.	3111.
708.	2798.	125047.	4789.	29562.	77289.	4703.	8246.
709.	3831.	170011.	9611.	40770.	93583.	7014.	17936.
710.	5199.	229069.	21035.	53361.	115956.	9673.	32099.
711.	6924.	305136.	42898.	67262.	133166.	12660.	50067.
712.	9024.	402153.	79251.	82379.	152568.	15947.	71084.
713.	11345.	523445.	134560.	98747.	173139.	19546.	95718.
714.	13800.	669999.	208898.	116289.	195847.	23434.	124778.
715.	16350.	835896.	295004.	134986.	219164.	27606.	158840.
716.	18901.	1028665.	407763.	155247.	245632.	32153.	199197.
717.	21451.	1250645.	553124.	177098.	270830.	37207.	246528.

RATING TABLE FOR SECTION 20.09 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	699.4	0.0	0.0						
BANK FULL	701.0	70.3	280.2	0.0	0.0	0.0			
1	705.4	1088.9	1065.0	0.0	0.0	0.0	1065.00	701.9	0.00049
2	707.1	2092.6	2225.0	0.0	0.0	0.0	2225.00	703.5	0.00049
3	708.4	3140.5	3240.0	0.0	0.0	0.0	3240.00	703.9	0.00045
4	709.0	3775.4	3760.0	0.0	0.0	0.0	3760.00	704.1	0.00043
5	710.3	5618.4	5060.0	0.0	0.0	0.0	5060.00	704.5	0.00034

SEGMENT TABLE FOR SECTION 20.09

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	7.	214.	813.	19.	11.
1065.	VELOCITY FPS	2.00	0.24	0.37	2.26	0.25	0.30
2	DISCHARGE CFS	2225.	73.	560.	1411.	81.	99.
2225.	VELOCITY FPS	2.41	0.42	0.54	2.39	0.44	0.44
3	DISCHARGE CFS	3240.	154.	864.	1782.	143.	298.
3240.	VELOCITY FPS	2.41	0.38	0.62	3.20	0.54	0.56
4	DISCHARGE CFS	3760.	240.	992.	1915.	171.	446.
3760.	VELOCITY FPS	2.36	0.37	0.65	3.22	0.57	0.63
5	DISCHARGE CFS	5060.	584.	1263.	2161.	232.	620.
5060.	VELOCITY FPS	2.13	0.39	0.67	3.17	0.60	0.71
1	ELEV 705.4 KD	47984.	220.	9512.	37145.	753.	354.
2	ELEV 707.1 KD	99769.	3145.	25095.	63707.	3509.	4232.
3	ELEV 708.4 KD	151980.	7131.	40562.	83712.	6702.	13873.
4	ELEV 709.0 KD	181278.	11077.	48083.	93135.	8246.	20739.
5	ELEV 710.3 KD	273684.	31224.	68432.	117235.	12561.	44232.

KD TABLE FOR CROSS SECTION 20.09

ELEVATION	AREA	KD	KD BY SEGMENT				
699.36	0.						
700.	20.	279.	1.	1.	274.	1.	1.
701.	73.	1967.	1.	1.	1962.	1.	1.
702.	139.	5530.	1.	12.	5513.	1.	1.
703.	236.	11104.	1.	143.	10939.	1.	1.
704.	474.	20870.	1.	1797.	18990.	1.	1.
705.	869.	37724.	61.	6600.	30540.	364.	111.
706.	1385.	63838.	758.	14082.	48161.	1556.	1088.
707.	2010.	95906.	2779.	23781.	63932.	3333.	3723.
708.	2798.	134416.	5730.	35373.	77289.	5627.	9867.
709.	3831.	164925.	11501.	48785.	94883.	6393.	21462.
710.	5199.	252047.	25170.	63851.	111556.	11575.	38409.
711.	6924.	339283.	51331.	80484.	131166.	15145.	59909.
712.	9024.	451316.	94830.	96574.	151566.	19062.	85058.
713.	11345.	592208.	161013.	118155.	173139.	23368.	114534.
714.	13600.	763156.	249964.	139150.	198847.	28041.	149307.
715.	16350.	957052.	352998.	161522.	219664.	33033.	190065.
716.	18901.	1183484.	487948.	185767.	244632.	38522.	238356.
717.	21451.	1445458.	661861.	211913.	270730.	44521.	294992.

TABLE OF VALUES FOR BFR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BR1DA	APPAR	AEXIT
0.6737	0.5553	0.0488	0.8513	0.0	0.0697	0.6741	1.0000	1.0000	434.1135	2365.7493	2249.9526
DCRIT	701.33	KBCRIT=									
0.9522	0.9002	0.0416	0.7540	0.0	0.0104	0.5630	1.0000	1.0000	593.6519	4279.1719	3883.7910
DCRIT	702.78	KBCRIT=									
1.2002	1.2376	0.0349	0.6594	0.0	-0.0723	0.4706	1.0000	1.0000	722.1057	6732.8906	5675.7305
DCRIT	703.81	KBCRIT=									
1.2982	1.3769	0.0322	0.6206	0.0	-0.1109	0.4355	1.0000	1.0000	780.4172	8064.3008	6685.4505
DCRIT	704.31	KBCRIT=									
1.5192	1.6888	0.0264	0.5345	0.0	-0.1960	0.3617	1.0000	1.0000	924.7737	11801.8906	9452.4219
DCRIT	705.34	KBCRIT=									

ROAD SECTION 21.00

NO.	HW	CFS	HL	TW	LSM
0	69[illegible].50	0.00	0.00	0.00	0.00
1	70[illegible].61	1065.00	0.12	705.4[illegible]	1065.00
2	70[illegible].51	2225.00	0.32	707.1[illegible]	2225.00
3	70[illegible].02	3240.00	0.56	708.4[illegible]	3240.00
4	70[illegible].69	3760.00	0.68	709.01	3760.00
5	71[illegible].31	5060.00	0.98	710.3[illegible]	5060.00

IN ROAD ELEVATION 721.30

BRIDGE TYPE 2 IRDER BOTTOM ELEVATION = 717.[illegible]0 OPENING NO.= 1

RATING TABLE FOR SECTION 21.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	699.4	0.0	0.0						
BANK FULL	701.0	70.3	274.0	0.0	0.0	0.0			
1	705.6	1157.0	1065.0	0.0	0.0	0.0	1065.00	701.9	0.00046
2	707.5	2344.1	2225.0	0.0	0.0	0.0	2225.00	703.5	0.00045
3	709.0	3804.8	3240.0	0.0	0.0	0.0	3240.00	703.9	0.00037
4	709.7	4681.7	3760.0	0.0	0.0	0.0	3760.00	704.1	0.00033
5	711.3	7446.7	5060.0	0.0	0.0	0.0	5060.00	704.5	0.00024

SEGMENT TABLE FOR SECTION 21.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	7.	192.	837.	18.	11.
1065.	VELOCITY FPS	2.02	0.20	0.31	2.26	0.22	0.25
2	DISCHARGE CFS	2225.	76.	512.	1456.	77.	110.
2225.	VELOCITY FPS	2.39	0.34	0.45	2.93	0.38	0.38
3	DISCHARGE CFS	3240.	190.	777.	1787.	134.	352.
3240.	VELOCITY FPS	2.27	0.29	0.50	3.00	0.44	0.49
4	DISCHARGE CFS	3760.	308.	887.	1910.	159.	497.
3760.	VELOCITY FPS	2.17	0.30	0.51	2.99	0.46	0.53
5	DISCHARGE CFS	5060.	799.	1095.	2094.	208.	661.
5060.	VELOCITY FPS	1.85	0.31	0.51	2.01	0.46	0.56
1 ELEV	705.6 KD	49677.	268.	8855.	39357.	780.	417.
2 ELEV	707.5 KD	105286.	3546.	24222.	68865.	3643.	5010.
3 ELEV	709.0 KD	168120.	9443.	40492.	93581.	6956.	17648.
4 ELEV	709.7 KD	206021.	16000.	48868.	105590.	8720.	26834.
5 ELEV	711.3 KD	329483.	51631.	71463.	136813.	13576.	56001.

KD TABLE FOR CROSS SECTION 21.01

ELEVATION	AREA	KD	KD BY SEGMENT				
699.36	0.						
700.	20.	278.	1.	1.	274.	1.	1.
701.	73.	1966.	1.	1.	1962.	1.	1.
702.	139.	5527.	1.	10.	5513.	1.	1.
703.	236.	11077.	1.	120.	11039.	1.	1.
704.	474.	20562.	1.	1502.	19060.	1.	1.
705.	869.	36544.	51.	5516.	31040.	305.	93.
706.	1385.	60539.	634.	11769.	48161.	1285.	909.
707.	2010.	90335.	2323.	19874.	68032.	2786.	3111.
708.	2798.	125047.	4789.	29562.	77289.	4703.	8246.
709.	3831.	170011.	9611.	40770.	93083.	7014.	17936.
710.	5199.	229069.	21035.	53361.	115956.	9675.	32099.
711.	6924.	305136.	42698.	67262.	133166.	12660.	50067.
712.	9024.	402153.	79251.	82379.	151568.	15947.	71084.
713.	11345.	523445.	134560.	98747.	173139.	19546.	95718.
714.	13800.	669999.	208898.	116289.	195847.	23454.	124778.
715.	16350.	835896.	295004.	134986.	217664.	27606.	156840.
716.	18901.	1028665.	407783.	155247.	244132.	32193.	199197.
717.	21451.	1250645.	553124.	177098.	274730.	37207.	246528.

RATING TABLE FOR SECTION 21.09 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	699.4	0.0	0.0						
BANK FULL	701.0	70.3	272.4	0.0	0.0	0.0			
1	705.6	1175.0	1065.0	0.0	0.0	0.0	1065.00	701.9	0.00044
2	707.5	2373.8	2225.0	0.0	0.0	0.0	2225.00	703.5	0.00044
3	709.0	3837.9	3240.0	0.0	0.0	0.0	3240.00	703.9	0.00036
4	709.7	4720.7	3760.0	0.0	0.0	0.0	3760.00	704.1	0.00033
5	711.3	7481.5	5060.0	0.0	0.0	0.0	5060.00	704.5	0.00023

SEGMENT TABLE FOR SECTION 21.09

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	8.	193.	834.	19.	11.
1065.	VELOCITY FPS	2.00	0.20	0.31	2.24	0.22	0.25
2	DISCHARGE CFS	2225.	76.	513.	1444.	78.	114.
2225.	VELOCITY FPS	2.36	0.33	0.45	2.90	0.38	0.38
3	DISCHARGE CFS	3240.	192.	777.	1781.	134.	356.
3240.	VELOCITY FPS	2.25	0.29	0.50	2.98	0.44	0.49
4	DISCHARGE CFS	3760.	312.	686.	1903.	159.	500.
3760.	VELOCITY FPS	2.16	0.29	0.51	2.97	0.46	0.53
5	DISCHARGE CFS	5060.	803.	1094.	2091.	208.	862.
5060.	VELOCITY FPS	1.84	0.31	0.50	2.80	0.46	0.56
1	ELEV 705.6 KD	50637.	295.	9107.	39954.	824.	456.
2	ELEV 707.5 KD	106457.	3618.	24549.	69402.	3707.	5181.
3	ELEV 709.0 KD	169618.	9654.	40841.	94084.	7029.	18010.
4	ELEV 709.7 KD	207606.	16340.	49199.	106073.	8790.	27205.
5	ELEV 711.3 KD	331257.	52264.	71748.	137192.	13638.	56415.

KD TABLE FOR CROSS SECTION 21.09

ELEVATION	AREA	KD	KD BY SEGMENT				
699.36	0.						
700.	20.	278.	1.	1.	274.	1.	1.
701.	73.	1966.	1.	1.	1962.	1.	1.
702.	139.	5527.	1.	10.	5513.	1.	1.
703.	236.	11077.	1.	120.	10939.	1.	1.
704.	474.	20562.	1.	1502.	18990.	1.	1.
705.	869.	36544.	51.	5516.	30540.	305.	93.
706.	1385.	60939.	634.	11769.	48161.	1285.	909.
707.	2010.	90335.	2323.	19874.	67932.	2786.	3111.
708.	2798.	125047.	4789.	29562.	77289.	4753.	8246.
709.	3831.	170011.	9611.	40770.	93983.	7014.	17936.
710.	5199.	229069.	21035.	53361.	111956.	9673.	32099.
711.	6924.	305136.	42698.	67262.	131166.	12660.	50067.
712.	9024.	402153.	79251.	82379.	151568.	15947.	71084.
713.	11345.	523445.	134560.	98747.	173139.	19546.	95718.
714.	13800.	669999.	208898.	116289.	199847.	23454.	124778.
715.	16350.	835896.	295004.	134986.	219664.	27608.	158840.
716.	18901.	1028665.	407783.	155247.	244632.	32193.	199197.
717.	21451.	1250645.	553124.	177098.	270730.	37207.	246528.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	OKE	OKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.3905	0.2585	0.1515	0.9338	0.0	-0.0195	0.7972	1.0000	1.0000	393.9861	1087.6565	1058.3872
DCRIT	702.42	KBCRIT=									
0.6249	0.5439	0.1251	0.8544	0.0	-0.0441	0.6782	1.0000	1.0000	568.1956	2323.3196	2188.0732
DCRIT	703.71	KBCRIT=									
0.6774	0.8467	0.1044	0.7691	0.0	-0.0736	0.5789	1.0000	1.0000	722.0083	3928.2686	3565.2295
DCRIT	704.63	KBCRIT=									
1.0078	1.0023	0.0953	0.7253	0.0	-0.0898	0.5337	1.0000	1.0000	794.7515	4897.3516	4361.6406
DCRIT	704.82	KBCRIT=									
1.2764	1.3231	0.0779	0.6355	0.0	-0.1246	0.4489	1.0000	1.0000	975.7375	7479.2578	7036.8633
DCRIT	704.46	KBCRIT=									

ROAD SECTION 22.00

NO.	HW	CFS	HL	TW	CSM
0	69[illegible].60	0.00	0.00	0.00	0.00
1	70[illegible].66	1065.00	0.04	705.62	1065.00
2	70[illegible].66	2225.00	0.16	707.50	2225.00
3	70[illegible].31	3240.00	0.30	709.00	3240.00
4	71[illegible].02	3760.00	0.34	709.66	3760.00
5	71[illegible].52	5060.00	0.22	711.30	5060.00

'IN ROAD ELEVATION 709.50

BRIDGE TYPE 2 -IRDER BOTTOM ELEVATION = 713.50 OPENING NO.= 1

RATING TABLE FOR SECTION 22.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	699.7	0.0	0.0						
BANK FULL	701.3	70.3	282.8	0.0	0.0	0.0			
1	705.7	1060.7	1065.0	0.0	0.0	0.0	1065.00	702.2	0.00056
2	707.7	2273.3	2225.0	0.0	0.0	0.0	2225.00	703.8	0.00047
3	709.3	3855.2	3240.0	0.0	0.0	0.0	3240.00	704.2	0.00036
4	710.0	4798.1	3760.0	0.0	0.0	0.0	3760.00	704.4	0.00032
5	711.5	7350.3	5060.0	0.0	0.0	0.0	5060.00	704.8	0.00024

SEGMENT TABLE FOR SECTION 22.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	6.	184.	851.	16.	9.
1065.	VELOCITY FPS	2.16	0.21	0.32	2.36	0.22	0.27
2	DISCHARGE CFS	2225.	73.	509.	1464.	76.	101.
2225.	VELOCITY FPS	2.45	0.36	0.46	2.99	0.38	0.37
3	DISCHARGE CFS	3240.	193.	777.	1778.	134.	357.
3240.	VELOCITY FPS	2.24	0.29	0.50	2.97	0.44	0.49
4	DISCHARGE CFS	3760.	321.	684.	1890.	159.	506.
3760.	VELOCITY FPS	2.12	0.29	0.51	2.93	0.45	0.53
5	DISCHARGE CFS	5060.	789.	1098.	2108.	208.	857.
5060.	VELOCITY FPS	1.87	0.31	0.51	2.53	0.47	0.57
1	ELEV 705.7 KO	44838.	157.	7597.	36254.	575.	256.
2	ELEV 707.7 KO	102536.	3377.	23452.	67589.	3496.	4622.
3	ELEV 709.3 KO	170404.	9766.	41023.	94347.	7067.	18200.
4	ELEV 710.0 KO	210786.	17030.	49858.	107015.	8529.	27953.
5	ELEV 711.5 KO	324627.	49914.	70677.	135764.	13404.	54868.

KD TABLE FOR CROSS SECTION 22.01

ELEVATION	AREA	KD	KD BY SEGMENT				
699.66	0.						
700.	7.	52.	1.	1.	46.	1.	1.
701.	55.	1343.	1.	1.	139.	1.	1.
702.	118.	4315.	1.	5.	408.	1.	1.
703.	200.	9115.	1.	56.	847.	1.	1.
704.	390.	17229.	1.	884.	1[illegible]41.	1.	1.
705.	742.	30977.	14.	3919.	2[illegible]76.	60.	21.
706.	1217.	53084.	372.	9727.	4[illegible]387.	939.	562.
707.	1803.	81310.	1691.	17312.	5[illegible]601.	2304.	2239.
708.	2545.	113867.	4060.	26498.	72[illegible]42.	4088.	6272.
709.	3490.	155153.	7619.	37272.	83642.	6267.	14508.
710.	4751.	209678.	16604.	49453.	105437.	8844.	27492.
711.	6368.	280335.	35057.	62966.	125280.	11734.	44316.
712.	8353.	370564.	66542.	77730.	143329.	14934.	64563.
713.	10616.	483920.	116396.	93767.	166559.	16452.	88011.
714.	13043.	624701.	186542.	110953.	183929.	22262.	115638.
715.	15586.	783443.	266636.	129218.	212402.	26313.	147997.
716.	18136.	967913.	370838.	149007.	237027.	30774.	186397.
717.	20686.	1180887.	505749.	170379.	26[illegible]88.	35658.	231565.

RATING TABLE FOR SECTION 22.05 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	700.9	0.0	0.0						
BANK FULL	702.5	70.3	296.3	0.0	0.0	0.0			
1	706.6	923.9	1065.0	0.0	0.0	0.0	1065.00	703.4	0.00074
2	708.4	1954.2	2225.0	0.0	0.0	0.0	2225.00	705.0	0.00062
3	709.9	3185.2	3240.0	0.0	0.0	0.0	3240.00	705.4	0.00050
4	710.6	3922.7	3760.0	0.0	0.0	0.0	3760.00	705.6	0.00045
5	712.0	5930.0	5060.0	0.0	0.0	0.0	5060.00	706.0	0.00035

SEGMENT TABLE FOR SECTION 22.05

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	3.	176.	668.	12.	5.
1065.	VELOCITY FPS	2.34	0.22	0.36	2.56	0.22	0.28
2	DISCHARGE CFS	2225.	60.	505.	1509.	71.	81.
2225.	VELOCITY FPS	2.74	0.40	0.51	3.29	0.42	0.43
3	DISCHARGE CFS	3240.	147.	802.	1874.	133.	284.
3240.	VELOCITY FPS	2.58	0.35	0.58	3.35	0.50	0.52
4	DISCHARGE CFS	3760.	236.	925.	2006.	161.	434.
3760.	VELOCITY FPS	2.48	0.34	0.59	3.35	0.52	0.58
5	DISCHARGE CFS	5060.	601.	1179.	2268.	218.	797.
5060.	VELOCITY FPS	2.24	0.36	0.61	3.27	0.55	0.66
1	ELEV 706.6 KD	39070.	75.	6366.	32112.	386.	131.
2	ELEV 708.4 KD	88908.	2244.	20134.	60751.	2784.	2996.
3	ELEV 709.9 KD	145411.	6466.	36065.	84362.	5975.	12544.
4	ELEV 710.6 KD	177497.	10736.	43866.	95381.	7586.	19929.
5	ELEV 712.0 KD	268547.	31298.	62734.	120718.	11596.	42200.

KD TABLE FOR CROSS SECTION 22.05

ELEVATION	AREA	KD	KD BY SEGMENT				
700.86	0.						
701.	1.	9.	1.	1.	6.	1.	1.
702.	44.	985.	1.	1.	980.	1.	1.
703.	105.	3567.	1.	3.	3560.	1.	1.
704.	178.	7941.	1.	36.	7897.	1.	1.
705.	338.	15271.	1.	602.	14626.	1.	1.
706.	659.	27791.	6.	3215.	24286.	13.	8.
707.	1118.	48416.	227.	8749.	38078.	725.	360.
708.	1672.	76482.	1401.	16472.	54569.	2101.	1860.
709.	2376.	108658.	3809.	25827.	69447.	3901.	5460.
710.	3262.	148782.	6828.	36831.	85481.	6150.	13183.
711.	4451.	202174.	14842.	49335.	102819.	8741.	25986.
712.	5997.	271851.	32100.	63258.	121415.	11707.	42650.
713.	7905.	361111.	62077.	78515.	141226.	15007.	63542.
714.	10143.	474090.	110465.	95092.	162121.	18635.	87268.
715.	12557.	615279.	178850.	112644.	184354.	22548.	115238.
716.	15075.	777294.	261621.	131826.	207611.	26765.	148240.
717.	17626.	964294.	365402.	152293.	232006.	31366.	187256.
718.	20176.	1180872.	500201.	174417.	257540.	36409.	233240.
719.	22726.	1429568.	672639.	198223.	284197.	41906.	286920.

RATING TABLE FOR SECTION 22.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	702.1	0.0	0.0						
BANK FULL	703.3	100.8	252.3	0.0	0.0	0.0			
1	707.2	638.5	1065.0	0.0	0.0	0.0	1065.00	703.8	0.00045
2	708.9	1461.8	2225.0	0.0	0.0	0.0	2225.00	704.7	0.00038
3	710.3	2545.5	3240.0	0.0	0.0	0.0	3240.00	705.3	0.00030
4	710.9	3072.7	3760.0	0.0	0.0	0.0	3760.00	705.6	0.00027
5	712.2	4302.4	5060.0	0.0	0.0	0.0	5060.00	706.3	0.00023

SEGMENT TABLE FOR SECTION 22.10

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1065.	7.	1049.	[illegible]
1065.	VELOCITY FPS	1.85	0.22	1.85	0.24
2	DISCHARGE CFS	2225.	32.	1953.	24[illegible].
2225.	VELOCITY FPS	2.37	0.30	2.51	0.42
3	DISCHARGE CFS	3240.	64.	2401.	77[illegible].
3240.	VELOCITY FPS	2.21	0.33	2.53	0.[illegible]
4	DISCHARGE CFS	3760.	82.	2598.	108[illegible]
3760.	VELOCITY FPS	2.15	0.34	2.54	0.[illegible]
5	DISCHARGE CFS	5060.	119.	3046.	16[illegible]
5060.	VELOCITY FPS	2.05	0.31	2.57	0.[illegible]
1 ELEV	707.2 KD	50284.	304.	49783.	1[illegible]
2 ELEV	708.9 KD	112594.	1571.	100018.	1100[illegible]
3 ELEV	710.3 KD	186444.	3665.	139264.	4351[illegible]
4 ELEV	710.9 KD	227166.	4933.	157620.	6441[illegible]
5 ELEV	712.2 KD	333007.	7806.	201034.	1241[illegible]

KD TABLE FOR CROSS SECTION 22.10

ELEVATION	AREA	KD	KD BY SEGMENT		
702.09	0.				
703.	68.	1191.	1.	1196.	1.
704.	186.	6109.	3.	6099.	2.
705.	308.	14239.	5.	14228.	7.
706.	437.	27329.	37.	27258.	30.
707.	594.	46609.	250.	46159.	113.
708.	943.	76659.	761.	73008.	2837.
709.	1529.	117649.	1683.	102595.	12511.
710.	2282.	168169.	3109.	130101.	34601.
711.	3137.	233039.	5108.	160147.	67439.
712.	4061.	311839.	7162.	192642.	111781.
713.	5060.	403629.	10191.	227495.	165758.
714.	6136.	508639.	15092.	264627.	228771.
715.	7280.	626199.	21992.	303963.	299843.
716.	8482.	756609.	30495.	345457.	380238.
717.	9757.	893659.	40372.	389054.	463796.
718.	11060.	1036087.	52504.	434729.	545192.
719.	12404.	1190443.	66887.	482491.	643446.
720.	13728.	1356919.	84031.	532300.	747495.

RATING TABLE FOR SECTION 22.15 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	702.1	0.0	0.0						
BANK FULL	703.3	100.8	240.7	0.0	0.0	0.0			
1	707.4	708.3	1065.0	0.0	0.0	0.0	1065.00	703.8	0.00035
2	709.1	1617.3	2225.0	0.0	0.0	0.0	2225.00	704.7	0.00033
3	710.5	2703.7	3240.0	0.0	0.0	0.0	3240.00	705.3	0.00027
4	711.1	3217.9	3760.0	0.0	0.0	0.0	3760.00	705.6	0.00025
5	712.4	4447.1	5060.0	0.0	0.0	0.0	5060.00	706.3	0.00022

SEGMENT TABLE FOR SECTION 22.15

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	8.	1043.	14.
1065.	VELOCITY FPS	1.74	0.20	1.75	0.20
2	DISCHARGE CFS	2225.	33.	1914.	278.
2225.	VELOCITY FPS	2.22	0.28	2.37	0.40
3	DISCHARGE CFS	3240.	66.	2357.	818.
3240.	VELOCITY FPS	2.11	0.31	2.43	0.54
4	DISCHARGE CFS	3760.	83.	2571.	1104.
3760.	VELOCITY FPS	2.06	0.32	2.46	0.56
5	DISCHARGE CFS	5060.	120.	3023.	1917.
5060.	VELOCITY FPS	2.00	0.30	2.52	0.67
1	ELEV 707.4 KD	56678.	401.	55826.	452.
2	ELEV 709.1 KD	122353.	1809.	106029.	14515.
3	ELEV 710.5 KD	196910.	3946.	144726.	48239.
4	ELEV 711.1 KD	238451.	5237.	163090.	70124.
5	ELEV 712.4 KD	343201.	8083.	205981.	129137.

KD TABLE FOR CROSS SECTION 22.15

ELEVATION	AREA	KD	KD BY SEGMENT		
702.09	0.				
703.	68.	1198.	1.	1196.	1.
704.	186.	6104.	3.	6099.	2.
705.	308.	14239.	5.	14228.	6.
706.	437.	27324.	37.	27250.	30.
707.	594.	46602.	245.	46159.	11.
708.	943.	76589.	748.	73008.	96.
709.	1529.	117386.	1654.	102595.	1294.
710.	2282.	167505.	3055.	130101.	34099.
711.	3137.	231764.	5019.	160147.	66266.
712.	4061.	309766.	7037.	192642.	108836.
713.	5060.	400562.	10014.	227499.	162875.
714.	6136.	504393.	14829.	264627.	224792.
715.	7280.	620591.	21610.	303963.	294528.
716.	8482.	749455.	29965.	345457.	373625.
717.	9757.	884877.	39866.	389054.	455729.
718.	11080.	1025625.	51591.	434729.	539641.
719.	12404.	1178111.	65723.	482491.	632453.
720.	13728.	1342529.	82570.	532300.	734696.

RATING TABLE FOR SECTION 22.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	701.8	0.0	0.0						
BANK FULL	705.1	216.9	576.3	0.0	0.0	0.0			
1	707.8	480.0	1065.0	0.0	0.0	0.0	1065.00	704.1	0.00053
2	709.6	900.0	2225.0	0.0	0.0	0.0	2225.00	705.3	0.00068
3	710.9	1530.2	3240.0	0.0	0.0	0.0	3240.00	706.1	0.00060
4	711.5	1849.9	3760.0	0.0	0.0	0.0	3760.00	706.5	0.00057
5	712.7	2597.4	5060.0	0.0	0.0	0.0	5060.00	707.5	0.00050

SEGMENT TABLE FOR SECTION 22.50

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N	6 N
1	DISCHARGE CFS	1065.	0.	0.	1.	1056.	6.	1.
1065.	VELOCITY FPS	2.37	0.0	0.0	0.24	2.36	0.30	0.22
2	DISCHARGE CFS	2225.	0.	51.	5.	2118.	24.	26.
2225.	VELOCITY FPS	3.47	0.0	0.25	0.30	3.55	0.55	0.64
3	DISCHARGE CFS	3240.	0.	477.	12.	2639.	39.	74.
3240.	VELOCITY FPS	3.40	0.0	0.75	0.34	3.74	0.64	0.83
4	DISCHARGE CFS	3760.	0.	738.	18.	2855.	46.	104.
3760.	VELOCITY FPS	3.35	0.0	0.85	0.40	3.79	0.67	0.90
5	DISCHARGE CFS	5060.	0.	1439.	31.	3343.	62.	184.
5060.	VELOCITY FPS	3.23	0.07	1.03	0.46	3.89	0.73	1.00
1 ELEV	707.8 KD	46397.	1.	1.	61.	46052.	258.	23.
2 ELEV	709.6 KD	84978.	1.	1439.	233.	81509.	921.	875.
3 ELEV	710.9 KD	132043.	1.	19070.	469.	107937.	1594.	2972.
4 ELEV	711.5 KD	156934.	1.	29622.	715.	120411.	1927.	4258.
5 ELEV	712.7 KD	225810.	9.	63606.	1441.	145629.	2758.	8167.

KD TABLE FOR CROSS SECTION 22.50

ELEVATION	AREA	KD	KD BY SEGMENT					
701.82	0.							
702.	5.	36.	1.	1.	1.	31.	1.	1.
703.	63.	1540.	1.	1.	1.	1535.	1.	1.
704.	132.	4820.	1.	1.	1.	4814.	1.	1.
705.	211.	9849.	1.	1.	1.	9843.	1.	1.
706.	297.	18518.	1.	1.	4.	18499.	11.	1.
707.	393.	31553.	1.	1.	23.	31430.	82.	2.
708.	499.	50120.	1.	1.	72.	49667.	310.	42.
709.	673.	71829.	1.	243.	160.	70359.	669.	330.
710.	1077.	97291.	1.	3815.	293.	89410.	1114.	1450.
711.	1588.	136663.	1.	20662.	607.	110135.	1651.	3175.
712.	2158.	184655.	2.	42637.	1005.	132561.	2268.	5763.
713.	2779.	244164.	20.	73332.	1628.	156598.	2961.	9242.
714.	3445.	315275.	315.	112598.	2362.	182220.	3724.	13695.
715.	4149.	396382.	1185.	158755.	3209.	209384.	4560.	19242.
716.	4902.	486620.	2755.	209990.	4141.	238015.	5455.	25683.
717.	5695.	586421.	5277.	267221.	5171.	268103.	6416.	33770.
718.	6527.	695785.	8973.	330048.	6294.	299612.	7440.	42978.
719.	7389.	814850.	14219.	398060.	7504.	332507.	8523.	53571.
720.	8267.	944212.	21656.	471610.	8805.	366772.	9668.	65671.
721.	9145.	1085513.	32248.	553700.	10244.	402446.	10893.	79629.
722.	10024.	1239142.	47058.	644798.	11827.	439517.	12199.	95614.

RATING TABLE FOR SECTION 22.56 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	702.9	0.0	0.0						
BANK FULL	706.2	216.9	581.7	0.0	0.0	0.0			
1	708.9	473.8	1065.0	0.0	0.0	0.0	1065.00	705.2	0.00055
2	710.8	947.6	2225.0	0.0	0.0	0.0	2225.00	706.4	0.00064
3	712.0	1549.7	3240.0	0.0	0.0	0.0	3240.00	707.2	0.00060
4	712.6	1850.9	3760.0	0.0	0.0	0.0	3760.00	707.6	0.00058
5	713.7	2549.8	5060.0	0.0	0.0	0.0	5060.00	708.6	0.00054

SEGMENT TABLE FOR SECTION 22.56

CSM		TOTAL	SEG NO 1 N	2 N	3 N	4 C	5 N	6 N
1	DISCHARGE CFS	1065.	0.	0.	[illegible]	1057.	6.	1.
1065.	VELOCITY FPS	2.39	0.0	0.0	0.23	2.38	0.29	0.21
2	DISCHARGE CFS	2225.	0.	56.	[illegible]	2113.	23.	27.
2225.	VELOCITY FPS	3.40	0.0	0.24	0.30	3.46	0.52	0.61
3	DISCHARGE CFS	3240.	0.	466.	[illegible]	2654.	37.	71.
3240.	VELOCITY FPS	3.41	0.0	0.71	[illegible]	3.74	0.61	0.79
4	DISCHARGE CFS	3760.	0.	707.	[illegible]	2893.	44.	100.
3760.	VELOCITY FPS	3.41	0.0	0.81	[illegible]	3.84	0.64	0.86
5	DISCHARGE CFS	5060.	0.	1363.	[illegible]	3432.	59.	175.
5060.	VELOCITY FPS	3.38	0.07	1.00	[illegible]	4.03	0.71	0.97
1	ELEV 708.9 KD	45220.	1.	1.	[illegible]	44916.	229.	18.
2	ELEV 710.8 KD	87950.	1.	1905.	[illegible]	83879.	925.	1002.
3	ELEV 712.0 KD	132041.	1.	18513.	[illegible]	108678.	1523.	2870.
4	ELEV 712.6 KD	154585.	1.	28012.	[illegible]	120449.	1821.	4026.
5	ELEV 713.7 KD	216803.	7.	57762.	[illegible]	147736.	2552.	7436.

.D TABLE FOR CROSS SECTION 22.56

ELEVATION	AREA	.D	KD BY SEGMENT					
702.92	0.							
703.	2.	13.	1.	1.	1.	12.	1.	1.
704.	57.	129[illegible].	1.	1.	1.	1253.	1.	1.
705.	125.	442[illegible].	1.	1.	1.	4416.	1.	1.
706.	203.	918[illegible].	1.	1.	1.	9180.	1.	1.
707.	289.	1746[illegible].	1.	1.	3.	17453.	8.	1.
708.	383.	3002[illegible].	1.	1.	19.	29926.	65.	2.
709.	488.	4795[illegible].	1.	1.	62.	47570.	263.	28.
710.	654.	6946 .	1.	120.	141.	68236.	591.	265.
711.	1028.	9347[illegible].	1.	2952.	262.	87444.	1008.	1257.
712.	1532.	13104[illegible].	1.	18049.	444.	107995.	1507.	2812.
713.	2096.	17659[illegible].	1.	37984.	901.	130244.	2082.	5175.
714.	2714.	23504[illegible].	14.	66133.	1478.	154131.	2729.	8372.
715.	3375.	30071[illegible].	259.	102599.	2161.	179558.	3444.	12484.
716.	4079.	37767 .	985.	145052.	2943.	206598.	4223.	17587.
717.	4827.	46364 .	2400.	193049.	3816.	235060.	5064.	23756.
718.	5614.	55872 .	4697.	246684.	4782.	265033.	5966.	31092.
719.	6441.	66290 .	8074.	305597.	5835.	296404.	6928.	39667.
720.	7301.	77628 .	12859.	369438.	6971.	329164.	7946.	49545.
721.	8179.	89924[illegible].	19632.	438121.	8187.	363287.	9020.	60805.
722.	9056.	103347[illegible].	29297.	514828.	9533.	398823.	10169.	73806.
723.	9936.	117931[illegible].	42834.	599592.	11014.	435753.	11395.	88704.

RATING TABLE FOR SECTION 22.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	704.1	0.0	0.0						
BANK FULL	705.3	37.4	206.5	0.0	0.0	0.0			
1	710.3	715.9	1065.0	0.0	0.0	0.0	1065.00	707.0	0.00083
2	711.9	1590.0	2225.0	0.0	0.0	0.0	2225.00	708.6	0.00058
3	713.0	2263.7	3240.0	0.0	0.0	0.0	3240.00	709.8	0.00051
4	713.5	2589.1	3760.0	0.0	0.0	0.0	3760.00	710.0	0.00050
5	714.6	3393.1	5060.0	0.0	0.0	0.0	5060.00	710.4	0.00047

SEGMENT TABLE FOR SECTION 22.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 N	SEG NO 3 C	SEG NO 4 N
1	DISCHARGE CFS	1065.	104.	12.	944.	5.
1065.	VELOCITY FPS	2.86	0.29	0.48	3.01	0.29
2	DISCHARGE CFS	2225.	887.	27.	1294.	13.
2225.	VELOCITY FPS	2.54	0.80	0.59	3.22	0.36
3	DISCHARGE CFS	3240.	1621.	39.	1558.	22.
3240.	VELOCITY FPS	2.43	0.96	0.66	3.34	0.40
4	DISCHARGE CFS	3760.	1990.	46.	1693.	27.
3760.	VELOCITY FPS	2.44	1.01	0.70	3.42	0.42
5	DISCHARGE CFS	5060.	2923.	63.	2034.	39.
5060.	VELOCITY FPS	2.46	1.10	0.78	3.62	0.46
1	ELEV 710.3 KD	36631.	3220.	409.	32840.	162.
2	ELEV 711.9 KD	91866.	35945.	1102.	54272.	547.
3	ELEV 713.0 KD	143114.	71197.	1743.	69210.	964.
4	ELEV 713.5 KD	168512.	88715.	2072.	76533.	1192.
5	ELEV 714.6 KD	233663.	134546.	2913.	94392.	1812.

KD TABLE FOR CROSS SECTION 22.90

ELEVATION	AREA	KD	KD BY SEGMENT			
704.10	0.					
705.	24.	396.	1.	1.	592.	1.
706.	71.	2209.	2.	1.	1203.	3.
707.	128.	5287.	20.	1.	2255.	8.
708.	197.	10145.	144.	2.	4566.	29.
709.	296.	17911.	363.	53.	7912.	66.
710.	568.	30659.	1670.	293.	2[illegible]65.	120.
711.	1072.	57436.	12299.	673.	4[illegible]513.	291.
712.	1663.	97529.	39642.	1171.	52873.	589.
713.	2283.	144995.	72408.	1764.	6[illegible]650.	978.
714.	2938.	197259.	108647.	2451.	84819.	1465.
715.	3683.	258740.	152663.	3225.	10[illegible]730.	2053.
716.	4501.	333276.	208428.	4082.	11[illegible]945.	2747.
717.	5373.	422673.	277699.	5014.	13[illegible]220.	3500.
718.	6284.	523357.	357320.	6024.	15[illegible]541.	4241.
719.	7239.	631737.	445508.	7108.	175878.	5110.
720.	8247.	750026.	538171.	8264.	19[illegible]205.	6244.
721.	9306.	887502.	650932.	9492.	21[illegible]07.	7649.
722.	10365.	1040060.	778751.	10816.	24[illegible]31.	9262.
723.	11424.	1208378.	922634.	12237.	26[illegible]63.	11059.

TABLE OF VALUES FOR BER EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.4545	0.3465	0.1079	0.9096	0.0	0.0	0.7564	1.0000	1.0000	368.6753	1103.0647	1023.8303
DCRIT	707.23	KBCRIT=									
1.0583	0.9772	0.0811	0.7324	0.0	0.0	0.5408	1.0000	1.0000	522.2031	2151.3838	1928.5505
DCRIT	708.50	KBCRIT=									
1.2517	1.1804	0.0713	0.6754	0.0	0.0	0.4855	1.0000	1.0000	623.4019	2930.9580	2615.7717
DCRIT	709.15	KBCRIT=									
1.3248	1.2573	0.0675	0.6539	0.0	0.0	0.4655	1.0000	1.0000	672.8752	3266.8591	2944.6414
DCRIT	709.20	KBCRIT=									
1.4557	1.3953	0.0604	0.6155	0.0	0.0	0.4310	1.0000	1.0000	789.2839	4080.9141	3801.6936
DCRIT	709.07	KBCRIT=									

ROGUE RIVER FLOOD HAZARD STUDY, KENT CO. MICH. 7/17/81

FINAL TR20 DISCHARGES ------ TO GRANGE AVE

ROAD SECTION 23.00

NO.	HW	CFS	HL	TW	CSM
0	703.60	0.00	0.00	0.00	0.00
1	710.53	1065.00	0.12	710.42	1065.00
2	712.27	2225.00	0.34	711.93	2225.00
3	713.47	3240.00	0.46	713.01	3240.00
4	713.93	3760.00	0.42	713.51	3760.00
5	714.97	5060.00	0.32	714.65	5060.00

weir flow

→ MIN ROAD ELEVATION 712.80

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 717.30 OPENING NO.= 1

RATING TABLE FOR SECTION 23.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	704.1	0.0	0.0						
BANK FULL	705.3	37.4	200.8	0.0	0.0	0.0			
1	710.5	795.5	1065.0	0.0	0.0	0.0	1065.00	707.0	0.00070
2	712.3	1826.7	2225.0	0.0	0.0	0.0	2225.00	708.6	0.00045
3	713.5	2589.7	3240.0	0.0	0.0	0.0	3240.00	709.8	0.00040
4	713.9	2892.8	3760.0	0.0	0.0	0.0	3760.00	710.0	0.00041
5	715.0	3663.3	5060.0	0.0	0.0	0.0	5060.00	710.4	0.00043

SEGMENT TABLE FOR SECTION 23.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 N	SEG NO 3 C	SEG NO 4 N
1	DISCHARGE CFS	1065.	115.	12.	934.	5.
1065.	VELOCITY FPS	2.71	0.27	0.43	2.88	0.26
2	DISCHARGE CFS	2225.	940.	26.	1246.	13.
2225.	VELOCITY FPS	2.26	0.72	0.51	2.93	0.31
3	DISCHARGE CFS	3240.	1655.	38.	1524.	22.
3240.	VELOCITY FPS	2.21	0.84	0.58	3.[illegible]	0.35
4	DISCHARGE CFS	3760.	1996.	45.	169[illegible]	27.
3760.	VELOCITY FPS	2.28	0.90	0.63	3.[illegible]	0.37
5	DISCHARGE CFS	5060.	2895.	61.	20[illegible]	39.
5060.	VELOCITY FPS	2.39	1.00	0.72	3.[illegible]	0.42
1 ELEV	710.5 KD	40159.	4161.	447.	3537[illegible]	174.
2 ELEV	712.3 KD	105217.	43943.	1220.	5942[illegible]	632.
3 ELEV	713.5 KD	161736.	82166.	1919.	7654[illegible]	1104.
4 ELEV	713.9 KD	185110.	98025.	2221.	8354[illegible]	1321.
5 ELEV	715.0 KD	245295.	140151.	2966.	1002[illegible]	1885.

KD TABLE FOR CROSS SECTION 23.01

ELEVATION	AREA	KD	KD BY SEGMENT			
704.10	0.					
705.	24.	39[illegible].	1.	1.	1392.	1.
706.	71.	220[illegible].	2.	1.	4203.	3.
707.	128.	528[illegible].	18.	1.	5255.	8.
708.	197.	1013[illegible].	133.	1.	5966.	27.
709.	296.	1787[illegible].	336.	49.	11412.	61.
710.	568.	3048[illegible].	1546.	271.	28765.	111.
711.	1072.	5634[illegible].	11386.	623.	42313.	270.
712.	1663.	9444[illegible].	36701.	1084.	59873.	546.
713.	2283.	13941[illegible].	67037.	1633.	69650.	906.
714.	2938.	18890 .	100587.	2269.	84619.	1356.
715.	3683.	24702 .	141339.	2586.	106730.	1901.
716.	4501.	31730[illegible].	192967.	3779.	117945.	2543.
717.	5373.	40143[illegible].	257099.	4642.	136220.	3241.
718.	6284.	49608 .	330814.	5577.	155541.	3926.
719.	7239.	59792 .	410609.	6581.	175578.	4731.
720.	8247.	70902[illegible].	498250.	7651.	193205.	5780.
721.	9306.	83794 .	602646.	8786.	219607.	7082.
722.	10365.	98083[illegible].	720984.	10013.	242831.	8575.
723.	11424.	113831[illegible].	854194.	11329.	267163.	10276.

RATING TABLE FOR SECTION 23.05 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	704.1	0.0	0.0						
BANK FULL	705.3	37.4	187.1	0.0	0.0	0.0			
1	711.0	1064.9	1065.0	0.0	0.0	0.0	1065.00	707.0	0.00036
2	712.7	2084.3	2225.0	0.0	0.0	0.0	2225.00	708.6	0.00031
3	713.9	2852.7	3240.0	0.0	0.0	0.0	3240.00	709.8	0.00031
4	714.3	3187.9	3760.0	0.0	0.0	0.0	3760.00	710.0	0.00032
5	715.4	4008.4	5060.0	0.0	0.0	0.0	5060.00	710.4	0.00033

SEGMENT TABLE FOR SECTION 23.05

CSM		TOTAL	SEG NO 1 N	SEG NO 2 N	SEG NO 3 C	SEG NO 4 N
1	DISCHARGE CFS	1065.	268.	12.	780.	5.
1065.	VELOCITY FPS	1.97	0.41	0.36	2.22	0.22
2	DISCHARGE CFS	2225.	1044.	26.	1140.	14.
2225.	VELOCITY FPS	1.90	0.68	0.48	2.54	0.29
3	DISCHARGE CFS	3240.	1739.	39.	1439.	23.
3240.	VELOCITY FPS	1.95	0.79	0.55	2.77	0.32
4	DISCHARGE CFS	3760.	2093.	46.	1593.	28.
3760.	VELOCITY FPS	2.01	0.84	0.60	2.92	0.35
5	DISCHARGE CFS	5060.	3018.	62.	1940.	40.
5060.	VELOCITY FPS	2.12	0.94	0.68	3.19	0.40
1	ELEV 711.0 KD	54526.	11485.	639.	42126.	276.
2	ELEV 712.7 KD	125353.	57949.	1492.	65109.	804.
3	ELEV 713.9 KD	185277.	99086.	2254.	82603.	1335.
4	ELEV 714.3 KD	211661.	117471.	2590.	90017.	1563.
5	ELEV 715.4 KD	279396.	166238.	3407.	107532.	2219.

KD TABLE FOR CROSS SECTION 23.05

ELEVATION	AREA	KD	KD BY SEGMENT			
704.10	0.					
705.	24.	396.	1.	1.	592.	1.
706.	71.	2208.	2.	1.	2203.	3.
707.	128.	5286.	19.	1.	5255.	8.
708.	197.	10137.	138.	1.	10066.	28.
709.	296.	17890.	348.	51.	17412.	63.
710.	568.	30558.	1599.	280.	28665.	115.
711.	1072.	56808.	11776.	645.	42513.	275.
712.	1663.	95762.	37956.	1121.	55873.	564.
713.	2283.	141795.	69330.	1689.	69550.	937.
714.	2938.	192472.	104027.	2347.	84619.	1403.
715.	3683.	252023.	146172.	3088.	100930.	1966.
716.	4501.	324123.	199566.	3908.	117945.	2660.
717.	5373.	410500.	265892.	4800.	136220.	3352.
718.	6284.	507724.	342127.	5768.	155541.	4061.
719.	7239.	612359.	424651.	6806.	175878.	4893.
720.	8247.	726526.	515289.	7912.	197205.	5978.
721.	9306.	859098.	623255.	9088.	219507.	7324.
722.	10365.	1006116.	745640.	10356.	243331.	8868.
723.	11424.	1168218.	883406.	11717.	267163.	10627.

ROAD SECTION 23.00

NO.	HW	CFS	HL	TW	CSM
0	703.60	0.00	0.00	0.00	0.00
1	710.53	1065.00	0.12	710.42	1065.00
2	712.27	2225.00	0.34	711.93	2225.00
3	713.47	3240.00	0.46	713.01	3240.00
4	713.93	3760.00	0.42	713.51	3760.00
5	714.97	5060.00	0.32	714.65	5060.00

MIN ROAD ELEVATION = 712.00

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 717.30 OPENING NO.= 1

RATING TABLE FOR SECTION 23.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHAN EL	NON-CHAN	CSM	CRIT ELEV	FRICTION SLOPE
0	704.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BANK FULL	707.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	7[illegible].[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	712.3	1824.7	2225.0	0.0	0.0	0.0	[illegible]	7[illegible].[illegible]	[illegible]
3	713.5	2589.7	3240.0	0.0	0.0	0.0	3240.0	7[illegible].[illegible]	0.00041
4	713.9	2892.8	3760.0	0.0	0.0	0.0	3760.0	710.0	0.00041
5	715.0	3663.3	5060.0	0.0	0.0	0.0	5060.0	710.4	0.00043

SEGMENT TABLE FOR SECTION 23.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4
1	DISCHARGE CFS	1065.	115.	12.	934.	5.
1065.	VELOCITY FPS	2.71	0.27	0.43	2.88	0.26
2	DISCHARGE CFS	2225.	940.	26.	1248.	13.
2225.	VELOCITY FPS	2.26	0.72	0.51	2.93	0.31
3	DISCHARGE CFS	3240.	1655.	38.	1526.	22.
3240.	VELOCITY FPS	2.21	0.84	0.58	3.[illegible]	0.35
4	DISCHARGE CFS	3760.	1996.	45.	1693.	27.
3760.	VELOCITY FPS	2.28	0.90	0.63	3.[illegible]	0.37
5	DISCHARGE CFS	5060.	2895.	61.	2061.	39.
5060.	VELOCITY FPS	2.39	1.00	0.72	3.[illegible]	0.42
1	ELEV 710.5 KD	40159.	4161.	447.	3537[illegible]	174.
2	ELEV 712.3 KD	105217.	43943.	1220.	5942[illegible]	632.
3	ELEV 713.5 KD	161736.	82166.	1919.	7654[illegible]	1104.
4	ELEV 713.9 KD	185110.	98025.	2221.	8354[illegible]	1321.
5	ELEV 715.0 KD	245295.	140151.	2966.	10029[illegible]	1885.

KD TABLE FOR CROSS SECTION 23.01

ELEVATION	AREA	KD	KD BY SEGMENT			
704.10	0.					
705.	24.	39 .	1.	1.	392.	1.
706.	71.	220 .	2.	1.	1203.	3.
707.	128.	528 .	18.	1.	5255.	8.
708.	197.	1013 .	133.	1.	5966.	27.
709.	296.	1787 .	336.	49.	11412.	61.
710.	568.	3048 .	1546.	271.	28265.	111.
711.	1072.	5634 .	11386.	623.	42313.	270.
712.	1663.	9444 .	36701.	1084.	55873.	546.
713.	2283.	13941 .	67037.	1633.	69650.	506.
714.	2938.	18890 .	100587.	2269.	84619.	1356.
715.	3683.	24702 .	141339.	2986.	100730.	1901.
716.	4501.	31730 .	192967.	3779.	117545.	2543.
717.	5373.	40143 .	257099.	4642.	136220.	3241.
718.	6284.	49608 .	330814.	5577.	155541.	3926.
719.	7239.	59792 .	410609.	6581.	175678.	4731.
720.	8247.	70902 .	498250.	7651.	197205.	5780.
721.	9306.	83794 .	602646.	8788.	219507.	7082.
722.	10365.	98083 .	720984.	10013.	242831.	8575.
723.	11424.	113831 .	854194.	11329.	267163.	10276.

RATING TABLE FOR SECTION 23.05 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	704.1	0.0	0.0						
BANK FULL	705.3	37.4	187.1	0.0	0.0	0.0			
1	711.0	1064.9	1065.0	0.0	0.0	0.0	1065.00	707.0	0.00036
2	712.7	2084.3	2225.0	0.0	0.0	0.0	2225.00	708.6	0.00031
3	713.9	2852.7	3240.0	0.0	0.0	0.0	3240.00	709.8	0.00031
4	714.3	3187.9	3760.0	0.0	0.0	0.0	3760.00	710.0	0.00032
5	715.4	4008.4	5060.0	0.0	0.0	0.0	5060.00	710.4	0.00033

SEGMENT TABLE FOR SECTION 23.05

CSM		TOTAL	SEG NO 1 N	SEG NO 2 N	SEG NO 3 C	SEG NO 4 N
1	DISCHARGE CFS	1065.	268.	12.	780.	5.
1065.	VELOCITY FPS	1.97	0.41	0.36	2.22	0.22
2	DISCHARGE CFS	2225.	1044.	26.	1144.	14.
2225.	VELOCITY FPS	1.90	0.68	0.48	2.54	0.29
3	DISCHARGE CFS	3240.	1739.	39.	1439.	23.
3240.	VELOCITY FPS	1.95	0.79	0.55	2.77	0.33
4	DISCHARGE CFS	3760.	2093.	46.	1593.	28.
3760.	VELOCITY FPS	2.01	0.84	0.60	2.92	0.36
5	DISCHARGE CFS	5060.	3018.	62.	1940.	40.
5060.	VELOCITY FPS	2.12	0.94	0.68	3.19	0.40
1	ELEV 711.0 KD	54526.	11485.	639.	42126.	276.
2	ELEV 712.7 KD	125353.	57949.	1492.	65109.	804.
3	ELEV 713.9 KD	185277.	99086.	2254.	82603.	1335.
4	ELEV 714.3 KD	211661.	117471.	2550.	90017.	1563.
5	ELEV 715.4 KD	279396.	166238.	3407.	107531.	2219.

KD TABLE FOR CROSS SECTION 23.05

ELEVATION	AREA	KD	KD BY SEGMENT			
704.10	0.					
705.	24.	396.	1.	1.	392.	1.
706.	71.	2208.	2.	1.	2103.	3.
707.	128.	5286.	19.	1.	5255.	8.
708.	197.	10137.	138.	1.	10066.	28.
709.	296.	17890.	348.	51.	17412.	63.
710.	568.	30558.	1599.	280.	28665.	115.
711.	1072.	56808.	11776.	645.	43513.	279.
712.	1663.	95762.	37956.	1121.	55873.	564.
713.	2283.	141795.	69330.	1689.	69550.	987.
714.	2938.	192472.	104027.	2347.	84619.	1403.
715.	3683.	252023.	146172.	3088.	100730.	1966.
716.	4501.	324123.	199566.	3908.	117945.	2650.
717.	5373.	410500.	265892.	4800.	136220.	3352.
718.	6284.	507724.	342127.	5768.	155541.	4061.
719.	7239.	612359.	424651.	6806.	175878.	4853.
720.	8247.	726526.	515289.	7912.	197205.	5978.
721.	9306.	859098.	623255.	9088.	219507.	7324.
722.	10365.	1006116.	745640.	10356.	243731.	8868.
723.	11424.	1168218.	883406.	11717.	269163.	10627.

RATING TABLE FOR SECTION 23.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	705.2	0.0	0.0						
BANK FULL	707.3	76.7	23.7	0.0	0.0	0.0			
1	712.1	749.9	1 65.0	0.0	0.0	0.0	1065.00	708.2	0.00051
2	714.0	1649.5	2 25.0	0.0	0.0	0.0	2225.00	709.6	0.00061
3	715.3	2419.3	3 40.0	0.0	0.0	0.0	3240.00	711.1	0.00064
4	715.8	2739.8	3 60.0	0.0	0.0	0.0	3760.00	711.5	0.00064
5	716.8	3473.6	5 60.0	0.0	0.0	0.0	5060.00	711.9	0.00066

SEGMENT TABLE FOR SECTION 23.50

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N
1	DISCHARGE CFS	1065.	0.	74.	980.	10.
1065.	VELOCITY FPS	2.61	0.0	0.24	2.70	0.14
2	DISCHARGE CFS	2225.	3.	339.	1745.	139.
2225.	VELOCITY FPS	3.25	0.12	0.45	3.85	0.35
3	DISCHARGE CFS	3240.	78.	594.	2275.	292.
3240.	VELOCITY FPS	3.47	0.39	0.57	4.11	0.47
4	DISCHARGE CFS	3760.	213.	706.	2478.	363.
3760.	VELOCITY FPS	3.50	0.71	0.61	4.25	0.52
5	DISCHARGE CFS	5060.	561.	982.	2975.	541.
5060.	VELOCITY FPS	3.59	1.06	0.70	4.60	0.61
1	ELEV 712.1 KD	46795.	1.	2990.	43527.	277.
2	ELEV 714.0 KD	89737.	67.	13538.	70703.	5430.
3	ELEV 715.3 KD	127789.	2449.	23511.	90294.	11535.
4	ELEV 715.8 KD	146136.	6066.	27728.	98166.	14176.
5	ELEV 716.8 KD	197022.	20994.	38328.	116647.	21053.

KD TABLE FOR CROSS SECTION 23.50

ELEVATION	AREA	KD	KD BY SEGMENT			
705.20	0.					
706.	19.	314.	1.	1.	311.	1.
707.	61.	1709.	1.	1.	1705.	1.
708.	117.	4540.	1.	1.	4535.	3.
709.	178.	9317.	1.	2.	9308.	6.
710.	241.	16854.	1.	8.	16824.	20.
711.	403.	28222.	1.	527.	27585.	43.
712.	706.	44959.	1.	2586.	41850.	195.
713.	1145.	65419.	1.	7176.	56078.	1888.
714.	1632.	89074.	57.	13283.	76185.	5272.
715.	2231.	118117.	1222.	20937.	85535.	9909.
716.	2895.	158402.	9265.	29949.	102075.	15608.
717.	3595.	206411.	23693.	40196.	115763.	22292.
718.	4324.	261597.	40996.	51550.	138555.	29848.
719.	5078.	324409.	63036.	64066.	158436.	38339.
720.	5859.	393307.	88330.	77666.	174673.	47676.
721.	6678.	466721.	115075.	92303.	201338.	57885.
722.	7565.	546389.	145269.	107938.	224305.	68872.
723.	8536.	640332.	186728.	124387.	248239.	80514.
724.	9552.	747560.	238822.	141852.	273144.	92989.
725.	10606.	863653.	298047.	160283.	299002.	106256.
726.	11710.	969887.	344288.	179545.	325779.	120208.
727.	12815.	1083271.	395020.	200052.	355527.	135206.
728.	13920.	1203923.	450440.	221823.	382234.	151276.

RATING TABLE FOR SECTION 23.55 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	705.8	0.0	0.0						
BANK FULL	707.9	76.7	323.0	0.0	0.0	0.0			
1	712.7	756.2	1065.0	0.0	0.0	0.0	1065.00	708.8	0.00051
2	714.8	1710.6	2225.0	0.0	0.0	0.0	2225.00	710.2	0.00060
3	716.0	2522.6	3240.0	0.0	0.0	0.0	3240.00	711.7	0.00062
4	716.5	2850.1	3760.0	0.0	0.0	0.0	3760.00	712.1	0.00063
5	717.6	3605.2	5060.0	0.0	0.0	0.0	5060.00	712.5	0.00065

SEGMENT TABLE FOR SECTION 23.55

CSM		TOTAL	SEG NO 1 N	SEG NO 2 N	SEG NO 3 C	SEG NO 4 N
1	DISCHARGE CFS	1065.	0.	68.	988.	9.
1065.	VELOCITY FPS	2.63	0.0	0.22	2.71	0.12
2	DISCHARGE CFS	2225.	3.	317.	1772.	133.
2225.	VELOCITY FPS	3.26	0.11	0.41	3.65	0.32
3	DISCHARGE CFS	3240.	107.	554.	2301.	277.
3240.	VELOCITY FPS	3.48	0.46	0.51	4.[illegible]	0.43
4	DISCHARGE CFS	3760.	230.	660.	252[illegible]	344.
3760.	VELOCITY FPS	3.53	0.69	0.55	4.[illegible]	0.47
5	DISCHARGE CFS	5060.	561.	924.	30[illegible]	514.
5060.	VELOCITY FPS	3.66	0.98	0.64	4.[illegible]	0.56
1	ELEV 712.7 KD	46760.	1.	2729.	437[illegible]	260.
2	ELEV 714.8 KD	90993.	105.	12948.	725[illegible]	5389.
3	ELEV 716.0 KD	128981.	2948.	22196.	927[illegible]	11038.
4	ELEV 716.5 KD	148070.	7342.	26204.	1009[illegible]	13582.
5	ELEV 717.6 KD	197589.	21414.	36102.	1200[illegible]	20037.

KD TABLE FOR CROSS SECTION 23.55

ELEVATION	AREA	KD	KD BY SEGMENT			
705.80	0.					
706.	3.	2.	1.	1.	17.	1.
707.	34.	75.	1.	1.	749.	1.
708.	82.	263.	1.	1.	2632.	1.
709.	141.	616.	1.	1.	6158.	3.
710.	203.	1200.	1.	2.	11989.	9.
711.	298.	2087.	1.	52.	20706.	26.
712.	497.	3410.	1.	949.	33033.	43.
713.	868.	5278.	1.	3911.	48246.	622.
714.	1336.	7300.	3.	8454.	61570.	2733.
715.	1656.	9747.	221.	14477.	76163.	6283.
716.	2490.	12827.	2688.	21827.	92014.	10809.
717.	3171.	16975.	13768.	30336.	109618.	16260.
718.	3883.	21699.	27035.	39911.	127153.	22562.
719.	4618.	27129.	44572.	50576.	146400.	29758.
720.	5384.	33224.	65583.	62094.	166695.	37582.
721.	6180.	39721.	88153.	74582.	188038.	46205.
722.	7033.	46735.	113174.	87994.	210401.	55573.
723.	7954.	54600.	143915.	102280.	233759.	65645.
724.	8928.	63602.	183951.	117490.	258104.	76469.
725.	9969.	74057.	235387.	133371.	283577.	87836.
726.	11048.	84242.	282661.	150123.	309600.	99921.
727.	12153.	94284.	325606.	167795.	336766.	112772.
728.	13257.	104977.	372638.	186587.	364899.	126567.

RATING TABLE FOR SECTION 23.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	706.6	0.0	0.0						
BANK FULL	708.6	78.7	311.6	0.0	0.0	0.0			
1	713.4	501.8	1065.0	0.0	0.0	0.0	1065.00	709.4	0.00057
2	715.5	1703.4	2225.0	0.0	0.0	0.0	2225.00	710.8	0.00054
3	716.7	2611.1	3240.0	0.0	0.0	0.0	3240.00	711.9	0.00049
4	717.2	2995.6	3760.0	0.0	0.0	0.0	3760.00	712.4	0.00050
5	718.3	3951.2	5060.0	0.0	0.0	0.0	5060.00	714.1	0.00051

SEGMENT TABLE FOR SECTION 23.90

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	2.	22.	1039.	3.	0.
1065.	VELOCITY FPS	2.84	0.09	0.23	2.86	0.13	0.0
2	DISCHARGE CFS	2225.	258.	231.	1672.	64.	0.
2225.	VELOCITY FPS	3.02	0.62	0.40	3.45	0.29	0.0
3	DISCHARGE CFS	3240.	600.	471.	2023.	146.	0.
3240.	VELOCITY FPS	2.90	0.80	0.51	3.02	0.38	0.0
4	DISCHARGE CFS	3760.	757.	596.	2216.	190.	0.
3760.	VELOCITY FPS	2.95	0.84	0.56	3.37	0.42	0.0
5	DISCHARGE CFS	5060.	1158.	915.	2683.	304.	0.
5060.	VELOCITY FPS	3.05	0.86	0.67	4.11	0.50	0.0
1 ELEV	713.4 KD	44689.	15.	914.	43645.	114.	1.
2 ELEV	715.5 KD	95069.	10251.	9721.	72410.	2685.	1.
3 ELEV	716.7 KD	146338.	26911.	21147.	91731.	6548.	1.
4 ELEV	717.2 KD	168453.	33632.	26484.	99922.	8414.	1.
5 ELEV	718.3 KD	223860.	51036.	40342.	119093.	13389.	1.

KD TABLE FOR CROSS SECTION 23.90

ELEVATION	AREA	KD	KD BY SEGMENT				
706.59	0.						
707.	6.	50.	1.	1.	46.	1.	1.
708.	46.	1036.	1.	1.	1031.	1.	1.
709.	102.	3667.	1.	2.	3662.	1.	1.
710.	162.	7863.	1.	8.	7850.	3.	1.
711.	227.	14582.	1.	40.	14532.	5.	1.
712.	306.	24433.	1.	239.	24157.	15.	1.
713.	399.	38424.	1.	745.	37613.	62.	1.
714.	720.	54556.	250.	1546.	53851.	295.	1.
715.	1367.	79111.	4216.	6083.	65578.	1568.	1.
716.	2070.	115304.	16606.	13852.	80095.	4037.	1.
717.	2612.	157932.	30283.	23823.	96981.	7478.	1.
718.	3640.	206078.	45312.	35779.	113896.	11756.	1.
719.	4581.	266459.	68177.	49519.	131101.	16754.	1.
720.	5575.	345906.	107566.	65112.	150274.	22576.	1.
721.	6561.	435556.	153569.	82354.	173481.	29123.	1.
722.	7679.	520175.	193540.	100952.	191681.	33878.	1.
723.	8881.	627895.	249576.	121096.	213867.	42452.	94.
724.	10135.	751482.	315569.	142682.	235615.	52814.	1930.
725.	11406.	889173.	390667.	166054.	261331.	64411.	8526.
726.	12681.	1042771.	478256.	191711.	285331.	77764.	34842.
727.	13954.	1213148.	579531.	219739.	313259.	92929.	132620.

TABLE OF VALUES FOR BRR EQUATION

COEFA	AKB	DGTAK	SIGMA	DKE	DKS	F	ALPHA	ALPHA2	EPIGA	APPAR	AEXIT
0.0197	0.0	0.0267	0.9969	0.0	-0.0070	0.9900	1.0000	1.0000	[illegible].4709	560.0820	[illegible]
DCRIT	709.06	KBCRIT=									
0.4321	0.4555	0.0254	0.9283	0.0	-0.0517	0.7552	1.0000	1.0000	7[illegible]4.9187	1938.4392	18[illegible]7.4555
DCRIT	710.07	KBCRIT=									
0.7194	0.7945	0.0237	0.8621	0.0	-0.0989	0.6404	1.0000	1.0000	519.0820	2953.0571	2784.1418
DCRIT	710.79	KBCRIT=									
0.8067	0.8981	0.0232	0.6409	0.0	-0.1146	0.6053	1.0000	1.0000	568.8782	3404.3738	3168.8630
DCRIT	711.13	KBCRIT=									
1.0457	1.1840	0.0217	0.7818	0.0	-0.1600	0.5302	1.0000	1.0000	1079.3257	4667.0937	41[illegible].0000
DCRIT	711.93	KBCRIT=									

ROAD SECTION 24.00

NO.	HW	CFS	HL	TW	CSM
0	706.40	0.00	0.00	0.00	0.00
1	713.46	1065.00	0.0	713.46	1065.00
2	715.61	2225.00	0.08	715.53	2225.00
3	716.97	3240.00	0.20	716.77	3240.00
4	717.53	3760.00	0.26	717.27	3760.00
5	718.88	5060.00	0.50	718.38	5060.00

MIN ROAD ELEVATION 720.00

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 719.30 OPENING NO.= 1

RATING TABLE FOR SECTION 24.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	706.6	0.0	0.0						
BANK FULL	708.6	78.7	309.1	0.0	0.0	0.0			
1	713.5	515.0	1065.0	0.0	0.0	0.0	1065.00	709.4	0.00055
2	715.6	1794.8	2225.0	0.0	0.0	0.0	2225.00	710.8	0.00049
3	717.0	2800.7	3240.0	0.0	0.0	0.0	3240.00	711.9	0.00044
4	717.5	3231.6	3760.0	0.0	0.0	0.0	3760.00	712.4	0.00043
5	718.9	4469.0	5060.0	0.0	0.0	0.0	5060.00	714.1	0.00040

SEGMENT TABLE FOR SECTION 24.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	2.	21.	1039.	3.	0.
1065.	VELOCITY FPS	2.81	0.08	0.21	2.84	0.12	0.0
2	DISCHARGE CFS	2225.	272.	235.	1653.	66.	0.
2225.	VELOCITY FPS	2.91	0.61	0.38	3.36	0.28	0.0
3	DISCHARGE CFS	3240.	615.	484.	1988.	153.	0.
3240.	VELOCITY FPS	2.77	0.75	0.49	3.[illegible]	0.37	0.0
4	DISCHARGE CFS	3760.	773.	609.	218[illegible]	197.	0.
3760.	VELOCITY FPS	2.78	0.78	0.53	3.[illegible]	0.40	0.0
5	DISCHARGE CFS	5060.	1270.	925.	255[illegible]	313.	0.
5060.	VELOCITY FPS	2.72	0.79	0.62	3.[illegible]	0.46	0.0
1 ELEV 713.5 KD		45506.	19.	907.	4445[illegible]	120.	1.
2 ELEV 715.6 KD		99984.	12126.	10541.	7435[illegible]	2964.	1.
3 ELEV 717.0 KD		154952.	29124.	22910.	9573[illegible]	7185.	1.
4 ELEV 717.5 KD		180985.	37148.	29289.	10510[illegible]	9447.	1.
5 ELEV 718.9 KD		253429.	62401.	46386.	12899[illegible]	15647.	1.

