APPENDIXES

APPENDIX A

HYDROLOGIC PARAMETERS ESTIMATION

PHYSIOGRAPHIC INFORMATION AND CN ESTIMATION
PROJECT: NEW CASTLE DEVELOPMENT
Canóvanas, Puerto Rico

PHYSIOGRAFIC INFORMATION:

Soil	Description	HSG	CN
MuE2	Mucara Silty Clay Loam, 20 to 40% slope	D	89
Tt	Toa Silty Clay Loam	B	79
AcC	Aceituna Silty Clay Loam, 5 to 12% slope	B	79
RrC2	Rio Ariba Clay, 5 to 12% slope	D	89
Re	Reilly Soils	A	68
Rs	Rock Land	D	89
CbF2	Caguabo Clay Loam, 20 to 60% slopes	D	89
HuF	Humatas-stony Land Complex, 40 to 60% slope	C	86
MaD2	Mabi Clay, 12 to 20 percent slopes	D	89
LsE2	Los Guineos Silty Clay Loam, 20 to 40% slopes	C	86
LsF2	Los Guineos Silty Clay Loam, 40 to 60% slopes	C	86
LsD	Los Guineos Silty Clay Loam, 12 to 20% slopes	C	86

PROJECT AREA (P1A)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
RrC2	D	89	14.55
Rs	D	89	5.42
MuE2	D	89	1.45
CbF2	D	89	5.62
Tt	B	79	3.11
Total (acres)			30.15
Total (km2)			0.122
Total (mi2)			0.047
Weighted CN			87.97

PROJECT AREA (P1B)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	6.51
AcC	B	79	2.44
Total (acres)			8.95
Total (km2)			0.036
Total (mi2)			0.014
Weighted CN			79.00

PROJECT AREA (P1C)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	7.1
MuE2	D	89	4.5
Total (acres)			11.60
Total (km2)			0.047
Total (mi2)			0.018
Weighted CN			82.88

PROJECT AREA (P1D)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	0.84
Re	A	68	6.97
Rs	D	89	8.2
CbF2	D	89	2.64
RrC2	D	89	2.41
Total (acres)			21.06
Total (km2)			0.085
Total (mi2)			0.033
Weighted CN			81.65

DRAINAGE AREA (E0)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
HuF	C	86	129.51
Rs	D	89	21.64
LsE2	C	86	9.42
LsF2	C	86	59.13
LsD	C	86	28.65
Total (acres)			248.35
Total (km2)			1.005
Total (mi2)			0.388
Weighted CN			86.26

DRAINAGE AREA (E1)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
HuF	C	86	58.93
MuE2	D	89	10.32
Rs	D	89	25.12
CbF2	D	89	21.59
Total (acres)			115.96
Total (km2)			0.469
Total (mi2)			0.181
Weighted CN			87.48

PROJECT AREA (E2)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
MuE2	D	89	25.7
CbF2	D	89	14.35
HuF	C	86	1.38
Total (acres)			41.43
Total (km2)			0.168
Total (mi2)			0.065
Weighted CN			88.90

DRAINAGE AREA (E3)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
CbF2	D	89	16.34
MuE2	D	89	1.58
Total (acres)			17.92
Total (km2)			0.073
Total (mi2)			0.028
Weighted CN			89.00

PROJECT AREA (P1E)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	3.53
Re	A	68	1.1
AcC	B	79	6.4
MuE2	D	89	24.43
CbF2	D	89	2.07
HuF	C	86	7.70
Total (acres)			45.23
Total (km2)			0.183
Total (mi2)			0.071
Weighted CN			85.78

PROJECT AREA (P1F)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
MuE2	D	89	1.53
Rs	D	89	0.53
CbF2	D	89	14.05
HuF	C	86	3.35
Total (acres)			19.46
Total (km2)			0.079
Total (mi2)			0.030
Weighted CN			88.48

PROJECT AREA (E5A)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Rs	D	89	0.76
CbF2	D	89	7.46
HuF	C	86	5.17
Total (acres)			13.39
Total (km2)			0.054
Total (mi2)			0.021
Weighted CN			87.84

PROJECT AREA (E5B)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
MuE2	D	89	16.07
MaD2	D	89	3.32
CbF2	D	89	3.47
HuF	C	86	17.14
Total (acres)			40.00
Total (km2)			0.162
Total (mi2)			0.063
Weighted CN			87.71

PROJECT AREA (E5C)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
HuF	C	86	19.99
Total (acres)			19.99
Total (km2)			0.081
Total (mi2)			0.031
Weighted CN			86.00

DRAINAGE AREA (E4)

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
CbF2	D	89	13.53
Total (acres)			13.53
Total (km2)			0.055
Total (mi2)			0.021
Weighted CN			89.00

PROJECT: NEW CASTLE DEVELOPMENT
COMPUTATIONS FOR LAG TIME - SCS

Lag = {L^0.8(S+1)^0.7} / (1900*Y^0.5)*
SCS's Method

	Length		High Elevation	Low Elevation	DH								Lag
Area	*(m)*	*(ft)*	*(m)*	*(m)*	*(m)*	*(ft)*	**Slope**	**(L^0.8)**	**[CN]**	**[S]**	**[(S+1)^0.7]**	**[Y^0.5]**	*(hrs)*
P1A	452.00	1483.01	90.00	50.00	40.00	131.24	0.0885	344.28	87.97	1.2825	1.7819	2.9748	0.11
P1B	224.00	734.94	55.00	45.00	10.00	32.81	0.0446	196.34	79.00	1.4493	1.8721	2.1129	0.09
P1C	229.00	751.35	80.00	50.00	30.00	98.43	0.1310	199.84	82.88	1.3721	1.8306	3.6195	0.05
P1D	387.00	1269.75	100.00	50.00	50.00	164.05	0.1292	304.07	81.65	1.3957	1.8433	3.5944	0.08
P1E	839.00	2752.76	90.00	50.00	40.00	131.24	0.0477	564.70	85.85	1.3184	1.8015	2.1835	0.25
P1F	360.00	1181.16	120.00	70.00	50.00	164.05	0.1389	286.98	88.46	1.2745	1.7775	3.7268	0.07
E5A	187.00	613.55	200.00	150.00	50.00	164.05	0.2674	169.93	87.84	1.2847	1.7831	5.1709	0.03
E5B	585.00	1919.39	220.00	170.00	50.00	164.05	0.0855	423.18	87.71	1.2868	1.7843	2.9235	0.14
E5C	452.00	1483.01	220.00	200.00	20.00	65.62	0.0442	344.28	86.00	1.3158	1.8001	2.1035	0.16
E0	1635.00	5364.44	425.00	200.00	225.00	738.23	0.1376	962.98	86.26	1.3113	1.7976	3.7096	0.25
E1	850.00	2788.85	160.00	100.00	60.00	196.86	0.0706	570.61	87.48	1.2907	1.7864	2.6568	0.20
E2	467.00	1532.23	200.00	100.00	100.00	328.10	0.2141	353.39	88.90	1.2674	1.7737	4.6274	0.07
E3	300.00	984.30	180.00	130.00	50.00	164.05	0.1667	248.03	89.00	1.2658	1.7728	4.0825	0.06
E4	256.00	839.94	150.00	100.00	50.00	164.05	0.1953	218.47	89.00	1.2658	1.7728	4.4194	0.05

APPENDIX B

HEC-1 MODEL RESULTS

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1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN   1998              *
 *            VERSION 4.1               *
 *  RGMHEC2000               HEC-1.COM  *
 *  RUN DATE   14JUL09  TIME  15:01:13  *
 *                                      *
 ****************************************
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

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

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

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1                                                HEC-1 INPUT                                                PAGE  1

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

            1           ID        HYDROLOGIC ANALYSIS
            2           ID        PROJECT: NEW CASTLE DEVELOPMENT, CANOVANAS, PR
            3           ID        TRIANGULAR DISTRIBUTION
            4           ID        FREQUENCY OF OCCURRENCE: 10-, 50-, 100- & 500-YEARS
            5           ID         HYDROLOGIC ANALYSIS
            6           IT       5                     300
            7           IO       4
            8           JP       4

            9           KK     P1B
           10           KP       1
           11           BA  0.0140
           12           LS       0      79
           13           UD    0.09
           14           IN      15
           15           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
           16           PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
           17           KP       2
           18           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
           19           PH                    0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
           20           KP       3
           21           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
           22           PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
           23           KP       4
           24           KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
           25           PH                    1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

           26           KK     P1C
           27           KP       1
           28           BA  0.0181
           29           LS       0   82.88
           30           UD    0.05
           31           IN      15
           32           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
           33           PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
           34           KP       2
           35           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
           36           PH                    0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
           37           KP       3
           38           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
           39           PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
           40           KP       4
           41           KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
           42           PH                    1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

           43           KK   COMB1
           44           KM  P1B+P1C
           45           HC       2

           46           KK     E5C
           47           KP       1
           48           BA  0.0312
           49           LS       0      86
           50           UD    0.16
           51           IN      15
1                                                HEC-1 INPUT                                                PAGE  2

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

           52           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
           53           PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
           54           KP       2
           55           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
           56           PH                    0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
           57           KP       3
           58           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
           59           PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
           60           KP       4
           61           KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
           62           PH                    1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

           63           KK   CHANN
           64           KM   ROUTING THROUGH OPEN CHANNEL
           65           KO       5                              21
           66           RD  2260.6    0.08   0.045            TRAP      12    1.00

           67           KK     E5B
           68           KP       1
           69           BA  0.0625
           70           LS       0   87.71
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  71          UD    0.14
  72          IN      15
  73          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
  74          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
  75          KP       2
  76          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
  77          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
  78          KP       3
  79          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
  80          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
  81          KP       4
  82          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
  83          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

  84          KK   CHANN
  85          KM   ROUTING THROUGH OPEN CHANNEL
  86          KO       5                            21
  87          RD    1977    0.08   0.045            TRAP      12    1.00

  88          KK     E5A
  89          KP       1
  90          BA  0.0209
  91          LS       0   87.84
  92          UD    0.03
  93          IN      15
  94          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
  95          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
  96          KP       2
  97          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
  98          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
  99          KP       3
 100          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 101          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
 102          KP       4
1                                          HEC-1 INPUT                                          PAGE  3

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

 103          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
 104          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

 105          KK   CHANN
 106          KM   ROUTING THROUGH OPEN CHANNEL
 107          KO       5                            21
 108          RD  917.36    0.08   0.045            TRAP      12    1.00

 109          KK   COMB2
 110          KM  E5
 111          HC       3

 112          KK      E0
 113          KP       1
 114          BA  0.3880
 115          LS       0   86.26
 116          UD    0.25
 117          IN      15
 118          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 119          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 120          KP       2
 121          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 122          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 123          KP       3
 124          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 125          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
 126          KP       4
 127          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
 128          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

 129          KK   CHANN
 130          KM   ROUTING THROUGH OPEN CHANNEL
 131          KO       5                            21
 132          RD    3261    0.08   0.045            TRAP      12    1.00

 133          KK      E1
 134          KP       1
 135          BA  0.1812
 136          LS       0   87.48
 137          UD    0.20
 138          IN      15
 139          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 140          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 141          KP       2
 142          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 143          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
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          144          KP       3
          145          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          146          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
          147          KP       4
          148          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
          149          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97
1                                                HEC-1 INPUT                                                PAGE  4

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


          150          KK   COMB3
          151          KM  E0+E1
          152          HC       2

          153          KK   COMB4
          154          KM  COMB3 + COMB2
          155          HC       2

          156          KK   CHANN
          157          KM   ROUTING THROUGH OPEN CHANNEL
          158          KO       5                             21
          159          RD     547    0.08   0.045            TRAP      12    1.00

          160          KK      E3
          161          KP       1
          162          BA  0.0280
          163          LS       0      89
          164          UD    0.06
          165          IN      15
          166          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          167          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          168          KP       2
          169          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          170          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          171          KP       3
          172          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          173          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
          174          KP       4
          175          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
          176          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

          177          KK   CHANN
          178          KM   ROUTING THROUGH OPEN CHANNEL
          179          KO       5                             21
          180          RD  763.98    0.08   0.045            TRAP      12    1.00

          181          KK     P1F
          182          KP       1
          183          BA  0.0304
          184          LS       0   88.48
          185          UD    0.07
          186          IN      15
          187          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          188          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          189          KP       2
          190          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          191          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          192          KP       3
          193          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          194          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
          195          KP       4
          196          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
          197          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97
1                                                HEC-1 INPUT                                                PAGE  5

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


          198          KK   COMB5
          199          KM  E3 + P1F
          200          HC       2

          201          KK   COMB6
          202          KM  COMB5 + COMB4
          203          HC       2

          204          KK   CHANN
          205          KM   ROUTING THROUGH OPEN CHANNEL
          206          KO       5                             21
          207          RD     515    0.08   0.045            TRAP      12    1.00

          208          KK      E2
          209          KP       1
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```
 210          BA  0.0647
 211          LS       0   88.90
 212          UD    0.07
 213          IN      15
 214          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 215          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 216          KP       2
 217          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 218          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 219          KP       3
 220          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 221          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
 222          KP       4
 223          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
 224          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

 225          KK   CHANN
 226          KM   ROUTING THROUGH OPEN CHANNEL
 227          KO       5                            21
 228          RD     974    0.08   0.045            TRAP      12    1.00

 229          KK     P1E
 230          KP       1
 231          BA  0.0707
 232          LS       0   85.78
 233          UD    0.25
 234          IN      15
 235          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 236          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 237          KP       2
 238          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 239          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 240          KP       3
 241          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 242          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
 243          KP       4
 244          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
 245          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97
1                                          HEC-1 INPUT                                                PAGE  6

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


 246          KK   COMB7
 247          KM  E2+P1E
 248          HC       2

 249          KK   COMB8
 250          KM  COMB7 + COM6
 251          HC       2

 252          KK   CHANN
 253          KM   ROUTING THROUGH OPEN CHANNEL
 254          KO       5                            21
 255          RD    1698    0.08   0.045            TRAP      12    1.00

 256          KK     P1D
 257          KP       1
 258          BA  0.0329
 259          LS       0   81.65
 260          UD    0.08
 261          IN      15
 262          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 263          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 264          KP       2
 265          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 266          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 267          KP       3
 268          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 269          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
 270          KP       4
 271          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
 272          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

 273          KK   COMB9
 274          KM  P1D + COMB8
 275          HC       2

 276          KK   CHANN
 277          KM   ROUTING THROUGH OPEN CHANNEL
 278          KO       5                            21
 279          RD    1932    0.08   0.045            TRAP      12    1.00

 280          KK      E4
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          281          KP       1
          282          BA  0.0211
          283          LS       0      89
          284          UD    0.05
          285          IN      15
          286          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          287          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          288          KP       2
          289          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          290          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          291          KP       3
          292          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          293          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
1                                                  HEC-1 INPUT                                                PAGE  7

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

          294          KP       4
          295          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
          296          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

          297          KK   CHANN
          298          KM   ROUTING THROUGH OPEN CHANNEL
          299          KO       5                              21
          300          RD    1811    0.08   0.045            TRAP      12    1.00

          301          KK     P1A
          302          KP       1
          303          BA  0.0471
          304          LS       0   87.97
          305          UD    0.11
          306          IN      15
          307          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          308          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          309          KP       2
          310          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          311          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          312          KP       3
          313          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          314          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
          315          KP       4
          316          KM        TRIANGULAR DISTRIBUTION 500-YRS STORM
          317          PH                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97

          318          KK  COMB10
          319          KM  P1A + E4
          320          HC       2

          321          KK  COMB11
          322          KM  COMB10 + COMB9
          323          HC       2
          324          ZZ
1****************************************                                                  ****************************************
 *                                      *                                                  *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                  *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                                  *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                  *          609 SECOND STREET           *
 *  RGMHEC2000               HEC-1.COM  *                                                  *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   14JUL09  TIME  15:01:13  *                                                  *           (916) 756-1104             *
 *                                      *                                                  *                                      *
 ****************************************                                                  ****************************************


                                HYDROLOGIC ANALYSIS
                                PROJECT: NEW CASTLE DEVELOPMENT, CANOVANAS, PR
                                TRIANGULAR DISTRIBUTION
                                FREQUENCY OF OCCURRENCE: 10-, 50-, 100- & 500-YEARS
                                 HYDROLOGIC ANALYSIS

    7 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

     JP         MULTI-PLAN OPTION
                      NPLAN           4  NUMBER OF PLANS

     JR         MULTI-RATIO OPTION
                    RATIOS OF RUNOFF
                   1.00


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


            **************
            *            *
   9 KK     *       P1B  *
            *            *
            **************


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

  10 KP        PLAN  1 FOR STATION      P1B
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  16 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .01

  12 LS          SCS LOSS RATE
                      STRTL         .53  INITIAL ABSTRACTION
                     CRVNBR       79.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.


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

  17 KP        PLAN  2 FOR STATION      P1B
                             TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  19 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00
```

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                                                  STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.


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

  20 KP        PLAN  3 FOR STATION      P1B
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  22 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                  STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.


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

  23 KP        PLAN  4 FOR STATION      P1B
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  25 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                  STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  26 KK     *       P1C  *
            *            *
            **************


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

  27 KP        PLAN  1 FOR STATION      P1C
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  28 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  33 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .02

  29 LS          SCS LOSS RATE
                       STRTL         .41  INITIAL ABSTRACTION
                      CRVNBR       82.88  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  30 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
                94.       36.        8.        2.        0.


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

  34 KP        PLAN  2 FOR STATION      P1C
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  28 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  36 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .02

  29 LS          SCS LOSS RATE
                       STRTL         .41  INITIAL ABSTRACTION
                      CRVNBR       82.88  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  30 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
                94.       36.        8.        2.        0.


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

  37 KP        PLAN  3 FOR STATION      P1C
                                TRIANGULAR DISTRIBUTION 100-YRS STORM
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              SUBBASIN RUNOFF DATA

  28 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  39 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .02

  29 LS          SCS LOSS RATE
                       STRTL         .41  INITIAL ABSTRACTION
                      CRVNBR       82.88  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  30 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                                 ***

                                                            UNIT HYDROGRAPH
                                                        5 END-OF-PERIOD ORDINATES
               94.       36.        8.        2.        0.


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

  40 KP        PLAN  4 FOR STATION      P1C
                                 TRIANGULAR DISTRIBUTION 500-YRS STORM

              SUBBASIN RUNOFF DATA

  28 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  42 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .02

  29 LS          SCS LOSS RATE
                       STRTL         .41  INITIAL ABSTRACTION
                      CRVNBR       82.88  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  30 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                                 ***

                                                            UNIT HYDROGRAPH
                                                        5 END-OF-PERIOD ORDINATES
               94.       36.        8.        2.        0.


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


            **************
            *            *
  43 KK     *     COMB1  *
            *            *
            **************
                          P1B+P1C

  45 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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              **************
              *            *
   46 KK      *       E5C  *
              *            *
              **************

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

   47 KP        PLAN  1 FOR STATION      E5C
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

                SUBBASIN RUNOFF DATA

   48 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

   53 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .03

   49 LS          SCS LOSS RATE
                        STRTL         .33  INITIAL ABSTRACTION
                       CRVNBR       86.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

   50 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                 25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
                  0.        0.

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

   54 KP        PLAN  2 FOR STATION      E5C
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

                SUBBASIN RUNOFF DATA

   48 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

   56 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .03

   49 LS          SCS LOSS RATE
                        STRTL         .33  INITIAL ABSTRACTION
                       CRVNBR       86.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

   50 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                 25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
                  0.        0.

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

   57 KP        PLAN  3 FOR STATION      E5C
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM

                SUBBASIN RUNOFF DATA
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 48 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 59 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .03

 49 LS          SCS LOSS RATE
                      STRTL         .33  INITIAL ABSTRACTION
                     CRVNBR       86.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 50 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
               25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
                0.        0.


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

 60 KP        PLAN  4 FOR STATION      E5C
                            TRIANGULAR DISTRIBUTION 500-YRS STORM

              SUBBASIN RUNOFF DATA

 48 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 62 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .03

 49 LS          SCS LOSS RATE
                      STRTL         .33  INITIAL ABSTRACTION
                     CRVNBR       86.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 50 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
               25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
                0.        0.


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


            **************
            *            *
 63 KK      *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 65 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS
```

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


            **************
            *            *
  67 KK     *       E5B  *
            *            *
            **************


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

  68 KP        PLAN  1 FOR STATION      E5B
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  69 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  74 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                 STORM AREA =     .06

  70 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.71  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  71 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                            ***

                                                      UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                67.      166.      133.       62.       30.       14.        7.        3.        2.        1.


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

  75 KP        PLAN  2 FOR STATION      E5B
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  69 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  77 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                 STORM AREA =     .06

  70 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.71  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  71 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                            ***

                                                      UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                67.      166.      133.       62.       30.       14.        7.        3.        2.        1.


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***
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 78 KP        PLAN  3 FOR STATION      E5B
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 69 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

 80 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .06

 70 LS          SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.71  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 71 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
               67.      166.      133.       62.       30.       14.        7.        3.        2.        1.


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

 81 KP        PLAN  4 FOR STATION      E5B
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

              SUBBASIN RUNOFF DATA

 69 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

 83 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .06

 70 LS          SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.71  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 71 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
               67.      166.      133.       62.       30.       14.        7.        3.        2.        1.


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


            **************
            *            *
 84 KK      *     CHANN  *
            *            *
            **************
                        ROUTING THROUGH OPEN CHANNEL

 86 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
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```
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .083  TIME INTERVAL IN HOURS



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

 99 KP        PLAN  3 FOR STATION      E5A
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 90 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

101 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .02

 91 LS          SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.84  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 92 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .03  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
              120.       34.        7.        1.        0.

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

102 KP        PLAN  4 FOR STATION      E5A
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

              SUBBASIN RUNOFF DATA

 90 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

104 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .02

 91 LS          SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.84  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 92 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .03  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
              120.       34.        7.        1.        0.


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


            **************
            *            *
105 KK      *     CHANN  *
            *            *
            **************
                          ROUTING THROUGH OPEN CHANNEL

107 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
```

```
                    IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                   ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                   ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                  TIMINT        .083  TIME INTERVAL IN HOURS



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


           **************
           *            *
 109 KK    *     COMB2  *
           *            *
           **************
                         E5

 111 HC          HYDROGRAPH COMBINATION
                       ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***



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


           **************
           *            *
 112 KK    *        E0  *
           *            *
           **************


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

 113 KP        PLAN  1 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 114 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 119 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .39

 115 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 116 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                 ***

                                                        UNIT HYDROGRAPH
                                                   17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

 120 KP        PLAN  2 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 114 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 122 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
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                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .39

 115 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 116 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                 28.       18.       11.        7.        5.        3.        1.


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

 123 KP        PLAN  3 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

                SUBBASIN RUNOFF DATA

 114 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 125 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .39

 115 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 116 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                 28.       18.       11.        7.        5.        3.        1.


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

 126 KP        PLAN  4 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

                SUBBASIN RUNOFF DATA

 114 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 128 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .39

 115 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 116 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***
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```
                                                    UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
              114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
               28.       18.       11.        7.        5.        3.        1.


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


           **************
           *            *
 129 KK    *     CHANN  *
           *            *
           **************
                          ROUTING THROUGH OPEN CHANNEL

 131 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


           **************
           *            *
 133 KK    *        E1  *
           *            *
           **************


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

 134 KP        PLAN  1 FOR STATION       E1
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 135 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 140 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .18

 136 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 137 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                          ***

                                                    UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
               88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                6.        3.        2.        1.


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

 141 KP        PLAN  2 FOR STATION       E1
                             TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 135 BA          SUBBASIN CHARACTERISTICS
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                    TAREA         .18  SUBBASIN AREA

                PRECIPITATION DATA

143 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .18

136 LS          SCS LOSS RATE
                     STRTL         .29  INITIAL ABSTRACTION
                    CRVNBR       87.48  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

137 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
               88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                6.        3.        2.        1.

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

144 KP        PLAN  3 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

135 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .18  SUBBASIN AREA

                PRECIPITATION DATA

146 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .18

136 LS          SCS LOSS RATE
                     STRTL         .29  INITIAL ABSTRACTION
                    CRVNBR       87.48  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

137 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
               88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                6.        3.        2.        1.

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

147 KP        PLAN  4 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

              SUBBASIN RUNOFF DATA

135 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .18  SUBBASIN AREA

                PRECIPITATION DATA

149 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .18

136 LS          SCS LOSS RATE
                     STRTL         .29  INITIAL ABSTRACTION
                    CRVNBR       87.48  CURVE NUMBER
```

```
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 137 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .20  LAG

                                                          ***

                                                   UNIT HYDROGRAPH
                                             14 END-OF-PERIOD ORDINATES
                88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                 6.        3.        2.        1.


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


            **************
            *            *
 150 KK     *     COMB3  *
            *            *
            **************
                          E0+E1

 152 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
 153 KK     *     COMB4  *
            *            *
            **************
                          COMB3 + COMB2

 155 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
 156 KK     *     CHANN  *
            *            *
            **************
                            ROUTING THROUGH OPEN CHANNEL

 158 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 160 KK     *        E3  *
            *            *
            **************


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

 161 KP        PLAN  1 FOR STATION       E3
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                                TRIANGULAR DISTRIBUTION 10-YRS STORM

              SUBBASIN RUNOFF DATA

 162 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 167 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .03

 163 LS         SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 164 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
              124.       69.       18.        5.        1.        0.


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

 168 KP       PLAN  2 FOR STATION       E3
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 162 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 170 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .03

 163 LS         SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 164 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
              124.       69.       18.        5.        1.        0.


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

 171 KP       PLAN  3 FOR STATION       E3
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 162 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 173 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .03
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 163 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 164 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
                124.       69.       18.        5.        1.        0.

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

 174 KP        PLAN  4 FOR STATION       E3
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

                SUBBASIN RUNOFF DATA

 162 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 176 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                   STORM AREA =     .03

 163 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 164 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
                124.       69.       18.        5.        1.        0.


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


            **************
            *            *
 177 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 179 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 181 KK     *       P1F  *
            *            *
            **************


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***
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 182 KP        PLAN  1 FOR STATION      P1F
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 183 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 188 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                  STORM AREA =     .03

 184 LS          SCS LOSS RATE
                       STRTL         .26  INITIAL ABSTRACTION
                      CRVNBR       88.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 185 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  6 END-OF-PERIOD ORDINATES
               112.       88.       25.        7.        2.        1.


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

 189 KP        PLAN  2 FOR STATION      P1F
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 183 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 191 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                  STORM AREA =     .03

 184 LS          SCS LOSS RATE
                       STRTL         .26  INITIAL ABSTRACTION
                      CRVNBR       88.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 185 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  6 END-OF-PERIOD ORDINATES
               112.       88.       25.        7.        2.        1.


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

 192 KP        PLAN  3 FOR STATION      P1F
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 183 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 194 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00
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                                                STORM AREA =     .03

 184 LS          SCS LOSS RATE
                       STRTL         .26  INITIAL ABSTRACTION
                      CRVNBR       88.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 185 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
               112.       88.       25.        7.        2.        1.


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

 195 KP        PLAN  4 FOR STATION      P1F
                             TRIANGULAR DISTRIBUTION 500-YRS STORM

               SUBBASIN RUNOFF DATA

 183 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 197 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .03

 184 LS          SCS LOSS RATE
                       STRTL         .26  INITIAL ABSTRACTION
                      CRVNBR       88.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 185 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
               112.       88.       25.        7.        2.        1.


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


            **************
            *            *
 198 KK     *     COMB5  *
            *            *
            **************
                          E3 + P1F

 200 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
 201 KK     *     COMB6  *
            *            *
            **************
                          COMB5 + COMB4

 203 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

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


            **************
            *            *
 204 KK     *     CHANN  *
            *            *
            **************
                            ROUTING THROUGH OPEN CHANNEL

 206 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 208 KK     *        E2  *
            *            *
            **************


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

 209 KP        PLAN  1 FOR STATION       E2
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 210 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 215 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .06

 211 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       88.90  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 212 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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

 216 KP        PLAN  2 FOR STATION       E2
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 210 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 218 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
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                .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .06

 211 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 212 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                        ***

                                                    UNIT HYDROGRAPH
                                                6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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

 219 KP        PLAN  3 FOR STATION       E2
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 210 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 221 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .06

 211 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 212 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                        ***

                                                    UNIT HYDROGRAPH
                                                6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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

 222 KP        PLAN  4 FOR STATION       E2
                                 TRIANGULAR DISTRIBUTION 500-YRS STORM

               SUBBASIN RUNOFF DATA

 210 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 224 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .06

 211 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 212 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                        ***

                                                    UNIT HYDROGRAPH
                                                6 END-OF-PERIOD ORDINATES
```

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                238.      188.       53.       15.        5.        1.


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


            **************
            *            *
 225 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 227 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 229 KK     *       P1E  *
            *            *
            **************


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

 230 KP        PLAN  1 FOR STATION      P1E
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .07  SUBBASIN AREA

                 PRECIPITATION DATA

 236 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .07

 232 LS          SCS LOSS RATE
                       STRTL         .33  INITIAL ABSTRACTION
                      CRVNBR       85.78  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                 5.        3.        2.        1.        1.        1.        0.


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

 237 KP        PLAN  2 FOR STATION      P1E
                             TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .07  SUBBASIN AREA

                 PRECIPITATION DATA
```

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 239 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .07

 232 LS           SCS LOSS RATE
                        STRTL         .33  INITIAL ABSTRACTION
                       CRVNBR       85.78  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                 21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                  5.        3.        2.        1.        1.        1.        0.

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

 240 KP        PLAN  3 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .07  SUBBASIN AREA

                 PRECIPITATION DATA

 242 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .07

 232 LS           SCS LOSS RATE
                        STRTL         .33  INITIAL ABSTRACTION
                       CRVNBR       85.78  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                 21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                  5.        3.        2.        1.        1.        1.        0.

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

 243 KP        PLAN  4 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .07  SUBBASIN AREA

                 PRECIPITATION DATA

 245 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                STORM AREA =     .07

 232 LS           SCS LOSS RATE
                        STRTL         .33  INITIAL ABSTRACTION
                       CRVNBR       85.78  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .25  LAG
```

```
                                                  ***

                                              UNIT HYDROGRAPH
                                          17 END-OF-PERIOD ORDINATES
              21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
               5.        3.        2.        1.        1.        1.        0.


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


           **************
           *            *
 246 KK    *     COMB7  *
           *            *
           **************
                         E2+P1E

 248 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                  ***


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


           **************
           *            *
 249 KK    *     COMB8  *
           *            *
           **************
                         COMB7 + COM6

 251 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                  ***


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


           **************
           *            *
 252 KK    *     CHANN  *
           *            *
           **************
                           ROUTING THROUGH OPEN CHANNEL

 254 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


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


           **************
           *            *
 256 KK    *       P1D  *
           *            *
           **************


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

 257 KP        PLAN  1 FOR STATION      P1D
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA
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 258 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 263 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .03

 259 LS          SCS LOSS RATE
                       STRTL         .45  INITIAL ABSTRACTION
                      CRVNBR       81.65  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 260 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  7 END-OF-PERIOD ORDINATES
               102.      103.       33.       11.        4.        1.        0.


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

 264 KP        PLAN  2 FOR STATION      P1D
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 258 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 266 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .03

 259 LS          SCS LOSS RATE
                       STRTL         .45  INITIAL ABSTRACTION
                      CRVNBR       81.65  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 260 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  7 END-OF-PERIOD ORDINATES
               102.      103.       33.       11.        4.        1.        0.


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

 267 KP        PLAN  3 FOR STATION      P1D
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 258 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 269 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .03

 259 LS          SCS LOSS RATE
                       STRTL         .45  INITIAL ABSTRACTION
                      CRVNBR       81.65  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA
```

```
 260 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               102.      103.       33.       11.        4.        1.        0.


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

 270 KP        PLAN  4 FOR STATION      P1D
                            TRIANGULAR DISTRIBUTION 500-YRS STORM

               SUBBASIN RUNOFF DATA

 258 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 272 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                  STORM AREA =     .03

 259 LS          SCS LOSS RATE
                      STRTL         .45  INITIAL ABSTRACTION
                     CRVNBR       81.65  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 260 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               102.      103.       33.       11.        4.        1.        0.


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


            **************
            *            *
 273 KK     *     COMB9  *
            *            *
            **************
                          P1D + COMB8

 275 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
 276 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 278 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS
```

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


            **************
            *            *
 280 KK     *        E4  *
            *            *
            **************


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

 281 KP        PLAN  1 FOR STATION       E4
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 282 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 287 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                 STORM AREA =     .02

 283 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 284 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 288 KP        PLAN  2 FOR STATION       E4
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 282 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 290 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                 STORM AREA =     .02

 283 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 284 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 291 KP        PLAN  3 FOR STATION       E4
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM
```

```
              SUBBASIN RUNOFF DATA

 282 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 293 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .02

 283 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 284 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                             ***

                                                         UNIT HYDROGRAPH
                                                     5 END-OF-PERIOD ORDINATES
              109.       42.       10.        2.        1.


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

 294 KP       PLAN  4 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

              SUBBASIN RUNOFF DATA

 282 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 296 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                   STORM AREA =     .02

 283 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 284 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                             ***

                                                         UNIT HYDROGRAPH
                                                     5 END-OF-PERIOD ORDINATES
              109.       42.       10.        2.        1.


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


            **************
            *            *
 297 KK     *     CHANN  *
            *            *
            **************
                          ROUTING THROUGH OPEN CHANNEL

 299 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS
```

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


            **************
            *            *
 301 KK     *       P1A  *
            *            *
            **************


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

 302 KP        PLAN  1 FOR STATION      P1A
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 303 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 308 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .05

 304 LS          SCS LOSS RATE
                       STRTL         .27  INITIAL ABSTRACTION
                      CRVNBR       87.97  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 305 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .11  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                   9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.


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

 309 KP        PLAN  2 FOR STATION      P1A
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 303 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 311 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .05

 304 LS          SCS LOSS RATE
                       STRTL         .27  INITIAL ABSTRACTION
                      CRVNBR       87.97  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 305 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .11  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                   9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***
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 312 KP        PLAN  3 FOR STATION      P1A
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 303 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 314 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                 STORM AREA =     .05

 304 LS          SCS LOSS RATE
                       STRTL         .27  INITIAL ABSTRACTION
                      CRVNBR       87.97  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 305 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .11  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.


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

 315 KP        PLAN  4 FOR STATION      P1A
                                TRIANGULAR DISTRIBUTION 500-YRS STORM

               SUBBASIN RUNOFF DATA

 303 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 317 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.23    2.17    5.14    7.93    9.89   14.45   19.19   24.97     .00     .00     .00     .00

                                                 STORM AREA =     .05

 304 LS          SCS LOSS RATE
                       STRTL         .27  INITIAL ABSTRACTION
                      CRVNBR       87.97  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 305 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .11  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.


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


             **************
             *            *
 318 KK      *    COMB10  *
             *            *
             **************
                           P1A + E4

 320 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***
```

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


            **************
            *            *
  321 KK    *    COMB11  *
            *            *
            **************
                          COMB10 + COMB9

  323 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***
1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO FLOWS
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                        1.00

 HYDROGRAPH AT
+                    P1B       .01     1   FLOW          43.
                                           TIME        12.17
                                        2   FLOW          59.
                                           TIME        12.17
                                        3   FLOW          65.
                                           TIME        12.17
                                        4   FLOW          81.
                                           TIME        12.17

 HYDROGRAPH AT
+                    P1C       .02     1   FLOW          75.
                                           TIME        12.08
                                        2   FLOW         101.
                                           TIME        12.08
                                        3   FLOW         112.
                                           TIME        12.08
                                        4   FLOW         137.
                                           TIME        12.08

  2 COMBINED AT
+                  COMB1       .03     1   FLOW         116.
                                           TIME        12.08
                                        2   FLOW         158.
                                           TIME        12.08
                                        3   FLOW         176.
                                           TIME        12.08
                                        4   FLOW         217.
                                           TIME        12.08

 HYDROGRAPH AT
+                    E5C       .03     1   FLOW          92.
                                           TIME        12.17
                                        2   FLOW         123.
                                           TIME        12.17
                                        3   FLOW         135.
                                           TIME        12.17
                                        4   FLOW         166.
                                           TIME        12.17

 ROUTED TO
+                  CHANN       .03     1   FLOW          89.
                                           TIME        12.25
                                        2   FLOW         120.
                                           TIME        12.25
                                        3   FLOW         134.
                                           TIME        12.25
                                        4   FLOW         164.
                                           TIME        12.25

 HYDROGRAPH AT
+                    E5B       .06     1   FLOW         198.
                                           TIME        12.17
                                        2   FLOW         261.
                                           TIME        12.17
                                        3   FLOW         287.
                                           TIME        12.17
                                        4   FLOW         352.
                                           TIME        12.17
```

```
 ROUTED TO
+                  CHANN       .06     1   FLOW         189.
                                           TIME        12.25
                                       2   FLOW         249.
                                           TIME        12.25
                                       3   FLOW         271.
                                           TIME        12.25
                                       4   FLOW         331.
                                           TIME        12.25

 HYDROGRAPH AT
+                    E5A       .02     1   FLOW          95.
                                           TIME        12.08
                                       2   FLOW         126.
                                           TIME        12.08
                                       3   FLOW         138.
                                           TIME        12.08
                                       4   FLOW         169.
                                           TIME        12.08

 ROUTED TO
+                  CHANN       .02     1   FLOW          82.
                                           TIME        12.08
                                       2   FLOW         111.
                                           TIME        12.08
                                       3   FLOW         122.
                                           TIME        12.08
                                       4   FLOW         149.
                                           TIME        12.08

  3 COMBINED AT
+                  COMB2       .11     1   FLOW         325.
                                           TIME        12.25
                                       2   FLOW         431.
                                           TIME        12.25
                                       3   FLOW         472.
                                           TIME        12.25
                                       4   FLOW         581.
                                           TIME        12.17

 HYDROGRAPH AT
+                     E0       .39     1   FLOW         988.
                                           TIME        12.25
                                       2   FLOW        1315.
                                           TIME        12.25
                                       3   FLOW        1451.
                                           TIME        12.25
                                       4   FLOW        1785.
                                           TIME        12.25

 ROUTED TO
+                  CHANN       .39     1   FLOW         987.
                                           TIME        12.33
                                       2   FLOW        1313.
                                           TIME        12.33
                                       3   FLOW        1449.
                                           TIME        12.33
                                       4   FLOW        1783.
                                           TIME        12.33

 HYDROGRAPH AT
+                     E1       .18     1   FLOW         507.
                                           TIME        12.25
                                       2   FLOW         669.
                                           TIME        12.25
                                       3   FLOW         736.
                                           TIME        12.25
                                       4   FLOW         903.
                                           TIME        12.25

  2 COMBINED AT
+                  COMB3       .57     1   FLOW        1454.
                                           TIME        12.33
                                       2   FLOW        1928.
                                           TIME        12.33
                                       3   FLOW        2125.
                                           TIME        12.33
                                       4   FLOW        2612.
                                           TIME        12.25

  2 COMBINED AT
+                  COMB4       .68     1   FLOW        1765.
                                           TIME        12.25
```

```
                                        2   FLOW        2350.
                                            TIME        12.25
                                        3   FLOW        2592.
                                            TIME        12.25
                                        4   FLOW        3189.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .68     1   FLOW        1753.
                                            TIME        12.25
                                        2   FLOW        2337.
                                            TIME        12.25
                                        3   FLOW        2577.
                                            TIME        12.25
                                        4   FLOW        3172.
                                            TIME        12.25

 HYDROGRAPH AT
+                      E3       .03     1   FLOW         114.
                                            TIME        12.08
                                        2   FLOW         150.
                                            TIME        12.08
                                        3   FLOW         165.
                                            TIME        12.08
                                        4   FLOW         201.
                                            TIME        12.08

 ROUTED TO
+                   CHANN       .03     1   FLOW         102.
                                            TIME        12.08
                                        2   FLOW         136.
                                            TIME        12.08
                                        3   FLOW         150.
                                            TIME        12.08
                                        4   FLOW         185.
                                            TIME        12.08

 HYDROGRAPH AT
+                     P1F       .03     1   FLOW         114.
                                            TIME        12.08
                                        2   FLOW         150.
                                            TIME        12.08
                                        3   FLOW         165.
                                            TIME        12.08
                                        4   FLOW         202.
                                            TIME        12.08

  2 COMBINED AT
+                   COMB5       .06     1   FLOW         216.
                                            TIME        12.08
                                        2   FLOW         286.
                                            TIME        12.08
                                        3   FLOW         315.
                                            TIME        12.08
                                        4   FLOW         387.
                                            TIME        12.08

  2 COMBINED AT
+                   COMB6       .74     1   FLOW        1891.
                                            TIME        12.25
                                        2   FLOW        2517.
                                            TIME        12.25
                                        3   FLOW        2775.
                                            TIME        12.25
                                        4   FLOW        3413.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .74     1   FLOW        1882.
                                            TIME        12.25
                                        2   FLOW        2507.
                                            TIME        12.25
                                        3   FLOW        2765.
                                            TIME        12.25
                                        4   FLOW        3402.
                                            TIME        12.25

 HYDROGRAPH AT
+                      E2       .06     1   FLOW         243.
                                            TIME        12.08
                                        2   FLOW         319.
                                            TIME        12.08
                                        3   FLOW         351.
                                            TIME        12.08
```

```
                                        4   FLOW         429.
                                            TIME        12.08

 ROUTED TO
+                   CHANN       .06     1   FLOW         221.
                                            TIME        12.08
                                        2   FLOW         292.
                                            TIME        12.08
                                        3   FLOW         323.
                                            TIME        12.08
                                        4   FLOW         397.
                                            TIME        12.08

 HYDROGRAPH AT
+                     P1E       .07     1   FLOW         180.
                                            TIME        12.25
                                        2   FLOW         239.
                                            TIME        12.25
                                        3   FLOW         264.
                                            TIME        12.25
                                        4   FLOW         326.
                                            TIME        12.25

  2 COMBINED AT
+                   COMB7       .14     1   FLOW         370.
                                            TIME        12.17
                                        2   FLOW         488.
                                            TIME        12.17
                                        3   FLOW         538.
                                            TIME        12.17
                                        4   FLOW         659.
                                            TIME        12.17

  2 COMBINED AT
+                   COMB8       .88     1   FLOW        2225.
                                            TIME        12.25
                                        2   FLOW        2958.
                                            TIME        12.25
                                        3   FLOW        3260.
                                            TIME        12.25
                                        4   FLOW        4009.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .88     1   FLOW        2200.
                                            TIME        12.25
                                        2   FLOW        2931.
                                            TIME        12.25
                                        3   FLOW        3232.
                                            TIME        12.25
                                        4   FLOW        3982.
                                            TIME        12.25

 HYDROGRAPH AT
+                     P1D       .03     1   FLOW         108.
                                            TIME        12.08
                                        2   FLOW         146.
                                            TIME        12.08
                                        3   FLOW         162.
                                            TIME        12.08
                                        4   FLOW         201.
                                            TIME        12.08

  2 COMBINED AT
+                   COMB9       .91     1   FLOW        2274.
                                            TIME        12.25
                                        2   FLOW        3030.
                                            TIME        12.25
                                        3   FLOW        3342.
                                            TIME        12.25
                                        4   FLOW        4117.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .91     1   FLOW        2247.
                                            TIME        12.25
                                        2   FLOW        3000.
                                            TIME        12.25
                                        3   FLOW        3311.
                                            TIME        12.25
                                        4   FLOW        4083.
                                            TIME        12.25

 HYDROGRAPH AT
```

```
+                    E4       .02     1   FLOW          92.
                                          TIME        12.08
                                        2   FLOW         121.
                                          TIME        12.08
                                        3   FLOW         133.
                                          TIME        12.08
                                        4   FLOW         162.
                                          TIME        12.08

 ROUTED TO
+                  CHANN       .02     1   FLOW          80.
                                          TIME        12.17
                                        2   FLOW         103.
                                          TIME        12.17
                                        3   FLOW         114.
                                          TIME        12.17
                                        4   FLOW         135.
                                          TIME        12.17

 HYDROGRAPH AT
+                    P1A       .05     1   FLOW         158.
                                          TIME        12.17
                                        2   FLOW         209.
                                          TIME        12.17
                                        3   FLOW         230.
                                          TIME        12.17
                                        4   FLOW         281.
                                          TIME        12.17

  2 COMBINED AT
+                 COMB10       .07     1   FLOW         238.
                                          TIME        12.17
                                        2   FLOW         312.
                                          TIME        12.17
                                        3   FLOW         343.
                                          TIME        12.17
                                        4   FLOW         416.
                                          TIME        12.17

  2 COMBINED AT
+                 COMB11       .98     1   FLOW        2419.
                                          TIME        12.25
                                        2   FLOW        3229.
                                          TIME        12.25
                                        3   FLOW        3561.
                                          TIME        12.25
                                        4   FLOW        4391.
                                          TIME        12.25
1
                                          SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                              (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                   INTERPOLATED TO
                                                                                 COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                              PEAK

                                (MIN)     (CFS)      (MIN)     (IN)     (MIN)     (CFS)     (MIN)       (IN)

           FOR PLAN = 1  RATIO=  .00
              CHANN  MANE         4.09     90.67    736.55      8.60      5.00     89.27    735.00        8.60


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1431E+02 EXCESS= .0000E+00 OUTFLOW= .1431E+02 BASIN STORAGE= .3104E-02 PERCENT ERROR=    .0


           FOR PLAN = 2  RATIO=  .00
              CHANN  MANE         3.72    120.40    736.99     13.80      5.00    120.25    735.00       13.79


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2295E+02 EXCESS= .0000E+00 OUTFLOW= .2296E+02 BASIN STORAGE= .2623E-02 PERCENT ERROR=    .0


           FOR PLAN = 3  RATIO=  .00
              CHANN  MANE         3.60    134.17    735.03     16.34      5.00    134.10    735.00       16.35


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2719E+02 EXCESS= .0000E+00 OUTFLOW= .2719E+02 BASIN STORAGE= .3152E-02 PERCENT ERROR=    .0


           FOR PLAN = 4  RATIO=  .00
              CHANN  MANE         3.36    165.07    733.51     23.12      5.00    164.03    735.00       23.12


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3847E+02 EXCESS= .0000E+00 OUTFLOW= .3847E+02 BASIN STORAGE= .3060E-02 PERCENT ERROR=    .0
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```
          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         2.78    194.43    733.45      8.82      5.00    188.51    735.00        8.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2940E+02 EXCESS= .0000E+00 OUTFLOW= .2940E+02 BASIN STORAGE= .1484E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         2.53    256.84    732.25     14.03      5.00    249.09    735.00       14.03

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4675E+02 EXCESS= .0000E+00 OUTFLOW= .4675E+02 BASIN STORAGE= .1822E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         2.45    279.57    733.86     16.58      5.00    270.74    735.00       16.58

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5526E+02 EXCESS= .0000E+00 OUTFLOW= .5526E+02 BASIN STORAGE= .1660E-02 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.29    345.52    731.89     23.36      5.00    331.04    735.00       23.36

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .7787E+02 EXCESS= .0000E+00 OUTFLOW= .7788E+02 BASIN STORAGE= .2393E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.64     89.49    726.17      8.84      5.00     81.56    725.00        8.84

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9849E+01 EXCESS= .0000E+00 OUTFLOW= .9849E+01 BASIN STORAGE= .8099E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.50    121.16    726.39     14.05      5.00    110.97    725.00       14.06

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1566E+02 EXCESS= .0000E+00 OUTFLOW= .1566E+02 BASIN STORAGE= .7168E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.45    133.76    726.59     16.60      5.00    121.64    725.00       16.61

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1851E+02 EXCESS= .0000E+00 OUTFLOW= .1851E+02 BASIN STORAGE= .7539E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.36    163.22    726.57     23.38      5.00    148.87    725.00       23.39

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2606E+02 EXCESS= .0000E+00 OUTFLOW= .2606E+02 BASIN STORAGE= .7184E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         2.69    990.66    738.92      8.63      5.00    987.38    740.00        8.63

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1786E+03 EXCESS= .0000E+00 OUTFLOW= .1786E+03 BASIN STORAGE= .3920E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         2.44   1315.03    738.11     13.82      5.00   1313.46    740.00       13.82

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2860E+03 EXCESS= .0000E+00 OUTFLOW= .2860E+03 BASIN STORAGE= .5737E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         2.37   1451.23    738.01     16.37      5.00   1449.08    740.00       16.37

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3387E+03 EXCESS= .0000E+00 OUTFLOW= .3387E+03 BASIN STORAGE= .5889E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.21   1785.79    739.81     23.14      5.00   1782.82    740.00       23.14

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4789E+03 EXCESS= .0000E+00 OUTFLOW= .4789E+03 BASIN STORAGE= .8681E-01 PERCENT ERROR=    .0
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```
          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .37   1764.33    735.44      8.69      5.00   1753.35    735.00        8.69

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3170E+03 EXCESS= .0000E+00 OUTFLOW= .3170E+03 BASIN STORAGE= .8699E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .34   2349.32    735.38     13.89      5.00   2336.79    735.00       13.89

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5066E+03 EXCESS= .0000E+00 OUTFLOW= .5066E+03 BASIN STORAGE= .1221E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .33   2589.73    735.50     16.44      5.00   2577.26    735.00       16.44

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5996E+03 EXCESS= .0000E+00 OUTFLOW= .5996E+03 BASIN STORAGE= .1269E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .31   3186.94    735.43     23.22      5.00   3172.34    735.00       23.22

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8467E+03 EXCESS= .0000E+00 OUTFLOW= .8467E+03 BASIN STORAGE= .1800E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.29    109.15    727.07      8.98      5.00    102.37    725.00        8.99

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1341E+02 EXCESS= .0000E+00 OUTFLOW= .1341E+02 BASIN STORAGE= .6114E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.18    147.63    726.29     14.20      5.00    136.10    725.00       14.21

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2120E+02 EXCESS= .0000E+00 OUTFLOW= .2120E+02 BASIN STORAGE= .6424E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.14    160.66    726.48     16.76      5.00    149.90    725.00       16.77

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2502E+02 EXCESS= .0000E+00 OUTFLOW= .2502E+02 BASIN STORAGE= .5151E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.07    198.52    726.04     23.55      5.00    185.40    725.00       23.56

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3516E+02 EXCESS= .0000E+00 OUTFLOW= .3516E+02 BASIN STORAGE= .5724E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .34   1889.72    735.52      8.71      5.00   1882.47    735.00        8.71

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3449E+03 EXCESS= .0000E+00 OUTFLOW= .3449E+03 BASIN STORAGE= .8748E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .31   2515.00    735.36     13.91      5.00   2507.35    735.00       13.91

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5507E+03 EXCESS= .0000E+00 OUTFLOW= .5507E+03 BASIN STORAGE= .1209E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .30   2771.81    735.43     16.46      5.00   2764.51    735.00       16.46

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .6517E+03 EXCESS= .0000E+00 OUTFLOW= .6517E+03 BASIN STORAGE= .1276E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .28   3410.50    735.25     23.24      5.00   3401.97    735.00       23.24

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9200E+03 EXCESS= .0000E+00 OUTFLOW= .9200E+03 BASIN STORAGE= .1771E-01 PERCENT ERROR=    .0
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```
          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.28    237.68    727.14      8.97      5.00    221.01    725.00        8.97

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3095E+02 EXCESS= .0000E+00 OUTFLOW= .3095E+02 BASIN STORAGE= .7691E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.17    312.69    725.87     14.18      5.00    292.24    725.00       14.19

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4894E+02 EXCESS= .0000E+00 OUTFLOW= .4894E+02 BASIN STORAGE= .8463E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.13    345.98    725.94     16.74      5.00    322.76    725.00       16.75

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5777E+02 EXCESS= .0000E+00 OUTFLOW= .5777E+02 BASIN STORAGE= .7256E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.06    420.95    725.81     23.53      5.00    397.31    725.00       23.54

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8120E+02 EXCESS= .0000E+00 OUTFLOW= .8120E+02 BASIN STORAGE= .7382E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.07   2218.51    736.44      8.72      5.00   2200.20    735.00        8.72

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4082E+03 EXCESS= .0000E+00 OUTFLOW= .4082E+03 BASIN STORAGE= .3561E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .97   2950.20    736.19     13.92      5.00   2931.19    735.00       13.92

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .6516E+03 EXCESS= .0000E+00 OUTFLOW= .6516E+03 BASIN STORAGE= .4719E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .94   3247.54    736.33     16.47      5.00   3232.43    735.00       16.47

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .7710E+03 EXCESS= .0000E+00 OUTFLOW= .7710E+03 BASIN STORAGE= .5258E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .88   4003.37    735.88     23.25      5.00   3981.88    735.00       23.25

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1088E+04 EXCESS= .0000E+00 OUTFLOW= .1088E+04 BASIN STORAGE= .6862E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.21   2269.36    736.45      8.70      5.00   2247.01    735.00        8.70

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4224E+03 EXCESS= .0000E+00 OUTFLOW= .4224E+03 BASIN STORAGE= .4959E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.10   3021.78    736.53     13.89      5.00   2999.96    735.00       13.90

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .6747E+03 EXCESS= .0000E+00 OUTFLOW= .6747E+03 BASIN STORAGE= .6747E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.06   3334.37    736.36     16.45      5.00   3310.93    735.00       16.45

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .7987E+03 EXCESS= .0000E+00 OUTFLOW= .7986E+03 BASIN STORAGE= .7467E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .99   4105.43    735.72     23.22      5.00   4083.34    735.00       23.23

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1128E+04 EXCESS= .0000E+00 OUTFLOW= .1128E+04 BASIN STORAGE= .9395E-01 PERCENT ERROR=    .0
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```
          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         3.28     86.11    728.02      9.00      5.00     79.84    730.00        8.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1012E+02 EXCESS= .0000E+00 OUTFLOW= .1013E+02 BASIN STORAGE= .1769E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         2.99    112.83    727.54     14.21      5.00    103.40    730.00       14.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1599E+02 EXCESS= .0000E+00 OUTFLOW= .1599E+02 BASIN STORAGE= .1705E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         2.90    130.08    728.00     16.77      5.00    113.59    730.00       16.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1888E+02 EXCESS= .0000E+00 OUTFLOW= .1888E+02 BASIN STORAGE= .1667E-02 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.72    158.77    728.01     23.55      5.00    135.01    730.00       23.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2650E+02 EXCESS= .0000E+00 OUTFLOW= .2650E+02 BASIN STORAGE= .1339E-02 PERCENT ERROR=    .0



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

APPENDIX C

HEC-RAS RESULTS FOR EXISTING CONDITION

```
                    HEC-RAS Version 3.1.3 May 2005
                     U.S. Army Corp of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


          X     X  XXXXXX    XXXX        XXXX       XX      XXXX
          X     X  X        X    X       X   X     X  X    X
          X     X  X        X            X   X    X    X   X
          XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
          X     X  X        X            X  X     X    X        X
          X     X  X        X    X       X   X    X    X        X
          X     X  XXXXXX    XXXX        X    X   X    X   XXXXX


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

PROJECT DATA
Project Title: NEW CASTLE DEVELOPMENT
Project File : E.prj
Run Date and Time: 7/14/2009 2:40:55 PM

Project in SI units

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

PLAN DATA

Plan Title: E
Plan File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\E\E.p01

           Geometry Title: E
           Geometry File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\E\E.g01

           Flow Title    : E
           Flow File     : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\E\E.f01

Plan Summary Information:
Number of:  Cross Sections =   18    Multiple Openings  =    0
            Culverts       =    0    Inline Structures  =    0
            Bridges        =    0    Lateral Structures =    0

Computational Information
    Water surface calculation tolerance  =  0.003
    Critical depth calculation tolerance =  0.003
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.1
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Mixed Flow


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

FLOW DATA

Flow Title: E
Flow File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\E\E.f01

Flow Data (m3/s)
*****************************************************************************************************
* River           Reach           RS      *          500-Yr          100-Yr           50-Yr           10-Yr *
* A_TRIBUTARY     ONE             12      *           11.24            9.15            8.27            6.26 *
* A_TRIBUTARY     ONE             10.91   *          112.74           91.51           82.98           62.29 *
* CREEK1          ONE             15      *           89.81           72.96           66.17           49.63 *
* CREEK1          ONE             14      *           96.32           78.28           70.98           53.28 *
* CREEK1          ONE             10.9    *          112.74           91.51           82.98           62.29 *
* CREEK1          ONE             8       *           115.6           93.74           84.94           63.62 *
* CREEK1          ONE             2       *          124.32          100.82           91.42           68.49 *
*****************************************************************************************************

Boundary Conditions
*****************************************************************************************************
* River           Reach           Profile          *            Upstream                Downstream    *
*****************************************************************************************************
* A_TRIBUTARY     ONE             500-Yr           *              Critical             Normal S = 0.01 *
* A_TRIBUTARY     ONE             100-Yr           *              Critical             Normal S = 0.01 *
* A_TRIBUTARY     ONE             50-Yr            *              Critical             Normal S = 0.01 *
* A_TRIBUTARY     ONE             10-Yr            *              Critical             Normal S = 0.01 *
* CREEK1          ONE             500-Yr           *              Critical            Known WS = 48.21 *
* CREEK1          ONE             100-Yr           *              Critical            Known WS = 47.76 *
* CREEK1          ONE             50-Yr            *              Critical            Known WS = 47.39 *
* CREEK1          ONE             10-Yr            *              Critical            Known WS = 46.95 *
*****************************************************************************************************

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

GEOMETRY DATA

Geometry Title: E
Geometry File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\E\E.g01

CROSS SECTION

RIVER: A_TRIBUTARY
REACH: ONE RS: 12

INPUT
Description:
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	89.73	5.64	88	12.87	86.53	16.61	85.74	18.62	85.42
25.94	83.58	31.55	82.95	34.25	82.95	37.79	82.57	51.33	77.62
60.92	75	64.25	74.53	67.46	74	73.69	73.5	79.95	72.812
81.51	72.64	86.86	72.09	86.89	72.086	86.91	72.084	86.99	72.075
87.39	72.03	87.7	72	89.89	72	95.76	72	98.47	71.51
102.66	71	105.56	72.02	105.6	72.03	105.72	72.075	105.75	72.086
105.76	72.09	105.77	72.09	106.26	72.26	107.35	72.821	111.58	75
118.62	78	125.46	79	143.47	80	153.99	81	161.09	81.26
170.48	82	186.57	84.57	189.05	84.78	190.94	84.71	197.73	84.1
212.01	82	217.99	81.47	222.12	81.48	232.8	81.95	241.66	81.34
247.06	81.42	253.91	81.95						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	79.95	.04	107.35	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
79.95	107.35	124.36	124.36	124.36	.1	.3

CROSS SECTION OUTPUT Profile #500-Yr

E.G. Elev (m)	72.22	Element	Left OB	Channel	Right OB
Vel Head (m)	0.17	Wt. n-Val.		0.040	
W.S. Elev (m)	72.05	Reach Len. (m)	124.36	124.36	124.36
Crit W.S. (m)	72.05	Flow Area (m2)		6.14	
E.G. Slope (m/m)	0.023644	Area (m2)		6.14	
Q Total (m3/s)	11.24	Flow (m3/s)		11.24	
Top Width (m)	18.46	Top Width (m)		18.46	
Vel Total (m/s)	1.83	Avg. Vel. (m/s)		1.83	
Max Chl Dpth (m)	1.05	Hydr. Depth (m)		0.33	
Conv. Total (m3/s)	73.1	Conv. (m3/s)		73.1	
Length Wtd. (m)	124.36	Wetted Per. (m)		18.72	
Min Ch El (m)	71.00	Shear (N/m2)		76.12	
Alpha	1.00	Stream Power (N/m s)		139.25	
Frctn Loss (m)		Cum Volume (1000 m3)		2.12	
C & E Loss (m)		Cum SA (1000 m2)		4.92	

CROSS SECTION OUTPUT Profile #100-Yr

E.G. Elev (m)	72.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.040	
W.S. Elev (m)	71.89	Reach Len. (m)	124.36	124.36	124.36
Crit W.S. (m)	71.89	Flow Area (m2)		4.19	
E.G. Slope (m/m)	0.021321	Area (m2)		4.19	
Q Total (m3/s)	9.15	Flow (m3/s)		9.15	
Top Width (m)	8.82	Top Width (m)		8.82	
Vel Total (m/s)	2.19	Avg. Vel. (m/s)		2.19	
Max Chl Dpth (m)	0.89	Hydr. Depth (m)		0.47	
Conv. Total (m3/s)	62.7	Conv. (m3/s)		62.7	
Length Wtd. (m)	124.36	Wetted Per. (m)		9.04	
Min Ch El (m)	71.00	Shear (N/m2)		96.83	
Alpha	1.00	Stream Power (N/m s)		211.60	
Frctn Loss (m)	2.97	Cum Volume (1000 m3)		1.75	
C & E Loss (m)	0.04	Cum SA (1000 m2)		4.17	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #50-Yr

E.G. Elev (m)	72.09	Element	Left OB	Channel	Right OB
Vel Head (m)	0.23	Wt. n-Val.		0.040	
W.S. Elev (m)	71.85	Reach Len. (m)	124.36	124.36	124.36
Crit W.S. (m)	71.85	Flow Area (m2)		3.87	
E.G. Slope (m/m)	0.021594	Area (m2)		3.87	
Q Total (m3/s)	8.27	Flow (m3/s)		8.27	
Top Width (m)	8.52	Top Width (m)		8.52	
Vel Total (m/s)	2.14	Avg. Vel. (m/s)		2.14	
Max Chl Dpth (m)	0.85	Hydr. Depth (m)		0.45	
Conv. Total (m3/s)	56.3	Conv. (m3/s)		56.3	
Length Wtd. (m)	124.36	Wetted Per. (m)		8.73	

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* Min Ch El (m)        *   71.00  * Shear (N/m2)         *          *   93.93  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  200.71  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *    1.64  *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *    4.12  *          *
*********************************************************************************************

CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   71.97  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.21  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   71.76  * Reach Len. (m)        *  124.36  *  124.36  *  124.36  *
* Crit W.S. (m)        *   71.76  * Flow Area (m2)        *          *    3.12  *          *
* E.G. Slope (m/m)     *0.022416  * Area (m2)             *          *    3.12  *          *
* Q Total (m3/s)       *    6.26  * Flow (m3/s)           *          *    6.26  *          *
* Top Width (m)        *    7.74  * Top Width (m)         *          *    7.74  *          *
* Vel Total (m/s)      *    2.01  * Avg. Vel. (m/s)       *          *    2.01  *          *
* Max Chl Dpth (m)     *    0.76  * Hydr. Depth (m)       *          *    0.40  *          *
* Conv. Total (m3/s)   *    41.8  * Conv. (m3/s)          *          *    41.8  *          *
* Length Wtd. (m)      *  124.36  * Wetted Per. (m)       *          *    7.92  *          *
* Min Ch El (m)        *   71.00  * Shear (N/m2)          *          *   86.44  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  173.66  *          *
* Frctn Loss (m)       *    3.13  * Cum Volume (1000 m3) *          *    1.37  *          *
* C & E Loss (m)       *    0.04  * Cum SA (1000 m2)     *          *    3.98  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: A_TRIBUTARY
REACH: ONE                RS: 11

INPUT
Description:
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0     110    3.72     109     7.9     108   11.74     107   15.26     106
   21.87     105   24.88     104   27.85     103   30.69     102    33.5     101
   36.17     100   38.74      99   41.24      98   43.79      97   46.25      96
   48.69      95   51.18      94    53.7      93   56.19      92   59.09      91
   61.88      90   64.01      89   66.13      88   68.04      87    69.9      86
   71.79      85   73.73      84   75.67      83   77.83      82   80.06      81
   82.18      80   84.27      79   86.19      78   88.11      77   90.06      76
   92.05      75   98.16      74  101.56      73  106.26      72  107.27      71
  109.93      70  110.03      69  113.35      68  117.82      67  121.83      66
  129.93      65  142.87      65  153.13      66   165.9      66  180.65      65
  188.54      65  195.78      66  200.16      68  203.61      69  207.15      70
  210.82      71  217.77      72  249.99      73  266.72      74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
       0    .045  109.93     .04  203.61    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        109.93  203.61            68.16   68.16   68.16             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   65.62  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.47  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   65.16  * Reach Len. (m)        *   68.16  *   68.16  *   68.16  *
* Crit W.S. (m)        *   65.28  * Flow Area (m2)        *          *    3.72  *          *
* E.G. Slope (m/m)     *0.207171  * Area (m2)             *          *    3.72  *          *
* Q Total (m3/s)       *   11.24  * Flow (m3/s)           *          *   11.24  *          *
* Top Width (m)        *   27.09  * Top Width (m)         *          *   27.09  *          *
* Vel Total (m/s)      *    3.02  * Avg. Vel. (m/s)       *          *    3.02  *          *
* Max Chl Dpth (m)     *    0.16  * Hydr. Depth (m)       *          *    0.14  *          *
* Conv. Total (m3/s)   *    24.7  * Conv. (m3/s)          *          *    24.7  *          *
* Length Wtd. (m)      *   68.16  * Wetted Per. (m)       *          *   27.12  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)          *          *  278.38  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  841.91  *          *
* Frctn Loss (m)       *    6.57  * Cum Volume (1000 m3) *          *    1.51  *          *
* C & E Loss (m)       *    0.03  * Cum SA (1000 m2)     *          *    2.08  *          *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   65.62  * Element              *  Left OB *  Channel * Right OB *
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* Vel Head (m)         *    0.50  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   65.13  * Reach Len. (m)       *   68.16  *   68.16  *   68.16  *
* Crit W.S. (m)        *   65.25  * Flow Area (m2)       *          *    2.93  *          *
* E.G. Slope (m/m)     *0.284576  * Area (m2)            *          *    2.93  *          *
* Q Total (m3/s)       *    9.15  * Flow (m3/s)          *          *    9.15  *          *
* Top Width (m)        *   25.90  * Top Width (m)        *          *   25.90  *          *
* Vel Total (m/s)      *    3.12  * Avg. Vel. (m/s)      *          *    3.12  *          *
* Max Chl Dpth (m)     *    0.13  * Hydr. Depth (m)      *          *    0.11  *          *
* Conv. Total (m3/s)   *    17.2  * Conv. (m3/s)         *          *    17.2  *          *
* Length Wtd. (m)      *   68.16  * Wetted Per. (m)      *          *   25.92  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)         *          *  315.74  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  985.01  *          *
* Frctn Loss (m)       *    6.49  * Cum Volume (1000 m3) *          *    1.31  *          *
* C & E Loss (m)       *    0.03  * Cum SA (1000 m2)     *          *    2.01  *          *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*****************************************************************************************
* E.G. Elev (m)        *   65.56  * Element             *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.44  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   65.12  * Reach Len. (m)       *   68.16  *   68.16  *   68.16  *
* Crit W.S. (m)        *   65.23  * Flow Area (m2)       *          *    2.81  *          *
* E.G. Slope (m/m)     *0.265876  * Area (m2)            *          *    2.81  *          *
* Q Total (m3/s)       *    8.27  * Flow (m3/s)          *          *    8.27  *          *
* Top Width (m)        *   25.70  * Top Width (m)        *          *   25.70  *          *
* Vel Total (m/s)      *    2.94  * Avg. Vel. (m/s)      *          *    2.94  *          *
* Max Chl Dpth (m)     *    0.12  * Hydr. Depth (m)      *          *    0.11  *          *
* Conv. Total (m3/s)   *    16.0  * Conv. (m3/s)         *          *    16.0  *          *
* Length Wtd. (m)      *   68.16  * Wetted Per. (m)      *          *   25.73  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)         *          *  284.63  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  838.09  *          *
* Frctn Loss (m)       *    6.51  * Cum Volume (1000 m3) *          *    1.23  *          *
* C & E Loss (m)       *    0.02  * Cum SA (1000 m2)     *          *    2.00  *          *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*****************************************************************************************
* E.G. Elev (m)        *   65.45  * Element             *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.35  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   65.10  * Reach Len. (m)       *   68.16  *   68.16  *   68.16  *
* Crit W.S. (m)        *   65.20  * Flow Area (m2)       *          *    2.39  *          *
* E.G. Slope (m/m)     *0.250813  * Area (m2)            *          *    2.39  *          *
* Q Total (m3/s)       *    6.26  * Flow (m3/s)          *          *    6.26  *          *
* Top Width (m)        *   25.04  * Top Width (m)        *          *   25.04  *          *
* Vel Total (m/s)      *    2.62  * Avg. Vel. (m/s)      *          *    2.62  *          *
* Max Chl Dpth (m)     *    0.10  * Hydr. Depth (m)      *          *    0.10  *          *
* Conv. Total (m3/s)   *    12.5  * Conv. (m3/s)         *          *    12.5  *          *
* Length Wtd. (m)      *   68.16  * Wetted Per. (m)      *          *   25.06  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)         *          *  234.86  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  614.32  *          *
* Frctn Loss (m)       *    6.50  * Cum Volume (1000 m3) *          *    1.02  *          *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)     *          *    1.94  *          *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: A_TRIBUTARY
REACH: ONE                RS: 10.91

INPUT
Description:
Station Elevation Data    num=      66
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0      94    9.27      93   17.48      92   24.16      91   29.44      90
   33.21      89   36.49      88   39.76      87   43.03      86   46.22      85
   49.01      84   51.81      83    54.6      82    57.4      81   60.19      80
   62.89      79   65.59      78   68.29      77   70.99      76   73.69      75
   76.55      74   79.46      73   82.36      72   85.27      71   88.18      70
    91.7      69   95.95      68   99.52      67  102.74      66  105.86      65
  108.79      64  112.27      63  117.04      62  131.79      62  142.89      62
  144.42      63  146.32      64  148.26      65  150.08      66  151.84      67
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  154.24      68   156.7      69  159.21      70  161.25      71  164.25      72
  170.29      73     177      74  196.87      75  206.19      76  208.81      77
  211.16      78  213.79      79  216.81      80  219.51      81  222.04      82
   224.5      83  226.86      84  229.06      85  231.28      86  233.47      87
  235.63      88   237.8      89  239.99      90   242.2      91   244.3      92
  246.42      93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  102.74     .04  150.08    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        102.74  150.08                0       0       0             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
**********************************************************************************************
* E.G. Elev (m)        *   63.74  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.39  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   63.35  * Reach Len. (m)       *          *          *          *
* Crit W.S. (m)        *   63.18  * Flow Area (m2)       *          *   40.54  *          *
* E.G. Slope (m/m)     *0.010002  * Area (m2)            *          *   40.54  *          *
* Q Total (m3/s)       *  112.74  * Flow (m3/s)          *          *  112.74  *          *
* Top Width (m)        *   34.03  * Top Width (m)        *          *   34.03  *          *
* Vel Total (m/s)      *    2.78  * Avg. Vel. (m/s)      *          *    2.78  *          *
* Max Chl Dpth (m)     *    1.35  * Hydr. Depth (m)      *          *    1.19  *          *
* Conv. Total (m3/s)   *  1127.3  * Conv. (m3/s)         *          *  1127.3  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)      *          *   34.56  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)         *          *  115.05  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  319.95  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *          *          *
**********************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT  Profile #100-Yr
**********************************************************************************************
* E.G. Elev (m)        *   63.54  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.34  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   63.20  * Reach Len. (m)       *          *          *          *
* Crit W.S. (m)        *   63.03  * Flow Area (m2)       *          *   35.40  *          *
* E.G. Slope (m/m)     *0.010003  * Area (m2)            *          *   35.40  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)          *          *   91.51  *          *
* Top Width (m)        *   33.20  * Top Width (m)        *          *   33.20  *          *
* Vel Total (m/s)      *    2.58  * Avg. Vel. (m/s)      *          *    2.58  *          *
* Max Chl Dpth (m)     *    1.20  * Hydr. Depth (m)      *          *    1.07  *          *
* Conv. Total (m3/s)   *   915.0  * Conv. (m3/s)         *          *   915.0  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)      *          *   33.68  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)         *          *  103.11  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  266.52  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *          *          *
**********************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT  Profile #50-Yr
**********************************************************************************************
* E.G. Elev (m)        *   63.45  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.32  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   63.13  * Reach Len. (m)       *          *          *          *
* Crit W.S. (m)        *   62.97  * Flow Area (m2)       *          *   33.23  *          *
* E.G. Slope (m/m)     *0.010004  * Area (m2)            *          *   33.23  *          *
* Q Total (m3/s)       *   82.98  * Flow (m3/s)          *          *   82.98  *          *
* Top Width (m)        *   32.85  * Top Width (m)        *          *   32.85  *          *
* Vel Total (m/s)      *    2.50  * Avg. Vel. (m/s)      *          *    2.50  *          *
* Max Chl Dpth (m)     *    1.13  * Hydr. Depth (m)      *          *    1.01  *          *
* Conv. Total (m3/s)   *   829.6  * Conv. (m3/s)         *          *   829.6  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)      *          *   33.30  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)         *          *   97.90  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  244.44  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *          *          *
**********************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT  Profile #10-Yr
**********************************************************************************************
* E.G. Elev (m)        *   63.22  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.26  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   62.96  * Reach Len. (m)       *          *          *          *
* Crit W.S. (m)        *   62.81  * Flow Area (m2)       *          *   27.62  *          *
* E.G. Slope (m/m)     *0.010009  * Area (m2)            *          *   27.62  *          *
* Q Total (m3/s)       *   62.29  * Flow (m3/s)          *          *   62.29  *          *
* Top Width (m)        *   31.88  * Top Width (m)        *          *   31.88  *          *
* Vel Total (m/s)      *    2.26  * Avg. Vel. (m/s)      *          *    2.26  *          *
* Max Chl Dpth (m)     *    0.96  * Hydr. Depth (m)      *          *    0.87  *          *
* Conv. Total (m3/s)   *   622.6  * Conv. (m3/s)         *          *   622.6  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)      *          *   32.26  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)         *          *   84.03  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  189.50  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *          *          *
```

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

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 15

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
      .7      84     .73      84    7.67      83   13.93      82    18.7      81
   22.01      80   24.47      79   27.13      78   29.62      77   37.55      77
   40.87      78   42.24      79   43.37      80   44.45      81   45.65      82
      47      83   48.31      84   49.61      85   50.89      86   52.17      87
   53.18      88   54.15      89   55.13      90    55.9      91   56.63      92
   57.37      93   58.08      94   58.82      95   59.54      96   60.27      97
   60.79      98   61.29      99   61.78     100

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
      .7    .045   22.01     .04   43.37    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         22.01   43.37             54.72   92.14  142.18             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*******************************************************************************************
* E.G. Elev (m)        *   79.57  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.70  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   78.86  * Reach Len. (m)        *   54.72  *   92.14  *  142.18  *
* Crit W.S. (m)        *   78.86  * Flow Area (m2)        *          *   24.18  *          *
* E.G. Slope (m/m)     *0.014887  * Area (m2)             *          *   24.18  *          *
* Q Total (m3/s)       *   89.81  * Flow (m3/s)           *          *   89.81  *          *
* Top Width (m)        *   17.22  * Top Width (m)         *          *   17.22  *          *
* Vel Total (m/s)      *    3.71  * Avg. Vel. (m/s)       *          *    3.71  *          *
* Max Chl Dpth (m)     *    1.86  * Hydr. Depth (m)       *          *    1.40  *          *
* Conv. Total (m3/s)   *   736.1  * Conv. (m3/s)          *          *   736.1  *          *
* Length Wtd. (m)      *   92.14  * Wetted Per. (m)       *          *   17.99  *          *
* Min Ch El (m)        *   77.00  * Shear (N/m2)          *          *  196.17  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  728.67  *          *
* Frctn Loss (m)       *    1.43  * Cum Volume (1000 m3)  *   20.84  *   58.90  *    2.29  *
* C & E Loss (m)       *    0.05  * Cum SA (1000 m2)      *   17.52  *   45.58  *    5.54  *
*******************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #100-Yr
*******************************************************************************************
* E.G. Elev (m)        *   79.29  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.63  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   78.65  * Reach Len. (m)        *   54.72  *   92.14  *  142.18  *
* Crit W.S. (m)        *   78.66  * Flow Area (m2)        *          *   20.69  *          *
* E.G. Slope (m/m)     *0.015366  * Area (m2)             *          *   20.69  *          *
* Q Total (m3/s)       *   72.96  * Flow (m3/s)           *          *   72.96  *          *
* Top Width (m)        *   16.38  * Top Width (m)         *          *   16.38  *          *
* Vel Total (m/s)      *    3.53  * Avg. Vel. (m/s)       *          *    3.53  *          *
* Max Chl Dpth (m)     *    1.65  * Hydr. Depth (m)       *          *    1.26  *          *
* Conv. Total (m3/s)   *   588.6  * Conv. (m3/s)          *          *   588.6  *          *
* Length Wtd. (m)      *   92.14  * Wetted Per. (m)       *          *   17.05  *          *
* Min Ch El (m)        *   77.00  * Shear (N/m2)          *          *  182.86  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  644.74  *          *
* Frctn Loss (m)       *    1.48  * Cum Volume (1000 m3)  *   17.28  *   51.19  *    1.70  *
* C & E Loss (m)       *    0.05  * Cum SA (1000 m2)      *   17.25  *   43.84  *    4.94  *
*******************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #50-Yr
*******************************************************************************************
* E.G. Elev (m)        *   79.17  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.60  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   78.57  * Reach Len. (m)        *   54.72  *   92.14  *  142.18  *
* Crit W.S. (m)        *   78.57  * Flow Area (m2)        *          *   19.25  *          *
```

```
* E.G. Slope (m/m)     *0.015584  * Area (m2)            *          *   19.25  *          *
* Q Total (m3/s)       *   66.17  * Flow (m3/s)          *          *   66.17  *          *
* Top Width (m)        *   16.02  * Top Width (m)        *          *   16.02  *          *
* Vel Total (m/s)      *    3.44  * Avg. Vel. (m/s)      *          *    3.44  *          *
* Max Chl Dpth (m)     *    1.57  * Hydr. Depth (m)      *          *    1.20  *          *
* Conv. Total (m3/s)   *   530.0  * Conv. (m3/s)         *          *   530.0  *          *
* Length Wtd. (m)      *   92.14  * Wetted Per. (m)      *          *   16.65  *          *
* Min Ch El (m)        *   77.00  * Shear (N/m2)         *          *  176.70  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  607.50  *          *
* Frctn Loss (m)       *    1.50  * Cum Volume (1000 m3) *   14.68  *   46.33  *    1.35  *
* C & E Loss (m)       *    0.05  * Cum SA (1000 m2)     *   17.14  *   43.07  *    4.62  *
*******************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #10-Yr
*******************************************************************************************
* E.G. Elev (m)        *   78.85  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.52  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   78.32  * Reach Len. (m)       *   54.72  *   92.14  *  142.18  *
* Crit W.S. (m)        *   78.32  * Flow Area (m2)       *          *   15.50  *          *
* E.G. Slope (m/m)     *0.016461  * Area (m2)            *          *   15.50  *          *
* Q Total (m3/s)       *   49.63  * Flow (m3/s)          *          *   49.63  *          *
* Top Width (m)        *   15.05  * Top Width (m)        *          *   15.05  *          *
* Vel Total (m/s)      *    3.20  * Avg. Vel. (m/s)      *          *    3.20  *          *
* Max Chl Dpth (m)     *    1.32  * Hydr. Depth (m)      *          *    1.03  *          *
* Conv. Total (m3/s)   *   386.8  * Conv. (m3/s)         *          *   386.8  *          *
* Length Wtd. (m)      *   92.14  * Wetted Per. (m)      *          *   15.55  *          *
* Min Ch El (m)        *   77.00  * Shear (N/m2)         *          *  160.93  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  515.11  *          *
* Frctn Loss (m)       *    1.59  * Cum Volume (1000 m3) *   10.97  *   38.30  *    0.87  *
* C & E Loss (m)       *    0.05  * Cum SA (1000 m2)     *   10.20  *   41.24  *    3.48  *
*******************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 14

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
    3.34      83    8.67      82    14.4      81   30.33      80   36.53      79
   41.64      78   45.76      77   50.22      76   56.02      75   57.59      74
   81.85      74   84.04      75   85.87      76   88.85      77   94.65      78
   99.21      79     105      80  121.57      81  129.22      82

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    3.34    .045   50.22     .04   85.87    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          50.22   85.87            31.11    22.5    32.6             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*******************************************************************************************
* E.G. Elev (m)        *   76.43  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.79  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   74.64  * Reach Len. (m)       *   31.11  *   22.50  *   32.60  *
* Crit W.S. (m)        *   75.14  * Flow Area (m2)       *          *   16.26  *          *
* E.G. Slope (m/m)     *0.110228  * Area (m2)            *          *   16.26  *          *
* Q Total (m3/s)       *   96.32  * Flow (m3/s)          *          *   96.32  *          *
* Top Width (m)        *   26.66  * Top Width (m)        *          *   26.66  *          *
* Vel Total (m/s)      *    5.92  * Avg. Vel. (m/s)      *          *    5.92  *          *
* Max Chl Dpth (m)     *    0.64  * Hydr. Depth (m)      *          *    0.61  *          *
* Conv. Total (m3/s)   *   290.1  * Conv. (m3/s)         *          *   290.1  *          *
* Length Wtd. (m)      *   22.50  * Wetted Per. (m)      *          *   26.99  *          *
* Min Ch El (m)        *   74.00  * Shear (N/m2)         *          *  651.47  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          * 3858.05  *          *
* Frctn Loss (m)       *    3.03  * Cum Volume (1000 m3) *   20.84  *   57.03  *    2.29  *
* C & E Loss (m)       *    0.11  * Cum SA (1000 m2)     *   17.52  *   43.56  *    5.54  *
*******************************************************************************************
```

```
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   76.10  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.53  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   74.56  * Reach Len. (m)        *   31.11  *   22.50  *   32.60  *
* Crit W.S. (m)        *   74.99  * Flow Area (m2)        *          *   14.28  *          *
* E.G. Slope (m/m)     *0.110681  * Area (m2)             *          *   14.28  *          *
* Q Total (m3/s)       *   78.28  * Flow (m3/s)           *          *   78.28  *          *
* Top Width (m)        *   26.38  * Top Width (m)         *          *   26.38  *          *
* Vel Total (m/s)      *    5.48  * Avg. Vel. (m/s)       *          *    5.48  *          *
* Max Chl Dpth (m)     *    0.56  * Hydr. Depth (m)       *          *    0.54  *          *
* Conv. Total (m3/s)   *   235.3  * Conv. (m3/s)          *          *   235.3  *          *
* Length Wtd. (m)      *   22.50  * Wetted Per. (m)       *          *   26.67  *          *
* Min Ch El (m)        *   74.00  * Shear (N/m2)          *          *  581.05  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 3186.17  *          *
* Frctn Loss (m)       *    3.10  * Cum Volume (1000 m3)  *   17.28  *   49.58  *    1.70  *
* C & E Loss (m)       *    0.09  * Cum SA (1000 m2)      *   17.25  *   41.87  *    4.94  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*********************************************************************************************
* E.G. Elev (m)        *   75.95  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.42  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   74.53  * Reach Len. (m)        *   31.11  *   22.50  *   32.60  *
* Crit W.S. (m)        *   74.93  * Flow Area (m2)        *          *   13.44  *          *
* E.G. Slope (m/m)     *0.110567  * Area (m2)             *          *   13.44  *          *
* Q Total (m3/s)       *   70.98  * Flow (m3/s)           *          *   70.98  *          *
* Top Width (m)        *   26.26  * Top Width (m)         *          *   26.26  *          *
* Vel Total (m/s)      *    5.28  * Avg. Vel. (m/s)       *          *    5.28  *          *
* Max Chl Dpth (m)     *    0.53  * Hydr. Depth (m)       *          *    0.51  *          *
* Conv. Total (m3/s)   *   213.5  * Conv. (m3/s)          *          *   213.5  *          *
* Length Wtd. (m)      *   22.50  * Wetted Per. (m)       *          *   26.53  *          *
* Min Ch El (m)        *   74.00  * Shear (N/m2)          *          *  549.18  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 2900.84  *          *
* Frctn Loss (m)       *    3.13  * Cum Volume (1000 m3)  *   14.68  *   44.82  *    1.35  *
* C & E Loss (m)       *    0.08  * Cum SA (1000 m2)      *   17.14  *   41.13  *    4.62  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   75.57  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.11  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   74.45  * Reach Len. (m)        *   31.11  *   22.50  *   32.60  *
* Crit W.S. (m)        *   74.77  * Flow Area (m2)        *          *   11.39  *          *
* E.G. Slope (m/m)     *0.106152  * Area (m2)             *          *   11.39  *          *
* Q Total (m3/s)       *   53.28  * Flow (m3/s)           *          *   53.28  *          *
* Top Width (m)        *   25.97  * Top Width (m)         *          *   25.97  *          *
* Vel Total (m/s)      *    4.68  * Avg. Vel. (m/s)       *          *    4.68  *          *
* Max Chl Dpth (m)     *    0.45  * Hydr. Depth (m)       *          *    0.44  *          *
* Conv. Total (m3/s)   *   163.5  * Conv. (m3/s)          *          *   163.5  *          *
* Length Wtd. (m)      *   22.50  * Wetted Per. (m)       *          *   26.20  *          *
* Min Ch El (m)        *   74.00  * Shear (N/m2)          *          *  452.78  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 2117.18  *          *
* Frctn Loss (m)       *    3.22  * Cum Volume (1000 m3)  *   10.97  *   37.06  *    0.87  *
* C & E Loss (m)       *    0.06  * Cum SA (1000 m2)      *   10.20  *   39.35  *    3.48  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 13

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
*******************************************************************************
       0      90    4.33      89    8.33      88   12.25      87   16.12      86
   20.02      85    23.8      84   27.35      83   30.66      82   34.06      81
   37.95      80   42.04      79    45.3      78   48.76      77   53.34      76
   59.47      75   71.32      74   78.66      73   80.29      72   83.99      72
   94.83      73  100.94      74  128.08      75  153.85      76  160.44      77
  165.39      78  169.82      79  174.35      80  177.99      81  181.78      82

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045   71.32     .04  100.94    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         71.32  100.94           174.52  174.52  174.52             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   74.70  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.20  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   73.51  * Reach Len. (m)        *  174.52  *  174.52  *  174.52  *
* Crit W.S. (m)        *   73.90  * Flow Area (m2)        *          *   19.86  *          *
* E.G. Slope (m/m)     *0.046789  * Area (m2)             *          *   19.86  *          *
* Q Total (m3/s)       *   96.32  * Flow (m3/s)           *          *   96.32  *          *
* Top Width (m)        *   22.99  * Top Width (m)         *          *   22.99  *          *
* Vel Total (m/s)      *    4.85  * Avg. Vel. (m/s)       *          *    4.85  *          *
* Max Chl Dpth (m)     *    1.51  * Hydr. Depth (m)       *          *    0.86  *          *
* Conv. Total (m3/s)   *   445.3  * Conv. (m3/s)          *          *   445.3  *          *
* Length Wtd. (m)      *  174.52  * Wetted Per. (m)       *          *   23.39  *          *
* Min Ch El (m)        *   72.00  * Shear (N/m2)          *          *  389.60  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 1889.21  *          *
* Frctn Loss (m)       *    1.54  * Cum Volume (1000 m3)  *   20.84  *   56.63  *    2.29  *
* C & E Loss (m)       *    0.18  * Cum SA (1000 m2)      *   17.52  *   43.00  *    5.54  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   74.44  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.05  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   73.39  * Reach Len. (m)        *  174.52  *  174.52  *  174.52  *
* Crit W.S. (m)        *   73.73  * Flow Area (m2)        *          *   17.24  *          *
* E.G. Slope (m/m)     *0.045083  * Area (m2)             *          *   17.24  *          *
* Q Total (m3/s)       *   78.28  * Flow (m3/s)           *          *   78.28  *          *
* Top Width (m)        *   21.40  * Top Width (m)         *          *   21.40  *          *
* Vel Total (m/s)      *    4.54  * Avg. Vel. (m/s)       *          *    4.54  *          *
* Max Chl Dpth (m)     *    1.39  * Hydr. Depth (m)       *          *    0.81  *          *
* Conv. Total (m3/s)   *   368.7  * Conv. (m3/s)          *          *   368.7  *          *
* Length Wtd. (m)      *  174.52  * Wetted Per. (m)       *          *   21.78  *          *
* Min Ch El (m)        *   72.00  * Shear (N/m2)          *          *  349.83  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 1588.64  *          *
* Frctn Loss (m)       *    1.51  * Cum Volume (1000 m3)  *   17.28  *   49.23  *    1.70  *
* C & E Loss (m)       *    0.14  * Cum SA (1000 m2)      *   17.25  *   41.33  *    4.94  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*********************************************************************************************
* E.G. Elev (m)        *   74.33  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.99  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   73.33  * Reach Len. (m)        *  174.52  *  174.52  *  174.52  *
* Crit W.S. (m)        *   73.65  * Flow Area (m2)        *          *   16.10  *          *
* E.G. Slope (m/m)     *0.044486  * Area (m2)             *          *   16.10  *          *
* Q Total (m3/s)       *   70.98  * Flow (m3/s)           *          *   70.98  *          *
* Top Width (m)        *   20.67  * Top Width (m)         *          *   20.67  *          *
* Vel Total (m/s)      *    4.41  * Avg. Vel. (m/s)       *          *    4.41  *          *
* Max Chl Dpth (m)     *    1.33  * Hydr. Depth (m)       *          *    0.78  *          *
* Conv. Total (m3/s)   *   336.5  * Conv. (m3/s)          *          *   336.5  *          *
* Length Wtd. (m)      *  174.52  * Wetted Per. (m)       *          *   21.05  *          *
* Min Ch El (m)        *   72.00  * Shear (N/m2)          *          *  333.64  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 1471.25  *          *
* Frctn Loss (m)       *    1.50  * Cum Volume (1000 m3)  *   14.68  *   44.49  *    1.35  *
* C & E Loss (m)       *    0.13  * Cum SA (1000 m2)      *   17.14  *   40.60  *    4.62  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
```

```
*******************************************************************************************
* E.G. Elev (m)        *   74.03  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.85  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   73.18  * Reach Len. (m)        *  174.52  *  174.52  *  174.52  *
* Crit W.S. (m)        *   73.45  * Flow Area (m2)        *          *   13.05  *          *
* E.G. Slope (m/m)     *0.043797  * Area (m2)             *          *   13.05  *          *
* Q Total (m3/s)       *   53.28  * Flow (m3/s)           *          *   53.28  *          *
* Top Width (m)        *   18.58  * Top Width (m)         *          *   18.58  *          *
* Vel Total (m/s)      *    4.08  * Avg. Vel. (m/s)       *          *    4.08  *          *
* Max Chl Dpth (m)     *    1.18  * Hydr. Depth (m)       *          *    0.70  *          *
* Conv. Total (m3/s)   *   254.6  * Conv. (m3/s)          *          *   254.6  *          *
* Length Wtd. (m)      *  174.52  * Wetted Per. (m)       *          *   18.94  *          *
* Min Ch El (m)        *   72.00  * Shear (N/m2)          *          *  296.01  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 1208.38  *          *
* Frctn Loss (m)       *    1.46  * Cum Volume (1000 m3)  *   10.97  *   36.78  *    0.87  *
* C & E Loss (m)       *    0.08  * Cum SA (1000 m2)      *   10.20  *   38.85  *    3.48  *
*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 11

INPUT
Description:
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0     110    3.72     109     7.9     108   11.74     107   15.26     106
   21.87     105   24.88     104   27.85     103   30.69     102    33.5     101
   36.17     100   38.74      99   41.24      98   43.79      97   46.25      96
   48.69      95   51.18      94    53.7      93   56.19      92   59.09      91
   61.88      90   64.01      89   66.13      88   68.04      87    69.9      86
   71.79      85   73.73      84   75.67      83   77.83      82   80.06      81
   82.18      80   84.27      79   86.19      78   88.11      77   90.06      76
   92.05      75   98.16      74  101.56      73  106.26      72  107.27      71
  109.93      70  110.03      69  113.35      68  117.82      67  121.83      66
  129.93      65  142.87      65  153.13      66   165.9      66  180.65      65
  188.54      65  195.78      66  200.16      68  203.61      69  207.15      70
  210.82      71  217.77      72  249.99      73  266.72      74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  109.93     .04  203.61    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        109.93  203.61            72.98   72.98   72.98             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*******************************************************************************************
* E.G. Elev (m)        *   66.39  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.64  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   65.76  * Reach Len. (m)        *   72.98  *   72.98  *   72.98  *
* Crit W.S. (m)        *   65.94  * Flow Area (m2)        *          *   27.28  *          *
* E.G. Slope (m/m)     *0.046550  * Area (m2)             *          *   27.28  *          *
* Q Total (m3/s)       *   96.32  * Flow (m3/s)           *          *   96.32  *          *
* Top Width (m)        *   51.34  * Top Width (m)         *          *   51.34  *          *
* Vel Total (m/s)      *    3.53  * Avg. Vel. (m/s)       *          *    3.53  *          *
* Max Chl Dpth (m)     *    0.76  * Hydr. Depth (m)       *          *    0.53  *          *
* Conv. Total (m3/s)   *   446.4  * Conv. (m3/s)          *          *   446.4  *          *
* Length Wtd. (m)      *   72.98  * Wetted Per. (m)       *          *   51.50  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)          *          *  241.79  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  853.77  *          *
* Frctn Loss (m)       *    8.14  * Cum Volume (1000 m3)  *   20.84  *   52.51  *    2.29  *
* C & E Loss (m)       *    0.17  * Cum SA (1000 m2)      *   17.52  *   36.52  *    5.54  *
*******************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*******************************************************************************************
* E.G. Elev (m)        *   66.25  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.57  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   65.68  * Reach Len. (m)        *   72.98  *   72.98  *   72.98  *
* Crit W.S. (m)        *   65.85  * Flow Area (m2)        *          *   23.39  *          *
* E.G. Slope (m/m)     *0.047166  * Area (m2)             *          *   23.39  *          *
* Q Total (m3/s)       *   78.28  * Flow (m3/s)           *          *   78.28  *          *
* Top Width (m)        *   48.19  * Top Width (m)         *          *   48.19  *          *
* Vel Total (m/s)      *    3.35  * Avg. Vel. (m/s)       *          *    3.35  *          *
* Max Chl Dpth (m)     *    0.68  * Hydr. Depth (m)       *          *    0.49  *          *
* Conv. Total (m3/s)   *   360.4  * Conv. (m3/s)          *          *   360.4  *          *
* Length Wtd. (m)      *   72.98  * Wetted Per. (m)       *          *   48.33  *          *
```

```
* Min Ch El (m)        *   65.00  * Shear (N/m2)         *          *  223.84  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  749.15  *          *
* Frctn Loss (m)       *    8.05  * Cum Volume (1000 m3) *   17.28  *   45.68  *    1.70  *
* C & E Loss (m)       *    0.14  * Cum SA (1000 m2)     *   17.25  *   35.26  *    4.94  *
*******************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*******************************************************************************************
* E.G. Elev (m)        *   66.19  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.54  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   65.64  * Reach Len. (m)        *   72.98  *   72.98  *   72.98  *
* Crit W.S. (m)        *   65.81  * Flow Area (m2)        *          *   21.78  *          *
* E.G. Slope (m/m)     *0.047316  * Area (m2)             *          *   21.78  *          *
* Q Total (m3/s)       *   70.98  * Flow (m3/s)           *          *   70.98  *          *
* Top Width (m)        *   46.82  * Top Width (m)         *          *   46.82  *          *
* Vel Total (m/s)      *    3.26  * Avg. Vel. (m/s)       *          *    3.26  *          *
* Max Chl Dpth (m)     *    0.64  * Hydr. Depth (m)       *          *    0.47  *          *
* Conv. Total (m3/s)   *   326.3  * Conv. (m3/s)          *          *   326.3  *          *
* Length Wtd. (m)      *   72.98  * Wetted Per. (m)       *          *   46.96  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)          *          *  215.24  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  701.38  *          *
* Frctn Loss (m)       *    8.00  * Cum Volume (1000 m3) *   14.68  *   41.19  *    1.35  *
* C & E Loss (m)       *    0.13  * Cum SA (1000 m2)     *   17.14  *   34.71  *    4.62  *
*******************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*******************************************************************************************
* E.G. Elev (m)        *   66.01  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.46  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   65.56  * Reach Len. (m)        *   72.98  *   72.98  *   72.98  *
* Crit W.S. (m)        *   65.69  * Flow Area (m2)        *          *   17.83  *          *
* E.G. Slope (m/m)     *0.046796  * Area (m2)             *          *   17.83  *          *
* Q Total (m3/s)       *   53.28  * Flow (m3/s)           *          *   53.28  *          *
* Top Width (m)        *   43.28  * Top Width (m)         *          *   43.28  *          *
* Vel Total (m/s)      *    2.99  * Avg. Vel. (m/s)       *          *    2.99  *          *
* Max Chl Dpth (m)     *    0.56  * Hydr. Depth (m)       *          *    0.41  *          *
* Conv. Total (m3/s)   *   246.3  * Conv. (m3/s)          *          *   246.3  *          *
* Length Wtd. (m)      *   72.98  * Wetted Per. (m)       *          *   43.40  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)          *          *  188.52  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  563.43  *          *
* Frctn Loss (m)       *    7.90  * Cum Volume (1000 m3) *   10.97  *   34.09  *    0.87  *
* C & E Loss (m)       *    0.12  * Cum SA (1000 m2)     *   10.20  *   33.45  *    3.48  *
*******************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 10.9

INPUT
Description:
Station Elevation Data    num=      66
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0      94    9.27      93   17.48      92   24.16      91   29.44      90
   33.21      89   36.49      88   39.76      87   43.03      86   46.22      85
   49.01      84   51.81      83    54.6      82    57.4      81   60.19      80
   62.89      79   65.59      78   68.29      77   70.99      76   73.69      75
   76.55      74   79.46      73   82.36      72   85.27      71   88.18      70
    91.7      69   95.95      68   99.52      67  102.74      66  105.86      65
  108.79      64  112.27      63  117.04      62  131.79      62  142.89      62
  144.42      63  146.32      64  148.26      65  150.08      66  151.84      67
  154.24      68   156.7      69  159.21      70  161.25      71  164.25      72
  170.29      73     177      74  196.87      75  206.19      76  208.81      77
  211.16      78  213.79      79  216.81      80  219.51      81  222.04      82
   224.5      83  226.86      84  229.06      85  231.28      86  233.47      87
  235.63      88   237.8      89  239.99      90   242.2      91   244.3      92
  246.42      93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  102.74     .04  150.08    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        102.74  150.08            30.43   30.43   30.43             .1       .3
```