D TABLE FOR CROSS SECTION 24.01

ELEVATION	AREA	D	KD BY SEGMENT				
706.59	0.						
707.	6.	5.	1.	1.	46.	1.	1.
708.	46.	103.	1.	1.	1031.	1.	1.
709.	102.	366.	1.	2.	3662.	1.	1.
710.	162.	786.	1.	6.	7850.	3.	1.
711.	227.	1458.	1.	39.	14532.	5.	1.
712.	306.	2442.	1.	231.	24157.	14.	1.
713.	395.	3839.	1.	721.	37513.	60.	1.
714.	720.	5447.	242.	1497.	51891.	285.	1.
715.	1367.	7868.	4082.	5890.	65978.	1508.	1.
716.	2070.	11419.	16079.	13412.	80195.	3909.	1.
717.	2812.	15597.	29322.	23067.	95581.	7240.	1.
718.	3640.	20312.	43874.	34643.	112956.	11363.	1.
719.	4581.	26217.	66012.	47947.	131101.	16222.	1.
720.	5575.	33969.	104150.	63044.	150274.	21861.	1.
721.	6581.	42713.	148712.	79739.	170481.	28198.	1.
722.	7679.	50974.	187395.	97746.	191681.	32802.	1.
723.	6881.	61475.	241650.	117251.	213667.	41104.	91.
724.	10135.	73515.	305548.	138151.	237015.	51137.	1868.
725.	11406.	86922.	378281.	160781.	261131.	62366.	8258.
726.	12681.	101867.	463069.	185623.	286231.	75265.	33735.
727.	13954.	118432.	561129.	212761.	311299.	89979.	126409.

RATING TABLE FOR SECTION 24.08 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	707.4	0.0	0.0						
BANK FULL	709.4	78.7	303.7	0.0	0.0	0.0			
1	714.4	544.9	1065.0	0.0	0.0	0.0	1065.00	710.2	0.00050
2	716.5	1831.7	2225.0	0.0	0.0	0.0	2225.00	711.6	0.00045
3	717.8	2799.4	3240.0	0.0	0.0	0.0	3240.00	712.7	0.00041
4	718.3	3210.1	3760.0	0.0	0.0	0.0	3760.00	713.2	0.00040
5	719.6	4392.4	5060.0	0.0	0.0	0.0	5060.00	714.9	0.00038

SEGMENT TABLE FOR SECTION 24.08

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	2.	24.	1036.	4.	0.
1065.	VELOCITY FPS	2.74	0.09	0.20	2.77	0.12	0.0
2	DISCHARGE CFS	2225.	299.	257.	1594.	73.	0.
2225.	VELOCITY FPS	2.76	0.65	0.41	3.22	0.30	0.0
3	DISCHARGE CFS	3240.	650.	511.	1917.	161.	0.
3240.	VELOCITY FPS	2.63	0.79	0.52	3.35	0.39	0.0
4	DISCHARGE CFS	3760.	811.	640.	2103.	206.	0.
3760.	VELOCITY FPS	2.65	0.82	0.57	3.46	0.42	0.0
5	DISCHARGE CFS	5060.	1302.	966.	2466.	326.	0.
5060.	VELOCITY FPS	2.61	0.83	0.65	3.52	0.49	0.0
1 ELEV	714.4 KD	47586.	43.	1052.	46334.	156.	1.
2 ELEV	716.5 KD	104217.	13803.	11932.	75110.	3371.	1.
3 ELEV	717.8 KD	160525.	31879.	25077.	95704.	7864.	1.
4 ELEV	718.3 KD	186756.	40215.	31703.	104629.	10212.	1.
5 ELEV	719.6 KD	259724.	65765.	49672.	127566.	16721.	1.

KD TABLE FOR CROSS SECTION 24.08

ELEVATION	AREA	KD	KD BY SEGMENT				
707.39	0.						
708.	12.	153.	1.	1.	148.	1.	1.
709.	57.	1440.	1.	1.	436.	1.	1.
710.	114.	4349.	1.	3.	843.	1.	1.
711.	174.	8971.	1.	13.	1453.	3.	1.
712.	241.	16269.	1.	55.	1[illegible]38.	6.	1.
713.	323.	26855.	1.	356.	2[illegible]76.	19.	1.
714.	448.	41368.	4.	871.	4[illegible]91.	66.	1.
715.	844.	58717.	539.	2286.	5[illegible]89.	472.	1.
716.	1505.	86824.	6481.	7846.	6[illegible]228.	2074.	1.
717.	2215.	125824.	20332.	16606.	8[illegible]162.	4929.	1.
718.	2967.	171174.	35094.	27631.	9[illegible]298.	8762.	1.
719.	3821.	222503.	51535.	40719.	11[illegible]535.	13449.	1.
720.	4780.	290257.	79756.	55639.	134852.	18923.	1.
721.	5776.	375397.	122813.	72490.	154232.	25244.	1.
722.	6801.	468557.	170838.	91064.	17[illegible]640.	31865.	1.
723.	7901.	559217.	214754.	111336.	19[illegible]051.	37046.	1.
724.	9126.	678032.	278498.	132975.	21[illegible]430.	47210.	293.
725.	10390.	810312.	349666.	156110.	24[illegible]63.	58341.	2775.
726.	11663.	956237.	431882.	181378.	26[illegible]78.	70955.	12062.
727.	12936.	1123261.	527563.	209087.	29[illegible]72.	85511.	48556.

RATING TABLE FOR SECTION 24.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	707.7	0.0	0.0						
BANK FULL	709.8	44.0	515.9	0.0	0.0	0.0			
1	714.8	1617.4	1065.0	0.0	0.0	0.0	1065.00	711.6	0.00075
2	716.8	3469.0	2225.0	0.0	0.0	0.0	2225.00	713.2	0.00055
3	718.1	4727.1	3240.0	0.0	0.0	0.0	3240.00	713.5	0.00050
4	718.6	5250.5	3760.0	0.0	0.0	0.0	3760.00	713.6	0.00049
5	719.9	6520.7	5060.0	0.0	0.0	0.0	5060.00	713.8	0.00047

SEGMENT TABLE FOR SECTION 24.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	311.	646.	107.
1065.	VELOCITY FPS	2.07	0.29	2.61	0.37
2	DISCHARGE CFS	2225.	1055.	904.	266.
2225.	VELOCITY FPS	1.78	0.41	2.74	0.46
3	DISCHARGE CFS	3240.	1745.	1101.	394.
3240.	VELOCITY FPS	1.73	0.48	2.86	0.54
4	DISCHARGE CFS	3760.	2092.	1208.	459.
3760.	VELOCITY FPS	1.75	0.52	2.97	0.57
5	DISCHARGE CFS	5060.	2985.	1454.	621.
5060.	VELOCITY FPS	1.77	0.59	3.16	0.63
1 ELEV 714.8 KD		38765.	11052.	23834.	3879.
2 ELEV 716.8 KD		94792.	44833.	36613.	11346.
3 ELEV 718.1 KD		145281.	77954.	49642.	17684.
4 ELEV 716.6 KD		169309.	94085.	54546.	20679.
5 ELEV 719.9 KD		233114.	137382.	67124.	28604.

KD TABLE FOR CROSS SECTION 24.10

ELEVATION	AREA	KD	KD BY SEGMENT		
707.73	0.				
708.	2.	14.	1.	11.	1.
709.	20.	497.	1.	494.	1.
710.	50.	1856.	2.	1853.	1.
711.	88.	4333.	3.	4328.	1.
712.	135.	8115.	10.	8098.	4.
713.	363.	13857.	233.	12920.	226.
714.	942.	24573.	3848.	18635.	1782.
715.	1788.	43211.	13497.	25147.	4487.
716.	2716.	69417.	28848.	32399.	7978.
717.	3680.	102457.	49630.	40381.	12299.
718.	4662.	142595.	76112.	49051.	17336.
719.	5649.	188386.	106893.	58382.	23045.
720.	6640.	239431.	141637.	68348.	29386.
721.	7635.	295791.	180459.	78943.	36376.
722.	8635.	356709.	222635.	90128.	43921.
723.	9639.	422232.	268260.	101898.	52035.
724.	10648.	492373.	317371.	114241.	60724.
725.	11662.	564013.	369761.	127143.	69971.
726.	12685.	636575.	425633.	140602.	78334.
727.	13758.	718049.	484164.	154582.	79280.
728.	14834.	805912.	545850.	169090.	90921.
729.	15913.	899371.	610693.	184123.	104530.
730.	16994.	996866.	678391.	199660.	118801.
731.	18079.	1097960.	748634.	215686.	133598.
732.	19166.	1203513.	822073.	232218.	149204.
733.	20256.	1312675.	898084.	249228.	165342.
734.	21348.	1425570.	976773.	266713.	182059.
735.	22443.	1542354.	1058194.	284681.	199477.
736.	23542.	1659209.	1138810.	303100.	217282.
737.	24640.	1780391.	1222443.	322007.	235973.
738.	25739.	1905906.	1309100.	341400.	255362.

RATING TABLE FOR SECTION 24.70 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	709.1	0.0	0.0						
BANK FULL	710.6	39.6	209.7	0.0	0.0	0.0			
1	716.7	1098.0	1065.0	0.0	0.0	0.0	1065.00	712.3	0.00069
2	718.5	2784.2	2225.0	0.0	0.0	0.0	2225.00	714.4	0.00068
3	719.7	4041.8	3240.0	0.0	0.0	0.0	3240.00	715.8	0.00061
4	720.2	4521.6	3760.0	0.0	0.0	0.0	3760.00	716.0	0.00061
5	721.4	5796.8	5060.0	0.0	0.0	0.0	5060.00	716.4	0.00057

SEGMENT TABLE FOR SECTION 24.70

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	12.	879.	174.
1065.	VELOCITY FPS	2.59	0.36	2.81	0.23
2	DISCHARGE CFS	2225.	44.	1271.	913.
2225.	VELOCITY FPS	2.50	0.47	3.23	0.40
3	DISCHARGE CFS	3240.	83.	1494.	1663.
3240.	VELOCITY FPS	2.32	0.55	3.34	0.[illegible]
4	DISCHARGE CFS	3760.	104.	1625.	2031
3760.	VELOCITY FPS	2.32	0.60	3.47	0.[illegible]
5	DISCHARGE CFS	5060.	163.	1878.	3031
5060.	VELOCITY FPS	2.26	0.69	3.59	0.[illegible]
1 ELEV	716.7 KD	39864.	448.	33702.	5715
2 ELEV	718.5 KD	84784.	1662.	49325.	3379[illegible]
3 ELEV	719.7 KD	131327.	3316.	61201.	6681[illegible]
4 ELEV	720.2 KD	152337.	4206.	65976.	8215[illegible]
5 ELEV	721.4 KD	212458.	6827.	79267.	12636[illegible]

KD TABLE FOR CROSS SECTION 24.70

ELEVATION	AREA	KD	KD BY SEGMENT		
709.09	0.				
710.	17.	306.	1.	306.	1.
711.	57.	2018.	3.	2018.	1.
712.	102.	5123.	7.	5123.	2.
713.	149.	9461.	26.	9461.	4.
714.	200.	14811.	66.	14811.	6.
715.	290.	21067.	123.	21067.	127.
716.	619.	30181.	238.	20181.	1423.
717.	1330.	45781.	577.	36102.	8614.
718.	2260.	70021.	1218.	44783.	25726.
719.	3310.	103601.	2238.	54196.	46957.
720.	4356.	145161.	3896.	64315.	76618.
721.	5407.	193441.	5981.	75114.	112268.
722.	6463.	247651.	8415.	86569.	152485.
723.	7523.	307931.	11235.	98669.	197862.
724.	8588.	373941.	14424.	111397.	247397.
725.	9656.	445421.	17979.	124736.	302136.
726.	10729.	522151.	21895.	138672.	361564.
727.	11807.	603571.	26145.	153186.	424179.
728.	12890.	690101.	30765.	168275.	490989.
729.	13975.	781881.	35773.	183930.	561135.
730.	15063.	878531.	41151.	200137.	631235.
731.	16154.	979261.	46876.	216881.	715455.
732.	17247.	1084661.	52995.	234161.	797457.
733.	18342.	1194811.	59519.	251973.	885307.
734.	19441.	1303611.	61383.	270294.	971623.
735.	20540.	1416721.	62759.	289144.	1064943.
736.	21639.	1534801.	64113.	308520.	1162050.

TABLE OF VALUES FOR BRR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.1356	0.0038	0.1315	0.9975	0.0	0.0003	0.9948	1.0000	1.0000	550.1504	582.5662	579.6931
DCRIT	714.59	KBCRIT=									
0.1934	0.0636	0.1264	0.9920	0.0	0.0034	0.9490	1.0000	1.0000	789.5212	1140.0759	1131.5366
DCRIT	715.79	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	855.4128	1140.0759	1131.5366
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	855.4128	1140.0759	1131.5366
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	855.4128	1140.0759	1131.5366
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 25.00

NO.	HW	CFS	HL	TW	CSM
0	712.00	0.00	0.00	0.00	0.00
1	718.82	1065.00	0.0	718.82	1065.00
2	721.05	2225.00	0.0	721.05	2225.00
3	722.53	3240.00	0.30	722.23	3240.00
4	723.05	3760.00	0.32	722.73	3760.00
5	724.20	5060.00	0.32	723.87	5060.00

MIN ROAD ELEVATION 720.00

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 722.00 OPENING NO.= 1

RATING TABLE FOR SECTION 25.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	711.7	0.0	0.0						
BANK FULL	712.9	59.1	77.8	0.0	0.0	0.0			
1	718.9	634.2	1 65.0	0.0	0.0	0.0	1065.00	714.0	0.00050
2	721.1	1307.4	2 25.0	0.0	0.0	0.0	2225.00	715.5	0.00068
3	722.6	2007.7	3 40.0	0.0	0.0	0.0	3240.00	716.4	0.00064
4	723.1	2287.9	3 60.0	0.0	0.0	0.0	3760.00	716.8	0.00065
5	724.3	2949.5	5 60.0	0.0	0.0	0.0	5060.00	717.7	0.00068

SEGMENT TABLE FOR SECTION 25.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1065.	0.	46.	997.	23.	0.
1065.	VELOCITY FPS	2.32	0.0	0.29	2.39	0.36	0.0
2	DISCHARGE CFS	2225.	26.	186.	1848.	67.	97.
2225.	VELOCITY FPS	3.08	0.47	0.56	3.35	0.40	0.48
3	DISCHARGE CFS	3240.	104.	294.	2299.	140.	403.
3240.	VELOCITY FPS	3.05	0.71	0.67	3.59	0.52	0.79
4	DISCHARGE CFS	3760.	151.	344.	2518.	174.	573.
3760.	VELOCITY FPS	3.12	0.79	0.71	3.75	0.57	0.90
5	DISCHARGE CFS	5060.	288.	465.	3011.	259.	1030.
5060.	VELOCITY FPS	3.23	0.92	0.81	4.07	0.68	1.10
1	ELEV 718.9 KD	47674.	1.	2044.	44621.	1008.	1.
2	ELEV 721.1 KD	83892.	698.	7086.	71306.	2490.	2312.
3	ELEV 722.6 KD	128227.	4063.	11556.	91278.	5510.	15720.
4	ELEV 723.1 KD	146495.	5706.	13456.	98840.	6753.	21738.
5	ELEV 724.3 KD	193598.	10750.	17837.	116385.	9900.	38727.

KD TABLE FOR CROSS SECTION 25.01

ELEVATION	AREA	KD	KD BY SEGMENT				
711.67	0.						
712.	12.	154.	1.	1.	149.	1.	1.
713.	67.	2154.	1.	1.	2149.	1.	1.
714.	127.	6096.	1.	7.	6085.	1.	1.
715.	195.	11619.	1.	39.	11560.	10.	1.
716.	280.	18737.	1.	160.	18451.	118.	1.
717.	383.	27378.	1.	475.	26563.	322.	1.
718.	508.	37587.	1.	1114.	35823.	640.	1.
719.	658.	49525.	2.	2264.	46153.	1077.	1.
720.	883.	63744.	71.	4262.	57502.	1568.	10.
721.	1257.	82514.	562.	6775.	69831.	2305.	1806.
722.	1717.	109654.	2538.	9725.	83099.	4192.	9708.
723.	2230.	143080.	5343.	13081.	97275.	6490.	20437.
724.	2793.	182792.	9452.	16813.	112330.	9158.	34570.
725.	3403.	229317.	15229.	20933.	128242.	12208.	52504.
726.	4069.	283566.	23161.	25391.	144984.	15575.	74330.
727.	4734.	345659.	34240.	30399.	162561.	19548.	102787.
728.	5399.	416108.	49383.	35982.	180954.	24183.	139257.

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
LINK
TITLE      FINAL TR20 DISCHARGES ---- TO DIVISION AVE
CHANGE     DISCHARGE
DISCHARGE -1.        1060.       2255.       3305.       3820.       5180.
END
           25.10     1.0         1630.0      1470.0                              2510-1
    CNT    25.10     1           N           956.0                               2510-2
WVALUE     0.20                                                                  2510-3
SEGMENT    25.10     2           C           1001.0                              2510-4
WVALUE     0.055                                                                 2510-5
SEGMENT    25.10     3           N           1900.0                              2510-6
WVALUE     0.18                                                                  2510-7
SECTION       25.10                                                              2510-8
                0.00     736.71     100.00     731.71     200.00     727.32
              300.00     725.61     400.00     724.92     500.00     726.52
              600.00     725.61     660.00     724.82     720.00     718.16
              800.00     716.36     900.00     716.06     956.00     716.77
              960.00     713.11     970.00     708.31     980.00     710.61
              990.00     712.11    1001.00     716.11    1010.00     716.21
             1100.00     716.81    1200.00     716.02    1300.00     717.21
             1400.00     719.31    1500.00     721.46    1600.00     721.36
           1700.0      723.5       1800.0      724.3       1900.0      736.2        2510-17
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 25.10  EXCEEDS  10. FEET----------
REACH      25.80     1.0         10000.0     4180.0                              2580-1
SEGMENT    25.80     1           N           1264.0                              2580-2
WVALUE     0.20                                                                  2580-3
SEGMENT    25.80     2           C           1303.0                              2580-4
WVALUE     0.055                                                                 2580-5
SEGMENT    25.80     3           N           2400.0                              2580-6
WVALUE     0.20                                                                  2580-7
SEGMENT    25.80     4           N           2800.0                              2580-8
WVALUE     0.18      1.6         0.09                                            2580-9
SEGMENT    25.80     5           N           3600.0                              2580-10
WVALUE     0.20                                                                  2580-11
SECTION       25.80                                                              2580-12
             1100.00     740.26    1200.00     739.65    1233.00     737.85
             1253.00     718.26    1264.00     718.35    1273.00     715.76
             1283.00     715.66    1293.00     716.85    1303.00     718.35
             1313.00     718.45    1315.00     719.75    1400.00     720.25
             1500.00     720.05    1600.00     719.34    1700.00     719.65
             1800.00     720.29    1900.00     719.89    2000.00     718.98
             2100.00     719.98    2102.00     717.89    2109.00     715.89
             2117.00     715.89    2121.00     718.39    2122.00     719.58
             2200.00     719.79    2300.00     718.54    2394.00     718.44
             2400.00     721.64    2500.00     722.44    2600.00     723.04
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
            2700.00    722.44   2800.00    719.89   2900.00    719.29
            3000.00    719.48   3100.00    719.69   3200.00    720.08
            3300.00    721.08   3353.00    722.19   3384.00    730.75
            3400.00    730.50   3500.00    733.50   3600.00    737.00
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 25.80  EXCEEDS  10. FEET------------
REACH     25.90     1.0       4800.0    1840.0                          2590-1
SEGMENT   25.90     1         N         473.0                           2590-2
NVALUE    0.20                                                          2590-3
SEGMENT   25.90     2         C         532.0                           2590-4
NVALUE    .055                                                          2590-5
SEGMENT   25.90     3         N         1835.0                          2590-6
NVALUE    0.20                                                          2590-7
SECTION     25.90                                                       2590-8
              0.00    733.06     20.00   730.27    105.00    730.56
            180.00    727.66    205.00   721.06    305.00    721.16
            405.00    721.16    469.00   721.56    473.00    717.46
            479.00    714.77    485.00   713.56    494.00    713.46
            500.00    713.16    505.00   715.66    515.00    716.86
            525.00    717.77    532.00   718.86    541.00    721.69
            605.00    721.79    705.00   720.79    805.00    721.50
            905.00    720.59   1005.00   721.29   1105.00    720.69
           1205.00    721.09   1305.00   721.26   1405.00    720.66
           1505.00    720.85   1605.00   721.16   1705.00    720.76
           1765.00    721.16   1805.00   726.35   1835.00    729.85
ENDTABLE
ROAD      26.00     2.6       60.0      60.0                            2600-1
BPR       26.00     B         3.0                                       2600-2
BRIDGE    725.3     723.1     30.0      0.6       2.5                   2600-3
          -46.4     734.3     -46.3     723.2     -31.6     725.6       2600-4
          -31.5     725.3     31.5      725.3     31.6      725.6       2600-5
          46.3      723.1     46.4      734.4                           2600-6
ENDTABLE                                                                2600-7
SECTION   26.00                                                         2600-8
          -750.0    734.2     -700.0    733.4     -600.0    731.5       2600-9
          -500.0    730.3     -400.0    730.1     -300.0    729.4       2600-10
          -299.0    730.9     -200.0    730.3     -100.0    729.8       2600-11
          -57.1     730.0     -57.0     731.5     -50.1     731.5       2600-12
          -50.0     733.3     -46.4     734.3     -46.2     719.6       2600-13
          -26.0     719.6     -22.0     717.3     -16.0     716.2       2600-14
          -12.0     714.5     0.0       714.2     9.0       713.2       2600-15
          20.0      713.8     30.0      718.7     35.0      719.6       2600-16
          42.0      717.2     46.2      718.6     46.4      734.4       2600-15
          50.0      732.5     57.0      732.5     57.1      728.2       2600-16
          100.0     727.9     200.0     726.9     300.0     726.2       2600-17
          400.0     725.7     500.0     725.5     600.0     725.4       2600-18
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
        1000.0     725.4     1001.0     734.0                                  2600-19
ENDTABLE                                                                        2600-20
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 26.00  EXCEEDS  10. FEET----------
REACH     26.01     1.0       40.0       40.0                                   2601-1
REACH 2   25.90     0.0                                                         2601-2
REACH     26.10     1.0       6120.0     2800.0                                 2610-1
SEGMENT   26.10     1         N          1253.0                                 2610-2
NVALUE    0.20                                                                  2610-3
SEGMENT   26.10     2         C          1283.0                                 2610-4
NVALUE    0.055                                                                 2610-5
SEGMENT   26.10     3         N          2385.0                                 2610-6
NVALUE    0.20                                                                  2610-7
SECTION      26.10                                                              2610-8
              0.00     745.11     100.00     738.92     200.00     735.71
            300.00     735.32     400.00     735.71     500.00     734.32
            570.00     722.95     600.00     722.76     700.00     722.95
            800.00     722.89     900.00     722.98    1000.00     722.79
           1100.00     722.58    1200.00     722.19    1252.00     722.08
           1253.00     721.27    1268.00     717.36    1283.00     718.96
           1285.00     722.67    1300.00     723.27    1400.00     722.66
           1500.00     722.67    1600.00     722.17    1700.00     721.96
           1800.00     722.27    1900.00     722.56    1930.00     720.77
           2000.00     722.16    2100.00     723.77    2200.00     724.06
        2300.0     724.2     2365.0     724.7     2385.0     735.7              2610-19
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 26.10  EXCEEDS  10. FEET----------
REACH     26.70     1.0       6000.0     2400.0                                 2670-1
SEGMENT   26.70     1         N          275.0                                  2670-2
NVALUE    0.20                                                                  2670-3
SEGMENT   26.70     2         C          321.0                                  2670-4
NVALUE    .055                                                                  2670-5
SEGMENT   26.70     3         N          1802.0                                 2670-6
NVALUE    0.20                                                                  2670-7
SECTION      26.70                                                              2670-8
              0.00     743.78      93.00     739.28     135.00     725.18
            200.00     724.39     273.00     725.28     275.00     723.09
            285.00     721.59     295.00     721.59     305.00     721.20
            315.00     721.50     321.00     722.90     323.00     725.50
            400.00     725.09     500.00     724.80     600.00     725.20
            807.00     725.63     900.00     724.83    1000.00     724.63
           1100.00     724.33    1200.00     724.72    1300.00     724.63
           1400.00     724.83    1500.00     724.72    1600.00     724.63
        1700.0     725.6     1800.0     725.2     1802.0     740.0              2670-18
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 26.70  EXCEEDS  10. FEET----------
COMPUTE   25.10     26.70     25.01
-----------------------------END OF 80/80 LIST------------------------------
```

COMPUTE 25.10 26.70 25.01

----------STARTING DATA FROM PREVIOUS COMPUTATIONS----------

RATING TABLE FOR SECTION 25.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	708.3	0.0	0.0						
BANK FULL	716.1	212.7	42.6	0.0	0.0	0.0			
1	719.4	2021.2	1060.0	0.0	0.0	0.0	1060.00	713.9	0.00031
2	721.8	3849.5	2255.0	0.0	0.0	0.0	2255.00	716.6	0.00033
3	723.2	5277.2	3305.0	0.0	0.0	0.0	3305.00	717.0	0.00033
4	723.8	5837.0	3820.0	0.0	0.0	0.0	3820.00	717.2	0.00034
5	725.0	7218.2	5180.0	0.0	0.0	0.0	5180.00	717.5	0.00039

SEGMENT TABLE FOR SECTION 25.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1060.	181.	600.	279.
1060.	VELOCITY FPS	1.33	0.27	1.74	0.28
2	DISCHARGE CFS	2255.	517.	974.	764.
2255.	VELOCITY FPS	1.47	0.40	2.16	0.36
3	DISCHARGE CFS	3305.	786.	1219.	1300.
3305.	VELOCITY FPS	1.49	0.47	2.36	0.42
4	DISCHARGE CFS	3820.	918.	1347.	1555.
3820.	VELOCITY FPS	1.53	0.50	2.49	0.42
5	DISCHARGE CFS	5180.	1147.	1679.	2354.
5180.	VELOCITY FPS	1.67	0.52	2.82	0.53
1 ELEV 719.4 KD		60344.	10233.	34389.	15722.
2 ELEV 721.8 KD		123173.	28203.	53633.	41336.
3 ELEV 723.2 KD		181489.	43116.	67323.	71050.
4 ELEV 723.8 KD		206032.	49511.	72793.	83727.
5 ELEV 725.0 KD		263867.	58510.	85610.	119767.

KD TABLE FOR CROSS SECTION 25.10

ELEVATION	AREA	KD	KD BY SEGMENT		
708.31	0.				
709.	2.	22.	1.	20.	1.
710.	9.	217.	1.	214.	1.
711.	24.	733.	1.	731.	1.
712.	46.	1736.	1.	1733.	1.
713.	76.	3507.	1.	3504.	1.
714.	110.	6008.	1.	6006.	1.
715.	148.	9167.	1.	9165.	1.
716.	205.	13102.	8.	13074.	7.
717.	533.	20111.	407.	18140.	1501.
718.	1079.	32508.	3091.	24251.	4587.
719.	1720.	50636.	7571.	31114.	11617.
720.	2421.	73909.	13744.	38642.	21316.
721.	3187.	99568.	21245.	46789.	31402.
722.	4055.	131256.	30189.	55569.	45223.
723.	5027.	171409.	40459.	64948.	63885.
724.	6060.	215573.	51544.	74506.	89049.
725.	7197.	263001.	58376.	85404.	119125.
726.	8565.	313010.	60342.	96421.	155601.
727.	10069.	377408.	71587.	107999.	197388.
728.	11687.	461211.	97473.	120115.	243624.
729.	13353.	553239.	127615.	132702.	293615.
730.	15049.	653314.	161577.	145793.	345627.
731.	16771.	761614.	199433.	159388.	402607.
732.	18527.	877184.	240613.	173454.	462908.
733.	20315.	1000111.	285305.	187984.	526868.
734.	22121.	1131708.	334295.	203012.	594357.
735.	23968.	1268936.	385667.	218454.	664629.
736.	25816.	1416829.	442602.	234438.	740163.
737.	27663.	1575783.	505466.	250962.	821137.

*****SECT.25.80 KD VALUES REVERSED ON SEGMENT 3 AT ELEVATION 718.66 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****
*****SECT.25.80 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 739.66 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 25.80 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	715.7	0.0	0.0						
BANK FULL	718.3	112.9	485.5	0.0	0.0	0.0			
1	721.5	3349.7	1060.0	0.0	0.0	0.0	1060.00	718.9	0.00023
2	723.3	6675.0	2255.0	0.0	0.0	0.0	2255.00	719.5	0.00014
3	724.4	8973.6	3305.0	0.0	0.0	0.0	3305.00	719.9	0.00011
4	724.8	9948.4	3820.0	0.0	0.0	0.0	3820.00	719.9	0.00010
5	725.9	12306.2	5180.0	0.0	0.0	0.0	5180.00	720.1	0.00009

SEGMENT TABLE FOR SECTION 25.80

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N	5 N
1	DISCHARGE CFS	1060.	13.	219.	609.	9.	215.
1060.	VELOCITY FPS	0.60	0.33	1.15	0.28	0.15	0.25
2	DISCHARGE CFS	2255.	22.	285.	1323.	77.	543.
2255.	VELOCITY FPS	0.50	0.32	1.10	0.32	0.17	0.30
3	DISCHARGE CFS	3305.	27.	327.	1806.	370.	775.
3305.	VELOCITY FPS	0.48	0.32	1.09	0.34	0.42	0.32
4	DISCHARGE CFS	3820.	30.	348.	2033.	526.	884.
3820.	VELOCITY FPS	0.49	0.32	1.09	0.[illegible]	0.50	0.33
5	DISCHARGE CFS	5180.	38.	409.	26[illegible]	894.	1186.
5180.	VELOCITY FPS	0.52	0.33	1.13	0.[illegible]	0.59	0.36
1	ELEV 721.5 KD	68955.	892.	14692.	3909[illegible]	540.	13740.
2	ELEV 723.3 KD	190297.	1858.	24383.	112473[illegible]	5750.	45833.
3	ELEV 724.4 KD	310566.	2619.	31435.	172702[illegible]	29855.	73968.
4	ELEV 724.8 KD	378155.	2979.	34635.	201544[illegible]	51352.	87644.
5	ELEV 725.9 KD	540317.	3932.	42848.	27727[illegible]	92452.	123806.

KD TABLE FOR CROSS SECTION 25.80

ELEVATION	AREA	KD	KD BY SEGMENT				
715.66	0.						
716.	5.	47.	2.	37.	4.	2.	2.
717.	35.	712.	2.	583.	124.	2.	2.
718.	82.	2304.	2.	1885.	418.	2.	2.
719.	219.	5344.	60.	4337.	889.	2.	2.
720.	886.	14103.	301.	7847.	5750.	3.	874.
721.	2438.	43684.	656.	12118.	22636.	178.	7508.
722.	4173.	96364.	1125.	17120.	56319.	10012.	20703.
723.	6115.	168144.	1691.	22774.	99577.	35905.	39930.
724.	8221.	267707.	2357.	29051.	151662.	172164.	64168.
725.	10336.	402834.	3126.	35933.	213113.	570784.	93119.
726.	12455.	551484.	3996.	43388.	282314.	952674.	126220.
727.	14579.	719564.	4969.	51394.	359038.	1407124.	163247.
728.	16708.	905694.	6046.	59531.	442632.	1927314.	203565.
729.	18841.	1110114.	7231.	68990.	533822.	2515454.	248462.
730.	20978.	1330924.	8525.	78550.	631308.	3161394.	296365.
731.	23136.	1556574.	9930.	68594.	734892.	3860034.	337027.
732.	25330.	1796892.	11449.	99118.	844836.	4615914.	381781.
733.	27560.	2057764.	13086.	110109.	960628.	5424924.	431143.
734.	29817.	2333414.	14843.	121566.	1083097.	6290914.	484787.
735.	32111.	2624974.	16721.	133464.	1210723.	7200974.	543919.
736.	34435.	2931644.	18725.	145801.	1343962.	8155514.	607143.
737.	36781.	3257244.	20567.	158574.	1482970.	9169184.	678137.
738.	39147.	3605434.	21917.	171779.	1627468.	10226284.	761626.
739.	41531.	3968304.	21995.	185389.	1776717.	11320794.	851929.
740.	43916.	4349854.	21995.	195437.	1932295.	12477184.	948526.
741.	46302.	4750484.	21996.	213918.	2094617.	13697934.	1051517.

*****SECT.25.90 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 721.16 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 25.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	713.2	0.0	0.0						
BANK FULL	717.5	116.3	484.8	0.0	0.0	0.0			
1	722.6	2671.5	1060.0	0.0	0.0	0.0	1060.00	717.5	0.00020
2	724.1	5097.2	2255.0	0.0	0.0	0.0	2255.00	719.2	0.00018
3	725.1	6778.3	3305.0	0.0	0.0	0.0	3305.00	720.3	0.00017
4	725.6	7502.8	3820.0	0.0	0.0	0.0	3820.00	721.3	0.00017
5	726.7	9321.3	5180.0	0.0	0.0	0.0	5180.00	721.4	0.00016

SEGMENT TABLE FOR SECTION 25.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1060.	82.	547.	431.
1060.	VELOCITY FPS	1.03	0.22	1.33	0.25
2	DISCHARGE CFS	2255.	257.	734.	1264.
2255.	VELOCITY FPS	0.88	0.32	1.46	0.33
3	DISCHARGE CFS	3305.	418.	870.	2017.
3305.	VELOCITY FPS	0.86	0.38	1.54	0.39
4	DISCHARGE CFS	3820.	499.	929.	2392.
3820.	VELOCITY FPS	0.87	0.41	1.58	0.42
5	DISCHARGE CFS	5180.	712.	1088.	3380.
5180.	VELOCITY FPS	0.88	0.46	1.66	0.47
1 ELEV 722.6 KD		72578.	5167.	39718.	27693.
2 ELEV 724.1 KD		169310.	19256.	55376.	94677.
3 ELEV 725.1 KD		255555.	32334.	67276.	155945.
4 ELEV 725.6 KD		295097.	38370.	72602.	184125.
5 ELEV 726.7 KD		410411.	56321.	86740.	267349.

KD TABLE FOR CROSS SECTION 25.90

ELEVATION	AREA	KD	KD BY SEGMENT		
713.16	0.				
714.	10.	169.	2.	166.	2.
715.	32.	992.	2.	989.	2.
716.	59.	2404.	2.	2401.	2.
717.	96.	4321.	2.	4318.	2.
718.	144.	7375.	3.	7371.	2.
719.	202.	12054.	9.	12042.	2.
720.	265.	18500.	34.	18445.	14.
721.	506.	26849.	50.	25997.	842.
722.	1800.	51246.	1708.	34520.	11567.
723.	3362.	97558.	8537.	43990.	43025.
724.	4949.	162274.	18114.	54354.	89833.
725.	6548.	242248.	30236.	65575.	146182.
726.	8159.	335221.	44528.	77603.	212753.
727.	9781.	441698.	61187.	90445.	289621.
728.	11420.	559378.	78758.	104071.	374404.
729.	13084.	686906.	96319.	118455.	472059.
730.	14782.	825862.	115707.	133576.	576559.
731.	16569.	970099.	130771.	149379.	689810.
732.	18383.	1134890.	156858.	165896.	813100.
733.	20210.	1320286.	193166.	183166.	944178.
734.	22038.	1524581.	235454.	201251.	1088000.

*****SECT.26.01 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 721.16 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

TABLE OF VALUES FOR BRR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA1	ALPHA2	BRIDA	APPAR	AEXIT
0.8716	0.8183	0.0	0.0	0.0	0.0532	0.6331	1.0000	1.0000	548.1541	2718.8516	2626.0295
DCRIT	716.97	KBCRIT=									
1.4931	1.6165	0.0	0.0	0.0	-0.1234	0.4242	1.0000	1.0000	684.1831	5590.3477	5049.4336
DCRIT	718.75	KBCRIT=									
1.6529	1.8320	0.0	0.0	0.0	-0.1791	0.3757	1.0000	1.0000	772.8186	6889.5664	6729.4258
DCRIT	720.05	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	772.8186	6889.5664	6729.4258
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	772.8186	6889.5664	6729.4258
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 26.00

NO.	HW	CFS	HL	TW	CSM
0	713.20	0.00	0.00	0.00	0.00
1	722.61	1060.00	0.04	722.57	1060.00
2	724.42	2255.00	0.32	724.10	2255.00
3	725.77	3305.00	0.62	725.15	3305.00
4	726.16	3820.00	0.56	725.60	3820.00
5	727.04	5180.00	0.32	726.72	5180.00

2785 p

→ MIN ROAD ELEVATION 725.40

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 723.10 OPENING NO.= 1

RATING TABLE FOR SECTION 26.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	713.2	0.0	0.0						
BANK FULL	717.5	116.3	481.6	0.0	0.0	0.0			
1	722.6	2770.1	1060.0	0.0	0.0	0.0	1060.00	717.5	0.00028
2	724.4	5638.8	2255.0	0.0	0.0	0.0	2255.00	719.2	0.00025
3	725.8	7805.7	3305.0	0.0	0.0	0.0	3305.00	720.3	0.00022
4	726.2	8433.9	3820.0	0.0	0.0	0.0	3820.00	721.3	0.00024
5	727.1	9872.8	5180.0	0.0	0.0	0.0	5180.00	721.4	0.00028

SEGMENT TABLE FOR SECTION 26.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1060.	65.	658.	338.
1060.	VELOCITY FPS	1.31	0.16	1.59	0.17
2	DISCHARGE CFS	2255.	227.	923.	1105.
2255.	VELOCITY FPS	1.17	0.25	1.77	0.26
3	DISCHARGE CFS	3305.	381.	1102.	1822.
3305.	VELOCITY FPS	1.10	0.30	1.84	0.[illegible]
4	DISCHARGE CFS	3820.	451.	1218.	215[illegible]
3820.	VELOCITY FPS	1.15	0.32	1.95	0.[illegible]
5	DISCHARGE CFS	5180.	641.	1505.	30[illegible]
5180.	VELOCITY FPS	1.26	0.39	2.23	0.[illegible]
1	ELEV 722.6 KD	62093.	3442.	40313.	1833[illegible]
2	ELEV 724.4 KD	142935.	14252.	59093.	695[illegible]
3	ELEV 725.8 KD	222263.	25461.	74689.	12196[illegible]
4	ELEV 726.2 KD	248806.	29302.	79748.	13975[illegible]
5	ELEV 727.1 KD	311996.	38504.	91190.	18230[illegible]

KD TABLE FOR CROSS SECTION 26.01

ELEVATION	AREA	KD	KD BY SEGMENT		
713.16	0.				
714.	10.	16.	1.	166.	1.
715.	32.	99.	1.	989.	1.
716.	59.	240.	1.	2401.	1.
717.	96.	432.	1.	4318.	1.
718.	144.	737.	2.	7371.	1.
719.	202.	1205.	5.	12042.	1.
720.	265.	1847.	21.	18445.	9.
721.	506.	2652.	31.	25997.	335.
722.	1800.	4498.	1060.	34520.	7162.
723.	3362.	7729.	5285.	43990.	27196.
724.	4949.	12126.	11215.	54354.	55310.
725.	6548.	17501.	18720.	65575.	90507.
726.	8159.	23718.	27569.	77603.	131723.
727.	9781.	30798.	37863.	90445.	179439.
728.	11420.	38600.	48762.	104071.	233046.
729.	13084.	47042.	59435.	118455.	292270.
730.	14782.	56220.	71638.	133578.	359970.
731.	16569.	65754.	80965.	149376.	427089.
732.	18383.	76587.	97117.	165896.	502673.
733.	20210.	88716.	119596.	183168.	584577.
734.	22038.	102025.	145779.	201251.	674759.

RATING TABLE FOR SECTION 26.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	717.4	0.0	0.0						
BANK FULL	719.0	16.9	239.8	0.0	0.0	0.0			
1	724.4	3082.5	1060.0	0.0	0.0	0.0	1060.00	722.2	0.00032
2	725.9	5777.1	2255.0	0.0	0.0	0.0	2255.00	722.6	0.00023
3	727.0	7652.7	3305.0	0.0	0.0	0.0	3305.00	723.0	0.00020
4	727.4	8374.6	3820.0	0.0	0.0	0.0	3820.00	723.0	0.00020
5	728.3	10066.1	5180.0	0.0	0.0	0.0	5180.00	723.1	0.00020

SEGMENT TABLE FOR SECTION 26.10

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1060.	326.	256.	479.
1060.	VELOCITY FPS	0.79	0.28	1.50	0.27
2	DISCHARGE CFS	2255.	779.	316.	1160.
2255.	VELOCITY FPS	0.65	0.35	1.47	0.35
3	DISCHARGE CFS	3305.	1169.	374.	1762.
3305.	VELOCITY FPS	0.64	0.40	1.52	0.39
4	DISCHARGE CFS	3820.	1359.	407.	2054.
3820.	VELOCITY FPS	0.65	0.42	1.57	0.42
5	DISCHARGE CFS	5180.	1863.	487.	2830.
5180.	VELOCITY FPS	0.69	0.48	1.70	0.48
1 ELEV 724.4 KD		59013.	17810.	14542.	26661.
2 ELEV 725.9 KD		149819.	51650.	21454.	76715.
3 ELEV 727.0 KD		234559.	82919.	26825.	124815.
4 ELEV 727.4 KD		272405.	96933.	29024.	146447.
5 ELEV 728.3 KD		365197.	131341.	34389.	199467.

KD TABLE FOR CROSS SECTION 26.10

ELEVATION	AREA	KD	KD BY SEGMENT		
717.36	0.				
718.	3.	37.	1.	34.	1.
719.	18.	423.	1.	419.	2.
720.	41.	1516.	1.	1510.	4.
721.	72.	3227.	2.	3212.	9.
722.	167.	6080.	3.	5735.	24.
723.	816.	14234.	762.	8969.	4826.
724.	2352.	41872.	10627.	12738.	18170.
725.	4089.	88366.	28909.	17026.	42154.
726.	5901.	155226.	53562.	21796.	79852.
727.	7721.	238091.	84181.	27030.	126760.
728.	9549.	334837.	120038.	32704.	182021.
729.	11385.	444565.	160820.	38802.	244891.
730.	13230.	566146.	206115.	45306.	314571.
731.	15082.	700057.	256135.	52212.	391675.
732.	16942.	845426.	310556.	59506.	475346.
733.	18809.	1001802.	369220.	67177.	565402.
734.	20685.	1167975.	431675.	75208.	661081.
735.	22609.	1302312.	455513.	83095.	763467.
736.	24660.	1452468.	489747.	92342.	872163.
737.	26859.	1636575.	550667.	101438.	988458.
738.	29105.	1849404.	635262.	110859.	1110267.
739.	31376.	2076480.	728215.	120618.	1238118.
740.	33668.	2317488.	829419.	130707.	1373177.
741.	35979.	2571032.	938024.	141113.	1499170.
742.	38307.	2835684.	1052485.	151835.	1632421.
743.	40646.	3112534.	1173548.	162879.	1777[illegible]5.
744.	43009.	3398200.	1299035.	174217.	1923[illegible]28.
745.	45372.	3698101.	1432569.	185882.	2077[illegible]45.
746.	47735.	4012383.	1574342.	197872.	224[illegible]64.

RATING TABLE FOR SECTION 26.70 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	721.2	0.0	0.0						
BANK FULL	722.9	53.7	333.9	0.0	0.0	0.0			
1	726.6	2906.1	1060.0	0.0	0.0	0.0	1060.00	724.8	0.00031
2	727.7	4751.4	2255.0	0.0	0.0	0.0	2255.00	725.0	0.00032
3	728.7	6373.9	3305.0	0.0	0.0	0.0	3305.00	725.2	0.00027
4	729.0	6858.0	3820.0	0.0	0.0	0.0	3820.00	725.3	0.00029
5	729.9	8481.1	5180.0	0.0	0.0	0.0	5180.00	725.5	0.00027

SEGMENT TABLE FOR SECTION 26.70

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1060.	75.	294.	691.
1060.	VELOCITY FPS	0.77	0.30	1.32	0.28
2	DISCHARGE CFS	2255.	171.	428.	1655.
2255.	VELOCITY FPS	0.78	0.41	1.56	0.41
3	DISCHARGE CFS	3305.	257.	510.	2537.
3305.	VELOCITY FPS	0.76	0.46	1.60	0.46
4	DISCHARGE CFS	3820.	299.	563.	2958.
3820.	VELOCITY FPS	0.80	0.50	1.69	0.50
5	DISCHARGE CFS	5180.	411.	671.	4098.
5180.	VELOCITY FPS	0.83	0.55	1.78	0.56
1	ELEV 726.6 KD	59863.	4225.	17251.	38387.
2	ELEV 727.7 KD	126993.	9636.	24279.	93078.
3	ELEV 728.7 KD	200790.	15628.	31206.	153957.
4	ELEV 729.0 KD	225550.	17646.	33404.	174500.
5	ELEV 729.9 KD	316603.	25100.	41189.	250313.

KD TABLE FOR CROSS SECTION 26.70

ELEVATION	AREA	KD	KD BY SEGMENT		
721.20	0.				
722.	18.	308.	2.	305.	2.
723.	58.	1856.	2.	1852.	2.
724.	105.	4821.	4.	4813.	4.
725.	486.	10732.	148.	8877.	1927.
726.	1911.	34766.	2206.	13874.	18683.
727.	3580.	82313.	6014.	19708.	56414.
728.	5252.	147936.	11322.	26341.	110135.
729.	6928.	229342.	17950.	33729.	177601.
730.	8606.	324364.	25732.	41817.	256757.
731.	10288.	432564.	34653.	50592.	347281.
732.	11972.	552993.	44647.	60024.	448295.
733.	13660.	685061.	55679.	70089.	559273.
734.	15351.	827922.	67694.	80765.	679434.
735.	17045.	981845.	80727.	92042.	809053.
736.	18742.	1146286.	94744.	103902.	947624.
737.	20443.	1320883.	109728.	116331.	1094816.
738.	22146.	1505326.	125663.	129316.	1250347.
739.	23853.	1697709.	141734.	142837.	1413125.
740.	25571.	1895675.	154474.	156896.	1584231.
741.	27303.	2100051.	165220.	171481.	1763334.
742.	29056.	2314603.	178415.	186578.	1949697.
743.	30836.	2539032.	193695.	202177.	2142948.
744.	32620.	2773572.	210436.	218288.	2344864.
745.	34403.	3018305.	227586.	234907.	2555905.

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
LINK
TITLE     FINAL TR20 DISCHARGES ------ TO NASH CREEK
CHANGE    DISCHARGE
DISCHARGE -1.       1100.     2370.     3470.     4000.     5410.
END
REACH     26.90     1.0       5300.0    2260.0                                2690-1
SEGMENT   26.90     1         N         1901.0                                2690-2
NVALUE    0.20                                                                2690-3
SEGMENT   26.90     2         C         1960.0                                2690-4
NVALUE    0.055                                                               2690-5
SEGMENT   26.90     3         N         3230.0                                2690-6
NVALUE    0.20                                                                2690-7
SECTION      26.90                                                            2690-8
          1230.0    743.0     1231.0    726.2     1430.0    726.8             2690-9
             1530.00    726.51    1630.00    727.10    1656.00    725.81
             1730.00    726.70    1830.00    726.81    1898.00    727.51
             1901.00    725.00    1914.00    725.09    1922.00    723.30
             1930.00    722.80    1935.00    721.50    1940.00    720.30
             1945.00    718.69    1953.00    719.90    1960.00    723.60
             1962.00    727.40    2030.00    727.00    2130.00    726.90
             2230.00    726.80    2330.00    726.59    2430.00    725.80
             2530.00    726.69    2630.00    726.69    2730.00    728.80
             2830.00    727.55    2930.00    727.55    3030.00    728.05
             3130.00    729.94    3180.00    732.65    3230.00    733.15
NOTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 26.90  EXCEEDS  10. FEET----------
ROAD      27.00     2.7       70.0      70.0                                  2700-1
BPR       27.00     A         3.0       3.0                                   2700-2
PIER      722.1     2.6       722.8     2.4                                   2700-3
GIRDER    731.3     731.1     30.0      0.6       2.7                         2700-4
          943.0     735.5     943.1     731.1     984.7     731.1             2700-5
          1035.5    731.1     1075.1    731.1     1075.2    735.5             2700-6
NOTABLE                                                                       2700-7
SECTION      27.00                                                            700-8
          0.00      745.0     1.00      729.4     58.0      729.3             2700-9
             64.00      729.32    100.00     729.22    200.00     729.13
             300.00     729.22    376.00     729.32    382.00     729.42
             400.00     729.52    500.00     729.92    600.00     730.72
             700.00     731.72    800.00     732.63    900.00     733.13
          938.0     734.3     938.1     735.5     943.0     735.5             700-14
          943.2     729.1     950.0     729.4     959.0     728.0             700-15
          967.0     725.5     976.0     724.7     984.0     722.2             700-16
          985.5     721.6     993.0     720.4     1000.0    720.9             700-17
          1011.0    721.5     1025.0    722.3     1034.7    722.4             700-18
          1036.3    723.3     1042.0    722.9     1049.0    725.0             700-19
          1060.0    728.5     1075.0    729.0     1075.2    735.5             700-20
```