CROSS SECTION OUTPUT Profile #500-Yr

E.G. Elev (m)	63.78	Element	Left OB	Channel	Right OB
Vel Head (m)	0.79	Wt. n-Val.		0.040	
W.S. Elev (m)	62.99	Reach Len. (m)	30.43	30.43	30.43
Crit W.S. (m)	63.18	Flow Area (m2)		28.72	
E.G. Slope (m/m)	0.029075	Area (m2)		28.72	
Q Total (m3/s)	112.74	Flow (m3/s)		112.74	
Top Width (m)	32.09	Top Width (m)		32.09	
Vel Total (m/s)	3.93	Avg. Vel. (m/s)		3.93	
Max Chl Dpth (m)	0.99	Hydr. Depth (m)		0.89	
Conv. Total (m3/s)	661.2	Conv. (m3/s)		661.2	
Length Wtd. (m)	30.43	Wetted Per. (m)		32.49	
Min Ch El (m)	62.00	Shear (N/m2)		251.99	
Alpha	1.00	Stream Power (N/m s)		989.30	
Frctn Loss (m)	2.60	Cum Volume (1000 m3)	20.84	50.47	2.29
C & E Loss (m)	0.02	Cum SA (1000 m2)	17.52	33.47	5.54

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-Yr

E.G. Elev (m)	63.56	Element	Left OB	Channel	Right OB
Vel Head (m)	0.69	Wt. n-Val.		0.040	
W.S. Elev (m)	62.87	Reach Len. (m)	30.43	30.43	30.43
Crit W.S. (m)	63.03	Flow Area (m2)		24.78	
E.G. Slope (m/m)	0.030256	Area (m2)		24.78	
Q Total (m3/s)	91.51	Flow (m3/s)		91.51	
Top Width (m)	31.31	Top Width (m)		31.31	
Vel Total (m/s)	3.69	Avg. Vel. (m/s)		3.69	
Max Chl Dpth (m)	0.87	Hydr. Depth (m)		0.79	
Conv. Total (m3/s)	526.1	Conv. (m3/s)		526.1	
Length Wtd. (m)	30.43	Wetted Per. (m)		31.66	
Min Ch El (m)	62.00	Shear (N/m2)		232.22	
Alpha	1.00	Stream Power (N/m s)		857.61	
Frctn Loss (m)	2.68	Cum Volume (1000 m3)	17.28	43.92	1.70
C & E Loss (m)	0.01	Cum SA (1000 m2)	17.25	32.36	4.94

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-Yr

E.G. Elev (m)	63.47	Element	Left OB	Channel	Right OB
Vel Head (m)	0.65	Wt. n-Val.		0.040	
W.S. Elev (m)	62.81	Reach Len. (m)	30.43	30.43	30.43
Crit W.S. (m)	62.97	Flow Area (m2)		23.15	
E.G. Slope (m/m)	0.030753	Area (m2)		23.15	
Q Total (m3/s)	82.98	Flow (m3/s)		82.98	
Top Width (m)	30.98	Top Width (m)		30.98	
Vel Total (m/s)	3.58	Avg. Vel. (m/s)		3.58	
Max Chl Dpth (m)	0.81	Hydr. Depth (m)		0.75	
Conv. Total (m3/s)	473.2	Conv. (m3/s)		473.2	
Length Wtd. (m)	30.43	Wetted Per. (m)		31.31	
Min Ch El (m)	62.00	Shear (N/m2)		222.97	
Alpha	1.00	Stream Power (N/m s)		799.28	
Frctn Loss (m)	2.71	Cum Volume (1000 m3)	14.68	39.55	1.35
C & E Loss (m)	0.01	Cum SA (1000 m2)	17.14	31.87	4.62

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #10-Yr

E.G. Elev (m)	63.23	Element	Left OB	Channel	Right OB
Vel Head (m)	0.55	Wt. n-Val.		0.040	
W.S. Elev (m)	62.68	Reach Len. (m)	30.43	30.43	30.43
Crit W.S. (m)	62.81	Flow Area (m2)		18.97	
E.G. Slope (m/m)	0.032346	Area (m2)		18.97	
Q Total (m3/s)	62.29	Flow (m3/s)		62.29	
Top Width (m)	30.12	Top Width (m)		30.12	
Vel Total (m/s)	3.28	Avg. Vel. (m/s)		3.28	
Max Chl Dpth (m)	0.68	Hydr. Depth (m)		0.63	
Conv. Total (m3/s)	346.3	Conv. (m3/s)		346.3	
Length Wtd. (m)	30.43	Wetted Per. (m)		30.39	
Min Ch El (m)	62.00	Shear (N/m2)		197.98	
Alpha	1.00	Stream Power (N/m s)		650.12	
Frctn Loss (m)	2.78	Cum Volume (1000 m3)	10.97	32.74	0.87
C & E Loss (m)	0.01	Cum SA (1000 m2)	10.20	30.77	3.48

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: CREEK1
REACH: ONE RS: 10

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	118.76	1.71	118.75	14.38	116.29	16.19	116	20.32	114.97
27.19	112	40.56	107	64.38	96.05	73	92.47	82.85	89.52
93.5	86.69	95.72	86.52	99.46	86.69	102.93	86.54	107.7	85.74
109.47	85	111.43	84.39	121.39	79	126.96	75.48	140.71	67
150.05	62	154.6	61	163.94	60.03	168.24	60	171.45	60.68
173.33	60.78	175.57	61.02	189.57	63	202.55	65	207.65	66
221.9	71	234.96	75.67	240.49	77.71	243.83	78.67	253.91	81.44

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	140.71	.04	207.65	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
140.71	207.65	80.47	86.63	80.65	.1	.3

CROSS SECTION OUTPUT Profile #500-Yr

E.G. Elev (m)	62.67	Element	Left OB	Channel	Right OB
Vel Head (m)	1.16	Wt. n-Val.		0.040	
W.S. Elev (m)	61.50	Reach Len. (m)	80.47	86.63	80.65
Crit W.S. (m)	61.87	Flow Area (m2)		23.60	
E.G. Slope (m/m)	0.043511	Area (m2)		23.60	
Q Total (m3/s)	112.74	Flow (m3/s)		112.74	
Top Width (m)	26.69	Top Width (m)		26.69	
Vel Total (m/s)	4.78	Avg. Vel. (m/s)		4.78	
Max Chl Dpth (m)	1.50	Hydr. Depth (m)		0.88	
Conv. Total (m3/s)	540.5	Conv. (m3/s)		540.5	
Length Wtd. (m)	86.63	Wetted Per. (m)		26.91	
Min Ch El (m)	60.00	Shear (N/m2)		374.13	
Alpha	1.00	Stream Power (N/m s)		1787.32	
Frctn Loss (m)	1.07	Cum Volume (1000 m3)	20.84	49.67	2.29
C & E Loss (m)	0.04	Cum SA (1000 m2)	17.52	32.58	5.54

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-Yr

E.G. Elev (m)	62.42	Element	Left OB	Channel	Right OB
Vel Head (m)	1.05	Wt. n-Val.		0.040	
W.S. Elev (m)	61.37	Reach Len. (m)	80.47	86.63	80.65
Crit W.S. (m)	61.70	Flow Area (m2)		20.19	
E.G. Slope (m/m)	0.044563	Area (m2)		20.19	
Q Total (m3/s)	91.51	Flow (m3/s)		91.51	
Top Width (m)	25.16	Top Width (m)		25.16	
Vel Total (m/s)	4.53	Avg. Vel. (m/s)		4.53	
Max Chl Dpth (m)	1.37	Hydr. Depth (m)		0.80	
Conv. Total (m3/s)	433.5	Conv. (m3/s)		433.5	
Length Wtd. (m)	86.63	Wetted Per. (m)		25.36	
Min Ch El (m)	60.00	Shear (N/m2)		347.86	
Alpha	1.00	Stream Power (N/m s)		1576.77	
Frctn Loss (m)	1.11	Cum Volume (1000 m3)	17.28	43.24	1.70
C & E Loss (m)	0.04	Cum SA (1000 m2)	17.25	31.50	4.94

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-Yr

E.G. Elev (m)	62.31	Element	Left OB	Channel	Right OB
Vel Head (m)	1.00	Wt. n-Val.		0.040	
W.S. Elev (m)	61.32	Reach Len. (m)	80.47	86.63	80.65
Crit W.S. (m)	61.63	Flow Area (m2)		18.78	
E.G. Slope (m/m)	0.045022	Area (m2)		18.78	
Q Total (m3/s)	82.98	Flow (m3/s)		82.98	
Top Width (m)	24.50	Top Width (m)		24.50	
Vel Total (m/s)	4.42	Avg. Vel. (m/s)		4.42	
Max Chl Dpth (m)	1.32	Hydr. Depth (m)		0.77	
Conv. Total (m3/s)	391.1	Conv. (m3/s)		391.1	
Length Wtd. (m)	86.63	Wetted Per. (m)		24.69	
Min Ch El (m)	60.00	Shear (N/m2)		335.74	
Alpha	1.00	Stream Power (N/m s)		1483.79	
Frctn Loss (m)	1.12	Cum Volume (1000 m3)	14.68	38.91	1.35
C & E Loss (m)	0.03	Cum SA (1000 m2)	17.14	31.03	4.62

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

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         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   62.02  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.86  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   61.16  * Reach Len. (m)        *   80.47  *   86.63  *   80.65  *
* Crit W.S. (m)        *   61.43  * Flow Area (m2)        *          *   15.16  *          *
* E.G. Slope (m/m)     *0.046739  * Area (m2)             *          *   15.16  *          *
* Q Total (m3/s)       *   62.29  * Flow (m3/s)           *          *   62.29  *          *
* Top Width (m)        *   22.72  * Top Width (m)         *          *   22.72  *          *
* Vel Total (m/s)      *    4.11  * Avg. Vel. (m/s)       *          *    4.11  *          *
* Max Chl Dpth (m)     *    1.16  * Hydr. Depth (m)       *          *    0.67  *          *
* Conv. Total (m3/s)   *   288.1  * Conv. (m3/s)          *          *   288.1  *          *
* Length Wtd. (m)      *   86.63  * Wetted Per. (m)       *          *   22.89  *          *
* Min Ch El (m)        *   60.00  * Shear (N/m2)          *          *  303.70  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          * 1247.52  *          *
* Frctn Loss (m)       *    1.17  * Cum Volume (1000 m3)  *   10.97  *   32.22  *    0.87  *
* C & E Loss (m)       *    0.03  * Cum SA (1000 m2)      *   10.20  *   29.97  *    3.48  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 9

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   85.27   14.96    90.7   18.45   91.21   21.18   91.79   25.88   92.31
   31.28   92.84   39.22      92   43.16      91   52.72      84   68.25      74
   85.82      65   93.86   62.65  102.76   61.25  118.88   59.75  140.69      58
  144.49      57  149.31      57  152.96      58  160.67   58.94  164.95      60
  172.66      62  187.25    63.5  192.88      64  197.53   64.62  205.02    65.7
  216.74   67.46  218.78   67.59  220.96   67.93   224.5    68.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
       0    .045  118.88     .04  164.95    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        118.88  164.95           115.38   85.94   72.36             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   59.69  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.73  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   58.96  * Reach Len. (m)        *  115.38  *   85.94  *   72.36  *
* Crit W.S. (m)        *   59.13  * Flow Area (m2)        *          *   29.73  *          *
* E.G. Slope (m/m)     *0.025727  * Area (m2)             *          *   29.73  *          *
* Q Total (m3/s)       *  112.74  * Flow (m3/s)           *          *  112.74  *          *
* Top Width (m)        *   31.97  * Top Width (m)         *          *   31.97  *          *
* Vel Total (m/s)      *    3.79  * Avg. Vel. (m/s)       *          *    3.79  *          *
* Max Chl Dpth (m)     *    1.96  * Hydr. Depth (m)       *          *    0.93  *          *
* Conv. Total (m3/s)   *   702.9  * Conv. (m3/s)          *          *   702.9  *          *
* Length Wtd. (m)      *   85.94  * Wetted Per. (m)       *          *   32.33  *          *
* Min Ch El (m)        *   57.00  * Shear (N/m2)          *          *  232.02  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  879.85  *          *
* Frctn Loss (m)       *    2.85  * Cum Volume (1000 m3)  *   20.84  *   47.36  *    2.29  *
* C & E Loss (m)       *    0.13  * Cum SA (1000 m2)      *   17.52  *   30.04  *    5.54  *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   59.47  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.65  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   58.82  * Reach Len. (m)        *  115.38  *   85.94  *   72.36  *
* Crit W.S. (m)        *   58.97  * Flow Area (m2)        *          *   25.54  *          *
* E.G. Slope (m/m)     *0.024952  * Area (m2)             *          *   25.54  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)           *          *   91.51  *          *
* Top Width (m)        *   29.21  * Top Width (m)         *          *   29.21  *          *
* Vel Total (m/s)      *    3.58  * Avg. Vel. (m/s)       *          *    3.58  *          *
* Max Chl Dpth (m)     *    1.82  * Hydr. Depth (m)       *          *    0.87  *          *
* Conv. Total (m3/s)   *   579.3  * Conv. (m3/s)          *          *   579.3  *          *
* Length Wtd. (m)      *   85.94  * Wetted Per. (m)       *          *   29.55  *          *
* Min Ch El (m)        *   57.00  * Shear (N/m2)          *          *  211.47  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  757.69  *          *
* Frctn Loss (m)       *    2.83  * Cum Volume (1000 m3)  *   17.28  *   41.26  *    1.70  *
* C & E Loss (m)       *    0.12  * Cum SA (1000 m2)      *   17.25  *   29.14  *    4.94  *
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*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*******************************************************************************************
* E.G. Elev (m)        *   59.38  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.62  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   58.76  * Reach Len. (m)        *  115.38  *   85.94  *   72.36  *
* Crit W.S. (m)        *   58.90  * Flow Area (m2)        *          *   23.74  *          *
* E.G. Slope (m/m)     *0.024641  * Area (m2)             *          *   23.74  *          *
* Q Total (m3/s)       *   82.98  * Flow (m3/s)           *          *   82.98  *          *
* Top Width (m)        *   27.90  * Top Width (m)         *          *   27.90  *          *
* Vel Total (m/s)      *    3.50  * Avg. Vel. (m/s)       *          *    3.50  *          *
* Max Chl Dpth (m)     *    1.76  * Hydr. Depth (m)       *          *    0.85  *          *
* Conv. Total (m3/s)   *   528.6  * Conv. (m3/s)          *          *   528.6  *          *
* Length Wtd. (m)      *   85.94  * Wetted Per. (m)       *          *   28.24  *          *
* Min Ch El (m)        *   57.00  * Shear (N/m2)          *          *  203.11  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  709.93  *          *
* Frctn Loss (m)       *    2.82  * Cum Volume (1000 m3)  *   14.68  *   37.07  *    1.35  *
* C & E Loss (m)       *    0.11  * Cum SA (1000 m2)      *   17.14  *   28.76  *    4.62  *
*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*******************************************************************************************
* E.G. Elev (m)        *   59.12  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.54  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   58.58  * Reach Len. (m)        *  115.38  *   85.94  *   72.36  *
* Crit W.S. (m)        *   58.69  * Flow Area (m2)        *          *   19.10  *          *
* E.G. Slope (m/m)     *0.023780  * Area (m2)             *          *   19.10  *          *
* Q Total (m3/s)       *   62.29  * Flow (m3/s)           *          *   62.29  *          *
* Top Width (m)        *   24.22  * Top Width (m)         *          *   24.22  *          *
* Vel Total (m/s)      *    3.26  * Avg. Vel. (m/s)       *          *    3.26  *          *
* Max Chl Dpth (m)     *    1.58  * Hydr. Depth (m)       *          *    0.79  *          *
* Conv. Total (m3/s)   *   403.9  * Conv. (m3/s)          *          *   403.9  *          *
* Length Wtd. (m)      *   85.94  * Wetted Per. (m)       *          *   24.55  *          *
* Min Ch El (m)        *   57.00  * Shear (N/m2)          *          *  181.45  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  591.80  *          *
* Frctn Loss (m)       *    2.81  * Cum Volume (1000 m3)  *   10.97  *   30.74  *    0.87  *
* C & E Loss (m)       *    0.10  * Cum SA (1000 m2)      *   10.20  *   27.94  *    3.48  *
*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 8

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   67.61    15.7      71   28.78      73   35.82   73.32   40.01   73.23
   46.16   72.76   47.76   72.56    49.8   72.37   57.27      71   60.93      69
   72.11      68   90.92      63  108.64      59  111.87   58.54  114.49      58
  134.34      57   140.8      57  160.47   56.54  181.78   56.04  189.08      55
  195.66      55  219.92      56   230.3   56.89  233.59   57.26  243.44      59
  248.31   60.87  251.62      62  259.84      64  271.48      68  286.51   72.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  160.47     .04   230.3    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        160.47   230.3            86.33   82.02   77.78             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*******************************************************************************************
* E.G. Elev (m)        *   56.93  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.73  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   56.20  * Reach Len. (m)        *   86.33  *   82.02  *   77.78  *
* Crit W.S. (m)        *   56.44  * Flow Area (m2)        *          *   30.58  *          *
* E.G. Slope (m/m)     *0.040966  * Area (m2)             *          *   30.58  *          *
* Q Total (m3/s)       *  115.60  * Flow (m3/s)           *          *  115.60  *          *
* Top Width (m)        *   47.24  * Top Width (m)         *          *   47.24  *          *
* Vel Total (m/s)      *    3.78  * Avg. Vel. (m/s)       *          *    3.78  *          *
* Max Chl Dpth (m)     *    1.20  * Hydr. Depth (m)       *          *    0.65  *          *
* Conv. Total (m3/s)   *   571.1  * Conv. (m3/s)          *          *   571.1  *          *
* Length Wtd. (m)      *   82.02  * Wetted Per. (m)       *          *   47.34  *          *
* Min Ch El (m)        *   55.00  * Shear (N/m2)          *          *  259.45  *          *
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* Alpha                *    1.00  * Stream Power (N/m s) *          *  980.90  *          *
* Frctn Loss (m)       *    2.76  * Cum Volume (1000 m3) *   20.84  *   44.77  *    2.29  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   17.52  *   26.64  *    5.54  *
*******************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*******************************************************************************************
* E.G. Elev (m)        *   56.77  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.68  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   56.09  * Reach Len. (m)        *   86.33  *   82.02  *   77.78  *
* Crit W.S. (m)        *   56.31  * Flow Area (m2)        *          *   25.60  *          *
* E.G. Slope (m/m)     *0.040497  * Area (m2)             *          *   25.60  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *          *   93.74  *          *
* Top Width (m)        *   41.13  * Top Width (m)         *          *   41.13  *          *
* Vel Total (m/s)      *    3.66  * Avg. Vel. (m/s)       *          *    3.66  *          *
* Max Chl Dpth (m)     *    1.09  * Hydr. Depth (m)       *          *    0.62  *          *
* Conv. Total (m3/s)   *   465.8  * Conv. (m3/s)          *          *   465.8  *          *
* Length Wtd. (m)      *   82.02  * Wetted Per. (m)       *          *   41.22  *          *
* Min Ch El (m)        *   55.00  * Shear (N/m2)          *          *  246.61  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  903.04  *          *
* Frctn Loss (m)       *    2.70  * Cum Volume (1000 m3) *   17.28  *   39.06  *    1.70  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   17.25  *   26.12  *    4.94  *
*******************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*******************************************************************************************
* E.G. Elev (m)        *   56.70  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.66  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   56.03  * Reach Len. (m)        *   86.33  *   82.02  *   77.78  *
* Crit W.S. (m)        *   56.25  * Flow Area (m2)        *          *   23.51  *          *
* E.G. Slope (m/m)     *0.040424  * Area (m2)             *          *   23.51  *          *
* Q Total (m3/s)       *   84.94  * Flow (m3/s)           *          *   84.94  *          *
* Top Width (m)        *   38.49  * Top Width (m)         *          *   38.49  *          *
* Vel Total (m/s)      *    3.61  * Avg. Vel. (m/s)       *          *    3.61  *          *
* Max Chl Dpth (m)     *    1.03  * Hydr. Depth (m)       *          *    0.61  *          *
* Conv. Total (m3/s)   *   422.5  * Conv. (m3/s)          *          *   422.5  *          *
* Length Wtd. (m)      *   82.02  * Wetted Per. (m)       *          *   38.59  *          *
* Min Ch El (m)        *   55.00  * Shear (N/m2)          *          *  241.54  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  872.61  *          *
* Frctn Loss (m)       *    2.68  * Cum Volume (1000 m3) *   14.68  *   35.04  *    1.35  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   17.14  *   25.90  *    4.62  *
*******************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*******************************************************************************************
* E.G. Elev (m)        *   56.48  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.57  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   55.91  * Reach Len. (m)        *   86.33  *   82.02  *   77.78  *
* Crit W.S. (m)        *   56.09  * Flow Area (m2)        *          *   19.02  *          *
* E.G. Slope (m/m)     *0.040679  * Area (m2)             *          *   19.02  *          *
* Q Total (m3/s)       *   63.62  * Flow (m3/s)           *          *   63.62  *          *
* Top Width (m)        *   35.11  * Top Width (m)         *          *   35.11  *          *
* Vel Total (m/s)      *    3.35  * Avg. Vel. (m/s)       *          *    3.35  *          *
* Max Chl Dpth (m)     *    0.91  * Hydr. Depth (m)       *          *    0.54  *          *
* Conv. Total (m3/s)   *   315.4  * Conv. (m3/s)          *          *   315.4  *          *
* Length Wtd. (m)      *   82.02  * Wetted Per. (m)       *          *   35.20  *          *
* Min Ch El (m)        *   55.00  * Shear (N/m2)          *          *  215.55  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  721.03  *          *
* Frctn Loss (m)       *    2.63  * Cum Volume (1000 m3) *   10.97  *   29.10  *    0.87  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   10.20  *   25.39  *    3.48  *
*******************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 7

INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   58.01    8.41      60   13.71      61   21.92    61.7   24.46   61.34
   25.46   61.38   28.89      60   29.94   60.01   45.59      64   58.37   66.41
    70.4   68.69   74.12   69.05   79.84      69   89.96    67.5  105.82      65
   121.2      64  135.74      63  144.24   61.97  154.29      60  163.39      58
  169.32      57  178.21      56  185.35   55.55  196.44      55  221.73      53
  223.92   53.01  226.97   52.99  230.61      53  231.45   53.49     239  53.972
  239.44      54  241.67      54  252.74      60  256.76    60.5  260.73    60.5
  263.75   60.15  265.68      60   268.8      60  275.63      61  281.69      63
  290.06   65.75
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
       0    .045  196.44     .04  252.74    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        196.44  252.74            74.02   78.09   82.28             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   55.02  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.47  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   54.55  * Reach Len. (m)        *   74.02  *   78.09  *   82.28  *
* Crit W.S. (m)        *   54.55  * Flow Area (m2)        *          *   38.07  *          *
* E.G. Slope (m/m)     *0.016244  * Area (m2)             *          *   38.07  *          *
* Q Total (m3/s)       *  115.60  * Flow (m3/s)           *          *  115.60  *          *
* Top Width (m)        *   40.58  * Top Width (m)         *          *   40.58  *          *
* Vel Total (m/s)      *    3.04  * Avg. Vel. (m/s)       *          *    3.04  *          *
* Max Chl Dpth (m)     *    1.56  * Hydr. Depth (m)       *          *    0.94  *          *
* Conv. Total (m3/s)   *   907.0  * Conv. (m3/s)          *          *   907.0  *          *
* Length Wtd. (m)      *   78.70  * Wetted Per. (m)       *          *   40.93  *          *
* Min Ch El (m)        *   52.99  * Shear (N/m2)          *          *  148.17  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  449.87  *          *
* Frctn Loss (m)       *    1.35  * Cum Volume (1000 m3)  *   20.84  *   41.96  *    2.29  *
* C & E Loss (m)       *    0.06  * Cum SA (1000 m2)      *   17.52  *   23.03  *    5.54  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   54.83  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.43  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   54.41  * Reach Len. (m)        *   74.02  *   78.09  *   82.28  *
* Crit W.S. (m)        *   54.41  * Flow Area (m2)        *          *   32.34  *          *
* E.G. Slope (m/m)     *0.017129  * Area (m2)             *          *   32.34  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *          *   93.74  *          *
* Top Width (m)        *   38.48  * Top Width (m)         *          *   38.48  *          *
* Vel Total (m/s)      *    2.90  * Avg. Vel. (m/s)       *          *    2.90  *          *
* Max Chl Dpth (m)     *    1.42  * Hydr. Depth (m)       *          *    0.84  *          *
* Conv. Total (m3/s)   *   716.2  * Conv. (m3/s)          *          *   716.2  *          *
* Length Wtd. (m)      *   78.67  * Wetted Per. (m)       *          *   38.79  *          *
* Min Ch El (m)        *   52.99  * Shear (N/m2)          *          *  140.05  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  405.94  *          *
* Frctn Loss (m)       *    1.38  * Cum Volume (1000 m3)  *   17.28  *   36.68  *    1.70  *
* C & E Loss (m)       *    0.06  * Cum SA (1000 m2)      *   17.25  *   22.86  *    4.94  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #50-Yr
*********************************************************************************************
* E.G. Elev (m)        *   54.75  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.40  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   54.35  * Reach Len. (m)        *   74.02  *   78.09  *   82.28  *
* Crit W.S. (m)        *   54.35  * Flow Area (m2)        *          *   30.24  *          *
* E.G. Slope (m/m)     *0.017107  * Area (m2)             *          *   30.24  *          *
* Q Total (m3/s)       *   84.94  * Flow (m3/s)           *          *   84.94  *          *
* Top Width (m)        *   37.68  * Top Width (m)         *          *   37.68  *          *
* Vel Total (m/s)      *    2.81  * Avg. Vel. (m/s)       *          *    2.81  *          *
* Max Chl Dpth (m)     *    1.36  * Hydr. Depth (m)       *          *    0.80  *          *
* Conv. Total (m3/s)   *   649.4  * Conv. (m3/s)          *          *   649.4  *          *
* Length Wtd. (m)      *   78.66  * Wetted Per. (m)       *          *   37.97  *          *
* Min Ch El (m)        *   52.99  * Shear (N/m2)          *          *  133.58  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  375.24  *          *
* Frctn Loss (m)       *    1.38  * Cum Volume (1000 m3)  *   14.68  *   32.83  *    1.35  *
* C & E Loss (m)       *    0.05  * Cum SA (1000 m2)      *   17.14  *   22.78  *    4.62  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.
```

```
CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   54.54  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.35  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   54.19  * Reach Len. (m)        *   74.02  *   78.09  *   82.28  *
* Crit W.S. (m)        *   54.19  * Flow Area (m2)        *          *   24.43  *          *
* E.G. Slope (m/m)     *0.017952  * Area (m2)             *          *   24.43  *          *
* Q Total (m3/s)       *   63.62  * Flow (m3/s)           *          *   63.62  *          *
* Top Width (m)        *   35.38  * Top Width (m)         *          *   35.38  *          *
* Vel Total (m/s)      *    2.60  * Avg. Vel. (m/s)       *          *    2.60  *          *
* Max Chl Dpth (m)     *    1.20  * Hydr. Depth (m)       *          *    0.69  *          *
* Conv. Total (m3/s)   *   474.8  * Conv. (m3/s)          *          *   474.8  *          *
* Length Wtd. (m)      *   78.62  * Wetted Per. (m)       *          *   35.62  *          *
* Min Ch El (m)        *   52.99  * Shear (N/m2)          *          *  120.72  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  314.43  *          *
* Frctn Loss (m)       *    1.45  * Cum Volume (1000 m3)  *   10.97  *   27.32  *    0.87  *
* C & E Loss (m)       *    0.04  * Cum SA (1000 m2)      *   10.20  *   22.50  *    3.48  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 6

INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
       0   51.45   11.42   51.73   30.09      52   47.15      54   60.48      57
   69.96      60    77.5   61.09  100.98   61.71  112.42   61.81  119.71   61.71
  135.06      62  139.74      62  145.06   61.39  147.25      61  156.74      53
  157.97  52.423     158  52.409  158.87      52  161.54   51.37   165.1      51
  166.94   51.46   170.3      52  178.41   52.01  188.58   52.01  197.91   52.48
  207.61   52.72  213.93   52.93  216.38   52.93  227.32   52.72  241.98   52.22
  252.97   51.45  254.98   52.17  262.24   52.17  267.88   52.22  272.32  52.422
  274.03    52.5  276.22   52.66  279.79      53  284.02      54  290.22      56
  298.57   58.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
       0    .045     158     .04  216.38    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           158  216.38          149.21   97.35   84.37            .1       .3
Left Levee      Station=  135.06      Elevation=      62

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   53.03  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.55  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   52.49  * Reach Len. (m)        *  149.21  *   97.35  *   84.37  *
* Crit W.S. (m)        *   52.66  * Flow Area (m2)        *    0.01  *   22.84  *   14.25  *
* E.G. Slope (m/m)     *0.044143  * Area (m2)             *    0.01  *   22.84  *   14.25  *
* Q Total (m3/s)       *  115.60  * Flow (m3/s)           *    0.00  *   81.99  *   33.61  *
* Top Width (m)        *   79.82  * Top Width (m)         *    0.16  *   40.14  *   39.52  *
* Vel Total (m/s)      *    3.12  * Avg. Vel. (m/s)       *    0.50  *    3.59  *    2.36  *
* Max Chl Dpth (m)     *    1.49  * Hydr. Depth (m)       *    0.04  *    0.57  *    0.36  *
* Conv. Total (m3/s)   *   550.2  * Conv. (m3/s)          *     0.0  *   390.2  *   160.0  *
* Length Wtd. (m)      *   95.43  * Wetted Per. (m)       *    0.18  *   40.44  *   39.68  *
* Min Ch El (m)        *   51.00  * Shear (N/m2)          *   15.06  *  244.54  *  155.44  *
* Alpha                *    1.11  * Stream Power (N/m s)  *    7.49  *  877.72  *  366.65  *
* Frctn Loss (m)       *    1.98  * Cum Volume (1000 m3)  *   20.84  *   39.58  *    1.70  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *   17.51  *   19.88  *    3.91  *
*********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   52.88  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.45  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   52.44  * Reach Len. (m)        *  149.21  *   97.35  *   84.37  *
* Crit W.S. (m)        *   52.58  * Flow Area (m2)        *    0.00  *   20.91  *   12.38  *
* E.G. Slope (m/m)     *0.038932  * Area (m2)             *    0.00  *   20.91  *   12.38  *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *    0.00  *   67.66  *   26.08  *
* Top Width (m)        *   76.13  * Top Width (m)         *    0.06  *   39.05  *   37.02  *
* Vel Total (m/s)      *    2.82  * Avg. Vel. (m/s)       *    0.24  *    3.24  *    2.11  *
* Max Chl Dpth (m)     *    1.44  * Hydr. Depth (m)       *    0.01  *    0.54  *    0.33  *
```

```
* Conv. Total (m3/s)   *   475.1  * Conv. (m3/s)         *     0.0  *   342.9  *   132.2  *
* Length Wtd. (m)      *   95.47  * Wetted Per. (m)      *    0.07  *   39.35  *   37.18  *
* Min Ch El (m)        *   51.00  * Shear (N/m2)         *    4.81  *  202.87  *  127.12  *
* Alpha                *    1.11  * Stream Power (N/m s) *    1.14  *  656.54  *  267.77  *
* Frctn Loss (m)       *    1.95  * Cum Volume (1000 m3) *   17.28  *   34.61  *    1.19  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   17.25  *   19.83  *    3.42  *
*******************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #50-Yr
*******************************************************************************************
* E.G. Elev (m)        *   52.83  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.42  * Wt. n-Val.            *          *   0.040  *   0.045  *
* W.S. Elev (m)        *   52.41  * Reach Len. (m)        *  149.21  *   97.35  *   84.37  *
* Crit W.S. (m)        *   52.54  * Flow Area (m2)        *          *   19.88  *   11.42  *
* E.G. Slope (m/m)     *0.037838  * Area (m2)             *    0.00  *   19.88  *   11.42  *
* Q Total (m3/s)       *   84.94  * Flow (m3/s)           *          *   61.90  *   23.04  *
* Top Width (m)        *   74.20  * Top Width (m)         *          *   38.53  *   35.66  *
* Vel Total (m/s)      *    2.71  * Avg. Vel. (m/s)       *          *    3.11  *    2.02  *
* Max Chl Dpth (m)     *    1.41  * Hydr. Depth (m)       *          *    0.52  *    0.32  *
* Conv. Total (m3/s)   *   436.7  * Conv. (m3/s)          *          *   318.2  *   118.4  *
* Length Wtd. (m)      *   95.50  * Wetted Per. (m)       *          *   38.82  *   35.82  *
* Min Ch El (m)        *   51.00  * Shear (N/m2)          *          *  190.05  *  118.29  *
* Alpha                *    1.11  * Stream Power (N/m s) *          *  591.66  *  238.60  *
* Frctn Loss (m)       *    1.92  * Cum Volume (1000 m3) *   14.68  *   30.88  *    0.88  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   17.14  *   19.80  *    3.16  *
*******************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #10-Yr
*******************************************************************************************
* E.G. Elev (m)        *   52.67  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.32  * Wt. n-Val.            *          *   0.040  *   0.045  *
* W.S. Elev (m)        *   52.35  * Reach Len. (m)        *  149.21  *   97.35  *   84.37  *
* Crit W.S. (m)        *   52.43  * Flow Area (m2)        *          *   17.48  *    9.25  *
* E.G. Slope (m/m)     *0.032668  * Area (m2)             *          *   17.48  *    9.25  *
* Q Total (m3/s)       *   63.62  * Flow (m3/s)           *          *   47.55  *   16.07  *
* Top Width (m)        *   69.53  * Top Width (m)         *          *   37.13  *   32.40  *
* Vel Total (m/s)      *    2.38  * Avg. Vel. (m/s)       *          *    2.72  *    1.74  *
* Max Chl Dpth (m)     *    1.35  * Hydr. Depth (m)       *          *    0.47  *    0.29  *
* Conv. Total (m3/s)   *   352.0  * Conv. (m3/s)          *          *   263.1  *    88.9  *
* Length Wtd. (m)      *   95.63  * Wetted Per. (m)       *          *   37.41  *   32.56  *
* Min Ch El (m)        *   51.00  * Shear (N/m2)          *          *  149.67  *   91.06  *
* Alpha                *    1.11  * Stream Power (N/m s) *          *  407.18  *  158.12  *
* Frctn Loss (m)       *    1.86  * Cum Volume (1000 m3) *   10.97  *   25.68  *    0.49  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)     *   10.20  *   19.66  *    2.14  *
*******************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 5