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
          1080.0    734.3     1125.0    732.9     1300.0    732.2        2700-21
          1500.0    731.0     1900.0    731.6     1901.0    745.0        2700-22
NOTABLE
---------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 27.00  EXCEEDS  10. FEET-----------
REACH     27.01     1.0       50.0      50.0                                2701-1
REACH 2   26.90     0.0                                                     2701-2
REACH     27.10     1.0       6430.0    3600.0                              2710-1
SEGMENT   27.10     1         N         803.0                               2710-2
NVALUE    0.20                                                              2710-3
SEGMENT   27.10     2         C         848.0                               2710-4
NVALUE    0.055                                                             2710-5
SEGMENT   27.10     3         N         3400.0                              2710-6
NVALUE    0.20                                                              2710-7
SECTION      27.10                                                          2710-8
             0.00     747.50    100.0     745.70    200.00    744.80
           266.00     743.80    314.00    730.20    400.00    729.40
           500.00     729.82    600.00    729.52    700.00    729.61
           800.00     729.02    803.00    728.68    810.00    727.98
           820.00     726.98    830.00    726.08    845.00    727.58
           848.00     729.66    900.00    729.35   1000.00    728.69
          1100.00     728.98   1200.00    728.18   1300.00    727.79
          1400.00     728.51   1500.00    728.51   1600.00    727.80
          1700.00     728.70   1800.00    728.40   1873.00    728.80
          1875.00     728.08   1889.00    726.88   1903.00    727.38
          1906.00     728.18   2000.00    728.18   2100.00    727.68
          2200.00     728.58   2300.0     728.18   2400.00    727.97
          2700.00     727.18   2733.00    728.18   2793.00    734.56
          2900.00     733.35   3000.00    734.45   3100.00    737.03
          3200.00     736.73   3300.00    738.03   3400.00    740.03
NOTABLE
---------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 27.10  EXCEEDS  10. FEET-----------
REACH     27.90     1.0       4320.0    1680.0                              2790-1
SEGMENT   27.90     1         N         1554.0                              2790-2
NVALUE    0.20                                                              2790-3
SEGMENT   27.90     2         C         1604.0                              2790-4
NVALUE    0.055                                                             2790-5
SEGMENT   27.90     3         N         2901.0                              2790-6
NVALUE    0.20                                                              2790-7
SECTION   27.90                                                             2790-8
          0.0       752.8     100.0     748.6     200.0     743.6          2790-9
          281.0     730.4     300.0     728.5     400.0     730.6          2790-10
          700.0     730.5     800.0     733.9     880.0     730.4          2790-11
          900.0     729.7     1300.0    731.5     1500.0    731.0          2790-12
          1552.0    731.1     1554.0    729.0     1564.0    727.8          2790-13
          1574.0    728.3     1589.0    728.0     1604.0    728.9          2790-14
          1607.0    731.5     1700.0    730.0     1900.0    729.2          2790-15
          2000.0    730.1     2600.0    730.8     2715.0    730.8          2790-16
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
          2800.0    731.9     2900.0    737.7     2901.0    752.0          2790-17
ENDTABLE                                                                   2790-18
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 27.90  EXCEEDS  10. FEET----------
REACH     27.99     1.0       3360.0    2400.0                             2799-1
REACH 2   27.90     -1.6                                                   2799-2
ROAD      28.00     2.7       50.0      50.0                               2800-1
BPR       28.00     A         3.0       7.0                                2800-2
PIER      727.5     2.5                                                    2800-3
GIRDER    736.8     736.6     0.0       0.6       2.7                      2800-4
          -42.5     741.4     -42.4     736.6     0.0       736.5          2800-5
          64.0      736.4     64.1      741.2                              2800-6
ENDTABLE                                                                   2800-7
SECTION   26.00                                                            2800-8
          -728.0    744.7     -700.0    744.3     -600.0    741.7          2800-9
          -500.0    740.7     -300.0    739.9     -200.0    739.5          2800-10
          -107.0    739.2     -42.5     741.4     -42.3     728.1          2800-11
          -35.0     727.6     -25.0     727.6     -5.0      727.6          2800-12
          -1.3      727.9     1.3       728.6     5.0       729.0          2800-13
          10.0      731.4     15.0      729.2     15.0      727.7          2800-14
          25.0      725.8     30.0      725.3     40.0      726.1          2800-15
          42.4      726.4     42.5      731.0     63.9      731.1          2800-16
          64.1      741.2     100.0     740.3     100.1     738.5          2800-17
          140.0     738.3     140.1     740.1     200.0     740.0          2800-18
          300.0     739.6     400.0     739.4     400.0     737.4          2800-19
          600.0     737.6     800.0     737.6     800.2     754.0          2800-20
ENDTABLE                                                                   2800-21
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 28.00  EXCEEDS  10. FEET----------
REACH     28.10     1.0       100.0     100.0                              2810-1
SEGMENT   28.10     1         N         657.0                              2810-2
NVALUE    0.20                                                             2810-3
SEGMENT   28.10     2         C         743.0                              2810-4
NVALUE    .055                                                             2810-5
SEGMENT   28.10     3         N         1900.1                             2810-6
NVALUE    0.20                                                             2810-7
SECTION   28.10                                                            2810-8
          0.00      744.47    100.00    743.28    160.00    739.88
          185.00    734.88    230.00    732.68    270.00    734.38
          290.00    732.38    400.00    733.08    500.00    732.08
          600.00    734.08    640.00    733.89    653.00    732.58
          657.00    730.28    660.00    728.68    674.00    729.78
          680.00    727.18    690.00    728.48    700.00    727.58
          710.00    726.98    720.00    726.18    730.00    726.58
          740.00    729.18    743.00    730.68    747.00    732.79
          800.00    732.79    900.00    731.60    1000.00   730.7[illegible]
          1100.00   731.59    1200.00   731.90    1300.00   731.50
          1400.00   731.60    1440.00   731.40    1500.00   732.30
          1545.00   730.70    1600.00   732.40    1700.00   732.60
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
          1800.0     732.4      1900.0     733.0      1900.1     751.0          2810-21
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 28.10  EXCEEDS  10. FEET-----------
REACH     28.14      1.0        960.0      480.0                                2814-1
REACH 2   28.10      0.0                                                        2814-2
SEGMENT   28.14      1          N          657.0                                2814-3
NVALUE    0.20                                                                  2814-4
SEGMENT   28.14      2          C          743.0                                2814-5
NVALUE    .055                                                                  2814-6
SEGMENT   28.14      3          N          1900.1                               2814-7
NVALUE    0.20       1.3        0.11                                            2814-9
REACH     28.17      1.0        860.0      480.0                                2817-1
REACH 2   28.31      0.0                                                        2817-2
SEGMENT   28.17      1          N          874.0                                2817-3
NVALUE    0.20                                                                  2817-4
SEGMENT   28.17      2          C          918.0                                2817-5
NVALUE    .055                                                                  2817-6
SEGMENT   28.17      3          N          2100.0                               2817-7
NVALUE    0.20                                                                  2817-8
REACH     28.31      1.0        800.0      720.0                                2831-1
SEGMENT   28.31      1          N          874.0                                2831-2
NVALUE    0.20                                                                  2830-3
SEGMENT   28.31      2          C          918.0                                2831-4
NVALUE    .055                                                                  2830-5
SEGMENT   28.31      3          N          994.0                                2831-6
NVALUE    0.20                                                                  2830-7
SEGMENT   28.31      4          N          1500.0                               2831-8
NVALUE    0.02                                                                  2830-9
SEGMENT   28.31      5          N          2100.0                               831-10
NVALUE    0.20                                                                  830-11
SECTION   28.31                                                                 831-12
                0.00     745.51     100.00     743.70     200.00     742.10
              226.00     741.70     284.00     733.01     300.00     732.60
              400.00     732.73     500.00     732.83     600.00     733.23
              700.00     733.43     800.00     733.43     872.00     733.14
              874.00     731.27     882.00     727.97     888.00     725.47
              902.00     725.27     916.00     728.47     918.00     733.07
              970.00     733.17     978.00     734.97     994.00     734.67
          1300.0     733.1      1500.0     733.0      1700.0     732.90          830-20
             1800.00    733.81    1900.00    736.51    1971.00    737.21
             1994.00    748.01    2100.00    748.31
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 28.31  EXCEEDS  10. FEET-----------
REACH     28.38      1.0        2880.0     2160.0                               2838-1
REACH 2   28.31      3.0                                                        2838-2
SEGMENT   28.38      1          N          874.0                                2838-3
NVALUE    0.20                                                                  2838-4
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
SEGMENT   28.38     2         C         918.0                          2838-5
NVALUE    0.055                                                        2838-6
SEGMENT   28.38     3         N         2100.0                         2838-7
NVALUE    0.20                                                         2838-8
REACH     28.60     1.0       640.0     480.0                          2860-1
SEGMENT   28.60     1         N         616.0                          2860-2
NVALUE    0.20                                                         2860-3
SEGMENT   28.60     2         C         656.0                          2860-4
NVALUE    0.055                                                        2860-5
SEGMENT   28.60     3         N         1400.1                         2860-6
NVALUE    0.20                                                         2860-7
SECTION      28.60                                                     2860-8
              0.00     762.19     22.0     756.59    100.00    755.29
            200.00     754.19    300.0     753.59    400.00    749.59
            500.00     745.82    578.0     742.71    614.00    735.11
            616.00     733.20    627.0     730.90    637.00    729.00
            647.00     728.90    656.0     732.80    660.00    735.80
            700.00     736.20    800.0     735.70    900.00    736.00
           1000.00     735.81   1100.0     735.31   1200.00    735.81
         1300.0     734.8     1400.0     735.1     1400.1     753.0        2860-16
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 28.60  EXCEEDS  10. FEET------------
COMPUTE   26.90     28.60     26.70
-----------------------------END OF 80/80 LIST------------------------------
```

COMPUTE 26.90 28.60 26.70

----------STARTING DATA FROM PREVIOUS COMPUTATIONS----------

RATING TABLE FOR SECTION 26.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	718.7	0.0	0.0						
BANK FULL	723.8	100.9	591.5	0.0	0.0	0.0			
1	728.2	2604.7	1100.0	0.0	0.0	0.0	1100.00	724.2	0.00034
2	729.4	4770.6	2370.0	0.0	0.0	0.0	2370.00	726.7	0.00035
3	730.3	6558.7	3470.0	0.0	0.0	0.0	3470.00	726.9	0.00030
4	730.6	7129.2	4000.0	0.0	0.0	0.0	4000.00	726.9	0.00030
5	731.5	8839.1	5410.0	0.0	0.0	0.0	5410.00	727.1	0.00029

SEGMENT TABLE FOR SECTION 26.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	293.	509.	298.
1100.	VELOCITY FPS	1.12	0.28	1.50	0.24
2	DISCHARGE CFS	2370.	755.	720.	895.
2370.	VELOCITY FPS	1.05	0.41	1.75	0.36
3	DISCHARGE CFS	3470.	1148.	832.	1490.
3470.	VELOCITY FPS	0.97	0.46	1.78	0.[illegible]
4	DISCHARGE CFS	4000.	1331.	908.	176[illegible]
4000.	VELOCITY FPS	0.99	0.50	1.87	0.[illegible]
5	DISCHARGE CFS	5410.	1820.	1051.	257[illegible]
5410.	VELOCITY FPS	1.00	0.56	1.96	0.[illegible]
1 ELEV 728.2 KD		57744.	14590.	28830.	1432[illegible]
2 ELEV 729.4 KD		126858.	40256.	39596.	4700[illegible]
3 ELEV 730.3 KD		200973.	66450.	48987.	8553[illegible]
4 ELEV 730.6 KD		229174.	76262.	52165.	10072[illegible]
5 ELEV 731.5 KD		314867.	105967.	61875.	14702[illegible]

KD TABLE FOR CROSS SECTION 26.90

ELEVATION	AREA	KD	KD BY SEGMENT		
718.69	0.				
719.	1.	7.	2.	4.	2.
720.	8.	172.	2.	169.	2.
721.	23.	732.	2.	730.	2.
722.	44.	1752.	2.	1750.	2.
723.	71.	3224.	2.	3221.	2.
724.	109.	5461.	2.	5457.	2.
725.	153.	7791.	2.	7788.	3.
726.	239.	13085.	7.	12975.	10.
727.	644.	23807.	1084.	19560.	3358.
728.	2274.	51324.	11742.	27250.	11192.
729.	4036.	101792.	30993.	35917.	34248.
730.	5909.	173042.	56533.	45511.	70631.
731.	7818.	261602.	87520.	55578.	118034.
732.	9746.	367192.	124064.	67332.	175740.
733.	11699.	482907.	164985.	79478.	238385.
734.	13694.	617172.	210087.	92387.	314555.
735.	15693.	766702.	259629.	106081.	400656.
736.	17693.	929402.	313217.	120522.	495546.
737.	19692.	1106132.	371207.	135737.	597166.
738.	21692.	1292742.	432276.	151608.	708801.
739.	23692.	1491172.	497049.	168178.	829876.
740.	25692.	1701852.	565664.	185461.	956687.
741.	27691.	1923422.	637692.	203414.	1082302.
742.	29691.	2153492.	712375.	221968.	1219095.
743.	31691.	2396772.	791829.	241299.	1365702.
744.	33691.	2660392.	876402.	261434.	1522954.

TABLE OF VALUES FOR BFR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.2110	0.0	0.2180	1.0002	0.0	-0.0070	0.9999	1.0000	1.0000	501.6743	393.2332	387.6484
DCRIT	724.01	KBCRIT=									
0.7443	0.6465	0.1752	0.8619	0.0	-0.0773	0.6879	1.0000	1.0000	642.6218	1842.6687	1805.5200
DCRIT	725.50	KBCPIT=									
1.3023	1.3634	0.1286	0.6744	0.0	-0.1898	0.4845	1.0000	1.0000	767.5864	3695.2637	3438.4468
DCRIT	725.48	KBCRIT=									
1.4373	1.5393	0.1178	0.6280	0.0	-0.2198	0.4421	1.0000	1.0000	807.1267	4289.2187	3954.2834
DCRIT	725.59	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	818.0430	4289.2187	3994.2834
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 27.00

NO.	HW	CFS	HL	TW	CSM
0	720.40	0.00	0.00	0.00	0.00
1	728.22	1100.00	0.0	728.22	1100.00
2	729.44	2370.00	0.0	729.44	2370.00
3	730.51	3470.00	0.12	730.39	3470.00
4	730.83	4000.00	0.14	730.69	4000.00
5	731.77	5410.00	0.20	731.57	5410.00

MIN ROAD ELEVATION = 729.15

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 731.50 OPENING NO.= 1

RATING TABLE FOR SECTION 27.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	718.7	0.0	0.0						
BANK FULL	723.8	100.9	472.0	0.0	0.0	0.0			
1	728.5	3161.5	1100.0	0.0	0.0	0.0	1100.00	724.2	0.00034
2	729.7	5416.0	2370.0	0.0	0.0	0.0	2370.00	726.7	0.00042
3	730.7	7151.5	3470.0	0.0	0.0	0.0	3470.00	726.9	0.00042
4	731.0	7743.1	4000.0	0.0	0.0	0.0	4000.00	726.9	0.00045
5	731.9	9478.9	5410.0	0.0	0.0	0.0	5410.00	727.1	0.00046

SEGMENT TABLE FOR SECTION 27.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	259.	569.	271.
1100.	VELOCITY FPS	1.18	0.21	1.59	0.18
2	DISCHARGE CFS	2370.	670.	880.	820.
2370.	VELOCITY FPS	1.27	0.32	2.04	0.28
3	DISCHARGE CFS	3470.	1031.	1074.	1364.
3470.	VELOCITY FPS	1.27	0.38	2.22	0.34
4	DISCHARGE CFS	4000.	1202.	1172.	1626.
4000.	VELOCITY FPS	1.32	0.42	2.33	0.37
5	DISCHARGE CFS	5410.	1661.	1404.	2343.
5410.	VELOCITY FPS	1.35	0.47	2.52	0.43
1 ELEV	728.5 KD	59237.	13602.	31620.	14015.
2 ELEV	729.7 KD	115262.	32552.	42976.	39734.
3 ELEV	730.7 KD	168560.	50078.	52291.	66191.
4 ELEV	731.0 KD	187704.	56334.	55558.	75813.
5 ELEV	731.9 KD	253120.	77700.	65746.	109674.

KD TABLE FOR CROSS SECTION 27.01

ELEVATION	AREA	KD	KD BY SEGMENT		
718.69	0.				
719.	1.	6.	1.	4.	1.
720.	8.	171.	1.	169.	1.
721.	23.	732.	1.	730.	1.
722.	44.	1752.	1.	1750.	1.
723.	71.	3223.	1.	3221.	1.
724.	109.	5459.	1.	5457.	2.
725.	153.	7792.	2.	7788.	3.
726.	235.	13049.	6.	12973.	7.
727.	844.	22428.	708.	19560.	1887.
728.	2274.	43127.	7667.	27250.	7309.
729.	4036.	79052.	20238.	35917.	22364.
730.	5909.	128866.	36516.	45511.	46122.
731.	7818.	190446.	57151.	55978.	77077.
732.	9746.	263160.	81015.	67332.	114759.
733.	11699.	342930.	107736.	79476.	155667.
734.	13694.	435109.	137188.	92367.	205406.
735.	15693.	537501.	169539.	106081.	261761.
736.	17693.	648757.	204533.	120522.	323694.
737.	19692.	769419.	242400.	135737.	391258.
738.	21692.	896794.	282279.	151606.	462651.
739.	23692.	1032120.	324576.	168178.	537801.
740.	25692.	1175680.	369361.	185461.	620604.
741.	27691.	1326592.	416416.	203414.	706749.
742.	29691.	1483279.	465184.	221966.	796075.
743.	31691.	1650125.	517068.	241299.	891610.
744.	33691.	1827869.	572295.	261434.	994495.

RATING TABLE FOR SECTION 27.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	726.1	0.0	0.0						
BANK FULL	728.7	1037.4	680.4	0.0	0.0	0.0			
1	730.3	4343.0	1100.0	0.0	0.0	0.0	1100.00	728.1	0.00024
2	731.4	7076.3	2370.0	0.0	0.0	0.0	2370.00	728.4	0.00024
3	732.2	9094.4	3470.0	0.0	0.0	0.0	3470.00	728.5	0.00023
4	732.5	9723.8	4000.0	0.0	0.0	0.0	4000.00	728.6	0.00025
5	733.4	11981.8	5410.0	0.0	0.0	0.0	5410.00	728.7	0.00023

SEGMENT TABLE FOR SECTION 27.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	41.	116.	942.
1100.	VELOCITY FPS	0.36	0.12	0.85	0.24
2	DISCHARGE CFS	2370.	206.	197.	1967.
2370.	VELOCITY FPS	0.44	0.23	1.06	0.33
3	DISCHARGE CFS	3470.	372.	262.	2836.
3470.	VELOCITY FPS	0.48	0.29	1.17	0.[illegible]
4	DISCHARGE CFS	4000.	447.	295.	3253
4000.	VELOCITY FPS	0.51	0.31	1.26	0.[illegible]
5	DISCHARGE CFS	5410.	685.	374.	437[illegible]
5410.	VELOCITY FPS	0.55	0.36	1.36	0.[illegible]
1 ELEV 730.3 KD		71745.	2682.	7585.	6147[illegible]
2 ELEV 731.4 KD		152394.	12785.	12793.	12681[illegible]
3 ELEV 732.2 KD		228562.	24208.	17309.	18704[illegible]
4 ELEV 732.5 KD		255506.	28541.	18839.	20812[illegible]
5 ELEV 733.4 KD		356140.	44976.	24627.	26653[illegible]

KD TABLE FOR CROSS SECTION 27.10

ELEVATION	AREA	KD	KD BY SEGMENT		
726.08	0.				
727.	11.	14[illegible].	1.	144.	3.
728.	244.	195[illegible].	1.	1040.	884.
729.	1564.	1600[illegible].	2.	3094.	12840.
730.	3664.	5500[illegible].	886.	6420.	47075.
731.	6096.	12075[illegible].	8522.	10807.	101243.
732.	8552.	20699[illegible].	20886.	16043.	169569.
733.	11019.	31212[illegible].	37474.	22084.	252505.
734.	13542.	42323[illegible].	57781.	28879.	336550.
735.	16222.	55367[illegible].	81289.	36371.	436000.
736.	18966.	70852[illegible].	107954.	44540.	556026.
737.	21777.	85662[illegible].	137597.	53358.	661150.
738.	24741.	104078[illegible].	170090.	62802.	807586.
739.	27784.	124519[illegible].	205230.	72843.	967108.
740.	30876.	146992.	243103.	83478.	1143337.
741.	33992.	171685[illegible].	283600.	94688.	1334545.
742.	37118.	198441[illegible].	326645.	106458.	1551305.
743.	40248.	226618.	371004.	118774.	1776385.
744.	43386.	255294[illegible].	408559.	131615.	2012722.
745.	46587.	283545[illegible].	429184.	144980.	2267755.
746.	49847.	313090[illegible].	451297.	158864.	2520717.
747.	53185.	345735[illegible].	492258.	173252.	2791835.
748.	56523.	380021[illegible].	534763.	188180.	3077399.
749.	59860.	415947[illegible].	578794.	203642.	3377464.

RATING TABLE FOR SECTION 27.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	727.8	0.0	0.0						
BANK FULL	728.9	37.3	295.4	0.0	0.0	0.0			
1	731.9	3499.0	1100.0	0.0	0.0	0.0	1100.00	729.9	0.00033
2	732.9	5883.7	2370.0	0.0	0.0	0.0	2370.00	730.3	0.00031
3	733.6	7627.9	3470.0	0.0	0.0	0.0	3470.00	730.5	0.00030
4	733.8	8135.0	4000.0	0.0	0.0	0.0	4000.00	730.6	0.00032
5	734.6	10208.2	5410.0	0.0	0.0	0.0	5410.00	730.8	0.00029

SEGMENT TABLE FOR SECTION 27.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	371.	205.	524.
1100.	VELOCITY FPS	0.56	0.25	1.13	0.25
2	DISCHARGE CFS	2370.	923.	298.	1149.
2370.	VELOCITY FPS	0.59	0.35	1.30	0.38
3	DISCHARGE CFS	3470.	1416.	370.	1684.
3470.	VELOCITY FPS	0.61	0.40	1.40	0.44
4	DISCHARGE CFS	4000.	1651.	409.	1940.
4000.	VELOCITY FPS	0.65	0.44	1.49	0.47
5	DISCHARGE CFS	5410.	2314.	486.	2610.
5410.	VELOCITY FPS	0.67	0.46	1.55	0.51
1	ELEV 731.9 KO	60546.	20164.	11544.	28838.
2	ELEV 732.9 KO	133805.	51795.	17130.	64879.
3	ELEV 733.6 KO	201666.	82091.	21650.	97926.
4	ELEV 733.8 KO	222707.	91623.	23014.	108071.
5	ELEV 734.6 KO	319963.	136576.	28917.	154471.

KD TABLE FOR CROSS SECTION 27.90

ELEVATION	AREA	KD	KD BY SEGMENT		
727.80	0.				
728.	1.	7.	2.	3.	2.
729.	44.	835.	34.	798.	3.
730.	293.	4695.	586.	3356.	688.
731.	1501.	19589.	4513.	7187.	673.
732.	3748.	67638.	23314.	12107.	17.
733.	6223.	145972.	57086.	17978.	767.
734.	8764.	250898.	104482.	24758.	69.
735.	11350.	380615.	165207.	32380.	28.
736.	13964.	530397.	236451.	40787.	530.
737.	16600.	700953.	317294.	49958.	661.
738.	19257.	891298.	407925.	59859.	500.
739.	21926.	1102442.	507515.	70463.	453.
740.	24601.	1331149.	615664.	81747.	726.
741.	27281.	1577480.	732435.	93696.	351.
742.	29969.	1839261.	856747.	106281.	224.
743.	32663.	2117305.	989047.	119494.	754.
744.	35367.	2407794.	1125787.	133322.	678.
745.	38085.	2710465.	1267011.	147748.	99.
746.	40818.	3027611.	1414864.	162767.	81.
747.	43578.	3358312.	1569617.	178352.	35.
748.	46355.	3705724.	1731635.	194507.	76.
749.	49148.	4062604.	1899907.	211220.	78.
750.	51967.	4431201.	2071213.	228477.	07.
751.	54815.	4813473.	2249696.	246269.	34.
752.	57671.	5210158.	2435124.	264602.	30.
753.	60527.	5621470.	2627396.	283475.	25.

RATING TABLE FOR SECTION 27.99 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	726.2	0.0	0.0						
BANK FULL	727.3	37.3	206.4	0.0	0.0	0.0			
1	732.1	7897.1	1100.0	0.0	0.0	0.0	1100.00	728.3	0.00005
2	733.2	10723.8	2370.0	0.0	0.0	0.0	2370.00	728.7	0.00008
3	733.9	12674.2	3470.0	0.0	0.0	0.0	3470.00	728.9	0.00010
4	734.2	13312.1	4000.0	0.0	0.0	0.0	4000.00	729.0	0.00012
5	735.0	15547.1	5410.0	0.0	0.0	0.0	5410.00	729.2	0.00013

SEGMENT TABLE FOR SECTION 27.99

CSM		TOTAL	SEG NO 1 N	2 C	3 M
1	DISCHARGE CFS	1100.	436.	150.	515.
1100.	VELOCITY FPS	0.24	0.12	0.56	0.13
2	DISCHARGE CFS	2370.	990.	273.	1107.
2370.	VELOCITY FPS	0.34	0.20	0.84	0.21
3	DISCHARGE CFS	3470.	1486.	367.	1617.
3470.	VELOCITY FPS	0.41	0.25	1.01	0.26
4	DISCHARGE CFS	4000.	1724.	414.	1862.
4000.	VELOCITY FPS	0.44	0.27	1.11	0.28
5	DISCHARGE CFS	5410.	2374.	523.	2513.
5410.	VELOCITY FPS	0.50	0.32	1.25	0.33
1 ELEV	732.1 KD	162778.	64239.	22369.	76170.
2 ELEV	733.2 KD	263661.	109985.	30459.	123218.
3 ELEV	733.9 KD	344265.	147269.	36945.	160431.
4 ELEV	734.2 KD	372875.	160634.	38630.	173612.
5 ELEV	735.0 KD	477357.	209346.	46214.	221797.

KD TABLE FOR CROSS SECTION 27.99

ELEVATION	AREA	KD	KD BY SEGMENT		
726.20	0.				
727.	18.	279.	2.	276.	1.
728.	140.	2462.	187.	2160.	65.
729.	860.	9651.	1513.	5514.	2441.
730.	2792.	34847.	9628.	10014.	14968.
731.	5220.	86987.	31351.	15525.	40110.
732.	7739.	157916.	62063.	21945.	73851.
733.	10314.	247742.	102618.	29230.	115835.
734.	12916.	354989.	152266.	37330.	165361.
735.	15543.	477193.	209255.	46201.	221709.
736.	18193.	614193.	273411.	55814.	284948.
737.	20858.	766858.	344294.	66139.	356410.
738.	23530.	933435.	421626.	77154.	434644.
739.	26210.	1112596.	505005.	88839.	518739.
740.	28895.	1304537.	594560.	101168.	608796.
741.	31586.	1508712.	690031.	114135.	704535.
742.	34264.	1723938.	790451.	127721.	805762.
743.	36992.	1947122.	892901.	141913.	912310.
744.	39725.	2179948.	999647.	156689.	1023604.
745.	42475.	2424035.	1111614.	172049.	1140165.
746.	45240.	2679114.	1229321.	187982.	1261807.
747.	48027.	2944582.	1352016.	204471.	1388093.
748.	50840.	3217602.	1477120.	221509.	1518972.
749.	53673.	3500351.	1606675.	239090.	1654583.
750.	56529.	3793465.	1741472.	257206.	1794786.
751.	59385.	4097538.	1881327.	275864.	1940362.
752.	62241.	4412507.	2026213.	295057.	2091283.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.6550	0.6232	0.0317	0.8964	0.0	0.0	0.6958	1.0000	1.0000	409.8489	1840.3123	10217.6836
DCRIT	729.07	KBCRIT=									
1.3713	1.3465	0.0248	0.7478	0.0	0.0	0.4887	1.0000	1.0000	526.5271	4159.9844	13074.4102
DCRIT	730.37	KBCRIT=									
1.7743	1.7530	0.0213	0.6627	0.0	0.0	0.3932	1.0000	1.0000	606.3000	6266.8828	15045.4297
DCRIT	731.46	KBCRIT=									
1.8851	1.8647	0.0204	0.6393	0.0	0.0	0.3686	1.0000	1.0000	632.3159	7168.4258	15689.0508
DCRIT	731.81	KBCRIT=									
2.1358	2.1175	0.0162	0.5866	0.0	0.0	0.3150	1.0000	1.0000	857.9958	9704.2461	17943.4492
DCRIT	732.61	KBCRIT=									

ROGUE RIVER FLOOD HAZARD STUDY, KENT CO., MICH. 7/17/81
FINAL TR20 DISCHARGES ------ TO NASH CREEK

KD TABLE FOR CROSS SECTION 27.10

ELEVATION	AREA	KD	KD BY SEGMENT		
726.08	0.				
727.	11.	148.	1.	144.	3.
728.	244.	1951.	1.	1040.	884.
729.	1564.	16006.	2.	3094.	12840.
730.	3664.	55008.	886.	6420.	47275.
731.	6096.	120758.	8522.	10607.	101543.
732.	8552.	206995.	20886.	16043.	169969.
733.	11019.	312124.	37474.	22084.	252505.
734.	13542.	423237.	57781.	28879.	336550.
735.	16222.	553677.	81289.	36371.	435000.
736.	18966.	708526.	107954.	44540.	555026.
737.	21777.	866820.	137557.	53358.	675850.
738.	24741.	1040783.	170090.	62802.	807888.
739.	27764.	1245191.	205230.	72843.	967108.
740.	30876.	1469529.	243103.	83478.	1143337.
741.	33992.	1716850.	283600.	94688.	1338545.
742.	37118.	1984418.	326645.	106458.	1551305.
743.	40248.	2266186.	371604.	118774.	1776385.
744.	43386.	2552942.	408539.	131615.	2012722.
745.	46587.	2835492.	429164.	144950.	2260755.
746.	49847.	3130900.	451197.	158864.	2520717.
747.	53165.	3457354.	492058.	173252.	2791835.
748.	56523.	3800211.	534763.	188180.	3077399.
749.	59860.	4159478.	578794.	203642.	3377464.

RATING TABLE FOR SECTION 27.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	727.8	0.0	0.0						
BANK FULL	728.9	37.3	295.4	0.0	0.0	0.0			
1	731.9	3499.0	1100.0	0.0	0.0	0.0	1100.00	729.9	0.00033
2	732.9	5863.7	2370.0	0.0	0.0	0.0	2370.00	730.3	0.00031
3	733.6	7627.9	3470.0	0.0	0.0	0.0	3470.00	730.5	0.00030
4	733.8	8135.0	4000.0	0.0	0.0	0.0	4000.00	730.6	0.00032
5	734.6	10208.2	5410.0	0.0	0.0	0.0	5410.00	730.8	0.00029

SEGMENT TABLE FOR SECTION 27.90

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1100.	371.	205.	524.
1100.	VELOCITY FPS	0.56	0.25	1.13	0.29
2	DISCHARGE CFS	2370.	923.	298.	1149.
2370.	VELOCITY FPS	0.59	0.35	1.30	0.38
3	DISCHARGE CFS	3470.	1416.	370.	1684.
3470.	VELOCITY FPS	0.61	0.40	1.40	0.[illegible]
4	DISCHARGE CFS	4000.	1651.	409.	194[illegible]
4000.	VELOCITY FPS	0.65	0.44	1.49	[illegible]
5	DISCHARGE CFS	5410.	2314.	485.	[illegible]
5410.	VELOCITY FPS	0.67	[illegible]	[illegible]	[illegible]
1	ELEV 731.9 KD	60546.	20164.	11544.	288[illegible]
2	ELEV 732.9 KD	133805.	51795.	17130.	6467
3	ELEV 733.6 KD	201666.	82091.	21650.	979[illegible]
4	ELEV 733.8 KD	222707.	91623.	23014.	10807
5	ELEV 734.6 KD	319963.	136576.	28817.	15447

:D TABLE FOR CROSS SECTION 27.90

ELEVATION	AREA	.D	KD BY SEGMENT		
727.80	0.				
728.	1.	.	2.	3.	2.
729.	44.	83 .	34.	798.	3.
730.	293.	469 .	586.	3356.	688.
731.	1501.	1958 .	4513.	7187.	7573.
732.	3748.	6783 .	23314.	12107.	32417.
733.	6223.	14597 .	57086.	17978.	70767.
734.	8764.	25089 .	104482.	24758.	122589.
735.	11350.	38061 .	165207.	32380.	183028.
736.	13964.	53039 .	236051.	40787.	253530.
737.	16600.	70095 .	317294.	49958.	333681.
738.	19257.	89129 .	407925.	59859.	423500.
739.	21926.	110244 .	507515.	70463.	524453.
740.	24601.	133114 .	615664.	81747.	633726.
741.	27281.	157748 .	732435.	93696.	751351.
742.	29969.	183926 .	856747.	106281.	879224.
743.	32663.	211730 .	989047.	119494.	1008754.
744.	35367.	240779 .	1125787.	133322.	1148678.
745.	38085.	271046 .	1267011.	147748.	1295699.
746.	40818.	302761 .	1414864.	162767.	1449981.
747.	43578.	335831 .	1569617.	178352.	1610335.
748.	46355.	370372 .	1731635.	194507.	1777576.
749.	49148.	406260 .	1899907.	211220.	1951478.
750.	51967.	443120 .	2071213.	228477.	2131507.
751.	54815.	481347 .	2249696.	246269.	2317504.
752.	57671.	521015 .	2435124.	264602.	2510430.
753.	60527.	562147 .	2627396.	283475.	2710625.

50 ft dls

RATING TABLE FOR SECTION 27.99 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	726.2	0.0	0.0						
BANK FULL	727.3	37.3	206.4	0.0	0.0	0.0			
1	732.1	7897.1	1100.0	0.0	0.0	0.0	1100.00	728.3	0.00005
2	733.2	10723.8	2370.0	0.0	0.0	0.0	2370.00	728.7	0.00008
3	733.9	12674.2	3470.0	0.0	0.0	0.0	3470.00	728.9	0.00010
4	734.2	13312.1	4000.0	0.0	0.0	0.0	4000.00	729.0	0.00012
5	735.0	15547.1	5410.0	0.0	0.0	0.0	5410.00	729.2	0.00013

SEGMENT TABLE FOR SECTION 27.99

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	436.	150.	515.
1100.	VELOCITY FPS	0.24	0.12	0.56	0.18
2	DISCHARGE CFS	2370.	990.	273.	1107.
2370.	VELOCITY FPS	0.34	0.20	0.84	0.21
3	DISCHARGE CFS	3470.	1486.	387.	1617.
3470.	VELOCITY FPS	0.41	0.25	1.01	0.26
4	DISCHARGE CFS	4000.	1724.	414.	1862.
4000.	VELOCITY FPS	0.44	0.27	1.11	0.28
5	DISCHARGE CFS	5410.	2374.	523.	2513.
5410.	VELOCITY FPS	0.50	0.32	1.25	0.33
1	ELEV 732.1 KD	162778.	64239.	22369.	76170.
2	ELEV 733.2 KD	263661.	109985.	30459.	123218.
3	ELEV 733.9 KD	344265.	147269.	36545.	160431.
4	ELEV 734.2 KD	372875.	160634.	38630.	173612.
5	ELEV 735.0 KD	477357.	209346.	46214.	221797.

KD TABLE FOR CROSS SECTION 27.99

ELEVATION	AREA	KD	KD BY SEGMENT		
726.20	0.				
727.	18.	279.	2.	276.	1.
728.	140.	2462.	187.	2160.	65.
729.	860.	9651.	1513.	5514.	[illegible]41.
730.	2792.	34647.	9628.	10014.	1[illegible]58.
731.	5220.	86987.	31351.	15525.	4[illegible]10.
732.	7739.	157916.	62063.	21945.	7[illegible]51.
733.	10314.	247742.	102618.	29230.	11[illegible]35.
734.	12916.	354989.	152268.	37330.	16[illegible]61.
735.	15543.	477193.	209255.	46201.	22[illegible]09.
736.	18193.	614193.	273411.	55814.	284[illegible]48.
737.	20858.	766858.	344294.	66139.	35[illegible]10.
738.	23530.	933435.	421626.	77154.	434[illegible]44.
739.	26210.	1112596.	505005.	88835.	518739.
740.	28895.	1304537.	594560.	101168.	608796.
741.	31586.	1508712.	690031.	114135.	704[illegible]35.
742.	34264.	1723938.	790451.	127721.	805762.
743.	36992.	1947122.	892901.	141913.	912310.
744.	39725.	2179948.	999647.	156689.	102[illegible]04.
745.	42475.	2424035.	1111614.	172049.	114[illegible]65.
746.	45240.	2679114.	1229321.	187582.	126[illegible]07.
747.	48027.	2944582.	1352016.	204471.	13[illegible]93.
748.	50840.	3217602.	1477120.	2[illegible]1507.	151[illegible]72.
749.	53673.	3500351.	1606675.	239090.	1[illegible]43.
750.	56529.	3793465.	1741472.	257206.	179[illegible]86.
751.	59385.	4097538.	1881327.	275864.	194[illegible]62.
752.	62241.	4412507.	2026213.	295057.	20[illegible]63.

TABLE OF VALUES FOR BRR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.6550	0.6232	0.0317	0.8964	0.0	0.0	0.6958	1.0000	1.0000	409.8489	1840.3123	10217.6836
DCRIT	729.07	KBCRIT=									
1.3713	1.3465	0.0248	0.7478	0.0	0.0	0.4887	1.0000	1.0000	526.5271	4159.9844	13074.4102
DCRIT	730.37	KBCRIT=									
1.7743	1.7530	0.0213	0.6627	0.0	0.0	0.3932	1.0000	1.0000	606.3000	6266.8828	15045.4297
DCRIT	731.46	KBCRIT=									
1.8851	1.8647	0.0204	0.6393	0.0	0.0	0.3686	1.0000	1.0000	632.3159	7168.4258	15689.0508
DCRIT	731.81	KBCRIT=									
2.1358	2.1175	0.0182	0.5866	0.0	0.0	0.3150	1.0000	1.0000	857.9958	9704.2461	17943.4492
DCRIT	732.61	KBCRIT=									

FINAL TR20 DISCHARGES ------ TO NASH CREEK

d/s Face Alpine

ROAD SECTION 28.00

NO.	HW	CFS	HL	TW	CSM
0	725.30	0.00	0.00	0.00	0.00
1	732.08	1100.00	0.02	732.06	1100.00
2	733.54	2370.00	0.38	733.16	2370.00
3	734.77	3470.00	0.86	733.91	3470.00
4	735.29	4000.00	1.14	734.16	4000.00
5	736.78	5410.00	1.78	735.01	5410.00

MIN ROAD ELEVATION 737.40

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 736.60 OPENING NO.= 1

RATING TABLE FOR SECTION 28.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	726.2	0.0	0.0						
BANK FULL	730.3	206.2	752.0	0.0	0.0	0.0			
1	732.2	908.6	1100.0	0.0	0.0	0.0	1100.00	729.5	0.00145
2	733.6	2805.8	2370.0	0.0	0.0	0.0	2370.00	731.3	0.00132
3	734.8	4821.9	3470.0	0.0	0.0	0.0	3470.00	731.8	0.00087
4	735.3	5709.1	4000.0	0.0	0.0	0.0	4000.00	731.9	0.00075
5	736.8	8247.6	5410.0	0.0	0.0	0.0	5410.00	732.2	0.00050

SEGMENT TABLE FOR SECTION 28.10

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1100.	2.	979.	123.
1100.	VELOCITY FPS	2.54	0.11	2.65	0.23
2	DISCHARGE CFS	2370.	78.	1508.	784.
2370.	VELOCITY FPS	2.50	0.25	3.06	0.49
3	DISCHARGE CFS	3470.	270.	1681.	1513.
3470.	VELOCITY FPS	2.02	0.33	2.82	0.[illegible]
4	DISCHARGE CFS	4000.	376.	1773.	185[illegible]
4000.	VELOCITY FPS	1.89	0.35	2.76	0.[illegible]
5	DISCHARGE CFS	5410.	706.	1965.	27[illegible]
5410.	VELOCITY FPS	1.60	0.40	2.56	0.[illegible]
1 ELEV	732.2 KD	28344.	29.	25928.	234[illegible]
2 ELEV	733.6 KD	64767.	1841.	42069.	208[illegible]
3 ELEV	734.8 KD	117243.	8512.	57843.	5068[illegible]
4 ELEV	735.3 KD	146143.	13482.	65247.	6741[illegible]
5 ELEV	736.8 KD	241236.	31152.	86141.	12194[illegible]

KD TABLE FOR CROSS SECTION 28.10

ELEVATION	AREA	KD	KD BY SEGMENT		
726.18	0.				
727.	11.	18[illegible].	1.	180.	1.
728.	46.	119[illegible].	1.	1187.	1.
729.	106.	372[illegible].	1.	3721.	1.
730.	183.	812[illegible].	1.	8120.	1.
731.	287.	1526[illegible].	3.	15219.	24.
732.	756.	2619[illegible].	19.	24170.	1636.
733.	1867.	4601[illegible].	345.	34760.	9535.
734.	3425.	7997[illegible].	3314.	46845.	29300.
735.	5120.	12728[illegible].	10129.	60304.	56370.
736.	6837.	18607[illegible].	20606.	75097.	96105.
737.	8560.	25488[illegible].	33833.	91158.	129727.
738.	10288.	33290[illegible].	49536.	108439.	174822.
739.	12022.	41923[illegible].	67412.	126879.	224787.
740.	13762.	51365[illegible].	87157.	146479.	279502.
741.	15513.	61550[illegible].	108439.	167197.	339795.
742.	17281.	72468[illegible].	131405.	189000.	404244.
743.	19063.	84117[illegible].	156251.	211862.	473059.
744.	20902.	95565[illegible].	174425.	235714.	543467.
745.	22778.	108534[illegible].	202334.	260598.	622262.
746.	24677.	122860[illegible].	238772.	286491.	703266.
747.	26577.	137959[illegible].	278283.	313341.	787909.
748.	28478.	153723[illegible].	319911.	341130.	876083.
749.	30378.	170206[illegible].	364001.	369873.	968110.
750.	32278.	187385[illegible].	410411.	399544.	1063650.
751.	34178.	205482[illegible].	460459.	430230.	1164533.
752.	36078.	224509[illegible].	514269.	461921.	1270198.

RATING TABLE FOR SECTION 28.14 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	726.2	0.0	0.0						
BANK FULL	730.3	206.2	681.7	0.0	0.0	0.0			
1	732.8	1570.1	1100.0	0.0	0.0	0.0	1100.00	729.5	0.00054
2	734.0	3478.6	2370.0	0.0	0.0	0.0	2370.00	731.3	0.00033
3	735.1	5303.6	3470.0	0.0	0.0	0.0	3470.00	731.8	0.00022
4	735.6	6128.0	4000.0	0.0	0.0	0.0	4000.00	731.9	0.00020
5	737.0	8525.4	5410.0	0.0	0.0	0.0	5410.00	732.2	0.00013

SEGMENT TABLE FOR SECTION 28.14

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1100.	12.	712.	376.
1100.	VELOCITY FPS	1.50	0.15	1.69	0.35
2	DISCHARGE CFS	2370.	95.	848.	1426.
2370.	VELOCITY FPS	1.08	0.20	1.60	0.98
3	DISCHARGE CFS	3470.	242.	520.	2309.
3470.	VELOCITY FPS	0.92	0.25	1.48	0.82
4	DISCHARGE CFS	4000.	323.	954.	2723.
4000.	VELOCITY FPS	0.89	0.27	1.44	0.64
5	DISCHARGE CFS	5410.	530.	1042.	3819.
5410.	VELOCITY FPS	0.81	0.30	1.33	0.65
1	ELEV 732.8 KD	45157.	236.	32483.	12439.
2	ELEV 734.0 KD	129698.	4923.	47267.	77508.
3	ELEV 735.1 KD	231987.	15919.	61846.	154222.
4	ELEV 735.6 KD	284729.	22396.	68822.	193511.
5	ELEV 737.0 KD	469514.	47411.	90818.	331285.

KD TABLE FOR CROSS SECTION 28.14

ELEVATION	AREA	KD	KD BY SEGMENT		
726.18	0.				
727.	11.	183.	1.	180.	1.
728.	46.	1190.	1.	1187.	1.
729.	106.	3724.	1.	3721.	1.
730.	183.	8124.	2.	8120.	1.
731.	287.	15280.	4.	15219.	33.
732.	756.	27013.	27.	24176.	2813.
733.	1867.	58270.	488.	34760.	1[illegible]836.
734.	3425.	127642.	4687.	46845.	7[illegible]39.
735.	5120.	220214.	14325.	60304.	144[illegible]44.
736.	6837.	336262.	29141.	75097.	23[illegible]688.
737.	8560.	472770.	47847.	91158.	33[illegible]565.
738.	10288.	628144.	70054.	108439.	44[illegible]520.
739.	12022.	800394.	95335.	126879.	57[illegible]93.
740.	13762.	989582.	123258.	146479.	719711.
741.	15513.	1194351.	153356.	167197.	873714.
742.	17281.	1414310.	185634.	185000.	103[illegible]432.
743.	19066.	1649214.	220972.	211862.	121[illegible]74.
744.	20902.	1885023.	246674.	235714.	140[illegible]57.
745.	22778.	2146949.	286144.	260598.	160[illegible]19.
746.	24677.	2432564.	337675.	286491.	180[illegible]06.
747.	26577.	2732919.	393551.	313341.	20[illegible]48.
748.	28478.	3046356.	452423.	341130.	22[illegible]9.
749.	30378.	3374051.	514775.	369870.	24[illegible]6.
750.	32278.	3715487.	580408.	399544.	273[illegible]75.
751.	34178.	4075278.	651187.	430230.	29[illegible]0.
752.	36078.	4453625.	727285.	461921.	326[illegible]0.

RATING TABLE FOR SECTION 28.17 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	725.3	0.0	0.0						
BANK FULL	731.3	186.6	777.9	0.0	0.0	0.0			
1	733.8	1168.7	1100.0	0.0	0.0	0.0	1100.00	729.5	0.00106
2	735.0	2886.5	2370.0	0.0	0.0	0.0	2370.00	731.5	0.00113
3	735.9	4324.7	3470.0	0.0	0.0	0.0	3470.00	733.4	0.00092
4	736.3	4976.4	4000.0	0.0	0.0	0.0	4000.00	733.4	0.00083
5	737.5	7061.4	5410.0	0.0	0.0	0.0	5410.00	733.6	0.00060

SEGMENT TABLE FOR SECTION 28.17

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	136.	835.	130.
1100.	VELOCITY FPS	2.61	0.32	2.63	0.29
2	DISCHARGE CFS	2370.	580.	1143.	647.
2370.	VELOCITY FPS	2.41	0.51	3.29	0.46
3	DISCHARGE CFS	3470.	1002.	1248.	1220.
3470.	VELOCITY FPS	2.05	0.60	3.22	0.54
4	DISCHARGE CFS	4000.	1200.	1304.	1497.
4000.	VELOCITY FPS	1.90	0.62	3.21	0.57
5	DISCHARGE CFS	5410.	1753.	1352.	2305.
5410.	VELOCITY FPS	1.58	0.65	2.94	0.59
1 ELEV	733.8 KD	31022.	2515.	26537.	1970.
2 ELEV	735.0 KD	69149.	16373.	34544.	17833.
3 ELEV	735.9 KD	113412.	32480.	41895.	39037.
4 ELEV	736.3 KD	138577.	41560.	45177.	51841.
5 ELEV	737.5 KD	220784.	71532.	55754.	93497.

KD TABLE FOR CROSS SECTION 28.17

ELEVATION	AREA	KD	KD BY SEGMENT		
725.27	0.				
726.	10.	190.	1.	188.	1.
727.	32.	1012.	1.	1010.	1.
728.	61.	2484.	1.	2481.	1.
729.	96.	4772.	1.	4769.	1.
730.	134.	7852.	1.	7849.	1.
731.	175.	11611.	1.	11608.	1.
732.	218.	16300.	3.	16296.	1.
733.	442.	22614.	147.	21823.	72.
734.	1485.	39290.	4435.	28187.	6694.
735.	2955.	72421.	17112.	35275.	18749.
736.	4544.	121963.	35324.	42983.	42997.
737.	6196.	184071.	58177.	51288.	74275.
738.	7903.	260202.	85049.	60160.	114638.
739.	9629.	350271.	116241.	69600.	164150.
740.	11364.	451758.	151335.	79564.	220689.
741.	13108.	563566.	189695.	90099.	283719.
742.	14864.	681602.	227896.	101124.	352551.
743.	16684.	801950.	262785.	112636.	426369.
744.	18555.	933349.	301969.	124658.	506527.
745.	20475.	1077546.	347532.	137166.	592814.
746.	22456.	1239163.	405473.	150135.	683467.
747.	24445.	1415661.	472628.	163569.	779320.
748.	26436.	1607635.	548347.	177495.	881577.
749.	28428.	1815669.	632138.	191930.	992851.

RATING TABLE FOR SECTION 28.31 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	725.3	0.0	0.0						
BANK FULL	731.3	186.6	746.5	0.0	0.0	0.0			
1	734.1	1628.2	1100.0	0.0	0.0	0.0	1100.00	729.5	0.00036
2	735.2	3285.2	2370.0	0.0	0.0	0.0	2370.00	731.5	0.00023
3	736.0	4594.2	3470.0	0.0	0.0	0.0	3470.00	733.4	0.00017
4	736.4	5203.0	4000.0	0.0	0.0	0.0	4000.00	733.4	0.00015
5	737.6	7187.0	5410.0	0.0	0.0	0.0	5410.00	733.6	0.00010

SEGMENT TABLE FOR SECTION 28.31

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N	5 N
1	DISCHARGE CFS	1100.	98.	527.	8.	419.	48.
1100.	VELOCITY FPS	1.50	0.16	1.70	0.15	1.28	0.15
2	DISCHARGE CFS	2370.	253.	558.	21.	1414.	124.
2370.	VELOCITY FPS	1.52	0.20	1.55	0.17	1.68	0.18
3	DISCHARGE CFS	3470.	367.	552.	34.	2331.	185.
3470.	VELOCITY FPS	1.66	0.21	1.40	0.1[illegible]	1.86	0.19
4	DISCHARGE CFS	4000.	422.	560.	4[illegible]	2766.	212.
4000.	VELOCITY FPS	1.69	0.21	1.36	0.[illegible]	1.92	0.19
5	DISCHARGE CFS	5410.	561.	547.	[illegible]	3953.	290.
5410.	VELOCITY FPS	1.72	0.21	1.18	0.[illegible]	1.94	0.18
1 ELEV 734.1 KD		52911.	4440.	28951.	31[illegible]	17110.	2099.
2 ELEV 735.2 KD		153886.	16425.	36890.	135[illegible]	91127.	8090.
3 ELEV 736.0 KD		263627.	28034.	43237.	259[illegible]	175691.	14072.
4 ELEV 736.4 KD		326870.	34497.	46283.	333[illegible]	225390.	17366.
5 ELEV 737.6 KD		549683.	57170.	56402.	595[illegible]	400526.	29232.

D TABLE FOR CROSS SECTION 28.31

ELEVATION	AREA	KD	KD BY SEGMENT				
725.27	0.						
726.	10.	192.	1.	188.	1.	1.	1.
727.	32.	101 .	1.	1010.	1.	1.	1.
728.	61.	248 .	1.	2481.	1.	1.	1.
729.	96.	477 .	1.	4769.	1.	1.	1.
730.	134.	785 .	1.	7849.	1.	1.	1.
731.	175.	1161 .	1.	11608.	1.	1.	1.
732.	218.	1630 .	3.	16296.	1.	1.	1.
733.	442.	2313 .	114.	21823.	7.	126.	42.
734.	1485.	5230 .	3453.	26187.	215.	12275.	1601.
735.	2955.	12888 .	13322.	35275.	1098.	69945.	6540.
736.	4544.	25956 .	27500.	42983.	2531.	171599.	13793.
737.	6196.	43246 .	45291.	51288.	4569.	308202.	22566.
738.	7903.	64089 .	66210.	60160.	7012.	471780.	35189.
739.	9629.	88628 .	90493.	69600.	9890.	664254.	51686.
740.	11364.	116377 .	117814.	79584.	13152.	882417.	70636.
741.	13108.	147106 .	147677.	90099.	16775.	1124570.	91881.
742.	14864.	180270 .	177417.	101124.	20720.	1368240.	115172.
743.	16684.	215302 .	204578.	112636.	24844.	1670447.	140218.
744.	18555.	253337 .	235083.	124655.	29525.	1976454.	167546.
745.	20475.	294355 .	270553.	137166.	34435.	2304399.	196971.
746.	22456.	338245 .	315660.	150135.	39596.	2649020.	227977.
747.	24445.	385023 .	367940.	163564.	45042.	3012741.	260810.
748.	26436.	435276 .	426887.	177495.	50867.	3401617.	296070.
749.	28428.	489494 .	492119.	191930.	57145.	3820659.	334267.

RATING TABLE FOR SECTION 28.38 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	728.3	0.0	0.0						
BANK FULL	734.3	186.6	765.7	0.0	0.0	0.0			
1	736.9	1342.9	1100.0	0.0	0.0	0.0	1100.00	732.5	0.00096
2	738.1	3102.0	2370.0	0.0	0.0	0.0	2370.00	734.5	0.00112
3	738.9	4396.8	3470.0	0.0	0.0	0.0	3470.00	736.4	0.00108
4	739.3	5073.0	4000.0	0.0	0.0	0.0	4000.00	736.4	0.00098
5	740.3	6623.3	5410.0	0.0	0.0	0.0	5410.00	736.6	0.00090

SEGMENT TABLE FOR SECTION 28.38

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	137.	831.	133.
1100.	VELOCITY FPS	2.50	0.27	2.76	0.24
2	DISCHARGE CFS	2370.	556.	1189.	621.
2370.	VELOCITY FPS	2.46	0.46	3.36	0.41
3	DISCHARGE CFS	3470.	949.	1362.	1159.
3470.	VELOCITY FPS	2.29	0.56	3.49	0.50
4	DISCHARGE CFS	4000.	1144.	1426.	1431.
4000.	VELOCITY FPS	2.14	0.58	3.49	0.53
5	DISCHARGE CFS	5410.	1665.	1603.	2141.
5410.	VELOCITY FPS	2.01	0.66	3.57	0.59
1 ELEV	736.9 KO	32827.	2937.	27439.	2451.
2 ELEV	738.1 KO	69799.	16027.	35989.	17783.
3 ELEV	738.9 KO	105105.	28480.	42252.	34374.
4 ELEV	739.3 KO	127600.	36428.	45647.	45526.
5 ELEV	740.3 KO	180539.	55546.	53521.	71472.

KD TABLE FOR CROSS SECTION 28.38

ELEVATION	AREA	KD	KD BY SEGMENT		
728.27	0.				
729.	10.	190.	1.	188.	1.
730.	32.	1012.	1.	1010.	1.
731.	61.	2483.	1.	2481.	1.
732.	96.	4771.	1.	4769.	1.
733.	134.	7851.	1.	7849.	1.
734.	175.	11610.	1.	11608.	1.
735.	218.	16300.	3.	16296.	1.
736.	442.	22499.	125.	21823.	562.
737.	1485.	37708.	3782.	28187.	5321.
738.	2955.	67027.	14593.	35275.	17590.
739.	4544.	110391.	30124.	42983.	35668.
740.	6196.	164558.	49614.	51288.	63342.
741.	7903.	230802.	72530.	60160.	97678.
742.	9629.	308987.	99131.	69600.	139587.
743.	11364.	396992.	129059.	79564.	188204.
744.	13108.	493878.	161772.	90099.	241956.
745.	14864.	596161.	194350.	101124.	300656.
746.	16684.	700495.	224103.	112636.	363108.
747.	18555.	814321.	257520.	124659.	432153.
748.	20475.	939128.	296376.	137166.	505553.
749.	22456.	1078868.	345789.	150135.	582879.
750.	24445.	1231369.	403058.	163569.	664756.
751.	26436.	1397105.	467632.	177495.	752052.
752.	28428.	1576551.	539089.	191930.	845707.

RATING TABLE FOR SECTION 28.60 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	728.9	0.0	0.0						
BANK FULL	732.8	93.5	506.3	0.0	0.0	0.0			
1	737.4	1615.2	1100.0	0.0	0.0	0.0	1100.00	733.3	0.00066
2	738.7	2693.8	2370.0	0.0	0.0	0.0	2370.00	735.7	0.00091
3	739.6	3405.6	3470.0	0.0	0.0	0.0	3470.00	736.2	0.00105
4	740.0	3744.0	4000.0	0.0	0.0	0.0	4000.00	736.2	0.00107
5	741.0	4504.5	5410.0	0.0	0.0	0.0	5410.00	736.4	0.00116

SEGMENT TABLE FOR SECTION 28.60

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1100.	5.	663.	432.
1100.	VELOCITY FPS	1.94	0.27	2.40	0.36
2	DISCHARGE CFS	2370.	17.	1070.	1283.
2370.	VELOCITY FPS	2.24	0.41	3.25	0.55
3	DISCHARGE CFS	3470.	30.	1360.	2080.
3470.	VELOCITY FPS	2.42	0.50	3.73	0.70
4	DISCHARGE CFS	4000.	37.	1485.	2478.
4000.	VELOCITY FPS	2.45	0.53	3.89	0.75
5	DISCHARGE CFS	5410.	58.	1807.	3545.
5410.	VELOCITY FPS	2.60	0.61	4.31	0.85
1 ELEV 737.4 KD		42327.	191.	26438.	15698.
2 ELEV 738.7 KD		78181.	538.	35631.	42013.
3 ELEV 739.6 KD		106894.	898.	42225.	63772.
4 ELEV 740.0 KD		122233.	1115.	45514.	75604.
5 ELEV 741.0 KD		159122.	1706.	53209.	104206.

KD TABLE FOR CROSS SECTION 28.60

ELEVATION	AREA	KD	KD BY SEGMENT		
728.90	0.				
729.	1.	8.	1.	7.	1.
730.	15.	342.	1.	339.	1.
731.	36.	1219.	1.	1217.	1.
732.	65.	2743.	1.	2741.	1.
733.	101.	5044.	1.	5041.	2.
734.	142.	8614.	3.	8605.	5.
735.	216.	13211.	10.	13073.	78.
736.	561.	20110.	41.	18264.	1592.
737.	1318.	35358.	135.	24110.	10919.
738.	2115.	58211.	326.	30587.	27191.
739.	2918.	87110.	641.	37666.	48737.
740.	3724.	121419.	1102.	45323.	74949.
741.	4536.	160703.	1733.	53534.	105497.
742.	5352.	204693.	2555.	62284.	139812.
743.	6176.	252637.	3240.	71550.	177782.
744.	7020.	305035.	4191.	81328.	219450.
745.	7887.	361993.	5709.	91604.	264601.
746.	8779.	423503.	8038.	102364.	313016.
747.	9695.	489556.	11239.	113601.	364662.
748.	10644.	559806.	15430.	125286.	418945.
749.	11615.	634773.	20748.	137434.	476434.
750.	12608.	714411.	27351.	150036.	536975.
751.	13633.	798380.	35276.	163062.	599911.
752.	14685.	886860.	44574.	176518.	665521.
753.	15755.	979618.	54971.	190414.	734226.
754.	16892.	1071168.	61443.	204709.	804992.
755.	18109.	1170148.	71906.	219424.	878523.
756.	19403.	1277150.	87821.	234552.	954594.
757.	20770.	1395458.	111632.	250064.	1033860.
758.	22149.	1520855.	140549.	265984.	1113716.
759.	23535.	1653130.	173192.	282288.	1196712.
760.	24924.	1790936.	209144.	298981.	1282102.
761.	26317.	1934191.	247822.	316058.	1369793.
762.	27716.	2083983.	292130.	333541.	1460518.

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
LINK
TITLE      FINAL TR20 DISCHARGES ------ TO BALL CREEK
CHANGE     DISCHARGE
DISCHARGE  -1.       1100.     2390.     3525.     4070.     5515.
END
REACH      28.90     1.0       960.0     880.0                                2890-1
SEGMENT    28.90     1         N         300.0                                2890-2
N VALUE    0.18      1.5       0.09                                           2890-3
SEGMENT    28.90     2         N         379.0                                2890-4
N VALUE    0.20                                                               2890-5
SEGMENT    28.90     3         C         423.0                                2890-6
N VALUE    0.055                                                              2890-7
SEGMENT    28.90     4         N         700.0                                2890-8
N VALUE    0.20                                                               2890-9
SEGMENT    28.90     5         N         1200.1                               2890-10
N VALUE    0.20      1.3       0.10                                           2890-11
SECTION       28.90                                                           2890-12
              0.00    746.42    100.00    744.21    200.00    742.92
            300.00    741.92    355.00    736.61    372.00    736.31
            379.00    732.21    385.00    730.92    390.00    730.61
            400.00    729.92    405.00    729.52    410.00    730.02
            415.00    731.11    423.00    732.61    427.00    736.11
            500.00    736.42    600.00    735.92    700.00    735.61
            800.00    735.92    900.00    736.21   1000.00    735.73
       1100.0    736.4     1200.0    736.9     1200.1    746.0                2890-20
NOTABLE
ROAD       29.00     2.7       65.0      65.0                                 2900-1
DPR        29.00     A         3.0                                            2900-2
GIRDER     741.0     740.8     15.0      0.6       2.7                        2900-3
           -20.5     746.9     -20.4     740.8     6.5       740.8            2900-4
           33.5      740.5     33.6      746.6                                2900-5
NOTABLE                                                                       2900-6
SECTION    29.00                                                              2900-7
           =400.0    748.2     =300.0    746.6     =200.0    745.3            2900-8
           -100.0    744.6     -66.5     744.5     -23.5     746.9            2900-9
           -20.5     746.9     -20.3     731.3     -15.0     730.6            2900-10
           -10.0     729.7     0.0       729.6     10.0      730.0            2900-11
           20.0      730.3     27.0      730.2     33.4      731.1            2900-12
           33.6      746.6     36.1      746.6     101.0     743.8            2900-13
           200.0     743.5     300.0     743.3     400.0     743.1            2900-14
           500.0     742.8     600.0     742.5     700.0     742.2            2900-15
           800.0     741.9     1000.0    741.3     1001.0    750.0            2900-16
NOTABLE                                                                       2900-17
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 29.00  EXCEEDS  10. FEET----------
REACH      29.01     1.0       50.0      50.0                                 2901-1
REACH 2    28.90     0.0                                                      2901-2
```

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
REACH      29.10     1.0       2240.0    1760.0                          2910-1
SEGMENT    29.10     1         N         2208.0                          2910-2
NVALUE     0.20                                                          2910-3
SEGMENT    29.10     2         C         2240.0                          2910-4
NVALUE     .055                                                          2910-5
SEGMENT    29.10     3         N         3600.0                          2910-6
NVALUE     0.20                                                          2910-7
SECTION       29.10                                                      2910-8
               300.00    748.36    400.0     747.77    500.00    747.28
               600.00    747.07    700.0     744.88    800.00    743.57
               900.00    743.13   1000.0     740.33   1100.00    738.83
              1200.00    738.03   1300.0     737.33   1400.00    735.63
              1500.00    734.97   1600.0     734.57   1700.00    735.07
              1800.00    735.17   1900.0     734.86   2000.00    734.36
              2100.00    735.36   2200.0     734.47   2208.00    733.97
              2210.00    731.97   2220.0     730.27   2230.00    727.64
              2235.00    729.14   2240.0     730.14   2245.00    734.64
              2300.00    735.64   2400.0     735.84   2500.00    735.94
              2600.00    736.21   2700.0     736.60   2800.00    737.51
              2900.00    736.51   3000.0     737.01   3100.00    737.21
              3200.00    738.31   3300.0     737.60   3400.00    736.30
              3500.00    737.80   3563.0     751.10   3600.00    752.20
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 29.10  EXCEEDS  10. FEET----------
REACH      29.30     1.0       4320.0    2040.0                          2930-1
SEGMENT    29.30     1         N         2067.0                          2930-2
NVALUE     0.20                                                          2930-3
SEGMENT    29.30     2         C         2104.0                          2930-4
NVALUE     0.055                                                         2930-5
SEGMENT    29.30     3         N         3300.0                          2930-6
NVALUE     0.20                                                          2930-7
SECTION       29.30                                                      2930-7*
           999.0     748.0     1000.0    739.0     1100.0    739.1       2930-8
              1200.00    738.91   1300.0     738.41   1400.00    738.10
              1500.00    737.20   1600.0     737.13   1700.00    736.93
              1800.00    737.13   1900.0     737.13   2000.00    736.93
              2067.00    736.96   2070.0     734.85   2080.00    732.56
              2090.00    732.85   2100.0     735.16   2104.00    735.35
              2108.00    737.56   2200.0     737.16   2300.00    736.85
              2400.00    736.55   2500.0     736.76   2600.00    737.16
              2670.00    739.16   2700.0     739.95   2800.00    738.85
              2900.00    738.95   3000.0     740.26   3100.00    743.35
              3200.00    748.56   3300.0     750.46
ENDTABLE
REACH      29.32     1.0       590.0     510.0                           2932-1
REACH 2    29.30     0.0                                                 2932-2
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
REACH     29.33     1.0       50.0      50.0                                  2933-1
SEGMENT   29.33     1         N         2067.0                                2933-2
NVALUE    0.20                                                                2933-3
SEGMENT   29.33     2         C         2104.0                                2933-4
NVALUE    0.055                                                               2933-5
SEGMENT   29.33     3         N         2901.0                                2933-6
NVALUE    0.20                                                                2933-7
SECTION   29.33                                                               2933-8
          999.0     746.0     1000.0    745.5     2030.0    745.0             2933-9
          2067.0    737.0     2070.0    734.9     2080.0    732.8             2933-10
          2090.0    732.9     2100.0    735.2     2104.0    735.4             2933-11
          2140.0    745.0     2900.0    745.0     2901.0    750.0             2933-12
ENDTABLE                                                                      2933-13
REACH     29.49     1.0       50.       50.
REACH2    29.50
REACH     29.50     1.0       6950.     2830.                                 2950-1
SEGMENT   29.50     1         N         3196.0                                2950-2
NVALUE    0.20                                                                2950-3
SEGMENT   29.50     2         C         3300.0                                2950-4
NVALUE    0.055                                                               2950-5
SEGMENT   29.50     3         N         3538.0                                2950-6
NVALUE    0.20                                                                2950-7
SECTION      29.50                                                            2950-8
             1200.00   749.93    1300.00   747.03    1400.00   746.28         2950-9
             1500.00   745.66    1600.00   745.08    1700.00   744.92
             1800.00   744.11    1900.00   742.22    2000.00   742.42
             2100.00   742.32    2200.00   741.95    2300.00   742.05
             2400.00   740.59    2500.00   740.09    2600.00   739.50
             2700.00   740.80    2800.00   740.09    2900.00   740.31
             3000.00   740.42    3100.00   739.81    3192.00   741.17
             3196.00   738.07    3208.00   737.77    3220.00   738.57
             3232.00   734.38    3248.00   736.17    3250.00   740.07
             3300.00   741.04    3400.00   743.34    3420.00   744.94
             3450.00   747.84    3500.00   748.54    3538.00   749.14
ENDTABLE
COMPUTE   28.90     29.50     28.60
-----------------------------END OF 80/80 LIST------------------------------
```

```
COMPUTE    28.90     29.50     28.60

----------------------------STARTING DATA FROM PREVIOUS COMPUTATIONS----------------------------
*****SECT.28.90 KD VALUES REVERSED ON SEGMENT 4  AT ELEVATION   735.92  VALUE CHANGED TO EQUAL PREVIOUS VALUE*****
```

RATING TABLE FOR SECTION 28.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	729.5	0.0	0.0						
BANK FULL	732.2	66.6	557.4	0.0	0.0	0.0			
1	737.8	1667.2	1100.0	0.0	0.0	0.0	1100.00	733.4	0.00040
2	739.2	2940.3	2390.0	0.0	0.0	0.0	2390.00	736.2	0.00048
3	740.2	3743.5	3525.0	0.0	0.0	0.0	3525.00	736.5	0.00053
4	740.6	4118.0	4070.0	0.0	0.0	0.0	4070.00	736.7	0.00053
5	741.6	4983.1	5515.0	0.0	0.0	0.0	5515.00	736.9	0.00056

SEGMENT TABLE FOR SECTION 28.90

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1100.	0.	11.	605.	110.	374.
1100.	VELOCITY FPS	1.52	0.0	0.20	1.54	0.23	0.45
2	DISCHARGE CFS	2390.	0.	35.	906.	323.	1126.
2390.	VELOCITY FPS	1.60	0.0	0.29	2.42	0.37	0.72
3	DISCHARGE CFS	3525.	0.	59.	1133.	517.	1615.
3525.	VELOCITY FPS	1.70	0.0	0.35	2.75	0.45	0.90
4	DISCHARGE CFS	4070.	0.	72.	1232.	612.	2154.
4070.	VELOCITY FPS	1.73	0.0	0.37	2.84	0.49	0.96
5	DISCHARGE CFS	5515.	0.	111.	1471.	667.	3060.
5515.	VELOCITY FPS	1.83	0.13	0.42	3.10	0.57	1.13
1 ELEV 737.8 KD		54088.	1.	537.	30775.	5188.	17587.
2 ELEV 739.2 KD		109222.	1.	1565.	41990.	14628.	51038.
3 ELEV 740.2 KD		153368.	1.	2560.	49775.	22391.	78641.
4 ELEV 740.6 KD		176677.	1.	3136.	53575.	26543.	93424.
5 ELEV 741.6 KD		233627.	1.	4699.	62637.	36709.	129580.

KD TABLE FOR CROSS SECTION 28.90

ELEVATION	AREA	KD	KD BY SEGMENT				
729.52	0.						
730.	3.	32.	1.	1.	27.	1.	1.
731.	24.	540.	1.	1.	535.	1.	1.
732.	58.	2019.	1.	1.	2014.	1.	1.
733.	101.	4663.	1.	3.	4656.	2.	1.
734.	148.	8543.	1.	17.	8517.	5.	1.
735.	198.	13371.	1.	58.	13290.	20.	1.
736.	315.	19274.	1.	127.	18875.	36.	26.
737.	1007.	32449.	1.	218.	25203.	1731.	3688.
738.	1860.	61023.	1.	639.	32243.	6154.	21121.
739.	2725.	98730.	1.	1341.	39969.	12724.	44271.
740.	3599.	145207.	1.	2360.	48544.	20902.	73345.
741.	4485.	199613.	1.	3738.	57544.	30582.	107780.
742.	5392.	261400.	8.	5628.	66944.	41612.	146995.
743.	6348.	331110.	268.	8186.	77136.	54050.	191188.
744.	7385.	409034.	1939.	11283.	87800.	67751.	239814.
745.	8498.	499174.	9596.	14717.	99210.	82556.	292274.
746.	9660.	597700.	20417.	18498.	111059.	98460.	348609.
747.	10828.	707518.	37770.	22674.	123488.	116129.	411020.
748.	11996.	829694.	67519.	27957.	136501.	135690.	480186.

*****SECT.29.01 KD VALUES REVERSED ON SEGMENT 4 AT ELEVATION 735.92 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
1.0486	1.1055	0.0	0.0	0.0	-0.0569	0.5510	1.0000	1.0000	413.0088	1758.9663	1639.5549
DCRIT	732.49	KBCRIT=									
1.8318	1.9531	0.0	0.0	0.0	-0.1213	0.3496	1.0000	1.0000	451.3823	3543.1638	2856.7590
DCRIT	734.09	KBCRIT=									
2.0310	2.1702	0.0	0.0	0.0	-0.1392	0.3042	1.0000	1.0000	569.5222	4409.5664	3702.4226
DCRIT	735.25	KBCRIT=									
2.0176	2.1556	0.0	0.0	0.0	-0.1380	0.3072	1.0000	1.0000	569.5222	4343.2422	4076.6462
DCRIT	735.77	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	569.5222	4343.2422	4076.6462
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 29.00

NO.	HW	CFS	HL	TW	CSM
0	72[illegible].60	0.00	0.00	0.00	0.00
1	737.94	1100.00	0.12	737.82	1100.00
2	74[illegible].00	2390.00	0.72	739.28	2390.00
3	74[illegible].77	3525.00	1.58	740.20	3525.00
4	74[illegible].32	4070.00	1.70	740.62	4070.00
5	74[illegible].13	5515.00	1.54	741.59	5515.00

TOP OF ROAD ELEVATION 741.30

BRIDGE TYPE 2 LOWER BOTTOM ELEVATION = 740.81 OPENING NO.= 1

RATING TABLE FOR SECTION 29.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	729.5	0.0	0.0						
BANK FULL	732.2	66.6	350.4	0.0	0.0	0.0			
1	738.0	1828.4	1100.0	0.0	0.0	0.0	1100.00	733.4	0.00035
2	740.0	3609.4	2390.0	0.0	0.0	0.0	2390.00	736.2	0.00028
3	741.8	5192.9	3525.0	0.0	0.0	0.0	3525.00	736.5	0.00022
4	742.3	5698.1	4070.0	0.0	0.0	0.0	4070.00	736.7	0.00022
5	743.1	6496.6	5515.0	0.0	0.0	0.0	5515.00	736.9	0.00028

SEGMENT TABLE FOR SECTION 29.01

CSM		TOTAL	SEG NO 1 N	2 N	3 C	4 N	5 N
1	DISCHARGE CFS	1100.	0.	12.	585.	114.	389.
1100.	VELOCITY FPS	1.42	0.0	0.19	1.84	0.22	0.42
2	DISCHARGE CFS	2390.	0.	39.	810.	342.	1199.
2390.	VELOCITY FPS	1.26	0.0	0.24	1.98	0.31	0.62
3	DISCHARGE CFS	3525.	0.	73.	949.	552.	1950.
3525.	VELOCITY FPS	1.15	0.07	0.26	1.95	0.35	0.69
4	DISCHARGE CFS	4070.	1.	92.	1037.	648.	2291.
4070.	VELOCITY FPS	1.18	0.07	0.28	2.03	0.37	0.74
5	DISCHARGE CFS	5515.	11.	139.	1308.	894.	3164.
5515.	VELOCITY FPS	1.37	0.13	0.36	2.39	0.46	0.90
1	ELEV 738.0 KD	57674.	1.	593.	31975.	5744.	19564.
2	ELEV 740.0 KD	141386.	1.	2272.	48442.	20108.	70562.
3	ELEV 741.8 KD	239688.	3.	4538.	64828.	37499.	132420.
4	ELEV 742.3 KD	274220.	30.	6136.	70244.	43624.	154185.
5	ELEV 743.1 KD	330110.	346.	6225.	78651.	53527.	189361.

KD TABLE FOR CROSS SECTION 29.01

ELEVATION	AREA	KD	KD BY SEGMENT				
729.52	0.						
730.	3.	32.	1.	1.	127.	1.	1.
731.	24.	540.	1.	1.	535.	1.	1.
732.	58.	2019.	1.	1.	2014.	1.	1.
733.	101.	4662.	1.	3.	4656.	2.	1.
734.	148.	8542.	1.	17.	8517.	5.	1.
735.	198.	13368.	1.	55.	13290.	19.	1.
736.	315.	19257.	1.	122.	19275.	35.	25.
737.	1007.	32156.	1.	207.	29503.	1667.	3531.
738.	1860.	59814.	1.	611.	38243.	5930.	20222.
739.	2725.	96239.	1.	1284.	39969.	12182.	42386.
740.	3599.	141090.	1.	2260.	46844.	20012.	70223.
741.	4485.	193561.	1.	3579.	58344.	29260.	103191.
742.	5392.	253126.	8.	5387.	65944.	39841.	140737.
743.	6348.	320300.	257.	7837.	77136.	51749.	183049.
744.	7385.	395363.	1857.	10803.	87500.	64867.	229605.
745.	8498.	482147.	9187.	14091.	99210.	79041.	279831.
746.	9660.	576985.	19546.	17709.	111059.	94288.	333768.
747.	10828.	682641.	36162.	21901.	125188.	111165.	393522.
748.	11996.	800125.	64644.	26766.	134201.	129943.	459743.

RATING TABLE FOR SECTION 29.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	727.6	0.0	0.0						
BANK FULL	730.1	23.3	258.5	0.0	0.0	0.0			
1	738.3	5202.6	1100.0	0.0	0.0	0.0	1100.00	733.1	0.00012
2	740.3	10004.7	2390.0	0.0	0.0	0.0	2390.00	735.2	0.00010
3	742.0	14332.2	3525.0	0.0	0.0	0.0	3525.00	735.4	0.00007
4	742.5	15755.3	4070.0	0.0	0.0	0.0	4070.00	735.6	0.00007
5	743.4	18012.4	5515.0	0.0	0.0	0.0	5515.00	735.8	0.00009

SEGMENT TABLE FOR SECTION 29.10

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1100.	535.	310.	255.
1100.	VELOCITY FPS	0.65	0.18	1.16	0.13
2	DISCHARGE CFS	2390.	1134.	401.	855.
2390.	VELOCITY FPS	0.54	0.22	1.21	0.19
3	DISCHARGE CFS	3525.	1662.	449.	1414.
3525.	VELOCITY FPS	0.46	0.23	1.16	0.21
4	DISCHARGE CFS	4070.	1912.	483.	1674.
4070.	VELOCITY FPS	0.47	0.24	1.20	0.23
5	DISCHARGE CFS	5515.	2575.	600.	2340.
5515.	VELOCITY FPS	0.53	0.28	1.39	0.28
1 ELEV	738.3 KD	99325.	48885.	28907.	21533.
2 ELEV	740.3 KD	241261.	114824.	41205.	85232.
3 ELEV	742.0 KD	416336.	196342.	53137.	166857.
4 ELEV	742.5 KD	478428.	224949.	57205.	196274.
5 ELEV	743.4 KD	585452.	273438.	63865.	248159.

KD TABLE FOR CROSS SECTION 29.10

ELEVATION	AREA	KD	KD BY SEGMENT		
727.64	0.				
728.	0.	7.	1.	4.	1.
729.	7.	136.	1.	134.	1.
730.	21.	587.	1.	585.	1.
731.	43.	1596.	1.	1592.	3.
732.	71.	3231.	1.	3217.	12.
733.	104.	5731.	1.	5690.	39.
734.	140.	8880.	2.	8790.	88.
735.	349.	13526.	347.	12629.	1116.
736.	1226.	25259.	6656.	17016.	1627.
737.	2619.	48445.	21574.	21926.	4049.
738.	4572.	86463.	42228.	27321.	16925.
739.	6893.	143353.	69176.	33178.	40420.
740.	9346.	219321.	104385.	39477.	75057.
741.	11857.	312322.	147608.	46218.	118569.
742.	14414.	420241.	198135.	53374.	168693.
743.	17018.	538114.	252164.	60921.	224901.
744.	19728.	664554.	307618.	68868.	287925.
745.	22528.	806604.	372199.	77200.	357080.
746.	25385.	966293.	447356.	85922.	432976.
747.	28306.	1139355.	520568.	95001.	513732.
748.	31416.	1300101.	595703.	104437.	599681.
749.	34615.	1493889.	687522.	114238.	691963.
750.	37870.	1726508.	812585.	124392.	789506.
751.	41134.	1964869.	942898.	134865.	866563.
752.	44398.	2223310.	1086666.	145723.	991026.
753.	47662.	2503263.	1245672.	156965.	1102482.

RATING TABLE FOR SECTION 29.30 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	732.6	0.0	0.0						
BANK FULL	735.3	57.4	443.7	0.0	0.0	0.0			
1	739.5	3519.6	1100.0	0.0	0.0	0.0	1100.00	737.0	0.00025
2	741.1	6650.8	2390.0	0.0	0.0	0.0	2390.00	737.4	0.00015
3	742.5	9672.7	3525.0	0.0	0.0	0.0	3525.00	737.5	0.00013
4	743.0	10730.3	4070.0	0.0	0.0	0.0	4070.00	737.6	0.00012
5	744.0	12639.9	5515.0	0.0	0.0	0.0	5515.00	737.8	0.00013

SEGMENT TABLE FOR SECTION 29.30

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	464.	266.	370.
1100.	VELOCITY FPS	0.69	0.25	1.28	0.25
2	DISCHARGE CFS	2390.	1154.	353.	883.
2390.	VELOCITY FPS	0.60	0.33	1.33	0.31
3	DISCHARGE CFS	3525.	1755.	401.	1363.
3525.	VELOCITY FPS	0.53	0.34	1.25	0.[illegible]
4	DISCHARGE CFS	4070.	2037.	432.	1601.
4070.	VELOCITY FPS	0.53	0.36	1.27	0.[illegible]
5	DISCHARGE CFS	5515.	2775.	530.	2211.
5515.	VELOCITY FPS	0.59	0.42	1.42	0.[illegible]
1 ELEV	739.5 KD	69960.	29100.	17357.	2350[illegible]
2 ELEV	741.1 KD	174589.	84060.	26288.	6424[illegible]
3 ELEV	742.5 KD	315153.	156898.	35889.	12235[illegible]
4 ELEV	743.0 KD	369382.	184817.	39435.	14513[illegible]
5 ELEV	744.0 KD	478694.	240841.	46157.	19169[illegible]

KD TABLE FOR CROSS SECTION 29.30

ELEVATION	AREA	KD	KD BY SEGMENT		
732.56	0.				
733.	3.	41.	1.	38.	1.
734.	21.	53[illegible].	1.	529.	1.
735.	46.	164[illegible].	1.	1642.	2.
736.	80.	362[illegible].	1.	3618.	3.
737.	285.	737[illegible].	20.	6598.	1204.
738.	1275.	2177[illegible].	4788.	10431.	4602.
739.	2644.	5036[illegible].	18959.	14980.	16575.
740.	4517.	9835[illegible].	44040.	20142.	33983.
741.	6522.	16963[illegible].	81384.	25901.	62133.
742.	8362.	25928[illegible].	127871.	32234.	99151.
743.	10635.	36434[illegible].	182177.	39109.	143971.
744.	12736.	48450[illegible].	243766.	46504.	194174.
745.	14859.	61892[illegible].	312049.	54398.	252420.
746.	17000.	76736 .	387238.	62788.	317505.
747.	19160.	92876[illegible].	468728.	71653.	388379.
748.	21342.	110170 .	555707.	80970.	465013.
749.	23550.	128131[illegible].	648488.	90737.	542175.
750.	25764.	147457[illegible].	749198.	100989.	624470.
751.	27978.	168374[illegible].	856606.	111730.	713733.

RATING TABLE FOR SECTION 29.32 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	732.6	0.0	0.0						
BANK FULL	735.3	57.4	432.1	0.0	0.0	0.0			
1	739.7	3860.4	1100.0	0.0	0.0	0.0	1100.00	737.0	0.00030
2	741.2	6977.7	2390.0	0.0	0.0	0.0	2390.00	737.4	0.00027
3	742.7	9914.6	3525.0	0.0	0.0	0.0	3525.00	737.5	0.00020
4	743.2	10967.6	4070.0	0.0	0.0	0.0	4070.00	737.6	0.00019
5	744.1	12904.7	5515.0	0.0	0.0	0.0	5515.00	737.8	0.00021

SEGMENT TABLE FOR SECTION 29.32

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	440.	315.	345.
1100.	VELOCITY FPS	0.82	0.22	1.47	0.22
2	DISCHARGE CFS	2390.	1104.	439.	847.
2390.	VELOCITY FPS	0.75	0.30	1.61	0.28
3	DISCHARGE CFS	3525.	1691.	513.	1321.
3525.	VELOCITY FPS	0.67	0.32	1.58	0.30
4	DISCHARGE CFS	4070.	1966.	556.	1548.
4070.	VELOCITY FPS	0.68	0.34	1.62	0.32
5	DISCHARGE CFS	5515.	2686.	685.	2144.
5515.	VELOCITY FPS	0.74	0.40	1.81	0.37
1	ELEV 739.7 KD	63406.	25212.	18331.	19863.
2	ELEV 741.2 KD	146254.	67363.	27279.	51612.
3	ELEV 742.7 KD	251407.	120551.	36689.	94167.
4	ELEV 743.2 KD	293101.	141538.	40251.	111312.
5	ELEV 744.1 KD	377907.	184015.	47116.	146777.

KD TABLE FOR CROSS SECTION 29.32

ELEVATION	AREA	KD	KD BY SEGMENT		
732.56	0.				
733.	3.	41.	1.	38.	1.
734.	21.	531.	1.	529.	1.
735.	46.	1645.	1.	1642.	1.
736.	80.	3619.	1.	3616.	2.
737.	285.	7180.	15.	6598.	1.
738.	1275.	18886.	3539.	10431.	41.
739.	2644.	41140.	14013.	14980.	1[illegible]03.
740.	4517.	77987.	32550.	20142.	2[illegible]17.
741.	6522.	132182.	60153.	25901.	4[illegible]23.
742.	8562.	200078.	94512.	32234.	7[illegible]210.
743.	10635.	279513.	134651.	39109.	105[illegible]72.
744.	12736.	370254.	180172.	46504.	143[illegible]17.
745.	14859.	471666.	230641.	54398.	186[illegible]68.
746.	17000.	583558.	286214.	62788.	234[illegible]526.
747.	19160.	705160.	346445.	71653.	287[illegible]058.
748.	21342.	835419.	410733.	80970.	34[illegible]699.
749.	23550.	970721.	479309.	90737.	400[illegible]658.
750.	25764.	1116216.	553746.	100989.	46[illegible]57.
751.	27978.	1273558.	634612.	111730.	52[illegible]33.

RATING TABLE FOR SECTION 29.33 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	732.8	0.0	0.0						
BANK FULL	735.4	55.5	429.4	0.0	0.0	0.0			
1	739.5	249.0	1100.0	0.0	0.0	0.0	1100.00	737.0	0.00406
2	740.4	313.9	2390.0	0.0	0.0	0.0	2390.00	739.0	0.01093
3	741.2	369.8	3525.0	0.0	0.0	0.0	3525.00	740.2	0.01618
4	741.2	370.5	4070.0	0.0	0.0	0.0	4070.00	740.7	0.02147
5	742.0	438.5	5515.0	0.0	0.0	0.0	5515.00	741.9	0.02663

SEGMENT TABLE FOR SECTION 29.33

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1100.	8.	1069.	23.
1100.	VELOCITY FPS	5.19	0.55	5.25	0.75
2	DISCHARGE CFS	2390.	30.	2293.	67.
2390.	VELOCITY FPS	9.42	1.11	9.59	1.41
3	DISCHARGE CFS	3525.	62.	3345.	118.
3525.	VELOCITY FPS	12.26	1.54	12.55	1.28
4	DISCHARGE CFS	4070.	72.	3661.	138.
4070.	VELOCITY FPS	14.14	1.77	14.47	2.17
5	DISCHARGE CFS	5515.	130.	5168.	211.
5515.	VELOCITY FPS	16.84	2.22	17.35	2.64
1 ELEV 739.5 KD		17256.	115.	16782.	356.
2 ELEV 740.4 KD		22852.	280.	21940.	632.
3 ELEV 741.2 KD		27700.	474.	26312.	913.
4 ELEV 741.2 KD		27763.	477.	26369.	917.
5 ELEV 742.0 KD		33784.	781.	31684.	1319.

KD TABLE FOR CROSS SECTION 29.33

ELEVATION	AREA	KD	KD BY SEGMENT		
732.80	0.				
733.	2.	14.	1.	12.	1.
734.	18.	427.	1.	425.	1.
735.	43.	1467.	1.	1465.	1.
736.	77.	3360.	1.	3355.	3.
737.	117.	6280.	1.	6249.	30.
738.	165.	10146.	9.	10021.	108.
739.	221.	14838.	66.	14503.	1260.
740.	284.	20332.	200.	19630.	502.
741.	357.	26617.	427.	25333.	847.
742.	438.	33716.	777.	31616.	1313.
743.	527.	41632.	1265.	38443.	1914.
744.	624.	50375.	1909.	45793.	2563.
745.	988.	60876.	3012.	53647.	3942.
746.	2372.	76606.	6600.	61998.	8182.
747.	4273.	116012.	21694.	70812.	21387.
748.	6174.	167303.	45290.	80093.	40429.
749.	8076.	230079.	75251.	89828.	64079.
750.	9977.	306523.	114301.	100029.	94230.
751.	11879.	401797.	169562.	110714.	135581.
752.	13781.	519112.	246287.	121876.	191316.

RATING TABLE FOR SECTION 29.49 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	734.4	0.0	0.0						
BANK FULL	738.1	68.2	730.0	0.0	0.0	0.0			
1	739.9	197.6	1100.0	0.0	0.0	0.0	1100.00	739.8	0.01443
2	741.9	1785.6	2390.0	0.0	0.0	0.0	2390.00	740.4	0.00540
3	743.5	4040.0	3525.0	0.0	0.0	0.0	3525.00	740.8	0.00170
4	744.3	5265.0	4070.0	0.0	0.0	0.0	4070.00	740.9	0.00111
5	746.4	9194.5	5515.0	0.0	0.0	0.0	5515.00	741.1	0.00049

SEGMENT TABLE FOR SECTION 29.49

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1100.	10.	1090.	0.
1100.	VELOCITY FPS	6.57	0.32	6.59	0.0
2	DISCHARGE CFS	2390.	954.	1426.	1.
2390.	VELOCITY FPS	3.35	0.67	4.21	0.37
3	DISCHARGE CFS	3525.	1904.	1572.	49.
3525.	VELOCITY FPS	2.14	0.56	3.11	0.37
4	DISCHARGE CFS	4070.	2360.	1628.	81.
4070.	VELOCITY FPS	1.82	0.53	2.78	0.38
5	DISCHARGE CFS	5515.	3476.	1856.	183.
5515.	VELOCITY FPS	1.38	0.44	2.30	0.38
1 ELEV	739.9 KD	9149.	77.	9071.	1.
2 ELEV	741.9 KD	32422.	12738.	19629.	59.
3 ELEV	743.5 KD	85485.	45921.	38430.	1135.
4 ELEV	744.3 KD	122178.	70678.	49079.	2421.
5 ELEV	746.4 KD	248884.	156824.	83619.	8241.

KD TABLE FOR CROSS SECTION 29.49

ELEVATION	AREA	KD	KD BY SEGMENT		
734.38	0.				
735.	2.	3[illegible].	1.	28.	1.
736.	16.	36[illegible].	1.	360.	1.
737.	38.	133[illegible].	1.	1328.	1.
738.	65.	237[illegible].	1.	2372.	1.
739.	116.	497[illegible].	3.	4973.	1.
740.	214.	944[illegible].	98.	9309.	1.
741.	874.	1595[illegible].	3429.	12206.	2.
742.	1889.	3446[illegible].	13730.	20563.	72.
743.	3254.	6413[illegible].	31355.	31811.	673.
744.	4819.	10773[illegible].	60650.	44999.	1850.
745.	6509.	15896[illegible].	94950.	59933.	3987.
746.	8390.	21989[illegible].	136445.	76511.	8630.
747.	10451.	29532[illegible].	190179.	94627.	10341.
748.	12612.	38480[illegible].	256518.	114310.	13831.
749.	14828.	48779[illegible].	335769.	135640.	16547.
750.	17043.	60873[illegible].	431744.	159138.	19564.
751.	19258.	74928[illegible].	546553.	184863.	22191.

RATING TABLE FOR SECTION 29.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	734.4	0.0	0.0						
BANK FULL	738.1	68.2	488.4	0.0	0.0	0.0			
1	742.7	2784.7	1100.0	0.0	0.0	0.0	1100.00	739.8	0.00027
2	744.0	4769.1	2390.0	0.0	0.0	0.0	2390.00	740.4	0.00029
3	745.2	6827.1	3525.0	0.0	0.0	0.0	3525.00	740.8	0.00024
4	745.8	7950.2	4070.0	0.0	0.0	0.0	4070.00	740.9	0.00021
5	747.4	11336.4	5515.0	0.0	0.0	0.0	5515.00	741.1	0.00014

SEGMENT TABLE FOR SECTION 29.50

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1100.	640.	448.	11.
1100.	VELOCITY FPS	0.75	0.28	1.07	0.18
2	DISCHARGE CFS	2390.	1594.	744.	51.
2390.	VELOCITY FPS	0.84	0.40	1.34	0.28
3	DISCHARGE CFS	3525.	2452.	963.	110.
3525.	VELOCITY FPS	0.63	0.42	1.42	0.34
4	DISCHARGE CFS	4070.	2878.	1050.	142.
4070.	VELOCITY FPS	0.81	0.42	1.42	0.30
5	DISCHARGE CFS	5515.	4064.	1225.	227.
5515.	VELOCITY FPS	0.73	0.41	1.34	0.37
1	ELEV 742.7 KD	66657.	37963.	28130.	564.
2	ELEV 744.0 KD	140776.	93406.	44557.	2812.
3	ELEV 745.2 KD	229203.	159324.	62873.	7007.
4	ELEV 745.8 KD	279952.	197668.	72668.	9616.
5	ELEV 747.4 KD	461186.	339572.	102720.	18894.

KD TABLE FOR CROSS SECTION 29210

ELEVATION	AREA	KD	KD BY SEGMENT		
734.38	0.				
735.	2.	31.	2.	28.	2.
736.	16.	363.	2.	360.	2.
737.	38.	1331.	2.	1328.	2.
738.	65.	2375.	2.	2372.	2.
739.	116.	4979.	4.	4973.	2.
740.	214.	9524.	153.	9309.	2.
741.	874.	18018.	5374.	12206.	4.
742.	1889.	42324.	21517.	20563.	114.
743.	3254.	82339.	49137.	31811.	897.
744.	4819.	143237.	95045.	44599.	2899.
745.	6509.	215103.	148797.	59933.	6249.
746.	8390.	301171.	213825.	76517.	10703.
747.	10451.	409064.	298031.	94627.	10705.
748.	12612.	538142.	401991.	114310.	21175.
749.	14828.	687571.	526187.	135640.	25232.
750.	17043.	864362.	676590.	159138.	30118.
751.	19258.	1071260.	856509.	184863.	32072.