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0      59    6.16   59.05    6.16   59.06   16.72   59.19   19.85      59
   24.68      58   32.66      55   35.07      54   37.81      53   41.43      52
   44.47      51   52.86   50.01    65.9   50.53   75.29   50.38   86.25   50.01
   98.98   50.03  109.13      50   119.9      49  134.31      48  139.21    48.3
  146.63   48.36  147.79   48.26  152.74      48  153.09      48  173.63      49
  179.54      50     183      51  197.09      52  215.49      52  236.35      54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045   119.9     .04  173.63    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         119.9  173.63             96.25   56.06   37.76             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
```

E.G. Elev (m)	49.79	Element	Left OB	Channel	Right OB
Vel Head (m)	0.15	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (m)	49.64	Reach Len. (m)	96.25	56.06	37.76
Crit W.S. (m)	49.18	Flow Area (m2)	2.20	66.38	1.20
E.G. Slope (m/m)	0.003537	Area (m2)	2.20	66.38	1.20
Q Total (m3/s)	115.60	Flow (m3/s)	1.35	113.51	0.74
Top Width (m)	64.38	Top Width (m)	6.88	53.73	3.77
Vel Total (m/s)	1.66	Avg. Vel. (m/s)	0.62	1.71	0.61
Max Chl Dpth (m)	1.64	Hydr. Depth (m)	0.32	1.24	0.32
Conv. Total (m3/s)	1943.7	Conv. (m3/s)	22.7	1908.6	12.4
Length Wtd. (m)	63.41	Wetted Per. (m)	6.91	53.81	3.83
Min Ch El (m)	48.00	Shear (N/m2)	11.03	42.79	10.92
Alpha	1.05	Stream Power (N/m s)	6.79	73.17	6.68
Frctn Loss (m)	0.30	Cum Volume (1000 m3)	20.68	35.24	1.05
C & E Loss (m)	0.00	Cum SA (1000 m2)	16.99	15.31	2.08

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #100-Yr

E.G. Elev (m)	49.64	Element	Left OB	Channel	Right OB
Vel Head (m)	0.12	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (m)	49.51	Reach Len. (m)	96.25	56.06	37.76
Crit W.S. (m)	49.08	Flow Area (m2)	1.43	59.72	0.78
E.G. Slope (m/m)	0.003347	Area (m2)	1.43	59.72	0.78
Q Total (m3/s)	93.74	Flow (m3/s)	0.74	92.60	0.40
Top Width (m)	62.31	Top Width (m)	5.54	53.73	3.04
Vel Total (m/s)	1.51	Avg. Vel. (m/s)	0.52	1.55	0.52
Max Chl Dpth (m)	1.51	Hydr. Depth (m)	0.26	1.11	0.26
Conv. Total (m3/s)	1620.2	Conv. (m3/s)	12.8	1600.5	7.0
Length Wtd. (m)	63.24	Wetted Per. (m)	5.57	53.81	3.08
Min Ch El (m)	48.00	Shear (N/m2)	8.41	36.43	8.33
Alpha	1.04	Stream Power (N/m s)	4.36	56.49	4.29
Frctn Loss (m)	0.28	Cum Volume (1000 m3)	17.17	30.68	0.63
C & E Loss (m)	0.00	Cum SA (1000 m2)	16.83	15.31	1.73

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #50-Yr

E.G. Elev (m)	49.57	Element	Left OB	Channel	Right OB
Vel Head (m)	0.11	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (m)	49.46	Reach Len. (m)	96.25	56.06	37.76
Crit W.S. (m)	49.03	Flow Area (m2)	1.14	56.81	0.63
E.G. Slope (m/m)	0.003262	Area (m2)	1.14	56.81	0.63
Q Total (m3/s)	84.94	Flow (m3/s)	0.54	84.10	0.30
Top Width (m)	61.41	Top Width (m)	4.96	53.73	2.72
Vel Total (m/s)	1.45	Avg. Vel. (m/s)	0.48	1.48	0.47
Max Chl Dpth (m)	1.46	Hydr. Depth (m)	0.23	1.06	0.23
Conv. Total (m3/s)	1487.2	Conv. (m3/s)	9.5	1472.6	5.2
Length Wtd. (m)	63.15	Wetted Per. (m)	4.98	53.81	2.76
Min Ch El (m)	48.00	Shear (N/m2)	7.33	33.77	7.26
Alpha	1.03	Stream Power (N/m s)	3.49	49.99	3.43
Frctn Loss (m)	0.28	Cum Volume (1000 m3)	14.59	27.14	0.38
C & E Loss (m)	0.00	Cum SA (1000 m2)	16.77	15.31	1.54

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #10-Yr

E.G. Elev (m)	49.41	Element	Left OB	Channel	Right OB
Vel Head (m)	0.08	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (m)	49.32	Reach Len. (m)	96.25	56.06	37.76
Crit W.S. (m)	48.91	Flow Area (m2)	0.56	49.35	0.31
E.G. Slope (m/m)	0.002955	Area (m2)	0.56	49.35	0.31
Q Total (m3/s)	63.62	Flow (m3/s)	0.20	63.31	0.11
Top Width (m)	59.09	Top Width (m)	3.46	53.73	1.90
Vel Total (m/s)	1.27	Avg. Vel. (m/s)	0.36	1.28	0.35
Max Chl Dpth (m)	1.32	Hydr. Depth (m)	0.16	0.92	0.16
Conv. Total (m3/s)	1170.3	Conv. (m3/s)	3.7	1164.7	2.0
Length Wtd. (m)	62.96	Wetted Per. (m)	3.48	53.81	1.93
Min Ch El (m)	48.00	Shear (N/m2)	4.64	26.58	4.60
Alpha	1.02	Stream Power (N/m s)	1.65	34.10	1.63
Frctn Loss (m)	0.23	Cum Volume (1000 m3)	10.92	22.43	0.09
C & E Loss (m)	0.00	Cum SA (1000 m2)	9.94	15.24	0.70

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: CREEK1
REACH: ONE RS: 4

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	55.12	1.38	55.12	2.26	55.11	4.86	55.04	6.85	55.03

```
    8.33   54.98   11.82   55.08   20.62      56   24.86   56.26   31.49   56.99
   53.17   57.25   69.54   57.18   85.66    57.1   98.65    57.2  105.99   57.02
  111.75      56  115.02      55  121.68      53  134.11      51  153.82      50
  161.55      48  165.92      48  173.04      48  176.34      48  177.49      49
  182.78   49.01  187.98      49  190.75   48.32  193.81      48   203.7   48.09
  207.53   48.15   212.5      48  220.87      49  223.95      49  238.96      50
  241.33      51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
       0    .045  187.98     .04  220.87    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        187.98  220.87            89.13    87.5   98.64             .1       .3

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   49.49  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.18  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   49.30  * Reach Len. (m)        *   89.13  *   87.50  *   98.64  *
* Crit W.S. (m)        *          * Flow Area (m2)        *   26.55  *   35.02  *    1.61  *
* E.G. Slope (m/m)     *0.006412  * Area (m2)             *   26.55  *   35.02  *    1.61  *
* Q Total (m3/s)       *  115.60  * Flow (m3/s)           *   41.72  *   72.87  *    1.02  *
* Top Width (m)        *   71.95  * Top Width (m)         *   31.46  *   32.89  *    7.60  *
* Vel Total (m/s)      *    1.83  * Avg. Vel. (m/s)       *    1.57  *    2.08  *    0.63  *
* Max Chl Dpth (m)     *    1.30  * Hydr. Depth (m)       *    0.84  *    1.06  *    0.21  *
* Conv. Total (m3/s)   *  1443.6  * Conv. (m3/s)          *   521.0  *   910.0  *    12.7  *
* Length Wtd. (m)      *   88.15  * Wetted Per. (m)       *   32.00  *   33.05  *    7.61  *
* Min Ch El (m)        *   48.00  * Shear (N/m2)          *   52.17  *   66.63  *   13.30  *
* Alpha                *    1.08  * Stream Power (N/m s)  *   81.98  *  138.63  *    8.40  *
* Frctn Loss (m)       *    0.68  * Cum Volume (1000 m3)  *   19.29  *   32.39  *    1.00  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *   15.14  *   12.88  *    1.87  *
*********************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   49.35  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.16  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   49.19  * Reach Len. (m)        *   89.13  *   87.50  *   98.64  *
* Crit W.S. (m)        *          * Flow Area (m2)        *   23.20  *   31.50  *    0.88  *
* E.G. Slope (m/m)     *0.006225  * Area (m2)             *   23.20  *   31.50  *    0.88  *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *   33.14  *   60.17  *    0.43  *
* Top Width (m)        *   69.93  * Top Width (m)         *   31.05  *   32.89  *    6.00  *
* Vel Total (m/s)      *    1.69  * Avg. Vel. (m/s)       *    1.43  *    1.91  *    0.49  *
* Max Chl Dpth (m)     *    1.19  * Hydr. Depth (m)       *    0.75  *    0.96  *    0.15  *
* Conv. Total (m3/s)   *  1188.1  * Conv. (m3/s)          *   420.0  *   762.7  *     5.5  *
* Length Wtd. (m)      *   88.07  * Wetted Per. (m)       *   31.57  *   33.05  *    6.00  *
* Min Ch El (m)        *   48.00  * Shear (N/m2)          *   44.87  *   58.18  *    8.97  *
* Alpha                *    1.08  * Stream Power (N/m s)  *   64.07  *  111.15  *    4.38  *
* Frctn Loss (m)       *    0.65  * Cum Volume (1000 m3)  *   15.99  *   28.12  *    0.60  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *   15.07  *   12.88  *    1.56  *
*********************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*********************************************************************************************
* E.G. Elev (m)        *   49.29  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.14  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   49.15  * Reach Len. (m)        *   89.13  *   87.50  *   98.64  *
* Crit W.S. (m)        *          * Flow Area (m2)        *   21.78  *   29.99  *    0.62  *
* E.G. Slope (m/m)     *0.006125  * Area (m2)             *   21.78  *   29.99  *    0.62  *
* Q Total (m3/s)       *   84.94  * Flow (m3/s)           *   29.69  *   54.99  *    0.26  *
* Top Width (m)        *   69.06  * Top Width (m)         *   30.87  *   32.89  *    5.31  *
* Vel Total (m/s)      *    1.62  * Avg. Vel. (m/s)       *    1.36  *    1.83  *    0.42  *
* Max Chl Dpth (m)     *    1.15  * Hydr. Depth (m)       *    0.71  *    0.91  *    0.12  *
* Conv. Total (m3/s)   *  1085.3  * Conv. (m3/s)          *   379.4  *   702.6  *     3.3  *
* Length Wtd. (m)      *   88.03  * Wetted Per. (m)       *   31.39  *   33.05  *    5.31  *
* Min Ch El (m)        *   48.00  * Shear (N/m2)          *   41.68  *   54.50  *    7.03  *
* Alpha                *    1.08  * Stream Power (N/m s)  *   56.82  *   99.93  *    2.93  *
* Frctn Loss (m)       *    0.64  * Cum Volume (1000 m3)  *   13.49  *   24.71  *    0.35  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *   15.04  *   12.88  *    1.38  *
*********************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   49.17  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.10  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   49.07  * Reach Len. (m)        *   89.13  *   87.50  *   98.64  *
* Crit W.S. (m)        *          * Flow Area (m2)        *   19.39  *   27.43  *    0.25  *
* E.G. Slope (m/m)     *0.004770  * Area (m2)             *   19.39  *   27.43  *    0.25  *
* Q Total (m3/s)       *   63.62  * Flow (m3/s)           *   21.73  *   41.83  *    0.06  *
* Top Width (m)        *   67.60  * Top Width (m)         *   30.57  *   32.89  *    4.14  *
* Vel Total (m/s)      *    1.35  * Avg. Vel. (m/s)       *    1.12  *    1.52  *    0.24  *
* Max Chl Dpth (m)     *    1.07  * Hydr. Depth (m)       *    0.63  *    0.83  *    0.06  *
* Conv. Total (m3/s)   *   921.2  * Conv. (m3/s)          *   314.7  *   605.6  *     0.9  *
* Length Wtd. (m)      *   87.89  * Wetted Per. (m)       *   31.08  *   33.05  *    4.14  *
```

```
* Min Ch El (m)        *   48.00  * Shear (N/m2)          *   29.19  *   38.82  *    2.88  *
* Alpha                *    1.07  * Stream Power (N/m s) *   32.71  *   59.19  *    0.69  *
* Frctn Loss (m)       *    0.63  * Cum Volume (1000 m3) *    9.96  *   20.28  *    0.08  *
* C & E Loss (m)       *    0.02  * Cum SA (1000 m2)     *    8.30  *   12.81  *    0.58  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 3

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
       0   49.36    7.73      50   21.01   51.47   31.79   51.85   41.23    51.5
   49.47   51.56   53.43   51.52   63.33   50.81   78.42      49   85.22      48
   95.32      48  114.62   48.26  122.76   48.29   133.2   48.34  155.33      48
  157.63      48  167.28   47.23  167.77      47  172.95      47   187.1      48
  201.48      49  209.21      50  215.08      52  218.88      53  223.77      54
  230.78      55  235.63   55.39  243.96      56  248.14   57.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  157.63     .04   187.1    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        157.63   187.1           120.92   98.71   93.98             .3       .5

CROSS SECTION OUTPUT  Profile #500-Yr
*******************************************************************************************
* E.G. Elev (m)        *   48.79  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.26  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   48.53  * Reach Len. (m)        *  120.92  *   98.71  *   93.98  *
* Crit W.S. (m)        *   48.53  * Flow Area (m2)        *   27.74  *   32.10  *    2.04  *
* E.G. Slope (m/m)     *0.009583  * Area (m2)             *   27.74  *   32.10  *    2.04  *
* Q Total (m3/s)       *  115.60  * Flow (m3/s)           *   30.80  *   82.96  *    1.83  *
* Top Width (m)        *  113.16  * Top Width (m)         *   76.03  *   29.47  *    7.66  *
* Vel Total (m/s)      *    1.87  * Avg. Vel. (m/s)       *    1.11  *    2.58  *    0.90  *
* Max Chl Dpth (m)     *    1.53  * Hydr. Depth (m)       *    0.36  *    1.09  *    0.27  *
* Conv. Total (m3/s)   *  1180.9  * Conv. (m3/s)          *   314.6  *   847.5  *    18.7  *
* Length Wtd. (m)      *  103.60  * Wetted Per. (m)       *   76.08  *   29.59  *    7.68  *
* Min Ch El (m)        *   47.00  * Shear (N/m2)          *   34.27  *  101.97  *   24.97  *
* Alpha                *    1.47  * Stream Power (N/m s) *   38.05  *  263.51  *   22.45  *
* Frctn Loss (m)       *    0.11  * Cum Volume (1000 m3) *   16.87  *   29.46  *    0.82  *
* C & E Loss (m)       *    0.11  * Cum SA (1000 m2)     *   10.35  *   10.16  *    1.12  *
*******************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #100-Yr
*******************************************************************************************
* E.G. Elev (m)        *   48.69  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.23  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   48.46  * Reach Len. (m)        *  120.92  *   98.71  *   93.98  *
* Crit W.S. (m)        *   48.46  * Flow Area (m2)        *   22.50  *   30.07  *    1.55  *
* E.G. Slope (m/m)     *0.008867  * Area (m2)             *   22.50  *   30.07  *    1.55  *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *   20.98  *   71.54  *    1.22  *
* Top Width (m)        *  111.70  * Top Width (m)         *   75.56  *   29.47  *    6.67  *
* Vel Total (m/s)      *    1.73  * Avg. Vel. (m/s)       *    0.93  *    2.38  *    0.79  *
* Max Chl Dpth (m)     *    1.46  * Hydr. Depth (m)       *    0.30  *    1.02  *    0.23  *
* Conv. Total (m3/s)   *   995.5  * Conv. (m3/s)          *   222.8  *   759.7  *    12.9  *
* Length Wtd. (m)      *  102.48  * Wetted Per. (m)       *   75.60  *   29.59  *    6.68  *
* Min Ch El (m)        *   47.00  * Shear (N/m2)          *   25.88  *   88.36  *   20.11  *
* Alpha                *    1.51  * Stream Power (N/m s) *   24.13  *  210.26  *   15.85  *
* Frctn Loss (m)       *    0.14  * Cum Volume (1000 m3) *   13.95  *   25.43  *    0.48  *
* C & E Loss (m)       *    0.09  * Cum SA (1000 m2)     *   10.32  *   10.16  *    0.93  *
*******************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #50-Yr
*********************************************************************************************
* E.G. Elev (m)        *   48.65  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.22  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   48.43  * Reach Len. (m)        *  120.92  *   98.71  *   93.98  *
* Crit W.S. (m)        *   48.43  * Flow Area (m2)        *   20.05  *   29.11  *    1.34  *
* E.G. Slope (m/m)     *0.008620  * Area (m2)             *   20.05  *   29.11  *    1.34  *
* Q Total (m3/s)       *   84.94  * Flow (m3/s)           *   17.11  *   66.84  *    0.99  *
* Top Width (m)        *  111.01  * Top Width (m)         *   75.34  *   29.47  *    6.20  *
* Vel Total (m/s)      *    1.68  * Avg. Vel. (m/s)       *    0.85  *    2.30  *    0.74  *
* Max Chl Dpth (m)     *    1.43  * Hydr. Depth (m)       *    0.27  *    0.99  *    0.22  *
* Conv. Total (m3/s)   *   914.8  * Conv. (m3/s)          *   184.3  *   719.9  *    10.7  *
* Length Wtd. (m)      *  101.46  * Wetted Per. (m)       *   75.38  *   29.59  *    6.21  *
* Min Ch El (m)        *   47.00  * Shear (N/m2)          *   22.49  *   83.17  *   18.18  *
* Alpha                *    1.52  * Stream Power (N/m s)  *   19.19  *  190.98  *   13.46  *
* Frctn Loss (m)       *    0.23  * Cum Volume (1000 m3)  *   11.63  *   22.12  *    0.26  *
* C & E Loss (m)       *    0.07  * Cum SA (1000 m2)      *   10.31  *   10.16  *    0.82  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   48.52  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.26  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   48.26  * Reach Len. (m)        *  120.92  *   98.71  *   93.98  *
* Crit W.S. (m)        *   48.26  * Flow Area (m2)        *    8.17  *   24.07  *    0.49  *
* E.G. Slope (m/m)     *0.011980  * Area (m2)             *    8.17  *   24.07  *    0.49  *
* Q Total (m3/s)       *   63.62  * Flow (m3/s)           *    5.92  *   57.40  *    0.30  *
* Top Width (m)        *   83.63  * Top Width (m)         *   50.42  *   29.47  *    3.74  *
* Vel Total (m/s)      *    1.94  * Avg. Vel. (m/s)       *    0.73  *    2.38  *    0.62  *
* Max Chl Dpth (m)     *    1.26  * Hydr. Depth (m)       *    0.16  *    0.82  *    0.13  *
* Conv. Total (m3/s)   *   581.2  * Conv. (m3/s)          *    54.1  *   524.4  *     2.8  *
* Length Wtd. (m)      *   99.69  * Wetted Per. (m)       *   50.44  *   29.59  *    3.75  *
* Min Ch El (m)        *   47.00  * Shear (N/m2)          *   19.02  *   95.58  *   15.24  *
* Alpha                *    1.37  * Stream Power (N/m s)  *   13.79  *  227.91  *    9.50  *
* Frctn Loss (m)       *    0.34  * Cum Volume (1000 m3)  *    8.74  *   18.03  *    0.04  *
* C & E Loss (m)       *    0.09  * Cum SA (1000 m2)      *    4.70  *   10.09  *    0.20  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 2

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  151.25      50  151.25      47  187.43   47.01  191.32      47  193.95   45.86
  205.24      45  220.11      45  223.17      46  230.14      47     235      47
  254.44      54   255.6   54.01  256.22   54.14  263.05   54.01  271.21      54
   280.9   54.14  297.06   54.58  313.38   54.52  327.54   54.54  337.16   54.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  151.25    .045  191.32     .04  230.14    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        191.32  230.14            84.08   70.45   77.44             .3       .5

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   48.23  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.04  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
```

```
* W.S. Elev (m)        *   48.19  * Reach Len. (m)       *   84.08  *   70.45  *   77.44  *
* Crit W.S. (m)        *   46.46  * Flow Area (m2)       *   47.60  *  103.35  *    7.77  *
* E.G. Slope (m/m)     *0.000396  * Area (m2)            *   47.60  *  103.35  *    7.77  *
* Q Total (m3/s)       *  124.32  * Flow (m3/s)          *   23.15  *   97.90  *    3.27  *
* Top Width (m)        *   87.06  * Top Width (m)        *   40.07  *   38.82  *    8.17  *
* Vel Total (m/s)      *    0.78  * Avg. Vel. (m/s)      *    0.49  *    0.95  *    0.42  *
* Max Chl Dpth (m)     *    3.19  * Hydr. Depth (m)      *    1.19  *    2.66  *    0.95  *
* Conv. Total (m3/s)   *  6248.4  * Conv. (m3/s)         *  1163.5  *  4920.6  *   164.3  *
* Length Wtd. (m)      *   74.20  * Wetted Per. (m)      *   41.26  *   39.32  *    8.38  *
* Min Ch El (m)        *   45.00  * Shear (N/m2)         *    4.48  *   10.20  *    3.60  *
* Alpha                *    1.23  * Stream Power (N/m s) *    2.18  *    9.67  *    1.51  *
* Frctn Loss (m)       *    0.00  * Cum Volume (1000 m3) *   12.32  *   22.77  *    0.35  *
* C & E Loss (m)       *    0.02  * Cum SA (1000 m2)     *    3.33  *    6.79  *    0.37  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   47.79  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.05  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   47.74  * Reach Len. (m)       *   84.08  *   70.45  *   77.44  *
* Crit W.S. (m)        *   46.30  * Flow Area (m2)       *   29.42  *   85.73  *    4.35  *
* E.G. Slope (m/m)     *0.000576  * Area (m2)            *   29.42  *   85.73  *    4.35  *
* Q Total (m3/s)       *  100.82  * Flow (m3/s)          *   12.62  *   86.52  *    1.68  *
* Top Width (m)        *   85.80  * Top Width (m)        *   40.07  *   38.82  *    6.91  *
* Vel Total (m/s)      *    0.84  * Avg. Vel. (m/s)      *    0.43  *    1.01  *    0.39  *
* Max Chl Dpth (m)     *    2.74  * Hydr. Depth (m)      *    0.73  *    2.21  *    0.63  *
* Conv. Total (m3/s)   *  4199.9  * Conv. (m3/s)         *   525.7  *  3604.0  *    70.2  *
* Length Wtd. (m)      *   73.92  * Wetted Per. (m)      *   40.81  *   39.32  *    7.04  *
* Min Ch El (m)        *   45.00  * Shear (N/m2)         *    4.07  *   12.32  *    3.49  *
* Alpha                *    1.26  * Stream Power (N/m s) *    1.75  *   12.43  *    1.35  *
* Frctn Loss (m)       *    0.00  * Cum Volume (1000 m3) *   10.81  *   19.72  *    0.21  *
* C & E Loss (m)       *    0.02  * Cum SA (1000 m2)     *    3.33  *    6.79  *    0.30  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-Yr
*********************************************************************************************
* E.G. Elev (m)        *   47.43  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.07  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   47.36  * Reach Len. (m)       *   84.08  *   70.45  *   77.44  *
* Crit W.S. (m)        *   46.23  * Flow Area (m2)       *   14.12  *   70.91  *    1.91  *
* E.G. Slope (m/m)     *0.001064  * Area (m2)            *   14.12  *   70.91  *    1.91  *
* Q Total (m3/s)       *   91.42  * Flow (m3/s)          *    5.08  *   85.69  *    0.65  *
* Top Width (m)        *   84.74  * Top Width (m)        *   40.07  *   38.82  *    5.85  *
* Vel Total (m/s)      *    1.05  * Avg. Vel. (m/s)      *    0.36  *    1.21  *    0.34  *
* Max Chl Dpth (m)     *    2.36  * Hydr. Depth (m)      *    0.35  *    1.83  *    0.33  *
* Conv. Total (m3/s)   *  2802.4  * Conv. (m3/s)         *   155.7  *  2626.6  *    20.1  *
* Length Wtd. (m)      *   73.59  * Wetted Per. (m)      *   40.43  *   39.32  *    5.92  *
* Min Ch El (m)        *   45.00  * Shear (N/m2)         *    3.65  *   18.82  *    3.38  *
* Alpha                *    1.25  * Stream Power (N/m s) *    1.31  *   22.74  *    1.15  *
* Frctn Loss (m)       *    0.00  * Cum Volume (1000 m3) *    9.56  *   17.19  *    0.10  *
* C & E Loss (m)       *    0.03  * Cum SA (1000 m2)     *    3.33  *    6.79  *    0.25  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   46.99  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.08  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   46.91  * Reach Len. (m)       *   84.08  *   70.45  *   77.44  *
* Crit W.S. (m)        *   46.04  * Flow Area (m2)       *          *   53.60  *          *
* E.G. Slope (m/m)     *0.001679  * Area (m2)            *          *   53.60  *          *
* Q Total (m3/s)       *   68.49  * Flow (m3/s)          *          *   68.49  *          *
* Top Width (m)        *   37.99  * Top Width (m)        *          *   37.99  *          *
* Vel Total (m/s)      *    1.28  * Avg. Vel. (m/s)      *          *    1.28  *          *
* Max Chl Dpth (m)     *    1.91  * Hydr. Depth (m)      *          *    1.41  *          *
* Conv. Total (m3/s)   *  1671.7  * Conv. (m3/s)         *          *  1671.7  *          *
* Length Wtd. (m)      *   73.46  * Wetted Per. (m)      *          *   38.46  *          *
* Min Ch El (m)        *   45.00  * Shear (N/m2)         *          *   22.94  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *   29.31  *          *
* Frctn Loss (m)       *    0.00  * Cum Volume (1000 m3) *    8.24  *   14.19  *    0.02  *
* C & E Loss (m)       *    0.04  * Cum SA (1000 m2)     *    1.65  *    6.76  *    0.02  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 1

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
```

```
       0      44    4.47      43   11.17      41   29.16      41   34.59      43
   39.18      45   66.33   44.61  102.57   44.61  141.96   44.61  165.85   44.61
     193      45  193.77      48  206.27   51.95  216.49   52.66  237.11      54
  242.41      56  248.92   56.01  253.07      56  258.33    54.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
       0    .045   39.18     .04     193    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         39.18     193                0       0       0             .3       .5

CROSS SECTION OUTPUT  Profile #500-Yr
*********************************************************************************************
* E.G. Elev (m)        *   48.21  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.00  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   48.21  * Reach Len. (m)        *          *          *          *
* Crit W.S. (m)        *   42.54  * Flow Area (m2)        *  245.41  *  543.16  *    1.39  *
* E.G. Slope (m/m)     *0.000007  * Area (m2)             *  245.41  *  543.16  *    1.39  *
* Q Total (m3/s)       *  124.32  * Flow (m3/s)           *   43.58  *   80.70  *    0.04  *
* Top Width (m)        *  194.43  * Top Width (m)         *   39.18  *  153.82  *    1.43  *
* Vel Total (m/s)      *    0.16  * Avg. Vel. (m/s)       *    0.18  *    0.15  *    0.03  *
* Max Chl Dpth (m)     *    7.21  * Hydr. Depth (m)       *    6.26  *    3.53  *    0.97  *
* Conv. Total (m3/s)   * 48509.2  * Conv. (m3/s)          * 17006.4  * 31487.1  *    15.7  *
* Length Wtd. (m)      *          * Wetted Per. (m)       *   44.57  *  153.83  *    3.79  *
* Min Ch El (m)        *   44.61  * Shear (N/m2)          *    0.35  *    0.23  *    0.02  *
* Alpha                *    1.02  * Stream Power (N/m s)  *    0.06  *    0.03  *    0.00  *
* Frctn Loss (m)       *          * Cum Volume (1000 m3)  *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)      *          *          *          *
*********************************************************************************************

CROSS SECTION OUTPUT  Profile #100-Yr
*********************************************************************************************
* E.G. Elev (m)        *   47.76  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.00  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   47.76  * Reach Len. (m)        *          *          *          *
* Crit W.S. (m)        *   42.35  * Flow Area (m2)        *  227.79  *  473.96  *    0.98  *
* E.G. Slope (m/m)     *0.000006  * Area (m2)             *  227.79  *  473.96  *    0.98  *
* Q Total (m3/s)       *  100.82  * Flow (m3/s)           *   37.90  *   62.89  *    0.03  *
* Top Width (m)        *  193.71  * Top Width (m)         *   39.18  *  153.82  *    0.71  *
* Vel Total (m/s)      *    0.14  * Avg. Vel. (m/s)       *    0.17  *    0.13  *    0.03  *
* Max Chl Dpth (m)     *    6.76  * Hydr. Depth (m)       *    5.81  *    3.08  *    1.38  *
* Conv. Total (m3/s)   * 40221.5  * Conv. (m3/s)          * 15121.7  * 25089.1  *    10.6  *
* Length Wtd. (m)      *          * Wetted Per. (m)       *   44.12  *  153.83  *    2.85  *
* Min Ch El (m)        *   44.61  * Shear (N/m2)          *    0.32  *    0.19  *    0.02  *
* Alpha                *    1.04  * Stream Power (N/m s)  *    0.05  *    0.03  *    0.00  *
* Frctn Loss (m)       *          * Cum Volume (1000 m3)  *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)      *          *          *          *
*********************************************************************************************

CROSS SECTION OUTPUT  Profile #50-Yr
*********************************************************************************************
* E.G. Elev (m)        *   47.39  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.00  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   47.39  * Reach Len. (m)        *          *          *          *
* Crit W.S. (m)        *   42.28  * Flow Area (m2)        *  213.29  *  417.04  *    0.73  *
* E.G. Slope (m/m)     *0.000007  * Area (m2)             *  213.29  *  417.04  *    0.73  *
* Q Total (m3/s)       *   91.42  * Flow (m3/s)           *   36.74  *   54.66  *    0.02  *
* Top Width (m)        *  193.61  * Top Width (m)         *   39.18  *  153.82  *    0.61  *
* Vel Total (m/s)      *    0.14  * Avg. Vel. (m/s)       *    0.17  *    0.13  *    0.03  *
* Max Chl Dpth (m)     *    6.39  * Hydr. Depth (m)       *    5.44  *    2.71  *    1.19  *
* Conv. Total (m3/s)   * 33906.9  * Conv. (m3/s)          * 13628.2  * 20271.4  *     7.3  *
* Length Wtd. (m)      *          * Wetted Per. (m)       *   43.75  *  153.83  *    2.47  *
* Min Ch El (m)        *   44.61  * Shear (N/m2)          *    0.35  *    0.19  *    0.02  *
* Alpha                *    1.06  * Stream Power (N/m s)  *    0.06  *    0.03  *    0.00  *
* Frctn Loss (m)       *          * Cum Volume (1000 m3)  *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)      *          *          *          *
*********************************************************************************************

CROSS SECTION OUTPUT  Profile #10-Yr
*********************************************************************************************
* E.G. Elev (m)        *   46.95  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.00  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   46.95  * Reach Len. (m)        *          *          *          *
* Crit W.S. (m)        *   42.07  * Flow Area (m2)        *  196.04  *  349.34  *    0.49  *
* E.G. Slope (m/m)     *0.000006  * Area (m2)             *  196.04  *  349.34  *    0.49  *
* Q Total (m3/s)       *   68.49  * Flow (m3/s)           *   30.22  *   38.25  *    0.01  *
* Top Width (m)        *  193.50  * Top Width (m)         *   39.18  *  153.82  *    0.50  *
* Vel Total (m/s)      *    0.13  * Avg. Vel. (m/s)       *    0.15  *    0.11  *    0.02  *
* Max Chl Dpth (m)     *    5.95  * Hydr. Depth (m)       *    5.00  *    2.27  *    0.97  *
* Conv. Total (m3/s)   * 27015.3  * Conv. (m3/s)          * 11921.9  * 15089.2  *     4.2  *
* Length Wtd. (m)      *          * Wetted Per. (m)       *   43.31  *  153.83  *    2.01  *
* Min Ch El (m)        *   44.61  * Shear (N/m2)          *    0.29  *    0.14  *    0.02  *
* Alpha                *    1.09  * Stream Power (N/m s)  *    0.04  *    0.02  *    0.00  *
* Frctn Loss (m)       *          * Cum Volume (1000 m3)  *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)      *          *          *          *
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SUMMARY OF MANNING'S N VALUES

River:A_TRIBUTARY
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Reach	River Sta.	n1	n2	n3
ONE	12	.045	.04	.045
ONE	11	.045	.04	.045
ONE	10.91	.045	.04	.045

River:CREEK1

Reach	River Sta.	n1	n2	n3
ONE	15	.045	.04	.045
ONE	14	.045	.04	.045
ONE	13	.045	.04	.045
ONE	11	.045	.04	.045
ONE	10.9	.045	.04	.045
ONE	10	.045	.04	.045
ONE	9	.045	.04	.045
ONE	8	.045	.04	.045
ONE	7	.045	.04	.045
ONE	6	.045	.04	.045
ONE	5	.045	.04	.045
ONE	4	.045	.04	.045
ONE	3	.045	.04	.045
ONE	2	.045	.04	.045
ONE	1	.045	.04	.045

SUMMARY OF REACH LENGTHS

River: A_TRIBUTARY

Reach	River Sta.	Left	Channel	Right
ONE	12	124.36	124.36	124.36
ONE	11	68.16	68.16	68.16
ONE	10.91	0	0	0

River: CREEK1

Reach	River Sta.	Left	Channel	Right
ONE	15	54.72	92.14	142.18
ONE	14	31.11	22.5	32.6
ONE	13	174.52	174.52	174.52
ONE	11	72.98	72.98	72.98
ONE	10.9	30.43	30.43	30.43
ONE	10	80.47	86.63	80.65
ONE	9	115.38	85.94	72.36
ONE	8	86.33	82.02	77.78
ONE	7	74.02	78.09	82.28
ONE	6	149.21	97.35	84.37
ONE	5	96.25	56.06	37.76
ONE	4	89.13	87.5	98.64
ONE	3	120.92	98.71	93.98
ONE	2	84.08	70.45	77.44
ONE	1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: A_TRIBUTARY

Reach	River Sta.	Contr.	Expan.
ONE	12	.1	.3
ONE	11	.1	.3
ONE	10.91	.1	.3

River: CREEK1

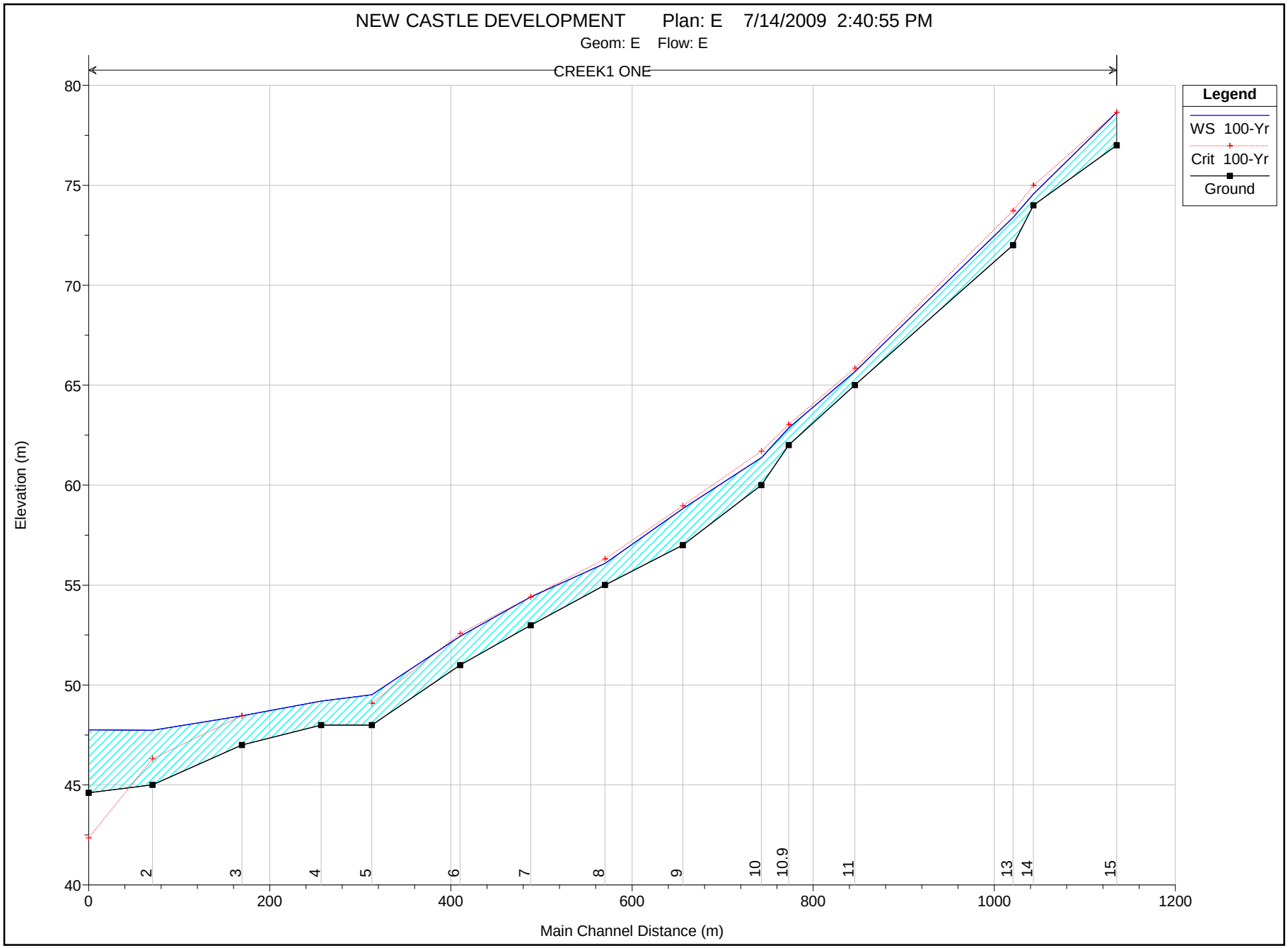
Reach	River Sta.	Contr.	Expan.
ONE	15	.1	.3
ONE	14	.1	.3
ONE	13	.1	.3
ONE	11	.1	.3
ONE	10.9	.1	.3
ONE	10	.1	.3
ONE	9	.1	.3
ONE	8	.1	.3
ONE	7	.1	.3
ONE	6	.1	.3
ONE	5	.1	.3
ONE	4	.1	.3
ONE	3	.3	.5
ONE	2	.3	.5
ONE	1	.3	.5

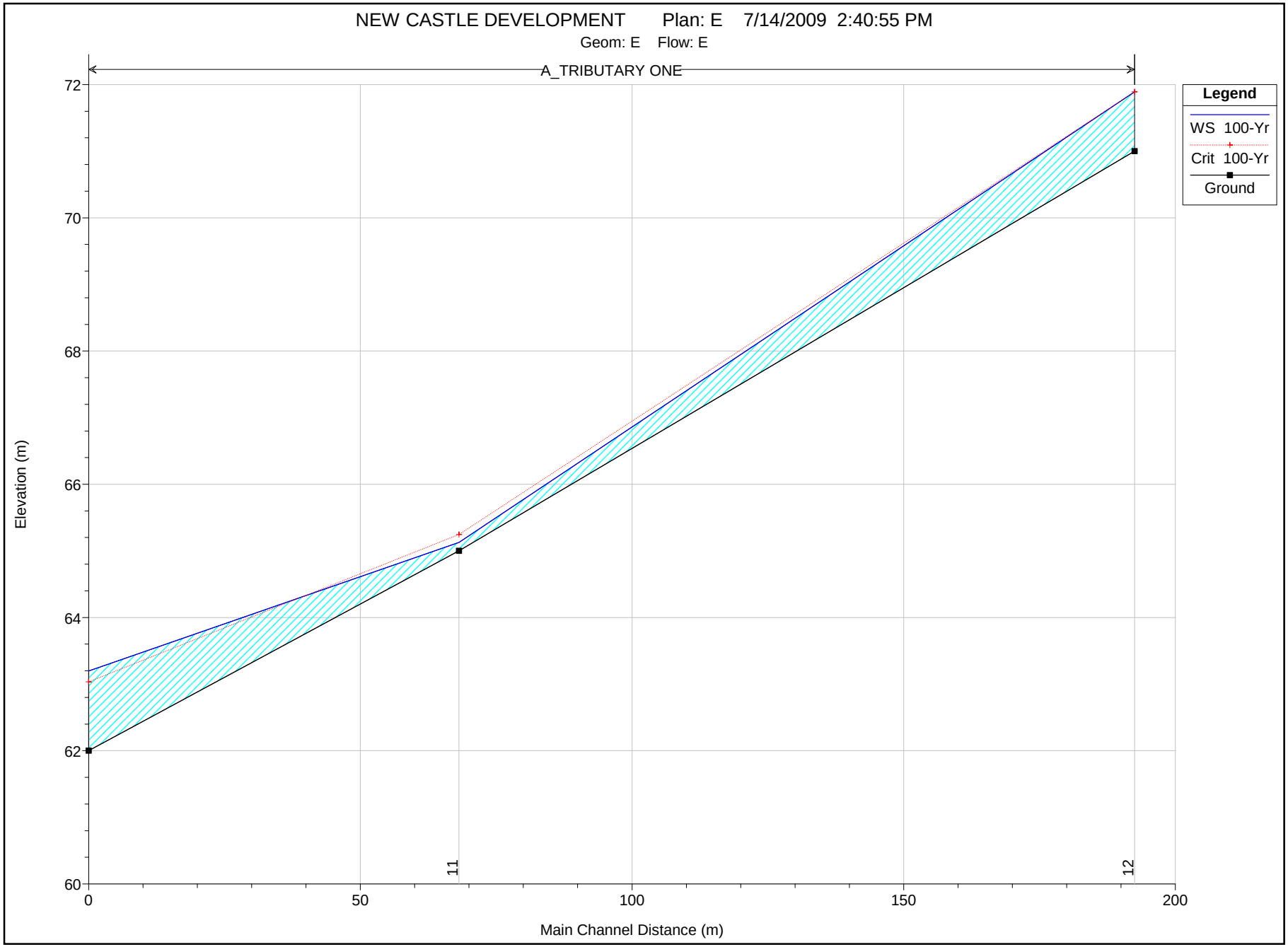
Profile Output Table - Standard Table 1

River	Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
CREEK1	ONE	15	500-Yr	89.81	77.00	78.86	78.86	79.57	0.014887	3.71	24.18	17.22	1.00
CREEK1	ONE	15	100-Yr	72.96	77.00	78.65	78.66	79.29	0.015366	3.53	20.69	16.38	1.00
CREEK1	ONE	15	50-Yr	66.17	77.00	78.57	78.57	79.17	0.015584	3.44	19.25	16.02	1.00
CREEK1	ONE	15	10-Yr	49.63	77.00	78.32	78.32	78.85	0.016461	3.20	15.50	15.05	1.01
CREEK1	ONE	14	500-Yr	96.32	74.00	74.64	75.14	76.43	0.110228	5.92	16.26	26.66	2.42
CREEK1	ONE	14	100-Yr	78.28	74.00	74.56	74.99	76.10	0.110681	5.48	14.28	26.38	2.38
CREEK1	ONE	14	50-Yr	70.98	74.00	74.53	74.93	75.95	0.110567	5.28	13.44	26.26	2.36
CREEK1	ONE	14	10-Yr	53.28	74.00	74.45	74.77	75.57	0.106152	4.68	11.39	25.97	2.25
CREEK1	ONE	13	500-Yr	96.32	72.00	73.51	73.90	74.70	0.046789	4.85	19.86	22.99	1.67
CREEK1	ONE	13	100-Yr	78.28	72.00	73.39	73.73	74.44	0.045083	4.54	17.24	21.40	1.62
CREEK1	ONE	13	50-Yr	70.98	72.00	73.33	73.65	74.33	0.044486	4.41	16.10	20.67	1.60
CREEK1	ONE	13	10-Yr	53.28	72.00	73.18	73.45	74.03	0.043797	4.08	13.05	18.58	1.55
CREEK1	ONE	11	500-Yr	96.32	65.00	65.76	65.94	66.39	0.046550	3.53	27.28	51.34	1.55
CREEK1	ONE	11	100-Yr	78.28	65.00	65.68	65.85	66.25	0.047166	3.35	23.39	48.19	1.53
CREEK1	ONE	11	50-Yr	70.98	65.00	65.64	65.81	66.19	0.047316	3.26	21.78	46.82	1.53
CREEK1	ONE	11	10-Yr	53.28	65.00	65.56	65.69	66.01	0.046796	2.99	17.83	43.28	1.49
CREEK1	ONE	10.9	500-Yr	112.74	62.00	62.99	63.18	63.78	0.029075	3.93	28.72	32.09	1.32
CREEK1	ONE	10.9	100-Yr	91.51	62.00	62.87	63.03	63.56	0.030256	3.69	24.78	31.31	1.33
CREEK1	ONE	10.9	50-Yr	82.98	62.00	62.81	62.97	63.47	0.030573	3.58	23.15	30.98	1.32
CREEK1	ONE	10.9	10-Yr	62.29	62.00	62.68	62.81	63.23	0.032346	3.28	18.97	30.12	1.32
CREEK1	ONE	10	500-Yr	112.74	60.00	61.50	61.87	62.67	0.043511	4.78	23.60	26.69	1.62
CREEK1	ONE	10	100-Yr	91.51	60.00	61.37	61.70	62.42	0.044563	4.53	20.19	25.16	1.62
CREEK1	ONE	10	50-Yr	82.98	60.00	61.32	61.63	62.31	0.045022	4.42	18.78	24.50	1.61
CREEK1	ONE	10	10-Yr	62.29	60.00	61.16	61.43	62.02	0.046739	4.11	15.16	22.72	1.61
CREEK1	ONE	9	500-Yr	112.74	57.00	58.96	59.13	59.69	0.025727	3.79	29.73	31.97	1.26
CREEK1	ONE	9	100-Yr	91.51	57.00	58.82	58.97	59.47	0.024952	3.58	25.54	29.21	1.22
CREEK1	ONE	9	50-Yr	82.98	57.00	58.76	58.90	59.38	0.024641	3.50	23.74	27.90	1.21
CREEK1	ONE	9	10-Yr	62.29	57.00	58.58	58.69	59.12	0.023780	3.26	19.10	24.22	1.17
CREEK1	ONE	8	500-Yr	115.60	55.00	56.20	56.44	56.93	0.040966	3.78	30.58	47.24	1.50
CREEK1	ONE	8	100-Yr	93.74	55.00	56.09	56.31	56.77	0.040497	3.66	25.60	41.13	1.48
CREEK1	ONE	8	50-Yr	84.94	55.00	56.03	56.25	56.70	0.040424	3.61	23.51	38.49	1.48
CREEK1	ONE	8	10-Yr	63.62	55.00	55.91	56.09	56.48	0.040679	3.35	19.02	35.11	1.45
CREEK1	ONE	7	500-Yr	115.60	52.99	54.55	54.55	55.02	0.016244	3.04	38.07	40.58	1.00
CREEK1	ONE	7	100-Yr	93.74	52.99	54.41	54.41	54.83	0.017129	2.90	32.34	38.48	1.01
CREEK1	ONE	7	50-Yr	84.94	52.99	54.35	54.35	54.75	0.017107	2.81	30.24	37.68	1.00
CREEK1	ONE	7	10-Yr	63.62	52.99	54.19	54.19	54.54	0.017952	2.60	24.43	35.38	1.00
CREEK1	ONE	6	500-Yr	115.60	51.00	52.49	52.66	53.03	0.044143	3.59	37.10	79.82	1.52
CREEK1	ONE	6	100-Yr	93.74	51.00	52.44	52.58	52.88	0.038932	3.24	33.29	76.13	1.41
CREEK1	ONE	6	50-Yr	84.94	51.00	52.41	52.54	52.83	0.037838	3.11	31.30	74.20	1.38
CREEK1	ONE	6	10-Yr	63.62	51.00	52.35	52.43	52.67	0.032668	2.72	26.73	69.53	1.27
CREEK1	ONE	5	500-Yr	115.60	48.00	49.64	49.18	49.79	0.003537	1.71	69.77	64.38	0.49
CREEK1	ONE	5	100-Yr	93.74	48.00	49.51	49.08	49.64	0.003347	1.55	61.93	62.31	0.47
CREEK1	ONE	5	50-Yr	84.94	48.00	49.46	49.03	49.57	0.003262	1.48	58.58	61.41	0.46
CREEK1	ONE	5	10-Yr	63.62	48.00	49.32	48.91	49.41	0.002955	1.28	50.21	59.09	0.43
CREEK1	ONE	4	500-Yr	115.60	48.00	49.30		49.49	0.006412	2.08	63.18	71.95	0.64
CREEK1	ONE	4	100-Yr	93.74	48.00	49.19		49.35	0.006225	1.91	55.59	69.93	0.62
CREEK1	ONE	4	50-Yr	84.94	48.00	49.15		49.29	0.006125	1.83	52.39	69.06	0.61
CREEK1	ONE	4	10-Yr	63.62	48.00	49.07		49.17	0.004770	1.52	47.08	67.60	0.53
CREEK1	ONE	3	500-Yr	115.60	47.00	48.53	48.53	48.79	0.009583	2.58	61.89	113.16	0.79
CREEK1	ONE	3	100-Yr	93.74	47.00	48.46	48.46	48.69	0.008867	2.38	54.11	111.70	0.75
CREEK1	ONE	3	50-Yr	84.94	47.00	48.43	48.43	48.65	0.008620	2.30	50.50	111.01	0.74
CREEK1	ONE	3	10-Yr	63.62	47.00	48.26	48.26	48.52	0.011980	2.38	32.72	83.63	0.84
CREEK1	ONE	2	500-Yr	124.32	45.00	48.19	46.46	48.23	0.000396	0.95	158.72	87.06	0.19
CREEK1	ONE	2	100-Yr	100.82	45.00	47.74	46.30	47.79	0.000576	1.01	119.51	85.80	0.22
CREEK1	ONE	2	50-Yr	91.42	45.00	47.36	46.23	47.43	0.001064	1.21	86.95	84.74	0.29
CREEK1	ONE	2	10-Yr	68.49	45.00	46.91	46.04	46.99	0.001679	1.28	53.60	37.99	0.34
CREEK1	ONE	1	500-Yr	124.32	44.61	48.21	42.54	48.21	0.000007	0.15	789.96	194.43	0.03
CREEK1	ONE	1	100-Yr	100.82	44.61	47.76	42.35	47.76	0.000006	0.13	702.72	193.71	0.02
CREEK1	ONE	1	50-Yr	91.42	44.61	47.39	42.28	47.39	0.000007	0.13	631.06	193.61	0.03
CREEK1	ONE	1	10-Yr	68.49	44.61	46.95	42.07	46.95	0.000006	0.11	545.87	193.50	0.02
A_TRIBUTARY	ONE	12	500-Yr	11.24	71.00	72.05	72.05	72.22	0.023644	1.83	6.14	18.46	1.01
A_TRIBUTARY	ONE	12	100-Yr	9.15	71.00	71.89	71.89	72.13	0.021321	2.19	4.19	8.82	1.01
A_TRIBUTARY	ONE	12	50-Yr	8.27	71.00	71.85	71.85	72.09	0.021594	2.14	3.87	8.52	1.01
A_TRIBUTARY	ONE	12	10-Yr	6.26	71.00	71.76	71.76	71.97	0.022416	2.01	3.12	7.74	1.01
A_TRIBUTARY	ONE	11	500-Yr	11.24	65.00	65.16	65.28	65.62	0.207171	3.02	3.72	27.09	2.61
A_TRIBUTARY	ONE	11	100-Yr	9.15	65.00	65.13	65.25	65.62	0.284576	3.12	2.93	25.90	2.96
A_TRIBUTARY	ONE	11	50-Yr	8.27	65.00	65.12	65.23	65.56	0.265876	2.94	2.81	25.70	2.84
A_TRIBUTARY	ONE	11	10-Yr	6.26	65.00	65.10	65.20	65.45	0.250813	2.62	2.39	25.04	2.70
A_TRIBUTARY	ONE	10.91	500-Yr	112.74	62.00	63.35	63.18	63.74	0.010002	2.78	40.54	34.03	0.81
A_TRIBUTARY	ONE	10.91	100-Yr	91.51	62.00	63.20	63.03	63.54	0.010003	2.58	35.40	33.20	0.80
A_TRIBUTARY	ONE	10.91	50-Yr	82.98	62.00	63.13	62.97	63.45	0.010004	2.50	33.23	32.85	0.79
A_TRIBUTARY	ONE	10.91	10-Yr	62.29	62.00	62.96	62.81	63.22	0.010009	2.26	27.62	31.88	0.77

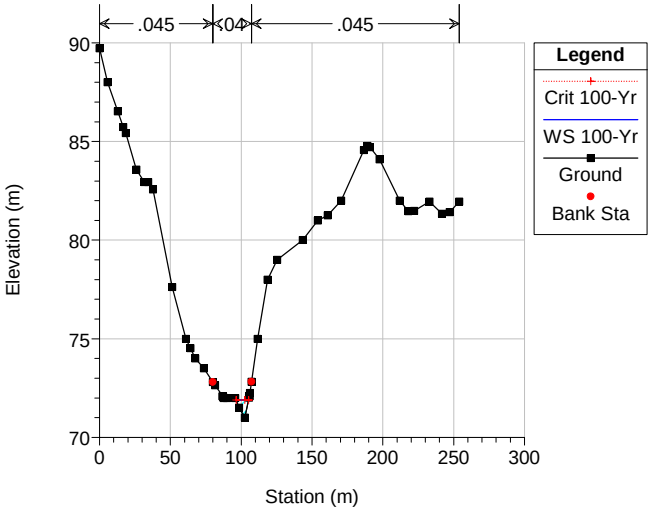
Profile Output Table - Standard Table 2

River	Reach	River Sta	Profile	E.G. Elev (m)	W.S. Elev (m)	Vel Head (m)	Frctn Loss (m)	C & E Loss (m)	Q Left (m3/s)	Q Channel (m3/s)	Q Right (m3/s)	Top Width (m)
CREEK1	ONE	15	500-Yr	79.57	78.86	0.70	1.43	0.05		89.81		17.22
CREEK1	ONE	15	100-Yr	79.29	78.65	0.63	1.48	0.05		72.96		16.38
CREEK1	ONE	15	50-Yr	79.17	78.57	0.60	1.50	0.05		66.17		16.02
CREEK1	ONE	15	10-Yr	78.85	78.32	0.52	1.59	0.05		49.63		15.05
CREEK1	ONE	14	500-Yr	76.43	74.64	1.79	3.03	0.11		96.32		26.66
CREEK1	ONE	14	100-Yr	76.10	74.56	1.53	3.10	0.09		78.28		26.38
CREEK1	ONE	14	50-Yr	75.95	74.53	1.42	3.13	0.08		70.98		26.26
CREEK1	ONE	14	10-Yr	75.57	74.45	1.11	3.22	0.06		53.28		25.97
CREEK1	ONE	13	500-Yr	74.70	73.51	1.20	1.54	0.18		96.32		22.99
CREEK1	ONE	13	100-Yr	74.44	73.39	1.05	1.51	0.14		78.28		21.40
CREEK1	ONE	13	50-Yr	74.33	73.33	0.99	1.50	0.13		70.98		20.67
CREEK1	ONE	13	10-Yr	74.03	73.18	0.85	1.46	0.08		53.28		18.58
CREEK1	ONE	11	500-Yr	66.39	65.76	0.64	8.14	0.17		96.32		51.34
CREEK1	ONE	11	100-Yr	66.25	65.68	0.57	8.05	0.14		78.28		48.19
CREEK1	ONE	11	50-Yr	66.19	65.64	0.54	8.00	0.13		70.98		46.82
CREEK1	ONE	11	10-Yr	66.01	65.56	0.46	7.90	0.12		53.28		43.28
CREEK1	ONE	10.9	500-Yr	63.78	62.99	0.79	2.60	0.02		112.74		32.09
CREEK1	ONE	10.9	100-Yr	63.56	62.87	0.69	2.68	0.01		91.51		31.31
CREEK1	ONE	10.9	50-Yr	63.47	62.81	0.65	2.71	0.01		82.98		30.98
CREEK1	ONE	10.9	10-Yr	63.23	62.68	0.55	2.78	0.01		62.29		30.12
CREEK1	ONE	10	500-Yr	62.67	61.50	1.16	1.07	0.04		112.74		26.69
CREEK1	ONE	10	100-Yr	62.42	61.37	1.05	1.11	0.04		91.51		25.16
CREEK1	ONE	10	50-Yr	62.31	61.32	1.00	1.12	0.03		82.98		24.50
CREEK1	ONE	10	10-Yr	62.02	61.16	0.86	1.17	0.03		62.29		22.72
CREEK1	ONE	9	500-Yr	59.69	58.96	0.73	2.85	0.13		112.74		31.97
CREEK1	ONE	9	100-Yr	59.47	58.82	0.65	2.83	0.12		91.51		29.21
CREEK1	ONE	9	50-Yr	59.38	58.76	0.62	2.82	0.11		82.98		27.90
CREEK1	ONE	9	10-Yr	59.12	58.58	0.54	2.81	0.10		62.29		24.22
CREEK1	ONE	8	500-Yr	56.93	56.20	0.73	2.76	0.00		115.60		47.24
CREEK1	ONE	8	100-Yr	56.77	56.09	0.68	2.70	0.00		93.74		41.13
CREEK1	ONE	8	50-Yr	56.70	56.03	0.66	2.68	0.00		84.94		38.49
CREEK1	ONE	8	10-Yr	56.48	55.91	0.57	2.63	0.00		63.62		35.11
CREEK1	ONE	7	500-Yr	55.02	54.55	0.47	1.35	0.06		115.60		40.58
CREEK1	ONE	7	100-Yr	54.83	54.41	0.43	1.38	0.06		93.74		38.48
CREEK1	ONE	7	50-Yr	54.75	54.35	0.40	1.38	0.05		84.94		37.68
CREEK1	ONE	7	10-Yr	54.54	54.19	0.35	1.45	0.04		63.62		35.38
CREEK1	ONE	6	500-Yr	53.03	52.49	0.55	1.98	0.01	0.00	81.99	33.61	79.82
CREEK1	ONE	6	100-Yr	52.88	52.44	0.45	1.95	0.00	0.00	67.66	26.08	76.13
CREEK1	ONE	6	50-Yr	52.83	52.41	0.42	1.92	0.00		61.90	23.04	74.20
CREEK1	ONE	6	10-Yr	52.67	52.35	0.32	1.86	0.01		47.55	16.07	69.53
CREEK1	ONE	5	500-Yr	49.79	49.64	0.15	0.30	0.00	1.35	113.51	0.74	64.38
CREEK1	ONE	5	100-Yr	49.64	49.51	0.12	0.28	0.00	0.74	92.60	0.40	62.31
CREEK1	ONE	5	50-Yr	49.57	49.46	0.11	0.28	0.00	0.54	84.10	0.30	61.41
CREEK1	ONE	5	10-Yr	49.41	49.32	0.08	0.23	0.00	0.20	63.31	0.11	59.09
CREEK1	ONE	4	500-Yr	49.49	49.30	0.18	0.68	0.01	41.72	72.87	1.02	71.95
CREEK1	ONE	4	100-Yr	49.35	49.19	0.16	0.65	0.01	33.14	60.17	0.43	69.93
CREEK1	ONE	4	50-Yr	49.29	49.15	0.14	0.64	0.01	29.69	54.99	0.26	69.06
CREEK1	ONE	4	10-Yr	49.17	49.07	0.10	0.63	0.02	21.73	41.83	0.06	67.60
CREEK1	ONE	3	500-Yr	48.79	48.53	0.26	0.11	0.11	30.80	82.96	1.83	113.16
CREEK1	ONE	3	100-Yr	48.69	48.46	0.23	0.14	0.09	20.98	71.54	1.22	111.70
CREEK1	ONE	3	50-Yr	48.65	48.43	0.22	0.23	0.07	17.11	66.84	0.99	111.01
CREEK1	ONE	3	10-Yr	48.52	48.26	0.26	0.34	0.09	5.92	57.40	0.30	83.63
CREEK1	ONE	2	500-Yr	48.23	48.19	0.04	0.00	0.02	23.15	97.90	3.27	87.06
CREEK1	ONE	2	100-Yr	47.79	47.74	0.05	0.00	0.02	12.62	86.52	1.68	85.80
CREEK1	ONE	2	50-Yr	47.43	47.36	0.07	0.00	0.03	5.08	85.69	0.65	84.74
CREEK1	ONE	2	10-Yr	46.99	46.91	0.08	0.00	0.04		68.49		37.99
CREEK1	ONE	1	500-Yr	48.21	48.21	0.00			43.58	80.70	0.04	194.43
CREEK1	ONE	1	100-Yr	47.76	47.76	0.00			37.90	62.89	0.03	193.71
CREEK1	ONE	1	50-Yr	47.39	47.39	0.00			36.74	54.66	0.02	193.61
CREEK1	ONE	1	10-Yr	46.95	46.95	0.00			30.22	38.25	0.01	193.50
A_TRIBUTARY	ONE	12	500-Yr	72.22	72.05	0.17				11.24		18.46
A_TRIBUTARY	ONE	12	100-Yr	72.13	71.89	0.24	2.97	0.04		9.15		8.82
A_TRIBUTARY	ONE	12	50-Yr	72.09	71.85	0.23				8.27		8.52
A_TRIBUTARY	ONE	12	10-Yr	71.97	71.76	0.21	3.13	0.04		6.26		7.74
A_TRIBUTARY	ONE	11	500-Yr	65.62	65.16	0.47	6.57	0.03		11.24		27.09
A_TRIBUTARY	ONE	11	100-Yr	65.62	65.13	0.50	6.49	0.03		9.15		25.90
A_TRIBUTARY	ONE	11	50-Yr	65.56	65.12	0.44	6.51	0.02		8.27		25.70
A_TRIBUTARY	ONE	11	10-Yr	65.45	65.10	0.35	6.50	0.01		6.26		25.04
A_TRIBUTARY	ONE	10.91	500-Yr	63.74	63.35	0.39				112.74		34.03
A_TRIBUTARY	ONE	10.91	100-Yr	63.54	63.20	0.34				91.51		33.20
A_TRIBUTARY	ONE	10.91	50-Yr	63.45	63.13	0.32				82.98		32.85
A_TRIBUTARY	ONE	10.91	10-Yr	63.22	62.96	0.26				62.29		31.88

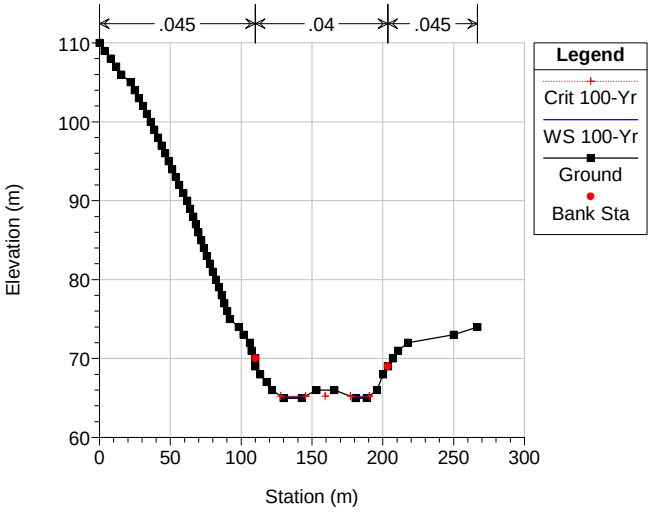

NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
CREEK1 ONE
Legend
WS 100-Yr
Crit 100-Yr
Ground
Elevation (m)
Main Channel Distance (m)
80
75
70
65
60
55
50
45
40
0
200
400
600
800
1000
1200
2
3
4
5
6
7
8
9
10
10.9
11
13
14
15


NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
A_TRIBUTARY ONE
Legend
WS 100-Yr
Crit 100-Yr
Ground
Elevation (m)
72
70
68
66
64
62
60
0
50
100
150
200
11
12
Main Channel Distance (m)

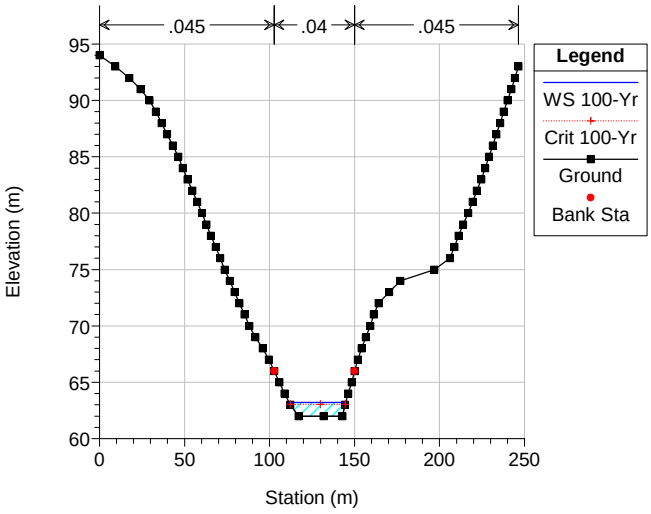
NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = A_TRIBUTARY Reach = ONE RS = 12



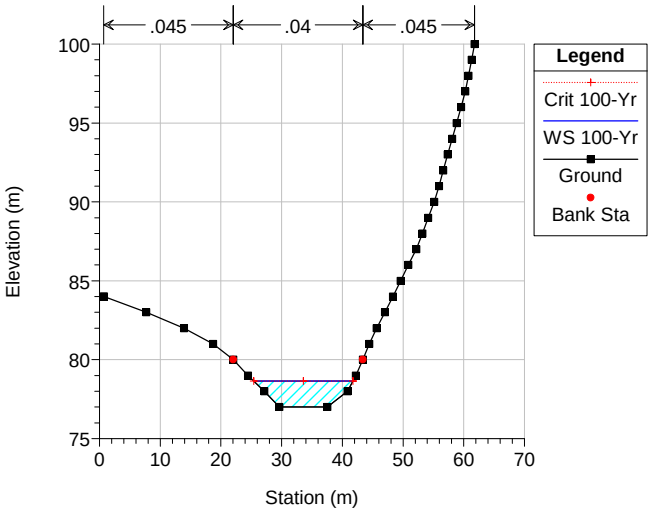
NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = A_TRIBUTARY Reach = ONE RS = 11



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = A_TRIBUTARY Reach = ONE RS = 10.91



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 15



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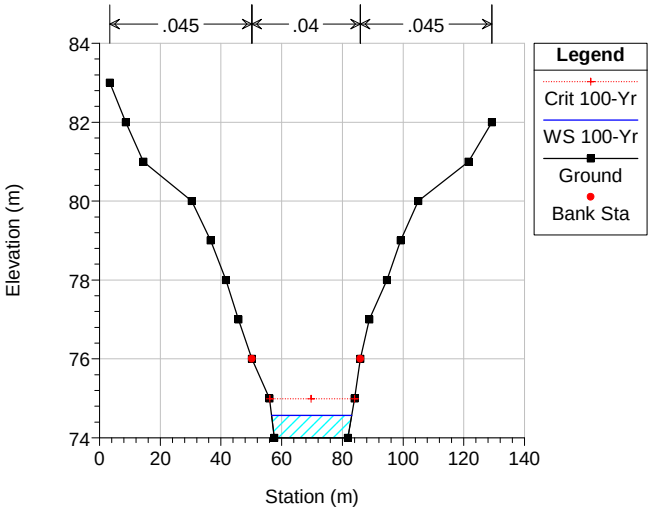
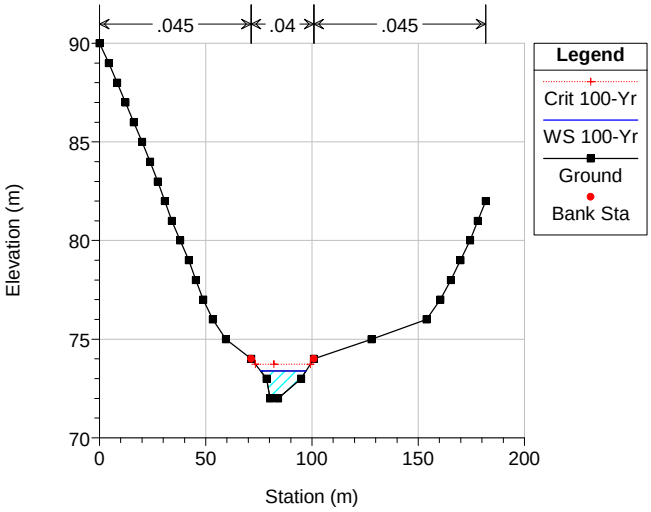
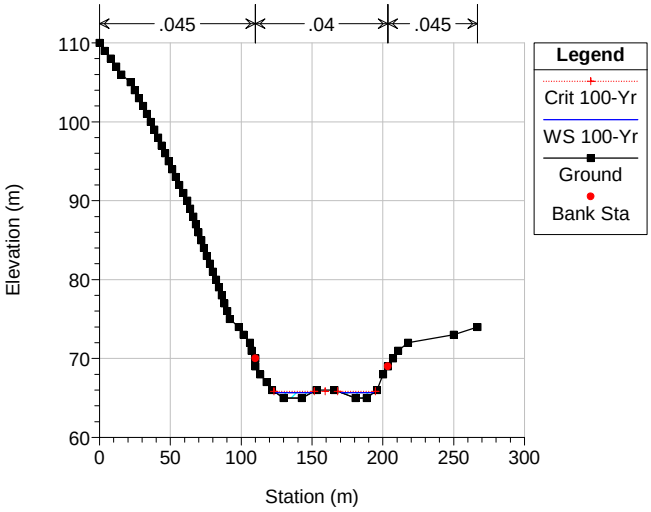
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 14



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 13



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 11



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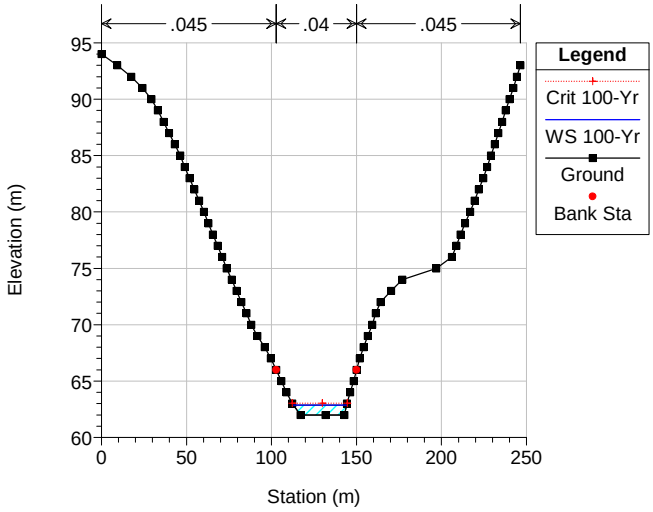
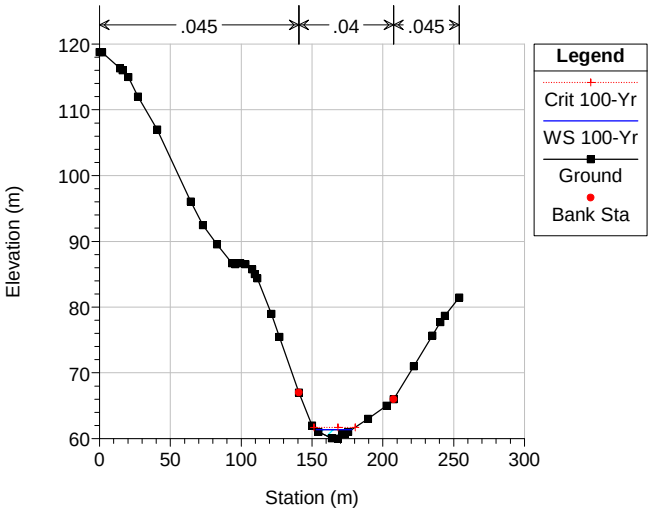
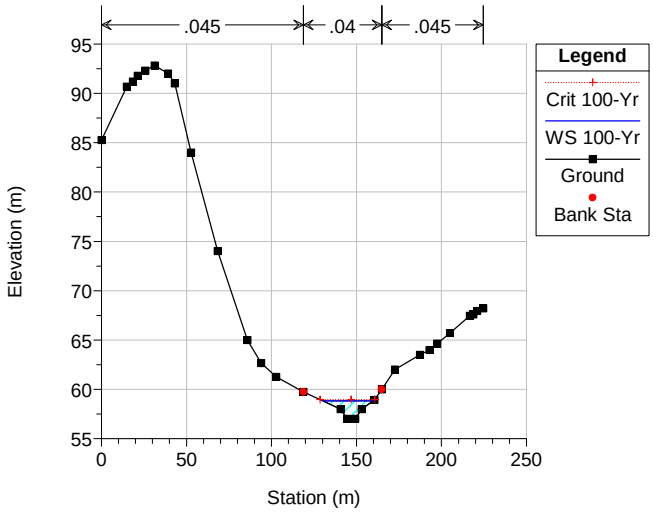
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 10.9



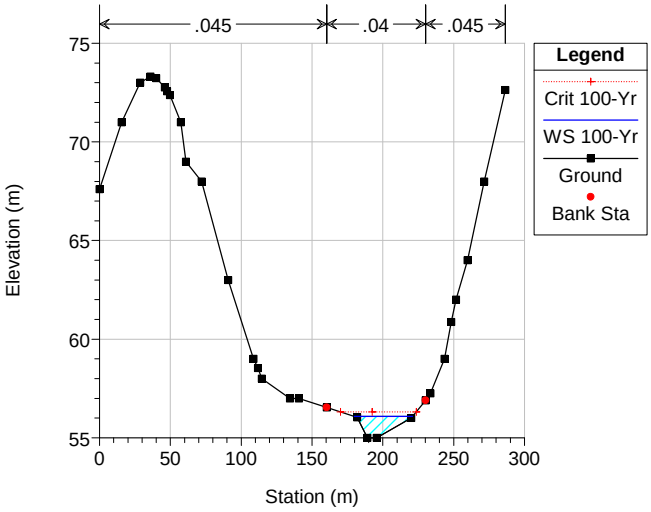
NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 10



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 9



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 8



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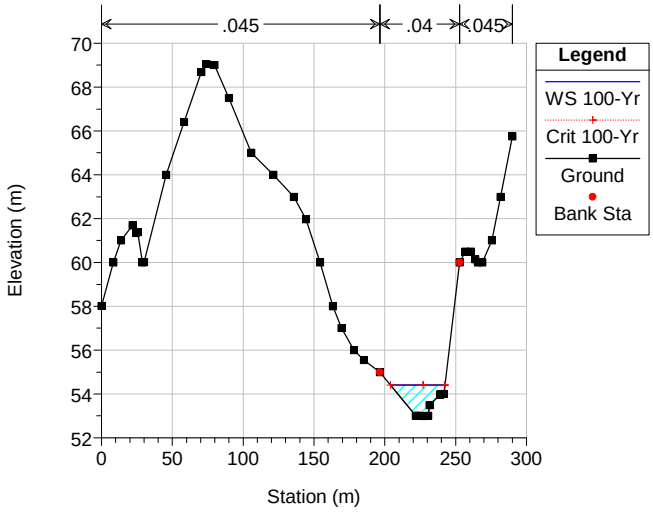
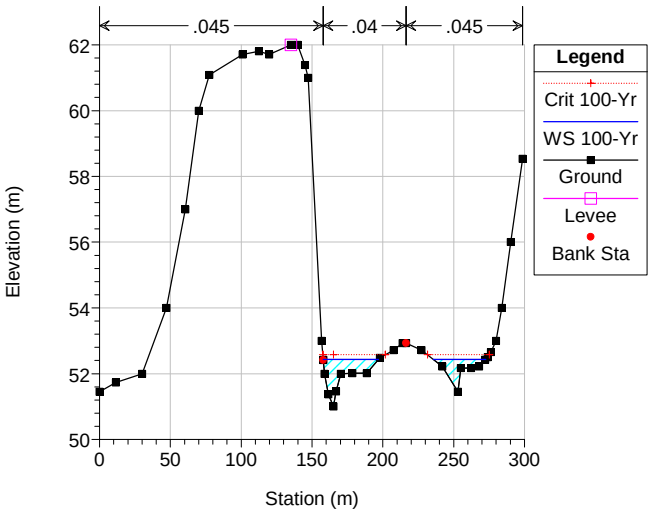
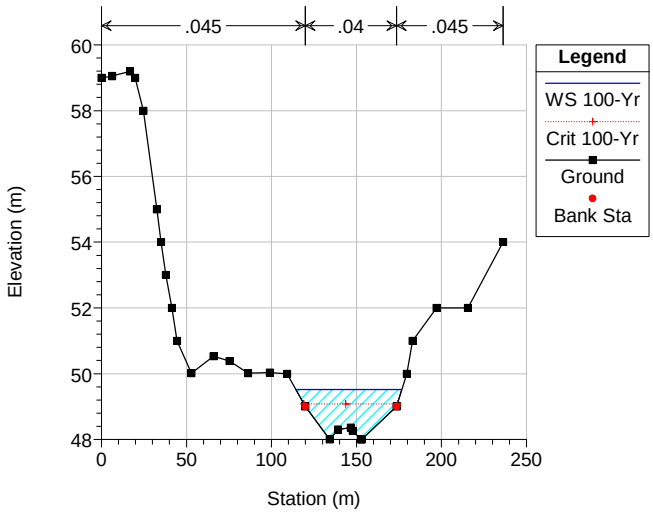
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 7



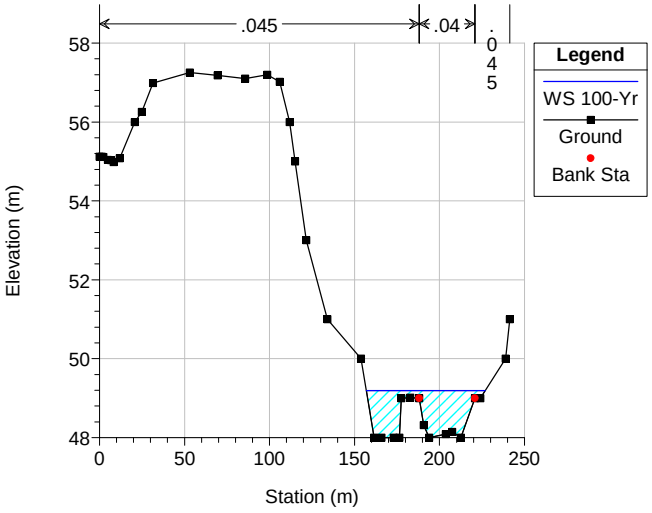
NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 6



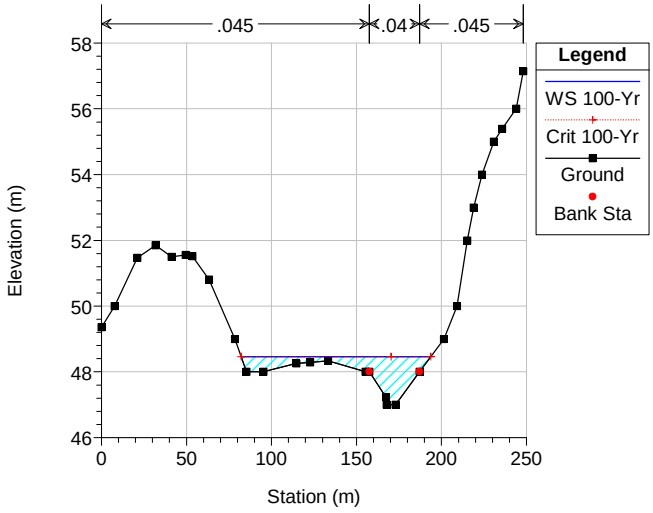
NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 5



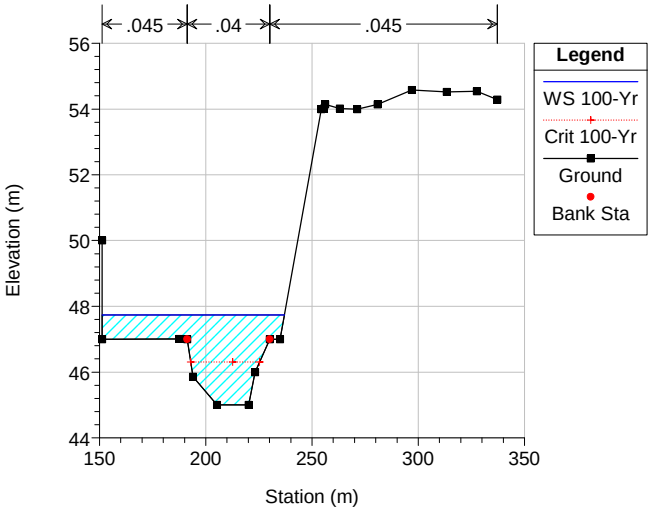
NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 4



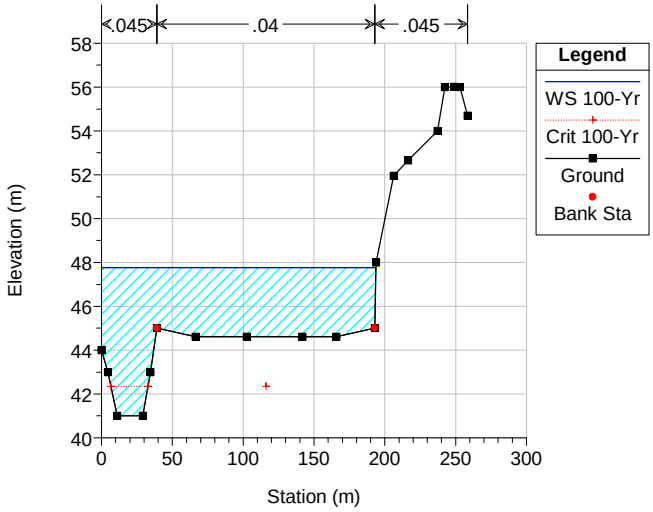
NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 3



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 2



NEW CASTLE DEVELOPMENT Plan: E 7/14/2009 2:40:55 PM
Geom: E Flow: E
River = CREEK1 Reach = ONE RS = 1



APPENDIX D

HEC-RAS RESULTS FOR PROPOSED CONDITION

```
                    HEC-RAS Version 3.1.3 May 2005
                     U.S. Army Corp of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


          X     X  XXXXXX    XXXX        XXXX       XX      XXXX
          X     X  X        X    X       X   X     X  X    X
          X     X  X        X            X   X    X    X   X
          XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
          X     X  X        X            X  X     X    X        X
          X     X  X        X    X       X   X    X    X        X
          X     X  XXXXXX    XXXX        X    X   X    X   XXXXX


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

PROJECT DATA
Project Title: NEW CASTLE DEVELOPMENT
Project File : P.prj
Run Date and Time: 7/14/2009 3:04:32 PM

Project in SI units

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

PLAN DATA

Plan Title: P
Plan File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\P\P.p02

          Geometry Title: P
          Geometry File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\P\P.g04

          Flow Title    : P
          Flow File     : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\P\P.f02

Plan Summary Information:
Number of:  Cross Sections =   18    Multiple Openings  =    0
            Culverts       =    0    Inline Structures  =    0
            Bridges        =    1    Lateral Structures =    0

Computational Information
    Water surface calculation tolerance  =  0.003
    Critical depth calculation tolerance =  0.003
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.1
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Mixed Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = CREEK1           Reach = ONE
RS      Profile           Method  Value1  Value2
15      ENC                    1   22.01   43.37
14      ENC                    1   50.22   85.87
13      ENC                    1   71.32  100.94
10.9    ENC                    1  102.74  150.08
10      ENC                    1  140.71  207.65
9       ENC                    1  118.88  164.95
8       ENC                    1  160.47   230.3
7       ENC                    4      .3
6       ENC                    4      .3
5       ENC                    4      .2
4       ENC                    4     .17
3       ENC                    4      .3
2       ENC                    1  191.32  254.44
1       ENC                    4   .0001

River = A_TRIBUTARY      Reach = ONE
RS      Profile           Method  Value1  Value2
12      ENC                    1   79.95  107.35
11      ENC                    4      .3      .3
10.91   ENC                    1  102.74  150.08


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

FLOW DATA

Flow Title: P
Flow File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\P\P.f02

Flow Data (m3/s)
*****************************************************************************
* River           Reach           RS      *            100Y             ENC *
* A_TRIBUTARY     ONE             12      *            9.15            9.15 *
* A_TRIBUTARY     ONE             10.91   *           91.51           91.51 *
* CREEK1          ONE             15      *           72.96           72.96 *
* CREEK1          ONE             14      *           78.28           78.28 *
* CREEK1          ONE             10.9    *           91.51           91.51 *
```

```
* CREEK1          ONE             8       *           93.74           93.74 *
* CREEK1          ONE             2       *          100.82          100.82 *
*****************************************************************************
```

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
A_TRIBUTARY	ONE	100Y	Critical	Normal S = 0.01
A_TRIBUTARY	ONE	ENC	Critical	Normal S = 0.01
CREEK1	ONE	100Y	Critical	Known WS = 47.76
CREEK1	ONE	ENC	Critical	Known WS = 47.76

GEOMETRY DATA

Geometry Title: P
Geometry File : p:\511-Campo Rico_New Castle\Revision_8JUL09\HEC-RAS\P\P.g04

CROSS SECTION

RIVER: A_TRIBUTARY
REACH: ONE RS: 12

INPUT
Description:
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	89.73	5.64	88	12.87	86.53	16.61	85.74	18.62	85.42
25.94	83.58	31.55	82.95	34.25	82.95	37.79	82.57	51.33	77.62
60.92	75	64.25	74.53	67.46	74	73.69	73.5	79.95	72.812
81.51	72.64	86.86	72.09	86.89	72.086	86.91	72.084	86.99	72.075
87.39	72.03	87.7	72	89.89	72	95.76	72	98.47	71.51
102.66	71	105.56	72.02	105.6	72.03	105.72	72.075	105.75	72.086
105.76	72.09	105.77	72.09	106.26	72.26	107.35	72.821	111.58	75
118.62	78	125.46	79	143.47	80	153.99	81	161.09	81.26
170.48	82	186.57	84.57	189.05	84.78	190.94	84.71	197.73	84.1
212.01	82	217.99	81.47	222.12	81.48	232.8	81.95	241.66	81.34
247.06	81.42	253.91	81.95						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	79.95	.04	107.35	.045

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
79.95 107.35 124.36 124.36 124.36 .1 .3

CROSS SECTION OUTPUT Profile #100Y

E.G. Elev (m)	72.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.040	
W.S. Elev (m)	71.89	Reach Len. (m)	124.36	124.36	124.36
Crit W.S. (m)	71.89	Flow Area (m2)		4.19	
E.G. Slope (m/m)	0.021321	Area (m2)		4.19	
Q Total (m3/s)	9.15	Flow (m3/s)		9.15	
Top Width (m)	8.82	Top Width (m)		8.82	
Vel Total (m/s)	2.19	Avg. Vel. (m/s)		2.19	
Max Chl Dpth (m)	0.89	Hydr. Depth (m)		0.47	
Conv. Total (m3/s)	62.7	Conv. (m3/s)		62.7	
Length Wtd. (m)	124.36	Wetted Per. (m)		9.04	
Min Ch El (m)	71.00	Shear (N/m2)		96.83	
Alpha	1.00	Stream Power (N/m s)		211.60	
Frctn Loss (m)	2.97	Cum Volume (1000 m3)		1.75	
C & E Loss (m)	0.04	Cum SA (1000 m2)		4.17	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #ENC