```
---------- ----------------80/80 LIST OF INPUT DATA----------------------------
TITLE     FINAL TR20 DISCHARGES ------ TO INDIAN LAKES ROAD
CHANGE    DISCHARGES
DISCHARGE -1.       1075.     2355.     3470.     4000.     5425.
END
REACH     29.70     1.0       6320.0    3600.0                          2970-1
SEGMENT   29.70     1         N         2517.0                          2970-2
NVALUE    0.20                                                          2970-3
SEGMENT   29.70     2         C         2564.0                          2970-4
NVALUE    0.055                                                         2970-5
SEGMENT   29.70     3         N         4100.0                          2970-6
NVALUE    0.20                                                          2970-7
SECTION      29.70                                                      2970-8
             1200.00   752.80   1300.00   751.80   1400.00   752.15
             1500.00   751.75   1600.00   752.25   1700.00   751.65
             1800.00   750.75   1900.00   750.85   2000.00   749.25
             2100.00   748.25   2200.00   748.45   2300.00   748.75
             2325.00   743.21   2400.00   742.01   2500.00   742.71
             2515.00   742.11   2517.00   741.30   2530.00   738.10
             2540.00   739.40   2550.00   739.60   2560.00   739.70
             2564.00   741.90   2600.00   743.10   2700.00   742.64
             2800.00   743.33   2900.00   743.55   3000.00   742.95
             3100.00   743.25   3200.00   743.45   3267.00   744.76
             3272.00   742.26   3277.00   744.56   3300.00   744.56
             3400.00   744.66   3500.00   744.96   3600.00   745.46
             3700.00   745.16   3780.00   745.06   3900.00   746.36
             4000.00   746.72   4100.00   761.61
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 29.70  EXCEEDS  10. FEET-----------
REACH     29.80     1.0       6000.0    2560.0                          2980-1
SEGMENT   29.80     1         N         1766.0                          2980-2
NVALUE    0.20                                                          2980-3
SEGMENT   29.80     2         C         1834.0                          2980-4
NVALUE    0.055                                                         2980-5
SEGMENT   29.80     3         N         3800.0                          2980-6
NVALUE    0.20                                                          2980-7
SECTION      29.80                                                      2980-8
              900.00   756.72   1000.00   755.53   1100.00   755.03
             1200.00   754.82   1300.00   755.02   1328.00   754.92
             1373.00   745.92   1400.00   746.02   1500.00   745.61
             1600.00   745.11   1700.00   745.31   1766.00   746.11
             1772.00   743.58   1782.00   742.66   1802.00   742.68
             1814.00   743.28   1829.00   743.88   1834.00   745.97
             1900.00   745.18   2000.00   745.18   2100.00   744.78
             2300.00   745.13   2400.00   744.53   2500.00   744.63
             2600.00   744.63   2700.00   744.82   2800.00   744.78
             2900.00   745.28   3000.00   745.07   3017.00   745.17
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
TITLE     FINAL TR20 DISCHARGES ------ TO INDIAN LAKES ROAD
CHANGE    DISCHARGES
DISCHARGE -1.       1075.     2355.     3470.     4000.     5425.
END
REACH     29.70     1.0       6320.0    3600.0                                    2970-1
SEGMENT   29.70     1         N         2517.0                                    2970-2
NVALUE    0.20                                                                    2970-3
SEGMENT   29.70     2         C         2564.0                                    2970-4
NVALUE    0.055                                                                   2970-5
SEGMENT   29.70     3         N         4100.0                                    2970-6
NVALUE    0.20                                                                    2970-7
SECTION      29.70                                                                2970-8
             1200.00   752.80   1300.00   751.80   1400.00   752.15
             1500.00   751.75   1600.00   752.25   1700.00   751.65
             1800.00   750.75   1900.00   750.85   2000.00   749.25
             2100.00   748.25   2200.00   748.45   2300.00   748.75
             2325.00   743.21   2400.00   742.01   2500.00   742.71
             2515.00   742.11   2517.00   741.30   2530.00   738.10
             2540.00   739.40   2550.00   739.60   2560.00   739.70
             2564.00   741.90   2600.00   743.10   2700.00   742.64
             2800.00   743.33   2900.00   743.55   3000.00   742.95
             3100.00   743.25   3200.00   743.45   3267.00   744.76
             3272.00   742.26   3277.00   744.56   3300.00   744.56
             3400.00   744.66   3500.00   744.96   3600.00   745.46
             3700.00   745.16   3780.00   745.06   3900.00   746.36
             4000.00   746.72   4100.00   761.61
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 29.70  EXCEEDS  10. FEET----------
REACH     29.80     1.0       6000.0    2560.0                                    2980-1
SEGMENT   29.80     1         N         1766.0                                    2980-2
NVALUE    0.20                                                                    2980-3
SEGMENT   29.80     2         C         1834.0                                    2980-4
NVALUE    0.055                                                                   2980-5
SEGMENT   29.80     3         N         3800.0                                    2980-6
NVALUE    0.20                                                                    2980-7
SECTION      29.80                                                                2980-8
              900.00   756.72   1000.00   755.53   1100.00   755.03
             1200.00   754.82   1300.00   755.02   1328.00   754.92
             1370.00   745.92   1400.00   746.02   1500.00   745.61
             1600.00   745.11   1700.00   745.31   1766.00   746.11
             1772.00   743.58   1782.00   742.68   1802.00   742.68
             1814.00   743.28   1829.00   743.88   1834.00   745.97
             1900.00   745.18   2000.00   745.18   2100.00   744.78
             2300.00   745.13   2400.00   744.53   2500.00   744.63
             2600.00   744.63   2700.00   744.82   2800.00   744.78
             2900.00   745.28   3000.00   745.07   3017.00   745.17
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
          3056.00    751.28   3100.00    751.28   3200.00    750.28
          3300.00    749.77   3400.00    749.46   3500.00    747.86
          3600.00    750.57   3660.00    750.46   3733.00    760.36
          3800.00    760.06
NOTABLE
COMPUTE   29.70      29.80      29.50
-----------------------------END OF 80/80 LIST------------------------------
```

```
COMPUTE    29.70      29.80      29.50

----------------------------STARTING D TA FROM PREVIOUS COMPUTATIONS----------------------------

*****SECT.29.70 KO VALUES REVERSED ON S GMENT 1  AT ELEVATION    749.10  VALUE CHANGED TO EQUAL PREVIOUS VALUE*****
```

RATING TABLE FOR SECTION 29.70 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	738.1	0.0	0.0						
BANK FULL	741.3	83.3	480.2	0.0	0.0	0.0			
1	745.3	2432.3	1075.0	0.0	0.0	0.0	1075.00	742.5	0.00040
2	746.7	4653.9	2355.0	0.0	0.0	0.0	2355.00	743.2	0.00041
3	747.7	6333.6	3470.0	0.0	0.0	0.0	3470.00	743.5	0.00037
4	748.1	6950.2	4000.0	0.0	0.0	0.0	4000.00	743.6	0.00037
5	749.4	9562.5	5425.0	0.0	0.0	0.0	5425.00	743.8	0.00031

SEGMENT TABLE FOR SECTION 29.70

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1075.	212.	460.	403.
1075.	VELOCITY FPS	1.15	0.39	1.71	0.25
2	DISCHARGE CFS	2355.	420.	662.	1273.
2355.	VELOCITY FPS	1.13	0.50	1.97	0.37
3	DISCHARGE CFS	3470.	575.	791.	2104.
3470.	VELOCITY FPS	1.08	0.55	2.06	0.43
4	DISCHARGE CFS	4000.	649.	859.	2493.
4000.	VELOCITY FPS	1.09	0.58	2.15	0.46
5	DISCHARGE CFS	5425.	667.	991.	3767.
5425.	VELOCITY FPS	1.02	0.39	2.13	0.51
1 ELEV	745.3 KD	53463.	10517.	22943.	20003.
2 ELEV	746.7 KD	115674.	20843.	33203.	61628.
3 ELEV	747.7 KD	178689.	29880.	41322.	107687.
4 ELEV	748.1 KD	206640.	33551.	44448.	128641.
5 ELEV	749.4 KD	310155.	38030.	56996.	215168.

KD TABLE FOR CROSS SECTION 29.70

ELEVATION	AREA	KD	KD BY SEGMENT		
738.10	0.				
739.	5.	78.	1.	75.	1.
740.	29.	610.	1.	607.	1.
741.	70.	2508.	1.	2506.	1.
742.	122.	5628.	9.	5610.	3.
743.	341.	10972.	689.	9906.	[illegible]5.
744.	1081.	23868.	3747.	15118.	[illegible]94.
745.	2125.	46436.	8820.	21192.	1[illegible]37.
746.	3537.	82342.	15521.	28065.	3[illegible]44.
747.	5168.	134258.	23588.	35674.	74820.
748.	6863.	202626.	33011.	43997.	125481.
749.	8718.	274110.	34037.	53005.	188639.
750.	10742.	366277.	45980.	62671.	257575.
751.	12897.	470859.	61213.	72963.	336574.
752.	15316.	585628.	77234.	83881.	424425.
753.	17999.	724730.	107580.	95404.	520547.
754.	20842.	894968.	162215.	107514.	624564.
755.	23694.	1083129.	226556.	120198.	736150.
756.	26553.	1285844.	297436.	133428.	85[illegible]49.
757.	29420.	1504163.	376468.	147209.	97[illegible]46.
758.	32292.	1738367.	463733.	161536.	111[illegible]85.
759.	35170.	1986821.	557811.	176391.	12[illegible]91.
760.	38057.	2247466.	657217.	191749.	13[illegible]9.
761.	40945.	2527267.	767117.	207662.	15[illegible]79.
762.	43832.	2827677.	890855.	224129.	171[illegible]62.

*****SECT.29.80 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 755.88 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 29.80 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	742.7	0.0	0.0						
BANK FULL	746.0	1591.3	22.2	0.0	0.0	0.0			
1	747.0	3250.8	175.0	0.0	0.0	0.0	1075.00	745.0	0.00025
2	748.2	5275.8	255.0	0.0	0.0	0.0	2355.00	745.2	0.00027
3	749.2	7146.2	370.0	0.0	0.0	0.0	3470.00	745.4	0.00025
4	749.6	7856.5	400.0	0.0	0.0	0.0	4000.00	745.5	0.00025
5	750.8	10332.2	525.0	0.0	0.0	0.0	5425.00	745.7	0.00023

SEGMENT TABLE FOR SECTION 29.80

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1075.	131.	244.	699.
1075.	VELOCITY FPS	0.54	0.23	0.99	0.29
2	DISCHARGE CFS	2355.	378.	415.	1562.
2355.	VELOCITY FPS	0.64	0.36	1.26	0.40
3	DISCHARGE CFS	3470.	628.	547.	2294.
3470.	VELOCITY FPS	0.67	0.42	1.37	0.44
4	DISCHARGE CFS	4000.	752.	618.	2630.
4000.	VELOCITY FPS	0.71	0.46	1.45	0.45
5	DISCHARGE CFS	5425.	1094.	782.	3549.
5425.	VELOCITY FPS	0.73	0.51	1.54	0.46
1	ELEV 747.0 KD	67960.	8173.	15585.	44202.
2	ELEV 748.2 KD	142395.	22751.	25166.	94478.
3	ELEV 749.2 KD	221280.	39931.	34958.	146391.
4	ELEV 749.6 KD	250650.	46964.	38775.	164911.
5	ELEV 750.8 KD	359196.	72428.	51905.	234864.

KD TABLE FOR CROSS SECTION 29.80

ELEVATION	AREA	KD	KD BY SEGMENT		
742.68	0.				
743.	8.	94.	2.	90.	2.
744.	54.	1372.	2.	1369.	2.
745.	302.	5433.	2.	4577.	4591.
746.	1640.	25303.	1254.	9284.	14359.
747.	3282.	68964.	8338.	15717.	44846.
748.	4957.	129149.	19960.	23535.	85558.
749.	6699.	202703.	35659.	32590.	134431.
750.	8595.	282213.	54601.	42771.	184827.
751.	10745.	379845.	76594.	54022.	249177.
752.	13038.	507879.	101657.	66311.	339627.
753.	15374.	661097.	129539.	79586.	451912.
754.	17722.	830439.	160132.	93812.	576451.
755.	20157.	1004888.	182418.	108556.	712741.
756.	22780.	1172286.	186471.	125001.	861602.
757.	25560.	1381096.	219177.	141911.	1019997.
758.	28371.	1625402.	276178.	159663.	1189321.
759.	31190.	1888688.	340900.	178245.	1369303.
760.	34012.	2172487.	413645.	197671.	1561863.
761.	36834.	2479364.	496492.	217944.	1766387.
762.	39656.	2809780.	590175.	239052.	1989043.

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
LINK
TITLE      FINAL TR20 DISCHARGES -------TO DUK CREEK
DISCHARGE -1.        1065.      2290.      3350.      3865.      5245.
END
REACH      29.90      1.0        2720.0     2080.0                                2990-1
SEGMENT    29.90      1          N          570.0                                 2990-2
N VALUE    0.20                                                                    2990-3
SEGMENT    29.90      2          C          630.0                                 2990-4
N VALUE    0.055                                                                   2990-5
SEGMENT    29.90      3          N          1300.0                                2990-6
N VALUE    0.20                                                                    2990-7
SECTION       29.90                                                                2990-8
                0.00     757.23     22.00     756.63     40.00     750.83
               50.00     750.53     56.00     747.63     70.00     747.33
               85.00     745.53    115.00     745.83    130.00     747.53
              200.00     747.53    300.00     746.83    365.00     746.03
              410.00     745.43    424.00     747.13    500.00     747.63
              550.00     748.13    566.00     748.23    570.00     744.83
              575.00     743.33    580.00     742.93    590.00     742.53
              600.00     741.23    610.00     739.23    615.00     740.23
              624.00     742.43    630.00     745.23    634.00     748.83
              642.00     749.43    660.00     751.03    700.00     751.43
              800.00     752.23    900.00     752.83   1000.00     752.33
             1100.00     753.23   1200.00     751.14   1300.00     757.94
ENDTABLE
ROAD       30.00      2.7        80.0       80.0                                  3000-1
SPR        30.00      A          1.0        3.0                                   3000-2
PIER       737.9      2.4                                                          3000-3
GIRDER     751.9      751.7      15.0       0.6        2.7                        3000-4
           -37.5      755.7      -37.4      751.5      4.5        751.7           3000-5
           46.3       751.9      46.4       756.1                                 3000-6
ENDTABLE                                                                           3000-7
SECTION    30.00                                                                   3000-8
           -1000.0    756.1      -900.0     754.9      -800.0     755.8           3000-9
           -760.0     755.9      -700.0     755.0      -600.0     752.6           3000-10
           -511.0     751.2      -500.0     751.1      -400.0     750.9           3000-11
           -300.0     750.9      -247.0     750.8      -200.0     750.6           3000-12
           -195.0     750.6      -100.0     752.8      -80.0      753.0           3000-13
           -37.5      755.7      -36.8      749.2      -33.5      749.1           3000-14
           -26.0      745.7      -20.0      742.7      -10.0      741.9           3000-15
           0.0        738.7      3.5        738.1      5.5        737.9           3000-16
           15.0       741.1      25.0       742.5      33.0       744.7           3000-17
           33.5       746.1      42.0       749.6      45.7       749.8           3000-18
           46.4       756.1      82.0       753.8      100.0      753.8           3000-19
           200.0      753.5      300.0      753.7      400.0      754.0           3000-20
```

```
-----------------------------80/80 LIST OF INPUT DATA-----------------------------
          500.0      754.7      600.0      757.3                                    3000-21
ENDTABLE                                                                            3000-22
REACH     30.01      1.0        55.0       55.0                                      3001-1
REACH 2   29.90      0.0                                                             3001-2
REACH     30.10      1.0        9200.0     3440.0                                    3010-1
SEGMENT   30.10      1          N          510.0                                     3010-2
NVALUE    0.20                                                                      3010-3
SEGMENT   30.10      2          C          548.0                                     3010-4
NVALUE    0.055                                                                     3010-5
SEGMENT   30.10      3          N          1301.0                                    3010-6
NVALUE    0.20                                                                      3010-7
SECTION      30.10                                                                  3010-8
              0.00     762.88     100.00     761.07     200.00     759.27
            300.00     758.33     400.00     758.73     424.00     757.94
            451.00     749.94     510.00     749.54     512.00     746.33
            520.00     745.94     530.00     746.54     548.00     748.73
            553.00     749.83     600.00     749.23     700.00     749.33
            800.00     748.89     900.00     750.29     932.00     750.09
            936.00     749.49     947.00     748.29     956.00     748.89
            969.00     749.69     974.00     750.49    1000.00     750.19
           1100.00     749.19    1200.00     750.60    1300.00     750.21
          1301.0      760.0                                                         3010-17
ENDTABLE
REACH     30.50      1.0        4720.0     2000.0                                    3050-1
SEGMENT   30.50      1          N          1290.0                                    3050-2
NVALUE    0.20                                                                      3050-3
SEGMENT   30.50      2          C          1335.0                                    3050-4
NVALUE    0.055                                                                     3050-5
SEGMENT   30.50      3          N          1470.0                                    3050-6
NVALUE    0.20                                                                      3050-7
SECTION      30.50                                                                  3050-8
              0.00     765.16     100.00     763.45     144.00     751.95
            200.00     752.66     300.00     752.17     400.00     751.97
            500.00     751.87     600.00     751.77     700.00     751.77
            800.00     751.77     900.00     751.02    1000.00     751.13
           1100.00     751.13    1200.00     751.63    1290.00     752.13
           1297.00     748.13    1308.00     748.13    1320.00     747.72
           1329.00     748.92    1335.00     749.53    1340.00     750.32
           1400.00     751.32    1425.00     753.63    1470.00     765.42
ENDTABLE
----------------MAX ELEV DIFFERENCE BETWEEN POINTS ON SECTION 30.50  EXCEEDS  10. FEET----------
REACH     30.55      1.0        3520.0     1760.0                                    3055-1
REACH2    30.50      0.
COMPUTE   29.90      30.55      29.80
-----------------------------END OF 80/80 LIST-----------------------------
```

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
SP2       20.
ITLE      ROGUE RIVER FLOOD HAZARD STUDY, KENT CO. MICH. 7/20/81
ITLE      FINAL TR20 DISCHARGES ------ TO DUK CREEK
ISCHARGE -1.        1065.      2290.      3350.      3865.      5245.
TARTE     29.80     747.0      748.2      749.2      749.6      750.8
RIG       30.50     30.55
UTPUT     SK
ACH       29.80     1.0        0.         0.
OMENT     29.80     1          N          1766.0                                2980-2
VALUE     0.20                                                                   2980-3
OMENT     29.80     2          C          1834.0                                2980-4
VALUE     0.055                                                                  2980-5
OMENT     29.80     3          N          3800.0                                2980-6
VALUE     0.20                                                                   2980-7
ECTION       29.80                                                               2980-8
              900.00    756.72    1000.00    755.53    1100.00    755.03
            1200.00    754.82    1300.00    755.02    1328.00    754.92
            1370.00    745.52    1400.00    746.02    1500.00    745.61
            1600.00    745.11    1700.00    745.31    1766.00    746.11
            1772.00    743.58    1782.00    742.68    1802.00    742.68
            1814.00    743.28    1829.00    743.88    1834.00    745.97
            1900.00    745.18    2000.00    745.18    2100.00    744.78
            2300.00    745.13    2400.00    744.53    2500.00    744.63
            2600.00    744.63    2700.00    744.82    2800.00    744.78
            2900.00    745.28    3000.00    745.07    3017.00    745.17
            3056.00    751.28    3100.00    751.28    3200.00    750.28
            3300.00    749.77    3400.00    749.46    3500.00    747.86
            3600.00    750.57    3660.00    750.46    3733.00    760.36
            3800.00    760.06
NOTABLE
ACH       29.90     1.0        2720.0     2080.0                                2990-1
OMENT     29.90     1          N          570.0                                 2990-2
VALUE     0.20                                                                   2990-3
OMENT     29.90     2          C          630.0                                 2990-4
VALUE     0.055                                                                  2990-5
OMENT     29.90     3          N          1300.0                                2990-6
VALUE     0.20                                                                   2990-7
ECTION       29.90                                                               2990-8
                0.00    757.23      22.00    756.63      40.00    750.83
               50.00    750.53      56.00    747.63      70.00    747.33
               85.00    745.53     115.00    745.83     130.00    747.53
              200.00    747.53     300.00    746.83     365.00    746.03
              410.00    745.43     424.00    747.13     500.00    747.63
              550.00    748.13     566.00    748.23     570.00    744.83
              575.00    743.33     580.00    742.93     590.00    742.[illegible]
```

```
----------------------------80/80 LIST OF INPUT DATA----------------------------
            600.00    741.23    610.00    739.23    615.00    740.23
            624.00    742.43    630.00    745.23    634.00    748.83
            642.00    749.43    660.00    751.03    700.00    751.43
            800.00    752.23    900.00    752.83   1000.00    752.33
           1100.00    753.23   1200.00    751.14   1300.00    757.94
NOTABLE
DAD       30.00     2.7       80.0      80.0                          3000-1
PR        30.00     A         1.0       3.0                           3000-2
IER       737.9     2.4                                               3000-3
IRDER     751.9     751.7     15.0      0.6       2.7                 3000-4
          -37.5     755.7     -37.4     751.5     4.5       751.7     3000-5
          46.3      751.9     46.4      756.1                         3000-6
NOTABLE                                                               3000-7
ECTION    30.00                                                       3000-8
          -1000.0   756.1     -900.0    754.9     -800.0    755.6     3000-9
          -700.0    755.9     -700.0    755.0     -600.0    752.6     3000-10
          -511.0    751.2     -500.0    751.1     -400.0    750.9     3000-11
          -300.0    750.9     -247.0    750.8     -200.0    750.6     3000-12
          -195.0    750.6     -100.0    752.8     -80.0     753.0     3000-13
          -37.5     755.7     -36.8     749.2     -33.5     749.1     3000-14
          -26.0     745.7     -20.0     742.7     -10.0     741.9     3000-15
          0.0       738.7     3.5       738.1     5.5       737.9     3000-16
          15.0      741.1     25.0      742.5     33.0      744.7     3000-17
          33.5      746.1     42.0      749.6     45.7      749.8     3000-18
          46.4      756.1     82.0      753.8     100.0     753.8     3000-19
          200.0     753.5     300.0     753.7     400.0     754.0     3000-20
          500.0     754.7     600.0     757.3                         3000-21
NOTABLE                                                               3000-22
EACH      30.01     1.0       55.0      55.0                          3001-1
EACH 2    29.90     0.0                                               3001-2
EACH      30.10     1.0       9200.0    3440.0                        3010-1
EGMENT    30.10     1         N         510.0                         3010-2
VALUE     0.20                                                        3010-3
EGMENT    30.10     2         C         548.0                         3010-4
VALUE     0.055                                                       3010-5
EGMENT    30.10     3         N         1301.0                        3010-6
VALUE     0.20                                                        3010-7
ECTION       30.10                                                    3010-8
              0.00    762.88    100.00    761.07    200.00    759.27
            300.00    758.33    400.00    758.73    424.00    757.94
            451.00    749.94    510.00    749.54    512.00    746.33
            520.00    745.94    530.00    746.54    548.00    748.73
            553.00    749.83    600.00    749.23    700.00    749.33
            800.00    748.89    900.00    750.29    932.00    750.09
            936.00    749.49    947.00    748.29    956.00    748.89
```

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
            969.00     749.69     974.00     750.49    1000.00     750.19
           1100.00     749.19    1200.00     750.60    1300.00     750.21
      1301.0     760.0                                                          3010-17
NOTABLE
EACH     30.50      1.0        4720.0     2000.0                                3050-1
EGMENT   30.50      1          N          1290.0                                3050-2
VALUE    0.20                                                                   3050-3
EGMENT   30.50      2          C          1335.0                                3050-4
VALUE    0.055                                                                  3050-5
EGMENT   30.50      3          N          1470.0                                3050-6
VALUE    0.20                                                                   3050-7
ECTION      30.50                                                               3050-8
              0.00     765.16     100.0      763.45     144.00     751.95
            200.00     752.66     300.0      752.17     400.00     751.97
            500.00     751.87     600.0      751.77     700.00     751.77
            800.00     751.77     900.0      751.02    1000.00     751.13
           1100.00     751.13    1200.0      751.63    1290.00     752.13
           1297.00     748.13    1308.0      748.13    1320.00     747.72
           1329.00     748.92    1335.0      749.53    1340.00     750.32
           1400.00     751.32    1425.0      753.63    1470.00     765.42
NOTABLE
EACH     30.55      1.0        3520.0     1760.0                                3055-1
EACH2    30.50      0.
OMPUTE   29.90      30.55      29.80
----------------------------END OF 80/80 LIST------------------------------------
```

```
                COMPUTE    29.90      30.55      29.80
****SECT.2).80 KD VALUES REVERSED ON SEGMENT 1  AT ELEVATION    755.88  VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

--------------------------STARTING DATA FROM GIVEN ELEVATION-----------------------------
```

RATING TABLE FOR SECTION 29.80 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	742.7	0.0	0.0						
BANK FULL	746.0	1591.3	811.0	0.0	0.0	0.0			
1	747.0	3281.7	1065.0	0.0	0.0	0.0	1065.00	745.0	0.00044
2	748.2	5293.9	2290.0	0.0	0.0	0.0	2290.00	745.2	0.00050
3	749.2	7065.4	3350.0	0.0	0.0	0.0	3350.00	745.4	0.00047
4	749.6	7817.0	3865.0	0.0	0.0	0.0	3865.00	745.4	0.00048
5	750.8	10290.0	5245.0	0.0	0.0	0.0	5245.00	745.6	0.00044

SEGMENT TABLE FOR SECTION 29.80

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	117.	329.	61[illegible].
1065.	VELOCITY FPS	0.77	0.20	1.33	0.[illegible]
2	DISCHARGE CFS	2290.	337.	564.	139[illegible].
2290.	VELOCITY FPS	0.91	0.32	1.71	0.[illegible]
3	DISCHARGE CFS	3350.	557.	748.	204[illegible].
3350.	VELOCITY FPS	0.96	0.38	1.88	0.[illegible]
4	DISCHARGE CFS	3865.	671.	845.	234[illegible]
3865.	VELOCITY FPS	1.00	0.41	1.99	0.[illegible]
5	DISCHARGE CFS	5245.	982.	1077.	31[illegible]
5245.	VELOCITY FPS	1.04	0.46	2.13	0.[illegible]
1 ELEV 747.0 KD		50456.	5446.	15717.	292[illegible]
2 ELEV 748.2 KD		102285.	14970.	25260.	620[illegible]
3 ELEV 749.2 KD		154422.	25591.	34536.	942[illegible]
4 ELEV 749.6 KD		175995.	30409.	38559.	10702
5 ELEV 750.8 KD		251206.	47037.	51691.	15247

KD TABLE FOR CROSS SECTION 29.80

ELEVATION	AREA	KD	KD BY SEGMENT		
742.68	0.				
743.	8.	92.	1.	90.	1.
744.	54.	137.	1.	1369.	1.
745.	302.	5143.	1.	4577.	1386.
746.	1640.	19803.	819.	9284.	9379.
747.	3282.	50503.	5446.	15717.	29293.
748.	4957.	92537.	13038.	23535.	55886.
749.	6699.	143711.	23293.	32590.	87810.
750.	8595.	199173.	35665.	42771.	120729.
751.	10745.	26686.	50031.	54022.	162762.
752.	13038.	354763.	66402.	66311.	221974.
753.	15374.	45944.	84615.	79586.	295188.
754.	17722.	57498.	104598.	93812.	376536.
755.	20157.	69417.	119155.	108956.	465500.
756.	22780.	80908.	121672.	125001.	562404.
757.	25560.	95134.	143166.	141911.	666259.
758.	28371.	111709.	180399.	159663.	776861.
759.	31190.	129551.	222675.	178245.	894425.
760.	34012.	148757.	270192.	197671.	1020205.
761.	36834.	169485.	324308.	217944.	1155106.
762.	39656.	191776.	385502.	239053.	1299238.

RATING TABLE FOR SECTION 29.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	739.2	0.0	0.0						
BANK FULL	744.8	171.9	643.4	0.0	0.0	0.0			
1	748.5	1175.0	1065.0	0.0	0.0	0.0	1065.00	744.0	0.00056
2	750.1	2134.3	2290.0	0.0	0.0	0.0	2290.00	746.0	0.00077
3	751.4	2927.9	3350.0	0.0	0.0	0.0	3350.00	746.9	0.00080
4	751.9	3279.5	3865.0	0.0	0.0	0.0	3865.00	747.2	0.00083
5	753.0	4381.1	5245.0	0.0	0.0	0.0	5245.00	747.6	0.00085

SEGMENT TABLE FOR SECTION 29.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	211.	852.	1.
1065.	VELOCITY FPS	1.98	0.27	2.17	0.20
2	DISCHARGE CFS	2290.	618.	1466.	5.
2290.	VELOCITY FPS	2.42	0.50	2.99	0.25
3	DISCHARGE CFS	3350.	1444.	1888.	19.
3350.	VELOCITY FPS	2.55	0.63	3.34	0.22
4	DISCHARGE CFS	3865.	1748.	2084.	33.
3865.	VELOCITY FPS	2.64	0.69	3.51	0.21
5	DISCHARGE CFS	5245.	2538.	2542.	166.
5245.	VELOCITY FPS	2.75	0.80	3.83	0.29
1 ELEV 746.5 KD		44635.	8214.	36367.	53.
2 ELEV 750.1 KD		82144.	29155.	52780.	209.
3 ELEV 751.4 KD		118437.	50878.	67022.	537.
4 ELEV 751.9 KD		133561.	60030.	72589.	943.
5 ELEV 753.0 KD		178244.	86566.	87431.	4247.

KD TABLE FOR CROSS SECTION 29.90

ELEVATION	AREA	KD	KD BY SEGMENT		
739.23	0.				
740.	3.	44.	1.	42.	1.
741.	16.	386.	1.	384.	1.
742.	38.	1229.	1.	1227.	1.
743.	74.	2719.	1.	2717.	1.
744.	125.	5765.	1.	5763.	1.
745.	183.	10191.	2.	10188.	1.
746.	277.	16411.	38.	16245.	3.
747.	478.	24776.	1107.	23541.	11.
748.	907.	36871.	4648.	31852.	36.
749.	1467.	55114.	13452.	41151.	70.
750.	2057.	78787.	26986.	51374.	183.
751.	2667.	106561.	43555.	62483.	522.
752.	3392.	139094.	63218.	74423.	1124.
753.	4362.	178684.	86152.	87205.	4147.
754.	5522.	226975.	111906.	100793.	13325.
755.	6742.	284490.	140324.	115161.	28659.
756.	7979.	349532.	171233.	130280.	47943.
757.	9246.	418021.	201273.	146089.	7[illegible]03.
758.	10513.	494857.	234335.	162786.	9[illegible]35.
759.	11781.	580705.	270683.	180374.	1[illegible]79.

TABLE OF VALUES FOR BRK EQUATI

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
0.6930	0.5320	0.1893	0.8578	0.0	-0.0284	0.6825	1.0000	1.0000	438.7192	2057.4644	1986.7375
DCRIT	743.54	KBCRIT=									
0.9431	0.8452	0.1477	0.7695	0.0	-0.0499	0.5793	1.0000	1.0000	567.1882	3280.0908	3038.3931
DCRIT	745.25	KBCRIT=									
1.0990	1.0376	0.1254	0.7154	0.0	-0.0641	0.5239	1.0000	1.0000	671.7075	4490.8750	4131.5078
DCRIT	745.51	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	656.4829	4490.8750	4131.5078
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	656.4829	4490.8750	4131.5078
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 30.00

NO.	HW	CFS	HL	TW	CSM
0	737.90	0.00	0.00	0.00	0.00
1	748.65	1065.00	0.10	748.55	1065.00
2	750.50	2290.00	0.30	750.20	2290.00
3	751.76	3350.00	0.30	751.47	3350.00
4	752.35	3865.00	0.42	751.53	3865.00
5	753.42	5245.00	0.32	753.11	5245.00

MIN ROAD ELEVATION 750.00

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 751.70 OPENING NO.= 1

RATING TABLE FOR SECTION 30.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	739.2	0.0	0.0						
BANK FULL	744.8	171.9	633.4	0.0	0.0	0.0			
1	748.6	1260.1	1065.0	0.0	0.0	0.0	1065.00	744.0	0.00052
2	750.5	2359.4	2290.0	0.0	0.0	0.0	2290.00	746.0	0.00068
3	751.6	3210.5	3350.0	0.0	0.0	0.0	3350.00	746.9	0.00074
4	752.3	3655.6	3865.0	0.0	0.0	0.0	3865.00	747.2	0.00073
5	753.4	4831.5	5245.0	0.0	0.0	0.0	5245.00	747.6	0.00091

SEGMENT TABLE FOR SECTION 30.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	209.	855.	[illegible]
1065.	VELOCITY FPS	1.54	0.25	2.13	0.17
2	DISCHARGE CFS	2290.	806.	1477.	[illegible]
2290.	VELOCITY FPS	2.35	0.44	2.89	0.20
3	DISCHARGE CFS	3350.	1394.	1931.	25[illegible]
3350.	VELOCITY FPS	2.54	0.56	3.25	0.[illegible]
4	DISCHARGE CFS	3865.	1690.	2133.	4[illegible]
3865.	VELOCITY FPS	2.58	0.60	3.43	0.[illegible]
5	DISCHARGE CFS	5245.	2408.	2631.	2[illegible]
5245.	VELOCITY FPS	2.77	0.71	3.83	0.[illegible]
1 ELEV 748.6 KD		46098.	8318.	37729.	[illegible]
2 ELEV 750.5 KD		87622.	30566.	56814.	24[illegible]
3 ELEV 751.8 KD		123059.	50842.	71477.	73[illegible]
4 ELEV 752.3 KD		142515.	62242.	78804.	147[illegible]
5 ELEV 753.4 KD		183736.	84538.	92786.	641[illegible]

'D TABLE FOR CROSS SECTION 30.01

ELEVATION	AREA	KD	KD BY SEGMENT		
739.23	0.				
740.	3.	4[illegible].	1.	42.	1.
741.	16.	38[illegible].	1.	384.	1.
742.	38.	122[illegible].	1.	1227.	1.
743.	74.	271[illegible].	1.	2712.	1.
744.	125.	576[illegible].	1.	5763.	1.
745.	183.	1019[illegible].	1.	10188.	1.
746.	277.	1639[illegible].	33.	16245.	3.
747.	478.	2462[illegible].	968.	23541.	9.
748.	907.	3624 .	4065.	31852.	32.
749.	1467.	5337[illegible].	11764.	41151.	61.
750.	2057.	7535 .	23599.	51374.	160.
751.	2667.	10103 .	38088.	62483.	334.
752.	3392.	13098[illegible].	55282.	74423.	983.
753.	4362.	16721 .	75338.	87205.	3627.
754.	5522.	21115[illegible].	97859.	100753.	11652.
755.	6742.	26324[illegible].	122710.	115161.	25061.
756.	7979.	32201[illegible].	149739.	130280.	41925.
757.	9246.	38390 .	176008.	146089.	61216.
758.	10513.	45313[illegible].	204920.	162788.	87203.
759.	11781.	53025[illegible].	236706.	180374.	122233.

****SECT.30.10 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 759.14 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 30.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	745.9	0.0	0.0						
BANK FULL	748.7	71.0	482.9	0.0	0.0	0.0			
1	752.1	2163.9	1065.0	0.0	0.0	0.0	1065.00	749.6	0.00034
2	753.6	3469.1	2290.0	0.0	0.0	0.0	2290.00	750.0	0.00036
3	754.9	4593.2	3350.0	0.0	0.0	0.0	3350.00	750.2	0.00032
4	755.4	5043.5	3865.0	0.0	0.0	0.0	3865.00	750.3	0.00032
5	756.6	6043.1	5245.0	0.0	0.0	0.0	5245.00	750.6	0.00033

SEGMENT TABLE FOR SECTION 30.10

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1065.	56.	276.	734.
1065.	VELOCITY FPS	0.82	0.38	1.42	0.40
2	DISCHARGE CFS	2290.	134.	443.	1713.
2290.	VELOCITY FPS	0.93	0.53	1.75	0.57
3	DISCHARGE CFS	3350.	207.	563.	2580.
3350.	VELOCITY FPS	0.97	0.60	1.86	0.65
4	DISCHARGE CFS	3865.	243.	621.	3001.
3865.	VELOCITY FPS	1.00	0.63	1.93	0.69
5	DISCHARGE CFS	5245.	340.	780.	4125.
5245.	VELOCITY FPS	1.10	0.71	2.14	0.79
1 ELEV 752.1 KD		57458.	2975.	15126.	39358.
2 ELEV 753.6 KD		120712.	7672.	23462.	90178.
3 ELEV 754.9 KD		187049.	11553.	31440.	144057.
4 ELEV 755.4 KD		216692.	13600.	34526.	168166.
5 ELEV 756.6 KD		289660.	18743.	43167.	227730.

KD TABLE FOR CROSS SECTION 30.10

ELEVATION	AREA	KD	KD BY SEGMENT		
745.94	0.				
746.	0.	3.	1.	2.	1.
747.	16.	328.	2.	324.	2.
748.	42.	1370.	2.	1367.	2.
749.	94.	3345.	2.	3275.	31.
750.	465.	9316.	57.	6301.	[illegible]9.
751.	1230.	25451.	1004.	10138.	1[illegible]6.
752.	2085.	54378.	2772.	14671.	3[illegible]95.
753.	2942.	92568.	5221.	19858.	6[illegible]42.
754.	3804.	138647.	8269.	25645.	104719.
755.	4669.	191915.	11886.	32014.	14[illegible]07.
756.	5537.	252033.	16073.	38931.	15[illegible]24.
757.	6409.	318637.	20822.	46379.	25[illegible]433.
758.	7290.	391100.	25784.	54339.	31[illegible]946.
759.	8262.	463511.	25785.	62793.	37[illegible]267.
760.	9368.	546492.	30496.	71729.	44[illegible]252.
761.	10539.	641166.	41800.	81137.	51[illegible]854.
762.	11763.	746434.	59193.	91006.	59[illegible]887.
763.	13023.	860471.	80918.	101336.	67[illegible]68.
764.	14283.	9[illegible]26.	108664.	112150.	76[illegible]40.
765.	15543.	1116995.	143623.	123442.	86[illegible]58.

RATING TABLE FOR SECTION 30.50 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	CHANNEL	NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	747.7	0.0	0.0						
BANK FULL	749.5	49.3	324.0	0.0	0.0	0.0			
1	753.7	2688.9	1065.0	0.0	0.0	0.0	1065.00	751.4	0.00030
2	755.0	4419.9	2290.0	0.0	0.0	0.0	2290.00	751.9	0.00031
3	756.2	5908.6	3350.0	0.0	0.0	0.0	3350.00	752.0	0.00027
4	756.6	6532.5	3865.0	0.0	0.0	0.0	3865.00	752.1	0.00026
5	757.7	8002.6	5245.0	0.0	0.0	0.0	5245.00	752.3	0.00025

SEGMENT TABLE FOR SECTION 30.50

CSM		TOTAL	SEG NO 1 N	2 C	3 N
1	DISCHARGE CFS	1065.	683.	304.	78.
1065.	VELOCITY FPS	0.78	0.31	1.33	0.35
2	DISCHARGE CFS	2290.	1664.	465.	161.
2290.	VELOCITY FPS	0.83	0.44	1.60	0.47
3	DISCHARGE CFS	3350.	2551.	567.	232.
3350.	VELOCITY FPS	0.83	0.50	1.66	0.51
4	DISCHARGE CFS	3865.	2978.	620.	267.
3865.	VELOCITY FPS	0.84	0.53	1.71	0.55
5	DISCHARGE CFS	5245.	4126.	758.	360.
5245.	VELOCITY FPS	0.89	0.59	1.84	0.58
1 ELEV 753.7 KD		61472.	38887.	18053.	4533.
2 ELEV 755.0 KD		130846.	95000.	26646.	9201.
3 ELEV 756.2 KD		205085.	155887.	34978.	14220.
4 ELEV 756.6 KD		240922.	185554.	38734.	16634.
5 ELEV 757.7 KD		332696.	261729.	48108.	22859.

KD TABLE FOR CROSS SECTION 30.50

ELEVATION	AREA	KD	KD BY SEGMENT		
747.72	0.				
748.	2.	15.	2.	11.	2.
749.	29.	710.	2.	706.	2.
750.	69.	2557.	2.	2551.	4.
751.	157.	5738.	17.	5514.	112.
752.	638.	13092.	2449.	9373.	1039.
753.	1831.	36342.	18594.	14270.	2825.
754.	3114.	76886.	51132.	20050.	5646.
755.	4408.	130350.	94573.	26582.	9165.
756.	5710.	194567.	147177.	33819.	13503.
757.	7019.	269709.	209334.	41747.	18584.
758.	8336.	354038.	279917.	50328.	24561.
759.	9661.	448861.	358475.	59538.	30525.
760.	10994.	551897.	444552.	69355.	37968.
761.	12333.	663870.	538286.	79769.	45609.
762.	13681.	785796.	638720.	90751.	54716.
763.	15036.	911677.	745870.	102290.	63503.
764.	16417.	1033640.	845866.	114378.	73388.
765.	17809.	1155083.	944048.	127026.	84030.
766.	19201.	1282750.	1047138.	140243.	95486.
767.	20593.	1416594.	1155088.	154020.	107767.

RATING TABLE FOR SECTION 30.55 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	747.7	0.0	0.0						
BANK FULL	749.5	49.3	295.6	0.0	0.0	0.0			
1	754.2	3424.7	1065.0	0.0	0.0	0.0	1065.00	751.4	0.00016
2	755.7	5294.6	2290.0	0.0	0.0	0.0	2290.00	751.9	0.00020
3	756.9	6831.7	3350.0	0.0	0.0	0.0	3350.00	752.0	0.00019
4	757.3	7478.2	3865.0	0.0	0.0	0.0	3865.00	752.1	0.00019
5	758.5	8951.9	5245.0	0.0	0.0	0.0	5245.00	752.3	0.00020

SEGMENT TABLE FOR SECTION 30.55

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	1065.	717.	273.	75
1065.	VELOCITY FPS	0.59	0.25	1.07	0.27
2	DISCHARGE CFS	2290.	1689.	444.	157.
2290.	VELOCITY FPS	0.70	0.37	1.39	0.39
3	DISCHARGE CFS	3350.	2560.	562.	228.
3350.	VELOCITY FPS	0.73	0.43	1.51	0.4[illegible]
4	DISCHARGE CFS	3865.	2984.	619.	26[illegible]
3865.	VELOCITY FPS	0.76	0.46	1.57	0.[illegible]
5	DISCHARGE CFS	5245.	4118.	771.	3[illegible]
5245.	VELOCITY FPS	0.83	0.53	1.73	0.[illegible]
1 ELEV 754.2 KD		83291.	55900.	21555.	58[illegible]
2 ELEV 755.7 KD		162063.	119505.	31450.	1110[illegible]
3 ELEV 756.9 KD		241248.	184259.	40578.	1641[illegible]
4 ELEV 757.3 KD		277951.	214401.	44666.	1888[illegible]
5 ELEV 758.5 KD		370065.	290432.	54537.	2511[illegible]

KD TABLE FOR CROSS SECTION 30.55

ELEVATION	AREA	KD	KD BY SEGMENT		
747.72	0.				
748.	2.	1[illegible].	1.	1[illegible].	1.
749.	29.	70[illegible].	1.	706.	1.
750.	69.	255[illegible].	1.	2551.	4.
751.	157.	572[illegible].	15.	5514.	103.
752.	638.	12803.	2254.	9373.	1957.
753.	1831.	3461[illegible].	17117.	14270.	2600.
754.	3114.	7238[illegible].	47071.	20050.	5105.
755.	4408.	12211[illegible].	87061.	26582.	8437.
756.	5710.	18180[illegible].	135487.	33619.	12431.
757.	7019.	25160 .	192707.	41747.	17108.
758.	8336.	33047 .	257685.	50328.	22426.
759.	9661.	41794[illegible].	330003.	59538.	28377.
760.	10994.	51357 .	409244.	69355.	34952.
761.	12333.	61747 .	495532.	79769.	42171.
762.	13681.	72875[illegible].	587990.	90751.	50002.
763.	15036.	84739 .	686628.	102290.	58459.
764.	16417.	96062 .	776682.	114376.	67559.
765.	17809.	107342 .	869068.	127026.	77356.
766.	19201.	119200[illegible].	963970.	140243.	87902.
767.	20593.	131631 .	1063347.	154020.	99207.

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
TITLE     FINAL TR20 DISCHARGES ------ TO 18-MILE ROAD
CHANGE    DISCHARGE
DISCHARGE -1.       810.      1780.     2585.     2980.     4030.
NO
EACH      30.57     1.0       2080.0    1120.0                          3057-1
EACH2     30.50     2.5                                                 3057-2
COMMENT   F. P. LENGTH TO CHANNEL LENGTH RATIO CHANGES                  3057-3
EACH      30.90     1.0       3120.0    1120.0                          3090-1
SEGMENT   30.90     1         N         532.0                           3090-2
VALUE     0.20                                                          3090-3
SEGMENT   30.90     2         C         571.0                           3090-4
VALUE     .055                                                          3090-5
SEGMENT   30.90     3         N         607.0                           3090-6
VALUE     0.18                                                          3090-7
SEGMENT   30.90     4         N         850.0                           3090-8
VALUE     0.18      1.3       0.08                                      3090-9
SECTION   30.90                                                         3090-10
          0.00      767.18    13.00     766.18    25.00     765.08
         50.00      759.08    70.00     755.08    150.00    755.89
        250.00      755.98    350.00    756.68    450.00    755.68
        500.00      756.68    527.00    756.68    532.00    752.34
        537.00      750.14    542.00    748.34    550.00    747.14
   558.       748.44    567.       751.34    571.       754.24
        572.00      757.64    586.00    758.24    607.00    762.24
        650.00      764.14    703.00    766.04    713.00    767.84
        750.00      769.94    850.00    773.04
NOTABLE
DAD       31.00     2.7       60.0      60.0                            3100-1
PR        31.00     8         3.0                                       3100-2
IRDER     760.2     760.1     0.0       0.6       2.7                   3100-3
          -22.6     768.1     -22.5     760.1     0.0       760.1       3100-4
          22.5      760.1     22.6      768.1                           3100-5
NOTABLE                                                                 3100-6
SECTION   31.00                                                         3100-7
          -1000.0   762.9     -900.0    763.0     -800.0    762.7       3100-8
          -700.0    762.3     -600.0    762.2     -500.0    761.9       3100-9
          -453.0    761.9     -400.0    761.9     -300.0    762.2       3100-10
          -200.0    762.7     -110.0    763.2     -25.1     767.4       3100-11
          -25.0     768.1     -22.6     768.1     -22.4     755.3       3100-12
          -15.0     754.1     -8.0      753.1     0.0       752.2       3100-13
          7.0       751.9     15.0      752.7     22.4      755.6       3100-14
          22.6      768.1     25.0      768.1     25.1      767.4       3100-15
          110.0     764.1     200.0     765.3     300.0     767.9       3100-16
          400.0     770.5     425.0     771.2                             3100-17
NOTABLE                                                                 3100-18
```

```
----------------------------80/80 LIST OF INPUT DATA-----------------------------
EACH      31.01     1.0       55.0      55.0                                  3101-1
EACH 2    30.90     0.0                                                       3101-2
EACH      31.10     1.0       3220.0    2660.0                                3110-1
EGMENT    31.10     1         N         1403.0                                3110-2
VALUE     0.20                                                                3110-3
EGMENT    31.10     2         C         1438.0                                3110-4
VALUE     0.055                                                               3110-5
EGMENT    31.10     3         N         1611.0                                3110-6
VALUE     0.15                                                                3110-7
ECTION       31.10                                                            3110-8
                0.00    772.14    100.00    772.34    200.00    772.64
              300.00    771.24    400.00    770.64    500.00    770.84
              600.00    770.84    622.00    769.90    665.00    759.70
              700.00    758.50    795.00    757.09    900.00    758.01
             1000.00    757.31   1100.00    756.61   1200.00    756.61
             1300.00    756.01   1400.00    757.81   1403.00    755.41
             1417.00    754.01   1428.00    752.71   1438.00    755.11
             1440.00    757.41   1500.00    756.51   1548.00    757.91
             1611.00    772.61
NOTABLE
EACH      31.90     1.0       5040.0    3520.0                                3190-1
EGMENT    31.90     1         N         433.0                                 3190-2
VALUE     0.20                                                                3190-3
EGMENT    31.90     2         C         470.0                                 3190-4
VALUE     0.055                                                               3190-5
EGMENT    31.90     3         N         700.0                                 3190-6
VALUE     0.20                                                                3190-7
ECTION       31.90                                                            3190-8
                0.00    772.04     14.00    770.64     53.00    760.54
              150.00    759.94    250.00    759.94    350.00    759.54
              400.00    760.24    426.00    760.65    433.00    757.65
              438.00    756.55    445.00    755.85    450.00    755.05
              455.00    755.05    465.00    755.65    470.00    757.55
              474.00    760.55    500.00    760.45    550.00    759.45
              600.00    761.65    644.00    779.67    700.00    781.07
NOTABLE
OAD       32.00     2.7       50.0      50.0                                  3200-1
PR        32.00     B         3.0       1.0                                   3200-2
IER       756.0     0.7                                                       3200-3
IRDER     763.6     763.4     0.0       0.6       2.7                         3200-4
          -22.9     768.1     -22.8     763.3     0.0       763.4             3200-5
          22.5      763.4     22.6      768.1                                 3200-6
NOTABLE                                                                       3200-7
ECTION    32.00                                                               3200-8
          -600.0    772.3     -500.0    768.6     -400.0    764.8             3200-9
```