E.G. Elev (m)	72.13	Element	Left OB	Channel	Right OB
Vel Head (m)	0.24	Wt. n-Val.		0.040	
W.S. Elev (m)	71.89	Reach Len. (m)	124.36	124.36	124.36
Crit W.S. (m)	71.89	Flow Area (m2)		4.19	
E.G. Slope (m/m)	0.021321	Area (m2)		4.19	
Q Total (m3/s)	9.15	Flow (m3/s)		9.15	
Top Width (m)	8.82	Top Width (m)		8.82	
Vel Total (m/s)	2.19	Avg. Vel. (m/s)		2.19	
Max Chl Dpth (m)	0.89	Hydr. Depth (m)		0.47	
Conv. Total (m3/s)	62.7	Conv. (m3/s)		62.7	
Length Wtd. (m)	124.36	Wetted Per. (m)		9.04	
Min Ch El (m)	71.00	Shear (N/m2)		96.83	
Alpha	1.00	Stream Power (N/m s)		211.60	
Frctn Loss (m)	2.97	Cum Volume (1000 m3)		1.75	
C & E Loss (m)	0.04	Cum SA (1000 m2)		4.18	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

```
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: A_TRIBUTARY
REACH: ONE                RS: 11

INPUT
Description:
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0     110    3.72     109     7.9     108   11.74     107   15.26     106
   21.87     105   24.88     104   27.85     103   30.69     102    33.5     101
   36.17     100   38.74      99   41.24      98   43.79      97   46.25      96
   48.69      95   51.18      94    53.7      93   56.19      92   59.09      91
   61.88      90   64.01      89   66.13      88   68.04      87    69.9      86
   71.79      85   73.73      84   75.67      83   77.83      82   80.06      81
   82.18      80   84.27      79   86.19      78   88.11      77   90.06      76
   92.05      75   98.16      74  101.56      73  106.26      72  107.27      71
  109.93      70  110.03      69  113.35      68  117.82      67  121.83      66
  129.93      65  142.87      65  153.13      66   165.9      66  180.65      65
  188.54      65  195.78      66  200.16      68  203.61      69  207.15      70
  210.82      71  217.77      72  249.99      73  266.72      74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  109.93     .04  203.61    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        109.93  203.61            68.16   68.16   68.16             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
**********************************************************************************************
* E.G. Elev (m)        *   65.62  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.49  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   65.13  * Reach Len. (m)       *   68.16  *   68.16  *   68.16  *
* Crit W.S. (m)        *   65.25  * Flow Area (m2)       *          *    2.94  *          *
* E.G. Slope (m/m)     *0.281022  * Area (m2)            *          *    2.94  *          *
* Q Total (m3/s)       *    9.15  * Flow (m3/s)          *          *    9.15  *          *
* Top Width (m)        *   25.92  * Top Width (m)        *          *   25.92  *          *
* Vel Total (m/s)      *    3.11  * Avg. Vel. (m/s)      *          *    3.11  *          *
* Max Chl Dpth (m)     *    0.13  * Hydr. Depth (m)      *          *    0.11  *          *
* Conv. Total (m3/s)   *    17.3  * Conv. (m3/s)         *          *    17.3  *          *
* Length Wtd. (m)      *   68.16  * Wetted Per. (m)      *          *   25.94  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)         *          *  312.84  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  972.01  *          *
* Frctn Loss (m)       *    6.49  * Cum Volume (1000 m3) *          *    1.31  *          *
* C & E Loss (m)       *    0.02  * Cum SA (1000 m2)     *          *    2.01  *          *
**********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
**********************************************************************************************
* E.G. Elev (m)        *   65.62  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.49  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   65.13  * Reach Len. (m)       *   68.16  *   68.16  *   68.16  *
* Crit W.S. (m)        *   65.25  * Flow Area (m2)       *          *    2.95  *          *
* E.G. Slope (m/m)     *0.280240  * Area (m2)            *          *    2.95  *          *
* Q Total (m3/s)       *    9.15  * Flow (m3/s)          *          *    9.15  *          *
* Top Width (m)        *   25.92  * Top Width (m)        *          *   25.92  *          *
* Vel Total (m/s)      *    3.10  * Avg. Vel. (m/s)      *          *    3.10  *          *
* Max Chl Dpth (m)     *    0.13  * Hydr. Depth (m)      *          *    0.11  *          *
* Conv. Total (m3/s)   *    17.3  * Conv. (m3/s)         *          *    17.3  *          *
* Length Wtd. (m)      *   68.16  * Wetted Per. (m)      *          *   25.95  *          *
* Min Ch El (m)        *   65.00  * Shear (N/m2)         *          *  312.20  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  969.15  *          *
* Frctn Loss (m)       *    6.49  * Cum Volume (1000 m3) *          *    1.31  *          *
* C & E Loss (m)       *    0.02  * Cum SA (1000 m2)     *          *    2.01  *          *
**********************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: A_TRIBUTARY
REACH: ONE                RS: 10.91

INPUT
Description:
Station Elevation Data    num=      66
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
*******************************************************************************
       0      94    9.27      93   17.48      92   24.16      91   29.44      90
   33.21      89   36.49      88   39.76      87   43.03      86   46.22      85
   49.01      84   51.81      83    54.6      82    57.4      81   60.19      80
   62.89      79   65.59      78   68.29      77   70.99      76   73.69      75
   76.55      74   79.46      73   82.36      72   85.27      71   88.18      70
    91.7      69   95.95      68   99.52      67  102.74      66  105.86      65
  108.79      64  112.27      63  117.04      62  131.79      62  142.89      62
  144.42      63  146.32      64  148.26      65  150.08      66  151.84      67
  154.24      68   156.7      69  159.21      70  161.25      71  164.25      72
  170.29      73     177      74  196.87      75  206.19      76  208.81      77
  211.16      78  213.79      79  216.81      80  219.51      81  222.04      82
   224.5      83  226.86      84  229.06      85  231.28      86  233.47      87
  235.63      88   237.8      89  239.99      90   242.2      91   244.3      92
  246.42      93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  102.74     .04  150.08    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        102.74  150.08                0       0       0             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
**********************************************************************************************
* E.G. Elev (m)        *   63.54  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.34  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   63.20  * Reach Len. (m)       *          *          *          *
* Crit W.S. (m)        *   63.03  * Flow Area (m2)       *          *   35.40  *          *
* E.G. Slope (m/m)     *0.010003  * Area (m2)            *          *   35.40  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)          *          *   91.51  *          *
* Top Width (m)        *   33.20  * Top Width (m)        *          *   33.20  *          *
* Vel Total (m/s)      *    2.58  * Avg. Vel. (m/s)      *          *    2.58  *          *
* Max Chl Dpth (m)     *    1.20  * Hydr. Depth (m)      *          *    1.07  *          *
* Conv. Total (m3/s)   *   915.0  * Conv. (m3/s)         *          *   915.0  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)       *          *   33.68  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)         *          *  103.11  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  266.51  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *          *          *
**********************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT  Profile #ENC
**********************************************************************************************
* E.G. Elev (m)        *   63.54  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.34  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   63.20  * Reach Len. (m)       *          *          *          *
* Crit W.S. (m)        *   63.03  * Flow Area (m2)       *          *   35.38  *          *
* E.G. Slope (m/m)     *0.010018  * Area (m2)            *          *   35.38  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)          *          *   91.51  *          *
* Top Width (m)        *   33.20  * Top Width (m)        *          *   33.20  *          *
* Vel Total (m/s)      *    2.59  * Avg. Vel. (m/s)      *          *    2.59  *          *
* Max Chl Dpth (m)     *    1.20  * Hydr. Depth (m)      *          *    1.07  *          *
* Conv. Total (m3/s)   *   914.3  * Conv. (m3/s)         *          *   914.3  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)       *          *   33.68  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)         *          *  103.22  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  266.95  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *          *          *
**********************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 15

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
      .7      84     .73      84    7.67      83   13.93      82    18.7      81
   22.01      80   24.47      79   27.13      78   29.62      77   37.55      77
   40.87      78   42.24      79   43.37      80   44.45      81   45.65      82
      47      83   48.31      84   49.61      85   50.89      86   52.17      87
   53.18      88   54.15      89   55.13      90    55.9      91   56.63      92
   57.37      93   58.08      94   58.82      95   59.54      96   60.27      97
   60.79      98   61.29      99   61.78     100

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
      .7    .045   22.01     .04   43.37    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         22.01   43.37            54.72   92.14  142.18             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
**********************************************************************************************
* E.G. Elev (m)        *   79.29  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.63  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   78.65  * Reach Len. (m)       *   54.72  *   92.14  *  142.18  *
* Crit W.S. (m)        *   78.66  * Flow Area (m2)       *          *   20.69  *          *
* E.G. Slope (m/m)     *0.015366  * Area (m2)            *          *   20.69  *          *
* Q Total (m3/s)       *   72.96  * Flow (m3/s)          *          *   72.96  *          *
```

```
* Top Width (m)        *   16.38  * Top Width (m)        *          *   16.38  *          *
* Vel Total (m/s)      *    3.53  * Avg. Vel. (m/s)      *          *    3.53  *          *
* Max Chl Dpth (m)     *    1.65  * Hydr. Depth (m)      *          *    1.26  *          *
* Conv. Total (m3/s)   *   588.6  * Conv. (m3/s)         *          *   588.6  *          *
* Length Wtd. (m)      *   92.14  * Wetted Per. (m)      *          *   17.05  *          *
* Min Ch El (m)        *   77.00  * Shear (N/m2)         *          *  182.86  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  644.74  *          *
* Frctn Loss (m)       *    1.48  * Cum Volume (1000 m3) *   11.38  *   42.22  *    1.82  *
* C & E Loss (m)       *    0.05  * Cum SA (1000 m2)     *   15.48  *   40.36  *    5.08  *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #ENC
*****************************************************************************************
* E.G. Elev (m)        *   79.29  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.63  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   78.65  * Reach Len. (m)       *   54.72  *   92.14  *  142.18  *
* Crit W.S. (m)        *   78.66  * Flow Area (m2)       *          *   20.69  *          *
* E.G. Slope (m/m)     *0.015366  * Area (m2)            *          *   20.69  *          *
* Q Total (m3/s)       *   72.96  * Flow (m3/s)          *          *   72.96  *          *
* Top Width (m)        *   16.38  * Top Width (m)        *          *   16.38  *          *
* Vel Total (m/s)      *    3.53  * Avg. Vel. (m/s)      *          *    3.53  *          *
* Max Chl Dpth (m)     *    1.65  * Hydr. Depth (m)      *          *    1.26  *          *
* Conv. Total (m3/s)   *   588.6  * Conv. (m3/s)         *          *   588.6  *          *
* Length Wtd. (m)      *   92.14  * Wetted Per. (m)      *          *   17.05  *          *
* Min Ch El (m)        *   77.00  * Shear (N/m2)         *          *  182.86  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  644.74  *          *
* Frctn Loss (m)       *    1.48  * Cum Volume (1000 m3) *    4.86  *   43.72  *    0.34  *
* C & E Loss (m)       *    0.05  * Cum SA (1000 m2)     *    2.32  *   41.05  *    0.45  *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 14

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
    3.34      83    8.67      82    14.4      81   30.33      80   36.53      79
   41.64      78   45.76      77   50.22      76   56.02      75   57.59      74
   81.85      74   84.04      75   85.87      76   88.85      77   94.65      78
   99.21      79     105      80  121.57      81  129.22      82

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    3.34    .045   50.22     .04   85.87    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         50.22   85.87             31.11    22.5    32.6             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
*****************************************************************************************
* E.G. Elev (m)        *   76.10  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.53  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   74.56  * Reach Len. (m)       *   31.11  *   22.50  *   32.60  *
* Crit W.S. (m)        *   74.99  * Flow Area (m2)       *          *   14.28  *          *
* E.G. Slope (m/m)     *0.110681  * Area (m2)            *          *   14.28  *          *
* Q Total (m3/s)       *   78.28  * Flow (m3/s)          *          *   78.28  *          *
* Top Width (m)        *   26.38  * Top Width (m)        *          *   26.38  *          *
* Vel Total (m/s)      *    5.48  * Avg. Vel. (m/s)      *          *    5.48  *          *
* Max Chl Dpth (m)     *    0.56  * Hydr. Depth (m)      *          *    0.54  *          *
* Conv. Total (m3/s)   *   235.3  * Conv. (m3/s)         *          *   235.3  *          *
* Length Wtd. (m)      *   22.50  * Wetted Per. (m)      *          *   26.67  *          *
* Min Ch El (m)        *   74.00  * Shear (N/m2)         *          *  581.05  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          * 3186.17  *          *
* Frctn Loss (m)       *    3.10  * Cum Volume (1000 m3) *   11.38  *   40.61  *    1.82  *
* C & E Loss (m)       *    0.09  * Cum SA (1000 m2)     *   15.48  *   38.39  *    5.08  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
```

```
*******************************************************************************************
* E.G. Elev (m)         *   76.10  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)          *    1.53  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)         *   74.56  * Reach Len. (m)        *   31.11  *   22.50  *   32.60  *
* Crit W.S. (m)         *   74.99  * Flow Area (m2)        *          *   14.28  *          *
* E.G. Slope (m/m)      *0.110681  * Area (m2)             *          *   14.28  *          *
* Q Total (m3/s)        *   78.28  * Flow (m3/s)           *          *   78.28  *          *
* Top Width (m)         *   26.38  * Top Width (m)         *          *   26.38  *          *
* Vel Total (m/s)       *    5.48  * Avg. Vel. (m/s)       *          *    5.48  *          *
* Max Chl Dpth (m)      *    0.56  * Hydr. Depth (m)       *          *    0.54  *          *
* Conv. Total (m3/s)    *   235.3  * Conv. (m3/s)          *          *   235.3  *          *
* Length Wtd. (m)       *   22.50  * Wetted Per. (m)       *          *   26.67  *          *
* Min Ch El (m)         *   74.00  * Shear (N/m2)          *          *  581.05  *          *
* Alpha                 *    1.00  * Stream Power (N/m s)  *          * 3186.17  *          *
* Frctn Loss (m)        *    3.10  * Cum Volume (1000 m3)  *    4.86  *   42.11  *    0.34  *
* C & E Loss (m)        *    0.09  * Cum SA (1000 m2)      *    2.32  *   39.08  *    0.45  *
*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 13

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0      90    4.33      89    8.33      88   12.25      87   16.12      86
   20.02      85    23.8      84   27.35      83   30.66      82   34.06      81
   37.95      80   42.04      79    45.3      78   48.76      77   53.34      76
   59.47      75   71.32      74   78.66      73   80.29      72   83.99      72
   94.83      73  100.94      74  128.08      75  153.85      76  160.44      77
  165.39      78  169.82      79  174.35      80  177.99      81  181.78      82

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045   71.32     .04  100.94    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         71.32  100.94           174.52  174.52  174.52             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
*******************************************************************************************
* E.G. Elev (m)         *   74.44  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)          *    1.05  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)         *   73.39  * Reach Len. (m)        *  174.52  *  174.52  *  174.52  *
* Crit W.S. (m)         *   73.73  * Flow Area (m2)        *          *   17.24  *          *
* E.G. Slope (m/m)      *0.045083  * Area (m2)             *          *   17.24  *          *
* Q Total (m3/s)        *   78.28  * Flow (m3/s)           *          *   78.28  *          *
* Top Width (m)         *   21.40  * Top Width (m)         *          *   21.40  *          *
* Vel Total (m/s)       *    4.54  * Avg. Vel. (m/s)       *          *    4.54  *          *
* Max Chl Dpth (m)      *    1.39  * Hydr. Depth (m)       *          *    0.81  *          *
* Conv. Total (m3/s)    *   368.7  * Conv. (m3/s)          *          *   368.7  *          *
* Length Wtd. (m)       *  174.52  * Wetted Per. (m)       *          *   21.78  *          *
* Min Ch El (m)         *   72.00  * Shear (N/m2)          *          *  349.83  *          *
* Alpha                 *    1.00  * Stream Power (N/m s)  *          * 1588.64  *          *
* Frctn Loss (m)        *    1.51  * Cum Volume (1000 m3)  *   11.38  *   40.25  *    1.82  *
* C & E Loss (m)        *    0.14  * Cum SA (1000 m2)      *   15.48  *   37.85  *    5.08  *
*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
*******************************************************************************************
* E.G. Elev (m)         *   74.44  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)          *    1.05  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)         *   73.39  * Reach Len. (m)        *  174.52  *  174.52  *  174.52  *
* Crit W.S. (m)         *   73.72  * Flow Area (m2)        *          *   17.24  *          *
* E.G. Slope (m/m)      *0.045084  * Area (m2)             *          *   17.24  *          *
* Q Total (m3/s)        *   78.28  * Flow (m3/s)           *          *   78.28  *          *
* Top Width (m)         *   21.40  * Top Width (m)         *          *   21.40  *          *
* Vel Total (m/s)       *    4.54  * Avg. Vel. (m/s)       *          *    4.54  *          *
* Max Chl Dpth (m)      *    1.39  * Hydr. Depth (m)       *          *    0.81  *          *
* Conv. Total (m3/s)    *   368.7  * Conv. (m3/s)          *          *   368.7  *          *
* Length Wtd. (m)       *  174.52  * Wetted Per. (m)       *          *   21.78  *          *
* Min Ch El (m)         *   72.00  * Shear (N/m2)          *          *  349.84  *          *
* Alpha                 *    1.00  * Stream Power (N/m s)  *          * 1588.70  *          *
* Frctn Loss (m)        *    1.51  * Cum Volume (1000 m3)  *    4.86  *   41.75  *    0.34  *
* C & E Loss (m)        *    0.14  * Cum SA (1000 m2)      *    2.32  *   38.55  *    0.45  *
*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
```

section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: CREEK1
REACH: ONE RS: 11

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	110	3.72	109	7.9	108	11.74	107	15.26	106
21.87	105	24.88	104	27.85	103	30.69	102	33.5	101
36.17	100	38.74	99	41.24	98	43.79	97	46.25	96
48.69	95	51.18	94	53.7	93	56.19	92	59.09	91
61.88	90	64.01	89	66.13	88	68.04	87	69.9	86
71.79	85	73.73	84	75.67	83	77.83	82	80.06	81
82.18	80	84.27	79	86.19	78	88.11	77	90.06	76
92.05	75	98.16	74	101.56	73	106.26	72	107.27	71
109.93	70	110.03	69	113.35	68	117.82	67	121.83	66
129.93	65	142.87	65	153.13	66	165.9	66	180.65	65
188.54	65	195.78	66	200.16	68	203.61	69	207.15	70
210.82	71	217.77	72	249.99	73	266.72	74		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	109.93	.04	203.61	.045

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
109.93 203.61 72.98 72.98 72.98 .1 .3

CROSS SECTION OUTPUT Profile #100Y

E.G. Elev (m)	66.25	Element	Left OB	Channel	Right OB
Vel Head (m)	0.57	Wt. n-Val.		0.040	
W.S. Elev (m)	65.68	Reach Len. (m)	72.98	72.98	72.98
Crit W.S. (m)	65.85	Flow Area (m2)		23.39	
E.G. Slope (m/m)	0.047166	Area (m2)		23.39	
Q Total (m3/s)	78.28	Flow (m3/s)		78.28	
Top Width (m)	48.19	Top Width (m)		48.19	
Vel Total (m/s)	3.35	Avg. Vel. (m/s)		3.35	
Max Chl Dpth (m)	0.68	Hydr. Depth (m)		0.49	
Conv. Total (m3/s)	360.4	Conv. (m3/s)		360.4	
Length Wtd. (m)	72.98	Wetted Per. (m)		48.33	
Min Ch El (m)	65.00	Shear (N/m2)		223.84	
Alpha	1.00	Stream Power (N/m s)		749.15	
Frctn Loss (m)	8.05	Cum Volume (1000 m3)	11.38	36.71	1.82
C & E Loss (m)	0.14	Cum SA (1000 m2)	15.48	31.78	5.08

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #ENC

E.G. Elev (m)	66.25	Element	Left OB	Channel	Right OB
Vel Head (m)	0.57	Wt. n-Val.		0.040	
W.S. Elev (m)	65.68	Reach Len. (m)	72.98	72.98	72.98
Crit W.S. (m)	65.85	Flow Area (m2)		23.39	
E.G. Slope (m/m)	0.047164	Area (m2)		23.39	
Q Total (m3/s)	78.28	Flow (m3/s)		78.28	
Top Width (m)	48.19	Top Width (m)		48.19	
Vel Total (m/s)	3.35	Avg. Vel. (m/s)		3.35	
Max Chl Dpth (m)	0.68	Hydr. Depth (m)		0.49	
Conv. Total (m3/s)	360.4	Conv. (m3/s)		360.4	
Length Wtd. (m)	72.98	Wetted Per. (m)		48.33	
Min Ch El (m)	65.00	Shear (N/m2)		223.84	
Alpha	1.00	Stream Power (N/m s)		749.12	
Frctn Loss (m)	8.05	Cum Volume (1000 m3)	4.86	38.21	0.34
C & E Loss (m)	0.14	Cum SA (1000 m2)	2.32	32.48	0.45

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: CREEK1
REACH: ONE RS: 10.9