```
----------------------------80/80 LIST OF INPUT DATA----------------------------
        -300.0     763.6     -200.0     763.7     -100.0     764.1     3200-10
        -23.0      764.8     -22.9      768.1     -22.7      757.6     3200-11
        -15.0      755.6     -7.0       756.1     0.0        757.1     3200-12
        6.0        756.8     14.0       754.50    22.5       756.8     3200-13
        22.6       768.1     23.5       765.0     100.0      766.8     3200-14
        150.0      769.2     200.0      772.2                           3200-15
NOTABLE                                                                3200-16
EACH    32.01      1.0       100.0      100.0                           3201-1
EACH 2  31.90      0.0                                                  3201-2
COMPUTE 30.57      32.01     30.55
----------------------------END OF 80/80 LIST-----------------------------
```

COMPUTE 30.57 32.01 30.55

----------STARTING DATA FROM PREVIOUS COMPUTATIONS----------

RATING TABLE FOR SECTION 30.57 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	750.2	0.0	0.0						
BANK FULL	752.0	49.3	275.8	0.0	0.0	0.0			
1	755.5	1875.8	810.0	0.0	0.0	0.0	810.00	753.5	0.00054
2	756.7	3421.8	1780.0	0.0	0.0	0.0	1780.00	754.2	0.00046
3	757.7	4647.2	2585.0	0.0	0.0	0.0	2585.00	754.4	0.00041
4	758.1	5214.8	2980.0	0.0	0.0	0.0	2980.00	754.5	0.00038
5	759.2	6589.4	4030.0	0.0	0.0	0.0	4030.00	754.6	0.00033

SEGMENT TABLE FOR SECTION 30.57

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	810.	428.	323.	[illegible]
810.	VELOCITY FPS	1.10	0.28	1.61	0.[illegible]
2	DISCHARGE CFS	1780.	1187.	470.	12[illegible].
1780.	VELOCITY FPS	1.02	0.41	1.84	0.[illegible]5
3	DISCHARGE CFS	2585.	1851.	557.	17[illegible].
2585.	VELOCITY FPS	0.97	0.46	1.87	0.[illegible]
4	DISCHARGE CFS	2980.	2177.	600.	20[illegible]
2980.	VELOCITY FPS	0.96	0.48	1.89	0.[illegible]
5	DISCHARGE CFS	4030.	3046.	711.	27[illegible]
4030.	VELOCITY FPS	0.95	0.53	1.95	0.[illegible]
1 ELEV	755.5 KD	34361.	17322.	14462.	257[illegible]
2 ELEV	756.7 KD	80951.	53792.	21542.	561[illegible]
3 ELEV	757.7 KD	128276.	91640.	27858.	877[illegible]
4 ELEV	758.1 KD	153489.	112042.	30995.	104[illegible]
5 ELEV	759.2 KD	221203.	167156.	39085.	149[illegible]

KD TABLE FOR CROSS SECTION 30.57

ELEVATION	AREA	KD	KD BY SEGMENT		
750.22	0.				
751.	13.	214.	1.	211.	1.
752.	48.	1461.	1.	1461.	2.
753.	95.	3913.	1.	3913.	20.
754.	314.	8291.	367.	7332.	373.
755.	1197.	21263.	7827.	11701.	1645.
756.	2470.	50624.	29783.	17069.	7608.
757.	3760.	92920.	63150.	23218.	6415.
758.	5058.	146267.	106109.	30113.	9970.
759.	6364.	209087.	157171.	37701.	14155.
760.	7677.	281084.	216114.	45958.	18972.
761.	8998.	361601.	282314.	54856.	24403.
762.	10326.	450240.	355415.	64373.	30440.
763.	11663.	546474.	434891.	74485.	37070.
764.	13007.	650481.	520957.	85183.	44318.
765.	14358.	761910.	613270.	96449.	53176.
766.	15721.	877370.	708453.	108273.	60648.
767.	17113.	983721.	793359.	120631.	69732.
768.	18505.	1095676.	882637.	133564.	79532.
769.	19897.	1213190.	976249.	147062.	90059.

RATING TABLE FOR SECTION 30.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0.	747.1	0.0	0.0						
BANK FULL	752.3	117.2	426.4	0.0	0.0	0.0			
1	757.0	761.2	810.0	0.0	0.0	0.0	810.00	751.5	0.00052
2	758.7	1643.2	1780.0	0.0	0.0	0.0	1780.00	753.4	0.00062
3	759.7	2152.7	2585.0	0.0	0.0	0.0	2585.00	754.7	0.00065
4	760.1	2407.4	2980.0	0.0	0.0	0.0	2980.00	756.4	0.00068
5	761.2	3033.3	4030.0	0.0	0.0	0.0	4030.00	756.6	0.00068

SEGMENT TABLE FOR SECTION 30.90

CSM		TOTAL	SEG NO 1 N	2 C	3 N	4 N
1	DISCHARGE CFS	810.	135.	675.	0.	0.
810.	VELOCITY FPS	2.09	0.29	2.27	0.37	0.0
2	DISCHARGE CFS	1780.	747.	1028.	4.	0.
1780.	VELOCITY FPS	2.22	0.59	2.83	0.31	0.0
3	DISCHARGE CFS	2585.	1298.	1271.	15.	0.
2585.	VELOCITY FPS	2.33	0.76	3.18	0.45	0.0
4	DISCHARGE CFS	2980.	1585.	1373.	22.	0.
2980.	VELOCITY FPS	2.33	0.81	3.28	0.59	0.0
5	DISCHARGE CFS	4030.	2369.	1614.	47.	0.
4030.	VELOCITY FPS	2.35	0.95	3.49	0.82	0.0
1	ELEV 757.0 KD	34964.	5106.	29847.	9.	2.
2	ELEV 758.7 KD	71028.	29147.	41757.	123.	2.
3	ELEV 759.7 KD	98188.	48657.	49020.	509.	2.
4	ELEV 760.1 KD	113679.	60074.	52803.	800.	2.
5	ELEV 761.2 KD	154815.	90687.	62375.	1751.	2.

KD TABLE FOR CROSS SECTION 30.90

ELEVATION	AREA	KD	KD BY SEGMENT			
747.14	0.					
748.	5.	78.	2.	72.	2.	2.
749.	21.	583.	2.	578.	2.	2.
750.	44.	1644.	2.	1639.	2.	2.
751.	72.	3313.	2.	3308.	2.	2.
752.	105.	5709.	2.	5704.	2.	2.
753.	142.	8956.	4.	8949.	2.	2.
754.	181.	12987.	14.	12967.	2.	2.
755.	223.	17898.	32.	17861.	3.	2.
756.	346.	24038.	432.	23496.	5.	2.
757.	754.	35441.	4917.	29737.	9.	2.
758.	1262.	54259.	17200.	36551.	29.	2.
759.	1796.	79387.	34970.	43916.	226.	2.
760.	2341.	109782.	56890.	51799.	712.	2.
761.	2895.	145341.	83351.	60204.	1501.	2.
762.	3459.	185797.	113833.	69113.	2552.	4.
763.	4037.	231047.	148078.	78510.	4267.	22.
764.	4639.	281187.	185862.	88381.	6364.	460.
765.	5276.	337001.	226126.	98692.	8596.	2562.
766.	5945.	398063.	266744.	109464.	12160.	7636.
767.	6637.	465554.	314669.	120690.	14539.	15445.
768.	7347.	541814.	365903.	132346.	17564.	25713.
769.	8075.	624206.	421152.	144414.	21053.	37185.
770.	8820.	712492.	479969.	156908.	25015.	50539.
771.	9584.	806416.	542032.	169824.	29453.	65714.
772.	10391.	907845.	605285.	183124.	33328.	84979.
773.	11206.	1017224.	674686.	196865.	38107.	108871.
774.	12020.	1134876.	747767.	211058.	43745.	132176.

TABLE OF VALUES FOR BRR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA1	ALPHA2	BRIDA	APPAR	AEXIT
0.4997	0.4997	0.0	0.0	0.0	0.0	0.7396	1.0000	1.0000	177.5771	121.1960	120.4966
DCRIT	755.38	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	1.0098	1.0000	1.0000	232.9142	167.4381	167.4480
DCRIT	756.89	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	1.0115	1.0000	1.0000	263.8894	214.1009	214.1112
DCRIT	757.92	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	307.9678	214.1009	214.1112
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	307.9678	214.1009	214.1112
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 31.00

NO.	HW	CFS	HL	TW	CSM
0	751.90	0.00	0.00	0.00	0.00
1	757.19	810.00	0.0	757.19	810.00
2	758.42	1780.00	0.0	758.42	1780.00
3	759.56	2585.00	0.0	759.56	2585.00
4	762.83	2980.00	1.72	761.11	2980.00
5	763.18	4030.00	1.78	761.40	4030.00

MIN ROAD ELEVATION = 761.90

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 760.10 OPENING NO.= 1

RATING TABLE FOR SECTION 31.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM.	CSM	CRIT ELEV	FRICTION SLOPE
0	747.1	0.0	0.0						
BANK FULL	752.3	117.2	392.5	0.0	0.0	0.0			
1	757.9	1194.7	810.0	0.0	0.0	0.0	810.00	751.5	0.00032
2	760.2	2432.2	1780.0	0.0	0.0	0.0	1780.00	753.4	0.00039
3	761.9	3383.9	2585.0	0.0	0.0	0.0	2585.00	754.7	0.00037
4	763.3	4243.7	2980.0	0.0	0.0	0.0	2980.00	756.4	0.00027
5	763.9	4593.5	4030.0	0.0	0.0	0.0	4030.00	756.6	0.00040

SEGMENT TABLE FOR SECTION 31.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N	SEG NO 4 N
1	DISCHARGE CFS	810.	174.	636.	[illegible]	0.
810.	VELOCITY FPS	1.73	0.20	1.93	0.07	0.0
2	DISCHARGE CFS	1780.	728.	1042.	1[illegible].	0.
1780.	VELOCITY FPS	1.92	0.37	2.48	0.23	0.0
3	DISCHARGE CFS	2585.	1262.	1294.	2[illegible].	0.
2585.	VELOCITY FPS	1.92	0.45	2.66	0.[illegible]	0.06
4	DISCHARGE CFS	2980.	1586.	1343.	4[illegible]	2.
2980.	VELOCITY FPS	1.70	0.45	2.47	0.[illegible]	0.12
5	DISCHARGE CFS	4030.	2196.	1754.	7[illegible]	5.
4030.	VELOCITY FPS	2.09	0.57	3.10	0.[illegible]	0.16
1	ELEV 757.9 KD	44617.	8979.	35623.	1[illegible]	1.
2	ELEV 760.2 KD	90406.	36725.	53179.	50[illegible]	1.
3	ELEV 761.9 KD	135153.	65744.	67921.	148[illegible]	2.
4	ELEV 763.3 KD	180976.	96134.	81846.	294[illegible]	49.
5	ELEV 763.9 KD	201337.	109723.	87655.	372[illegible]	235.

KD TABLE FOR CROSS SECTION 31.01

ELEVATION	AREA	KD	KD BY SEGMENT			
747.14	0.					
748.	5.	7[illegible].	1.	72.	1.	1.
749.	21.	58[illegible].	1.	578.	1.	1.
750.	44.	1642.	1.	1639.	1.	1.
751.	72.	3311.	1.	3308.	1.	1.
752.	105.	5707.	1.	5704.	1.	1.
753.	142.	8950.	2.	8949.	1.	1.
754.	181.	12970.	8.	12967.	2.	1.
755.	223.	17880.	19.	17861.	3.	1.
756.	346.	23820.	259.	23496.	4.	1.
757.	754.	33160.	2946.	29737.	5.	1.
758.	1262.	47190.	10305.	36551.	17.	1.
759.	1796.	65190.	20952.	43918.	135.	1.
760.	2341.	86590.	34085.	51799.	426.	1.
761.	2895.	111260.	49940.	60204.	899.	1.
762.	3459.	139050.	68203.	69113.	1589.	2.
763.	4037.	169920.	88720.	78510.	2656.	19.
764.	4639.	203900.	111358.	88381.	3813.	270.
765.	5276.	241500.	135482.	98692.	5210.	1535.
766.	5945.	282400.	161017.	109464.	6806.	4575.
767.	6637.	327330.	188532.	120690.	8591.	9254.
768.	7347.	377650.	219229.	132340.	10523.	15406.
769.	8075.	431910.	252331.	144414.	12584.	22279.
770.	8820.	489810.	287571.	156908.	14808.	30280.
771.	9584.	551240.	324756.	169824.	17191.	39372.
772.	10391.	617370.	363253.	183124.	19675.	50915.
773.	11206.	688340.	404235.	196865.	22370.	65229.
774.	12020.	764320.	448021.	211058.	25311.	82787.

****SECT.31.10 KD VALUES REVERSED ON SEGMENT 1 AT ELEVATION 770.91 VALUE CHANGED TO EQUAL PREVIOUS VALUE*****

RATING TABLE FOR SECTION 31.10 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	752.7	0.0	0.0						
BANK FULL	755.1	37.3	297.8	0.0	0.0	0.0			
1	759.2	1931.1	810.0	0.0	0.0	0.0	810.00	756.7	0.00044
2	761.2	3716.9	1780.0	0.0	0.0	0.0	1780.00	757.2	0.00032
3	762.8	5093.9	2585.0	0.0	0.0	0.0	2585.00	757.5	0.00026
4	764.0	6230.4	2980.0	0.0	0.0	0.0	2980.00	757.6	0.00018
5	764.8	6954.5	4030.0	0.0	0.0	0.0	4030.00	757.7	0.00024

SEGMENT TABLE FOR SECTION 31.10

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	810.	418.	301.	91.
810.	VELOCITY FPS	1.06	0.28	1.66	0.37
2	DISCHARGE CFS	1780.	1101.	447.	232.
1780.	VELOCITY FPS	0.96	0.37	1.78	0.48
3	DISCHARGE CFS	2585.	1679.	554.	352.
2585.	VELOCITY FPS	0.93	0.41	1.82	0.52
4	DISCHARGE CFS	2980.	1981.	583.	416.
2980.	VELOCITY FPS	0.83	0.39	1.68	0.45
5	DISCHARGE CFS	4030.	2706.	755.	569.
4030.	VELOCITY FPS	0.98	0.48	2.01	0.60
1 ELEV	759.2 KD	38703.	19848.	14553.	4302.
2 ELEV	761.2 KD	98932.	61003.	25062.	12867.
3 ELEV	762.8 KD	160754.	104373.	34498.	21884.
4 ELEV	764.0 KD	219323.	145711.	43022.	30591.
5 ELEV	764.8 KD	260501.	174905.	48603.	36793.

KD TABLE FOR CROSS SECTION 31.10

ELEVATION	AREA	KD	KD BY SEGMENT		
752.71	0.				
753.	1.	7.	1.	4.	1.
754.	11.	212.	1.	210.	1.
755.	34.	977.	1.	975.	1.
756.	73.	2829.	7.	2816.	3.
757.	274.	6480.	679.	5664.	5.
758.	896.	15566.	4988.	9215.	3[illegible]8.
759.	1723.	33334.	16224.	13453.	[illegible]26.
760.	2605.	58780.	33311.	18296.	[illegible]43.
761.	3503.	90553.	55219.	23704.	1[illegible]6[illegible].
762.	440[illegible].	128554.	81690.	29669.	17156.
763.	5524.	171838.	112137.	36158.	2[illegible]16.
764.	6247.	220227.	146335.	43149.	3[illegible]723.
765.	7179.	273457.	184059.	50623.	3[illegible]756.
766.	8118.	331615.	225390.	58578.	4[illegible]644.
767.	9066.	394169.	269863.	66977.	5[illegible]321.
768.	10024.	461101.	317465.	75621.	6[illegible]803.
769.	10990.	532481.	368253.	85100.	7[illegible]114.
770.	11978.	581839.	395371.	94804.	[illegible]44.
771.	13016.	607473.	398299.	104932.	10[illegible]30.
772.	14350.	663494.	430009.	115453.	11[illegible]97.
773.	15684.	721458.	462450.	126418.	1[illegible]48.
774.	17019.	781330.	495601.	137820.	1[illegible].

RATING TABLE FOR SECTION 31.90 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	755.0	0.0	0.0						
BANK FULL	757.5	61.6	188.4	0.0	0.0	0.0			
1	762.1	1264.7	810.0	0.0	0.0	0.0	810.00	758.4	0.00053
2	763.9	2305.5	1780.0	0.0	0.0	0.0	1780.00	760.2	0.00056
3	765.4	3125.3	2585.0	0.0	0.0	0.0	2585.00	760.6	0.00050
4	766.2	3611.0	2980.0	0.0	0.0	0.0	2980.00	760.7	0.00044
5	767.3	4243.1	4030.0	0.0	0.0	0.0	4030.00	760.9	0.00050

SEGMENT TABLE FOR SECTION 31.90

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	810.	267.	471.	72.
810.	VELOCITY FPS	1.60	0.33	2.06	0.30
2	DISCHARGE CFS	1780.	791.	754.	235.
1780.	VELOCITY FPS	1.70	0.52	2.53	0.49
3	DISCHARGE CFS	2585.	1258.	939.	388.
2585.	VELOCITY FPS	1.69	0.60	2.68	0.57
4	DISCHARGE CFS	2980.	1499.	1013.	468.
2980.	VELOCITY FPS	1.63	0.62	2.65	0.59
5	DISCHARGE CFS	4030.	2093.	1276.	661.
4030.	VELOCITY FPS	1.81	0.73	3.02	0.60
1 ELEV 762.1 KD		34972.	11353.	20607.	3013.
2 ELEV 763.9 KD		75148.	33291.	31948.	9909.
3 ELEV 765.4 KD		115251.	55986.	42023.	17242.
4 ELEV 766.2 KD		142257.	71514.	48429.	22314.
5 ELEV 767.3 KD		180308.	93557.	57193.	29554.

KD TABLE FOR CROSS SECTION 31.90

ELEVATION	AREA	KD	KD BY SEGMENT		
755.05	0.				
756.	15.	287.	1.	284.	1.
757.	43.	1358.	1.	1356.	1.
758.	78.	3442.	2.	3438.	2.
759.	119.	6574.	13.	6551.	8.
760.	237.	10835.	124.	10434.	57.
761.	681.	19324.	3150.	15000.	1721.
762.	1225.	33910.	10665.	20212.	2805.
763.	1782.	53441.	21281.	26029.	6094.
764.	2345.	77038.	34346.	32413.	10250.
765.	2914.	104448.	49837.	39346.	15248.
766.	3489.	135424.	67579.	46806.	21027.
767.	4071.	169790.	87457.	54779.	27550.
768.	4660.	207283.	109269.	63232.	34749.
769.	5255.	248001.	133127.	72173.	42567.
770.	5856.	291815.	158931.	81582.	51275.
771.	6464.	338083.	186068.	91448.	60552.
772.	7081.	386446.	214194.	101760.	70480.
773.	7708.	439807.	246266.	112509.	81019.
774.	8337.	496247.	280362.	123679.	92164.
775.	8968.	555700.	316408.	135270.	104007.
776.	9601.	617891.	354150.	147278.	116460.
777.	10238.	682421.	393249.	159683.	129474.
778.	10877.	749625.	433998.	172490.	143122.
779.	11517.	819573.	476455.	185695.	157421.
780.	12172.	880449.	520076.	199277.	160922.
781.	12828.	942563.	565686.	213257.	163819.
782.	13484.	1006461.	613344.	227634.	166655.

TABLE OF VALUES FOR BPR EQUATION

COEFK	AKB	DGTAK	SIGMA	DKE	DKS	M	ALPHA	ALPHA2	BRIDA	APPAR	AEXIT
1.1340	1.0866	0.0474	0.6918	0.0	0.0	0.5561	1.0000	1.0000	268.6128	1687.3379	1587.8289
DCRIT	758.34	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	321.2852	1687.3379	1587.8289
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	321.2852	1687.3379	1587.8289
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	321.2852	1687.3379	1587.8289
DCRIT	-1.00	KBCRIT=									
0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0000	1.0000	321.2852	1687.3379	1587.8289
DCRIT	-1.00	KBCRIT=									

ROAD SECTION 32.00

NO.	HI	CFS	HL	TW	CSH
0	75[illegible].50	0.00	0.00	0.00	0.00
1	76[illegible].26	810.00	0.16	762.10	810.00
2	76[illegible].56	1780.00	0.60	763.96	1780.00
3	76[illegible].65	2585.00	0.26	765.4[illegible]	2585.00
4	76[illegible].45	2980.00	0.22	766.23	2980.00
5	76[illegible].56	4030.00	0.24	767.32	4030.00

MIN ROAD ELEVATION 763.00

BRIDGE TYPE 2 GIRDER BOTTOM ELEVATION = 763.40 OPENING NO.= 1

RATING TABLE FOR SECTION 32.01 DA= 1.0

NO.	ELEV	AREA	CFS	ACRES FLOODED DAMAGE	ACRES FLOODED CHANNEL	ACRES FLOODED NON-DAM	CSM	CRIT ELEV	FRICTION SLOPE
0	755.0	0.0	0.0						
BANK FULL	757.5	61.6	279.4	0.0	0.0	0.0			
1	762.3	1389.6	810.0	0.0	0.0	0.0	810.00	758.4	0.00045
2	764.6	2683.9	1780.0	0.0	0.0	0.0	1780.00	760.2	0.00045
3	765.7	3315.3	2585.0	0.0	0.0	0.0	2585.00	760.6	0.00053
4	766.5	3775.8	2980.0	0.0	0.0	0.0	2980.00	760.7	0.00049
5	767.6	4427.5	4030.0	0.0	0.0	0.0	4030.00	760.9	0.00056

SEGMENT TABLE FOR SECTION 32.01

CSM		TOTAL	SEG NO 1 N	SEG NO 2 C	SEG NO 3 N
1	DISCHARGE CFS	810.	255.	485.	70.
810.	VELOCITY FPS	1.60	0.29	2.05	0.26
2	DISCHARGE CFS	1780.	772.	774.	234.
1780.	VELOCITY FPS	1.63	0.43	2.40	0.41
3	DISCHARGE CFS	2585.	1193.	1022.	370.
2585.	VELOCITY FPS	1.83	0.54	2.82	0.51
4	DISCHARGE CFS	2980.	1421.	1114.	445.
2980.	VELOCITY FPS	1.80	0.56	2.84	0.53
5	DISCHARGE CFS	4030.	1987.	1413.	630.
4030.	VELOCITY FPS	2.01	0.66	3.26	0.63
1 ELEV 762.3 KD		36410.	11421.	21882.	3107.
2 ELEV 764.6 KD		83442.	36044.	36475.	10923.
3 ELEV 765.7 KD		112180.	51666.	44469.	16003.
4 ELEV 766.5 KD		135140.	64334.	50662.	20144.
5 ELEV 767.6 KD		170228.	83833.	59831.	26564.

KD TABLE FOR CROSS SECTION 32.01

ELEVATION	AREA	KD	KD BY SEGMENT		
755.05	0.				
756.	15.	286.	1.	284.	1.
757.	43.	1358.	1.	1356.	1.
758.	78.	3442.	2.	3438.	2.
759.	119.	6570.	11.	6551.	7.
760.	237.	10771.	104.	10434.	48.
761.	681.	18628.	2633.	15000.	1[illegible]02.
762.	1225.	31672.	8913.	20212.	[illegible]44.
763.	1782.	48940.	17785.	26029.	[illegible]93.
764.	2345.	69709.	28704.	32413.	[illegible]66.
765.	2914.	93754.	41649.	39346.	12743.
766.	3489.	120866.	56477.	46606.	1[illegible]673.
767.	4071.	150695.	73089.	54775.	2[illegible]024.
768.	4660.	183621.	91317.	63232.	2[illegible]040.
769.	5255.	219118.	111256.	72173.	3[illegible]658.
770.	5856.	257279.	132820.	81583.	4[illegible]851.
771.	6464.	297565.	155499.	91448.	5[illegible]604.
772.	7081.	339677.	179005.	101760.	5[illegible]501.
773.	7708.	386037.	205807.	112505.	[illegible]708.
774.	8337.	435041.	234302.	123679.	7[illegible]39.
775.	8968.	486630.	264426.	135270.	8[illegible]20.
776.	9601.	540575.	295967.	147278.	[illegible]7.
777.	10238.	596543.	328643.	154683.	1[illegible]3.
778.	10877.	654811.	362697.	172490.	11[illegible]9.
779.	11517.	713435.	398179.	165695.	13[illegible]9.
780.	12172.	768540.	434633.	199277.	13[illegible]4.
781.	12828.	822746.	472750.	213257.	13[illegible]5.
782.	13484.	878508.	512579.	227634.	13[illegible]76.

----------80/80 LIST OF INPUT DATA----------

.0JOB

**********NORMAL END OF JOB----------

1) COUNTY: KENT

2) STUDY NAME: WYOMING, CITY OF

3) WATERCOURSE: BUCK CREEK

4) DOCUMENT TYPE: 100- YEAR ENCROACHED

```
1 T1 CITY OF WYOMING
  T2 WUF8000 10 FEB 89 STUDY
  T3 BUCK CREEK - 100-YEAR FLOOD ENCROACHED CONDITION

    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 15 860
  2800 NAT Q1=    1023 90  WSEL=     632 91  ENC Q1=    1023 90  WSEL=     633.01  RATIO=  0.0000
  NAT Q1=    1049   RATIOS LOB,CH,ROB=  0 4719  0 4696  0 0585  WSEL=     633.01

 3470 ENCROACHMENT STATIONS=       63 6      337 2  TYPE=      4  TARGET=        0.024
              500 FEET DOWNSTREAM OF CORPORATE LIMIT
     15 86     10 60    633 00     0 00    632 91    633.35     0.35      0 00      0 00    625.10
     4125      1939      1988      197      1229      302       135        0         0      626 40
      0 00      1 58      6 59     1 46     0 120    0 040     0 120    0 000    622.40     63 63
  0 001635       0         0        0         0        0         0      0.00    273.53    337.16
0
 *SECNO 15 870
  2800 NAT Q1=    1935 31  WSEL=     633 51  ENC Q1=    1935 31  WSEL=     633.61  RATIO=  0.0000
  NAT Q1=    1983   RATIOS LOB,CH,ROB=  0 2649  0.2627  0.4724  WSEL=     633 61
 3280 CROSS SECTION      15 87 EXTENDED       1 61 FEET

 3470 ENCROACHMENT STATIONS=       70 1      623 3  TYPE=      4  TARGET=        0.024
     15 87     10 81    633 61     0 00    633 51    633 68     0 06      0.30      0 03    625.50
     4125      1066.     1113      1946      1245      309      2076       22         3.      625 70
      0 07      0 86      3 60     0 94     0 120    0 040    0.120    0 000    622.80     70.14
  0 000456      350       450      350        2        0         0      0 00    553.15    623 30
0
 *SECNO 500 000
  2800 NAT Q1=    1374 06  WSEL=     633 70  ENC Q1=    1374 06  WSEL=     633 80  RATIO=  0.0000
  NAT Q1=    1415   RATIOS LOB,CH,ROB=  0 2734  0 3081  0 4184  WSEL=     633.80
 3280 CROSS SECTION     500 00 EXTENDED       1 25 FEET

 3470 ENCROACHMENT STATIONS=       72 8      593 4  TYPE=      4  TARGET=        0.029
    500 00      9 85    633 80     0 00    633 70    633 92     0 12      0 23      0 02    626 65
     4125      1105.     1307      1713      1029      279      1497.      46         7.      627 35
      0 11      1 07      4 68     1 14     0 120    0 040    0 120    0 000    623.95     72.79
  0 000898      425       550      225        2        0         0      0.00    520 60    593.39
0
 *SECNO 1050 000
1
   5 JUN 89    10 55 56
```



```
    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=      200 0      385 0  TYPE=      1  TARGET=      185 000
   1050 00     10 17    634 07     0 00    633 97    634.65     0 58      0 59      0 14    626.60
     4125      960       2301      864       488      288       436       62         10.      627.90
      0 13      1 97      7 98     1 98     0 120    0 040    0 120    0 000    623.90    200 00
```

```
0
 *SECNO 1225 000

 3470 ENCROACHMENT STATIONS=     1025 0     1125 0  TYPE=      1  TARGET=      100 000
   1225 00     10 38    634 38     0 00    634 29    635.22     0 84      0 49      0 08    628.00
     4125       608      3517        0      283.       445        0        66        11   100000 00
     0 14      2 15      7 90     0 00     0 120     0 040    0 000     0.000    624.00   1025 00
  0 003075       170       175      180         0         0        0      0 00    100 00   1125 00
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 1235 000

 3265 DIVIDED FLOW


 3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  637 70 MAX ELLC=  638 10


 3470 ENCROACHMENT STATIONS=       35 0      155 0  TYPE=      1  TARGET=      120 000
             ABANDONED RAILROAD BRIDGE
   1235 00     11 23    635 03     0 00    634 96    635.39     0 36      0.03      0 14    637.70
     4125         0      4125        0         0       856        0       66.        11.    638.00
     0 14      0 00      4 82     0 00    0.000     0 040    0 000    0 000    623.80     47 50
  0.002817        10        10      10.         2         0        0     0.00     99.00    152.50
0
 *SECNO 1245 000

 3265 DIVIDED FLOW


 3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  637 70 MAX ELLC=  638 10


 3470 ENCROACHMENT STATIONS=       30 0      155 0  TYPE=      1  TARGET=      125 000
1
   5 JUN 89     10 55 56                                                                                                    PAGE    39


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EQ        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


   1245 00     11 26    635 06     0 00    634 99    635 42     0 36      0 03      0 00    637 70
     4125         0      4125        0         0       858        0       66.        11     638 00
     0 14      0 00      4 81     0 00    0 000     0 040    0 000    0 000    623 80     47.50
  0 002796        10        10       10         0         0        0     0 00     99 00    152 50
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 1255 000
  2800 NAT Q1=     922 60  WSEL=     634 88  ENC Q1=     922 60  WSEL=     634 98  RATIO=  0.0000
  NAT Q1=   2677   RATIOS LOB,CH,ROB=  0 6853  0 3006  0 0141  WSEL=     634 98

 3470 ENCROACHMENT STATIONS=     1007 1     1119 0  TYPE=      4  TARGET=        0.655
   1255 00     10 92    634 92     0 00    634 88    635 51     0 59      0 03      0 07    628.50
     4125       539      3586        0       286       547        0       66        11.     629.20
     0 14      1 88      6 55     0 00    0 120     0 040    0 000    0 000    624 00   1007.07
  0 002251        10        10       10         2         0        0     0 00    111 93   1119 00
0
 *SECNO 1850 000

 3301 HV CHANGED MORE THAN HVINS


 3171 ENCROACHMENT STATIONS=      [illegible]  TYPE=      [illegible]  TARGET=      [illegible]
```

```
  1850 00     12 50    630 90     0 00    635 82    635 95     0 05      0 38      0 05    630 60
    4125      2042      2022       60      3086       828      150        95.        16     633.30
     0 24      0 66      2 44     0 40     0 120     0 040    0 120     0 000    623.40    100 00
  0 000327     480       595      590         2         0        0      0 00    800 00    900 00
0
 *SECNO 2275 000
  2800 NAT Q1=    1739 69  WSEL=     635 98  ENC Q1=    1739 69  WSEL=     636 08  RATIO=  0 0000
  NAT Q1=    1784   RATIOS LOB,CH,ROB=  0 6271   0 3474   0 0255  WSEL=     636 08
 3280 CROSS SECTION    2275 00 EXTENDED       6 05 FEET

 3470 ENCROACHMENT STATIONS=       58 5      611 8  TYPE=      4  TARGET=        0 025
  2275 00     10 35    636 05     0 00    635 98    636 14     0 09      0 18      0 01    630 70
    4125      2597      1472       56      2772       390       74       131.       23     629 79
     0 30      0 94      3 77     0 76     0 120     0 040    0 120     0 000    625 70     58 55
  0 000570     425       425      425         2         0        0      0 00    553 28    611 83
0
1
  5 JUN 89    10 55 56                                                                    PAGE    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 2680 000
  2800 NAT Q1=    1002 34  WSEL=     636 13  ENC Q1=    1002 34  WSEL=     636 23  RATIO=  0.0000
  NAT Q1=    1029   RATIOS LOB,CH,ROB=  0 2082  0 5705  0 2213  WSEL=     636 23

 3470 ENCROACHMENT STATIONS=      387 8      667 9  TYPE=      4  TARGET=        0.026
  2680 00     10 39    636 19     0 00    636 13    636 61     0 42      0 37      0 10    629.60
    4125       824      2421       879       552       364      601       153        27     629.40
     0 33      1 49      6 65     1 46     0 120     0 040    0 120     0 000    625 80    387.76
  0 001722     400       405      410         2         0        0      0.00    280.18    667.93
0
 *SECNO 2735 000
  2800 NAT Q1=    1032 94  WSEL=     636 24  ENC Q1=    1032 94  WSEL=     636.34  RATIO=  0.0000
  NAT Q1=    1061   RATIOS LOB,CH,ROB=  0 2107  0 5649  0 2244  WSEL=     636 34

 3470 ENCROACHMENT STATIONS=      386 1      670 6  TYPE=      4  TARGET=        0.026
  2735 00     10 51    636 31     0 00    636 24    636 70     0.39      0.09      0.00    629 60
    4125       836      2396       893       570       369      622       155        27     629.40
     0 33      1 47      6 50     1 44     0 120     0 040    0 120     0 000    625 80    386.08
  0 001619      55        55       55         2         0        0      0 00    284 53    670 61
0
 *SECNO 2736 000
  2800 NAT Q1=     810 31  WSEL=     636 31  ENC Q1=     810 31  WSEL=     636.41  RATIO=  0 0000
  NAT Q1=     836   RATIOS LOB,CH,ROB=  0 2746  0 4325  0 2929  WSEL=     636 41

 3470 ENCROACHMENT STATIONS=      383 6      674 3  TYPE=      4  TARGET=        0.031
  2736 00     10 58    636 38     0 00    636 31    636 71     0 33      0.00      0 01    629.60
    4125      1103      1843      1179       585       280      640       155       27.     629 40
     0 33      1 88      6 59     1 84     0 120     0 040    0 120     0 000    625.80    383 60
  0 002642       1         1        1         2         0        0      0 00    290.66    674.26
0
 *SECNO 2739 000
  2800 NAT Q1=     811 86  WSEL=     636 32  ENC Q1=     811 86  WSEL=     636 42  RATIO=  0 0000
  NAT Q1=     838   RATIOS LOB,CH,ROB=  0 2747  0 4322  0 2931  WSEL=     636 42

 3470 ENCROACHMENT STATIONS=      383 9      673 9  TYPE=      4  TARGET=        0 032
  2739 00     10 59    636 39     0 00    636 32    636 72     0 33      0 01      0.00    629 60
    4125      1103      1844      1179       585       280      640       155        27     629.40
     0 33      1 88      6 58     1 84     0 120     0 040    0 120     0 000    625.80    383 91
```

```
0
1
  5 JUN 89     10 55 56                                                                                                                PAGE    41

    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 2740 000
  2800 NAT Q1=    1044 93  WSEL=     636 38  ENC Q1=    1044 93  WSEL=     636 38  RATIO=  0.0000
  NAT Q1=    1073   RATIOS LOB,CH,ROB=  0 2116  0 5628  0 2256  WSEL=     636 38

 3470 ENCROACHMENT STATIONS=      385 4      671 4  TYPE=      4  TARGET=        0 026
   2740 00     10 55    636 35     0 00    636 28    636 74     0 39      0.00      0.02    629.60
     4125       840.     2387.     898       577       371       630       155        27     629 40
      0 33      1 46      6.44     1 42     0 120     0 040     0 120     0.000    625 80    385.44
  0 001583       1.         1        1         2         0         0      0 00    286 19    671.63
0
 *SECNO 3455 000
  2800 NAT Q1=    1259 55  WSEL=     637 43  ENC Q1=    1259 55  WSEL=     637.53  RATIO=  0.0000
  NAT Q1=    1297   RATIOS LOB,CH,ROB=  0 1287  0 4314  0 4399  WSEL=     637 53

 3470 ENCROACHMENT STATIONS=      494 1      904 9  TYPE=      4  TARGET=        0.029
   3455.00     10 75    637 51     0 00    637 43    637 68     0.17      0.92      0.02    630.66
     4125       486      1834     1804.      367       386      1514       187        33.     633.69
      0 40      1 33      4 75     1 19     0 120     0.040     0 120     0.000    626.76    494.06
  0 001081      725       715      705         2         0         0      0 00    410 84    904.90
0
 *SECNO 5070 000
  2800 NAT Q1=    1176 98  WSEL=     638 87  ENC Q1=    1176 98  WSEL=     638 97  RATIO=  0 0000
  NAT Q1=    2494   RATIOS LOB,CH,ROB=  0 2962  0 2092  0 4945  WSEL=     638 97
 3280 CROSS SECTION    5070 00 EXTENDED       6 92 FEET

 3470 ENCROACHMENT STATIONS=      310 9      663 0  TYPE=      4  TARGET=        0.528
   5070 00      9 82    638 89     0 00    638 87    639 11     0 21      1 41      0 01    632 97
     4125       280      1837     2008       237       344      1462      236.       41.     634 77
      0 51      1 18      5 34     1 37     0 120     0 040     0 120     0 000    629.07    310.92
  0 001274     1550      1615      740         2         0         0      0.00    352 03    662.95
0
 CCHV=    0 300 CEHV=    0 300
 *SECNO 5580 000
  2800 NAT Q1=     901 35  WSEL=     639 44  ENC Q1=     901 35  WSEL=     639.54  RATIO=  0.0000
  NAT Q1=     921   RATIOS LOB,CH,ROB=  0 0729  0.9103  0 0167  WSEL=     639 54

 3470 ENCROACHMENT STATIONS=      291 6      405 9  TYPE=      4  TARGET=        0 021
            BYRON CENTER ROAD
   5580 00     10 35    639 49     0 00    639 44    640 18     0 69      0 83      0.24    633.99
     4125       261      3843       21       180.      557        21       253        44      635 59
      0 53      1 45      6 90     1 00     0 120     0 040     0 120     0 000    629 14    291.60
  0 002146      500       510      520         2         0         0      0.00    114 31    405.91
0
1
  5 JUN 89     10 55 56                                                                                                                PAGE    42

    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

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
5227 DOWNSTREAM ELEV IS    637 11 ,NOT    639 49 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB   XK        XKOR      COEFQ      RDLEN      BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1 25      1 56      3 00       0 00       6 00      5 00      296 00    3 00      629.14    629.14

*SECNO 5630 000
PRESSURE AND WEIR FLOW

 EGPRS      EGLWR      HD        QWEIR      QPR       BAREA    TRAPEZOID    ELLC      ELTRD
                                                               AREA
    644 19     643 19     0 00      906       3311      296.      339       639 60    640.34


3470 ENCROACHMENT STATIONS=     100 0     400 0  TYPE=     1  TARGET=     300 000
  5630 00    13 17    642 31    0 00    642 29    642 52    0.21      2 34      0 00    630.74
    4125      883      3242       0       980       789       0.       254        44   100000 00
     0 54     0 90      4 11    0 00     0 120     0 040    0 000     0 000   629.14    100 00
 0 000566      50        50      50         2         0        3      0 00   300 00    400.00
0
CCHV=   0 100 CEHV=   0 300
*SECNO 6720 000

3470 ENCROACHMENT STATIONS=     340 0     620 0  TYPE=     1  TARGET=     280 000
  6720 00    12 14    642 97    0 00    642 95    643 22    0 25      0.69      0.01    634 72
    4125      740      2701     684       749       553.     525       297        51     633.73
     0 62     0 99      4 88    1 30     0 120     0 040    0 120     0 000   630 83    340.00
 0 000742    1020      1090     995         2         0        0      0.00   280 00    620.00
0
*SECNO 7120 000
 2800 NAT Q1=   1583 09  WSEL=    643 27  ENC Q1=   1583 09  WSEL=    643 37  RATIO=  0 0000
 NAT Q1=   1615   RATIOS LOB,CH,ROB=  0 1632  0 6091  0 2277  WSEL=    643 37

3470 ENCROACHMENT STATIONS=     811 9    1044 3  TYPE=     4  TARGET=       0.020
  7120 00    12.29    643 29    0 00    643 27    643 51    0 22      0 28      0 00    635.70
    4125      640      2573     912       485       553      802       313       53.     636 20
     0 65     1 32      4 65    1 14     0 120     0 040    0.120     0 000   631.00    811.94
 0.000700     360       400     410         2         0        0      0.00   232.36   1044.30
0
1
  5 JUN 89    10 55 56                                                                    PAGE    43

   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 7325 000
 2800 NAT Q1=   1910 51  WSEL=    643 50  ENC Q1=   1910 51  WSEL=    643 60  RATIO=  0 0000
 NAT Q1=   1951   RATIOS LOB,CH,ROB=  0 1323  0 4006  0 4671  WSEL=    643 60
3280 CROSS SECTION   7325 00 EXTENDED      6 76 FEET

3470 ENCROACHMENT STATIONS=     126 6     543 3  TYPE=     4  TARGET=       0 021
  7325 00    12 05    643 53    0 00    643 50    643.64    0.11      0 12      0 01    635.88
    4125      509      1693    1923       645       434     1852       325       55     635 77
     0 68     0 79      3 90    1 04     0 120     0 040    0 120     0 000   630.68    126 62
 0 000479     190       205     220         2         0        0      0 00   416 64    543 26
0
*SECNO 7[illegible]
```

```
 2800 NAT Q1=    1553 35  WSEL=     643 57  ENC Q1=    1553 35  WSEL=     643 67  RATIO=  0 0000
 NAT Q1=    1589   RATIOS LOB,CH,ROB=  0 1670  0 2502  0 5827  WSEL=     643 67
3280 CROSS SECTION    7335 00 EXTENDED       6 84 FEET


3370 NORMAL BRIDGE,NRD=  7 MIN ELTRD=  635 77 MAX ELLC=  636 53


3470 ENCROACHMENT STATIONS=      119 9      544 3  TYPE=      4  TARGET=        0 022
            PEDESTRIAN BRIDGE AT LEMRY PARK
  7335 00     12 93    643 61     0 00    643 57    643 65     0 04      0 01      0 01    635.88
    4125       652      1060      2413       670       427     1878       326        55     635 77
     0 68      0 97      2 49      1 29     0 120     0 040    0 120     0 000    630 68    119 87
 0 000725       10        10        10         2         0        0    -10 21    424 41    544 28
0
 *SECNO 7345 000
 2800 NAT Q1=    1555 41  WSEL=     643 58  ENC Q1=    1555 41  WSEL=     643 68  RATIO=  0.0000
 NAT Q1=    1591   RATIOS LOB,CH,ROB=  0 1672  0 2501  0 5827  WSEL=     643 68
3280 CROSS SECTION    7345 00 EXTENDED       6 84 FEET


3370 NORMAL BRIDGE,NRD=  7 MIN ELTRD=  635 77 MAX ELLC=  636.53


3470 ENCROACHMENT STATIONS=      120 1      544 2  TYPE=      4  TARGET=        0.023
  7345 00     12 94    643 62     0 00    643 58    643 66     0 04      0.01      0 00    635.88
    4125       652      1060      2413       670       427     1879       326.       55     635 77
     0 68      0 97      2 48      1 28     0 120     0 040    0 120     0 000    630 68    120.15
 0 000723       10        10        10         0         0        0    -10 21    424 06    544 21
0
1
  5 JUN 89    10 55 56                                                                    PAGE    44

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


 *SECNO 7355 000
 2800 NAT Q1=    1928 38  WSEL=     643 54  ENC Q1=    1928 38  WSEL=     643 64  RATIO=  0 0000
 NAT Q1=    1969   RATIOS LOB,CH,ROB=  0 1333  0 3995  0 4672  WSEL=     643 64
3280 CROSS SECTION    7355 00 EXTENDED       6 81 FEET


3470 ENCROACHMENT STATIONS=      125 2      543 3  TYPE=      4  TARGET=        0 021
  7355 00     12 90    643 58     0 00    643 54    643 68     0 10      0 01      0 02    635.88
    4125       513      1688      1924       654       436     1864       327        55.    635.77
     0 68      0 78      3 88      1 03     0 120     0 040    0 120     0 000    630 68    125 20
 0 000470       10        10        10         2         0        0     0 00    418 09    543.29
0
 *SECNO 8280 000
 2800 NAT Q1=    2006 12  WSEL=     643 93  ENC Q1=    2006 12  WSEL=     644 03  RATIO=  0 0000
 NAT Q1=    2051   RATIOS LOB,CH,ROB=  0 1637  0 4236  0 4127  WSEL=     644 03

3470 ENCROACHMENT STATIONS=      157 7      586 2  TYPE=      4  TARGET=        0 022
  8280 00     12 57    643 97     0 00    643 93    644 06     0 09      0 38      0 00    637 40
    4125       644      1792.     1689       753       508     1794       383        63     637.90
     0.80      0 85      3 53      0 94     0 120     0.040    0 120     0.000    631.40    157.70
 0 000433      880       925       750         2         0        0     0 00    428.50    586.19
0
 *SECNO 11550 000

3470 ENCROACHMENT STATIONS=       50 0      770 [illegible]  TYPE=      1  TARGET=      720 000
```

```
   4125      1595      2092       439      1383       356       399       531        91      641 00
   1 02      1 15      5 88      1 10     0 120     0 040     0 120     0 000    635.10      67 09
 0 001554    2200      3370      2400         2         0         0     0 00    587 03     654 12
0
 *SECNO 12620 000

 3265 DIVIDED FLOW


 3470 ENCROACHMENT STATIONS=      400 0      870 0  TYPE=      1  TARGET=      470 000
  12620 00    11 40    647 35     0 00    647 32    647 93     0.58      1.64      0.09    642.35
    4125      591      2789       745       370       379       587       563        99     641.85
    1 06      1 60      7 36      1 27     0 120     0 040     0 120     0 000    635 95     400 00
  0 002241     725       970       825         2         0         0     0 00    354 76     870 00
0
1
   5 JUN 89     10 55 56                                                                          PAGE    45

    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 13590 000

 3470 ENCROACHMENT STATIONS=      355 0      430 0  TYPE=      1  TARGET=       75 000
  13590 00    12 36    649 16     0 00    649 04    650 16     1 00      2.11      0 13    641.10
    4125       65      3830       230        44       461       119       582       103.    641.50
    1 10      1 48      8 31      1 94     0 120     0 040     0 120     0 000    636 80    358 46
  0 002282     720       970       820         2         0         0     0 00     71 54    430 00
0
 CCHV=    0 300 CEHV=    0 500
 *SECNO 13600 000

 3370 NORMAL BRIDGE,NRD= 28 MIN ELTRD=  653 90 MAX ELLC=  654 60


 3470 ENCROACHMENT STATIONS=      370 0      430 0  TYPE=      1  TARGET=       60 000
              44TH STREET
  13600 00    12 15    648.95     0 00    648 84    650 41     1 46      0 02      0.23    641 10
    4125         0      4125        0         0       426         0       582       103   100000 00
    1 10      0 00      9 29     0 00     0 000     0 014     0 000     0 000    636 80    370 00
  0 001536      10        10       10         2         0         0   -131 06     60 00    430 00
0
 *SECNO 13700 000

 3370 NORMAL BRIDGE,NRD= 28 MIN ELTRD=  653 90 MAX ELLC=  654 60


 3470 ENCROACHMENT STATIONS=      370 0      430 0  TYPE=      1  TARGET=       60 000
  13700 00    12 33    649 13     0 00    649 02    650 57     1 44      0 16      0 00    641.10
    4125         0      4125        0         0       428         0       583       103   100000 00
    1 10      0 00      9 64     0 00     0 000     0 014     0 000     0 000    636 80    370 00
  0 001597     100       100     100.         1         0         0   -139 67     60.00    430 00
0
 CCHV=    0 100 CEHV=    0 300
 *SECNO 13710 000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=      360 0      440 0  TYPE=      1  TARGET=       80 000
  13710.00    13 03    650 00     0 00    649 91    650 67     0 64      0 02      0 08    641 10
```

```
     1 10      2 14      6 90      2 97      0 070     0 040     0 070     0.000    636.80    360.00
  0 001416      10        10        10         3         0         0      0.00     80 00    440.00
0
1
   5 JUN 89     10 55 56                                                                          PAGE    46

    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 13990 000
 3280 CROSS SECTION  13990 00 EXTENDED       0 24 FEET

 3470 ENCROACHMENT STATIONS=      280 0      395 0  TYPE=      1  TARGET=      115 000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       651 00 ELREA=       651.00

  13990 00     11 60    650 40      0 00    650 30    651 11      0 71      0.42      0 02    641.90
     4125         0      4125         0         0       612         0       588       104     644 40
     1 11      0 00      6 74      0 00     0 000     0 040     0 000     0.000    638.80    302 00
  0 001687      340       280       200         2         0         0      0 00     64 00    366.00
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 14000 000

 3370 NORMAL BRIDGE,NRD=  8 MIN ELTRD=  654 00 MAX ELLC=  654 96

            BURLINGAME AVENNE
  14000 00     11 49    650 29      0 00    650 19    651 25      0 97      0.01      0 13    654 91
     4125         0      4125         0         0       522         0       588       104     654 01
     1 11      0 00      7 90      0 00     0 000     0 014     0 000     0 000    638 80    302.00
  0 000985      10        10        10         2         0         0    -82 27     64 00    366 00
0
 *SECNO 14080 000

 3370 NORMAL BRIDGE,NRD=  8 MIN ELTRD=  654 00 MAX ELLC=  654 96

  14080 00     11 56    650 36      0 00    650 27    651 33      0 97      0 08      0 00    654.91
     4125         0      4125         0         0       522         0       589       104     654 01
     1 11      0 00      7 90      0 00     0 000     0 014     0 000     0 000    638 80    302 00
  0 000985      80        80        80         2         0         0    -87 31     64 00    366.00
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 14090 000
 3280 CROSS SECTION  14090 00 EXTENDED       0 56 FEET

 3470 ENCROACHMENT STATIONS=      260 0      415 0  TYPE=      1  TARGET=      155.000
1
   5 JUN 89     10 55 56                                                                          PAGE    47

    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=       652 00 ELREA=       652 00
```

```
    4125        0      4125        0        0      632        0      589      104     644 40
     1 11     0 00     6 53     0 00    0 000    0 040    0 000    0 000   638 80    302 00
  0 001516      10       10       10        2        0        0     0 00    64 00    366 00
0
 *SECNO 14520 000
 3280 CROSS SECTION  14520 00 EXTENDED      3 09 FEET

 3470 ENCROACHMENT STATIONS=      530 3      730 3  TYPE=      1  TARGET=      200 000
  14520 00     11 99   651 64     0 00   651 55   651 85     0.22     0 43     0 04   643 15
     4125      329      2167     1631      266      433     1140      600      105.    642 73
     1 15     1 24     5 00     1 43    0 120    0 040    0 120    0 000   639 65   530.00
  0 000763      355      430      345        2        0        0     0 00   200 00   730 00
0
 *SECNO 14950 000
  2800 NAT Q1=    2645 73  WSEL=     651 91  ENC Q1=    2645 73  WSEL=     652 01  RATIO=  0 0000
  NAT Q1=    2896   RATIOS LOB,CH,ROB=  0 0929  0 2517  0 6554  WSEL=     652 01
 3280 CROSS SECTION  14950 00 EXTENDED      2 59 FEET

 3470 ENCROACHMENT STATIONS=      521 7     1114 3  TYPE=      4  TARGET=        0 087
  14950 00     11 49   651 99     0 00   651 91   652 03     0 04     0 16     0 02   644.00
     4125      237      1135     2753      319      414     3766      627      108.    643.58
     1 23     0 74     2 74     0 73    0 120    0 040    0 120    0 000   640 50   521.69
  0.000244      355      430      365        2        0        0     0 00   592.62  1114 31
0
 *SECNO 15250 000

 3470 ENCROACHMENT STATIONS=      113 0      820 3  TYPE=      1  TARGET=      707.000
  15250 00     12 35   652 03     0 00   651 98   652 08     0 03     0 05     0 00   643 80
     4125      289      1009     2827      440      406     4433      654      112.    644.00
     1 30     0 66     2 49     0 64    0 120    0 040    0 120    0 000   639.70   113 00
  0 000190      310      300      225        2        0        0     0 00   707 00   820.00
0
1
   5 JUN 89     10 55 56                                                                    PAGE    48

     SECNO      DEPTH      CWSEL      CRIWS      WSELK      EQ         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 17350 000
  2800 NAT Q1=    1132 26  WSEL=     652 62  ENC Q1=    1132 26  WSEL=     652 62  RATIO=  0 0000
  NAT Q1=    1170   RATIOS LOB,CH,ROB=  0 1104  0 3675  0 3221  WSEL=     652 62
 3280 CROSS SECTION  17350 00 EXTENDED      4 80 FEET

 3470 ENCROACHMENT STATIONS=       65 8      583 4  TYPE=      4  TARGET=        0.032
  17350 00      7 50   652 65     0 00   652 52   652 80     0 15     0 68     0 04   646.95
     4125     1255      1563     1307     1036      326     1085      793      134     648 40
     1 48     1 21     4 79     1 21    0 120    0 040    0 120    0.000   645 15    65 82
  0 001300     1760      2100     1450        2        0        0     0 00   522 61   588 43
0
 *SECNO 17360 000
  2800 NAT Q1=     845 67  WSEL=     652 64  ENC Q1=     845 67  WSEL=     652 74  RATIO=  0.0000
  NAT Q1=     877   RATIOS LOB,CH,ROB=  0 4068  0.1686  0 4246  WSEL=     652 74
 3280 CROSS SECTION  17360 00 EXTENDED      4 92 FEET

 3370 NORMAL BRIDGE,NRD=  4 MIN ELTRD=  650 90 MAX ELLC=  651 85

 [illegible]  TARGET=  [illegible]
```

```
            PEDESTRIAN BRIDGE AT PALMER PARK
 17360 00      7 62    652 77      0 00    652 64    652 83      0 05      0.02      0 01    650 90
    4125      1664       719      1742      1030       277      1079       794       134     651 85
     1 48      1 62      5 60      1 61     0 120     0 040     0 120     0 000    645 15     62 58
 0 002319        10        10        10         2         0         0    -54 02    528 41    590.99
0
 *SECNO 17370 000
  2800 NAT Q1=     851 37  WSEL=     652 76  ENC Q1=     851 37  WSEL=     652 76  RATIO=  0 0000
  NAT Q1=     884   RATIOS LOB CH ROB=   0 4070  0 1683  0 4247  WSEL=     652 76
 3280 CROSS SECTION  17370 00 EXTENDED       4 95 FEET


 3370 NORMAL BRIDGE NED=  4 MIN ELTRD=  650 90 MAX ELLC=  651 85


 3470 ENCROACHMENT STATIONS=       63 2      590 1  TYPE=      4  TARGET=        0 037
  17370 00      7 65    652 80      0 00    652 66    652 85      0 05      0 02      0 00    650 90
     4125      1664       719      1742      1032       278      1082.       794       134     651.85
      1 49      1 61      2 50      1 61     0 120     0 040     0 120     0 000    645 15     63.17
  0.002292        10        10        10         0         0         0    -54 02    527 32    590 49
0
1
   5 JUN 89     10 55 56                                                                          PAGE    49

     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 17380 000
  2800 NAT Q1=    1170 11  WSEL=     652 62  ENC Q1=    1170 11  WSEL=     652 72  RATIO=  0.0000
  NAT Q1=    1208   RATIOS LOB CH ROB=  0 3119  0 3645  0 3236  WSEL=     652 72
 3280 CROSS SECTION  17380 00 EXTENDED       4 90 FEET


 3470 ENCROACHMENT STATIONS=       65 4      588 7  TYPE=      4  TARGET=        0 032
  17380 00      7 60    652 75      0 00    652 62    652 89      0 14      0 02      0 03    646 95
     4125      1262      1949      1314      1061       331      1110       795       134     648 40
      1 49      1 19      4 60      1 18     0 120     0 040     0 120     0 000    645 15     65 43
  0 001218        10        10        10         2         0         0      0.00    523 24    588.67
0
 *SECNO 18725 000
  2800 NAT Q1=    1238 66  WSEL=     654 16  ENC Q1=    1238 66  WSEL=     654 26  RATIO=  0 0000
  NAT Q1=    1278   RATIOS LOB CH ROB=  0 0502  0 4091  0 2406  WSEL=     654 26

 3470 ENCROACHMENT STATIONS=      280 5      680 1  TYPE=      4  TARGET=        0 031
  18725 00      8 67    654 27      0 00    654 16    654 45      0 18      1 55      0 01    650 50
     4125      1429      1743       953      1283.       380       317       863       148     648.20
      1 61      1 11      4 59      3 00     0 120     0 040     0 050     0 000    645 60    280 50
  0 001108      1300      1345      1345         1         0         0      0 00    399.57    680 06
0
 *SECNO 20865 000
  2800 NAT Q1=    1130 10  WSEL=     656 47  ENC Q1=    1130 10  WSEL=     656 57  RATIO=  0 0000
  NAT Q1=    1167   RATIOS LOB CH ROB=  0 0963  0 4820  0 4217  WSEL=     656 57

 3470 ENCROACHMENT STATIONS=      301 5      781 6  TYPE=      4  TARGET=        0 031
  20865 00      9 78    656 58      0 00    656 47    657 01      0 43      2 48      0 08    650 80
     4125       345      2050      1730       314       279      1464       955       168     650 40
      1 74      1 10      7 36      1 18     0 120     0 030     0 120     0 000    646 80    301 54
  0 001326      1935      2140      2010         2         0         0      0 00    480 01    781.56
0
 CCHV=   0 200 CEHV=   0 500
 *SECNO 23195 000
```

```
 NAT Q1=    1610   RATIOS LOB CH ROB=  1 1968  1 7530  0 0482  WSEL=     658 83

3470 ENCROACHMENT STATIONS=      536 0     1094 6  TYPE=      4  TARGET=        0.057
            CLYDE PARK AVENNUE
 23195 00     10 A3    658 83      0 00    658 73    659 25      0 42      2 23      0.00    652.00
    4125       744      9296        85       881       571       214      1053       193     657 50
     1 88      0 84      5 77      0 40     0 120     0 030     0 120     0 000    648 20    636 82
 0 000739     2510      2755      1110         2         0         0      0 00    457 79   1094 61
0
1
  5 JUN 89    10 55 56                                                                                                PAGE    50

   SECNO     DEPTH     CWSTL     CRIWS     WPELK     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     XLOCH     XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD 3B NOT SPECIFIED
 SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
      1 25       1 56       2 80       0 00      37 00      1 00     313.00      0 00     648 20     648 20

 *SECNO 23255 000
 PRESSURE AND WEIR FLOW

  EGPRS       EGLWC       HO         QWEIR      QPR        BAREA    TRAPEZOID       ELLC       ELTRD
                                                                       AREA
     663 04     659 28      0 03      2251       1076       313        331        657.40     658 50

 3470 ENCROACHMENT STATIONS=      550 0     1100 0  TYPE=      1  TARGET=      550.000
  23255 00      8 71    659 41      0 00    659 44    659 70      0 29      0 45      0 00    656 50
     4125      1382      2594       149      1450       478       257      1056       194     653 20
      1 88      0 95      5 42      0 58     0 120     0 030     0 120     0 000    650 70    550 00
  0 000784        60        60        60         2         0         4      0 00    550 00   1100 00
0
 CCHV=    0 100 CEHV=    0 300
 *SECNO 23505 000

 3470 ENCROACHMENT STATIONS=       50 0      600 0  TYPE=      1  TARGET=      550 000
  23505 00      9 41    659 71      0 00    659 64    659 86      0 15      0 14      0 01    653 60
     4125      2053      2072         0      2404       475         0      1068       196  100000 00
      1 91      0 85      4 36      0 00     0 120     0.030     0 000     0 000    650 30     50 00
  0 000531       190       250       270         2         0         0      0 00    550 00    600 00
0
 *SECNO 24485 000
  2800 NAT Q1=    1439 40  WSEL=     660 28  ENC Q1=    1439 40  WSEL=     660 28  RATIO=  0 0000
  NAT Q1=    1506   RATIOS LOB CH ROB=  0 1465  0 8373  0 0163  WSEL=     660 28

 3470 ENCROACHMENT STATIONS=      305 7      445 0  TYPE=      4  TARGET=        0 044
  24665 00      9 87    660 27      0 00    660 18    660 77      0 49      0 81      0.10    653 40
     4125       534      3591         0       442       598         0      1121       206     655 00
      1 97      1 21      6.00      0 00     0 120     0 030     0 000     0 000    650 40    305 65
  0 000897      1200      1180      1100         2         0         0      0 00    139 35    445.00
0
1
  5 JUN 89    10 55 56                                                                                                PAGE    51
```

```
   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      INITIAL    IDC        ICONT      CORAR      TOPWID     ENDST

 CCHV=   0 300 CEHV=   0 500
 *SECNO 24695 000

 3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  665 22 MAX ELLC=  665 77

              U S  131 SOUTHBOUND EXIT RAMP
  24695 00    10 22    660 66     0 00    660 51    660.85     0 23     0 00     0 08    665 77
     4125        0      4125        0         0      1079        0     1122      206     665 22
     1 97     0 00     3 80     0 00     0 000     0 014    0 000    0 000   650.40    300.00
  0 000238      10       10       10         0         0        0    -70 07   157 00    457 00
0
 *SECNO 24735 000

 3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  665 22 MAX ELLC=  665 77

  24735 00    10 23    660 63     0 00    660 52    660 86     0 23     0 01     0 00    665 77
     4125        0      4125        0         0      1079        0     1123      206.     665 22
     1 97     0 00     3 80     0 00     0 000     0 014    0 000    0 000   650 40    300 00
  0 000239      40       40       40         0         0        0    -71 31   157 00    457.00
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 24745 000

 3470 ENCROACHMENT STATIONS=     315 0     465 0  TYPE=     1  TARGET=     150 000
  24745 00    10 20    660 50     0 00    660 49    660 87     0 27     0 00     0 01    653 40
     4125      1081      2895      149       405       620       77     1123      206.     655 00
     1 97     2 67      4 67     1 94     0 040     0 030    0 040    0 000   650 40    315.00
  0 000468      10        10       10         2         0        0     0.00   150.00    465 00
0
 *SECNO 24855 000

 3470 ENCROACHMENT STATIONS=     345 0     455 0  TYPE=     1  TARGET=     110 000
  24855 00    10 16    660 56     0 00    660 45    660 98     0 41     0 06     0 04    653 40
     4125       610      3496      109       204       617       47     1125      206     655 00
     1 98     2 99      5 52     2 32     0 040     0 030    0 040    0 000   650 40    345.00
  0 000657      120       110       65         2         0        0     0 00   110 00    455 00
0
 *SECNO 24910 000
1
   5 JUN 89    10 55 56                                                                    PAGE    52

   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      INITIAL    IDC        ICONT      CORAR      TOPWID     ENDST

 3470 ENCROACHMENT STATIONS=     370 0     450 0  TYPE=     1  TARGET=      80 000
  24910 00    10 06    660 46     0 00    660 35    661 08     0 62     0 04     0 06    653 40
     4125       142      3929       54        53       611       25     1126      206     655 00
     1 98     2 69      6 43     2 12     0 040     0 030    0 040    0 000   650 40    370 00
  0 000907      60        55       32         2         0        0     0 00    80 00    450.00
0
 *SECNO 24935 000

 3470 ENCROACHMENT STATIONS=     375 0     445 0  TYPE=     1  TARGET=      70 000
  24935 00    10 04    660 44     0 00    660 32    661 13     0 69     0 02     0 02    653 40
     4125        42      4003        0        21       607        0     1127      206  100000 00
```

```
  0 001096       30        25        17         2         0         0      0 00     70 00    445 00
0
 *SECNO 24965 000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=      570 0      625 0   TYPE=      1  TARGET=       55 000
  24965 00      7 63    660 13      0 00     .00 00    661 33      1 20      0 05      0 15100000 00
     4125         0      4125         0          0       467         0      1127        206.  100000 00
     1 98      0 00      8 [illegible]      0 00     0 000     0 030     0 000     0 000    650 50    570 00
  0 002498       30        [illegible]        16         2         0         0      0 00     55 00    625 00
0
 CCHV=    0 100 CEHV=    0 500
 *SECNO 24975 000

 3370 NORMAL BRIDGE,NRD= 26 MIN ELTRD=  664 50 MAX ELLC=  668 70

              US HIGHWAY 131
  24975 00      9 93    659 93      0 00    659 80    661 55      1 62      0 01      0 21    665 70
     4125         0      4125         0          0       404         0      1127       206     665 20
     1 98      0 00     10 20      0 00     0 000     0 014     0 000     0.000    650 00    875.00
  0.000785       10        10        10         2         0         0      0 00     50.00    925.00
0
 *SECNO 25115 000
1
   5 JUN 89     10 55 56                                                                          PAGE    53

     SECNO     DEPTH     CWSEL     VRIWS     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= 26 MIN ELTRD=  664 50 MAX ELLC=  668 70

  25115 00      10 15    660 15      0 00    660 04    661 68      1 53      0 11      0 03    665.70
     4125         0      4125         0          0       415         0      1129       207     665 20
     1 99      0 00      9 [illegible]      0 00     0 000     0 014     0 000     0 000    650.00    875 00
  0 000723      140       140       140         1         0         0      0 00     50 00    925 00
0
 CCHV=    0 100 CEHV=    0 300
 *SECNO 25125 000

 3470 ENCROACHMENT STATIONS=      465 0      535 0   TYPE=      1  TARGET=       70 000
  25125 00      10 06    660 5[illegible]      0 00    660 46    661 73      1 17      0 01      0.04100000 00
     4125         0      4125         0          0       476         0      1129       207   100000 00
     1 99      0 00      8 67      0 00     0 000     0 030     0 000     0 000    650 50    465 00
  0 002821       10        10        10         3         0         0      0 00     70 00    535 00
0
 *SECNO 25140 000

 3470 ENCROACHMENT STATIONS=      455 0      555 0   TYPE=      1  TARGET=      100 000
  25140 00      10 60    661 10      0 00    661 01    661 81      0 71      0 03      0 05100000.00
     4125         0      4[illegible]        52         0       599        32      1129       207     657 50
     1 99      0 00      6 30      1 60     0 000     0 030     0 070     0 000    650 50    455 00
  0 001623        7        15        20         3         0         0      0 00    100 00    555 00
0
 *SECNO 25155 000

 3470 ENCROACHMENT STATIONS=      445 0      575 0   TYPE=      1  TARGET=      130 000
  25155 00      10 75    661 25      0 00    661 17    661 84      0 59      0 02      0 01    658 30
     4125        36      3[illegible]       187        27       616       109      1129       207     657 50
```

```
 0 001321        8        15        20         2         0         0      0 00    130 00    575 00
0
 *SECNO 25185 000

 3470 ENCROACHMENT STATIONS=      425 0      620 0  TYPE=      1  TARGET=      195 000
  25185 00     10 93    661 48     0 00    661 40    661 89     0 42      0 04      0 02    658 35
     4125       130      3025      468        96       632      290      1130.       207     657 55
     1 99      1 17      5 51     1 51     0 070     0 030    0 070     0 000    650 55    425 00
  0 000988       20        46        45         2         0         0      0 00    175 00    620 00
0
1
   5 JUN 89     10 55 56                                                                          PAGE    54

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      VCH       QROB      AROB      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 25250 000

 3470 ENCROACHMENT STATIONS=      280 0      700 0  TYPE=      1  TARGET=      320 000
  25250 00     11 13    661 73     0 00    661 67    661 96     0 23      0 05      0.02    658 40
     4125       355      2930      840       285       651      632      1132       207     657 60
     1 99      1 25      4 50     1 33     0 070     0 030    0 070     0 000    650 60    380 00
  0 000618       40        65        90         2         0         0      0 00    320 00    700 00
0
 *SECNO 25375 000

 3470 ENCROACHMENT STATIONS=      300 0      880 0  TYPE=      1  TARGET=      580 000
  25375 00     11 24    661 94     0 00    661 88    662 03     0 09      0 06      0 01    658.50
     4125       790      2131      1204       749       661     1300      1139       209     657 70
     2 01      1 05      3 22     0 93     0 070     0 030    0 070     0 000    650 70    300 00
  0 000311       75       125       175         2         0         0      0 00    580 00    880 00
0
 *SECNO 25855 000

 3470 ENCROACHMENT STATIONS=      415 0      755 0  TYPE=      1  TARGET=      340 000
  25855 00     10 93    662 08     0 00    662 04    662 19     0 11      0 15      0 01    658 95
     2800       104      1970       725       132       633      802      1163       214     658 15
     2.07      0 79      3 11     0 90     0 070     0 030    0 070     0 000    651.15    415 00
  0 000308       445       460       520         2         0         0      0.00    340 00    755.00
0
 *SECNO 26100 000

 3470 ENCROACHMENT STATIONS=      425 0      655 0  TYPE=      1  TARGET=      220 000
  26100 00     10 77    662 12     0 00    662 07    662 30     0 18      0 09      0 02    659.15
     2800        51      2309       440        59       618      410      1170       215     658 35
     2 09      0 87      3 74     1 07     0 070     0 030    0 070     0 000    651 35    435.00
  0 000458       225       240       260         2         0         0      0 00    220 00    655 00
0
 CCHV=    0 300 CEHV=    0 300
 *SECNO 26340 000
  2800 NAT Q1=    1041 00  WSEL=     662 19  ENC Q1=    1057 81  WSEL=     662 19  RATIO= -0 0161
  NAT Q1=    1060    RATIOS LOB CH ROB=  0 0000  0 9979  0 0021  WSEL=     662 19

 3470 ENCROACHMENT STATIONS=      335 0      400 0  TYPE=      4  TARGET=        0 002
            54TH STREET
1
   5 JUN 89     10 55 56                                                                          PAGE    55

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      VCH       QROB      AROB      ACH       AROB      VOL       TWA    LEFT/RIGHT
```

```
   SLOPE     YLOBL     XL[illegible]  YRCBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

 26340 00    10 56     662 1[illegible]   0 00    662 09    662 54    0 38      0 14      0 10      666 98
   2800        0       2800       0         0       566       0       1175      216       665 39
     2 10    0 00      4 95     0 00     0 000     0 030    0 000     0 000    651 60    335 00
 0 000707    225       245      260         2         0        0      0 00     65 00    400 00
0

 SPECIAL BRIDGE

 5070,VARIABLE ELTHD OR ELCHD ON CARD 4[illegible] NOT SPECIFIED
 SB   XK        XKIR      [illegible]    [illegible]    [illegible]    BWP       [illegible]AREA    SS        ELCHD     ELCHD
      0 00      1 56      [illegible] 00    0 00     40 00     0 00    840 00     0 70    651 60    651.60

 *SECNO 26400 000

 6070,LOW FLOW BY NORMAL BRIDGE

 EGPRS=   662 429  EGLWC=   662 569  ELLC=   66[illegible].980  PCWSE=   662 160  ELTRD=   661 390
  2800 NAT Q1=    467 22  WSEL=    662 09  ENC Q1=    467 22  WSEL=    662 19  RATIO=  0 0000
  NAT Q1=    468   RATIOS LOB,CH,ROB=  0 0000  0 9953  0 0047  WSEL=    662 19
  WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE

 3265 DIVIDED FLOW

 3470 ENCROACHMENT STATIONS=     335 0     660 7  TYPE=     4  TARGET=       0.001
  26430 00    10 56    662 1[illegible]    0 00    662 09    662 54    0 38      0 06      0 00    666 98
   2800        0       2796       4         0       566      10       1176      216       665.39
     2 11    0 00      4 9[illegible]    0 38    0 000     0 030    0 070     0 000    651 60    335.00
 0 000705     90        90        90         0         0        0      0 00     83 12    660.74
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 26610 000
  2800 NAT Q1=   1058 34  WSEL=    662 16  ENC Q1=   1074 64  WSEL=    662 28  RATIO= -0.0154
  NAT Q1=   1078   RATIOS LOB CH ROB=  0 0000  0 9973  0 0027  WSEL=    662 28

 3470 ENCROACHMENT STATIONS=     335 0     400 0  TYPE=     4  TARGET=       0.003
  26610 00    10 62    662 2[illegible]    0 00    662 18    662 72    0 50      0 15      0 04    666 98
    3230        0       3230       0         0       570       0       117[illegible]      217       665.39
     2 12    0 00      5 67     0 00    0 000     0 030    0 000     0 000    651 60    335 00
 0 000921    190       180      175         2         0        0      0 00     65 00    400 00
0
1
   5 JUN 89    10 55 56                                                                          PAGE   56

    SECNO     DEPTH     CWSEL     VRIWS     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 26790 000
  2800 NAT Q1=   1450 81  WSEL=    662 51  ENC Q1=   1450 81  WSEL=    662 61  RATIO=  0 0000
  NAT Q1=   1485   RATIOS LOB CH ROB=  0 0661  0 8682  0 0657  WSEL=    662 61

 3470 ENCROACHMENT STATIONS=     304 8     438 3  TYPE=     4  TARGET=       0 023
  26790 00    10 93    662 5[illegible]    0 00    662 51    662 86    0 33      0 12      0 02    656 60
    3230      178      2974      178       142       595      153       1182      217       656 70
     2 13    1 25      4 9[illegible]    1 16    0 070     0 030    0 070     0 000    651 60    304 80
 0 000511    190       1[illegible]      175         2         0        0      0 00    133 47    438 26
0
 *SECNO 27150 000
```

```
 NAT Q1=   3189   RATIOS LOB CH ROB=  0 3272  0 3849  0 3879  WSEL=    663 01

3470 ENCROACHMENT STATIONS=      256 0     1277 1  TYPE=      4  TARGET=        0 348
 27150 00     11 45    662 93      0 00    662 91    663 01      0 06      0 12      0 03    660 90
    3230       34       1905      1058       302       776      1088      1194       219     659 10
     2 18      0 87      2 44        97     0 070     0 030     0 070     0 000    651 50    856 63
 0 000251      390       2000       750         2         0         0      0 00    420 44   1277 07
0
 *SECNO 27290 000
 3280 CROSS SECTION  27290 00 EXTENDED       4 55 FEET


 3470 ENCROACHMENT STATIONS=       10 0      490 0  TYPE=      1  TARGET=      280 000
 27290 00     11 77    662 70      0 00    662 70    663 17      0 42      0 05      0 11    655 70
    3230       24       2097       471       203       376       534      1199       220     655 60
     2 19      1 91      6 10      1 26     0 070     0 030     0 070     0.000    650 76    210 00
 0 000759      170       140       110         2         0         0      0 00    280 00    490 00
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 27300 000
 3280 CROSS SECTION  27300 00 EXTENDED       4 05 FEET


 3370 NORMAL BRIDGE,NRD= 31 MIN ELTRD=  660 30 MAX ELLC=  661.60


 3470 ENCROACHMENT STATIONS=      210 0      485 0  TYPE=      1  TARGET=      275 000
          CLAY AVENUE
1
   5 JUN 89     10 55 56                                                                                    PAGE    57

    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

 27300 00     11 84    662 60      0 00    662 53    663 36      0 77      0 01      0 17    655 70
    3230       33       1848      1759        17       175       297      1199       221     655 60
     2 19      1 98      6 24      5 92     0 030     0 020     0 030     0.000    650 76    210 00
 0 004075       10        10        10         2         0         0   -556 89    275 00    485 00
0
 *SECNO 27370 000
 3280 CROSS SECTION  27370 00 EXTENDED       4 75 FEET