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	94	9.27	93	17.48	92	24.16	91	29.44	90
33.21	89	36.49	88	39.76	87	43.03	86	46.22	85
49.01	84	51.81	83	54.6	82	57.4	81	60.19	80
62.89	79	65.59	78	68.29	77	70.99	76	73.69	75
76.55	74	79.46	73	82.36	72	85.27	71	88.18	70
91.7	69	95.95	68	99.52	67	102.74	66	105.86	65

```
  108.79      64  112.27      63  117.04      62  131.79      62  142.89      62
  144.42      63  146.32      64  148.26      65  150.08      66  151.84      67
  154.24      68   156.7      69  159.21      70  161.25      71  164.25      72
  170.29      73     177      74  196.87      75  206.19      76  208.81      77
  211.16      78  213.79      79  216.81      80  219.51      81  222.04      82
   224.5      83  226.86      84  229.06      85  231.28      86  233.47      87
  235.63      88   237.8      89  239.99      90   242.2      91   244.3      92
  246.42      93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  102.74     .04  150.08    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        102.74  150.08            30.43   30.43   30.43             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
**********************************************************************************************
* E.G. Elev (m)        *   63.56  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.69  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   62.87  * Reach Len. (m)        *   30.43  *   30.43  *   30.43  *
* Crit W.S. (m)        *   63.03  * Flow Area (m2)        *          *   24.78  *          *
* E.G. Slope (m/m)     *0.030256  * Area (m2)             *          *   24.78  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)           *          *   91.51  *          *
* Top Width (m)        *   31.31  * Top Width (m)         *          *   31.31  *          *
* Vel Total (m/s)      *    3.69  * Avg. Vel. (m/s)       *          *    3.69  *          *
* Max Chl Dpth (m)     *    0.87  * Hydr. Depth (m)       *          *    0.79  *          *
* Conv. Total (m3/s)   *   526.1  * Conv. (m3/s)          *          *   526.1  *          *
* Length Wtd. (m)      *   30.43  * Wetted Per. (m)       *          *   31.66  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)          *          *  232.22  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  857.61  *          *
* Frctn Loss (m)       *    2.68  * Cum Volume (1000 m3)  *   11.38  *   34.95  *    1.82  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *   15.48  *   28.88  *    5.08  *
**********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
**********************************************************************************************
* E.G. Elev (m)        *   63.56  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.69  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   62.87  * Reach Len. (m)        *   30.43  *   30.43  *   30.43  *
* Crit W.S. (m)        *   63.03  * Flow Area (m2)        *          *   24.78  *          *
* E.G. Slope (m/m)     *0.030257  * Area (m2)             *          *   24.78  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)           *          *   91.51  *          *
* Top Width (m)        *   31.31  * Top Width (m)         *          *   31.31  *          *
* Vel Total (m/s)      *    3.69  * Avg. Vel. (m/s)       *          *    3.69  *          *
* Max Chl Dpth (m)     *    0.87  * Hydr. Depth (m)       *          *    0.79  *          *
* Conv. Total (m3/s)   *   526.1  * Conv. (m3/s)          *          *   526.1  *          *
* Length Wtd. (m)      *   30.43  * Wetted Per. (m)       *          *   31.66  *          *
* Min Ch El (m)        *   62.00  * Shear (N/m2)          *          *  232.22  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  857.63  *          *
* Frctn Loss (m)       *    2.68  * Cum Volume (1000 m3)  *    4.86  *   36.45  *    0.34  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *    2.32  *   29.57  *    0.45  *
**********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 10

INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
       0  118.76    1.71  118.75   14.38  116.29   16.19     116   20.32  114.97
   27.19     112   40.56     107   64.38   96.05      73   92.47   82.85   89.52
    93.5   86.69   95.72   86.52   99.46   86.69  102.93   86.54   107.7   85.74
  109.47      85  111.43   84.39  121.39      79  126.96   75.48  140.71      67
  150.05      62   154.6      61  163.94   60.03  168.24      60  171.45   60.68
  173.33   60.78  175.57   61.02  189.57      63  202.55      65  207.65      66
   221.9      71  234.96   75.67  240.49   77.71  243.83   78.67  253.91   81.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  140.71     .04  207.65    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        140.71  207.65            80.47   86.63   80.65             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
**********************************************************************************************
* E.G. Elev (m)        *   62.42  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.05  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   61.37  * Reach Len. (m)        *   80.47  *   86.63  *   80.65  *
* Crit W.S. (m)        *   61.70  * Flow Area (m2)        *          *   20.19  *          *
* E.G. Slope (m/m)     *0.044563  * Area (m2)             *          *   20.19  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)           *          *   91.51  *          *
* Top Width (m)        *   25.16  * Top Width (m)         *          *   25.16  *          *
```

```
* Vel Total (m/s)      *    4.53  * Avg. Vel. (m/s)      *          *    4.53  *          *
* Max Chl Dpth (m)     *    1.37  * Hydr. Depth (m)      *          *    0.80  *          *
* Conv. Total (m3/s)   *   433.5  * Conv. (m3/s)         *          *   433.5  *          *
* Length Wtd. (m)      *   86.63  * Wetted Per. (m)      *          *   25.36  *          *
* Min Ch El (m)        *   60.00  * Shear (N/m2)         *          *  347.86  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          * 1576.77  *          *
* Frctn Loss (m)       *    1.11  * Cum Volume (1000 m3) *   11.38  *   34.27  *    1.82  *
* C & E Loss (m)       *    0.04  * Cum SA (1000 m2)     *   15.48  *   28.02  *    5.08  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
*****************************************************************************************
* E.G. Elev (m)        *   62.42  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    1.05  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   61.37  * Reach Len. (m)        *   80.47  *   86.63  *   80.65  *
* Crit W.S. (m)        *   61.70  * Flow Area (m2)        *          *   20.19  *          *
* E.G. Slope (m/m)     *0.044563  * Area (m2)             *          *   20.19  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)           *          *   91.51  *          *
* Top Width (m)        *   25.16  * Top Width (m)         *          *   25.16  *          *
* Vel Total (m/s)      *    4.53  * Avg. Vel. (m/s)       *          *    4.53  *          *
* Max Chl Dpth (m)     *    1.37  * Hydr. Depth (m)       *          *    0.80  *          *
* Conv. Total (m3/s)   *   433.5  * Conv. (m3/s)          *          *   433.5  *          *
* Length Wtd. (m)      *   86.63  * Wetted Per. (m)       *          *   25.36  *          *
* Min Ch El (m)        *   60.00  * Shear (N/m2)          *          *  347.86  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          * 1576.77  *          *
* Frctn Loss (m)       *    1.11  * Cum Volume (1000 m3) *    4.86  *   35.77  *    0.34  *
* C & E Loss (m)       *    0.04  * Cum SA (1000 m2)     *    2.32  *   28.72  *    0.45  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 9

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   85.27   14.96    90.7   18.45   91.21   21.18   91.79   25.88   92.31
   31.28   92.84   39.22      92   43.16      91   52.72      84   68.25      74
   85.82      65   93.86   62.65  102.76   61.25  118.88   59.75  140.69      58
  144.49      57  149.31      57  152.96      58  160.67   58.94  164.95      60
  172.66      62  187.25    63.5  192.88      64  197.53   64.62  205.02    65.7
  216.74   67.46  218.78   67.59  220.96   67.93   224.5    68.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  118.88     .04  164.95    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        118.88  164.95           115.38   85.94   72.36             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
*****************************************************************************************
* E.G. Elev (m)        *   59.47  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.65  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   58.82  * Reach Len. (m)        *  115.38  *   85.94  *   72.36  *
* Crit W.S. (m)        *   58.97  * Flow Area (m2)        *          *   25.54  *          *
* E.G. Slope (m/m)     *0.024952  * Area (m2)             *          *   25.54  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)           *          *   91.51  *          *
* Top Width (m)        *   29.21  * Top Width (m)         *          *   29.21  *          *
* Vel Total (m/s)      *    3.58  * Avg. Vel. (m/s)       *          *    3.58  *          *
* Max Chl Dpth (m)     *    1.82  * Hydr. Depth (m)       *          *    0.87  *          *
* Conv. Total (m3/s)   *   579.3  * Conv. (m3/s)          *          *   579.3  *          *
* Length Wtd. (m)      *   85.94  * Wetted Per. (m)       *          *   29.55  *          *
* Min Ch El (m)        *   57.00  * Shear (N/m2)          *          *  211.47  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  757.69  *          *
* Frctn Loss (m)       *    2.83  * Cum Volume (1000 m3) *   11.38  *   32.29  *    1.82  *
* C & E Loss (m)       *    0.12  * Cum SA (1000 m2)     *   15.48  *   25.67  *    5.08  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
*****************************************************************************************
* E.G. Elev (m)        *   59.47  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.65  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   58.82  * Reach Len. (m)        *  115.38  *   85.94  *   72.36  *
* Crit W.S. (m)        *   58.97  * Flow Area (m2)        *          *   25.54  *          *
* E.G. Slope (m/m)     *0.024952  * Area (m2)             *          *   25.54  *          *
* Q Total (m3/s)       *   91.51  * Flow (m3/s)           *          *   91.51  *          *
* Top Width (m)        *   29.21  * Top Width (m)         *          *   29.21  *          *
* Vel Total (m/s)      *    3.58  * Avg. Vel. (m/s)       *          *    3.58  *          *
* Max Chl Dpth (m)     *    1.82  * Hydr. Depth (m)       *          *    0.87  *          *
* Conv. Total (m3/s)   *   579.3  * Conv. (m3/s)          *          *   579.3  *          *
```

```
* Length Wtd. (m)      *   85.94  * Wetted Per. (m)      *          *   29.55  *          *
* Min Ch El (m)        *   57.00  * Shear (N/m2)        *          *  211.47  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  757.69  *          *
* Frctn Loss (m)       *    2.83  * Cum Volume (1000 m3) *    4.86  *   33.79  *    0.34  *
* C & E Loss (m)       *    0.12  * Cum SA (1000 m2)     *    2.32  *   26.36  *    0.45  *
*******************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 8

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   67.61    15.7      71   28.78      73   35.82   73.32   40.01   73.23
   46.16   72.76   47.76   72.56    49.8   72.37   57.27      71   60.93      69
   72.11      68   90.92      63  108.64      59  111.87   58.54  114.49      58
  134.34      57   140.8      57  160.47   56.54  181.78   56.04  189.08      55
  195.66      55  219.92      56   230.3   56.89  233.59   57.26  243.44      59
  248.31   60.87  251.62      62  259.84      64  271.48      68  286.51   72.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***************************************************
       0    .045  160.47     .04   230.3    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        160.47   230.3            86.33   82.02   77.78             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
*******************************************************************************************
* E.G. Elev (m)        *   56.77  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.68  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   56.09  * Reach Len. (m)       *   86.33  *   82.02  *   77.78  *
* Crit W.S. (m)        *   56.31  * Flow Area (m2)       *          *   25.60  *          *
* E.G. Slope (m/m)     *0.040497  * Area (m2)            *          *   25.60  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *          *   93.74  *          *
* Top Width (m)        *   41.13  * Top Width (m)        *          *   41.13  *          *
* Vel Total (m/s)      *    3.66  * Avg. Vel. (m/s)      *          *    3.66  *          *
* Max Chl Dpth (m)     *    1.09  * Hydr. Depth (m)      *          *    0.62  *          *
* Conv. Total (m3/s)   *   465.8  * Conv. (m3/s)         *          *   465.8  *          *
* Length Wtd. (m)      *   82.02  * Wetted Per. (m)      *          *   41.22  *          *
* Min Ch El (m)        *   55.00  * Shear (N/m2)         *          *  246.61  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  903.04  *          *
* Frctn Loss (m)       *    2.70  * Cum Volume (1000 m3) *   11.38  *   30.09  *    1.82  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   15.48  *   22.64  *    5.08  *
*******************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
*******************************************************************************************
* E.G. Elev (m)        *   56.77  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.68  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   56.09  * Reach Len. (m)       *   86.33  *   82.02  *   77.78  *
* Crit W.S. (m)        *   56.31  * Flow Area (m2)       *          *   25.60  *          *
* E.G. Slope (m/m)     *0.040498  * Area (m2)            *          *   25.60  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *          *   93.74  *          *
* Top Width (m)        *   41.13  * Top Width (m)        *          *   41.13  *          *
* Vel Total (m/s)      *    3.66  * Avg. Vel. (m/s)      *          *    3.66  *          *
* Max Chl Dpth (m)     *    1.09  * Hydr. Depth (m)      *          *    0.62  *          *
* Conv. Total (m3/s)   *   465.8  * Conv. (m3/s)         *          *   465.8  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)      *          *   41.22  *          *
* Min Ch El (m)        *   55.00  * Shear (N/m2)         *          *  246.61  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  903.06  *          *
* Frctn Loss (m)       *    2.70  * Cum Volume (1000 m3) *    4.86  *   31.59  *    0.34  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *    2.32  *   23.34  *    0.45  *
*******************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 7

INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   58.01     8.41      60   13.71      61   21.92    61.7   24.46   61.34
   25.46   61.38    28.89      60   29.94   60.01   45.59      64   58.37   66.41
    70.4   68.69    74.12   69.05   79.84      69   89.96    67.5  105.82      65
   121.2      64   135.74      63  144.24   61.97  154.29      60  163.39      58
  169.32      57   178.21      56  185.35   55.55  196.44      55  221.73      53
  223.92   53.01   226.97   52.99  230.61      53  231.45   53.49     239  53.972
  239.44      54   241.67      54  252.74      60  256.76    60.5  260.73    60.5
  263.75   60.15   265.68      60   268.8      60  275.63      61  281.69      63
```

```
  290.06   65.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  196.44     .04  252.74    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        196.44  252.74            74.02   78.09   82.28             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
**********************************************************************************************
* E.G. Elev (m)        *   54.83  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.43  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   54.41  * Reach Len. (m)        *   74.02  *   78.09  *   82.28  *
* Crit W.S. (m)        *   54.41  * Flow Area (m2)        *          *   32.34  *          *
* E.G. Slope (m/m)     *0.017129  * Area (m2)             *          *   32.34  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *          *   93.74  *          *
* Top Width (m)        *   38.48  * Top Width (m)         *          *   38.48  *          *
* Vel Total (m/s)      *    2.90  * Avg. Vel. (m/s)       *          *    2.90  *          *
* Max Chl Dpth (m)     *    1.42  * Hydr. Depth (m)       *          *    0.84  *          *
* Conv. Total (m3/s)   *   716.2  * Conv. (m3/s)          *          *   716.2  *          *
* Length Wtd. (m)      *   78.67  * Wetted Per. (m)       *          *   38.79  *          *
* Min Ch El (m)        *   52.99  * Shear (N/m2)          *          *  140.05  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  405.94  *          *
* Frctn Loss (m)       *    1.38  * Cum Volume (1000 m3)  *   11.38  *   27.71  *    1.82  *
* C & E Loss (m)       *    0.06  * Cum SA (1000 m2)      *   15.48  *   19.38  *    5.08  *
**********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #ENC
**********************************************************************************************
* E.G. Elev (m)        *   54.83  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.42  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (m)        *   54.41  * Reach Len. (m)        *   74.02  *   78.09  *   82.28  *
* Crit W.S. (m)        *   54.41  * Flow Area (m2)        *          *   32.47  *          *
* E.G. Slope (m/m)     *0.016938  * Area (m2)             *          *   32.47  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *          *   93.74  *          *
* Top Width (m)        *   38.53  * Top Width (m)         *          *   38.53  *          *
* Vel Total (m/s)      *    2.89  * Avg. Vel. (m/s)       *          *    2.89  *          *
* Max Chl Dpth (m)     *    1.42  * Hydr. Depth (m)       *          *    0.84  *          *
* Conv. Total (m3/s)   *   720.3  * Conv. (m3/s)          *          *   720.3  *          *
* Length Wtd. (m)      *   78.09  * Wetted Per. (m)       *          *   38.84  *          *
* Min Ch El (m)        *   52.99  * Shear (N/m2)          *          *  138.85  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  400.91  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3)  *    4.86  *   29.21  *    0.34  *
* C & E Loss (m)       *          * Cum SA (1000 m2)      *    2.32  *   20.07  *    0.45  *
**********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 6

INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   51.45   11.42   51.73   30.09      52   47.15      54   60.48      57
   69.96      60    77.5   61.09  100.98   61.71  112.42   61.81  119.71   61.71
  135.06      62  139.74      62  145.06   61.39  147.25      61  156.74      53
  157.97  52.423     158  52.409  158.87      52  161.54   51.37   165.1      51
  166.94   51.46   170.3      52  178.41   52.01  188.58   52.01  197.91   52.48
  207.61   52.72  213.93   52.93  216.38   52.93  227.32   52.72  241.98   52.22
  252.97   51.45  254.98   52.17  262.24   52.17  267.88   52.22  272.32  52.422
  274.03    52.5  276.22   52.66  279.79      53  284.02      54  290.22      56
  298.57   58.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045     158     .04  216.38    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           158  216.38           149.21   97.35   84.37             .1       .3
Left Levee      Station=  135.06      Elevation=      62

CROSS SECTION OUTPUT  Profile #100Y
**********************************************************************************************
* E.G. Elev (m)        *   52.88  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.45  * Wt. n-Val.            *   0.045  *   0.040  *   0.045  *
```

```
* W.S. Elev (m)        *   52.44  * Reach Len. (m)       *  149.21  *   97.35  *   84.37  *
* Crit W.S. (m)        *   52.58  * Flow Area (m2)       *    0.00  *   20.91  *   12.38  *
* E.G. Slope (m/m)     *0.038932  * Area (m2)            *    0.00  *   20.91  *   12.38  *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *    0.00  *   67.66  *   26.08  *
* Top Width (m)        *   76.13  * Top Width (m)        *    0.06  *   39.05  *   37.02  *
* Vel Total (m/s)      *    2.82  * Avg. Vel. (m/s)      *    0.24  *    3.24  *    2.11  *
* Max Chl Dpth (m)     *    1.44  * Hydr. Depth (m)      *    0.01  *    0.54  *    0.33  *
* Conv. Total (m3/s)   *   475.1  * Conv. (m3/s)         *     0.0  *   342.9  *   132.2  *
* Length Wtd. (m)      *   95.93  * Wetted Per. (m)      *    0.07  *   39.35  *   37.18  *
* Min Ch El (m)        *   51.00  * Shear (N/m2)         *    4.81  *  202.87  *  127.12  *
* Alpha                *    1.11  * Stream Power (N/m s) *    1.14  *  656.54  *  267.77  *
* Frctn Loss (m)       *    1.95  * Cum Volume (1000 m3) *   11.38  *   25.63  *    1.31  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   15.48  *   16.35  *    3.56  *
*****************************************************************************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #ENC
*****************************************************************************************
* E.G. Elev (m)        *   53.15  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.49  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   52.65  * Reach Len. (m)       *  149.21  *   97.35  *   84.37  *
* Crit W.S. (m)        *   52.77  * Flow Area (m2)       *          *   30.15  *          *
* E.G. Slope (m/m)     *0.028315  * Area (m2)            *          *   30.15  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *          *   93.74  *          *
* Top Width (m)        *   46.92  * Top Width (m)        *          *   46.92  *          *
* Vel Total (m/s)      *    3.11  * Avg. Vel. (m/s)      *          *    3.11  *          *
* Max Chl Dpth (m)     *    1.65  * Hydr. Depth (m)      *          *    0.64  *          *
* Conv. Total (m3/s)   *   557.1  * Conv. (m3/s)         *          *   557.1  *          *
* Length Wtd. (m)      *   97.35  * Wetted Per. (m)      *          *   47.47  *          *
* Min Ch El (m)        *   51.00  * Shear (N/m2)         *          *  176.40  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  548.37  *          *
* Frctn Loss (m)       *    1.68  * Cum Volume (1000 m3) *    4.86  *   26.76  *    0.34  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)     *    2.32  *   16.73  *    0.45  *
*****************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 5

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0      59    6.16   59.05    6.16   59.06   16.72   59.19   19.85      59
   24.68      58   32.66      55   35.07      54   37.81      53   41.43      52
   44.47      51   52.86   50.01    65.9   50.53   75.29   50.38   86.25   50.01
   98.98   50.03  109.13      50     115      49   119.9      49  134.31      48
  139.21    48.3  146.63   48.36  147.79   48.26  152.74      48  153.09      48
  173.63      49     176      49  179.54      50     183      51  197.09      52
  215.49      52  236.35      54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045   119.9     .04  173.63    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         119.9  173.63            96.25   56.06   37.76             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
*****************************************************************************************
* E.G. Elev (m)        *   49.69  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.10  * Wt. n-Val.           *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   49.59  * Reach Len. (m)       *   96.25  *   56.06  *   37.76  *
* Crit W.S. (m)        *   49.09  * Flow Area (m2)       *    3.92  *   63.82  *    2.02  *
* E.G. Slope (m/m)     *0.002523  * Area (m2)            *    3.92  *   63.82  *    2.02  *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *    2.63  *   89.80  *    1.31  *
* Top Width (m)        *   66.56  * Top Width (m)        *    8.37  *   53.73  *    4.46  *
* Vel Total (m/s)      *    1.34  * Avg. Vel. (m/s)      *    0.67  *    1.41  *    0.65  *
* Max Chl Dpth (m)     *    1.59  * Hydr. Depth (m)      *    0.47  *    1.19  *    0.45  *
* Conv. Total (m3/s)   *  1866.3  * Conv. (m3/s)         *    52.3  *  1787.8  *    26.1  *
* Length Wtd. (m)      *   63.74  * Wetted Per. (m)      *    8.42  *   53.81  *    4.54  *
* Min Ch El (m)        *   48.00  * Shear (N/m2)         *   11.52  *   29.34  *   10.99  *
* Alpha                *    1.06  * Stream Power (N/m s) *    7.73  *   41.29  *    7.14  *
* Frctn Loss (m)       *    0.17  * Cum Volume (1000 m3) *   11.08  *   21.51  *    0.71  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *   14.85  *   11.84  *    1.81  *
*****************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT  Profile #ENC
*****************************************************************************************
* E.G. Elev (m)        *   49.80  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.09  * Wt. n-Val.           *          *   0.040  *          *
* W.S. Elev (m)        *   49.71  * Reach Len. (m)       *   96.25  *   56.06  *   37.76  *
* Crit W.S. (m)        *   49.08  * Flow Area (m2)       *          *   70.38  *          *
```

```
* E.G. Slope (m/m)     *0.002055  * Area (m2)            *          *   70.38  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *          *   93.74  *          *
* Top Width (m)        *   53.73  * Top Width (m)        *          *   53.73  *          *
* Vel Total (m/s)      *    1.33  * Avg. Vel. (m/s)      *          *    1.33  *          *
* Max Chl Dpth (m)     *    1.71  * Hydr. Depth (m)      *          *    1.31  *          *
* Conv. Total (m3/s)   *  2067.8  * Conv. (m3/s)         *          *  2067.8  *          *
* Length Wtd. (m)      *   60.50  * Wetted Per. (m)      *          *   55.24  *          *
* Min Ch El (m)        *   48.00  * Shear (N/m2)         *          *   25.68  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *   34.20  *          *
* Frctn Loss (m)       *    0.16  * Cum Volume (1000 m3) *    4.86  *   21.87  *    0.34  *
* C & E Loss (m)       *    0.00  * Cum SA (1000 m2)     *    2.32  *   11.84  *    0.45  *
*****************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 4

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
       0   55.12    1.38   55.12    2.26   55.11    4.86   55.04    6.85   55.03
    8.33   54.98   11.82   55.08   20.62      56   24.86   56.26   31.49   56.99
   53.17   57.25   69.54   57.18   85.66    57.1   98.65    57.2  105.99   57.02
  111.75      56  115.02      55  121.68      53  134.11      51  153.82      50
  161.55      48  165.92      48  173.04      48  176.34      48  177.49      49
  182.78   49.01  187.98      49  190.75   48.32  193.81      48   203.7   48.09
  207.53   48.15   212.5      48  220.87      49  223.95      49  238.96      50
  241.33      51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  187.98     .04  220.87    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        187.98  220.87            89.13    87.5   98.64             .1       .3

CROSS SECTION OUTPUT  Profile #100Y
*****************************************************************************************
* E.G. Elev (m)        *   49.52  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.09  * Wt. n-Val.           *   0.045  *   0.040  *   0.045  *
* W.S. Elev (m)        *   49.42  * Reach Len. (m)       *   89.13  *   87.50  *   98.64  *
* Crit W.S. (m)        *          * Flow Area (m2)       *   30.42  *   39.03  *    2.65  *
* E.G. Slope (m/m)     *0.002829  * Area (m2)            *   30.42  *   39.03  *    2.65  *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *   34.41  *   57.99  *    1.34  *
* Top Width (m)        *   74.26  * Top Width (m)        *   31.93  *   32.89  *    9.43  *
* Vel Total (m/s)      *    1.30  * Avg. Vel. (m/s)      *    1.13  *    1.49  *    0.51  *
* Max Chl Dpth (m)     *    1.42  * Hydr. Depth (m)      *    0.95  *    1.19  *    0.28  *
* Conv. Total (m3/s)   *  1762.5  * Conv. (m3/s)         *   646.9  *  1090.3  *    25.2  *
* Length Wtd. (m)      *   87.88  * Wetted Per. (m)      *   32.49  *   33.05  *    9.45  *
* Min Ch El (m)        *   48.00  * Shear (N/m2)         *   25.97  *   32.76  *    7.78  *
* Alpha                *    1.09  * Stream Power (N/m s) *   29.38  *   48.67  *    3.94  *
* Frctn Loss (m)       *    0.52  * Cum Volume (1000 m3) *    9.43  *   18.63  *    0.62  *
* C & E Loss (m)       *    0.04  * Cum SA (1000 m2)     *   12.91  *    9.41  *    1.55  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #ENC
*****************************************************************************************
* E.G. Elev (m)        *   49.63  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.14  * Wt. n-Val.           *   0.045  *   0.040  *          *
* W.S. Elev (m)        *   49.49  * Reach Len. (m)       *   89.13  *   87.50  *   98.64  *
* Crit W.S. (m)        *          * Flow Area (m2)       *   17.21  *   41.33  *          *
* E.G. Slope (m/m)     *0.003782  * Area (m2)            *   17.21  *   41.33  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)          *   20.70  *   73.04  *          *
* Top Width (m)        *   51.86  * Top Width (m)        *   18.97  *   32.89  *          *
* Vel Total (m/s)      *    1.60  * Avg. Vel. (m/s)      *    1.20  *    1.77  *          *
* Max Chl Dpth (m)     *    1.49  * Hydr. Depth (m)      *    0.91  *    1.26  *          *
* Conv. Total (m3/s)   *  1524.2  * Conv. (m3/s)         *   336.6  *  1187.7  *          *
* Length Wtd. (m)      *   87.68  * Wetted Per. (m)      *   20.83  *   33.54  *          *
* Min Ch El (m)        *   48.00  * Shear (N/m2)         *   30.63  *   45.70  *          *
* Alpha                *    1.07  * Stream Power (N/m s) *   36.85  *   80.76  *          *
* Frctn Loss (m)       *    0.64  * Cum Volume (1000 m3) *    4.03  *   18.74  *    0.34  *
* C & E Loss (m)       *    0.04  * Cum SA (1000 m2)     *    1.41  *    9.41  *    0.45  *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 3
```

```
INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0   49.36    7.73      50   21.01   51.47   31.79   51.85   41.23    51.5
   49.47   51.56   53.43   51.52   63.33   50.81   78.42      49   85.22      48
   95.32      48  114.62   48.26  122.76   48.29   133.2   48.34  155.33      48
  157.63      48  167.28   47.23  167.77      47  172.95      47   187.1      48
  201.48      49  209.21      50  215.08      52  218.88      53  223.77      54
  230.78      55  235.63   55.39  243.96      56  248.14   57.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045  157.63    .044   187.1    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        157.63   187.1           120.92   98.71   93.98             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0  157.63    48.6       F
   187.1  248.14    48.6       F

CROSS SECTION OUTPUT  Profile #100Y
*********************************************************************************************
* E.G. Elev (m)        *   48.96  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.50  * Wt. n-Val.            *          *   0.044  *          *
* W.S. Elev (m)        *   48.45  * Reach Len. (m)        *  120.92  *   98.71  *   93.98  *
* Crit W.S. (m)        *   48.45  * Flow Area (m2)        *          *   29.79  *          *
* E.G. Slope (m/m)     *0.018998  * Area (m2)             *   21.79  *   29.79  *    1.48  *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *          *   93.74  *          *
* Top Width (m)        *  111.50  * Top Width (m)         *   75.50  *   29.47  *    6.53  *
* Vel Total (m/s)      *    3.15  * Avg. Vel. (m/s)       *          *    3.15  *          *
* Max Chl Dpth (m)     *    1.45  * Hydr. Depth (m)       *          *    1.01  *          *
* Conv. Total (m3/s)   *   680.1  * Conv. (m3/s)          *          *   680.1  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)       *          *   29.59  *          *
* Min Ch El (m)        *   47.00  * Shear (N/m2)          *          *  187.57  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  590.24  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3)  *    7.11  *   15.61  *    0.41  *
* C & E Loss (m)       *          * Cum SA (1000 m2)      *    8.13  *    6.68  *    0.76  *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: Multiple water surfaces were found that could balance the energy equation. The program
         selected the water surface whose main channel velocity head was the closest to the previously
         computed cross section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION OUTPUT  Profile #ENC
*********************************************************************************************
* E.G. Elev (m)        *   48.96  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.50  * Wt. n-Val.            *          *   0.044  *          *
* W.S. Elev (m)        *   48.46  * Reach Len. (m)        *  120.92  *   98.71  *   93.98  *
* Crit W.S. (m)        *   48.45  * Flow Area (m2)        *          *   29.92  *          *
* E.G. Slope (m/m)     *0.019509  * Area (m2)             *          *   29.92  *          *
* Q Total (m3/s)       *   93.74  * Flow (m3/s)           *          *   93.74  *          *
* Top Width (m)        *   29.47  * Top Width (m)         *          *   29.47  *          *
* Vel Total (m/s)      *    3.13  * Avg. Vel. (m/s)       *          *    3.13  *          *
* Max Chl Dpth (m)     *    1.46  * Hydr. Depth (m)       *          *    1.02  *          *
* Conv. Total (m3/s)   *   671.1  * Conv. (m3/s)          *          *   671.1  *          *
* Length Wtd. (m)      *   98.71  * Wetted Per. (m)       *          *   30.50  *          *
* Min Ch El (m)        *   47.00  * Shear (N/m2)          *          *  187.62  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  587.91  *          *
* Frctn Loss (m)       *    0.67  * Cum Volume (1000 m3)  *    3.27  *   15.62  *    0.34  *
* C & E Loss (m)       *    0.06  * Cum SA (1000 m2)      *    0.56  *    6.68  *    0.45  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 2

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  151.25      50  151.25      47  187.43   47.01  191.32      47  193.95   45.86
  205.24      45  220.11      45  223.17      46  230.14      47     235      47
  254.44      54   255.6   54.01  256.22   54.14  263.05   54.01  271.21      54
   280.9   54.14  297.06   54.58  313.38   54.52  327.54   54.54  337.16   54.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  151.25    .045  191.32    .044  230.14    .045
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        191.32  230.14            84.08   70.45   77.44             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  151.25  204.23    50.5       F
  217.23  337.16    50.5       F

CROSS SECTION OUTPUT  Profile #100Y
*********************************************************************************************
* E.G. Elev (m)        *   48.23  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.38  * Wt. n-Val.            *          *   0.044  *          *
* W.S. Elev (m)        *   47.85  * Reach Len. (m)        *   28.73  *   28.73  *   28.73  *
* Crit W.S. (m)        *   46.83  * Flow Area (m2)        *          *   36.96  *          *
* E.G. Slope (m/m)     *0.003577  * Area (m2)             *   33.72  *   89.89  *    5.11  *
* Q Total (m3/s)       *  100.82  * Flow (m3/s)           *          *  100.82  *          *
* Top Width (m)        *   86.10  * Top Width (m)         *   40.07  *   38.82  *    7.21  *
* Vel Total (m/s)      *    2.73  * Avg. Vel. (m/s)       *          *    2.73  *          *
* Max Chl Dpth (m)     *    2.85  * Hydr. Depth (m)       *          *    2.84  *          *
* Conv. Total (m3/s)   *  1685.7  * Conv. (m3/s)          *          *  1685.7  *          *
* Length Wtd. (m)      *   28.73  * Wetted Per. (m)       *          *   13.00  *          *
* Min Ch El (m)        *   45.00  * Shear (N/m2)          *          *   99.71  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  271.98  *          *
* Frctn Loss (m)       *    0.06  * Cum Volume (1000 m3)  *    3.75  *    9.71  *    0.10  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *    1.14  *    3.31  *    0.11  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

CROSS SECTION OUTPUT  Profile #ENC
*********************************************************************************************
* E.G. Elev (m)        *   48.23  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.38  * Wt. n-Val.            *          *   0.044  *          *
* W.S. Elev (m)        *   47.85  * Reach Len. (m)        *   28.73  *   28.73  *   28.73  *
* Crit W.S. (m)        *   46.83  * Flow Area (m2)        *          *   36.96  *          *
* E.G. Slope (m/m)     *0.003577  * Area (m2)             *          *   89.89  *    5.11  *
* Q Total (m3/s)       *  100.82  * Flow (m3/s)           *          *  100.82  *          *
* Top Width (m)        *   46.03  * Top Width (m)         *          *   38.82  *    7.21  *
* Vel Total (m/s)      *    2.73  * Avg. Vel. (m/s)       *          *    2.73  *          *
* Max Chl Dpth (m)     *    2.85  * Hydr. Depth (m)       *          *    2.84  *          *
* Conv. Total (m3/s)   *  1685.7  * Conv. (m3/s)          *          *  1685.7  *          *
* Length Wtd. (m)      *   28.73  * Wetted Per. (m)       *          *   13.00  *          *
* Min Ch El (m)        *   45.00  * Shear (N/m2)          *          *   99.71  *          *
* Alpha                *    1.00  * Stream Power (N/m s)  *          *  271.98  *          *
* Frctn Loss (m)       *    0.06  * Cum Volume (1000 m3)  *    3.27  *    9.71  *    0.10  *
* C & E Loss (m)       *    0.01  * Cum SA (1000 m2)      *    0.56  *    3.31  *    0.11  *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

BRIDGE


RIVER: CREEK1
REACH: ONE                RS: 1.5

INPUT
Description:
Distance from Upstream XS =   28.73
Deck/Roadway Width        =      13
Weir Coefficient          =    1.44
Upstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
  151.25    50.5      45  204.23    50.5      45  204.23    50.5    48.5
  217.23    50.5    48.5  217.23    50.5      45     250    50.5      45

Upstream Bridge Cross Section Data
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  151.25      50  151.25      47  187.43   47.01  191.32      47  193.95   45.86
  205.24      45  220.11      45  223.17      46  230.14      47     235      47
  254.44      54   255.6   54.01  256.22   54.14  263.05   54.01  271.21      54
   280.9   54.14  297.06   54.58  313.38   54.52  327.54   54.54  337.16   54.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  151.25    .045  191.32    .025  230.14    .045

Bank Sta: Left   Right    Coeff Contr.   Expan.
        191.32  230.14             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  151.25  204.23    50.5       F
  217.23  337.16    50.5       F

Downstream  Deck/Roadway Coordinates
    num=       7
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
       0    50.5      41   39.18    50.5      41  106.98    50.5   44.61
  106.98    50.5    48.5  119.98    50.5    48.5  119.98    50.5   44.61
```

```
  206.27    50.5   44.61

Downstream Bridge Cross Section Data
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0      44    4.47      43   11.17      41   29.16      41   34.59      43
    38.8      45   39.18      45   66.33   44.61  102.57   44.61  141.96   44.61
  165.85   44.61     193      45  193.77      45  193.77      48  206.27   51.95
  216.49   52.66  237.11      54  242.41      56  248.92   56.01  253.07      56
  258.33    54.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045    38.8     .02  165.85    .045

Bank Sta: Left   Right    Coeff Contr.   Expan.
         39.18     193             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0  106.98    50.5       F
  119.98  258.33    50.5       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =    50.5
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  1

Pier Data
Pier Station     Upstream=  191.32    Downstream=   39.18
Upstream     num=       2
    Width   Elev    Width   Elev
*******************************
      .2      41      .2    48.5
Downstream     num=       2
    Width   Elev    Width   Elev
*******************************
      .2      41      .2    48.5

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION


RIVER: CREEK1
REACH: ONE                RS: 1

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
       0      44    4.47      43   11.17      41   29.16      41   34.59      43
    38.8      45   39.18      45   66.33   44.61  102.57   44.61  141.96   44.61
  165.85   44.61     193      45  193.77      45  193.77      48  206.27   51.95
  216.49   52.66  237.11      54  242.41      56  248.92   56.01  253.07      56
  258.33    54.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
       0    .045   39.18    .043     193    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         39.18     193                0       0       0             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
       0  106.98    50.5       F
  119.98  258.33    50.5       F

CROSS SECTION OUTPUT  Profile #100Y
*********************************************************************************************
* E.G. Elev (m)        *   48.07  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.31  * Wt. n-Val.            *          *   0.043  *          *
* W.S. Elev (m)        *   47.76  * Reach Len. (m)        *          *          *          *
* Crit W.S. (m)        *   46.44  * Flow Area (m2)        *          *   40.95  *          *
* E.G. Slope (m/m)     *0.002427  * Area (m2)             *  227.41  *  473.96  *    2.12  *
* Q Total (m3/s)       *  100.82  * Flow (m3/s)           *          *  100.82  *          *
* Top Width (m)        *  193.77  * Top Width (m)         *   39.18  *  153.82  *    0.77  *
* Vel Total (m/s)      *    2.46  * Avg. Vel. (m/s)       *          *    2.46  *          *
* Max Chl Dpth (m)     *    6.76  * Hydr. Depth (m)       *          *    3.15  *          *
```

```
* Conv. Total (m3/s)   *  2046.5  * Conv. (m3/s)         *          *  2046.5  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)      *          *   13.00  *          *
* Min Ch El (m)        *   44.61  * Shear (N/m2)         *          *   74.97  *          *
* Alpha                *    1.00  * Stream Power (N/m s) *          *  184.58  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3) *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)     *          *          *          *
*****************************************************************************************

Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

CROSS SECTION OUTPUT  Profile #ENC
*****************************************************************************************
* E.G. Elev (m)        *   48.07  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (m)         *    0.31  * Wt. n-Val.            *          *   0.043  *          *
* W.S. Elev (m)        *   47.76  * Reach Len. (m)        *          *          *          *
* Crit W.S. (m)        *   46.44  * Flow Area (m2)        *          *   40.95  *          *
* E.G. Slope (m/m)     *0.002427  * Area (m2)             *  227.41  *  473.96  *    2.12  *
* Q Total (m3/s)       *  100.82  * Flow (m3/s)            *          *  100.82  *          *
* Top Width (m)        *  193.77  * Top Width (m)          *   39.18  *  153.82  *    0.77  *
* Vel Total (m/s)      *    2.46  * Avg. Vel. (m/s)        *          *    2.46  *          *
* Max Chl Dpth (m)     *    6.76  * Hydr. Depth (m)        *          *    3.15  *          *
* Conv. Total (m3/s)   *  2046.5  * Conv. (m3/s)           *          *  2046.5  *          *
* Length Wtd. (m)      *          * Wetted Per. (m)        *          *   13.00  *          *
* Min Ch El (m)        *   44.61  * Shear (N/m2)           *          *   74.97  *          *
* Alpha                *    1.00  * Stream Power (N/m s)   *          *  184.58  *          *
* Frctn Loss (m)       *          * Cum Volume (1000 m3)   *          *          *          *
* C & E Loss (m)       *          * Cum SA (1000 m2)       *          *          *          *
*****************************************************************************************

Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

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

SUMMARY OF MANNING'S N VALUES

River:A_TRIBUTARY
*****************************************************************
*     Reach      *   River Sta.   *   n1    *   n2    *   n3    *
*****************************************************************
*ONE             *    12          *     .045*      .04*     .045*
*ONE             *    11          *     .045*      .04*     .045*
*ONE             *    10.91       *     .045*      .04*     .045*
*****************************************************************

River:CREEK1
*****************************************************************
*     Reach      *   River Sta.   *   n1    *   n2    *   n3    *
*****************************************************************
*ONE             *    15          *     .045*      .04*     .045*
*ONE             *    14          *     .045*      .04*     .045*
*ONE             *    13          *     .045*      .04*     .045*
*ONE             *    11          *     .045*      .04*     .045*
*ONE             *    10.9        *     .045*      .04*     .045*
*ONE             *    10          *     .045*      .04*     .045*
*ONE             *    9           *     .045*      .04*     .045*
*ONE             *    8           *     .045*      .04*     .045*
*ONE             *    7           *     .045*      .04*     .045*
*ONE             *    6           *     .045*      .04*     .045*
*ONE             *    5           *     .045*      .04*     .045*
*ONE             *    4           *     .045*      .04*     .045*
*ONE             *    3           *     .045*     .044*     .045*
*ONE             *    2           *     .045*     .044*     .045*
*ONE             *    1.5         *Bridge    *        *        *