 3370 NORMAL BRIDGE,NRD= 31 MIN ELTRD=  660 30 MAX ELLC=  661 60


 3470 ENCROACHMENT STATIONS=      230 0      470 0  TYPE=      1  TARGET=      240.000
 27370 00     11 24    663 00      0 00    662 96    663 70      0 70      0 32      0 02    655.70
    3230       42.      1196      1052        20       182       294      1200       221     655 60
     2 19      2 09      7 33      6 30     0 030     0 020     0 030     0 000    650 76    230 00
 0 005104       70        75        70         6         0         0   -531 90    240 00    470 00
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 27380 000
  2800 NAT Q1=   1272 32  WSEL=    663 35  ENC Q1=   1272 32  WSEL=    663 45  RATIO=  0 0000
  NAT Q1=   1974   RATIOS LOB CH ROB=  0 2682  0 4698  0 2620  WSEL=    663 45
 3280 CROSS SECTION  27380 00 EXTENDED       5 15 FEET


 3470 ENCROACHMENT STATIONS=      184 0      414 4  TYPE=      4  TARGET=        0 355
 27380 00     11 97    663 22      0 00    663 35    663 74      0 42      0 01      0 03    655 70
```

```
      2 19      1 33      5 99      1 25     0 070     0 030     0 070     0 000    650 76    184 04
  0 000682      10        10        10         2         0         0      0 00    230 32    414.37
0
 CCHV=   0 300 CEHV=   0 700
 *SECNO 27990 000
  2800 NAT Q1=    3045 72  WSEL=     663 97  ENC Q1=    3045 72  WSEL=     664.07  RATIO=  0.0000
  NAT Q1=    6559   RATIOS LOB CH ROB=    0 831    1029   0 2139  WSEL=     664 07
 3280 CROSS SECTION  27990 00 EXTENDED       1 59 FEET


 3470 ENCROACHMENT STATIONS=      457 7     1230 0  TYPE=      4  TARGET=        0 536
            PENN CENTRAL RAILROAD
1
   5 JUN 89     10 55 06                                                                          PAGE   58

    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


  27990 00    11 99    663 99      0 00    663 97    664 01      0 02      0 14      0 12    663 50
     3230     2520       710         0      3137       385         0     1233.       227     662 80
      2 36     0 80      1 54      0 00     0 070     0 030     0 000     0 000    652.00    657.68
  0 000118      620       610       600         2         0         0      0 00    572 32   1230 00
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB   XK        XKOP      CONFG      RDLEN      BW        BWP       BAREA     SS        ELCHU     ELCHD
      1 05      1 56      0 00      900 00     36 00      2 00    280 00      0 00    652.00    652.00

 *SECNO 28040 000
  2800 NAT Q1=    5517 66  WSEL=     666 16  ENC Q1=    5517 66  WSEL=     666 26  RATIO=  0 0000
  NAT Q1=    8071   RATIOS LOB CH ROB=   0 5639   0 1644   0 2717  WSEL=     666 26
  WATER EL=CHANGE FROM NATURAL PROFILES BRIDGE
 3280 CROSS SECTION  28040 00 EXTENDED       7 39 FEET


 3470 ENCROACHMENT STATIONS=      215 3     1093 5  TYPE=      4  TARGET=        0 316
  28040 00    13 68    666 18      0 00    666 16    666 19      0 01      0 00      0 00    659 10
     3230.    1913       781       536      4274       568      1182      1238       228     659 30
      2 38     0 45      1 07      0 45     0 070     0 030     0 070     0 000    652 50    215.26
  0 000036       50        50        50         0         0         4      0.00    878 28   1093 54
0
 CCHV=   0 100 CEHV=   0 500
 *SECNO 28350 000
 3280 CROSS SECTION  28350 00 EXTENDED       0 86 FEET


 3470 ENCROACHMENT STATIONS=      650 3     1150 0  TYPE=      1  TARGET=      500 000
  28350 00    13 46    666 16      0 00    666 17    666 22      0 06      0 02      0 02    661.60
     3230     1069      1320       841       942       444      1193      1267       232     663 00
      2 42     1 13      2 98      0 70     0 070     0 030     0 070     0 000    652 70    650.00
  0 000199      260       310       360         2         0         0      0 00    500 00   1150.00
0
 *SECNO 28410 000

 3470 ENCROACHMENT STATIONS=      650 3     1150 0  TYPE=      1  TARGET=      500 000
  28410 00    13 62    666 22      0 00    666 18    666 23      0 02      0 01      0 00    663 20
     3230     1931       934       365      2677       539       679      1272       233     662.40
      2 44     0 72      1 73      0 54     0 070     0 030     0 070     0 000    652.60    650 00
  0 000067       60        60        60         2         0         0      0 00    500 00   1150 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 30015 00

3470 ENCROACHMENT STATION			545 0	1300.0	TYPE=	1	TARGET=	755 000	
30015 00	11 45	666 23	0 00	666.23	666 37	0 02	0.14	0 00	661 30
3230.	976	774	1480	1358	357	2216	1416	256.	661 80
2 87	0 72	2 17	0 67	0 070	0 030	0.070	0 000	654 90	545 00
0 000114	1615	1605	1595.	2	0	0	0 00	755 00	1300.00

0
1
5 JUN 89 10 55:56 PAGE 60

THIS RUN EXECUTED 5 JUN 89 10:56:27

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

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

BUCK CREEK- 100 YEAR FLO

SUMMARY PRINTOUT TABLE 110

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
15 860	632.91	-0.29	633 04	317.74	1934.44	1950 97	239.58	0.00	0.00	283.00	314.00	0 00
15 860	633.00	0 09	633 35	273 53	1939.45	1988.21	197 35	0 02	63.63	283 00	314 00	337.16
15 870	633 51	0 00	633 57	621 88	1086.99	1092 04	1945 96	0 00	0.00	283.00	314 00	0 00
15 870	633 61	0 10	633 68	553 15	1066.12	1112 60	1946 28	0.02	70.14	283.00	314.00	623 30
500 000	633 70	0 00	633 82	614 22	1121 26	1284 68	1719.06	0 00	0 00	283.00	314.00	0 00
500 000	633 80	0 10	633 92	520 60	1105 16	1306 56	1713 28	0.03	72.79	283.00	314 00	593 39
1050 000	633 97	0 00	634 56	185 00	954 67	2309 96	860 37	185 00	200.00	283.00	314.00	385 00
1050 000	634 07	0 11	634 65	185 00	960 19	2300.57	864.24	185 00	200.00	283.00	314.00	385.00
1225 000	634 29	0 00	635 15	100 00	605 44	3519.56	0 00	100 00	1025.00	1070.00	1125.00	1125 00
1225 000	634 38	0 09	635 22	100 00	608 22	3516 78	0 00	100.00	1025.00	1070.00	1125.00	1125 00
1235 000	634 96	0 00	635 33	99 00	0 00	4125 00	0 00	120.00	35.00	47.50	152.50	155 00
1235 000	635 03	0 07	635 39	99 00	0 00	4125 00	0.00	120.00	35.00	47.50	152.50	155 00
1245 000	634.99	0 00	635 36	99 00	0 00	4125 00	0 00	125 00	30 00	47.50	152.50	155 00
1245 000	635 06	0 07	635 42	99 00	0 00	4125 00	0 00	125.00	30 00	47.50	152.50	155 00
1255 000	634 88	0 00	635 44	120 00	598 30	3523 92	2 78	120 00	1000 00	1050.00	1119.00	1120 00
1255 000	[illegible]	0 05	[illegible]	111 93	539 16	3585 84	0 00	0 66	1007.07	1050.00	1119.00	1119 00

1) COUNTY: KENT

2) STUDY NAME: WYOMING, CITY OF

3) WATERCOURSE: BUCK CREEK

4) DOCUMENT TYPE: 100-YEAR NATURAL

```
1*************************************************************
 *  WATER SURFACE PROFILES                                   *
 *  VERSION OF NOVEMBER 1976                                 *
 *  UPDATED MAY 1984                                         *
 *                                                           *
 *  RUN DATE   5 JUN 89   10 55 56                           *
 *************************************************************
```

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

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

1

5 JUN 89 10 55 56 PAGE 1

THIS RUN EXECUTED 5 JUN 89 10 55 56

```
*****************************************************
  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 WYOMING, KENT COUNTY, MICHIGAN
T2       FLOOD INSURANCE STUDY
T3       BUCK CREEK- 100 YEAR FLOOD - NATURAL CONDITIONS

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0        2         0         0   0 001600     0.00      0 0       0.    633 200    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

ET      0 000      0.000      1 400      0 000      0.000      0.000      0.000      0.000      0.000      0.000
NC      0.120      0.120      0.040      0 100      0.300      0.000      0.000      0.000      0.000      0.000
QT      2.000   4125 000   4125.000      0 000      0.000      0.000      0.000      0.000      0 000      0.000
            500 FEET DOWNSTREAM OF CORPORATE LIMIT
X1     15 860     17 000    283.000    314.000      0 000      0 000      0.000      0.000      0.000      0 000
GR    633 000     15.000    627.500     75 000    628.200    125.000    627 300    200.000    626.800    250.000
GR    626 200    270 000    625 100    283.000    623.400    287 000    622.400    300.000    623.700    312 000
GR    626 400    314 000    626 800    322 000    628 200    338.000    630.400    342.000    633.100    350.000
GR    633 800    380.000    633 600    500 000      0 000      0 000      0.000      0.000      0 000      0.000

X1     15 870     13 000    283 000    314 000    350 000    350.000    450.000      0 000      0 000      0.000
```

GR	626 600	270 000	625 500	283 000	623 800	287 000	622.800	300.000	624 100	312.000
GR	625 700	314 000	628 000	614 000	632 000	652.000	0 000	0.000	0.000	0.000
X1	500.000	13 000	283 000	314.000	425.000	225.000	550.000	0 000	0.550	0.000
GR	636.000	15 000	628 500	75.000	629 200	125 000	628 300	200 000	627.800	250.000
GR	627.200	270 000	626 100	283 000	624 400	287.000	623.400	300.000	624.700	312.000
GR	626 800	314 000	628 000	514 000	632 000	652.000	0 000	0.000	0.000	0.000
ET	0 000	4 100	4 100	200 000	385 000	0 000	0.000	0.000	0.000	0.000
X1	1050 000	15 000	283 000	314 000	425 000	225 000	550.000	0.000	0.000	0.000
GR	636 500	15 000	629 000	75 000	629 700	125 000	628.800	200.000	628.300	250.000
GR	627 700	270 000	626 600	283 000	624 900	287 000	623 900	300 000	625 200	312.000
GR	627 900	314 000	628 000	424 000	628.000	824.000	632 000	844.000	636.000	894.000

1

5 JUN 89 10 55 56 PAGE 2

ET	0 000	4.100	4 100	1025 000	1125 000	0 000	0 000	0.000	0.000	0.000
X1	1225 000	24 000	1070 000	1125 000	170 000	180 000	175 000	0.000	0.000	0 000
GR	638 700	0 000	633 500	100 000	635 800	200 000	638 000	300.000	633.700	400.000
GR	633 500	500 000	627 400	700.000	628 600	800 000	626.300	900.000	627.800	1000.000
GR	628 000	1050 000	620 500	1060 000	628 000	1070 000	626.300	1080.000	624.000	1100.000
GR	628 000	1120 000	632.300	1125 000	632 300	1150.000	637.000	1300.000	638 900	1400.000
GR	640 500	1500 000	638 500	1600.000	638 200	1700 000	641 200	1800.000	0.000	0.000
ET	0 000	4 100	4 100	35 000	155 000	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
	ABANDONED RAILROAD BRIDGE									
X1	1235 000	30 000	47 500	152 500	10 000	10.000	10.000	0.000	0 000	0.000
BT	-6 000	0 000	637 900	637 900	47.500	637 700	637.700	47.500	637 900	635.700
BT	0 000	152 500	638 000	635 700	152 500	638 000	638 000	200 000	638.100	638.100
GR	637 900	0 000	637 700	47 500	633 300	47 500	626 000	62.000	637.700	62.000
GR	637 700	53 000	628 700	63 000	623 800	77 000	637 700	77.000	637.700	78.000
GR	623 900	78 000	625 600	92 000	637.700	92 000	637.700	93.000	625.700	93 000
GR	624 700	107 000	637 700	107 000	637 700	108.000	624.600	108.000	624.000	122.000
GR	637 700	122 000	637 700	123.000	624 100	123.000	627.000	137.000	637.700	137.000
GR	637 700	138 000	627 900	138 000	633 200	152 500	638 000	152.500	638.100	200.000
ET	0 000	4 100	4 100	30 000	155 000	0 000	0.000	0.000	0 000	0.000
X1	1245 000	0 000	0 000	0 000	10 000	10 000	10 000	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
ET	0 000	4 100	1 400	1000 000	1120 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
X1	1255 000	25 000	1050 000	1119 000	10 000	10 000	10 000	0.000	0.000	0.000
GR	640 400	0 000	634 800	100 000	635 800	200 000	638 000	300.000	633 600	400.000
GR	632 200	500 000	625 500	600 000	628 000	700.000	628.900	800.000	626.800	900.000
GR	628 500	1050 000	628 500	1080 000	626 700	1085 000	624.000	1100 000	626.400	1115.000
GR	629 200	1119 000	632 300	1135 000	632 700	1150.000	635 000	1200.000	637.000	1300 000
GR	638 400	1400 000	640 600	1500 000	639.500	1600 000	639 200	1700.000	639.000	1800.000
ET	0 000	4 [illegible]	4 100	[illegible]	900 000	0 000	0 000	0.000	0 000	0.000
X1	1850 000	31 000	745 000	540 000	480 000	590 000	595 000	0.000	0.000	0.000
GR	638 500	0 000	[illegible]	15 000	633 500	25 000	633.300	145.000	631 200	245.000
GR	630 100	385 000	630 100	438 000	630 900	560 000	630 000	635 000	630 600	725.000
GR	629 700	727 000	627 [illegible]	739 000	627 600	757.000	626.700	758.000	625 100	760.000
GR	623 400	770 000	624 100	77 000	628 900	781 000	629 500	790.000	630.500	820.000
GR	633 300	840 000	633 700	965 000	636 000	1070 000	637.300	1170.000	638.200	1235.000
GR	633 000	1300 000	631 500	1400 000	631.500	1475 000	642 700	1525.000	645 200	1625 000
GR	645 800	1785 000	0 000	0 000	0 000	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	2275 000	68 000	559 000	100 000	425 000	425 000	425 000	0 000	0.000	0.000
GR	630 200	90 000	629 500	100 000	629.900	150 000	629 800	200.000	630 000	250.000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

635.8

GR	628 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	628 400	385 000	629 100	386 000	630.300	389.000
GR	630 200	400 000	631 500	425 000	632 600	450 000	632.600	475.000	633.100	500.000
GR	633 100	511 000	629 100	520 000	628 700	525 000	629.900	550 000	630 700	559.000
GR	630 300	560 000	629 200	562 000	627 200	563.000	626 000	565.000	626 000	570.000
GR	626 100	575 000	625 900	580 000	625 700	585 000	625 700	590.000	626.000	595.000

1

5 JUN 94 10 55 56 PAGE 3

GR	626 200	596 000	627 100	597 000	628.800	598.000	629 400	599 000	629 790	600.000
GR	629 840	613 000	634 640	623 000	635.640	625 000	636 990	650.000	637.700	675.000
GR	638 600	700 000	641 300	722 000	641 300	725 000	640 700	750 000	639 990	775.000
GR	638 200	792 000	638 040	800 000	637.650	807 000	637 640	814.000	637 050	827.000
GR	637.090	831 000	637 640	850 000	638 400	875 000	639.390	900.000	640 340	925.000
GR	641 390	950 000	642 490	1000 000	643 590	1025.000	644 690	1050.000	645.740	1075.000
GR	646 790	1100 000	647 800	1125 000	648 800	1150 000	0 000	0.000	0 000	0.000
X1	2680 000	49 000	500 000	539 000	400 000	410 000	405 000	0.000	0.000	0.000
GR	638 070	250 000	637 560	275 000	637 900	300 000	637 940	314 000	635 400	325.000
GR	634 600	350 000	636 700	375 000	634 000	380 000	631 700	400.000	632 900	425.000
GR	631 400	432 000	630 400	450 000	631.000	475 000	629 600	500.000	629 600	501.000
GR	628 400	503 000	627 500	504 000	627 300	505 000	626 200	510.000	626.000	515.000
GR	626 000	520 000	625 900	525 000	625 800	530 000	627.200	533.000	627.500	534.000
GR	629 000	536 000	629 400	539 000	630 700	550 000	630 400	575 000	631 400	600.000
GR	631 900	625 000	632 900	650 000	634 100	675 000	635.100	700.000	635.900	725.000
GR	636 400	750 000	637 200	775 000	638 000	800 000	638.240	825.000	639.100	850.000
GR	639 950	875 000	639 900	900.000	642 400	925 000	644.220	950.000	645.500	975.000
GR	646 700	1000 000	647 700	1025 000	649 600	1050 000	650 000	1075.000	0.000	0.000
X1	2735 000	0 000	0 000	0 000	55 000	55.000	55.000	0.000	0 000	0.000
X1	2736 000	44 000	500 000	539 000	1 000	1 000	1 000	0.000	0.000	0.000
GR	638 070	250 000	637 560	275 000	637 900	300 000	637 940	314.000	635 400	325.000
GR	634 600	350 000	636 700	375 000	634 000	380.000	631 700	400.000	632.900	425.000
GR	631 400	432 000	630 400	450 000	631 000	475 000	629.600	500.000	629 600	510.000
GR	629 600	520 000	629 600	530 000	625 800	530 000	627 200	533.000	627.500	534.000
GR	629 000	536 000	629 400	539 000	630 700	550 000	630.400	575.000	631.400	600.000
GR	631 900	625 000	632 900	650 000	634 100	675 000	635 100	700.000	635 900	725.000
GR	636 400	750 000	637 200	775 000	638 000	800 000	638 240	825.000	639.100	850.000
GR	639 950	875 000	639 900	900.000	642 400	925 000	644 220	950.000	645.500	975.000
GR	646 700	1000 000	647 700	1025 000	649 600	1050 000	650 000	1075.000	0.000	0.000
X1	2739 000	0 000	0 000	0 000	3 000	3 000	3 000	0 000	0 000	0.000
X1	2740 000	49 000	500 000	539 000	1 000	1 000	1 000	0.000	0.000	0.000
GR	638 070	250 000	637 560	275 000	637 900	300.000	637 940	314.000	635.400	325.000
GR	634 600	350 000	636 700	375 000	634 000	380 000	631.700	400.000	632 900	425.000
GR	631 400	432 000	630 400	450 000	631 000	475 000	629 600	500.000	629.600	501.000
GR	628 400	503 000	627 500	504 000	627 300	505 000	626 200	510.000	626.000	515.000
GR	626 000	520 000	625 900	525 000	625 800	530 000	627 200	533 000	627 500	534.000
GR	629 000	536 000	629 400	539 000	630 700	550 000	630 400	575.000	631 400	600.000
GR	631 900	625 000	632 900	650 000	634 100	675 000	635 100	700.000	635 900	725.000
GR	636 400	750 000	637 200	775 000	638 000	800 000	638 240	825 000	639 100	850.000
GR	639 950	875 000	639 900	900 000	642 400	925 000	644 220	950.000	645.500	975.000
GR	646 700	1000 000	647 700	1025 000	649 600	1050 000	650.000	1075.000	0.000	0 000
ET	0 000	4 100	[illegible]	[illegible]	1100 000	0 000	0 000	0.000	0 000	0.000
X1	3455 000	55 000	553 000	600 000	725.000	705 000	715 000	0.000	0 000	0.000
GR	644.260	75 000	643 [illegible]	100 000	643 650	125 000	642 610	150.000	640.610	175.000
GR	638 810	200 000	637 670	225 000	637 360	250 000	637.260	275 000	637.410	300.000
GR	638 160	325 000	638 660	350 000	638 460	375 000	638 510	400.000	638.460	425 000
GR	638 460	450 000	638 060	475 000	636 610	483 000	631.460	493.000	631.160	500.000
GR	631 910	525 000	630 360	550 000	630 660	553 000	630 060	556 000	629 060	557.000

1

5 JUN 94 [illegible] PAGE 4

GR	627 810	560 000	626 760	565 000	627 360	570 000	626 960	575.000	627.960	580.000
GR	628 760	585 000	630 760	585 000	632 110	590 000	633 010	595 000	633 690	600.000
GR	633 170	625 000	633 770	650 000	632 070	675 000	632.070	700.000	632.070	725.000
GR	632 570	750 000	631 970	775 000	631 470	800.000	632 170	825 000	632 370	850.000
GR	632 870	875 000	633 770	900 000	636 180	925 000	636 580	950.000	636 680	975 000
GR	637 130	1000 000	639 180	1025 000	639 580	1050 000	639 980	1075.000	640.130	1100.000
ET	0 000	4 100	0 000	200 000	575 000	0 000	0 000	0.000	0 000	0.000
X1	5070 000	49 000	361 000	400 000	1550 000	740 000	1615 000	0.000	0 000	0.000
GR	633 070	25 000	633 070	50 000	633 670	75 000	633 070	100.000	633.270	125.000
GR	632 870	150 000	632 170	175 000	632 970	200 000	633 370	225.000	633 270	250.000
GR	633 470	275 000	633 770	300 000	634 370	325 000	634 370	350.000	632 970	361.000
GR	631 770	362 000	630 970	364 000	630 670	365 000	630.170	370.000	629.670	375.000
GR	629 370	380 000	629 070	385 000	629 270	390 000	629 170	395.000	630.370	396.000
GR	631 070	397 000	632 770	398 000	632 970	399 000	634 770	400.000	633.170	425.000
GR	633 670	450 000	633 270	475 000	633 270	500 000	633 370	525.000	633.170	550.000
GR	633 170	575 000	633 070	600 000	633.270	625 000	633.170	650.000	633.070	675.000
GR	632 870	700 000	632 670	725 000	632 570	750.000	632.570	775.000	632.370	800.000
GR	632 070	825 000	631 970	850 000	632.070	875 000	631.970	900.000	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
	BYRON CENTER ROAD									
X1	5580 000	25 000	333 000	400 000	500 000	520.000	510 000	0.000	0.000	0.000
X3	10 000	0 000	0 000	0 000	0 000	0 000	0 000	638.000	638.000	0.000
GR	640 340	75 000	640 440	100 000	640 440	125.000	640 640	150.000	641.090	175.000
GR	641 440	200 000	633 990	333 000	630 790	340.000	631.190	349 000	631.140	350.000
GR	631 340	360 000	630 990	366 000	630 640	367.000	629 140	370.000	630.040	380 000
GR	630 540	383 000	630 640	390 000	635 590	400 000	645 440	500.000	645.890	525.000
GR	646 390	550 000	646 940	575 000	647 440	600 000	647 940	625.000	648.540	650.000
SB	1 250	1 560	3 000	0 000	6 000	5 000	296 000	3.000	0.000	0 000
X1	5630 000	25 000	333 000	400 000	50 000	50 000	50 000	0.000	0.000	0.000
X2	0 000	0 000	1 000	639 600	640 340	0 000	0 000	0 000	0 000	0 000
X3	10 000	0 000	0 000	100 000	0 000	400.000	0 000	640 340	640.340	0.000
BT	-15 000	100 000	640 340	0 000	110 000	640.440	0 000	125.000	640.440	0.000
BT	0 000	150 000	640 640	0 000	175 000	641 090	0 000	200.000	641.440	0.000
BT	0 000	333 000	643 040	0 000	400 000	643 040	0 000	500 000	645.890	0.000
BT	0 000	525 000	645 890	0 000	550 000	646 390	0 000	575.000	646.940	0 000
BT	0 000	600 000	647 440	0 000	625 000	647.940	0 000	650.000	648 540	0.000
GR	640 340	75 000	640 440	100 000	640 440	125.000	640.640	150.000	641 090	175.000
GR	641 440	200 000	630 740	333 000	630 790	340 000	631.190	349.000	631.140	350.000
GR	631 340	360 000	629 240	366 000	629 140	367.000	629.140	370.000	630.040	380.000
GR	630 540	383 000	630 640	390 000	631 140	400 000	645.440	500.000	645.890	525.000
GR	646 390	550 000	646 940	575 000	647 440	600.000	647.940	625 000	648 540	650.000
ET	0 000	4 100	6 100	250 000	620 000	340 000	620 000	0 000	0.000	0.000
NC	0 000	0 000	0 300	0 100	0 300	0.000	0.000	0.000	0.000	0.000
X1	6720 000	44 000	500 000	550 000	1020 000	995 000	1090.000	0.000	0 000	0.000
GR	640 690	0 000	640 990	50 000	641 190	100.000	641 290	125.000	641.390	150.000
GR	641 390	175 000	641 390	200 000	641 590	225 000	641 590	250 000	641.490	275 000
GR	641 890	285 000	641 725	300 000	641 320	325 000	640 120	350.000	639 920	375.000
GR	638 [illegible]	400 000	[illegible]	[illegible]	607 120	450 000	636 120	495.000	634 720	500.000
GR	632 030	501 000	631 630	505 000	631 130	510 000	630 830	515 000	631 030	520.000
GR	631 230	525 000	[illegible]	530 000	632 130	535 000	632 630	536 000	633.730	550.000

1

5 JUN 84 [illegible]

GR	635 230	575 000	635 030	600 000	635 430	607.000	636 705	610 000	642.950	625.000
GR	653 760	650 000	658 460	665 000	658 360	675 000	656.360	700.000	656 960	725.000
GR	658 160	750 000	659 760	775 000	661 360	800.000	662 960	825 000	0.000	0.000
ET	0 000	4 100	1 400	650 000	1155 000	0 000	0 000	0 000	0.000	0.000
X1	7120 000	91 000	[illegible]	920 000	360 000	410 000	400.000	0.000	0.000	0.000
GR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	140.000

642.52

GR	645 000	20 000	[illegible]	735 000	643 000	800 000	635.000	815 000	634.500	850.000
GR	635 700	870 000	634 500	880 000	632 600	881.000	631 100	885.000	631.000	915.000
GR	636 200	920 000	635 100	950 000	637 500	1020 000	642.000	1070.000	650.700	1120.000
GR	655 300	1155 000	0 000	0 000	0 000	0 000	0 000	0.000	0 000	0.000
X1	7325 000	33 000	261 000	300 000	190 000	220 000	205 000	0.000	0.000	0.000
GR	644 380	0 000	644 380	25 000	643 580	50 000	642 580	75.000	641 480	100.000
GR	641 480	125 000	640 280	150 000	639 480	175 000	638.380	200.000	638.380	225.000
GR	636 980	200 000	636 980	261 000	634 980	264 000	633 880	267.000	632.880	268.000
GR	631 680	270 000	630 680	275 000	631 080	280 000	631 280	285.000	631 380	290.000
GR	632 480	295 000	634 830	297 000	635 770	300 000	635.420	325.000	635.770	350.000
GR	635 620	375 000	635 770	400 000	635 770	425 000	635 720	450 000	635 670	475.000
GR	636 120	500 000	636 770	525 000	636 770	550 000	0 000	0 000	0.000	0.000
NC	0 120	0 120	0 040	0 000	0 000	0 000	0 000	0 000	0.000	0.000
	PEDESTRIAN DR,FOO AT CENTER MARK									
X1	7335 000	0 000	0 000	0 000	10 000	10 000	10 000	0.000	0.000	0.000
BT	-7 000	261 000	635 880	635 880	264.000	636 010	634 980	264.000	636.010	635.810
BT	0 000	280.000	636 730	636 530	297 000	635 910	635.710	297.000	635.910	634.530
BT	0 000	300 000	635 770	635 770	0 000	0 000	0.000	0.000	0.000	0.000
X1	7345 000	0 000	0 000	0 000	10 000	10 000	10 000	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	7355 000	0 000	0 000	0 000	10 000	10.000	10 000	0 000	0.000	0 000
X1	8280 000	21 000	280 000	330.000	880 000	750 000	925 000	0.000	0.000	0.000
GR	651 800	10 000	650 000	30 000	644 200	55 000	636 700	233 000	637.400	280.000
GR	633 200	287 000	631 800	293 000	631 400	300 000	631.600	305 000	633.200	313.000
GR	635 300	318 000	637 900	330 000	636 000	380 000	636.000	395 000	637.600	475.000
GR	636 900	535 000	637 500	585 000	646 700	625 000	646 800	660 000	647.100	745.000
GR	651 800	795 000	0 000	0.000	0 000	0.000	0 000	0.000	0 000	0.000
ET	0 000	4 100	4 100	50 000	770 000	0 000	0 000	0 000	0.000	0.000
X1	11650 000	25 000	480 000	520 000	2200 000	2400.000	3370 000	0.000	0 000	0.000
GR	654 500	50 000	646 000	65 000	643 000	145 000	642 900	245.000	641.000	315.000
GR	642 200	405 000	641 700	460 000	641 500	480 000	636.800	481 000	637 900	485.000
GR	635 100	500 000	637 900	515 000	638 500	519 000	641.000	520.000	641.800	570.000
GR	646 700	670 000	646 200	770 000	644.100	870 000	644 300	1025 000	644.800	1095.000
GR	648 500	1120 000	651 700	1155 000	651 900	1210.000	652 400	1280.000	651.000	1385.000
ET	0 000	4 100	4 100	400 000	940 000	400.000	870.000	0 000	0.000	0.000
X1	12620 000	0 000	0 000	0 000	725 000	825.000	970 000	0 000	0.850	0.000

ET	0 000	4 100	4 100	355 000	430 000	0 000	0 000	0 000	0.000	0.000
X1	13590 000	35 000	370 000	414 000	720 000	820 000	970 000	0 000	0.000	0.000
GR	656 600	50 000	656 600	100 000	656 600	150.000	656.100	200.000	655.500	250.000
GR	654 800	300 000	654 600	325 000	653 600	353 000	651 100	355.000	648 300	360.000
GR	644 900	365 000	641 600	370 000	640 300	373 000	638 900	375 000	638 600	380.000
GR	637 400	385 000	637 100	390 000	636 800	395 000	638 900	400.000	639.000	405.000
GR	640 100	409 000	641 500	414 000	641 500	420.000	642 200	425 000	641.700	430.000
GR	643 800	435 000	647 000	440 000	649 800	445 000	650.500	447.000	653 900	450.000
GR	653 700	475 000	653 500	500 000	653 000	550.000	651.900	600.000	651.100	650.000
NC	0 030	0 030	0 014	0 300	0 500	0.000	0 000	0.000	0 000	0.000
ET	0 000	4 100	4 100	370 000	430 000	0.000	0 000	0.000	0.000	0.000
	44TH STREET									
X1	13600 000	46 000	370 000	430 000	10 000	10 000	10 000	0.000	0 000	0 000
BT	-28 000	325 000	654 600	654 600	353 000	654.600	653.600	355.000	654 600	651 100
BT	0 000	360 000	654 600	648 300	365 000	654 500	644 900	370.000	654 500	641.100
BT	0 000	371 000	654 500	640 800	375 000	654 500	646.800	380.000	654.500	648.800

BT	0 000	399 000	654 400	642 300	399 000	654 400	639 900	401.000	654.400	639.900
BT	0 000	401 000	654 400	642 300	405.000	654.300	646 800	410 000	654.300	648 800
BT	0 000	415 000	654 300	649 500	420 000	654 200	648 800	425 000	654.200	646.800
BT	0 000	429 000	654 200	641 800	430 000	654 200	641 700	435.000	654.100	643.800
BT	0 000	440 000	654 100	647 000	445 000	654.000	649 800	447.000	654.000	650.500
BT	0 000	450 000	653 900	653 900	0 000	0 000	0.000	0 000	0.000	0 000
GR	656 600	50 000	656 600	100 000	656 600	150 000	656 100	200.000	655.500	250 000
GR	654 500	300 000	654 600	325 000	653 600	353 000	651 100	355.000	648.300	360.000
GR	644 900	365 000	641 100	370 000	640 800	371 000	640 300	373.000	638.900	375.000
GR	638 400	380 000	637 100	385 000	637 100	390 000	636 800	395.000	637.000	395.500
GR	638 900	395 500	638 900	398 000	639 900	398 000	639 900	399 000	639.900	401.000
GR	639 900	402 000	638 900	402 000	639 000	405 000	640 100	409.000	641.200	410 000
GR	641 500	414 000	[illegible]	415 000	641 300	420 000	642 200	425 000	641.800	429.000
GR	641 700	430 000	643 000	435 000	647 000	440.000	649 800	445.000	650.500	447.000
GR	653 900	450 000	653 900	475 000	653 500	500 000	653 000	550.000	651.900	600.000
GR	651 100	650 000	0 000	0 000	0 000	0.000	0.000	0.000	0 000	0 000
ET	0 000	4 100	4 100	370 000	430 000	0 000	0 000	0.000	0.000	0.000
X1	13700 000	0 000	0 000	0 000	100 000	100 000	100 000	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	0 070	0 070	0 040	0 100	0 300	0 000	0.000	0.000	0.000	0.000
ET	0 000	4 100	4 100	360 000	440 000	0 000	0.000	0.000	0.000	0.000
X1	13710 000	35 000	370 000	414 000	10 000	10 000	10.000	0.000	0.000	0.000
GR	656 600	50 000	656 600	100 000	656 600	150 000	656 100	200.000	655.500	250.000
GR	654 800	300 000	654 600	325 000	653 600	353 000	651.100	355 000	648.300	360.000
GR	644 900	365 000	641 100	370 000	640 300	373 000	638.900	375.000	638.600	380.000
GR	637 400	385 000	637 100	390 000	636 800	395 000	638 900	400.000	639.000	405 000
GR	640 100	409 000	641 500	414 000	641 500	420 000	642 200	425.000	641.700	430 000
GR	643 800	435 000	647 000	440 000	649 800	445.000	650 500	447.000	653.900	450.000
GR	653 700	475 000	653 500	500 000	653 000	550 000	651.900	600.000	651.100	650.000

X1	13990 000	28 000	302 000	366 000	340 000	200 000	280.000	0.000	0.000	0.000
X3	10 000	0 000	0 000	280 000	0 000	395 000	0 000	651.000	651.000	0 000
GR	665 300	50 000	664 000	75 000	662 700	100 000	661 400	125 000	660.100	150.000
GR	659 000	175 000	657 800	200 000	641 900	202 000	640 160	305.000	640.300	310.000
GR	640 000	315 000	639 900	320 000	639 300	225 000	640 200	330.000	639.900	335.000
GR	639 000	340 000	638 800	345 000	641 100	349 000	641 900	351.000	643.600	354 000
GR	644 300	360 000	644 400	366 000	652 300	475 000	652.100	500.000	651.700	525 000
GR	650 800	550 000	651 260	588 000	650 160	630 000	0 000	0 000	0.000	0.000
NC	0 030	0 030	0 014	0 300	0 500	0 000	0.000	0.000	0.000	0.000
	BURLINGAME AVENNE									
X1	14000 000	39 000	302 000	366 000	10 000	10 000	10 000	0.000	0.000	0.000
BT	-8 000	300 000	654 960	654 960	300 000	657 000	654 960	302.000	657.000	654.910
BT	0 000	302 000	657 000	649 000	366 000	657.000	649 000	366.000	657.000	654 010
BT	0 000	368 500	657 000	654 000	368 500	654.000	654 000	0.000	0.000	0.000
GR	665 300	50 000	664 000	75 000	662 700	100 000	661.400	125.000	660.100	150.000
GR	659 000	175 000	657 800	200 000	656 800	225 000	655.900	250.000	655.100	275.000
GR	654 960	300 000	654 910	302 000	641 910	302 000	640.160	305.000	640.300	310 000
GR	640 000	315 000	639 800	320 000	639 300	325 000	640 200	330 000	639.900	335 000
GR	639 000	340 000	638 800	345 000	641 100	349 000	641 900	351.000	643.600	354 000
GR	644 300	360 000	644 410	366 000	654 010	366 000	654 000	368.500	653 900	375 000
GR	653 500	400 000	653 000	425 000	652 700	450 000	652 300	475 000	652.100	500.000
GR	651 700	525 000	650 800	550 000	651 260	588 000	650.600	630.000	0.000	0.000
X1	14080 000	0 000	0 000	0 000	80 000	80 000	80 000	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	0 120	0 120	0 040	0 100	0 300	0 000	0 000	0.000	0.000	0.000
X1	14090 000	28 000	302 000	366 000	10 000	10 000	10 000	0 000	0 000	0.000

GR	665 500	20 000	664 000	75 000	662 700	100 000	661 400	125.000	660 100	150.000
GR	659 000	175 000	657 800	200 000	641 900	302 000	640 160	305.000	640 300	310.000
GR	640 000	315 000	639 800	320 000	639 300	325 000	640 200	330 000	639.900	335.000
GR	639 000	340 000	639 800	345 000	641 100	349 000	641 900	351 000	643 600	354 000
GR	644 300	360 000	644 400	366 000	652 300	475 000	652 100	500.000	651.700	525.000
GR	650 800	550 000	651 160	588 000	650 160	630 000	0 000	0 000	0 000	0.000
ET	0 000	4 100	4 100	530 000	730 000	0 000	0 000	0.000	0 000	0.000
X1	14520 000	49 000	561 000	600 000	355 000	365 000	430 000	0.000	-0 850	0.000
GR	667 570	96 000	666 470	123 000	666 000	148 000	666 700	175 000	667.000	200.000
GR	667 200	225 000	668 100	250 000	668 300	275 000	668 000	300.000	667.100	325.000
GR	666 300	350 000	664 400	375 000	656 500	400 000	657 000	425 000	654.300	450.000
GR	650 780	475 000	646 200	500 000	643 600	508 000	643 800	525.000	643.900	550.000
GR	644 000	561 000	643 200	563 000	642 300	565 000	640 800	570.000	640.500	575 000
GR	641 200	580 000	640 500	585 000	640 600	590 000	641 600	595 000	641 500	596.000
GR	642 300	597 000	643 580	600 000	643 300	625 000	643 600	650 000	643.600	675.000
GR	644 100	700.000	644 200	725 000	644 400	750 000	644.500	775.000	644.400	800.000
GR	643 530	815 000	644 600	850 000	645 030	900.000	645 000	950.000	645.100	1000.000
GR	645 900	1050 000	646 100	1100 000	646 000	1150 000	649 400	1175 000	0.000	0.000

1

ET	0 000	4 100	1 400	500 000	1100 000	0.000	0.000	0.000	0.000	0.000
X1	14950 000	49 000	561 000	600 000	355 000	365.000	430 000	0.000	0.000	0 000
GR	667 570	96 000	666 470	123 000	666 000	148 000	666 700	175.000	667.000	200.000
GR	667 200	225 000	668 100	250 000	668 300	275 000	668.000	300.000	667.100	325.000
GR	666 300	350 000	664 400	375 000	656 500	400 000	657.000	425.000	654.300	450.000
GR	650 780	475 000	646 200	500 000	643 600	508 000	643 800	525.000	643.900	550.000
GR	644 000	561 000	643 200	563 000	642 300	565 000	640 800	570 000	640.500	575.000
GR	641 200	580 000	640 500	585 000	640 600	590 000	641 600	595.000	641.500	596 000
GR	642 300	597 000	643 580	600 000	643 300	625 000	643 600	650.000	643 600	675 000
GR	644 100	700 000	644 200	725 000	644 400	750 000	644 500	775.000	644.400	800 000
GR	643 530	815 000	644 600	850 000	645 030	900 000	645 000	950.000	645.100	1000.000
GR	645 900	1050 000	646 100	1100 000	646 000	1150 000	649.400	1175.000	0.000	0 000
ET	0 000	0 000	4 100	113 000	820 000	0 000	0.000	0.000	0.000	0 000
X1	15250 000	24 000	170 000	205 000	310 000	225.000	300 000	0 000	0.000	0.000
GR	665 200	20 000	659 500	70 000	655 300	80 000	648 000	105.000	644.800	115.000
GR	643 800	170 000	642 400	171 300	640 300	175 000	639.700	185.000	639.800	200 000
GR	642 300	202 000	644 000	205 000	644 400	260 000	644.600	390 000	644.400	510.000
GR	644 800	630 000	645 600	735 000	647 300	860 000	650 800	1025.000	652.200	1115 000
GR	666 700	1260 000	667 100	1300 000	666 000	1370 000	664.900	1400.000	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	17350 000	32 000	300 000	347 000	1760 000	1450 000	2100.000	0 000	0.000	0.000
GR	649 250	50 000	647 650	75 000	647 350	100.000	647 150	125 000	647.550	150.000
GR	647 950	175 000	648 650	200 000	649 150	225 000	649.350	250.000	649.700	275.000
GR	646 950	300 000	645 350	305 000	645 150	310 000	645 550	315.000	645.450	320.000
GR	645 350	325 000	645 250	330 000	645 750	335 000	646 150	340.000	645 950	344 000
GR	646 950	345 000	648 400	347 000	648 950	375 000	648 350	400.000	647.950	425 000
GR	648 150	450 000	647 950	475 000	647 950	500 000	648 150	525 000	647.850	550.000
GR	647 950	575 000	647 850	600 000	0 000	0 000	0.000	0 000	0.000	0.000

PEDESTRIAN BRIDGE AT PALMER PARK

X1	17360 000	37 000	200 000	347 000	10.000	10 000	10 000	0.000	0.000	0.000
BT	-4 000	300 000	650 900	650 900	300 000	651 850	650.650	347.000	651 850	650.650
BT	0 000	347 000	651 850	651 850	0 000	0 000	0 000	0.000	0.000	0.000
GR	649 250	50 000	647 650	75 000	647 350	100 000	647.150	125.000	647.550	150.000
GR	647 950	175 000	648 650	200 000	649.150	225 000	649 350	250 000	649.700	275 000
GR	650 900	300 000	645 250	300 000	645 350	305 000	645.150	310.000	645 550	315.000
GR	645 450	320 000	645 350	325 000	650 650	325 000	650.650	326.000	645.350	326 000
GR	645 350	330 000	645 750	335 000	646 150	340 000	645 950	344.000	646 950	345.000
GR	648 400	347 000	651 850	347 000	648 950	375 000	648 350	400.000	647.950	425.000

GR	647 950	575 000	647 350	600 000	0 000	0 000	0 000	0.000	0 000	0.000
X1	17370 000	0 000	0 000	0 000	10 000	10 000	10 000	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	17380 000	32 000	600 000	347 000	10 000	10 000	10 000	0 000	0.000	0.000
GR	649 250	50 000	647 650	75 000	647 350	100 000	647.150	125.000	647 550	150.000
GR	647 950	175 000	648 350	200 000	649 150	225 000	649 350	250.000	649.700	275.000
GR	646 950	200 000	645 150	305 000	645 150	310.000	645 550	315 000	645.450	320.000
GR	645 350	325 000	645 350	330 000	645 150	335 000	646.150	340 000	645 950	344.000
GR	646 950	345 000	648 400	347 000	648 950	275 000	648 350	400 000	647 950	425.000

1

5 JUL 89 10 35 56 PAGE 9

GR	648 150	450 000	647 950	475 000	647 950	500 000	648 150	525 000	647 850	550 000
GR	647 950	575 000	647 850	600 000	0 000	0 000	0 000	0 000	0.000	0.000
NC	0 120	0 050	0 040	0 000	0 000	0 000	0.000	0.000	0 000	0.000
X1	18725 000	21 000	570 000	622 000	1300 000	1345 000	1345.000	0 000	0 000	0.000
GR	675 500	10 000	672 400	30 000	660 500	85 000	659 600	140.000	652.400	250.000
GR	648 700	345 000	649 700	450 000	650 700	535 000	650 500	570.000	648.600	580.000
GR	647 000	582 000	645 600	593 000	645 600	600 000	646 000	607.000	647 000	618.000
GR	648 200	622 000	649 000	670 000	654 300	705 000	660 500	735.000	665 700	755.000
GR	670 000	795 000	0 000	0 000	0 000	0 000	0.000	0 000	0.000	0.000
NC	0 120	0 120	0 030	0 000	0 000	0 000	0 000	0.000	0.000	0.000
X1	20865 000	16 000	385 000	417.000	1935 000	2010.000	2140.000	0.000	0.000	0.000
GR	668 500	80 000	656 700	175 000	652 800	355 000	650 800	385.000	648.200	388.000
GR	646 800	391 000	647 300	400 000	647 500	408 000	648.300	412.000	650.400	417.000
GR	651 600	520 000	653 700	650 000	653 700	800 000	661.900	845.000	665.100	885.000
GR	665 500	925 000	0 000	0 000	0 000	0 000	0 000	0.000	0 000	0.000
ET	0 000	4 100	0 000	350 000	1065 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
	CLYDE PARK AVENNUE									
X1	23195 000	23 000	870 000	930 000	2510.000	2110 000	2330.000	0.000	0.000	0.000
GR	661 200	0 000	660 400	100 000	661 500	200.000	659.700	300.000	656 500	400.000
GR	658 800	550 000	657 800	600 000	655 200	700 000	655 500	800 000	653.000	850.000
GR	652 000	870 000	648 300	880.000	648 200	900 000	648.200	920 000	657.500	930.000
GR	657 700	950 000	657 300	1000 000	657 800	1100 000	657 800	1200.000	657.500	1300.000
GR	658 000	1400 000	659 300	1500 000	661 200	1600 000	0.000	0.000	0.000	0.000
SB	1 250	1 550	2 800	0 000	37 000	1 000	313 000	0.000	0.000	0.000
ET	0 000	4 100	6 100	500 000	1185 000	550 000	1100 000	0 000	0.000	0.000
X1	23255 000	23 000	870 000	930 000	60 000	60 000	60.000	0 000	0.000	0.000
X2	0 000	0 000	1 000	657 400	658 500	0.000	0 000	0.000	0 000	0.000
BT	-14 000	500 000	658 600	0 000	550 000	658 600	0 000	600.000	658.500	0.000
BT	0 000	700 000	658 600	0 000	775 000	658 700	0 000	775.000	658 700	0.000
BT	0 000	799 500	658 700	0 000	800.500	658 700	0 000	825.000	658 700	0.000
BT	0 000	825 000	658 700	0 000	900 000	658 700	0 000	1000 000	658.500	0.000
BT	0 000	1100 000	658 500	0 000	1185 000	658 500	0 000	0 000	0 000	0.000
GR	663 000	0 000	660 000	100 000	658 500	200 000	657 000	300.000	654.800	400.000
GR	654 700	500 000	653 800	600 000	654 700	700 000	655 300	800.000	656.800	850.000
GR	656 500	870 00	651 300	880 000	650 700	900 000	650 700	925.000	653.200	930.000
GR	656 800	950 000	658 700	1000 000	658 400	1100 000	658 500	1200.000	659.000	1300.000
GR	661 300	1400 000	661 600	1500 000	663 000	1600 000	0.000	0.000	0 000	0.000
ET	0 000	0 000	4 100	50 000	600 000	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
X1	23505 000	41 000	544 000	600 000	190 000	270 000	250 000	0.000	0.000	0.000
GR	655 850	50 000	655 400	100 000	655 000	150 000	653 900	200 000	654.100	250.000
GR	653 400	275 000	652 300	700 000	652 300	325 000	654 000	350.000	654.200	375 000
GR	655 400	400 000	656 000	425 000	657 100	450 000	658 300	475 000	656 900	500.000
GR	653 800	525 000	651 000	540 000	653 600	544 000	651 800	545 000	651 300	550.000

GR	650 500	598 500	[illegible]	[illegible]	655 170	603 000	656 600	606 000	659 100	614.000
GR	660 100	623 000	660 200	650 000	660 400	675.000	660.400	700 000	660.500	725.000
GR	660 700	750 000	660 400	775 000	660 300	800.000	660 300	825.000	660 300	850.000

1

5 JUN 89 10 55 56 PAGE 10

GR	660 400	900 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000
ET	0 000	4 100	1 400	300 000	460 000	0 000	0.000	0 000	0 000	0.000
X1	24685 000	35 000	378 000	445 000	1200 000	1100 000	1180 000	0.000	0.000	0.000
GR	667 200	50 000	667 100	75 000	666 800	100 000	666 500	125.000	666 300	150.000
GR	666 100	175 000	666 000	200 000	655 270	300 000	654 900	305 000	653 900	310.000
GR	653 700	320 000	654 500	330 000	654 200	340 000	653 800	349.000	655.000	353.000
GR	654 900	360 000	654 300	370 000	653 400	378 000	652 500	380.000	651 000	390.000
GR	651 100	400 000	651 000	410 000	650 800	420 000	650 400	430.000	652 200	440.000
GR	655 000	445 000	655 800	450 000	657 400	457 000	665 200	557 000	665 000	582 000
GR	664 800	607 000	664 600	632 000	664 500	657.000	664 400	682.000	664.200	707 000
NC	0 030	0 030	0 014	0 300	0 500	0 000	0 000	0.000	0 000	0.000
	U S 131 SOUTHBOUND EXIT RAMP									
X1	24695 000	45 000	300 000	457 000	10 000	10.000	10 000	0.000	0.000	0.000
BT	-6 000	300 000	665 770	665 770	300 000	665 770	660 820	349.000	665.600	660.420
BT	0 000	353 000	665 580	660 420	457 000	665 220	659 520	457.000	665.220	665.220
GR	667 200	50 000	667 100	75 000	666 800	100 000	666 500	125.000	666.300	150.000
GR	666 100	175 000	666 000	200 000	665 900	225 000	665 800	250.000	665.800	275.000
GR	665 770	300 000	655 270	300 000	654 900	305 000	653.900	310.000	653.700	320.000
GR	654 000	330 000	654 200	340 000	653 820	349.000	660 420	349.000	660 420	353.000
GR	654 970	353 000	654 900	360 000	654 300	370 000	653 400	378.000	652.500	380.000
GR	651 000	390 000	651 100	400 000	651 000	410 000	650 800	420.000	650.400	430.000
GR	652 200	440 000	655 000	445 000	655 800	450 000	657 420	457.000	665.220	457.000
GR	665 200	482 000	665 300	507.000	665 300	532 000	665.200	557.000	665.000	582.000
GR	664 800	607 000	664 600	632 000	664 500	657 000	664 400	682.000	664 200	707.000
X1	24735 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
NC	0 040	0 040	0 030	0 100	0 300	0 000	0 000	0.000	0.000	0.000
ET	0 000	4 100	4 100	315 000	465 000	0 000	0 000	0.000	0.000	0.000
X1	24745 000	35 000	378 000	445 000	10 000	10 000	10.000	0.000	0.000	0.000
GR	667 200	50 000	667 100	75 000	666 800	100.000	666.500	125 000	666.300	150.000
GR	666 100	175 000	666 000	200 000	655 270	300 000	654 900	305.000	653.900	310.000
GR	653 700	320 000	654 000	330 000	654 200	340 000	653 800	349.000	655.000	353.000
GR	654 900	360.000	654 300	370 000	653 400	378 000	652 500	380.000	651.000	390.000
GR	651 100	400 000	651 000	410 000	650 800	420 000	650 400	430.000	652.200	440.000
GR	655 000	445 000	655 300	450 000	657 400	457 000	665.200	557.000	665.000	582.000
GR	664 800	607 000	664 600	632 000	664 500	657 000	664.400	682.000	664 200	707.000
ET	0 000	4 100	4 100	345 000	455 000	0 000	0.000	0.000	0.000	0.000
X1	24855 000	0 000	0 000	0 000	120 000	65.000	110 000	0.000	0.000	0.000
ET	0 000	4 100	4 100	370 000	450 000	0 000	0 000	0 000	0.000	0.000
X1	24910 000	0 000	0 000	0 000	60 000	32 000	55 000	0.000	0 000	0.000
ET	0 000	4 100	4 100	375 000	445 000	0 000	0 000	0 000	0 000	0.000
X1	24935 000	0 000	0 000	0 000	30 000	17 000	25 000	0.000	0 000	0 000

1

5 JUN 89 10 55 56 PAGE 11

ET	0 000	4 100	4 100	570 000	625 000	0 000	0 000	0 000	0 000	0.000
X1	24965 000	24 000	567 000	637 000	30 000	16 000	30.000	0 000	0.000	0 000
GR	669 700	50 000	657 300	100 000	658 700	200.000	659.100	300 000	657 700	400.000
GR	659 300	500 000	650 500	543 000	653 400	563.000	650.500	600 000	653 500	637.000

GR	657 600	1200 000	658 800	1300 000	658 500	1400 000	659.600	1500 000	659 600	1600.000
GR	659 600	1700 000	661 400	1800 000	662 500	1900 000	664 800	2000 000	0.000	0.000
NC	0 030	0 030	0 014	0 200	0 500	0 000	0 000	0.000	0 000	0.000
		US HIGHWAY 101								
X1	24975 000	28 000	875 000	925 000	10 000	10 000	10 000	0 000	0.000	0.000
BT	26 000	0 000	667 100	667 100	100 000	666 700	666 700	200 000	666.600	666.600
BT	0 000	300 000	666 400	666 400	400 000	666 000	666 000	500 000	666 200	666 200
BT	0 000	600 000	665 700	665 900	700 000	665 800	665 800	800 000	665 700	665 700
BT	0 000	825 000	665 700	665 700	875 000	665 700	665 700	875.000	665 700	661.700
BT	0 000	900 000	665 700	661 700	925 000	665 200	661 700	925 000	665.200	665 200
BT	0 000	975 000	664 700	664 700	1000 000	664 500	664 500	1100 000	664.700	664.700
BT	0 000	1200 000	665 200	65 200	1300 000	666 000	666 000	1400 000	666 200	666.200
BT	0 000	1500.000	666.600	666 600	1600 000	666 600	666 600	1700 000	667.500	667.500
BT	0 000	1800 000	668 100	668 200	1900 000	668 700	668 700	0 000	0 000	0.000
GR	667 100	0 000	0.0 00	100 000	666 600	200 000	666 400	300.000	666.000	400.000
GR	666 200	500 000	665 900	600 000	665 800	700.000	665.700	800.000	665.700	825.000
GR	665 700	875 000	653 400	575 000	650 600	888 000	650 000	900.000	653.300	913.000
GR	653 600	925 000	665 200	725 000	664 700	975 000	664 500	1000.000	664.700	1100.000
GR	665 200	1200 000	666 000	1300 000	666 200	1400.000	666.600	1500.000	666.600	1600.000
GR	667 300	1700 000	668 200	1800 000	668 700	1900.000	0.000	0.000	0.000	0.000
X1	25115 000	0 000	0 000	0 000	140 000	140 000	140 000	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	0 070	0 070	0 030	0 100	0 300	0 000	0 000	0.000	0 000	0.000
ET	0 000	4 100	4 100	465 000	535 000	0 000	0 000	0 000	0.000	0.000
X1	25125 000	21 000	454 000	546 000	10 000	10 000	10.000	0 000	0 000	0.000
GR	661 600	0.000	656 800	100 000	656 200	200 000	655.000	300.000	657.600	400.000
GR	658 300	454 000	655 600	469 000	653 800	485 000	650 500	500 000	653.800	515.000
GR	657 500	546 000	657 500	600 000	657 600	700 000	658 200	800.000	658.700	700.000
GR	660 800	1000 000	660 600	1100 000	658 100	1200 000	657 700	1300.000	663.800	1400.000
GR	667 800	1550 000	0 000	0 000	0 000	0 000	0 000	0 000	0 000	0.000
ET	0 000	4 100	4 100	455 000	555 000	0 000	0 000	0 000	0 000	0 000
X1	25140 000	0 000	0 000	0 000	7 000	20 000	15 000	0 000	0.000	0.000
ET	0 000	4 100	4 100	445 000	575 000	0.000	0 000	0.000	0.000	0.000
X1	25155 000	0 000	0 000	0 000	8 000	20.000	15 000	0 000	0.000	0.000
ET	0 000	4 100	4 100	425 000	620 000	0 000	0 000	0.000	0.000	0.000
X1	25185 000	0 000	0 000	0 000	20 000	45 000	30.000	0 000	0.050	0.000

1

5 JUN 89 10 55 56

ET	0 000	4 100	4 100	380.000	700 000	0 000	0 000	0 000	0.000	0.000
X1	25250 000	0 000	0 000	0 000	40 000	90 000	65 000	0 000	0.050	0.000
ET	0 000	4 100	4 100	300 000	880 000	0 000	0 000	0 000	0 000	0.000
X1	25375 000	0 000	0 000	0 000	75 000	175 000	125 000	0.000	0 100	0.000
QT	4 000	2015 000	2800 000	3230 000	4305 000	0 000	0.000	0 000	0.000	0.000
ET	0 000	4 100	4 100	415 000	755 000	0 000	0.000	0 000	0 000	0.000
X1	25855 000	0 000	0 000	0 000	445 000	520 000	480 000	0.000	0.450	0.000
ET	0 000	4 100	4 100	435 000	655 000	0.000	0 000	0.000	0.000	0.000
X1	26100 000	0 000	0 000	0 000	225 000	260 000	240 000	0.000	0 200	0.000
NC	0 000	0 000	0 000	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
		54TH STREET								
X1	26340 000	39 000	335 000	400 000	225 000	260 000	245 000	0.000	0.000	0 000
GR	676 300	50 000	673 800	75 000	674 800	100 000	673 800	125 000	672.660	150 000

```
GR     655 600     795 000     654 900     800 000     655 200     806.000     656.400     810.000     658.200     811.000
GR     660 400     816 000     661 800     820 000     661.000     865 000     660 300     950.000     662.200     755.000
GR     662 300     965 000     662.300     980 000     659 300     990 000     659 600    1080.000     664.000    1130.000
GR     664 300    1200 000     662 300    1280 000     663 100    1380.000     667 100    1690.000     667.700    1785.000
EJ       0 000       0 000       0 000       0 000       0 000       0 000       0 000       0 000       0.000       0.000
1
  5 JUN 89     10 55 56                                                                                          PAGE    15

   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 15 860
             500 FEET DOWNSTREAM OF CORPORATE LIMIT
    15 86     10 51    632 91      0 00    633 20    633 24      0.33      0 00      0.00    625 10
    4125      1934      1951       240      1273       299       161         0         0.     626.40
     0.00      1 52      6 53      1 49     0 120     0 040     0 120     0 000    622.40     31 70
  0 001623       0         0         0         0         0         3      0 00    317 74    349.44
0
 *SECNO 15 870
 3280 CROSS SECTION      15 87 EXTENDED       1 51 FEET

    15 87     10 71    633 51      0 00      0 00    633 57      0 06      0 30      0 03    625 50
    4125      1087      1092      1946      1323       306      2131        23         4.     625.70
     0 07      0 82      3 57      0 91     0 120     0.040     0 120     0 000    622 80     30 12
  0 000454     350       450       350         2         0         0      0 00    621.88    652.00
0
 *SECNO 500 000
 3280 CROSS SECTION     500 00 EXTENDED       1 15 FEET

   500 00      9 75    633 [illegible]      0 00      0 00    633 82      0 12      0 23      0 02    626.65
    4125      1121      1285      1719      1085       276      1586        48         8.     627.35
     0 11      1 03      4 66      1 08     0 120     0 040     0 120     0.000    623 95     37.78
  0 000901     425       550       225         2         0         0      0.00    614 22    652.00
0
 *SECNO 1050 000

 3470 ENCROACHMENT STATIONS=      200 0      385 0  TYPE=      1  TARGET=      185.000
   1050 00     10 07    633 97      0 00      0 00    634 56      0 60      0 60      0.14    626 60
    4125       955      2210       860       479       285.       429        64        11     627.90
     0 14      1 99      8 10      2 01     0 120     0 040     0 120     0 000    623 90    200 00
  0 002657     425       550       225         0         0         0      0 00    185 00    385.00
0
 *SECNO 1225 000

 3470 ENCROACHMENT STATIONS=     1025 0     1125 0  TYPE=      1  TARGET=      100 000
   1225 00     10 29    634.25      0 00      0 00    635.15      0.86      0.51      0 08    628.00
    4125       605      3520         0       279       440         0        68       12.  100000 00
     0 14      2 17      7 90      0 00     0 120     0 040     0 000     0 000    624 00   1025.00
  0 003190     170       175       180         1         0         0      0 00    100 00   1125.00
0
1
  5 JUN 89     10 55 56                                                                                          PAGE    16

   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 1235 000

3265 DIVIDED FLOW


3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  637 70 MAX ELLC=  638 10


3470 ENCROACHMENT STATIONS=      35 0      155 0  TYPE=     1  TARGET=     120 000
            ABANDONED RAILROAD BRIDGE
  1235 00    11 16   637 71     0 00      0 00   635 33     0 37     0 03     0 15   637 70
    4125        0     4125        0         0      849        0       68      12.    638.00
     0 14     2 00     4 36     0 50     0 000    0 040    0 000    0 000   623 80    47 50
 0 002875      10       10       10         2        0        0     0 00    99 00   152 50
0
*SECNO 1245 000

3265 DIVIDED FLOW


3370 NORMAL BRIDGE,NRD=  6 MIN ELTRD=  637 70 MAX ELLC=  638 10


3470 ENCROACHMENT STATIONS=      30 0      155 0  TYPE=     1  TARGET=     125.000
  1245 00    11 19   634 99     0 00      0 00   635 36     0.36     0 03     0 00   637.70
    4125        0     4125        0         0      852        0       68       12    638.00
     0 14     0 00     4 84     0 00     0 000    0 040    0 000    0 000   623 80    47 50
 0 002853      10       10       10         0        0        0     0 00    99.00   152 50
0
CCHV=   0 100 CEHV=   0 300
*SECNO 1255 000

3470 ENCROACHMENT STATIONS=    1000 0     1120 0  TYPE=     1  TARGET=     120.000
  1255 00    10 88   634 88     0 00      0 00   635 44     0.56     0 02     0 06   628.50
    4125       598     3524        3       333      544        6       69      12.    629 20
     0 14     1 80     6 48     0 50     0 120    0 040    0 120    0 000   624 00  1000 00
 0 001999      10       10       10         2        0        0     0 00   120 00  1120.00
0
1
  5 JUN 89    10 55 56                                                                PAGE   17


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


*SECNO 1850 000

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     100 0      900 0  TYPE=     1  TARGET=     800.000
  1850 00    12 42   635 02     0 00      0 00   635 87     0 05     0 38     0.05   630.60
    4125      2036     2031       59      3039      820      145       97      17.    633 30
     0 24     0 67     2 43     0.40     0 120    0 040    0.120    0 000   623 40   100 00
 0 000341      480      595      590         2        0        0     0 00   800 00   900 00
0
*SECNO 2275 000
3280 CROSS SECTION   2275 00 EXTENDED      5 96 FEET

  2275 00    10 28   635 98     0 00      0 00   636 07     0 08     0 18     0 01   630 70
```

GR	658 200	50 000	658 200	75 000	658 300	100 000	658.800	125.000	659.500	150 000
GR	660 500	175 000	659 600	200 000	660 200	225.000	660 800	250.000	661.500	260.000
GR	661 100	265 000	657 400	270 000	656 100	275 000	655.700	280.000	653.100	284.000
GR	652 500	285 000	651 610	290 000	650 760	292 000	652 800	295.000	652.200	299.000
GR	652 100	300 000	652 000	301 000	651 400	305 000	651 210	308.000	651.800	310.000
GR	653 300	315 000	653 900	315 500	655 600	316 000	657 800	320.000	661.100	325.000
GR	660 500	330 000	661 500	340 000	661 300	350.000	659 500	375.000	659.100	400.000
GR	660 300	425 000	659 700	450 000	658 100	475 000	658 800	500 000	658.490	525.000
GR	658 240	550 000	0 700	0 000	0 200	0 000	0 000	0 000	0 000	0 000
ET	0 000	4 100	4 100	130 000	470 000	0 000	0.000	0 000	0 000	0.000
X1	27370 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
NC	0 000	0 000	0 130	0 100	0 300	0 000	0 000	0 000	0.000	0.000
ET	0 000	4 100	1 400	130 000	470 000	0 000	0.000	0.000	0.000	0.000
X1	27380 000	0 000	0 000	0 000	10 000	10 000	10.000	0.000	0.000	0.000
ET	0 000	4 100	0 000	925 000	1825 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

PENN CENTRAL RAILROAD

X1	27990 000	34 000	1175 000	1230 000	620 000	600.000	610.000	0.000	0.000	0.000
GR	662 400	0 000	661 900	100 000	658.700	200.000	658 600	300.000	657.900	400.000
GR	657 800	500 000	658.300	600 000	658 800	700 000	656 300	800.000	656.100	870.000
GR	662 500	890 000	662 600	900 000	662 300	920.000	656.100	930.000	655 900	1000.000
GR	658 200	1100 000	660 400	1150 000	663 500	1175 000	655.500	1190.000	652.000	1200.000

1

GR	655 400	1210 000	657 600	1220 000	662 800	1230.000	659 500	1250.000	659 100	1300 000
GR	659 100	1400 000	660 600	1500 000	660 500	1600 000	660 500	1700 000	660.600	1800.000
GR	662 000	1900 000	663 200	2000 000	663 500	2100.000	665 200	2200.000	0 000	0.000
SB	1 050	1 560	2 800	900 000	36 000	2 000	280.000	0.000	0.000	0.000
ET	0 000	4 100	0 000	200 000	1100 000	0 000	0 000	0 000	0.000	0.000
X1	28040 000	22.000	870 000	925 000	50 000	50 000	50 000	0.000	0 000	0.000
X2	0 000	0 000	1 000	663 500	665 800	0.000	0 000	0.000	0.000	0.000
GR	658 800	0 000	658 600	100 000	659 400	200 000	658.600	300.000	658.600	420.000
GR	658 800	500.000	657 700	580 000	663 500	600 000	661 700	620 000	661.400	700 000
GR	660 400	800 000	659 800	850 000	659 100	870 000	652 500	900 000	659.300	925.000
GR	659 500	950 000	658 300	1000 000	660 300	1100.000	660.900	1200.000	661.600	1300.000
GR	661 700	1400 000	661 600	1500 000	0.000	0 000	0 000	0.000	0.000	0.000
ET	0 000	0 000	4 100	650 000	1150 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
X1	28350 000	24 000	777 000	823 000	260 000	360.000	310 000	0.000	0.000	0 000
GR	664 700	0 000	661 800	100 000	657 900	200 000	659 200	300.000	659.200	400.000
GR	659 500	500 000	657 700	600 000	657 300	700 000	656 400	732.000	662.600	747.000
GR	663 300	757 000	661 600	777 000	656 200	787 000	652 700	800 000	656.100	813.000
GR	663 000	823 000	662 700	900 000	662.500	1000 000	662 100	1100.000	662.600	1200.000
GR	663 300	1300 000	663 600	1400 000	663 900	1500 000	665 300	1600 000	0.000	0.000
ET	0 000	4 100	6 100	0 000	1720 000	650.000	1150.000	0.000	0.000	0 000
X1	28410 000	27 000	973 000	1030 000	60 000	60 000	60.000	0.000	0.000	0 000
GR	666 500	0 000	665 700	100.000	662 800	200.000	661.100	300.000	660.200	400.000
GR	659 600	500 000	659 300	600 000	658 500	700 000	657.100	800.000	656.200	900.000
GR	656 200	935 000	662 300	943 000	663 200	958.000	663 200	973 000	656.200	985.000
GR	652 600	1000 000	656 000	1015 000	662 400	1030 000	659.900	1050.000	660.500	1100.000
GR	661 200	1200 000	662 300	1300 000	663 400	1400.000	663 500	1500.000	663.900	1600.000
GR	664 200	1700 000	667 500	1800 000	0 000	0.000	0 000	0.000	0.000	0.000
ET	0 000	0 000	4 100	545 000	1300 000	0 000	0 000	0 000	0.000	0.000
X1	30015 000	30 000	780 000	820 000	1615 000	1595 000	1605 000	0 000	0.000	0.000
GR	666 700	500 000	668 600	510 000	668 500	520 000	667.600	530.000	659 500	540.000

```
GR     655 600     795 000     654 900     800 000     655.200     806 000     656 400     810.000     658.200     811.000
GR     660 400     816 000     661 800     820 000     661 000     865 000     660.300     950.000     662 200     955.000
GR     662 300     965 000     662 300     980 000     659 300     990 000     659.600    1080.000     664.000    1130.000
GR     664 300    1200 000     662 300    1280 000     663 100    1380.000     667.100    1690.000     667.700    1785.000
EJ       0 000       0 000       0 000       0 000       0 000       0 000       0 000       0 000       0.000       0.000
1
  5 JUN 89     10 55 56                                                                                          PAGE    15

   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 15 860
            500 FEET DOWNSTREAM OF CORPORATE LIMIT
    15 86     10 51    632 91      0 00    633 20    633 24      0 33      0 00      0 00    625.10
    4125      1934      1951       240      1273       299      161.         0         0.    626.40
     0 00      1 52      6 50      1 49     0 120     0 040     0.120     0 000    622.40     31.70
  0 001623        0         0         0         0         0         3      0 00    317 74    349 44
0
 *SECNO 15 870
 3280 CROSS SECTION      15 87 EXTENDED       1 51 FEET

    15.87     10 71    633 51      0 00      0 00    633 57      0 06      0 30      0 03    625.50
    4125      1087      1092      1946      1323       306      2131        23         4    625 70
     0 07      0 82      3 57      0 91     0 120     0 040     0.120     0 000    622 80     30 12
  0 000454      350       450       350         2         0         0      0 00    621.88    652 00
0
 *SECNO 500 000
 3280 CROSS SECTION     500 00 EXTENDED       1 15 FEET

    500 00      9 75    633 70      0 00      0 00    633 82      0 12      0 23      0 02    626 65
     4125      1121      1289      1719     1085.       276     1586.        48         8     627.35
     0 11      1 03      4 66      1 08     0 120     0 040     0 120     0 000    623.95     37.78
  0.000901      425       550       925         2         0         0      0.00    614.22    652.00
0
 *SECNO 1050 000

 3470 ENCROACHMENT STATIONS=      300 0      385 0  TYPE=      1  TARGET=      185 000
   1050 00     10 07    633 97      0 00      0 00    634 56      0 60      0.60      0.14    626 60
     4125       955      2310       860       479       285       429        64        11     627.90
     0 14      1 99      8 10      2 01     0 120     0 040     0 120     0 000    623 90    200.00
  0 002657      425       550       225         0         0         0      0 00    185 00    385.00
0
 *SECNO 1225 000

 3470 ENCROACHMENT STATIONS=     1025 0     1125 0  TYPE=      1  TARGET=      100 000
   1225 00     10.29    634 20      0 00      0 00    635 15      0 86      0 51      0 08    628.00
     4125       605      3520         0       279       440         0        68       12.  100000.00
     0 14      2 17      7 99      0 00     0 120     0 040     0 000     0 000    624 00   1025.00
  0 003190      170       175       180         1         0         0      0 00    100 00   1125.00
0
1
  5 JUN 89     10 55 56                                                                                          PAGE    16

   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
```

```
      0 31      0 72      0 73      0 87      0 120     0.040     0 120     0 000     625 70     50.00
  0 000562     425       425       425          2         0         0      0 00     581 32    631 32
0
 *SECNO 2680 000

 3265 DIVIDED FLOW

   2680 00    10 33    636 13     0 00      0 00    636 52     0 40      0 37      0 09    629 60
     4125      850      2374      902       612      362       663       156        29     629 40
      0 33    1 39      6 56     1 36     0 120    0 040     0 120     0 000    625 80    321 85
  0 001694     400       400      410         2         0         0      0 00    406 65    736.38
0
 *SECNO 2735 000

 3265 DIVIDED FLOW

   2735 00    10 44    636 24     0 00      0 00    636.62     0 38      0 09      0 00    629.60
     4125      860      2351      914       631      366.       686       158        29     629 40
      0 34    1 36      6 42     1 33     0 120    0 040     0 120     0 000    625 80    321 36
  0 001595      55        55       55         2         0         0      0 00    414 34    742.03
0
 *SECNO 2736 000
1
   5 JUN 89    10 55 56                                                                          PAGE    18

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EQ        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

   2736 00    10 51    636 31     0 00      0 00    636 63     0 31      0 00      0 01    629.60
     4125     1127      1798     1200       644      277       701.      158.       29.     629.40
      0.34    1 75      6 48     1 71     0 120    0 040     0 120     0 000    625 80    321.04
  0 002591      1         1        1         2         0         0      0 00    419 41    745.74
0
 *SECNO 2739 000

 3265 DIVIDED FLOW

   2739 00    10 52    636 32     0 00      0 00    636 63     0 31      0.01      0 00    629 60
     4125     1127      1798     1200       645      278       702       158.       29     629 40
      0.34    1 75      6 48     1 71     0 120    0 040     0 120     0 000    625 80    321 01
  0 002582      3         3        3         0         0         0      0 00    419 82    746 05
0
 *SECNO 2740 000

 3265 DIVIDED FLOW

   2740.00    10 48    636 28     0 00      0.00    636.65     0 37      0.00      0 02    629.60
     4125      864      2342      919       639      368       694       158.       29     629 40
      0 34    1 35      6 36     1 32     0 120    0 040     0 120     0 000    625.80    321.17
  0 001558      1         1        1         2         0         0      0 00    417 32    744 21
0
 *SECNO 3455 000

 3470 ENCROACHMENT STATIONS=     350 0     1100 0  TYPE=     1  TARGET=     750 000
   3455 00    10 67    637 42     0 00      0 00    637 59     0 16      0 91      0 02    630 66
     4125      529      1799     1801       404      382      1592       191        37.     633 69
      0 41    1 31      4 70     1 13     0 120    0 040     0 120     0 000    626.76    478 50
  0 001073     725       715      705         2         0         0      0.00    528 55   1007 05
```

```
*SECNO 5070 000
3280 CROSS SECTION   5070 00 EXTENDED      6 89 FEET

3470 ENCROACHMENT STATIONS=     200 0     575 0  TYPE=     1  TARGET=     375 000
1
  5 JUN 89    10 55 56                                                                                    PAGE   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

  5070 00     7 80    630 84     0 00      0 00    639 06     0 20      1 47      0 01    632 97
    4125     1072      1795      1259       839      343       954       249        48     634 77
     0 53     1 28     5 23      1 32     0 120    0 040     0.120     0 000    629 07    200 00
 0.001228    1550      1615       740         2        0         0      0 00    375.00    575.00
0
CCHV=   0.300 CEHV=   0 500
*SECNO 5580 000
            BYRON CENTER ROAD
  5580 00    10 30    639 44     0 00      0 00    640 10     0 66      0 80      0 23    633.99
    4125      294.     3765       66       266      554       75       266        51     635.59
     0 55     1 11     6 79     0 88     0 120    0 040    0 120     0 000    629 14    235 59
 0 002094     500       510       520         1        0         0      0 00    203 56    439 15
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
5227 DOWNSTREAM ELEV IS    637 11 ,NOT    639 44 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1 25      1 56      3 00      0 00      6 00      5 00    296.00      3 00    629.14    629.14

*SECNO 5630.000
PRESSURE AND WEIR FLOW

 EGPRS      EGLWC      H3        QWEIR     QPR       BAREA   TRAPEZOID     ELLC      ELTRD
                                                              AREA
    644 15    641 89     3 00       792      3326       296      339      639 60    640 34

3470 ENCROACHMENT STATIONS=     100 0     400 0  TYPE=     1  TARGET=     300 000
  5630 00    13 15    642 29     0 00      0 00    642 50     0 21      2 40      0.00    630.74
    4125      880      3245        0       976      787        0       268.       51   100000.00
     0 55     0 90     4 12     0 00     0 120    0 040    0 000     0 000    629 14    100.00
 0 000570      50        50       50         2        0         3      0.00    300 00    400 00
0
CCHV=   0 100 CEHV=   0 300
*SECNO 6720 000

3470 ENCROACHMENT STATIONS=     250 0     620 0  TYPE=     1  TARGET=     370 000
1
  5 JUN 89    10 55 56                                                                                    PAGE   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
```

Due to silt, area reduced

```
  6720 00     12 12    642 95      0 00      0 00    643 19      0 24      0 68      0 01    634.72
    4125       785      2666       674       876       552       523       312        59     633 73
     0 64      0 90      4 83      1 29     0 120     0 040     0 120     0 000    630 83    250.00
  0 000727     1020      1070       995         2         0         0      0 00    370.00    620 00
0
 *SECNO 7120 000

 3470 ENCROACHMENT STATIONS=      550 0     1155 0   TYPE=      1   TARGET=      505 000
  7120 00     12 27    643 27      0 00      0 00    643 47      0.21      0 28      0.00    635 70
    4125       667      2526       932       543       552       867       330        63     636 20
     0 67      1 23      4 58      1 06     0 120     0 040     0 120     0 000    631 00    732 99
  0 000679     360       400       410         2         0         0      0 00    344 29   1077 28
0
 *SECNO 7325 000
 3280 CROSS SECTION    7325 00 EXTENDED       6 73 FEET

  7325 00     12 82    643 50      0 00      0 00    643 60      0 10      0 12      0 01    635.88
    4125       536      1663      1926       742       433      1890       342       65.     635 77
     0 70      0 72      3 84      1 02     0.120     0 040     0 120     0 000    630 68     52 00
  0.000466     190       205       220         2         0         0      0 00    498 00    550 00
0
 *SECNO 7335 000
 3280 CROSS SECTION    7335 00 EXTENDED       6 80 FEET


 3370 NORMAL BRIDGE,NRD=  7 MIN ELTRD=  635 77 MAX ELLC=  636 53

            PEDESTRIAN BRIDGE AT LEMRY PARK
  7335 00     12 89    643.57      0 00      0 00    643 61      0 04      0.01      0 01    635 88
    4125       678      1040      2407       757       425      1908       343        65     635 77
     0.70      0 90      2 45      1 26     0 120     0 040     0 120     0 000    630 68     50 18
  0 000705      10        10        10         2         0         0    -10 21    499 82    550 00
0
 *SECNO 7345 000
 3280 CROSS SECTION    7345 00 EXTENDED       6 81 FEET


 3370 NORMAL BRIDGE,NRD=  7 MIN ELTRD=  635 77 MAX ELLC=  636.53

1
   5 JUN 89     10 55 56                                                                          PAGE    21


     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       VRUB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


  7345 00     12 90    643 58      0 00      0 00    643 62      0 04      0 01      0 00    635 88
    4125       679      1040      2406       758       425.      1910       343        65     635 77
     0 70      0 90      2 44      1 26     0 120     0 040     0 120     0 000    630 68     50 03
  0 000703      10        10        10         0         0         0    -10.21    499 97    550 00
0
 *SECNO 7355 000
 3280 CROSS SECTION    7355 00 EXTENDED       6 77 FEET

  7355 00     12 86    643 54      0 00      0 00    643 64      0 10      0 01      0 02    635.88
    4125       540      1658      1926       751       434      1901       344       65.     635 77
     0 70      0 72      3 82      1 01     0 120     0 040     0 120     0 000    630 68     50 90
  0 000458      10        10        10         2         0         0      0.00    499.10    550 00
0
 *SECNO 8280 000
  8280 00     12 53    643 93      0 00      0 00    644 01      0 09      0.37      0 00    637.40
```

```
     0 82      0 71      3 47      0 91      0 120     0 040     0 120     0.000    631 40     61 45
  0 000423     880       925       750         2         0         0      0 00    551.50    612 95
0
 *SECNO 11650 000

 3470 ENCROACHMENT STATIONS=      50 0      770 0  TYPE=      1  TARGET=      720 000
  11650 00     10 76    645 86     0 00      0 00    646 15     0 29      2 07      0 06    641 50
     4125      1581      2109      435      1358      353      391       557       106      641 00
     1 04      1 16      7 [illegible]     1 11     0 120     0 040     0 120     0 000    635 10     68 70
  0 001616     2200      3370     2400         2         0         0      0 00    584 17    652.88
0
 *SECNO 12620 000

 3265 DIVIDED FLOW


 3470 ENCROACHMENT STATIONS=     400 0      940 0  TYPE=      1  TARGET=      540 000
  12620 00     11 37    647 32     0 00      0 00    647 84     0 52      1 62      0 07    642 35
     4125       566      2668      872       367      378      743       590       115      641 85
     1 09      1 54      7 12      1 17     0 120     0.040    0.120     0.000    635.95    400 00
  0 002102      725       970      825         2         0         0      0 00    423.04    940.00
0
1
   5 JUN 89     10 55 56                                                                          PAGE    22

     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 13590 000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     355 0      430 0  TYPE=      1  TARGET=       75 000
  13590 00     12 24    649 04     0 00      0 00    650 07     1 02      2 08      0 15    641.10
     4125.       64      3833      229        43      456      117       611       119      641 50
     1 12      1 49      8 41      1 96     0 120     0 040     0 120     0 000    636 80    358.67
  0 002374      720       970      820         2         0         0      0 00     71.32    430.00
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 13600 000

 3370 NORMAL BRIDGE, NRD= 28 MIN ELTRD=  653 90 MAX ELLC=  654 60


 3470 ENCROACHMENT STATIONS=     370 0      430 0  TYPE=      1  TARGET=       60 000
            44TH STREET
  13600 00     12 04    648 84     0 00      0 00    650 31     1 47      0 02      0 22    641 10
     4125.        0      4125        0         0       424        0       611       119  100000.00
     1 12      0 00      9 74      0 00     0 000     0 014    0.000     0 000    636.80    370.00
  0 001504       10        10        10         2         0         0   -126 26     60 00    430 00
0
 *SECNO 13700 000

 3370 NORMAL BRIDGE, NRD= 28 MIN ELTRD=  653 90 MAX ELLC=  654.60


 3470 ENCROACHMENT STATIONS=     370 0      430 0  TYPE=      1  TARGET=       60 000
  13700 00     12 22    649 03     0 00      0 00    650 47     1 45      0 15      0 01    641.10
     4125        0      4125        0         0       427        0       612       120.  100000.00
     1 12      0 00      9 [illegible]     0 00     0 000     0 014    0 000     0 000    636 80    370 00
```

```
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 13710 000

 3301 HV CHANGED MORE THAN HVTNS

1
  5 JUN 89    10 55 56                                                                                    PAGE   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=     360 0     440 0  TYPE=     1  TARGET=     80 000
  13710 00     13 11    649 91     0 00     0 00    650 56     0 65     0 02     0 08    641 10
     4125       110      3449      566       51       494      189      612.      120     641 50
      1 12      2 16      6 98     3 00    0 070    0 040    0.070    0 000   636.80    360 00
  0 001470      10.        10       10        3        0        0     0 00    80 00    440 00
0
 *SECNO 13990 000
 3280 CROSS SECTION  13990 00 EXTENDED      0 15 FEET

 3470 ENCROACHMENT STATIONS=     280 0     395.0  TYPE=     1  TARGET=    115 000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      651 00 ELREA=      651 00
  13990 00     11 50    650 30     0 00     0 00    651 02     0 72     0 44     0 02    641 90
     4125        0      4125        0        0       606       0.       616      120.     644.40
      1 13     0 00      6 80     0 00    0 000    0 040    0 000    0 000   638 80    302 00
  0 001742      340       280      200        1        0        0     0 00    64 00    366.00
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 14000 000

 3370 NORMAL BRIDGE, NRD=  2 MIN ELTRD=  654 00 MAX ELLC=  654 96

            BURLINGAME AVENNE
  14000 00     11 39    650 19     0 00     0 00    651 16     0 97     0 01     0 13    654 91
     4125        0      4125        0        0       522        0       617      120.     654 01
     -1 13     0 00      7 90     0 00    0 000    0 014    0 000    0 000   638 80    302 00
  0 000984      10        10       10        2        0        0   -76.25    64 00    366.00
0
 *SECNO 14080 000

 3370 NORMAL BRIDGE, NRD=  8 MIN ELTRD=  654 00 MAX ELLC=  654 96

  14080 00     11 47    650 27     0 00     0 00    651 24     0 97     0 08     0 00    654 91
     4125        0      4125        0        0       522        0       618      120      654.01
      1 14     0 00      7 90     0 00    0 000    0 014    0 000    0 000   638.80    302 00
  0 000984      80        80       80        2        0        0   -81 29    64.00    366.00
0
1
  5 JUN 89    10 55 56                                                                                    PAGE   24

    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=   0 100 CEHV=   0 300
*SECNO 14090 000
3280 CROSS SECTION  14090 00 EXTENDED      0 45 FEET


3470 ENCROACHMENT STATIONS=     260 0     415 0  TYPE=     1  TARGET=     155.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=      652 00 ELREA=      652 00

 14090 00    11 80   650 60     0 00     0 00   651 28     0 68     0 01     0 03   641 90
    4125        0     4125        0        0      625        0      618      120    644 40
     1 14     0 00     6 60     0 00    0 000    0.040    0 000    0 000   638 80   302 00
 0 001374       10       10       10        2        0        0     0 00    64 00   366 00
0
*SECNO 14320 000
3280 CROSS SECTION  14520 00 EXTENDED      3 00 FEET


3470 ENCROACHMENT STATIONS=     530 0     730 0  TYPE=     1  TARGET=     200 000
 14520 00    11 90   651 55     0 00     0 00   651 77     0 22     0 45     0 05   643.15
    4125      329     2168     1628      264     430.     1129      629      121    642.73
     1 17     1 25     5 04     1 44    0 120    0 040    0 120    0 000   639 65   530.00
 0 000785      355      430     365.        2        0        0     0 00   200 00   730.00
0
*SECNO 14950 000
3280 CROSS SECTION  14950 00 EXTENDED      2 51 FEET


3470 ENCROACHMENT STATIONS=     500 0    1100 0  TYPE=     1  TARGET=     600 000
 14950 00    11 41   651 91     0 00     0 00   651 95     0 04     0.16     0 02   644.00
    4125      361     1119     2645      485      411     3642      656      125    643.58
     1 26     0 74     2 72     0 73    0 120    0.040    0 120    0 000   640 50   500 00
 0 000243      355      430      365        2        0        0     0 00   600.00  1100.00
0
*SECNO 15250 000
 15250 00    12 28   651 98     0 00     0 00   652 00     0 02     0 05     0.00   643 80
    4125      299      941     2885      505      403     5112      685      129    644.00
     1 33     0 59     2 34     0 56    0 120    0.040    0 120    0 000   639 70    91.38
 0 000169      310      300      225        2        0        0     0 00  1009 26  1100.64
0
1
  5 JUN 89    10 55:56                                                                    PAGE   25


    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 17350 000
3280 CROSS SECTION  17350 00 EXTENDED      4 67 FEET

 17350 00     7 37   652 52     0 00     0 00   652 66     0.15     0 63     0 04   646.95
    4125     1274     1529     1323     1064      320     1107      837      157    648 40
     1 52     1 20     4 78     1 20    0 120    0 040    0.120    0 000   645 15    50 00
 0 001327     1760     2100     1450        2        0        0     0 00   550 00   600 00
0
*SECNO 17360 000
3280 CROSS SECTION  17360 00 EXTENDED      4 79 FEET


3370 NORMAL BRIDGE,NRD=  4 MIN ELTRD=  650 90 MAX ELLC=  651 85

            PEDESTRIAN BRIDGE AT PALMER PARK
```

```
   4125      1675      700      1749      1045      270      1089.      838.      157.      651.85
    1 52     1 60     2.59      1 61     0 120    0 040     0 120     0 000    645 15     50.00
 0.002379     10        10       10         2        0         0     --54.02   550 00    600 00
0
 *SECNO 17370 000
 3280 CROSS SECTION  17370 00 EXTENDED      4 81 FEET


 3370 NORMAL BRIDGE NRD=  - MIN ELTRD=  650 90 MAX ELLC=  651 85

 17370 00     7 51    652 66     0 00      0 00    652 71     0 05      0.02      0 00    650 90
   4125      1676      6[illegible]      1[illegible]50      1050      271      1094      839      157      651 85
    1 52     1 60     [illegible] 55      1 60     0 120    0 040     0 120     0 000    645 15     50 00
 0 002348     10        10       10         0        0         0     -54 02    550 00    600 00
0
 *SECNO 17380 000
 3280 CROSS SECTION  17380 00 EXTENDED      4 77 FEET

 17380 00     7 47    652 62     0 00      0.00    652 76     0 14      0 02      0 03    646 95
   4125      1280      1516      1329      1090      325      1132      839      157      648.40
    1 52     1 18      4 67      1 17     0 120    0 040     0 120     0 000    645 15     50 00
 0 001243     10        10       10         2        0         0      0 00    550 00    600.00
0
1
  5 JUN 89    10 55 56                                                                          PAGE   26

   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 18725 000
 18725 00     8 56    654 16     0 00      0 00    654 33     0 17      1 56      0 01    650.50
   4125      1432      1702      991.      1348      374      355      909      173      648.20
    1 65     1 06      4 55      2 79     0 120    0 040     0 050     0 000    645 60    223.14
 0 001109    1300      1345      1345        3        0         0      0.00    480.92    704.06
0
 *SECNO 20865 000
 20865 00     9 67    656 47     0 00      0 00    656 89     0 42      2 49      0 07    650 80
   4125      388       2013      1724      452      275      1498      1008      198      650.40
    1 79     0 86      7 32      1 15     0.120    0 030     0 120     0 000    646 80    185 46
 0 001332    1935      2140      2010        2        0         0      0 00    629.76    815 22
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 23195 000

 3265 DIVIDED FLOW

NATURAL
 3470 ENCROACHMENT STATIONS=     350 0    1065 0  TYPE=     1  TARGET=     715 000
 [redacted]

 23195 00    10 53    658 73     0 00      0 00    659 13     0 40      2 24      0 00    652.00
   4125      824       3237       64      1165      565      167      1117      234      657 50
    1 92     0 71      5 73      0 39     0 120    0.030     0 120     0 000    648.20    350.00
 0 000739    2510      2330      2110        2        0         0      0 00    706 97   1065.00
0

 SPECIAL BRIDGE

 5070.VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1 25     1 56      2 80      0 00      37 00     1 00     313 00     0 00     648 20    648.20
```

PRESSURE AND WEIR FLOW

EGPRS	EGLWC	HW	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD
662 94	659 16	0.03	2177	1951	313	331	657 40	658 50

1

5 JUN 89 10 55 56 PAGE 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

3470 ENCROACHMENT STATIONS= 500 0 1185 0 TYPE= 1 TARGET= 685.000

23255 00	8 74	659 44	0 00	0 00	659 67	0 24	0.54	0 00	656 50
4125.	1532	2425	168	1706	480	346	1120	235	653.20
1 93	0 90	5.05	0 49	0 120	0 030	0 120	0.000	650 70	500 00
0 000678	60	60	60	2	0	4	0 00	685 00	1185.00

0

CCHV= 0 100 CEHV= 0 300

*SECNO 23505 000

3280 CROSS SECTION 23505 00 EXTENDED 3 79 FEET

23505 00	9 34	659 64	0 00	0 00	659 81	0 17	0.13	0 01	653 60
4125	1971	2129	25	2373	472	42.	1133	238.	654.23
1 95	0 83	4 51	0 59	0 120	0 030	0 120	0 000	650 30	50.00
0.000510	190	250	270.	2	0	0	0 00	568 89	618.89

0

*SECNO 24685 000

3470 ENCROACHMENT STATIONS= 300 0 460 0 TYPE= 1 TARGET= 160.000

24685 00	9 78	660 18	0 00	0 00	660 66	0 48	0 76	0 09	653.40
4125	531	3546	48	464	592.	57	1188	248	655 00
2 01	1 14	5 99	0 84	0 120	0 030	0 120	0 000	650.40	300.00
0 000821	1200	1180	1100	2	0	0	0 00	160 00	460.00

0

CCHV= 0 300 CEHV= 0 500

*SECNO 24695 000

3370 NORMAL BRIDGE, NRD= 6 MIN ELTRD= 665 22 MAX ELLC= 665 77

U S 131 SOUTHBOUND EXIT RAMP

24695 00	10 11	660 51	0 00	0 00	660 74	0 23	0 00	0.08	665 77
4125	0	4125	0	0	1076	0	1188	248.	665 22
2 01	0 00	6 84	0 00	0 000	0.014	0 000	0 000	650.40	300.00
0 000227	10	10	10	2	0	0	-57 74	157 00	457 00

0

*SECNO 24735 000

3370 NORMAL BRIDGE, NRD= 4 MIN ELTRD= 665 22 MAX ELLC= 665 77

1

5 JUN 89 10 55 56 PAGE 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

```
 24735 00     10 12    660 52      0 00      0 00    660 75      0 23      0 01      0.00    665.77
    4125         0      4125         0         0      1076         0      1189       248     665 22
     2 02      0 00      9 93      0 00     0 000     0 014     0 000     0 000    650 40    300 00
 0 000229       40        40        40         1         0         0    -59 34    157 00    457.00
0
 CCHV=   0 100 CEHV=   0 500
 *SECNO 24745 000

 3470 ENCROACHMENT STATIONS=      315 0      465 0  TYPE=      1  TARGET=      150 000
  24745 00     10 09    660 49      0 00      0 00    660 77      0 28      0 00      0.01    653 40
     4125       1075      2904       146       398       613        75      1189       248     655.00
     2 02      2 70      4 70      1 56     0 040     0 030     0 040     0 000    650 40    315 00
 0 000491        10        10        10         2         0         0      0 00    150 00    465 00
0
 *SECNO 24855 000

 3470 ENCROACHMENT STATIONS=      345 0      455 0  TYPE=      1  TARGET=      110.000
  24855 00     10 05    660 45      0 00      0 00    660 88      0 43      0.06      0 04    653 40
     4125       605      3412       107       200       610        46      1192       248.    655 00
     2 02      3 02      5 59      2 35     0.040     0 030     0 040     0 000    650 40    345 00
 0 000687       120       110        65         2         0         0      0.00    110.00    455.00
0
 *SECNO 24910 000

 3470 ENCROACHMENT STATIONS=      370 0      450 0  TYPE=      1  TARGET=       80 000
  24910 00      9 95    660 35      0 00      0 00    660 98      0 63      0 04      0 06    653 40
     4125       142      3930        53        52       603        25      1193.      249     655 00
     2 03      2 73      6 52      2 15     0 040     0.030     0.040     0 000    650 40    370.00

 0 000946        60        55        32         2         0         0      0.00     80.00    450.00
0
 *SECNO 24935 000

 3470 ENCROACHMENT STATIONS=      375 0      445 0  TYPE=      1  TARGET=       70.000
  24935 00      9 92    660 32      0 00      0 00    661 03      0 71      0.03      0 02    653.40
     4125        42      4083         0        20       601         0      1193       249. 100000.00
     2 03      2 06      6 79      0 00     0 040     0 030     0 000     0 000    650 40    375.00
 0 001141        30        25        17         2         0         0      0 00     70 00    445 00
0
1
   5 JUN 89    10 55 56                                                                          PAGE    29

    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 24965 000

 3301 HV CHANGED MORE THAN HVINS

 3470 ENCROACHMENT STATIONS=      570 0      625 0  TYPE=      1  TARGET=       55 000
  24965 00      9 50    660 00      0 00      0 00    661 24      1 24      0 05      0 16100000.00
     4125         0      4125         0         0.      462         0      1193.      249  100000 00
     2 03      0 00      8 92      0 00     0 000     0 030     0 000     0 000    650.50    570.00
 0 002610        30        30        16         2         0         0      0 00     55 00    625 00
0
 CCHV=   0 300 CEHV=   0.500
 *SECNO 24975 000

 3370 NORMAL BRIDGE,NRD= 26 MIN ELTRD=  664 50 MAX ELLC=  668 70
```

```
              US HIGHWAY 131
  24975 00      9 80    659 80      0 00      0 00    661 47      1 67      0 01      0 22    665.70
     4125         0      4125         0         0       398         0      1194.      249.     665.20
      2 03      0 00     10 37      0 00     0 000     0 014     0 000     0.000    650 00    875 00
  0 000825       10       10.        10         2         0         0      0 00     50 00    925 00
0
 *SECNO 25115 000

 3370 NORMAL BRIDGE, NRD= 38 MIN ELTRD=  664 50 MAX ELLC=  668 70

  25115 00     10 04    660 04      0 00      0 00    661 61      1 57      0 11      0 03    665.70
     4125         0      4125         0         0       410         0      1195       249      665 20
      2 03      0 00     10 07      0 00     0 000     0 014     0 000     0 000    650 00    875 00
  0 000755      140       140       140         0         0         0      0 00     50 00    925 00
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 25125 000

 3470 ENCROACHMENT STATIONS=      465 0      535 0  TYPE=      1  TARGET=      70 000
  25125.00      9 96    660 46      0 00      0 00    661 66      1 20      0 01      0 04100000.00
     4125         0      4125         0         0       469         0.      1195       249.  100000.00
      2 03      0 00      8 80      0 00     0 000     0.030     0.000     0 000    650.50    465 00
  0 002962       10        10        10         3         0         0      0 00     70 00    535 00
0
i
   5 JUN 89    10 55.56                                                                          PAGE    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

 *SECNO 25140 000

 3470 ENCROACHMENT STATIONS=      455 0      555 0  TYPE=      1  TARGET=      100 000
  25140 00     10 51    661 01      0 00      0 00    661 74      0 73      0.03      0.05100000 00
     4125         0      4074        51         0       591        32      1195       249      657 50
      2 03      0 00      6 89      1 62     0 000     0 030     0 070     0 000    650 50    455 00
  0 001693        7       15.        20         3         0         0      0.00    100.00    555.00
0
 *SECNO 25155.000

 3470 ENCROACHMENT STATIONS=      445 0      575 0  TYPE=      1  TARGET=      130 000
  25155 00     10 67    661 17      0 00      0 00    661 78      0 61      0 02      0 01    658 30
     4125        35      3906       184        26       608       106      1195       249      657.50
      2.03      1 33      6 42      1 73     0 070     0.030     0 070     0 000    650 50    445 00
  0 001377        8        15        20         2         0         0      0 00    130 00    575.00
0
 *SECNO 25185 000

 3470 ENCROACHMENT STATIONS=      425 0      620 0  TYPE=      1  TARGET=      195 000
  25185 00     10 85    661 40      0 00      0 00    661 83      0.43      0 04      0.02    658 35
     4125       130      3533       462        94       625       285      1196       249.     657 55
      2 04      1 38      5 65      1 62     0 070     0 030     0 070     0 000    650 55    425.00
  0 001029       20        30        45         2         0         0      0 00    195.00    620 00
0
 *SECNO 25250 000

 3470 ENCROACHMENT STATIONS=      380 0      700 0  TYPE=      1  TARGET=      320 000
  25250 00     11 07    661 67      0 00      0 00    661 90      0 24      0 05      0 02    658 40
     4125       352      2740       833       280       645.      621      1198.      249.     657 60
      2 04      1 26      4 56      1 34     0 070     0 030     0 070     0 000    650 60    380 00
  0 000642       40        65        90         2         0         0      0 00    320 00    700 00
0
```

```
*SECNO 25375 000

3470 ENCROACHMENT STATIONS=      300 0      880 0  TYPE=      1  TARGET=      580 000
 25375 00     11 18    661 08     0 00      0 00    661 98     0 09      0.06      0.01    658.50
    4125       789      2141     1195       740       656     1280      1205       251.     657 70
     2 06      1 07      3 26     0 93     0 070     0 030    0 070     0 000    650 70    300 00
  0 000322       75       175      175         2         0        0      0.00    580 00    880 00
0
1
   5 JUN 89     10:55 56                                                                          PAGE    31

    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      ANL       ANCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 25855 000

3470 ENCROACHMENT STATIONS=      415 0      755 0  TYPE=      1  TARGET=      340 000
 25855 00     10 89    662 04     0 00      0 00    662.10     0 06      0 12      0 00    658 95
    2015        75      1421      520      131.       629      794      1229       256     658.15
     2 13      0 57      2 26     0 65     0 070     0.030    0 070     0 000    651.15    415.00
  0 000163      445       480      520         2         0        0      0 00    340 00    755 00
0
*SECNO 26100 000

3470 ENCROACHMENT STATIONS=      435 0      655 0  TYPE=      1  TARGET=      220.000
 26100 00     10 72    662 07     0 00      0 00    662 16     0 10      0 05      0.01    659.15
    2015        36      1665      314       58       613      404      1236       258.     658.35
     2 16      0 63      2 72     0 78     0 070     0.030    0 070     0.000    651.35    435 00
  0 000245      225       240      260         2         0        0      0 00    220.00    655 00
0
CCHV=   0 300 CEHV=   0 500
*SECNO 26340 000

3265 DIVIDED FLOW

            54TH STREET
 26340 00     10 49    662 09     0 00      0 00    662 29     0 20      0.07      0 05    666.98
    2015         0      2012        3         0       561      14.      1241       259.     665.39
     2 18      0 00      3 59     0 20     0 000     0.030    0 070     0 000    651.60    335.00
  0 000375      225       945      260         2         0        0      0.00    106 46    684.77
0

SPECIAL BRIDGE

5070.VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB   XK        YKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0 00      1 56      3 00      0 00      43 00     0 00     840 00     0 70     651 60    651 60

*SECNO 26430 000

6070.LOW FLOW BY NORMAL BRIDGE

EGPRS=   662 227  EGLWC=   662 287  ELLC=   660 980  PCWSE=   662 088  ELTRD=   661 390

3265 DIVIDED FLOW

1
   5 JUN 89     10 55 56                                                                          PAGE    32

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        DLOSS    BANK ELEV
```

```
   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=  661 39 MAX ELLC=  660 98

  26430 00    17 49    662 09     0 00      0 00    662 42     0 33      0 06      0 06    666 98
     2015        0      2078        7         0       437       14      1242       259     665 39
      2 19     0 00      4 59     0 45     0 000     0 030    0 070     0 000    651 60    335.00
  0 001860      90        90       90         0         0        0   -123 70    106 46    684 77
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 26610 000

 3265 DIVIDED FLOW

  26610 00    10 58    662 18     0 00      0 00    662 68     0.50      0 21      0.05    666.98
     3230        0.      3024        6         0       567       19      1244       259     665 39
      2 20     0 00      5 69     0 35     0 000     0 030    0 070     0 000    651.60    335 00
  0 000931     190       180      175         2         0        0      0 00    111.88    689 32
0
 *SECNO 26790.000

 3470 ENCROACHMENT STATIONS=      330 0      680 0  TYPE=      1  TARGET=      450 000
  26790 00    10 91    662 51     0 00      0 00    662 82     0 31      0 12      0 02    656.60
     3230       209      2819       202       215       593      238      1247       260.     656 70
      2 21     0 97      4 75     0 85     0 070     0 030    0.070     0.000    651.60    262.18
  0 000496     190       180      175         2         0        0      0 00    321 33    583.51
0
 *SECNO 27150 000

 3470 ENCROACHMENT STATIONS=      820 0     1270 0  TYPE=      1  TARGET=      450 000
  27150 00    11 41    662 91     0 00      0 00    662 96     0 06      0 12      0 03    660.90
     3230       394      1353       982       453       770     1037      1261       263.     659 10
      2 26     0.87      2 41     0 95     0 070     0 030    0 070     0 000    651 50    820.00
  0 000242     380       360      350         2         0        0      0 00    450 00   1270 00
0
 *SECNO 27290 000
 3280 CROSS SECTION  27290 00 EXTENDED      4 46 FEET


 3470 ENCROACHMENT STATIONS=      210 0      490.0  TYPE=      1  TARGET=      280.000
1
   5 JUN 89    10 55 56                                                                          PAGE    33


   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


  27290 00    11 94    662 70     0 00      0 00    663 13     0 43      0 05      0 11    655.70
     3230       263      2305       662       199       374      524.     1266.      265.     655 60
      2 27     1 32      6 16     1 26     0 070     0.030    0 070     0.000    650 76    210 00
  0 000780     170       140      110         2         0        0      0 00    280.00    490.00
0
 CCHV=   0 300 CEHV=   0 500
 *SECNO 27300 000
 3280 CROSS SECTION  27300 00 EXTENDED      4 29 FEET


 3370 NORMAL BRIDGE,NRD= 31 MIN ELTRD=  660 30 MAX ELLC=  661 60
```

```
 3470 ENCROACHMENT STATIONS=      210 0      485 0  TYPE=      1  TARGET=      275 000
              CLAY AVENUE
  27300 00     11 77    662 53      0 00      0 00    663 33      0 81      0 02      0.19    655 70
     3230        27      1474      1729        14       175       287      1266.       265.     655 60
     2 27      1 94      8 44      6 01     0 030     0.020     0.030     0 000    650 76    210.00
  0 004279       10        10        10         2         0         0   -551 35    275 00    485.00
0
 *SECNO 27370 000
 3280 CROSS SECTION  27370 00 EXTENDED      4 72 FEET


 3370 NORMAL BRIDGE,NRD= 31 MIN ELTRD=  660 30 MAX ELLC=  661 60


 3470 ENCROACHMENT STATIONS=      230 0      470 0  TYPE=      1  TARGET=      240 000
  27370 00     12 20    662 76      0 00      0 00    663 69      0 73      0.33      0 02    655 70
     3230        37      1350      1843        18       181       287      1267       265     655 60
     2 27      2 03      7 47      6 41     0 030     0.020     0 030     0 000    650 76    230 00
  0 005366       70        70        70         4         0         0   -531.90    240.00    470.00
0
 CCHV=   0 100 CEHV=   0 300
 *SECNO 27380 000
 3280 CROSS SECTION  27380 00 EXTENDED      5 12 FEET


 3470 ENCROACHMENT STATIONS=      230 0      470.0  TYPE=      1  TARGET=      240.000
  27380 00     12 59    663 35      0 00      0 00    663 74      0 39      0 01      0 03    655.70
     3230       246      2320       664       179       398       537.      1267       265     655 60
     2 28      1 37      5.84      1 24     0 070     0.030     0 070     0 000    650 76    230.00
  0 000644       10        10        10         2         0         0      0 00    240.00    470.00
0
1
   5 JUN 89     10 55:56                                                                          PAGE   34


     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 27990 000

 3470 ENCROACHMENT STATIONS=      925 0     1825 0  TYPE=      1  TARGET=      900 000
              PENN CENTRAL RAILROAD
  27990 00     11 97    663 97      0 00      0 00    663.99      0.02      0 14      0 11    663 50
     3230.     1245       698     1287.      1564       384     2297.      1305       273     662 80
     2 46      0 80      1.82      0 56     0 070     0.030     0 070     0 000    652 00    925.00
  0 000112      620       610       600         2         0         0      0.00    900.00   1825 00
0

 SPECIAL BRIDGE

 5070.VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN     BWS       BWP       BAREA     SS        ELCHU     ELCHD
     1 05      1 56      2 80     900 00     36 00     2 00     280.00     0 00     652.00    652.00

 *SECNO 28040 000
 3280 CROSS SECTION  28040 00 EXTENDED      4 57 FEET

 PRESSURE AND WEIR FLOW


  EGPRS      EGLWC      HG        QWEIR     QPR       BAREA    TRAPEZOID     ELLC      ELTRD
                                                                 AREA
```

```
    667 19     664 00       0 00       566       2667        280        391.       663 50     665 80


 3470 ENCROACHMENT STATIONS=      200 0     1100 0  TYPE=      1  TARGET=      900.000
  28040 00     13 66    666 16      0 00      0 00    666.17      0 01      2 18      0 00    659.10
     3230      1923       766       542     4374.       568      1220      1311       274     659.30
      2 48      0 44      1 35      0 44     0 070     0 030     0 070     0 000    652.50    200.00
  0 000034        50        50        50         0         0         4      0 00    900 00   1100.00
0
 CCHV=   0 100 CLHV=   0 300
 *SECNO 28350 000
 3280 CROSS SECTION  28350 00 EXTENDED      1 48 FEET

  28350 00     13 47    666 17      0 00      0 00    666 18      0 00      0 01      0.00    661.60
     3230      2152       496       582     5204       445      2385      1358       283     663.00
      2 64      0 41      1 11      0 24     0 070     0 030     0 070     0 000    652 70      0 00
  0.000028       260       310       360         0         0         0      0 00   1600 00   1600.00
0
1
   5 JUN 89     10 55 56                                                                          PAGE 35

    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 28410 000
  28410 00     13 58    666 15      0 00      0 00    666 18      0 00      0 00      0.00    663 20
     3230.     2055       545       630     5500       537      2440      1369       285     662 40
      2 68      0 37      1 02      0 26     0 070     0 030     0 070     0.000    652.60     40.53
  0 000023        60        60        60         0         0         0      0 00   1659 47   1700.00
0
 *SECNO 30015 000
  30015 00     11 33    666 23      0 00      0.00    666 25      0 02      0.07      0 00    661.30
     3230       939       710      1581     1390.       352      2810      1609       336     661 80
      3 17      0 68      2 02      0.56     0 070     0 030     0 070     0 000    654 90    531.70
  0 000101      1615      1605     1595.         1         0         0      0 00   1090 54   1622.23
0
1
   5 JUN 89     10 55 56                                                                          PAGE 36


                                                                                THIS RUN EXECUTED  5 JUN 89   10:56:16
 ***********************************************
   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 WYOMING, KENT COUNTY, MICHIGAN
 T2       FLOOD INSURANCE STUDY
 T3       BUCK CREEK- 100 YEAR FLOOD - ENCROACHED CONDITION

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

        0         3          0          0   0 000000       0 00        0.0        0     633 000     0.000

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE
```

1) COUNTY: KENT

2) STUDY NAME: WYOMING, CITY OF

3) WATERCOURSE: BUCK CREEK

4) DOCUMENT TYPE: SUMMARIES

00BREAK00

```
0
 *SECNO 28410.000

 3470 ENCROACHMENT STATIONS=        0.0     1720.0  TYPE=      1  TARGET=     1719.999
  28410.00     14.09    666.69      0.00    662.60    666.70      0.01      0.00      0.00    663.20
     4305.     2702.      694.      909.     5998.      567.     2831.     1784.      323.    662.40
      2.59      0.45      1.22      0.32     0.070     0.030     0.070     0.000    652.60      0.00
  0.000031       60.       60.       60.         0         0         0      0.00   1720.00   1720.00
0
 *SECNO 30015.000

 3470 ENCROACHMENT STATIONS=      520.0     1785.0  TYPE=      1  TARGET=     -520.000
  ELENCL=     668.50  ELENCR= 100000.00
  30015.00     11.87    666.77      0.00    662.87    666.80      0.02      0.09      0.01    661.30
     4305.     1235.      886.     2184.     1526.      374.     3260.     2053.      375.    661.80
      3.01      0.81      2.37      0.67     0.070     0.030     0.070     0.000    654.90    531.02
  0.000129     1615.     1605.     1595.         2         0         0      0.00   1133.57   1664.59
0
1
   2 JUN 89    15:17:49                                                                          PAGE  104


                                                                                THIS RUN EXECUTED  2 JUN 89   15:18:41
 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
 ***************************************************

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

 BUCK CREEK- 10 YEAR FLOO

 SUMMARY PRINTOUT TABLE  110
```

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
15.860	631.21	-0.39	631.50	299.11	1030.05	1398.67	126.28	0.00	0.00	283.00	314.00	0.00
15.860	632.34	-0.36	632.66	311.51	1595.01	1748.42	196.56	0.00	0.00	283.00	314.00	0.00
15.860	632.91	-0.29	633.24	317.74	1934.44	1950.97	239.58	0.00	0.00	283.00	314.00	0.00
15.860	634.20	0.20	634.56	478.56	2766.89	2401.34	376.77	0.00	0.00	283.00	314.00	0.00
15.870	631.77	0.00	631.83	605.82	593.81	797.06	1164.13	0.00	0.00	283.00	314.00	0.00
15.870	632.92	0.00	632.98	617.18	901.42	983.39	1655.19	0.00	0.00	283.00	314.00	0.00
15.870	633.51	0.00	633.57	621.88	1086.99	1092.04	1945.96	0.00	0.00	283.00	314.00	0.00
15.870	634.82	0.00	634.89	632.34	1549.74	1344.84	2650.42	0.00	0.00	283.00	314.00	0.00
500.000	631.98	0.00	632.11	580.91	590.80	998.85	965.35	0.00	0.00	283.00	314.00	0.00
500.000	633.12	0.00	633.24	609.55	925.06	1179.94	1435.00	0.00	0.00	283.00	314.00	0.00
500.000	633.70	0.00	633.82	614.22	1121.26	1284.68	1719.06	0.00	0.00	283.00	314.00	0.00
500.000	635.00	0.00	635.12	624.63	1604.93	1530.08	2409.99	0.00	0.00	283.00	314.00	0.00
1050.000	632.44	0.00	632.85	185.00	524.83	1545.07	485.10	185.00	200.00	283.00	314.00	385.00
1050.000	633.44	0.00	633.97	185.00	792.12	2028.72	719.15	185.00	200.00	283.00	314.00	385.00
1050.000	633.97	0.00	634.56	185.00	954.67	2309.96	860.37	185.00	200.00	283.00	314.00	385.00
1050.000	635.13	0.00	635.89	185.00	1357.54	2979.67	1207.79	185.00	200.00	283.00	314.00	385.00
1225.000	632.76	0.00	633.29	100.00	338.87	2216.13	0.00	100.00	1025.00	1070.00	1125.00	1125.00
1225.000	633.77	0.00	634.50	100.00	504.93	3035.07	0.00	100.00	1025.00	1070.00	1125.00	1125.00
1225.000	634.29	0.00	635.15	100.00	605.44	3519.56	0.00	100.00	1025.00	1070.00	1125.00	1125.00
[illegible]	635.43	0.00	636.59	100.00	856.48	4688.52	0.00	100.00	1025.00	1070.00	1125.00	1125.00

1235.000	633.18	0.00	633.40	98.71	0.00	2555.00	0.00	120.00	35.00	47.50	152.50	155.00
1235.000	634.34	0.00	634.66	99.00	0.00	3540.00	0.00	120.00	35.00	47.50	152.50	155.00
1235.000	634.96	0.00	635.33	99.00	0.00	4125.00	0.00	120.00	35.00	47.50	152.50	155.00
1235.000	636.25	0.00	636.81	99.00	0.00	5545.00	0.00	120.00	35.00	47.50	152.50	155.00
1245.000	633.20	0.00	633.42	98.80	0.00	2555.00	0.00	125.00	30.00	47.50	152.50	155.00
1245.000	634.37	0.00	634.68	99.00	0.00	3540.00	0.00	125.00	30.00	47.50	152.50	155.00
1245.000	634.99	0.00	635.36	99.00	0.00	4125.00	0.00	125.00	30.00	47.50	152.50	155.00
1245.000	636.32	0.00	636.88	99.00	0.00	5545.00	0.00	125.00	30.00	47.50	152.50	155.00

1

2 JUN 89 15:17:49

SECNO	CWSEL	DIFKWS	EQ	TOPWID	GLOB	GCH	GROB	PERENC	STENCL	STCHL	STCHR	STENCR
1255.000	633.12	0.00	633.49	120.00	349.10	2204.16	1.74	120.00	1000.00	1050.00	1119.00	1120.00
1255.000	634.27	0.00	634.76	120.00	505.32	3032.27	2.41	120.00	1000.00	1050.00	1119.00	1120.00
1255.000	634.88	0.00	635.44	120.00	598.30	3523.92	2.78	120.00	1000.00	1050.00	1119.00	1120.00
1255.000	636.23	0.00	636.97	120.00	824.23	4717.15	3.62	120.00	1000.00	1050.00	1119.00	1120.00
1850.000	633.94	0.00	633.99	800.00	1105.81	1443.44	5.76	800.00	100.00	725.00	840.00	900.00
1850.000	635.16	0.00	635.21	800.00	1689.14	1814.50	36.37	800.00	100.00	725.00	840.00	900.00
1850.000	635.82	0.00	635.87	800.00	2035.63	2030.87	58.50	800.00	100.00	725.00	840.00	900.00
1850.000	637.32	0.00	637.37	800.00	2879.68	2547.99	117.33	800.00	100.00	725.00	840.00	900.00
2275.000	634.15	0.00	634.23	571.98	1430.38	1068.65	55.98	0.00	0.00	559.00	600.00	0.00
2275.000	635.33	0.00	635.42	574.39	2146.34	1308.16	85.50	0.00	0.00	559.00	600.00	0.00
2275.000	635.98	0.00	636.07	581.32	2576.62	1444.01	104.37	0.00	0.00	559.00	600.00	0.00
2275.000	637.45	0.00	637.54	641.90	3625.94	1757.95	161.12	0.00	0.00	559.00	600.00	0.00
2680.000	634.35	0.00	634.72	301.78	404.70	1736.92	413.38	-250.00	250.00	500.00	539.00	1075.00
2680.000	635.49	0.00	635.89	371.10	674.67	2156.59	708.74	-250.00	250.00	500.00	539.00	1075.00
2680.000	636.13	0.00	636.52	406.65	849.54	2373.93	901.53	-250.00	250.00	500.00	539.00	1075.00
2680.000	637.58	0.00	637.96	473.83	1301.18	2822.58	1421.24	-250.00	250.00	500.00	539.00	1075.00
2735.000	634.47	0.00	634.82	305.17	414.95	1714.92	425.13	-250.00	250.00	500.00	539.00	1075.01
2735.000	635.61	0.00	635.99	376.99	685.38	2133.21	721.41	-250.00	250.00	500.00	539.00	1075.01
2735.000	636.24	0.00	636.62	414.34	860.01	2350.54	914.45	-250.00	250.00	500.00	539.00	1075.01
2735.000	637.68	0.00	638.04	488.92	1309.88	2801.16	1433.95	-250.00	250.00	500.00	539.00	1075.01
2736.000	634.49	0.00	634.83	305.35	615.35	1309.10	630.55	-250.00	250.00	500.00	539.00	1075.00
2736.000	635.67	0.00	635.99	379.98	931.47	1627.18	981.36	-250.00	250.00	500.00	539.00	1075.00
2736.000	636.31	0.00	636.63	419.41	1126.83	1798.43	1199.74	-250.00	250.00	500.00	539.00	1075.00
2736.000	637.76	0.00	638.05	502.68	1611.77	2165.28	1767.94	-250.00	250.00	500.00	539.00	1075.00
2739.000	634.50	0.00	634.84	305.75	616.19	1307.15	631.65	-250.00	250.00	500.00	539.00	1075.01
2739.000	635.68	0.00	636.00	380.31	931.87	1626.25	981.88	-250.00	250.00	500.00	539.00	1075.01
2739.000	636.32	0.00	636.63	419.82	1127.19	1797.55	1200.26	-250.00	250.00	500.00	539.00	1075.01
2739.000	637.77	0.00	638.05	503.47	1612.05	2164.51	1768.44	-250.00	250.00	500.00	539.00	1075.01
2740.000	634.50	0.00	634.84	306.03	417.50	1709.42	428.08	-250.00	250.00	500.00	539.00	1075.00
2740.000	635.65	0.00	636.02	378.95	688.91	2125.52	725.57	-250.00	250.00	500.00	539.00	1075.00
2740.000	636.28	0.00	636.65	417.32	863.99	2341.61	919.39	-250.00	250.00	500.00	539.00	1075.00
2740.000	637.72	0.00	638.08	496.09	1313.98	2791.08	1439.94	-250.00	250.00	500.00	539.00	1075.00
3455.000	635.73	0.00	635.88	435.50	323.93	1300.36	930.71	-350.00	350.00	553.00	600.00	1100.00
3455.000	636.84	0.00	636.99	501.77	453.66	1618.67	1467.66	-350.00	350.00	553.00	600.00	1100.00
3455.000	637.43	0.00	637.59	528.55	529.47	1794.73	1800.79	-350.00	350.00	553.00	600.00	1100.00
3455.000	638.75	0.00	638.91	824.77	717.92	2187.08	2640.00	-350.00	350.00	553.00	600.00	1100.00
5070.000	637.31	0.00	637.47	375.00	583.52	1266.33	705.14	375.00	200.00	361.00	400.00	575.00
5070.000	638.32	0.00	638.51	375.00	887.41	1602.06	1050.53	375.00	200.00	361.00	400.00	575.00
5070.000	638.87	0.00	639.06	375.00	1071.64	1794.75	1258.61	375.00	200.00	361.00	400.00	575.00
5070.000	640.07	0.00	640.30	375.00	1526.85	2248.08	1770.08	375.00	200.00	361.00	400.00	575.00

	5580.000	637.90	0.00	638.40	67.00	0.00	2555.00	0.00	0.00	0.00	333.00	400.00	0.00
	5580.000	638.91	0.00	639.48	188.56	217.16	3279.66	43.18	0.00	0.00	333.00	400.00	0.00
	5580.000	639.44	0.00	640.10	203.56	293.73	3765.21	66.06	0.00	0.00	333.00	400.00	0.00
	5580.000	640.62	0.00	641.44	310.47	517.57	4887.33	140.10	0.00	0.00	333.00	400.00	0.00
*	5630.000	639.20	0.00	639.50	67.00	0.00	2555.00	0.00	300.00	100.00	333.00	400.00	400.00
*	5630.000	641.58	0.00	641.77	300.00	674.30	2865.70	0.00	300.00	100.00	333.00	400.00	400.00
*	5630.000	642.29	0.00	642.50	300.00	880.30	3244.70	0.00	300.00	100.00	333.00	400.00	400.00
*	5630.000	643.36	0.00	643.65	300.00	1364.06	4180.94	0.00	300.00	100.00	333.00	400.00	400.00
	6720.000	640.27	0.00	640.52	271.69	247.96	1922.77	384.27	370.00	250.00	500.00	550.00	620.00
	6720.000	642.22	0.00	642.45	370.00	580.26	2385.59	574.15	370.00	250.00	500.00	550.00	620.00
	6720.000	642.95	0.00	643.19	370.00	785.11	2665.69	674.20	370.00	250.00	500.00	550.00	620.00
	6720.000	644.17	0.00	644.46	370.00	1277.66	3358.80	908.54	370.00	250.00	500.00	550.00	620.00
	7120.000	640.68	0.00	640.87	251.04	379.99	1753.24	421.77	-650.00	650.00	870.00	920.00	1155.00
	7120.000	642.54	0.00	642.73	272.24	561.35	2232.64	746.00	-650.00	650.00	870.00	920.00	1155.00
	7120.000	643.27	0.00	643.47	344.29	667.04	2525.60	932.36	-650.00	650.00	870.00	920.00	1155.00
	7120.000	644.52	0.00	644.78	360.88	955.84	3221.66	1367.50	-650.00	650.00	870.00	920.00	1155.00
	7325.000	640.91	0.00	641.03	418.26	177.05	1249.28	1128.67	0.00	0.00	261.00	300.00	0.00
	7325.000	642.76	0.00	642.86	479.44	399.79	1497.99	1642.22	0.00	0.00	261.00	300.00	0.00
	7325.000	643.50	0.00	643.60	498.00	536.37	1662.65	1925.98	0.00	0.00	261.00	300.00	0.00
	7325.000	644.80	0.00	644.92	550.00	883.06	2070.73	2591.21	0.00	0.00	261.00	300.00	0.00
	7335.000	641.00	0.00	641.04	419.26	241.00	815.26	1498.73	0.00	0.00	261.00	300.00	0.00
	7335.000	642.83	0.00	642.87	481.22	513.49	946.33	2080.18	0.00	0.00	261.00	300.00	0.00
	7335.000	643.57	0.00	643.61	499.82	678.39	1039.96	2406.65	0.00	0.00	261.00	300.00	0.00
	7335.000	644.89	0.00	644.93	550.00	1094.88	1275.86	3174.26	0.00	0.00	261.00	300.00	0.00
	7345.000	641.01	0.00	641.05	419.36	241.62	814.48	1498.90	0.00	0.00	261.00	300.00	0.00
	7345.000	642.84	0.00	642.87	481.38	514.07	945.85	2080.08	0.00	0.00	261.00	300.00	0.00
	7345.000	643.58	0.00	643.62	499.97	679.00	1039.51	2406.49	0.00	0.00	261.00	300.00	0.00
	7345.000	644.89	0.00	644.94	550.00	1095.72	1275.36	3173.93	0.00	0.00	261.00	300.00	0.00
	7355.000	640.97	0.00	641.08	418.93	180.50	1242.97	1131.53	0.00	0.00	261.00	300.00	0.00
	7355.000	642.80	0.00	642.90	480.54	403.46	1493.47	1643.07	0.00	0.00	261.00	300.00	0.00
	7355.000	643.54	0.00	643.64	499.10	540.43	1658.12	1926.44	0.00	0.00	261.00	300.00	0.00
	7355.000	644.85	0.00	644.97	550.00	889.11	2065.15	2590.74	0.00	0.00	261.00	300.00	0.00
	8280.000	641.49	0.00	641.59	483.13	311.43	1290.67	952.90	0.00	0.00	280.00	330.00	0.00
	8280.000	643.20	0.00	643.28	530.95	534.88	1575.65	1429.47	0.00	0.00	280.00	330.00	0.00
	8280.000	643.93	0.00	644.01	551.50	669.29	1757.15	1698.56	0.00	0.00	280.00	330.00	0.00
	8280.000	645.26	0.00	645.36	568.29	1035.14	2189.45	2320.41	0.00	0.00	280.00	330.00	0.00
	11650.000	644.19	0.00	644.56	505.58	666.18	1694.61	194.21	770.00	0.00	480.00	520.00	770.00
	11650.000	645.25	0.00	645.57	555.52	1228.30	1971.85	339.85	770.00	0.00	480.00	520.00	770.00
	11650.000	645.86	0.00	646.15	584.17	1581.49	2108.45	435.06	770.00	0.00	480.00	520.00	770.00
	11650.000	647.10	0.00	647.36	1036.40	2418.46	2417.93	708.62	770.00	0.00	480.00	520.00	770.00

1

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
12620.000	645.93	0.00	646.34	343.02	289.84	1915.37	349.78	540.00	400.00	480.00	520.00	940.00
12620.000	646.83	0.00	647.32	395.07	462.68	2420.29	657.03	540.00	400.00	480.00	520.00	940.00
12[illegible]0.000	647.3[illegible]	0.00	647.84	423.04	565.94	2687.55	871.51	540.00	400.00	480.00	520.00	940.00

12620.000	648.36	0.00	648.91	540.00	800.21	3225.82	1518.98	540.00	400.00	480.00	520.00	940.00
13590.000	647.44	0.00	648.01	68.73	28.19	2399.07	127.74	75.00	355.00	370.00	414.00	430.00
13590.000	648.51	0.00	649.36	70.38	49.25	3300.18	190.57	75.00	355.00	370.00	414.00	430.00
13590.000	649.04	0.00	650.07	71.32	63.86	3832.63	228.51	75.00	355.00	370.00	414.00	430.00
13590.000	650.05	0.00	651.56	73.12	102.43	5121.48	321.08	75.00	355.00	370.00	414.00	430.00
13600.000	647.39	0.00	648.08	60.00	0.00	2555.00	0.00	60.00	370.00	370.00	430.00	430.00
13600.000	648.38	0.00	649.52	60.00	0.00	3540.00	0.00	60.00	370.00	370.00	430.00	430.00
13600.000	648.84	0.00	650.31	60.00	0.00	4125.00	0.00	60.00	370.00	370.00	430.00	430.00
13600.000	649.55	0.00	652.13	60.00	0.00	5545.00	0.00	60.00	370.00	370.00	430.00	430.00
13700.000	647.47	0.00	648.14	60.00	0.00	2555.00	0.00	60.00	370.00	370.00	430.00	430.00
13700.000	648.52	0.00	649.64	60.00	0.00	3540.00	0.00	60.00	370.00	370.00	430.00	430.00
13700.000	649.02	0.00	650.47	60.00	0.00	4125.00	0.00	60.00	370.00	370.00	430.00	430.00
13700.000	649.86	0.00	652.45	60.00	0.00	5545.00	0.00	60.00	370.00	370.00	430.00	430.00
13710.000	647.76	0.00	648.18	79.20	47.93	2207.30	299.77	80.00	360.00	370.00	414.00	440.00
13710.000	649.13	0.00	649.70	80.00	85.40	2990.38	464.23	80.00	360.00	370.00	414.00	440.00
13710.000	649.91	0.00	650.56	80.00	110.14	3448.56	566.30	80.00	360.00	370.00	414.00	440.00
13710.000	651.83	0.00	652.64	80.00	175.50	4542.22	827.28	80.00	360.00	370.00	414.00	440.00
13990.000	648.11	0.00	648.58	64.00	0.00	2555.00	0.00	115.00	280.00	302.00	366.00	395.00
13990.000	649.52	0.00	650.15	64.00	0.00	3540.00	0.00	115.00	280.00	302.00	366.00	395.00
13990.000	650.30	0.00	651.02	64.00	0.00	4125.00	0.00	115.00	280.00	302.00	366.00	395.00
13990.000	652.52	0.00	653.02	115.00	482.77	4598.97	463.25	115.00	280.00	302.00	366.00	395.00
14000.000	648.12	0.00	648.58	64.00	0.00	2555.00	0.00	0.00	0.00	302.00	366.00	0.00
14000.000	649.49	0.00	650.20	64.00	0.00	3540.00	0.00	0.00	0.00	302.00	366.00	0.00
14000.000	650.19	0.00	651.16	64.00	0.00	4125.00	0.00	0.00	0.00	302.00	366.00	0.00
14000.000	652.00	0.00	653.57	186.99	0.00	5349.45	195.55	0.00	0.00	302.00	366.00	0.00
14080.000	648.14	0.00	648.60	64.00	0.00	2555.00	0.00	0.00	0.00	302.00	366.00	0.00
14080.000	649.54	0.00	650.26	64.00	0.00	3540.00	0.00	0.00	0.00	302.00	366.00	0.00
14080.000	650.27	0.00	651.24	64.00	0.00	4125.00	0.00	0.00	0.00	302.00	366.00	0.00
14080.000	652.23	0.00	653.73	209.75	0.00	5260.43	284.57	0.00	0.00	302.00	366.00	0.00
14090.000	648.14	0.00	648.61	64.00	0.00	2555.00	0.00	155.00	260.00	302.00	366.00	415.00
14090.000	649.67	0.00	650.28	64.00	0.00	3540.00	0.00	155.00	260.00	302.00	366.00	415.00
14090.000	650.60	0.00	651.28	64.00	0.00	4125.00	0.00	155.00	260.00	302.00	366.00	415.00
14090.000	653.41	0.00	653.84	155.00	470.57	4627.91	446.52	155.00	260.00	302.00	366.00	415.00
14520.000	648.93	0.00	649.11	200.00	191.99	1431.10	931.91	200.00	530.00	561.00	600.00	730.00
14520.000	650.57	0.00	650.78	200.00	277.98	1897.53	1364.49	200.00	530.00	561.00	600.00	730.00
14520.000	651.55	0.00	651.77	200.00	328.94	2168.40	1627.66	200.00	530.00	561.00	600.00	730.00
14520.000	653.93	0.00	654.17	200.00	450.87	2815.52	2278.61	200.00	530.00	561.00	600.00	730.00

1

SECNO	CWSEL	DIFKWS	EQ	TOPWID	GLOB	GCH	GROB	PERENC	STENCL	STCHL	STCHR	STENCR
14950.000	649.28	0.00	649.32	600.00	222.80	824.09	1508.11	600.00	500.00	561.00	600.00	1100.00
14950.000	650.93	0.00	650.97	600.00	309.68	1011.33	2218.99	600.00	500.00	561.00	600.00	1100.00
14950.000	651.91	0.00	651.95	600.00	360.68	1118.83	2645.50	600.00	500.00	561.00	600.00	1100.00
14950.000	654.29	0.00	654.32	600.00	483.22	1374.37	3687.41	600.00	500.00	561.00	600.00	1100.00
15250.000	649.37	0.00	649.40	857.12	178.72	769.76	1606.52	0.00	0.00	170.00	205.00	0.00
15250.000	651.01	0.00	651.03	943.48	254.88	884.05	2401.07	0.00	0.00	170.00	205.00	0.00
15250.000	651.98	0.00	652.00	1009.26	298.74	941.33	2884.93	0.00	0.00	170.00	205.00	0.00
15250.000	654.34	0.00	654.36	1053.13	403.28	1064.99	4076.72	0.00	0.00	170.00	205.00	0.00
17350.000	650.34	0.00	650.60	550.00	638.61	1255.22	661.17	0.00	0.00	300.00	347.00	0.00
17350.000	651.67	0.00	651.85	550.00	1036.54	1424.84	1078.63	0.00	0.00	300.00	347.00	0.00
173[illegible]0.000	6[illegible].52	0.00	652.66	550.00	1273.79	1528.70	1322.51	0.00	0.00	300.00	347.00	0.00

17350.000	654.68	0.00	654.78	550.00	1845.55	1794.76	1904.69	0.00	0.00	300.00	347.00	0.00
17360.000	650.44	0.00	650.64	525.71	679.18	1153.56	722.26	0.00	0.00	300.00	347.00	0.00
17360.000	651.81	0.00	651.88	549.66	1352.33	768.61	1419.05	0.00	0.00	300.00	347.00	0.00
17360.000	652.64	0.00	652.69	550.00	1675.27	700.44	1749.29	0.00	0.00	300.00	347.00	0.00
17360.000	654.76	0.00	654.80	550.00	2311.64	840.62	2392.74	0.00	0.00	300.00	347.00	0.00
17370.000	650.48	0.00	650.68	526.77	683.35	1144.85	726.80	0.00	0.00	300.00	347.00	0.00
17370.000	651.85	0.00	651.91	549.90	1355.75	762.01	1422.23	0.00	0.00	300.00	347.00	0.00
17370.000	652.66	0.00	652.71	550.00	1675.82	699.48	1749.70	0.00	0.00	300.00	347.00	0.00
17370.000	654.77	0.00	654.81	550.00	2311.83	840.31	2392.86	0.00	0.00	300.00	347.00	0.00
17380.000	650.49	0.00	650.72	550.00	655.74	1218.78	680.47	0.00	0.00	300.00	347.00	0.00
17380.000	651.80	0.00	651.96	550.00	1046.48	1404.85	1088.67	0.00	0.00	300.00	347.00	0.00
17380.000	652.62	0.00	652.76	550.00	1280.26	1515.92	1328.82	0.00	0.00	300.00	347.00	0.00
17380.000	654.74	0.00	654.84	550.00	1848.00	1790.03	1906.97	0.00	0.00	300.00	347.00	0.00
18725.000	652.81	0.00	652.94	451.47	750.89	1208.22	595.89	0.00	0.00	570.00	622.00	0.00
18725.000	653.62	0.00	653.78	469.17	1165.29	1533.46	841.24	0.00	0.00	570.00	622.00	0.00
18725.000	654.16	0.00	654.33	480.92	1432.33	1701.93	990.74	0.00	0.00	570.00	622.00	0.00
18725.000	655.72	0.00	655.87	512.53	2121.57	2034.59	1388.83	0.00	0.00	570.00	622.00	0.00
20865.000	655.13	0.00	655.52	560.37	162.45	1509.79	882.76	0.00	0.00	385.00	417.00	0.00
20865.000	656.01	0.00	656.42	605.74	295.94	1837.02	1407.05	0.00	0.00	385.00	417.00	0.00
20865.000	656.47	0.00	656.89	629.76	387.97	2013.32	1723.71	0.00	0.00	385.00	417.00	0.00
20865.000	657.58	0.00	657.98	653.39	685.84	2367.02	2492.14	0.00	0.00	385.00	417.00	0.00
23195.000	657.27	0.00	657.57	383.24	302.82	2252.17	0.00	715.00	350.00	870.00	930.00	1065.00
23195.000	658.25	0.00	658.62	650.78	609.29	2903.42	27.29	715.00	350.00	870.00	930.00	1065.00
23195.000	658.73	0.00	659.13	706.97	824.32	3236.53	64.15	715.00	350.00	870.00	930.00	1065.00
23195.000	659.78	0.00	660.21	715.00	1430.85	3933.11	181.04	715.00	350.00	870.00	930.00	1065.00
23255.000	658.53	0.00	658.73	438.92	699.27	1797.95	57.78	500.00	585.00	870.00	930.00	1085.00
23255.000	659.19	0.66	659.39	685.00	1293.57	2125.03	121.41	685.00	500.00	870.00	930.00	1185.00
23255.000	659.44	0.91	659.67	685.00	1531.53	2425.24	168.22	685.00	500.00	870.00	930.00	1185.00
23255.000	659.99	1.46	660.32	685.00	2117.89	3116.99	310.12	685.00	500.00	870.00	930.00	1185.00

1

SECNO	CWSEL	DIFKWS	EQ	TOPWID	GLOB	QCH	GROB	PERENC	STENCL	STCHL	STCHR	STENCR
23505.000	658.73	0.00	658.83	562.83	1137.97	1405.16	11.87	0.00	0.00	544.00	600.00	0.00
23505.000	659.37	0.63	659.51	566.42	1660.39	1859.98	19.63	0.00	0.00	544.00	600.00	0.00
23505.000	659.64	0.91	659.81	568.89	1971.48	2128.84	24.68	0.00	0.00	544.00	600.00	0.00
23505.000	660.26	1.53	660.50	607.71	2747.55	2758.03	39.42	0.00	0.00	544.00	600.00	0.00
24685.000	659.10	0.00	659.35	160.00	299.11	2233.52	22.37	160.00	300.00	378.00	445.00	460.00
24685.000	659.84	0.74	660.23	160.00	443.67	3058.21	38.12	160.00	300.00	378.00	445.00	460.00
24685.000	660.18	1.08	660.66	160.00	530.91	3546.14	47.94	160.00	300.00	378.00	445.00	460.00
24685.000	660.93	1.83	661.65	160.00	750.17	4720.91	73.91	160.00	300.00	378.00	445.00	460.00
24695.000	659.28	0.00	659.40	153.00	0.00	2555.00	0.00	0.00	0.00	300.00	457.00	0.00
24695.000	660.12	0.84	660.29	153.00	0.00	3540.00	0.00	0.00	0.00	300.00	457.00	0.00
24695.000	660.51	1.23	660.74	157.00	0.00	4125.00	0.00	0.00	0.00	300.00	457.00	0.00
24695.000	661.35	2.06	661.75	157.00	0.00	5545.00	0.00	0.00	0.00	300.00	457.00	0.00
24735.000	659.28	0.00	659.40	153.00	0.00	2555.00	0.00	0.00	0.00	300.00	457.00	0.00
24735.000	660.12	0.84	660.30	153.00	0.00	3540.00	0.00	0.00	0.00	300.00	457.00	0.00
24735.000	660.52	1.24	660.75	157.00	0.00	4125.00	0.00	0.00	0.00	300.00	457.00	0.00
24735.000	661.36	2.08	661.77	157.00	0.00	5545.00	0.00	0.00	0.00	300.00	457.00	0.00
24745.000	659.26	0.00	659.41	150.00	616.52	1872.89	65.59	150.00	315.00	378.00	445.00	465.00
24745.000	660.09	0.83	660.32	150.00	902.44	2522.47	115.09	150.00	315.00	378.00	445.00	465.00
24745.000	[illegible]0.49	1.[illegible]	[illegible]0.77	150.00	1074.53	2904.22	146.24	150.00	315.00	378.00	445.00	465.00

24745.000	661.38	2.13	661.78	150.00	1502.06	3815.02	227.92	150.00	315.00	378.00	445.00	465.00
24855.000	659.25	0.00	659.48	110.00	338.25	2162.67	54.08	110.00	345.00	378.00	445.00	455.00
24855.000	660.06	0.82	660.41	110.00	504.61	2948.42	86.97	110.00	345.00	378.00	445.00	455.00
24855.000	660.45	1.21	660.88	110.00	605.41	3412.50	107.09	110.00	345.00	378.00	445.00	455.00
24855.000	661.31	2.06	661.93	110.00	858.57	4528.00	158.43	110.00	345.00	378.00	445.00	455.00
24910.000	659.21	0.00	659.53	80.00	84.72	2441.19	29.08	80.00	370.00	378.00	445.00	450.00
24910.000	659.99	0.78	660.50	80.00	120.67	3375.17	44.16	80.00	370.00	378.00	445.00	450.00
24910.000	660.35	1.14	660.98	80.00	141.88	3929.98	53.13	80.00	370.00	378.00	445.00	450.00
24910.000	661.13	1.91	662.09	80.00	193.26	5276.52	75.22	80.00	370.00	378.00	445.00	450.00
24935.000	659.20	0.00	659.56	70.00	25.71	2529.29	0.00	70.00	375.00	378.00	445.00	445.00
24935.000	659.97	0.77	660.53	70.00	35.87	3504.13	0.00	70.00	375.00	378.00	445.00	445.00
24935.000	660.32	1.12	661.03	70.00	41.83	4083.17	0.00	70.00	375.00	378.00	445.00	445.00
24935.000	661.07	1.87	662.17	70.00	56.13	5488.87	0.00	70.00	375.00	378.00	445.00	445.00
24965.000	659.06	0.00	659.66	55.00	0.00	2555.00	0.00	55.00	570.00	563.00	637.00	625.00
24965.000	659.72	0.67	660.70	55.00	0.00	3540.00	0.00	55.00	570.00	563.00	637.00	625.00
24965.000	660.00	0.95	661.24	55.00	0.00	4125.00	0.00	55.00	570.00	563.00	637.00	625.00
24965.000	660.52	1.47	662.50	55.00	0.00	5545.00	0.00	55.00	570.00	563.00	637.00	625.00
24975.000	658.97	0.00	659.77	50.00	0.00	2555.00	0.00	0.00	0.00	875.00	925.00	0.00
24975.000	659.57	0.60	660.87	50.00	0.00	3540.00	0.00	0.00	0.00	875.00	925.00	0.00
24975.000	659.80	0.84	661.47	50.00	0.00	4125.00	0.00	0.00	0.00	875.00	925.00	0.00
24975.000	660.15	1.19	662.92	50.00	0.00	5545.00	0.00	0.00	0.00	875.00	925.00	0.00

1

SECNO	CWSEL	DIFKWS	EQ	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
25115.000	659.05	0.00	659.83	50.00	0.00	2555.00	0.00	0.00	0.00	875.00	925.00	0.00
25115.000	659.73	0.68	660.98	50.00	0.00	3540.00	0.00	0.00	0.00	875.00	925.00	0.00
25115.000	660.04	0.99	661.61	50.00	0.00	4125.00	0.00	0.00	0.00	875.00	925.00	0.00
25115.000	660.84	1.78	663.20	50.00	0.00	5545.00	0.00	0.00	0.00	875.00	925.00	0.00
25125.000	659.13	0.00	659.85	70.00	0.00	2555.00	0.00	70.00	465.00	454.00	546.00	535.00
25125.000	659.99	0.86	661.02	70.00	0.00	3540.00	0.00	70.00	465.00	454.00	546.00	535.00
25125.000	660.46	1.33	661.66	70.00	0.00	4125.00	0.00	70.00	465.00	454.00	546.00	535.00
25125.000	661.79	2.66	663.30	70.00	0.00	5545.00	0.00	70.00	465.00	454.00	546.00	535.00
25140.000	659.40	0.00	659.90	100.00	0.00	2535.04	19.96	100.00	455.00	454.00	546.00	555.00
25140.000	660.44	1.04	661.08	100.00	0.00	3500.72	39.28	100.00	455.00	454.00	546.00	555.00
25140.000	661.01	1.62	661.74	100.00	0.00	4073.77	51.23	100.00	455.00	454.00	546.00	555.00
25140.000	662.54	3.15	663.40	100.00	0.00	5462.43	82.57	100.00	455.00	454.00	546.00	555.00
25155.000	659.48	0.00	659.93	130.00	9.56	2474.84	70.60	130.00	445.00	454.00	546.00	575.00
25155.000	660.56	1.09	661.12	130.00	25.04	3374.91	140.05	130.00	445.00	454.00	546.00	575.00
25155.000	661.17	1.69	661.78	130.00	35.10	3905.67	184.23	130.00	445.00	454.00	546.00	575.00
25155.000	662.75	3.27	663.44	130.00	61.59	5182.38	301.03	130.00	445.00	454.00	546.00	575.00
25185.000	659.61	0.00	659.98	195.00	38.85	2334.64	181.51	195.00	425.00	454.00	546.00	620.00
25185.000	660.76	1.15	661.17	195.00	94.26	3091.73	354.01	195.00	425.00	454.00	546.00	620.00
25185.000	661.40	1.79	661.83	195.00	130.06	3532.58	462.35	195.00	425.00	454.00	546.00	620.00
25185.000	663.04	3.43	663.49	195.00	224.84	4574.14	746.02	195.00	425.00	454.00	546.00	620.00
25250.000	659.82	0.00	660.06	325.00	136.60	2054.07	364.32	325.00	380.00	454.00	546.00	705.00
25250.000	661.01	1.19	661.25	325.00	268.26	2599.90	671.84	325.00	380.00	454.00	546.00	705.00
25250.000	661.67	1.85	661.90	325.00	349.18	2916.37	859.45	325.00	380.00	454.00	546.00	705.00
25250.000	663.33	3.51	663.56	325.00	555.98	3651.43	1337.59	325.00	380.00	454.00	546.00	705.00
25375.000	660.04	0.00	660.15	580.00	448.26	1603.94	502.80	580.00	300.00	454.00	546.00	880.00
25375.000	661.23	1.18	661.32	580.00	662.97	1942.59	934.44	580.00	300.00	454.00	546.00	880.00
25375.000	661.88	1.84	661.98	580.00	788.65	2141.01	1195.34	580.00	300.00	454.00	546.00	880.00

25375.000	663.53	3.49	663.61	580.00	1092.69	2599.63	1852.68	580.00	300.00	454.00	546.00	880.00
25855.000	660.27	0.00	660.42	340.00	41.13	1627.98	345.88	340.00	415.00	454.00	546.00	755.00
25855.000	661.39	1.12	661.54	340.00	89.85	2059.49	650.66	340.00	415.00	454.00	546.00	755.00
25855.000	662.02	1.75	662.17	340.00	119.13	2280.81	830.07	340.00	415.00	454.00	546.00	755.00
25855.000	663.62	3.36	663.76	340.00	194.54	2816.66	1293.80	340.00	415.00	454.00	546.00	755.00
26100.000	660.39	0.00	660.60	220.00	17.58	1794.58	202.84	220.00	435.00	454.00	546.00	655.00
26100.000	661.46	1.08	661.70	220.00	42.60	2367.39	390.02	220.00	435.00	454.00	546.00	655.00
26100.000	662.08	1.69	662.32	220.00	58.32	2667.79	503.89	220.00	435.00	454.00	546.00	655.00
26100.000	663.64	3.26	663.89	220.00	99.69	3400.05	805.26	220.00	435.00	454.00	546.00	655.00
26340.000	660.52	0.00	660.82	65.00	0.00	2015.00	0.00	0.00	0.00	335.00	400.00	0.00
26340.000	661.55	1.03	661.99	74.68	0.00	2799.91	0.09	0.00	0.00	335.00	400.00	0.00
26340.000	662.13	1.61	662.64	109.16	0.00	3224.46	5.54	0.00	0.00	335.00	400.00	0.00
26340.000	663.63	3.11	664.24	198.12	0.00	4197.41	107.59	0.00	0.00	335.00	400.00	0.00

SECNO	CWSEL	DIFKWS	EQ	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
26430.000	660.59	0.00	660.93	65.00	0.00	2015.00	0.00	0.00	0.00	335.00	400.00	0.00
26430.000	661.60	1.00	662.23	77.28	0.00	2799.64	0.36	0.00	0.00	335.00	400.00	0.00
26430.000	662.13	1.54	662.97	109.16	0.00	3217.56	12.44	0.00	0.00	335.00	400.00	0.00
26430.000	663.63	3.04	664.24	198.09	0.00	4197.45	107.55	0.00	0.00	335.00	400.00	0.00
26610.000	660.83	0.00	661.10	65.00	0.00	2015.00	0.00	0.00	0.00	335.00	400.00	0.00
26610.000	662.12	1.30	662.50	108.54	0.00	2795.36	4.64	0.00	0.00	335.00	400.00	0.00
26610.000	662.86	2.03	663.28	152.33	0.00	3200.00	30.00	0.00	0.00	335.00	400.00	0.00
26610.000	663.84	3.01	664.42	210.58	0.00	4173.28	131.72	0.00	0.00	335.00	400.00	0.00
26790.000	660.99	0.00	661.20	163.81	84.76	1862.89	67.35	450.00	230.00	335.00	400.00	680.00
26790.000	662.37	1.38	662.61	300.82	175.56	2460.30	164.15	450.00	230.00	335.00	400.00	680.00
26790.000	663.15	2.16	663.39	413.32	236.88	2719.88	273.24	450.00	230.00	335.00	400.00	680.00
26790.000	664.28	3.29	664.55	450.00	391.55	3313.66	599.78	450.00	230.00	335.00	400.00	680.00
27150.000	661.29	0.00	661.34	450.00	213.01	1214.20	587.79	450.00	820.00	925.00	1060.00	1270.00
27150.000	662.69	1.40	662.73	450.00	337.18	1614.72	848.10	450.00	820.00	925.00	1060.00	1270.00
27150.000	663.45	2.16	663.50	450.00	405.95	1833.26	990.79	450.00	820.00	925.00	1060.00	1270.00
27150.000	664.60	3.31	664.66	450.00	565.74	2400.77	1338.50	450.00	820.00	925.00	1060.00	1270.00
27290.000	661.13	0.00	661.50	252.82	101.19	1692.92	220.89	280.00	210.00	280.00	316.00	490.00
27290.000	662.52	1.39	662.87	280.00	218.36	2035.59	546.05	280.00	210.00	280.00	316.00	490.00
27290.000	663.30	2.17	663.62	280.00	296.74	2176.71	756.55	280.00	210.00	280.00	316.00	490.00
27290.000	664.43	3.30	664.79	280.00	466.71	2633.42	1204.87	280.00	210.00	280.00	316.00	490.00
27300.000	660.82	0.00	661.84	232.09	0.00	1552.33	462.67	275.00	210.00	280.00	316.00	485.00
27300.000	662.37	1.55	663.05	275.00	14.01	1355.42	1430.57	275.00	210.00	280.00	316.00	485.00
27300.000	663.27	2.46	663.67	275.00	140.52	1015.04	2074.44	275.00	210.00	280.00	316.00	485.00
27300.000	664.52	3.70	664.82	275.00	432.90	1066.29	2805.81	275.00	210.00	280.00	316.00	485.00
27370.000	661.07	0.00	662.30	209.75	0.00	1675.35	339.65	240.00	230.00	280.00	316.00	470.00
27370.000	662.56	1.49	663.42	240.00	3.41	1524.34	1272.25	240.00	230.00	280.00	316.00	470.00
27370.000	663.42	2.36	663.91	240.00	102.13	1205.37	1922.50	240.00	230.00	280.00	316.00	470.00
27370.000	664.58	3.52	664.97	240.00	328.04	1274.86	2702.10	240.00	230.00	280.00	316.00	470.00
27380.000	662.16	0.00	662.41	240.00	121.19	1606.33	287.48	240.00	230.00	280.00	316.00	470.00
27380.000	663.18	1.02	663.49	240.00	207.46	2039.62	552.92	240.00	230.00	280.00	316.00	470.00
27380.000	663.58	1.42	663.93	240.00	254.39	2279.48	696.13	240.00	230.00	280.00	316.00	470.00
27380.000	664.56	2.41	665.00	240.00	382.89	2824.76	1097.35	240.00	230.00	280.00	316.00	470.00
27990.000	662.55	0.00	662.57	888.57	869.05	511.06	634.89	900.00	925.00	1175.00	1230.00	1825.00
27990.000	663.63	1.08	663.64	900.00	1105.31	622.35	1072.34	900.00	925.00	1175.00	1230.00	1825.00
27990.000	664.08	1.53	664.09	900.00	1235.80	692.27	1301.93	900.00	925.00	1175.00	1230.00	1825.00

27990.000	665.15	2.60	665.16	900.00	1552.09	859.60	1893.31	900.00	925.00	1175.00	1230.00	1825.00
28040.000	662.55	0.00	662.57	886.18	1018.40	694.60	302.00	900.00	200.00	870.00	925.00	1100.00
28040.000	665.91	3.36	665.91	900.00	1656.66	675.02	468.32	900.00	200.00	870.00	925.00	1100.00
28040.000	666.18	3.63	666.19	900.00	1923.53	764.64	541.83	900.00	200.00	870.00	925.00	1100.00
28040.000	666.67	4.12	666.69	900.00	2590.16	989.51	725.33	900.00	200.00	870.00	925.00	1100.00

1

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
28350.000	662.59	0.00	662.61	972.81	1509.58	500.07	5.35	0.00	0.00	777.00	823.00	0.00
28350.000	665.92	3.33	665.92	1600.00	1885.79	441.86	472.35	0.00	0.00	777.00	823.00	0.00
28350.000	666.20	3.60	666.20	1600.00	2150.10	494.75	585.15	0.00	0.00	777.00	823.00	0.00
28350.000	666.69	4.10	666.70	1600.00	2810.26	627.76	866.98	0.00	0.00	777.00	823.00	0.00
28410.000	662.60	0.00	662.62	1089.37	1379.95	512.86	122.20	1720.00	0.00	973.00	1030.00	1720.00
28410.000	665.92	3.32	665.92	1647.44	1790.46	483.46	526.08	1720.00	0.00	973.00	1030.00	1720.00
28410.000	666.20	3.59	666.20	1682.19	2050.79	543.55	635.67	1720.00	0.00	973.00	1030.00	1720.00
28410.000	666.69	4.09	666.70	1720.00	2702.25	693.65	909.09	1720.00	0.00	973.00	1030.00	1720.00
30015.000	662.87	0.00	662.96	675.56	538.19	803.26	673.55	-520.00	520.00	780.00	820.00	1785.00
30015.000	665.97	3.10	665.99	1069.84	818.79	637.52	1343.69	-520.00	520.00	780.00	820.00	1785.00
30015.000	666.26	3.38	666.27	1092.20	938.42	708.54	1583.05	-520.00	520.00	780.00	820.00	1785.00
30015.000	666.77	3.90	666.80	1133.57	1234.59	885.94	2184.47	-520.00	520.00	780.00	820.00	1785.00

1

BUCK CREEK- 10 YEAR FLOO

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
15.860	0.00	0.00	0.00	622.40	2555.00	631.21	0.00	631.50	15.92	5.68	1208.86	640.36
15.860	0.00	0.00	0.00	622.40	3540.00	632.34	0.00	632.66	15.96	6.22	1554.27	886.15
15.860	0.00	0.00	0.00	622.40	4125.00	632.91	0.00	633.24	16.23	6.53	1732.91	1023.90
15.860	0.00	0.00	0.00	622.40	5545.00	634.20	0.00	634.56	16.21	7.09	2229.79	1377.20
15.870	450.00	0.00	0.00	622.80	2555.00	631.77	0.00	631.83	4.61	3.16	2692.58	1189.56
15.870	450.00	0.00	0.00	622.80	3540.00	632.92	0.00	632.98	4.52	3.42	3396.77	1665.10
15.870	450.00	0.00	0.00	622.80	4125.00	633.51	0.00	633.57	4.54	3.57	3760.77	1935.31
15.870	450.00	0.00	0.00	622.80	5545.00	634.82	0.00	634.89	4.55	3.88	4580.08	2598.59
500.000	550.00	0.00	0.00	623.95	2555.00	631.98	0.00	632.11	11.14	4.49	1907.40	765.40
500.000	550.00	0.00	0.00	623.95	3540.00	633.12	0.00	633.24	9.53	4.58	2588.80	1146.53
500.000	550.00	0.00	0.00	623.95	4125.00	633.70	0.00	633.82	9.01	4.66	2946.23	1374.06
500.000	550.00	0.00	0.00	623.95	5545.00	635.00	0.00	635.12	8.11	4.84	3751.72	1946.54
1050.000	550.00	0.00	0.00	623.90	2555.00	632.44	0.00	632.85	21.83	6.50	909.80	546.84
1050.000	550.00	0.00	0.00	623.90	3540.00	633.44	0.00	633.97	24.97	7.54	1095.71	708.48
1050.000	550.00	0.00	0.00	623.90	4125.00	633.97	0.00	634.56	26.57	8.10	1193.58	800.25
1050.000	550.00	0.00	0.00	623.90	5545.00	635.13	0.00	635.89	29.81	7.28	1407.26	1015.60
1225.000	175.00	0.00	0.00	624.00	2555.00	632.76	0.00	633.29	24.65	6.21	567.40	514.63
1225.000	175.00	0.00	0.00	624.00	3540.00	633.77	0.00	634.50	29.20	7.36	668.45	655.09
1225.000	175.00	0.00	0.00	624.00	4125.00	634.29	0.00	635.15	31.90	7.99	719.47	730.39
1225.000	175.00	0.00	0.00	624.00	5545.00	635.43	0.00	636.59	37.18	9.31	834.04	909.36
1235.000	10.00	637.70	638.10	623.80	2555.00	633.18	0.00	633.40	20.47	3.80	672.50	564.74
1235.000	10.00	637.70	638.10	623.80	3540.00	634.34	0.00	634.66	25.77	4.49	788.11	697.33
1235.000	10.00	637.70	638.10	623.80	4125.00	634.96	0.00	635.33	28.75	4.86	849.31	769.34
1235.000	10.00	637.70	638.10	623.80	5545.00	636.25	0.00	636.81	67.37	6.01	922.05	675.58

	1245.000	10.00	637.70	638.10	623.80	2555.00	633.20	0.00	633.42	20.31	3.79	674.57	566.97	
	1245.000	10.00	637.70	638.10	623.80	3540.00	634.37	0.00	634.68	25.57	4.48	790.47	700.09	
	1245.000	10.00	637.70	638.10	623.80	4125.00	634.99	0.00	635.36	28.53	4.84	851.80	772.29	
	1245.000	10.00	637.70	638.10	623.80	5545.00	636.32	0.00	636.88	67.38	6.01	922.05	675.50	
	1255.000	10.00	0.00	0.00	624.00	2555.00	633.12	0.00	633.49	18.14	5.22	671.45	599.87	
	1255.000	10.00	0.00	0.00	624.00	3540.00	634.27	0.00	634.76	19.34	6.04	809.56	804.99	
	1255.000	10.00	0.00	0.00	624.00	4125.00	634.88	0.00	635.44	19.99	6.48	882.48	922.60	
	1255.000	10.00	0.00	0.00	624.00	5545.00	636.23	0.00	636.97	21.09	7.40	1045.40	1207.42	
	1850.000	595.00	0.00	0.00	623.40	2555.00	633.94	0.00	633.99	4.80	2.39	2494.80	1166.19	
	1850.000	595.00	0.00	0.00	623.40	3540.00	635.16	0.00	635.21	3.77	2.44	3473.19	1823.15	
	1850.000	595.00	0.00	0.00	623.40	4125.00	635.82	0.00	635.87	3.41	2.48	4003.62	2233.54	
	1850.000	595.00	0.00	0.00	623.40	5545.00	637.32	0.00	637.37	2.84	2.57	5204.62	3290.87	

1

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EQ	10K*S	VCH	AREA	.01K	
	2275.000	425.00	0.00	0.00	625.70	2555.00	634.15	0.00	634.23	6.32	3.42	2243.13	1016.36	
	2275.000	425.00	0.00	0.00	625.70	3540.00	635.33	0.00	635.42	5.85	3.63	2922.49	1463.94	
	2275.000	425.00	0.00	0.00	625.70	4125.00	635.98	0.00	636.07	5.62	3.73	3296.20	1739.69	
	2275.000	425.00	0.00	0.00	625.70	5545.00	637.45	0.00	637.54	5.14	3.93	4180.30	2445.66	
	2680.000	405.00	0.00	0.00	625.80	2555.00	634.35	0.00	634.72	18.46	5.94	1009.40	594.70	
	2680.000	405.00	0.00	0.00	625.80	3540.00	635.49	0.00	635.89	17.70	6.40	1391.03	841.49	
	2680.000	405.00	0.00	0.00	625.80	4125.00	636.13	0.00	636.52	16.94	6.56	1636.76	1002.34	
	2680.000	405.00	0.00	0.00	625.80	5545.00	637.58	0.00	637.96	14.74	6.74	2281.07	1444.19	
	2735.000	55.00	0.00	0.00	625.80	2555.00	634.47	0.00	634.82	17.02	5.77	1047.63	619.30	
	2735.000	55.00	0.00	0.00	625.80	3540.00	635.61	0.00	635.99	16.54	6.24	1435.65	870.37	
	2735.000	55.00	0.00	0.00	625.80	4125.00	636.24	0.00	636.62	15.95	6.42	1683.13	1032.94	
	2735.000	55.00	0.00	0.00	625.80	5545.00	637.68	0.00	638.04	14.10	6.63	2326.99	1476.86	
	2736.000	1.00	0.00	0.00	625.80	2555.00	634.49	0.00	634.83	37.17	6.36	957.96	419.10	
	2736.000	1.00	0.00	0.00	625.80	3540.00	635.67	0.00	635.99	29.07	6.45	1366.84	656.54	
	2736.000	1.00	0.00	0.00	625.80	4125.00	636.31	0.00	636.63	25.91	6.48	1622.34	810.31	
	2736.000	1.00	0.00	0.00	625.80	5545.00	637.76	0.00	638.05	20.25	6.49	2278.33	1232.13	
	2739.000	3.00	0.00	0.00	625.80	2555.00	634.50	0.00	634.84	36.71	6.34	962.48	421.69	
	2739.000	3.00	0.00	0.00	625.80	3540.00	635.68	0.00	636.00	28.94	6.44	1369.39	658.05	
	2739.000	3.00	0.00	0.00	625.80	4125.00	636.32	0.00	636.63	25.82	6.48	1624.91	811.86	
	2739.000	3.00	0.00	0.00	625.80	5545.00	637.77	0.00	638.05	20.20	6.48	2280.85	1233.78	
	2740.000	1.00	0.00	0.00	625.80	2555.00	634.50	0.00	634.84	16.68	5.73	1057.45	625.66	
	2740.000	1.00	0.00	0.00	625.80	3540.00	635.65	0.00	636.02	16.18	6.19	1450.67	880.13	
	2740.000	1.00	0.00	0.00	625.80	4125.00	636.28	0.00	636.65	15.58	6.36	1701.29	1044.93	
	2740.000	1.00	0.00	0.00	625.80	5545.00	637.72	0.00	638.08	13.80	6.58	2349.32	1492.55	
	3455.000	715.00	0.00	0.00	626.76	2555.00	635.73	0.00	635.88	12.35	4.31	1563.60	727.16	
	3455.000	715.00	0.00	0.00	626.76	3540.00	636.84	0.00	636.99	11.23	4.57	2071.02	1056.46	
	3455.000	715.00	0.00	0.00	626.76	4125.00	637.43	0.00	637.59	10.73	4.70	2377.64	1259.55	
	3455.000	715.00	0.00	0.00	626.76	5545.00	638.75	0.00	638.91	9.64	4.92	3153.40	1786.00	
	5070.000	1615.00	0.00	0.00	629.07	2555.00	637.31	0.00	637.47	11.70	4.48	1552.18	746.92	
	5070.000	1615.00	0.00	0.00	629.07	3540.00	638.32	0.00	638.51	12.11	4.97	1932.07	1017.39	
	5070.000	1615.00	0.00	0.00	629.07	4125.00	638.87	0.00	639.06	12.28	5.23	2136.11	1176.98	
	5070.000	1615.00	0.00	0.00	629.07	5545.00	640.07	0.00	640.30	12.55	5.76	2589.68	1565.45	
	5580.000	510.00	0.00	0.00	629.14	2555.00	637.90	0.00	638.40	19.25	5.67	450.41	582.39	
	5580.000	510.00	0.00	0.00	629.14	3540.00	638.91	0.00	639.48	19.86	6.33	790.38	794.29	
	5580.000	510.00	0.00	0.00	629.14	4125.00	639.44	0.00	640.10	20.94	6.79	895.38	901.35	
Byron Center	5580.000	510.00	0.00	0.00	629.14	5545.00	640.62	0.00	641.44	22.59	7.72	1169.00	1166.59	
*	5630.000	50.00	640.34	639.60	629.14	2555.00	639.20	0.00	639.50	9.25	4.40	580.52	839.99	
*	5630.000	50.00	640.34	639.60	629.14	3540.00	641.58	0.00	641.77	5.40	3.87	1550.24	1522.73	
*	[illegible]	[illegible]	640.34	639.60	629.14	4125.00	642.29	0.00	642.50	5.70	4.12	1763.24	1728.14	

*	5630.000	50.00	640.34	639.60	629.14	5545.00	643.36	0.00	643.65	7.19	4.86	2085.81	2067.23

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EQ	10K*S	VCH	AREA	.01K
6720.000	1090.00	0.00	0.00	630.83	2555.00	640.27	0.00	640.52	9.54	4.60	1073.42	827.40
6720.000	1090.00	0.00	0.00	630.83	3540.00	642.22	0.00	642.45	7.31	4.63	1681.69	1309.62
6720.000	1090.00	0.00	0.00	630.83	4125.00	642.95	0.00	643.19	7.27	4.83	1950.99	1530.09
6720.000	1090.00	0.00	0.00	630.83	5545.00	644.17	0.00	644.46	8.13	5.48	2403.59	1944.83
7120.000	400.00	0.00	0.00	631.00	2555.00	640.68	0.00	640.87	7.96	4.15	1256.75	905.82
7120.000	400.00	0.00	0.00	631.00	3540.00	642.54	0.00	642.73	6.66	4.33	1744.07	1371.73
7120.000	400.00	0.00	0.00	631.00	4125.00	643.27	0.00	643.47	6.79	4.58	1961.77	1583.09
7120.000	400.00	0.00	0.00	631.00	5545.00	644.52	0.00	644.78	7.72	5.24	2403.44	1995.60
7325.000	205.00	0.00	0.00	630.68	2555.00	640.91	0.00	641.03	6.38	3.77	1869.39	1011.85
7325.000	205.00	0.00	0.00	630.68	3540.00	642.76	0.00	642.86	4.77	3.71	2701.72	1621.42
7325.000	205.00	0.00	0.00	630.68	4125.00	643.50	0.00	643.60	4.66	3.84	3064.43	1910.51
7325.000	205.00	0.00	0.00	630.68	5545.00	644.80	0.00	644.92	4.99	4.28	3754.96	2481.30
7335.000	10.00	635.77	636.53	630.68	2555.00	641.00	0.00	641.04	10.64	2.51	1894.25	783.30
7335.000	10.00	635.77	636.53	630.68	3540.00	642.83	0.00	642.87	7.39	2.39	2725.68	1302.17
7335.000	10.00	635.77	636.53	630.68	4125.00	643.57	0.00	643.61	7.05	2.45	3090.60	1553.35
7335.000	10.00	635.77	636.53	630.68	5545.00	644.89	0.00	644.93	7.26	2.68	3791.19	2057.46
7345.000	10.00	635.77	636.53	630.68	2555.00	641.01	0.00	641.05	10.58	2.51	1897.81	785.38
7345.000	10.00	635.77	636.53	630.68	3540.00	642.84	0.00	642.87	7.37	2.39	2728.60	1304.13
7345.000	10.00	635.77	636.53	630.68	4125.00	643.58	0.00	643.62	7.03	2.44	3093.53	1555.41
7345.000	10.00	635.77	636.53	630.68	5545.00	644.89	0.00	644.94	7.25	2.68	3794.55	2059.99
7355.000	10.00	0.00	0.00	630.68	2555.00	640.97	0.00	641.08	6.17	3.72	1893.00	1028.25
7355.000	10.00	0.00	0.00	630.68	3540.00	642.80	0.00	642.90	4.67	3.68	2722.82	1637.86
7355.000	10.00	0.00	0.00	630.68	4125.00	643.54	0.00	643.64	4.58	3.82	3086.31	1928.38
7355.000	10.00	0.00	0.00	630.68	5545.00	644.85	0.00	644.97	4.90	4.26	3781.88	2504.39
8280.000	925.00	0.00	0.00	631.40	2555.00	641.49	0.00	641.59	5.71	3.36	2054.70	1069.26
8280.000	925.00	0.00	0.00	631.40	3540.00	643.20	0.00	643.28	4.37	3.36	2918.14	1694.10
8280.000	925.00	0.00	0.00	631.40	4125.00	643.93	0.00	644.01	4.23	3.47	3314.26	2006.12
8280.000	925.00	0.00	0.00	631.40	5545.00	645.26	0.00	645.36	4.35	3.82	4061.76	2658.86
11650.000	3370.00	0.00	0.00	635.10	2555.00	644.19	0.00	644.56	20.98	5.91	1192.86	557.83
11650.000	3370.00	0.00	0.00	635.10	3540.00	645.25	0.00	645.57	17.93	5.99	1755.62	836.08
11650.000	3370.00	0.00	0.00	635.10	4125.00	645.86	0.00	646.15	16.16	5.97	2102.53	1026.28
11650.000	3370.00	0.00	0.00	635.10	5545.00	647.10	0.00	647.36	13.70	6.00	2981.86	1497.87
12620.000	970.00	0.00	0.00	635.95	2555.00	645.93	0.00	646.34	18.18	5.95	954.14	599.24
12620.000	970.00	0.00	0.00	635.95	3540.00	646.83	0.00	647.32	20.34	6.76	1288.51	784.89
12620.000	970.00	0.00	0.00	635.95	4125.00	647.32	0.00	647.84	21.02	7.12	1487.68	899.64
12620.000	970.00	0.00	0.00	635.95	5545.00	648.36	0.00	648.91	21.33	7.69	2022.98	1200.75
13590.000	970.00	0.00	0.00	636.80	2555.00	647.44	0.00	648.01	16.29	6.23	503.04	632.96
13590.000	970.00	0.00	0.00	636.80	3540.00	648.51	0.00	649.36	20.97	7.63	577.61	772.98
13590.000	970.00	0.00	0.00	636.80	4125.00	649.04	0.00	650.07	23.74	8.41	615.19	846.63
13590.000	970.00	0.00	0.00	636.80	5545.00	650.05	0.00	651.56	31.10	10.24	687.97	994.24

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EQ	10K*S	VCH	AREA	.01K
13600.000	10.00	653.90	654.60	636.80	2555.00	647.39	0.00	648.08	6.50	6.64	384.79	1001.91
13600.000	10.00	653.90	654.60	636.80	3540.00	648.38	0.00	649.52	11.23	8.56	413.66	1056.54
13600.000	10.00	653.90	654.60	636.80	4125.00	648.84	0.00	650.31	15.04	9.74	423.65	1063.75
13600.000	10.00	653.90	654.60	636.80	5545.00	649.55	0.00	652.13	31.68	12.90	429.90	985.15
13700.000	100.00	653.90	654.60	636.80	2555.00	647.47	0.00	648.14	6.43	6.60	387.36	1007.61
13700.000	100.00	653.90	654.60	636.80	3540.00	648.52	0.00	649.64	11.14	8.49	416.81	1060.79
13700.000	100.00	653.90	654.60	636.80	4125.00	649.02	0.00	650.47	15.59	9.67	426.67	1044.56

13700.000	100.00	653.90	654.60	636.80	5545.00	649.86	0.00	652.45	31.68	12.90	429.90	985.15
13710.000	10.00	0.00	0.00	636.80	2555.00	647.76	0.00	648.18	12.24	5.53	561.83	730.17
13710.000	10.00	0.00	0.00	636.80	3540.00	649.13	0.00	649.70	14.02	6.50	672.00	945.54
13710.000	10.00	0.00	0.00	636.80	4125.00	649.91	0.00	650.56	14.70	6.98	733.72	1075.82
13710.000	10.00	0.00	0.00	636.80	5545.00	651.83	0.00	652.64	15.08	7.86	886.92	1427.71
13990.000	280.00	0.00	0.00	638.80	2555.00	648.11	0.00	648.58	16.16	5.49	465.14	635.61
13990.000	280.00	0.00	0.00	638.80	3540.00	649.52	0.00	650.15	17.19	6.38	555.20	853.69
13990.000	280.00	0.00	0.00	638.80	4125.00	650.30	0.00	651.02	17.42	6.80	606.23	988.46
13990.000	280.00	0.00	0.00	638.80	5545.00	652.52	0.00	653.02	10.77	6.15	1148.26	1689.33
14000.000	10.00	654.00	654.96	638.80	2555.00	648.12	0.00	648.58	2.37	5.48	466.00	1658.98
14000.000	10.00	654.00	654.96	638.80	3540.00	649.49	0.00	650.20	7.20	6.78	522.12	1319.58
14000.000	10.00	654.00	654.96	638.80	4125.00	650.19	0.00	651.16	9.84	7.90	522.12	1315.23
14000.000	10.00	654.00	654.96	638.80	5545.00	652.00	646.96	653.57	16.82	10.25	623.97	1351.99
14080.000	80.00	654.00	654.96	638.80	2555.00	648.14	0.00	648.60	2.36	5.47	466.92	1664.02
14080.000	80.00	654.00	654.96	638.80	3540.00	649.54	0.00	650.26	7.20	6.78	522.12	1319.23
14080.000	80.00	654.00	654.96	638.80	4125.00	650.27	0.00	651.24	9.84	7.90	522.12	1314.75
14080.000	80.00	654.00	654.96	638.80	5545.00	652.23	646.96	653.73	16.30	10.08	655.53	1373.37
14090.000	10.00	0.00	0.00	638.80	2555.00	648.14	0.00	648.61	15.93	5.47	467.11	640.11
14090.000	10.00	0.00	0.00	638.80	3540.00	649.67	0.00	650.28	16.23	6.27	564.92	878.77
14090.000	10.00	0.00	0.00	638.80	4125.00	650.60	0.00	651.28	15.74	6.60	624.94	1039.83
14090.000	10.00	0.00	0.00	638.80	5545.00	653.41	0.00	653.84	8.54	5.75	1504.92	1897.77
14520.000	430.00	0.00	0.00	639.65	2555.00	648.93	0.00	649.11	8.45	4.37	1298.45	879.20
14520.000	430.00	0.00	0.00	639.65	3540.00	650.57	0.00	650.78	8.19	4.84	1627.04	1237.20
14520.000	430.00	0.00	0.00	639.65	4125.00	651.55	0.00	651.77	7.85	5.04	1822.40	1472.56
14520.000	430.00	0.00	0.00	639.65	5545.00	653.93	0.00	654.17	6.90	5.39	2297.83	2110.98
14950.000	430.00	0.00	0.00	640.50	2555.00	649.28	0.00	649.32	3.44	2.67	2959.85	1378.34
14950.000	430.00	0.00	0.00	640.50	3540.00	650.93	0.00	650.97	2.75	2.71	3951.26	2135.39
14950.000	430.00	0.00	0.00	640.50	4125.00	651.91	0.00	651.95	2.43	2.72	4537.93	2645.73
14950.000	430.00	0.00	0.00	640.50	5545.00	654.29	0.00	654.32	1.86	2.73	5963.07	4063.24
15250.000	300.00	0.00	0.00	639.70	2555.00	649.37	0.00	649.40	2.67	2.47	3598.92	1564.64
15250.000	300.00	0.00	0.00	639.70	3540.00	651.01	0.00	651.03	2.00	2.40	5071.27	2501.43
15250.000	300.00	0.00	0.00	639.70	4125.00	651.98	0.00	652.00	1.69	2.34	6019.78	3170.78
15250.000	300.00	0.00	0.00	639.70	5545.00	654.34	0.00	654.36	1.16	2.19	8470.82	5143.47

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
17350.000	2100.00	0.00	0.00	645.15	2555.00	650.34	0.00	650.60	32.48	5.78	1290.28	448.29
17350.000	2100.00	0.00	0.00	645.15	3540.00	651.67	0.00	651.85	17.92	5.08	2027.26	836.36
17350.000	2100.00	0.00	0.00	645.15	4125.00	652.52	0.00	652.66	13.27	4.78	2490.74	1132.26
17350.000	2100.00	0.00	0.00	645.15	5545.00	654.68	0.00	654.78	7.29	4.26	3679.70	2053.20
17360.000	10.00	650.90	651.85	645.15	2555.00	650.44	0.00	650.64	37.97	5.21	1259.86	414.63
17360.000	10.00	650.90	651.85	645.15	3540.00	651.81	0.00	651.88	31.05	3.30	1953.12	635.25
17360.000	10.00	650.90	651.85	645.15	4125.00	652.64	0.00	652.69	23.79	2.59	2404.69	845.67
17360.000	10.00	650.90	651.85	645.15	5545.00	654.76	0.00	654.80	12.04	2.27	3571.03	1597.89
17370.000	10.00	650.90	651.85	645.15	2555.00	650.48	0.00	650.68	36.62	5.14	1278.02	422.19
17370.000	10.00	650.90	651.85	645.15	3540.00	651.85	0.00	651.91	30.52	3.27	1965.40	640.82
17370.000	10.00	650.90	651.85	645.15	4125.00	652.66	0.00	652.71	23.48	2.58	2414.85	851.37
17370.000	10.00	650.90	651.85	645.15	5545.00	654.77	0.00	654.81	11.98	2.27	3576.34	1601.75
17380.000	10.00	0.00	0.00	645.15	2555.00	650.49	0.00	650.72	27.39	5.43	1376.75	488.16
17380.000	10.00	0.00	0.00	645.15	3540.00	651.80	0.00	651.96	16.23	4.91	2097.50	878.75
17380.000	10.00	0.00	0.00	645.15	4125.00	652.62	0.00	652.76	12.43	4.67	2546.13	1170.11
17380.000	10.00	0.00	0.00	645.15	5545.00	654.74	0.00	654.84	7.10	4.22	3711.37	2080.70
18725.000	1345.00	0.00	0.00	645.[illegible]0	2555.00	652.81	0.00	652.94	11.15	3.97	1449.31	765.30

18725.000	1345.00	0.00	0.00	645.60	3540.00	653.62	0.00	653.78	11.66	4.43	1821.51	1036.68
18725.000	1345.00	0.00	0.00	645.60	4125.00	654.16	0.00	654.33	11.09	4.55	2076.63	1238.66
18725.000	1345.00	0.00	0.00	645.60	5545.00	655.72	0.00	655.87	8.24	4.47	2851.16	1931.34
20865.000	2140.00	0.00	0.00	646.80	2555.00	655.13	0.00	655.52	13.20	6.50	1425.03	703.19
20865.000	2140.00	0.00	0.00	646.80	3540.00	656.01	0.00	656.42	13.35	7.06	1937.26	968.79
20865.000	2140.00	0.00	0.00	646.80	4125.00	656.47	0.00	656.89	13.32	7.32	2224.69	1130.10
20865.000	2140.00	0.00	0.00	646.80	5545.00	657.58	0.00	657.98	12.30	7.62	2939.22	1581.34
23195.000	2330.00	0.00	0.00	648.20	2555.00	657.27	0.00	657.57	6.23	4.72	1025.49	1023.24
23195.000	2330.00	0.00	0.00	648.20	3540.00	658.25	0.00	658.62	7.10	5.42	1565.31	1328.84
23195.000	2330.00	0.00	0.00	648.20	4125.00	658.73	0.00	659.13	7.39	5.73	1896.42	1517.86
23195.000	2330.00	0.00	0.00	648.20	5545.00	659.78	0.00	660.21	7.68	6.27	2644.40	2001.50
23255.000	60.00	658.50	657.40	650.70	2555.00	658.53	0.00	658.73	5.56	4.22	1549.34	1083.47
23255.000	60.00	658.50	657.40	650.70	3540.00	659.19	0.00	659.39	5.77	4.57	2365.53	1474.14
23255.000	60.00	658.50	657.40	650.70	4125.00	659.44	0.00	659.67	6.78	5.05	2532.21	1584.63
23255.000	60.00	658.50	657.40	650.70	5545.00	659.99	0.00	660.32	8.96	6.08	2910.21	1852.31
23505.000	250.00	0.00	0.00	650.30	2555.00	658.73	0.00	658.83	3.25	3.34	2373.22	1417.36
23505.000	250.00	0.00	0.00	650.30	3540.00	659.37	0.00	659.51	4.35	4.07	2731.29	1698.15
23505.000	250.00	0.00	0.00	650.30	4125.00	659.64	0.00	659.81	5.10	4.51	2887.02	1826.92
23505.000	250.00	0.00	0.00	650.30	5545.00	660.26	0.00	660.50	6.76	5.45	3243.38	2132.84
24685.000	1180.00	0.00	0.00	650.40	2555.00	659.10	0.00	659.35	5.03	4.30	939.88	1138.87
24685.000	1180.00	0.00	0.00	650.40	3540.00	659.84	0.00	660.23	6.97	5.38	1057.85	1340.87
24685.000	1180.00	0.00	0.00	650.40	4125.00	660.18	0.00	660.66	8.21	5.99	1112.71	1439.40
24685.000	1180.00	0.00	0.00	650.40	5545.00	660.93	0.00	661.65	11.07	7.35	1233.43	1666.22

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EQ	10K*S	VCH	AREA	.01K
24695.000	10.00	665.22	665.77	650.40	2555.00	659.28	0.00	659.40	0.66	2.71	944.08	3138.95
24695.000	10.00	665.22	665.77	650.40	3540.00	660.12	0.00	660.29	1.42	3.37	1051.50	2969.21
24695.000	10.00	665.22	665.77	650.40	4125.00	660.51	0.00	660.74	2.27	3.84	1075.57	2736.66
24695.000	10.00	665.22	665.77	650.40	5545.00	661.35	0.00	661.75	4.75	5.13	1081.23	2545.39
24735.000	40.00	665.22	665.77	650.40	2555.00	659.28	0.00	659.40	0.66	2.70	945.79	3147.89
24735.000	40.00	665.22	665.77	650.40	3540.00	660.12	0.00	660.30	1.43	3.36	1052.34	2963.34
24735.000	40.00	665.22	665.77	650.40	4125.00	660.52	0.00	660.75	2.29	3.83	1076.05	2728.44
24735.000	40.00	665.22	665.77	650.40	5545.00	661.36	0.00	661.77	4.75	5.13	1081.23	2545.39
24745.000	10.00	0.00	0.00	650.40	2555.00	659.26	0.00	659.41	3.31	3.54	899.73	1403.87
24745.000	10.00	0.00	0.00	650.40	3540.00	660.09	0.00	660.32	4.30	4.31	1024.69	1706.63
24745.000	10.00	0.00	0.00	650.40	4125.00	660.49	0.00	660.77	4.91	4.74	1085.25	1862.28
24745.000	10.00	0.00	0.00	650.40	5545.00	661.38	0.00	661.78	6.22	5.68	1217.87	2292.65
24855.000	110.00	0.00	0.00	650.40	2555.00	659.25	0.00	659.48	4.43	4.09	723.29	1213.55
24855.000	110.00	0.00	0.00	650.40	3540.00	660.06	0.00	660.41	5.94	5.05	812.94	1452.66
24855.000	110.00	0.00	0.00	650.40	4125.00	660.45	0.00	660.88	6.87	5.59	855.93	1573.47
24855.000	110.00	0.00	0.00	650.40	5545.00	661.31	0.00	661.93	8.97	6.79	950.00	1851.38
24910.000	55.00	0.00	0.00	650.40	2555.00	659.21	0.00	659.53	5.74	4.63	588.63	1066.83
24910.000	55.00	0.00	0.00	650.40	3540.00	659.99	0.00	660.50	8.01	5.83	650.83	1251.07
24910.000	55.00	0.00	0.00	650.40	4125.00	660.35	0.00	660.98	9.46	6.52	679.90	1341.04
24910.000	55.00	0.00	0.00	650.40	5545.00	661.13	0.00	662.09	12.95	8.06	741.87	1540.65
24935.000	25.00	0.00	0.00	650.40	2555.00	659.20	0.00	659.56	6.69	4.81	543.01	987.62
24935.000	25.00	0.00	0.00	650.40	3540.00	659.97	0.00	660.53	9.55	6.07	596.67	1145.48
24935.000	25.00	0.00	0.00	650.40	4125.00	660.32	0.00	661.03	11.41	6.79	621.54	1221.34
24935.000	25.00	0.00	0.00	650.40	5545.00	661.07	0.00	662.17	15.99	8.42	674.02	1386.65
24965.000	30.00	0.00	0.00	650.50	2555.00	659.06	0.00	659.66	14.39	6.23	410.04	673.51
24965.000	30.00	0.00	0.00	650.50	3540.00	659.72	0.00	660.70	21.31	7.92	446.74	766.93
24965.000	30.00	0.00	0.00	650.50	4125.00	660.00	0.00	661.24	26.10	8.92	462.25	807.44
24965.000	30.00	0.00	0.00	650.50	5545.00	660.52	0.00	662.50	39.29	11.29	491.23	884.68

24975.000	10.00	664.50	668.70	650.00	2555.00	658.97	0.00	659.77	4.42	7.18	355.83	1215.22
24975.000	10.00	664.50	668.70	650.00	3540.00	659.57	0.00	660.87	6.64	9.17	386.02	1374.00
24975.000	10.00	664.50	668.70	650.00	4125.00	659.80	0.00	661.47	8.25	10.37	397.63	1436.49
24975.000	10.00	664.50	668.70	650.00	5545.00	660.15	0.00	662.92	13.08	13.35	415.36	1533.40
25115.000	140.00	664.50	668.70	650.00	2555.00	659.05	0.00	659.83	4.26	7.10	360.09	1237.29
25115.000	140.00	664.50	668.70	650.00	3540.00	659.73	0.00	660.98	6.25	8.99	393.85	1416.04
25115.000	140.00	664.50	668.70	650.00	4125.00	660.04	0.00	661.61	7.55	10.07	409.60	1501.70
25115.000	140.00	664.50	668.70	650.00	5545.00	660.84	0.00	663.20	10.35	12.34	449.27	1723.40
25125.000	10.00	0.00	0.00	650.50	2555.00	659.13	0.00	659.85	22.70	6.80	375.61	536.22
25125.000	10.00	0.00	0.00	650.50	3540.00	659.99	0.00	661.02	27.22	8.11	436.47	678.51
25125.000	10.00	0.00	0.00	650.50	4125.00	660.46	0.00	661.66	29.62	8.80	468.61	757.90
25125.000	10.00	0.00	0.00	650.50	5545.00	661.79	0.00	663.30	30.53	9.87	561.94	1003.50

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
25140.000	15.00	0.00	0.00	650.50	2555.00	659.40	0.00	659.90	16.59	5.70	461.58	627.21
25140.000	15.00	0.00	0.00	650.50	3540.00	660.44	0.00	661.08	16.81	6.49	566.27	863.37
25140.000	15.00	0.00	0.00	650.50	4125.00	661.01	0.00	661.74	16.93	6.89	622.92	1002.49
25140.000	15.00	0.00	0.00	650.50	5545.00	662.54	0.00	663.40	15.36	7.48	775.98	1414.66
25155.000	15.00	0.00	0.00	650.50	2555.00	659.48	0.00	659.93	14.82	5.47	521.18	663.75
25155.000	15.00	0.00	0.00	650.50	3540.00	660.56	0.00	661.12	14.17	6.11	662.49	940.50
25155.000	15.00	0.00	0.00	650.50	4125.00	661.17	0.00	661.78	13.77	6.42	741.25	1111.43
25155.000	15.00	0.00	0.00	650.50	5545.00	662.75	0.00	663.44	11.88	6.88	946.48	1608.67
25185.000	30.00	0.00	0.00	650.55	2555.00	659.61	0.00	659.98	12.47	5.07	654.71	723.67
25185.000	30.00	0.00	0.00	650.55	3540.00	660.76	0.00	661.17	10.96	5.46	879.36	1069.35
25185.000	30.00	0.00	0.00	650.55	4125.00	661.40	0.00	661.83	10.29	5.65	1004.20	1286.04
25185.000	30.00	0.00	0.00	650.55	5545.00	663.04	0.00	663.49	8.40	5.90	1323.30	1912.76
25250.000	65.00	0.00	0.00	650.60	2555.00	659.82	0.00	660.06	8.67	4.32	966.66	867.52
25250.000	65.00	0.00	0.00	650.60	3540.00	661.01	0.00	661.25	6.96	4.44	1354.01	1342.07
25250.000	65.00	0.00	0.00	650.60	4125.00	661.67	0.00	661.90	6.30	4.52	1568.18	1643.17
25250.000	65.00	0.00	0.00	650.60	5545.00	663.33	0.00	663.56	4.87	4.57	2107.35	2512.62
25375.000	125.00	0.00	0.00	650.70	2555.00	660.04	0.00	660.15	4.90	3.30	1608.23	1154.17
25375.000	125.00	0.00	0.00	650.70	3540.00	661.23	0.00	661.32	3.67	3.26	2294.55	1848.76
25375.000	125.00	0.00	0.00	650.70	4125.00	661.88	0.00	661.98	3.23	3.27	2675.62	2296.51
25375.000	125.00	0.00	0.00	650.70	5545.00	663.53	0.00	663.61	2.38	3.22	3631.17	3595.64
25855.000	480.00	0.00	0.00	651.15	2015.00	660.27	0.00	660.42	5.84	3.50	949.65	833.87
25855.000	480.00	0.00	0.00	651.15	2800.00	661.39	0.00	661.54	4.80	3.62	1330.20	1277.86
25855.000	480.00	0.00	0.00	651.15	3230.00	662.02	0.00	662.17	4.25	3.64	1545.62	1566.18
25855.000	480.00	0.00	0.00	651.15	4305.00	663.62	0.00	663.76	3.21	3.64	2090.52	2403.60
26100.000	240.00	0.00	0.00	651.35	2015.00	660.39	0.00	660.60	7.46	3.91	705.55	737.71
26100.000	240.00	0.00	0.00	651.35	2800.00	661.46	0.00	661.70	6.78	4.25	941.46	1075.16
26100.000	240.00	0.00	0.00	651.35	3230.00	662.08	0.00	662.32	6.25	4.35	1076.36	1292.49
26100.000	240.00	0.00	0.00	651.35	4305.00	663.64	0.00	663.89	5.03	4.49	1420.50	1920.19
26340.000	245.00	0.00	0.00	651.60	2015.00	660.52	0.00	660.82	6.94	4.39	459.11	764.86
26340.000	245.00	0.00	0.00	651.60	2800.00	661.55	0.00	661.99	8.82	5.32	527.08	943.03
26340.000	245.00	0.00	0.00	651.60	3230.00	662.13	0.00	662.64	9.47	5.72	580.45	1049.60
26340.000	245.00	0.00	0.00	651.60	4305.00	663.63	0.00	664.24	9.93	6.35	810.59	1366.40
26430.000	90.00	661.39	660.98	651.60	2015.00	660.59	0.00	660.93	16.24	4.64	434.32	500.01
26430.000	90.00	661.39	660.98	651.60	2800.00	661.60	0.00	662.23	36.14	6.40	438.65	465.76
26430.000	90.00	661.39	660.98	651.60	3230.00	662.13	0.00	662.97	47.74	7.36	453.80	467.50
26430.000	90.00	661.39	660.98	651.60	4305.00	663.63	0.00	664.24	9.93	6.35	810.52	1366.31
26610.000	180.00	0.00	0.00	651.60	2015.00	660.83	0.00	661.10	6.09	4.21	479.13	816.75
26610.000	180.00	0.00	0.00	651.60	2800.00	662.12	0.00	662.50	7.14	4.96	579.32	1047.63

26610.000	180.00	0.00	0.00	651.60	3230.00	662.86	0.00	663.28	7.31	5.23	675.50	1194.52
26610.000	180.00	0.00	0.00	651.60	4305.00	663.84	0.00	664.42	9.23	6.18	853.49	1416.97

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EQ	10K*S	VCH	AREA	.01K
26790.000	180.00	0.00	0.00	651.60	2015.00	660.99	0.00	661.20	3.97	3.77	709.10	1010.83
26790.000	180.00	0.00	0.00	651.60	2800.00	662.37	0.00	662.61	3.98	4.21	1002.20	1403.57
26790.000	180.00	0.00	0.00	651.60	3230.00	663.15	0.00	663.39	3.69	4.29	1280.57	1682.53
26790.000	180.00	0.00	0.00	651.60	4305.00	664.28	0.00	664.55	3.79	4.68	1778.88	2211 70
27150.000	360.00	0.00	0.00	651.50	2015.00	661.29	0.00	661.34	3.16	2.20	1532.83	1133.76
27150.000	360.00	0.00	0.00	651.50	2800.00	662.69	0.00	662.73	2.10	2.18	2161.42	1933.62
27150.000	360.00	0.00	0.00	651.50	3230.00	663.45	0.00	663.50	1.75	2.17	2506.03	2442.83
27150.000	360.00	0.00	0.00	651.50	4305.00	664.60	0.00	664.66	1.71	2.40	3023.48	3294.40
27290.000	140.00	0.00	0.00	650.76	2015.00	661.13	0.00	661.50	7.29	5.34	662.11	746.48
27290.000	140.00	0.00	0.00	650.76	2800.00	662.52	0.00	662.87	6.46	5.54	1046.04	1101.99
27290.000	140.00	0.00	0.00	650.76	3230.00	663.30	0.00	663.62	5.78	5.51	1263.68	1343.53
27290.000	140.00	0.00	0.00	650.76	4305.00	664.43	0.00	664.79	6.10	6.04	1580.80	1743.17
27300.000	10.00	660.30	661.60	650.76	2015.00	660.82	657.23	661.84	47.46	8.89	273.55	292.50
27300.000	10.00	660.30	661.60	650.76	2800.00	662.37	0.00	663.05	36.18	7.76	448.28	465.50
27300.000	10.00	660.30	661.60	650.76	3230.00	663.27	0.00	663.67	24.77	5.29	663.36	649.03
27300.000	10.00	660.30	661.60	650.76	4305.00	664.52	0.00	664.82	13.57	4.50	1005.99	1168.49
27370.000	70.00	660.30	661.60	650.76	2015.00	661.07	657.27	662.30	55.28	9.59	251.84	271.02
27370.000	70.00	660.30	661.60	650.76	2800.00	662.56	661.72	663.42	45.76	8.73	405.59	413.92
27370.000	70.00	660.30	661.60	650.76	3230.00	663.42	0.00	663.91	31.83	6.11	597.79	572.54
27370.000	70.00	660.30	661.60	650.76	4305.00	664.58	0.00	664.97	18.75	5.33	87/.06	994.32
27380.000	10.00	0.00	0.00	650.76	2015.00	662.16	0.00	662.41	4.53	4.53	825.61	946.40
27380.000	10.00	0.00	0.00	650.76	2800.00	663.18	0.00	663.49	5.24	5.21	1073.24	1222.90
27380.000	10.00	0.00	0.00	650.76	3230.00	663.58	0.00	663.93	5.82	5.62	1167.06	1338.78
27380.000	10.00	0.00	0.00	650.76	4305.00	664.56	0.00	665.00	6.76	6.40	1403.66	1655.95
27990.000	610.00	0.00	0.00	652.00	2015.00	662.55	0.00	662.57	1.20	1.66	2976.65	1841.76
27990.000	610.00	0.00	0.00	652.00	2800.00	663.63	0.00	663.64	1.06	1.70	3937.14	2724.04
27990.000	610.00	0.00	0.00	652.00	3230.00	664.08	0.00	664.09	1.05	1.77	4343.08	3151.95
27990.000	610.00	0.00	0.00	652.00	4305.00	665.15	0.00	665.16	1.01	1.91	5308.67	4278.61
28040.000	50.00	665.80	663.50	652.50	2015.00	662.55	0.00	662.57	1.19	1.88	2911.02	1848.39
28040.000	50.00	665.80	663.50	652.50	2800.00	665.91	0.00	665.91	0.29	1.22	5931.27	5203.86
28040.000	50.00	665.80	663.50	652.50	3230.00	666.18	0.00	666.19	0.34	1.34	6180.76	5544.87
28040.000	50.00	665.80	663.50	652.50	4305.00	666.67	0.00	666.69	0.49	1.66	6619.78	6166.57
28350.000	310.00	0.00	0.00	652.70	2015.00	662.59	0.00	662.61	1.30	1.79	2828.40	1765.84
28350.000	310.00	0.00	0.00	652.70	2800.00	665.92	0.00	665.92	0.24	1.02	7625.05	5703.16
28350.000	310.00	0.00	0.00	652.70	3230.00	666.20	0.00	666.20	0.27	1.11	8067.22	6165.93
28350.000	310.00	0.00	0.00	652.70	4305.00	666.69	0.00	666.70	0.37	1.34	8853.92	7033.68
28410.000	60.00	0.00	0.00	652.60	2015.00	662.60	0.00	662.62	0.97	1.54	3288.69	2041.62
28410.000	60.00	0.00	0.00	652.60	2800.00	665.92	0.00	665.92	0.20	0.93	8083.88	6275.33
28410.000	60.00	0.00	0.00	652.60	3230.00	666.20	0.00	666.20	0.23	1.01	8546.74	6767.51
28410.000	60.00	0.00	0.00	652.60	4305.00	666.69	0.00	666.70	0.31	1.22	9395.77	7698.59

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EQ	10K*S	VCH	AREA	.01K
30015.000	1605.00	0.00	0.00	654.90	2015.00	662.87	0.00	662.96	6.38	3.68	1476.33	797.47
30015.000	1605.00	0.00	0.00	654.90	2800.00	665.97	0.00	665.99	0.90	1.87	4268.83	2951.91
30015.000	1605.00	0.00	0.00	654.90	3230.00	666.26	0.00	666.27	1.00	2.01	4575.75	3235.49
30015.000	1605.00	0.00	0.00	654.90	4305.00	666.77	0.00	666.80	1.29	2.37	5160.55	3797.69

1

TOPOGRAPHIC FLOOD STUDY MAP
OF
BUCK CREEK - WYOMING, MI

PREPARED FOR
GOSLING - CZUBAK

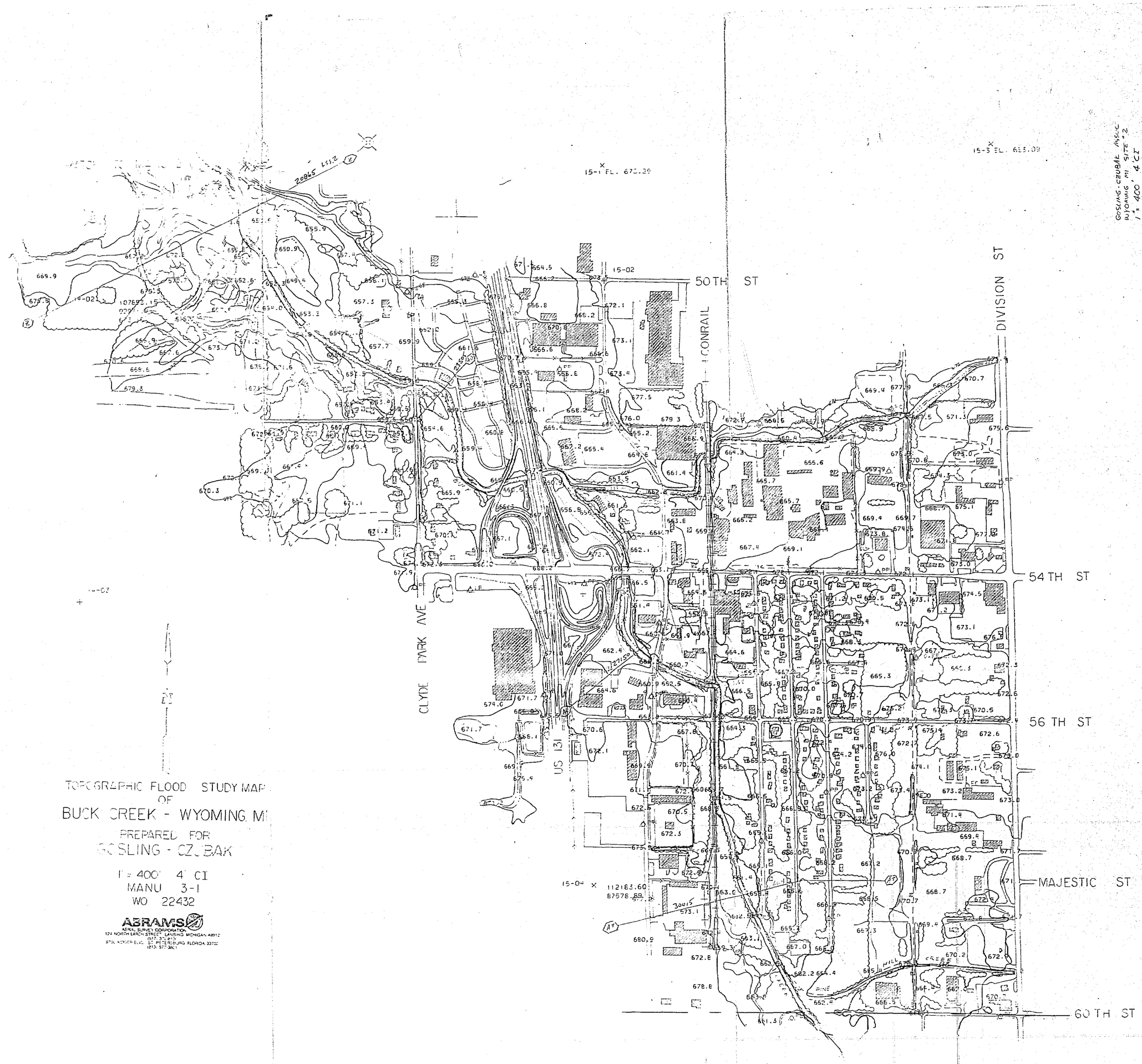
1" = 400' 4' CI
MANU 2 - 1
WO 22432

ABRAMS
AERIAL SURVEY CORPORATION
124 NORTH LAWSH STREET, LANSING, MICHIGAN 48912
(517) 372-7836
9700 ROGER BLVD., ST. PETE - ORPG, FLORIDA 33702
(813) 577-1711

CONTRACT NUMBER: DACW 35-88-D-0036
DELIVERY ORDER NUMBER: 0002
Description

GOSLING-CZUBAK ASSOC
WYOMING MI SITE #2
1" = 400' 4 CI
MOD KBC 13-15 (PT 3)
MANU 3-1

48-C-5



TOPOGRAPHIC FLOOD STUDY MAP
OF
BUCK CREEK - WYOMING, MI

PREPARED FOR
GOSLING - CZUBAK

1" = 400' 4' CI
MANU 3-1
WO 22432

ABRAMS
AERIAL SURVEY CORPORATION
124 NORTH LARCH STREET LANSING, MICHIGAN 48912
(517) 371-4113
8700 ROOSEVELT BLVD. ST. PETERSBURG, FLORIDA 33702
(813) 577-3821

Flooding between
56th Street & XSEC AT ?

RECEIVED
APR 17 1989
NATURAL RESOURCES
LAND & WATER MGMT.

CONTRACT NUMBER: DACW 35-88-D-0036	
DELIVERY ORDER NUMBER: 0002	
Description	TOPOGRAPHIC FLOOD STUDY MAP OF BUCK CREEK WYOMING, MICHIGAN
Gosling Czubak Associates — Engineers, Surveyors	Gosling Czubak Associates, P.C. 525 West Fourteenth Traverse City, MI 49684 616 946-9191
Scale 1" = 400'	Drawn by ABRAMS
Date NOV. 25, 1988	Revised
Sheet 2 of 2	
Job No. 88217.02	