*ONE             *    1           *     .045*     .043*     .045*
*****************************************************************

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

SUMMARY OF REACH LENGTHS

River: A_TRIBUTARY
*****************************************************************
*     Reach      *   River Sta.   *  Left   * Channel *  Right  *
*****************************************************************
*ONE             *    12          *   124.36*   124.36*   124.36*
*ONE             *    11          *    68.16*    68.16*    68.16*
*ONE             *    10.91       *        0*        0*        0*
*****************************************************************

River: CREEK1
*****************************************************************
*     Reach      *   River Sta.   *  Left   * Channel *  Right  *
*****************************************************************
*ONE             *    15          *    54.72*    92.14*   142.18*
*ONE             *    14          *    31.11*     22.5*     32.6*
*ONE             *    13          *   174.52*   174.52*   174.52*
*ONE             *    11          *    72.98*    72.98*    72.98*
*ONE             *    10.9        *    30.43*    30.43*    30.43*
*ONE             *    10          *    80.47*    86.63*    80.65*
*ONE             *    9           *   115.38*    85.94*    72.36*
*ONE             *    8           *    86.33*    82.02*    77.78*
*ONE             *    7           *    74.02*    78.09*    82.28*
*ONE             *    6           *   149.21*    97.35*    84.37*
*ONE             *    5           *    96.25*    56.06*    37.76*
*ONE             *    4           *    89.13*     87.5*    98.64*
*ONE             *    3           *   120.92*    98.71*    93.98*
*ONE             *    2           *    84.08*    70.45*    77.44*
*ONE             *    1.5         *Bridge    *         *         *
*ONE             *    1           *        0*        0*        0*
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****

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SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: A_TRIBUTARY

Reach	River Sta.	Contr.	Expan.
ONE	12	.1	.3
ONE	11	.1	.3
ONE	10.91	.1	.3

River: CREEK1

Reach	River Sta.	Contr.	Expan.
ONE	15	.1	.3
ONE	14	.1	.3
ONE	13	.1	.3
ONE	11	.1	.3
ONE	10.9	.1	.3
ONE	10	.1	.3
ONE	9	.1	.3
ONE	8	.1	.3
ONE	7	.1	.3
ONE	6	.1	.3
ONE	5	.1	.3
ONE	4	.1	.3
ONE	3	.3	.5
ONE	2	.3	.5
ONE	1.5	Bridge	
ONE	1	.3	.5

Profile Output Table - Standard Table 1

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
CREEK1	ONE	15	100Y	72.96	77.00	78.65	78.66	79.29	0.015366	3.53	20.69	16.38	1.00
CREEK1	ONE	15	ENC	72.96	77.00	78.65	78.66	79.29	0.015366	3.53	20.69	16.38	1.00
CREEK1	ONE	14	100Y	78.28	74.00	74.56	74.99	76.10	0.110681	5.48	14.28	26.38	2.38
CREEK1	ONE	14	ENC	78.28	74.00	74.56	74.99	76.10	0.110681	5.48	14.28	26.38	2.38
CREEK1	ONE	13	100Y	78.28	72.00	73.39	73.73	74.44	0.045083	4.54	17.24	21.40	1.62
CREEK1	ONE	13	ENC	78.28	72.00	73.39	73.72	74.44	0.045084	4.54	17.24	21.40	1.62
CREEK1	ONE	11	100Y	78.28	65.00	65.68	65.85	66.25	0.047166	3.35	23.39	48.19	1.53
CREEK1	ONE	11	ENC	78.28	65.00	65.68	65.85	66.25	0.047164	3.35	23.39	48.19	1.53
CREEK1	ONE	10.9	100Y	91.51	62.00	62.87	63.03	63.56	0.030256	3.69	24.78	31.31	1.33
CREEK1	ONE	10.9	ENC	91.51	62.00	62.87	63.03	63.56	0.030257	3.69	24.78	31.31	1.33
CREEK1	ONE	10	100Y	91.51	60.00	61.37	61.70	62.42	0.044563	4.53	20.19	25.16	1.62
CREEK1	ONE	10	ENC	91.51	60.00	61.37	61.70	62.42	0.044563	4.53	20.19	25.16	1.62
CREEK1	ONE	9	100Y	91.51	57.00	58.82	58.97	59.47	0.024952	3.58	25.54	29.21	1.22
CREEK1	ONE	9	ENC	91.51	57.00	58.82	58.97	59.47	0.024952	3.58	25.54	29.21	1.22
CREEK1	ONE	8	100Y	93.74	55.00	56.09	56.31	56.77	0.040497	3.66	25.60	41.13	1.48
CREEK1	ONE	8	ENC	93.74	55.00	56.09	56.31	56.77	0.040498	3.66	25.60	41.13	1.48
CREEK1	ONE	7	100Y	93.74	52.99	54.41	54.41	54.83	0.017129	2.90	32.34	38.48	1.01
CREEK1	ONE	7	ENC	93.74	52.99	54.41	54.41	54.83	0.016938	2.89	32.47	38.53	1.00

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* CREEK1      * ONE         * 6           * 100Y    *   93.74 *     51.00 *     52.44 *     52.58 *     52.88 *   0.038932 *
3.24 *     33.29 *     76.13 *         1.41 *
* CREEK1      * ONE         * 6           * ENC     *   93.74 *     51.00 *     52.65 *     52.77 *     53.15 *   0.028315 *     3.11 *     30.15 *     46.92
*         1.24 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* CREEK1      * ONE         * 5           * 100Y    *   93.74 *     48.00 *     49.59 *     49.09 *     49.69 *   0.002523 *     1.41 *     69.76 *     66.56
*         0.41 *
* CREEK1      * ONE         * 5           * ENC     *   93.74 *     48.00 *     49.71 *     49.08 *     49.80 *   0.002055 *     1.33 *     70.38 *     53.73
*         0.37 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* CREEK1      * ONE         * 4           * 100Y    *   93.74 *     48.00 *     49.42 *           *     49.52 *   0.002829 *     1.49 *     72.10 *     74.26
*         0.44 *
* CREEK1      * ONE         * 4           * ENC     *   93.74 *     48.00 *     49.49 *           *     49.63 *   0.003782 *     1.77 *     58.54 *     51.86
*         0.50 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* CREEK1      * ONE         * 3           * 100Y    *   93.74 *     47.00 *     48.45 *     48.45 *     48.96 *   0.018998 *     3.15 *     29.79 *    111.50
*         1.00 *
* CREEK1      * ONE         * 3           * ENC     *   93.74 *     47.00 *     48.46 *     48.45 *     48.96 *   0.019509 *     3.13 *     29.92 *     29.47
*         0.99 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* CREEK1      * ONE         * 2           * 100Y    *  100.82 *     45.00 *     47.85 *     46.83 *     48.23 *   0.003577 *     2.73 *     36.96 *     86.10
*         0.52 *
* CREEK1      * ONE         * 2           * ENC     *  100.82 *     45.00 *     47.85 *     46.83 *     48.23 *   0.003577 *     2.73 *     36.96 *     46.03
*         0.52 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* CREEK1      * ONE         * 1.5         *         *  Bridge *           *           *           *           *           *           *
*             *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* CREEK1      * ONE         * 1           * 100Y    *  100.82 *     44.61 *     47.76 *     46.44 *     48.07 *   0.002427 *     2.46 *     40.95 *    193.77
*         0.44 *
* CREEK1      * ONE         * 1           * ENC     *  100.82 *     44.61 *     47.76 *     46.44 *     48.07 *   0.002427 *     2.46 *     40.95 *    193.77
*         0.44 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* A_TRIBUTARY * ONE         * 12          * 100Y    *    9.15 *     71.00 *     71.89 *     71.89 *     72.13 *   0.021321 *     2.19 *      4.19 *      8.82
*         1.01 *
* A_TRIBUTARY * ONE         * 12          * ENC     *    9.15 *     71.00 *     71.89 *     71.89 *     72.13 *   0.021321 *     2.19 *      4.19 *      8.82
*         1.01 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* A_TRIBUTARY * ONE         * 11          * 100Y    *    9.15 *     65.00 *     65.13 *     65.25 *     65.62 *   0.281022 *     3.11 *      2.94 *     25.92
*         2.94 *
* A_TRIBUTARY * ONE         * 11          * ENC     *    9.15 *     65.00 *     65.13 *     65.25 *     65.62 *   0.280240 *     3.10 *      2.95 *     25.92
*         2.94 *
*            *             *             *         *         *           *           *           *           *           *           *
*             *
* A_TRIBUTARY * ONE         * 10.91       * 100Y    *   91.51 *     62.00 *     63.20 *     63.03 *     63.54 *   0.010003 *     2.58 *     35.40 *     33.20
*         0.80 *
* A_TRIBUTARY * ONE         * 10.91       * ENC     *   91.51 *     62.00 *     63.20 *     63.03 *     63.54 *   0.010018 *     2.59 *     35.38 *     33.20
*         0.80 *
*****************************************************************************************************************************************************************
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Profile Output Table - Standard Table 2

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*****************************************************************************************************************************************************************
* River       * Reach       * River Sta   * Profile * E.G. Elev * W.S. Elev * Vel Head * Frctn Loss * C & E Loss * Q Left * Q Channel * Q Right * Top Width *
*            *             *             *         *       (m) *       (m) *      (m) *        (m) *        (m) * (m3/s) *    (m3/s) *  (m3/s) *       (m) *
*****************************************************************************************************************************************************************
* CREEK1      * ONE         * 15          * 100Y    *     79.29 *     78.65 *     0.63 *       1.48 *       0.05 *        *     72.96 *        *     16.38 *
* CREEK1      * ONE         * 15          * ENC     *     79.29 *     78.65 *     0.63 *       1.48 *       0.05 *        *     72.96 *        *     16.38 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 14          * 100Y    *     76.10 *     74.56 *     1.53 *       3.10 *       0.09 *        *     78.28 *        *     26.38 *
* CREEK1      * ONE         * 14          * ENC     *     76.10 *     74.56 *     1.53 *       3.10 *       0.09 *        *     78.28 *        *     26.38 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 13          * 100Y    *     74.44 *     73.39 *     1.05 *       1.51 *       0.14 *        *     78.28 *        *     21.40 *
* CREEK1      * ONE         * 13          * ENC     *     74.44 *     73.39 *     1.05 *       1.51 *       0.14 *        *     78.28 *        *     21.40 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 11          * 100Y    *     66.25 *     65.68 *     0.57 *       8.05 *       0.14 *        *     78.28 *        *     48.19 *
* CREEK1      * ONE         * 11          * ENC     *     66.25 *     65.68 *     0.57 *       8.05 *       0.14 *        *     78.28 *        *     48.19 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 10.9        * 100Y    *     63.56 *     62.87 *     0.69 *       2.68 *       0.01 *        *     91.51 *        *     31.31 *
* CREEK1      * ONE         * 10.9        * ENC     *     63.56 *     62.87 *     0.69 *       2.68 *       0.01 *        *     91.51 *        *     31.31 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 10          * 100Y    *     62.42 *     61.37 *     1.05 *       1.11 *       0.04 *        *     91.51 *        *     25.16 *
* CREEK1      * ONE         * 10          * ENC     *     62.42 *     61.37 *     1.05 *       1.11 *       0.04 *        *     91.51 *        *     25.16 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 9           * 100Y    *     59.47 *     58.82 *     0.65 *       2.83 *       0.12 *        *     91.51 *        *     29.21 *
* CREEK1      * ONE         * 9           * ENC     *     59.47 *     58.82 *     0.65 *       2.83 *       0.12 *        *     91.51 *        *     29.21 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 8           * 100Y    *     56.77 *     56.09 *     0.68 *       2.70 *       0.00 *        *     93.74 *        *     41.13 *
* CREEK1      * ONE         * 8           * ENC     *     56.77 *     56.09 *     0.68 *       2.70 *       0.00 *        *     93.74 *        *     41.13 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 7           * 100Y    *     54.83 *     54.41 *     0.43 *       1.38 *       0.06 *        *     93.74 *        *     38.48 *
* CREEK1      * ONE         * 7           * ENC     *     54.83 *     54.41 *     0.42 *           *           *        *     93.74 *        *     38.53 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 6           * 100Y    *     52.88 *     52.44 *     0.45 *       1.95 *       0.00 *   0.00 *     67.66 *    26.08 *     76.13 *
* CREEK1      * ONE         * 6           * ENC     *     53.15 *     52.65 *     0.49 *       1.68 *       0.01 *        *     93.74 *        *     46.92 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 5           * 100Y    *     49.69 *     49.59 *     0.10 *       0.17 *       0.00 *   2.63 *     89.80 *     1.31 *     66.56 *
* CREEK1      * ONE         * 5           * ENC     *     49.80 *     49.71 *     0.09 *       0.16 *       0.00 *        *     93.74 *        *     53.73 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 4           * 100Y    *     49.52 *     49.42 *     0.09 *       0.52 *       0.04 *  34.41 *     57.99 *     1.34 *     74.26 *
* CREEK1      * ONE         * 4           * ENC     *     49.63 *     49.49 *     0.14 *       0.64 *       0.04 *  20.70 *     73.04 *        *     51.86 *
*            *             *             *         *         *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 3           * 100Y    *     48.96 *     48.45 *     0.50 *           *           *        *     93.74 *        *    111.50 *
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* CREEK1      * ONE         * 3           * ENC     *     48.96 *     48.46 *     0.50 *       0.67 *       0.06 *        *
93.74 *         *     29.47 *
*            *             *             *         *           *           *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 2           * 100Y    *     48.23 *     47.85 *     0.38 *       0.06 *       0.01 *        *    100.82 *         *     86.10 *
* CREEK1      * ONE         * 2           * ENC     *     48.23 *     47.85 *     0.38 *       0.06 *       0.01 *        *    100.82 *         *     46.03 *
*            *             *             *         *           *           *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 1.5         *         *    Bridge *           *           *           *           *           *           *           *           *
*            *             *             *         *           *           *           *           *           *           *           *           *           *
* CREEK1      * ONE         * 1           * 100Y    *     48.07 *     47.76 *     0.31 *           *           *        *    100.82 *         *    193.77 *
* CREEK1      * ONE         * 1           * ENC     *     48.07 *     47.76 *     0.31 *           *           *        *    100.82 *         *    193.77 *
*            *             *             *         *           *           *           *           *           *           *           *           *           *
* A_TRIBUTARY * ONE         * 12          * 100Y    *     72.13 *     71.89 *     0.24 *       2.97 *       0.04 *        *      9.15 *         *      8.82 *
* A_TRIBUTARY * ONE         * 12          * ENC     *     72.13 *     71.89 *     0.24 *       2.97 *       0.04 *        *      9.15 *         *      8.82 *
*            *             *             *         *           *           *           *           *           *           *           *           *           *
* A_TRIBUTARY * ONE         * 11          * 100Y    *     65.62 *     65.13 *     0.49 *       6.49 *       0.02 *        *      9.15 *         *     25.92 *
* A_TRIBUTARY * ONE         * 11          * ENC     *     65.62 *     65.13 *     0.49 *       6.49 *       0.02 *        *      9.15 *         *     25.92 *
*            *             *             *         *           *           *           *           *           *           *           *           *           *
* A_TRIBUTARY * ONE         * 10.91       * 100Y    *     63.54 *     63.20 *     0.34 *           *           *        *     91.51 *         *     33.20 *
* A_TRIBUTARY * ONE         * 10.91       * ENC     *     63.54 *     63.20 *     0.34 *           *           *        *     91.51 *         *     33.20 *
*****************************************************************************************************************************************************************

Profile Output Table - Encroachment 1
*****************************************************************************************************************************************************************
****************************
* River       * Reach       * River Sta    * Profile * W.S. Elev * Prof Delta WS * E.G. Elev * Top Wdth Act * Q Left * Q Channel * Q Right * Enc Sta L * Ch
Sta L * Ch Sta R * Enc Sta R *
*            *             *              *         *       (m) *           (m) *       (m) *          (m) * (m3/s) *    (m3/s) *  (m3/s) *       (m) *
(m) *      (m) *       (m) *
*****************************************************************************************************************************************************************
****************************
* CREEK1      * ONE         * 15          * 100Y    *     78.65 *               *     79.29 *        16.38 *        *     72.96 *         *           *
22.01 *    43.37 *           *
* CREEK1      * ONE         * 15          * ENC     *     78.65 *          0.00 *     79.29 *        16.38 *        *     72.96 *         *     22.01 *
22.01 *    43.37 *     43.37 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 14          * 100Y    *     74.56 *               *     76.10 *        26.38 *        *     78.28 *         *           *
50.22 *    85.87 *           *
* CREEK1      * ONE         * 14          * ENC     *     74.56 *          0.00 *     76.10 *        26.38 *        *     78.28 *         *     50.22 *
50.22 *    85.87 *     85.87 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 13          * 100Y    *     73.39 *               *     74.44 *        21.40 *        *     78.28 *         *           *
71.32 *   100.94 *           *
* CREEK1      * ONE         * 13          * ENC     *     73.39 *          0.00 *     74.44 *        21.40 *        *     78.28 *         *     71.32 *
71.32 *   100.94 *    100.94 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 11          * 100Y    *     65.68 *               *     66.25 *        48.19 *        *     78.28 *         *           *
109.93 *   203.61 *           *
* CREEK1      * ONE         * 11          * ENC     *     65.68 *          0.00 *     66.25 *        48.19 *        *     78.28 *         *           *
109.93 *   203.61 *           *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 10.9        * 100Y    *     62.87 *               *     63.56 *        31.31 *        *     91.51 *         *           *
102.74 *   150.08 *           *
* CREEK1      * ONE         * 10.9        * ENC     *     62.87 *          0.00 *     63.56 *        31.31 *        *     91.51 *         *    102.74 *
102.74 *   150.08 *    150.08 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 10          * 100Y    *     61.37 *               *     62.42 *        25.16 *        *     91.51 *         *           *
140.71 *   207.65 *           *
* CREEK1      * ONE         * 10          * ENC     *     61.37 *          0.00 *     62.42 *        25.16 *        *     91.51 *         *    140.71 *
140.71 *   207.65 *    207.65 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 9           * 100Y    *     58.82 *               *     59.47 *        29.21 *        *     91.51 *         *           *
118.88 *   164.95 *           *
* CREEK1      * ONE         * 9           * ENC     *     58.82 *          0.00 *     59.47 *        29.21 *        *     91.51 *         *    118.88 *
118.88 *   164.95 *    164.95 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 8           * 100Y    *     56.09 *               *     56.77 *        41.13 *        *     93.74 *         *           *
160.47 *   230.30 *           *
* CREEK1      * ONE         * 8           * ENC     *     56.09 *          0.00 *     56.77 *        41.13 *        *     93.74 *         *    160.47 *
160.47 *   230.30 *    230.30 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 7           * 100Y    *     54.41 *               *     54.83 *        38.48 *        *     93.74 *         *           *
196.44 *   252.74 *           *
* CREEK1      * ONE         * 7           * ENC     *     54.41 *          0.00 *     54.83 *        38.53 *        *     93.74 *         *    196.44 *
196.44 *   252.74 *    252.74 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 6           * 100Y    *     52.44 *               *     52.88 *        76.13 *   0.00 *     67.66 *   26.08 *           *
158.00 *   216.38 *           *
* CREEK1      * ONE         * 6           * ENC     *     52.65 *          0.22 *     53.15 *        46.92 *        *     93.74 *         *    158.00 *
158.00 *   216.38 *    216.38 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 5           * 100Y    *     49.59 *               *     49.69 *        66.56 *   2.63 *     89.80 *    1.31 *           *
119.90 *   173.63 *           *
* CREEK1      * ONE         * 5           * ENC     *     49.71 *          0.12 *     49.80 *        53.73 *        *     93.74 *         *    119.90 *
119.90 *   173.63 *    173.63 *
*            *             *             *         *           *               *           *           *           *           *           *           *
*          *           *
* CREEK1      * ONE         * 4           * 100Y    *     49.42 *               *     49.52 *        74.26 *  34.41 *     57.99 *    1.34 *           *
187.98 *   220.87 *           *
* CREEK1      * ONE         * 4           * ENC     *     49.49 *          0.07 *     49.63 *        51.86 *  20.70 *     73.04 *         *    169.01 *
187.98 *   220.87 *    220.87 *
```

```
*            *            *              *        *          *              *          *             *        *          *
*          *          *          *          *
* CREEK1      * ONE         * 3            * 100Y    *     48.45 *              *     48.96 *        29.47 *        *     93.74 *         *          *
157.63 *   187.10 *           *
* CREEK1      * ONE         * 3            * ENC     *     48.46 *         0.00 *     48.96 *        29.47 *        *     93.74 *         *    157.63 *
157.63 *   187.10 *    187.10 *
*            *            *              *        *          *              *          *             *        *          *        *          *
*          *          *
* CREEK1      * ONE         * 2            * 100Y    *     47.85 *              *     48.23 *        13.00 *        *    100.82 *         *          *
191.32 *   230.14 *           *
* CREEK1      * ONE         * 2            * ENC     *     47.85 *         0.00 *     48.23 *        13.00 *        *    100.82 *         *    191.32 *
191.32 *   230.14 *    254.44 *
*            *            *              *        *          *              *          *             *        *          *        *          *
*          *          *
* CREEK1      * ONE         * 1.5     BR U * 100Y    *     47.76 *              *     48.16 *        13.00 *        *    100.82 *         *          *
191.32 *   230.14 *           *
* CREEK1      * ONE         * 1.5     BR U * ENC     *     47.76 *         0.00 *     48.16 *        13.00 *        *    100.82 *         *    191.32 *
191.32 *   230.14 *    254.44 *
*            *            *              *        *          *              *          *             *        *          *        *          *
*          *          *
* CREEK1      * ONE         * 1.5     BR D * 100Y    *     47.80 *              *     48.10 *        13.00 *        *    100.82 *         *          *
39.18 *   193.00 *           *
* CREEK1      * ONE         * 1.5     BR D * ENC     *     47.80 *         0.00 *     48.10 *        13.00 *        *    100.82 *         *      0.00 *
39.18 *   193.00 *    258.33 *
*            *            *              *        *          *              *          *             *        *          *        *          *
*          *          *
* CREEK1      * ONE         * 1            * 100Y    *     47.76 *              *     48.07 *        13.00 *        *    100.82 *         *          *
39.18 *   193.00 *           *
* CREEK1      * ONE         * 1            * ENC     *     47.76 *         0.00 *     48.07 *        13.00 *        *    100.82 *         *      0.00 *
39.18 *   193.00 *    258.33 *
*            *            *              *        *          *              *          *             *        *          *        *          *
*          *          *
* A_TRIBUTARY * ONE         * 12           * 100Y    *     71.89 *              *     72.13 *         8.82 *        *      9.15 *         *          *
79.95 *   107.35 *           *
* A_TRIBUTARY * ONE         * 12           * ENC     *     71.89 *         0.00 *     72.13 *         8.82 *        *      9.15 *         *     79.95 *
79.95 *   107.35 *    107.35 *
*            *            *              *        *          *              *          *             *        *          *        *          *
*          *          *
* A_TRIBUTARY * ONE         * 11           * 100Y    *     65.13 *              *     65.62 *        25.92 *        *      9.15 *         *          *
109.93 *   203.61 *           *
* A_TRIBUTARY * ONE         * 11           * ENC     *     65.13 *         0.00 *     65.62 *        25.92 *        *      9.15 *         *    109.93 *
109.93 *   203.61 *    203.61 *
*            *            *              *        *          *              *          *             *        *          *        *          *
*          *          *
* A_TRIBUTARY * ONE         * 10.91        * 100Y    *     63.20 *              *     63.54 *        33.20 *        *     91.51 *         *          *
102.74 *   150.08 *           *
* A_TRIBUTARY * ONE         * 10.91        * ENC     *     63.20 *         0.00 *     63.54 *        33.20 *        *     91.51 *         *    102.74 *
102.74 *   150.08 *    150.08 *
*****************************************************************************************************************************************************************
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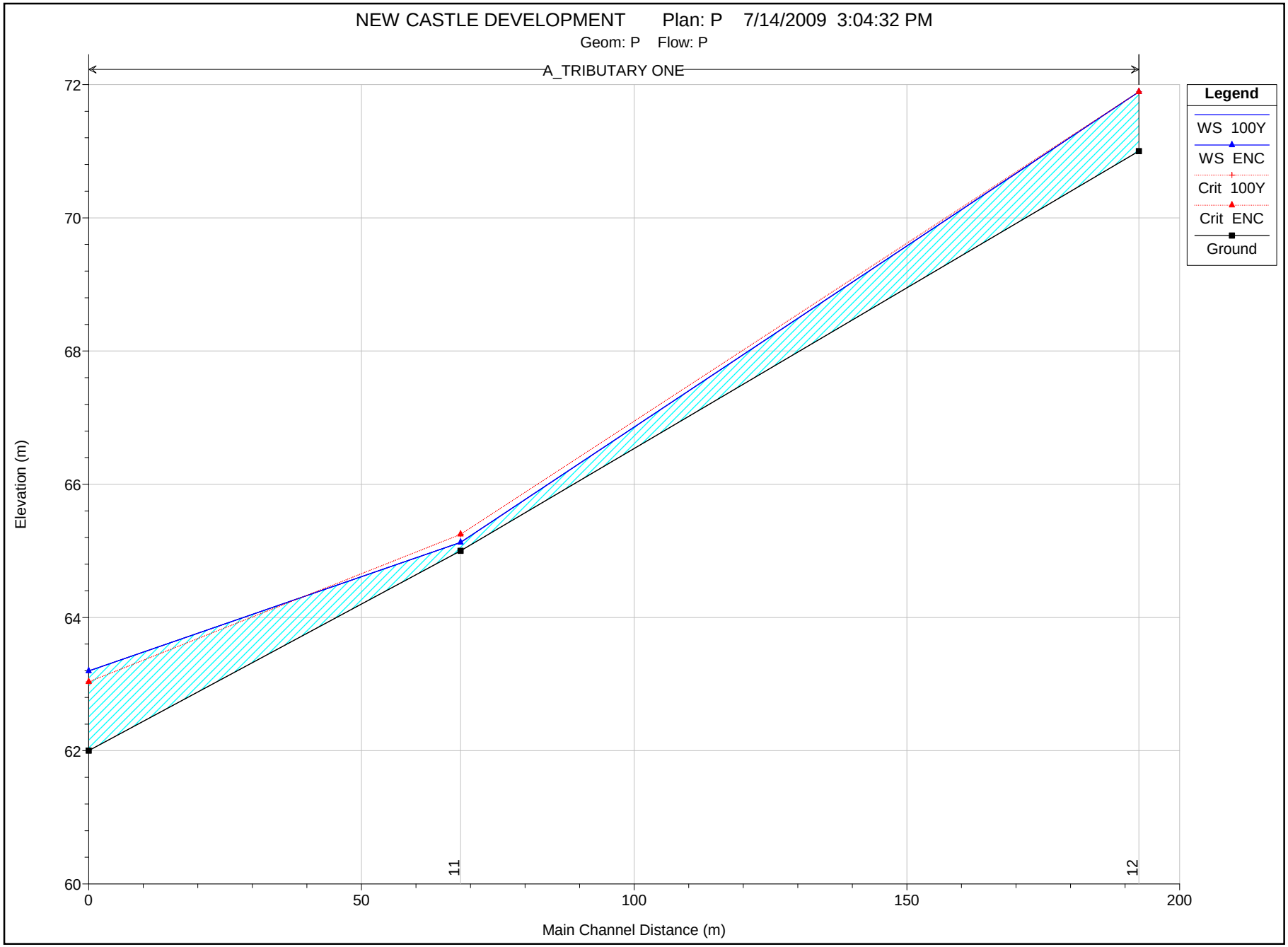
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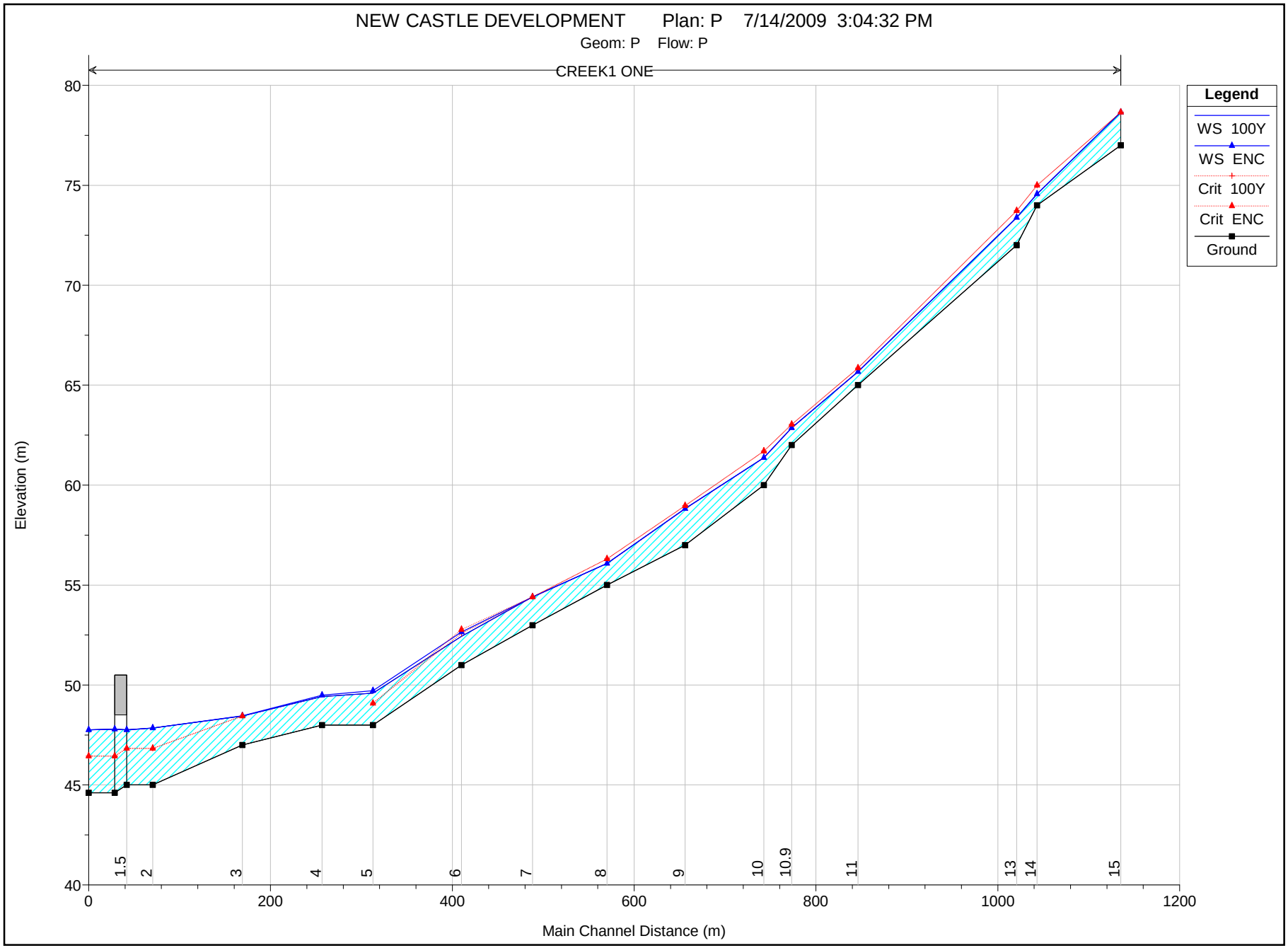
Geom: P Flow: P
A_TRIBUTARY ONE
Legend
WS 100Y
WS ENC
Crit 100Y
Crit ENC
Ground
Elevation (m)
72
70
68
66
64
62
60
0
50
100
150
200
11
12
Main Channel Distance (m)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Geom: P Flow: P
CREEK1 ONE
Legend
WS 100Y
WS ENC
Crit 100Y
Crit ENC
Ground
Elevation (m)
Main Channel Distance (m)
80
75
70
65
60
55
50
45
40
0
200
400
600
800
1000
1200
1.5
2
3
4
5
6
7
8
9
10
10.9
11
13
14
15

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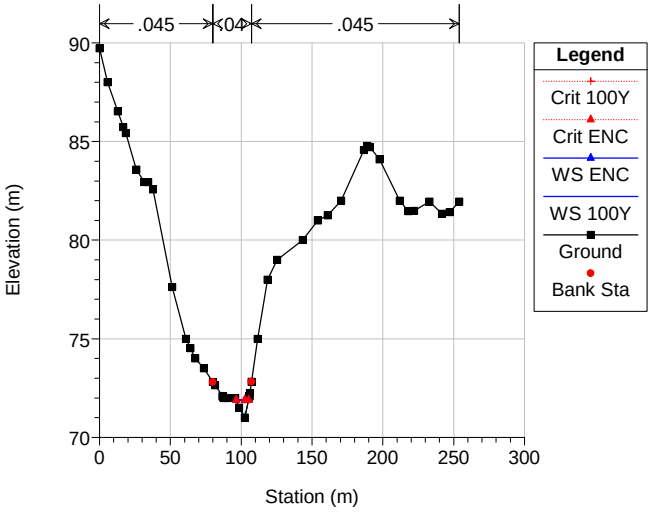
Geom: P Flow: P
River = A_TRIBUTARY Reach = ONE RS = 12



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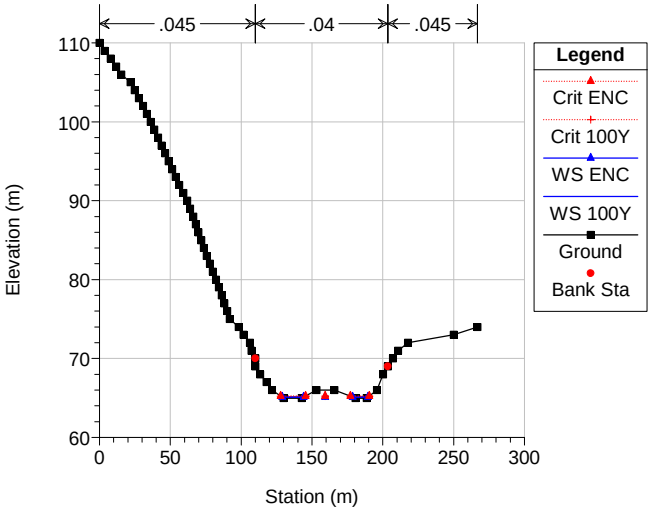
Geom: P Flow: P
River = A_TRIBUTARY Reach = ONE RS = 11



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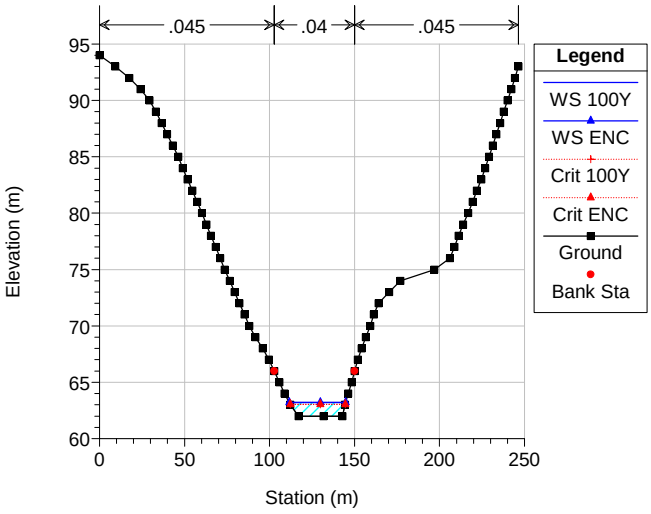
River = A_TRIBUTARY Reach = ONE RS = 10.91



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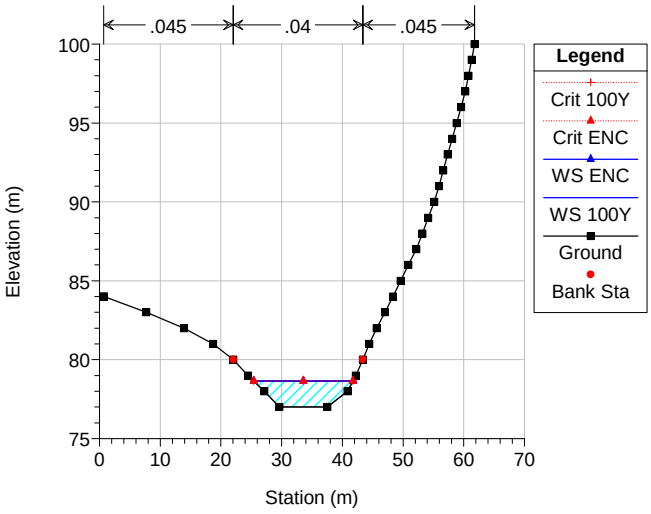
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 15



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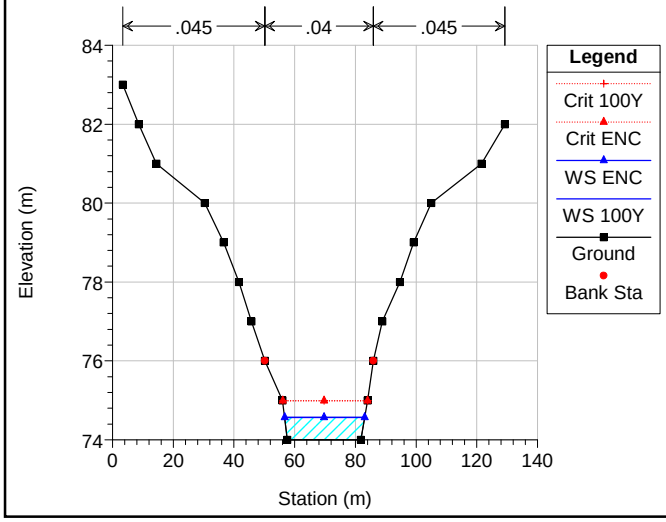
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 14



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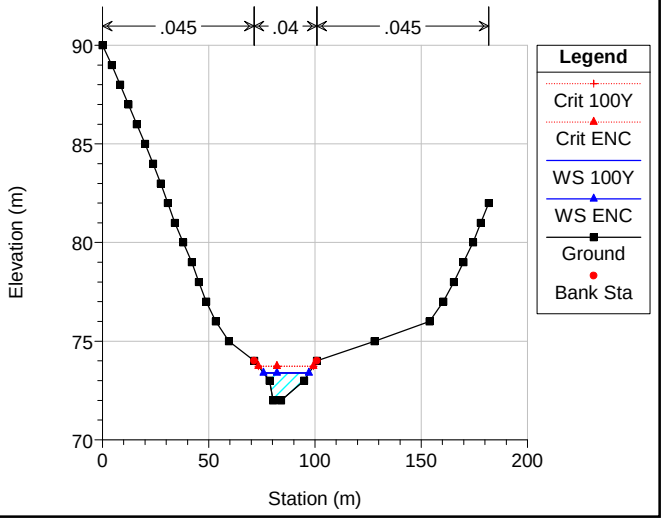
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 13



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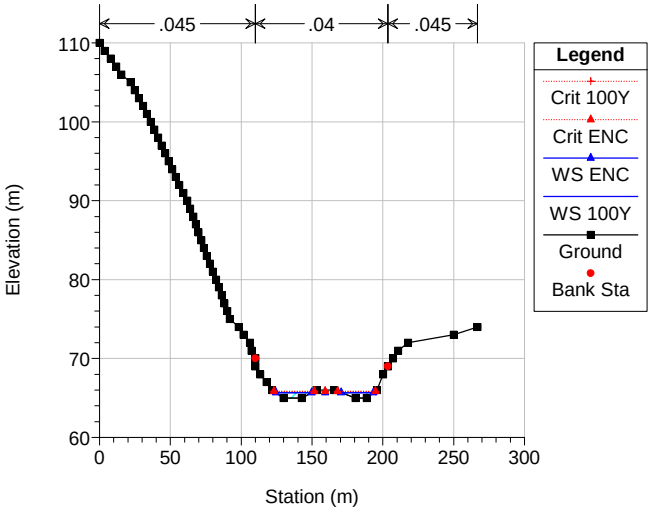

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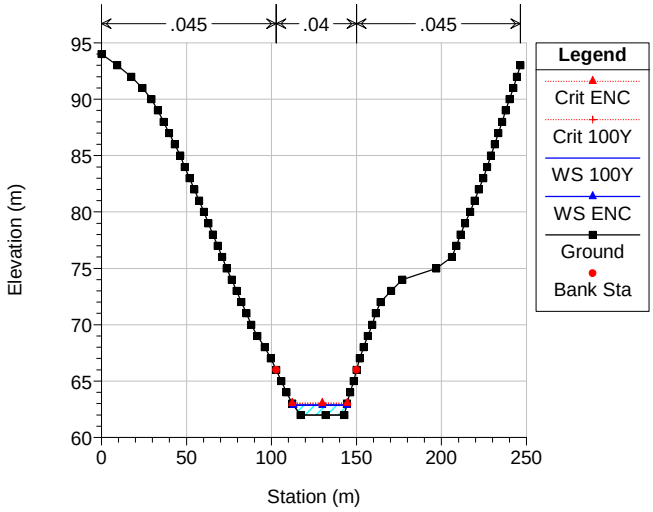
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 10.9



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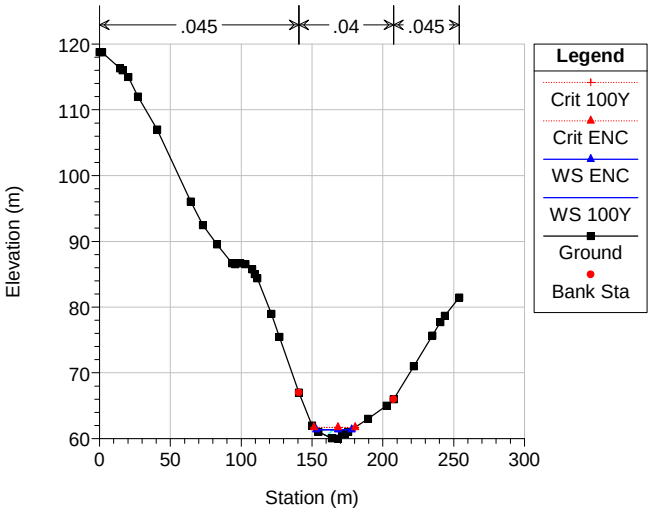
River = CREEK1 Reach = ONE RS = 10



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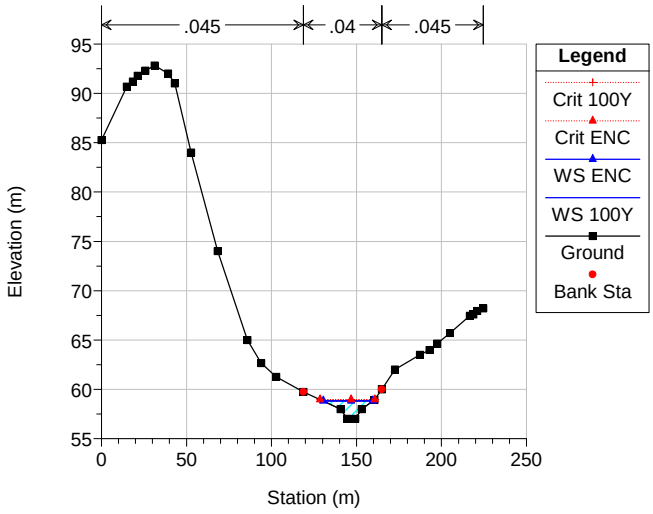
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 9



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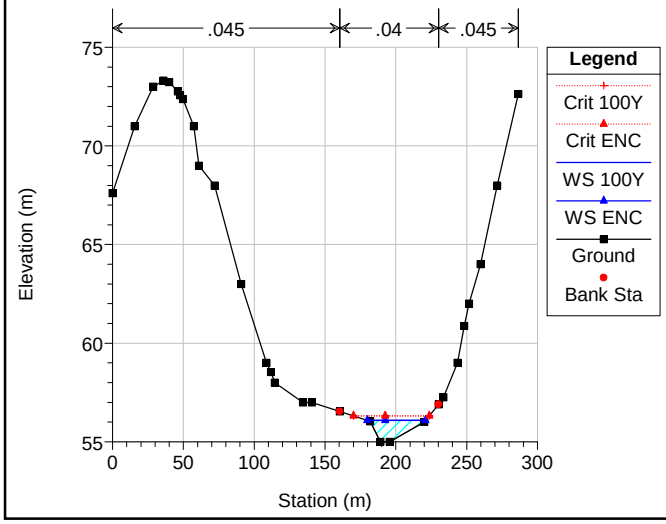
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 8



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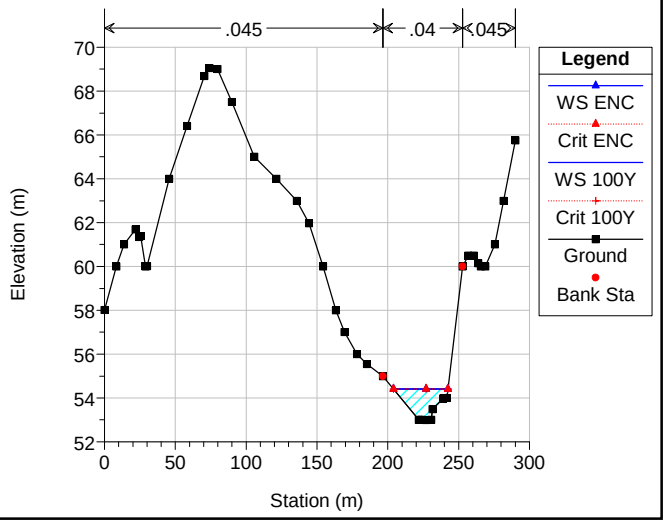
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 7



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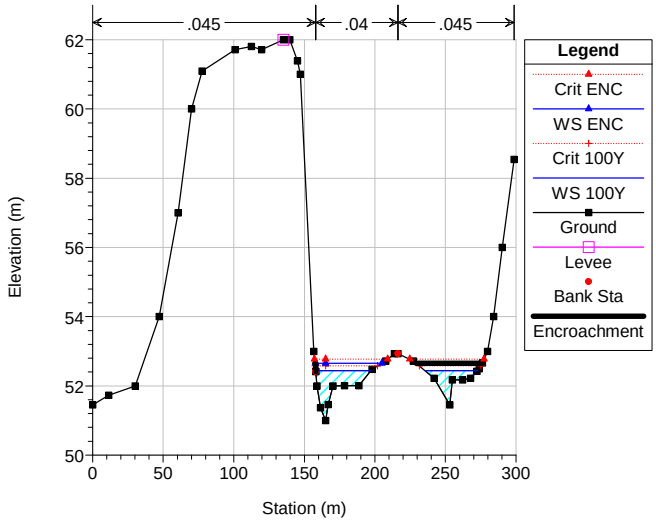
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 6



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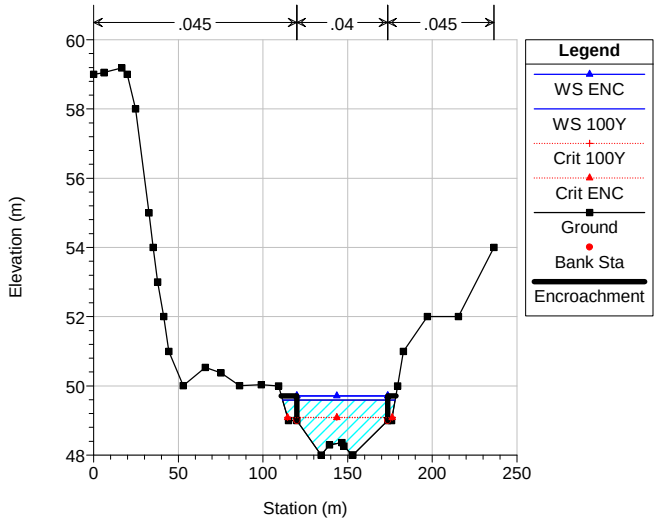
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 5



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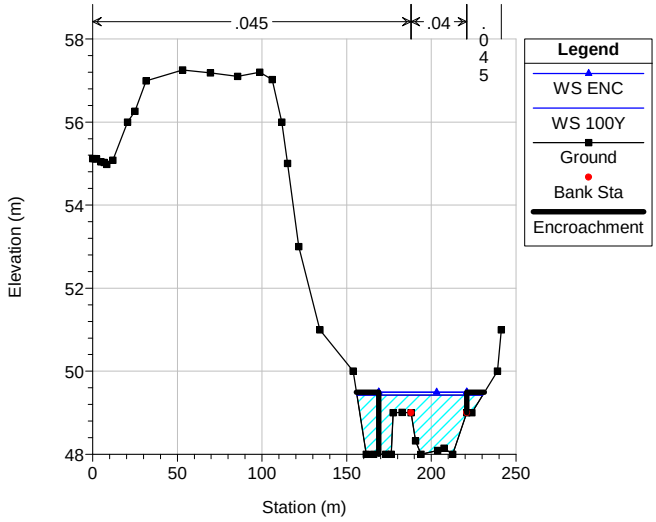
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 4



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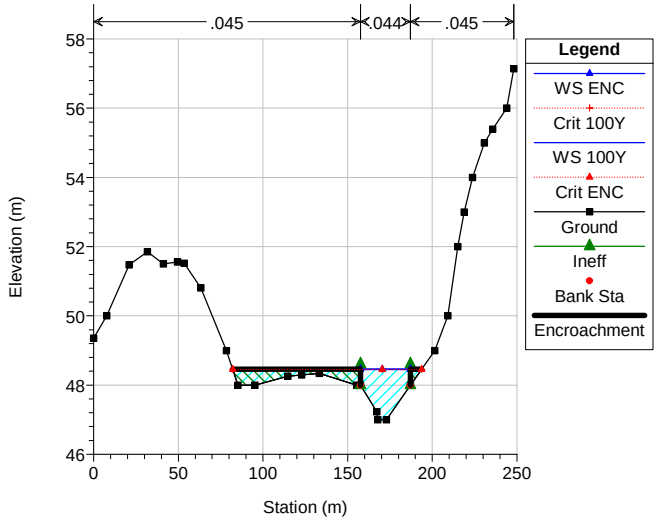
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 3



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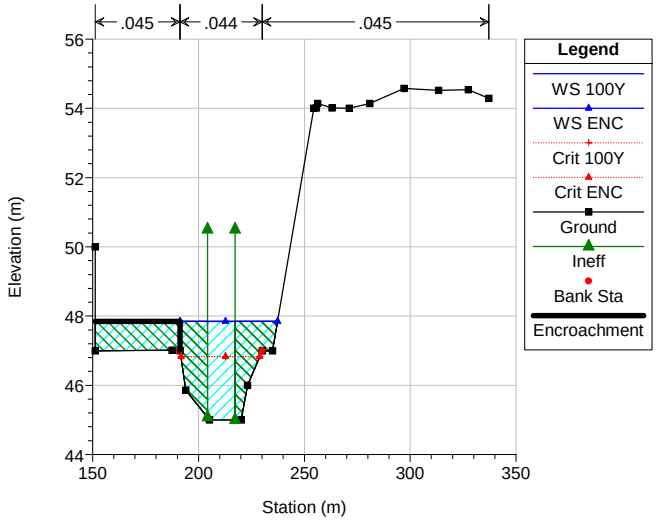
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 2



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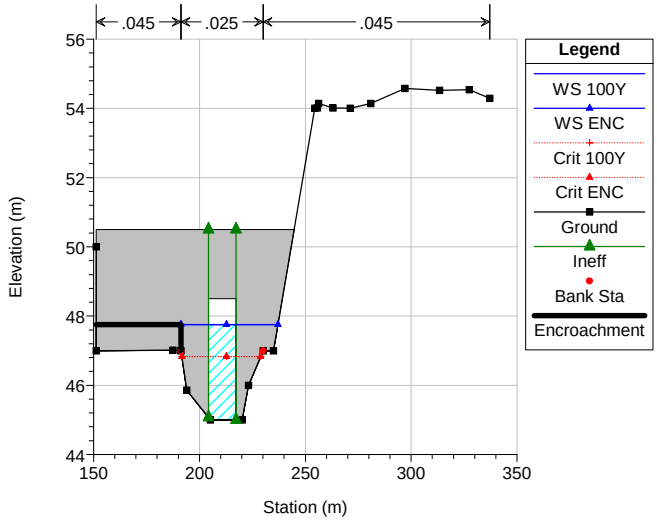
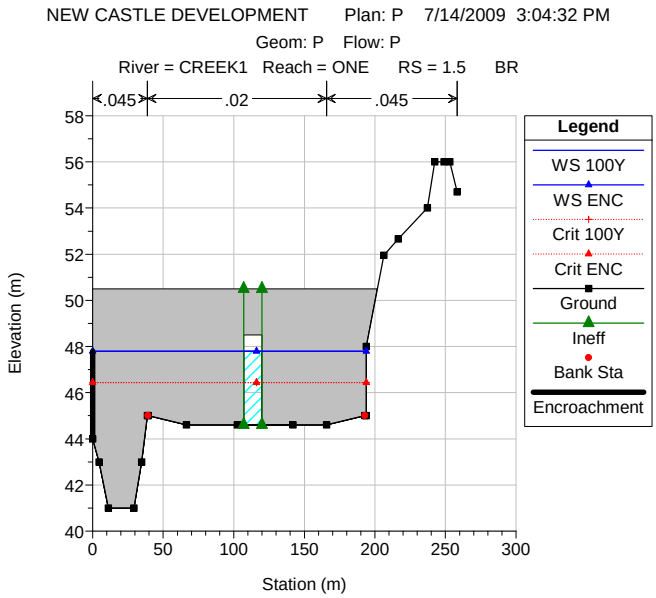
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 1.5 BR

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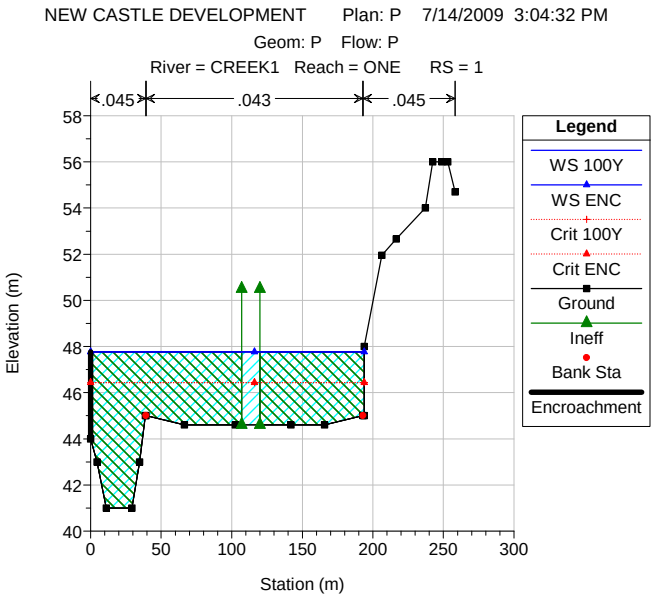
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 1.5 BR
.045
.02
.045
Elevation (m)
Station (m)
Legend
WS 100Y
WS ENC
Crit 100Y
Crit ENC
Ground
Ineff
Bank Sta
Encroachment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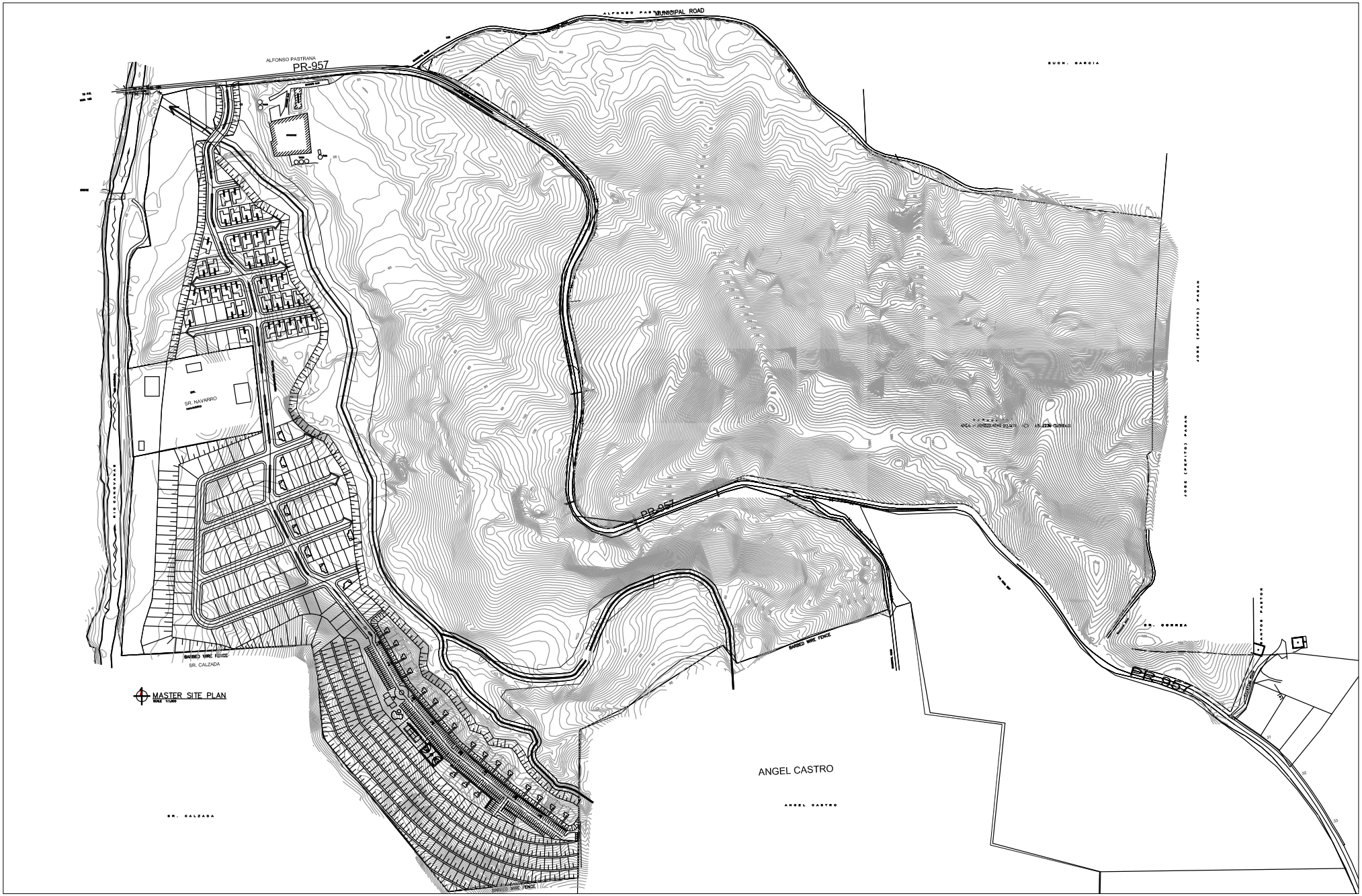
Geom: P Flow: P
River = CREEK1 Reach = ONE RS = 1
.045
.043
.045
Elevation (m)
Station (m)
Legend
WS 100Y
WS ENC
Crit 100Y
Crit ENC
Ground
Ineff
Bank Sta
Encroachment

APPENDIX E

FIELD WORK


ALFONSO PASTRANA
PR-957
MUNICIPAL ROAD
SR. NAVARRO
SR. CALZADA
BARBED WIRE FENCE
MASTER SITE PLAN
SCALE 1:1,000
PR-957
ANGEL CASTRO
SR. CORREA
SR. CALZADA

APPENDIX F

FEMA'S MT-2 FORM

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☒ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
720000	Puerto Rico	PR	720000	0760H	04/19/05

2. a. Flooding Source: Río Canóvanas tributary

   b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH) ☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Hydrologic Hydraulic Study for Campo Rico New Castle, Canóvanas, Puerto Rico

4. FEMA zone designations affected: A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

   a. The basis for this revision request is (check all that apply)

   ☐ Physical Change ☐ Improved Methodology/Data ☐ Regulatory Floodway Revision ☐ Base Map Changes
   ☐ Coastal Analysis ☒ Hydraulic Analysis ☒ Hydrologic Analysis ☐ Corrections
   ☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
   ☐ New Topographic Data ☐ Other (Attach Description)

   Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

   b. The area of revision encompasses the following structures (check all that apply)

   Structures: ☐ Channelization ☐ Levee/Floodwall ☒ Bridge/Culvert
   ☐ Dam ☐ Fill ☐ Other (Attach Description)

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $4,400

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Casiano Ancalle	Company: CA Engineering, PSC	
Mailing Address: PO BOX 190332 San Juan, PR 00919-0332	Daytime Telephone No.: 787-748-6106	Fax No.: 787-760-0409
	E-Mail Address: ancallec@caribe.net	
Signature of Requester (required):	Date: 07/14/2009	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title:	Community Name:	
Mailing Address:	Daytime Telephone No.:	Fax No.:
	E-Mail Address:	
Community Official's Signature (required):	Date:	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting data. All documents submitted in support of this request are correct to the best of my knowledge. All analyses have been performed correctly and in accordance with sound engineering practices. All project works are designed in accordance with sound engineering practices to provide protection from the 1% annual chance flood. If "as-built" conditions data/plan provided, then the structure(s) has been built according to the plans being certified, is in place, and is fully functioning. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Casiano Ancalle	License No.: 11294	Expiration Date: 04/22/2010
Company Name: CA Engineering, PSC	Telephone No.: 787-748-6106	Fax No.: 787-760-0409
Signature:		Date: 07/14/2009

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if …
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Seal (Optional)

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

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Flooding Source: Río Canóvanas Tributary
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section B) ☒ No existing analysis ☐ Improved data
☐ Alternative methodology ☒ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	Effective/FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☒ Precipitation/Runoff Model HEC-1
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit		1		156.70
Upstream Limit		15		258.05

2. Hydraulic Method/Model Used

HEC-RAS

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs may help verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. **These tools do not replace engineering judgment.** CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. Review of your submittal and resolution of valid modeling discrepancies may result in reduced review time.

4.

Models Submitted	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	_____
Existing or Pre-Project Conditions Model	File Name: Ex.dat	Plan Name: E	File Name: PR.dat	Plan Name: P	MSL
Revised or Post-Project Conditions Model	File Name:	Plan Name:	File Name:	Plan Name:	MSL
Other - (attach description)	File Name:	Plan Name:	File Name:	Plan Name:	_____

* For details, refer to the corresponding section of the instructions.

☒ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

☐ Digital Mapping (GIS/CADD) Data Submitted

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No

   a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:
   - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
   - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

   b. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☐ No
   If Yes, please attach **proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

2. Does the request involve the placement or proposed placement of fill? ☒ Yes ☐ No

   If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☐ No

   If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

   If Yes, please submit documentation to the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

   For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Río Canovanas Tributary
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization.....complete Section B
Bridge/Culvert.....complete Section C
Dam/Basin.....complete Section D
Levee/Floodwall.....complete Section E
Sediment Transport.....complete Section F (if required)

Description Of Structure

1. Name of Structure: Proposed Bridge

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam/Basin

Location of Structure: At proposed access road, about 120 m southeast of bridge over Rio Canóvanas

Downstream Limit/Cross Section: 1

Upstream Limit/Cross Section: 2

2. Name of Structure:

Type (check one): ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam/Basin

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

3. Name of Structure:

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam/Basin

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source:

Name of Structure:

1. Accessory Structures

The channelization includes (check one):

☐ Levees [Attach Section E (Levee/Floodwall)]
☐ Superelevated sections
☐ Debris basin/detention basin [Attach Section D (Dam/Basin)]
☐ Other (Describe):
☐ Drop structures
☐ Transitions in cross sectional geometry
☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry (cfs) and/or the -year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: Río Canóvanas Tributary

Name of Structure: Proposed Bridge

1. This revision reflects (check one):

☒ Bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☐ Shape (culverts only)
☐ Material
☐ Beveling or Rounding
☐ Wing Wall Angle
☐ Skew Angle
☒ Distances Between Cross Sections
☐ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

D. DAM/BASIN

Flooding Source:

Name of Structure:

1. This request is for (check one): ☐ Existing dam ☐ New dam ☐ Modification of existing dam

2. The dam was designed by (check one): ☐ Federal agency ☐ State agency ☐ Local government agency ☐ Private organization

   Name of the agency or organization:

3. The Dam was permitted as (check one):

   a. ☐ Federal Dam ☐ State Dam

      Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

      Permit or ID number Permitting Agency or Organization

   b. ☐ Local Government Dam ☐ Private Dam

      Provided related drawings, specification and supporting design information.

4. Does the project involve revised hydrology? ☐ Yes ☐ No

   If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

   Was the dam/basin designed using critical duration storm?

   ☐ Yes, provide supporting documentation with your completed Form 2.

   ☐ No, provide a written explanation and justification for not using the critical duration storm.

5. Does the submittal include debris/sediment yield analysis? ☐ Yes ☐ No

   If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why debris/sediment analysis was not considered.

6. Does the Base Flood Elevation behind the dam or downstream of the dam change?

   ☐ Yes ☐ No If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

   Stillwater Elevation Behind the Dam

FREQUENCY (% annual chance)	FIS	REVISED
10-year (10%)		
50-year (2%)		
100-year (1%)		
500-year (0.2%)		
Normal Pool Elevation		

7. Please attach a copy of the formal Operation and Maintenance Plan

E. LEVEE/FLOODWALL

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

☐ upgrading of an existing levee/floodwall system
☐ a newly constructed levee/floodwall system
☐ reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

☐ earthen embankment, dike, berm, etc.	Station	to
☐ structural floodwall	Station	to
☐ Other (describe):	Station	to

c. Structural Type (check one):

☐ monolithic cast-in place reinforced concrete
☐ reinforced concrete masonry block
☐ sheet piling
☐ Other (describe):

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

☐ Yes ☐ No

If Yes, by which agency?

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

1. Plan of the levee embankment and floodwall structures. Sheet Numbers:
2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system. Sheet Numbers:
3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure. Sheet Numbers:
4. A layout detail for the embankment protection measures. Sheet Numbers:
5. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations. Sheet Numbers:

2. Freeboard

a. The minimum freeboard provided above the BFE is:

Riverine

3.0 feet or more at the downstream end and throughout	☐ Yes	☐ No
3.5 feet or more at the upstream end	☐ Yes	☐ No
4.0 feet within 100 feet upstream of all structures and/or constrictions	☐ Yes	☐ No

Coastal

1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater).	☐ Yes	☐ No
2.0 feet above the 1%-annual-chance stillwater surge elevation	☐ Yes	☐ No

2. Freeboard (continued)

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE? ☐ Yes ☐ No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one): ☐ exists ☐ does not exist

If opening exists, list all closures:

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

a. The maximum levee slope landside is:

b. The maximum levee slope floodside is:

c. The range of velocities along the levee during the base flood is: (min.) to (max.)

d. Embankment material is protected by (describe what kind):

e. Riprap Design Parameters (check one): ☐ Velocity ☐ Tractive stress
Attach references

Reach		Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
						D_{100}	D_{50}	Thickness	
Sta	to								
Sta	to								
Sta	to								
Sta	to								
Sta	to								
Sta	to								

(Extend table on an added sheet as needed and reference each entry)

4. Embankment Protection (continued)

f. Is a bedding/filter analysis and design attached? ☐ Yes ☐ No

g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

Attach engineering analysis to support construction plans.

5. Embankment And Foundation Stability

a. Identify locations and describe the basis for selection of critical location for analysis:

☐ Overall height: Sta. ; height ft.

☐ Limiting foundation soil strength:

Sta. , depth to

strength ϕ = degrees, c = psf

slope: SS = (h) to (v)

(Repeat as needed on an added sheet for additional locations)

b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

c. Summary of stability analysis results:

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction		1.3
II	Sudden drawdown		1.0
III	Critical flood stage		1.4
IV	Steady seepage at flood stage		1.4
VI	Earthquake (Case I)		1.0

(Reference: USACE EM-1110-2-1913 Table 6-1)

d. Was a seepage analysis for the embankment performed? ☐ Yes ☐ No

If Yes, describe methodology used:

e. Was a seepage analysis for the foundation performed? ☐ Yes ☐ No

f. Were uplift pressures at the embankment landside toe checked? ☐ Yes ☐ No

g. Were seepage exit gradients checked for piping potential? ☐ Yes ☐ No

h. The duration of the base flood hydrograph against the embankment is hours.

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

6. Floodwall And Foundation Stability

a. Describe analysis submittal based on Code (check one):

☐ UBC (1988) or ☐ Other (specify):

b. Stability analysis submitted provides for:

☐ Overturning ☐ Sliding If not, explain:

c. Loading included in the analyses were:

☐ Lateral earth @ P_A = psf; P_p = psf

☐ Surcharge-Slope @ , ☐ surface psf

☐ Wind @ P_w = psf

☐ Seepage (Uplift); ☐ Earthquake @ P_{eq} = %g

☐ 1%-annual-chance significant wave height: ft.

☐ 1%-annual-chance significant wave period: sec.

d. Summary of Stability Analysis Results: Factors of Safety.

Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
Dead & Wind	1.5	1.5				
Dead & Soil	1.5	1.5				
Dead, Soil, Flood, & Impact	1.5	1.5				
Dead, Soil, & Seismic	1.3	1.3				

(Ref: FEMA 114 Sept 1986; USACE EM 1110-2-2502)

(Note: Extend table on an added sheet as needed and reference)

e. Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum		
Maximum allowable		

f. Foundation scour protection ☐ is, ☐ is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

7. Settlement

a. Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin? ☐ Yes ☐ No

b. The computed range of settlement is ft. to ft.

c. Settlement of the levee crest is determined to be primarily from :

☐ Foundation consolidation
☐ Embankment compression
☐ Other (Describe):

d. Differential settlement of floodwalls ☐ has ☐ has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: acres
Draining to ponding area: acres

b. Relationships Established

Ponding elevation vs. storage	☐ Yes	☐ No
Ponding elevation vs. gravity flow	☐ Yes	☐ No
Differential head vs. gravity flow	☐ Yes	☐ No

c. The river flow duration curve is enclosed: ☐ Yes ☐ No

d. Specify the discharge capacity of the head pressure conduit: cfs

e. Which flooding conditions were analyzed?

• Gravity flow (Interior Watershed)	☐ Yes	☐ No
• Common storm (River Watershed)	☐ Yes	☐ No
• Historical ponding probability	☐ Yes	☐ No
• Coastal wave overtopping	☐ Yes	☐ No

If No for any of the above, attach explanation.

f. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection. ☐ Yes ☐ No

If No, attach explanation.

g. The rate of seepage through the levee system for the base flood is cfs

h. The length of levee system used to drive this seepage rate in item g: ft.

8. Interior Drainage (continued)

i. Will pumping plants be used for interior drainage? ☐ Yes ☐ No

If Yes, include the number of pumping plants:
For each pumping plant, list:

	Plant #1	Plant #2
The number of pumps		
The ponding storage capacity		
The maximum pumping rate		
The maximum pumping head		
The pumping starting elevation		
The pumping stopping elevation		
Is the discharge facility protected?		
Is there a flood warning plan?		
How much time is available between warning and flooding?		

Will the operation be automatic? ☐ Yes ☐ No

If the pumps are electric, are there backup power sources? ☐ Yes ☐ No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction ☐ is ☐ is not a problem
Hydrocompaction ☐ is ☐ is not a problem
Heave differential movement due to soils of high shrink/swell ☐ is ☐ is not a problem

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?
☐ Yes ☐ No

Attach supporting documentation

d. Sediment Transport Considerations:

Was sediment transport considered? ☐ Yes ☐ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

E. LEVEE/FLOODWALL (CONTINUED)

10. Operational Plan And Criteria

    a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☐ Yes ☐ No

    b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?
    ☐ Yes ☐ No

    c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?
    ☐ Yes ☐ No

    If the answer is No to any of the above, please attach supporting documentation.

11. Maintenance Plan

    a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☐ Yes ☐ No
    If No, please attach supporting documentation.

12. Operations and Maintenance Plan

    Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

F. SEDIMENT TRANSPORT

Flooding Source:

Name of Structure:

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume acre-feet

Debris load associated with the base flood discharge: Volume acre-feet

Sediment transport rate (percent concentration by volume)

Method used to estimate sediment transport:

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition:

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport:
Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.

FEDERAL EMERGENCY MANAGEMENT AGENCY

PAYMENT INFORMATION FORM

Community Name: Puerto Rico

Project Identifier: New Castle Development

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Type of Request:

☐ MT-1 application
☒ MT-2 application

FEMA
Fee Charge System Administrator
P.O. Box 22787
Alexandria, VA 22304
FAX (703) 317-3076

☐ EDR application

FEMA Project Library
3601 Eisenhower Avenue
Alexandria, VA 22304
FAX (703) 751-7391

Request No.: _____ (if known)

Amount: $ 4,400.00

☐ INITIAL FEE* ☐ FINAL FEE ☐ FEE BALANCE** ☐ MASTER CARD ☐ VISA ☒ CHECK ☐ MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).

**Note: Check only if submitting a corrected fee for an ongoing request.

COMPLETE THIS SECTION ONLY IF PAYING BY CREDIT CARD

CARD NUMBER

1	2	3	4	—	5	6	7	8	—	9	10	11	12	—	13	14	15	16

EXP. DATE

Month		—	Year	

_____ Date

_____ Signature

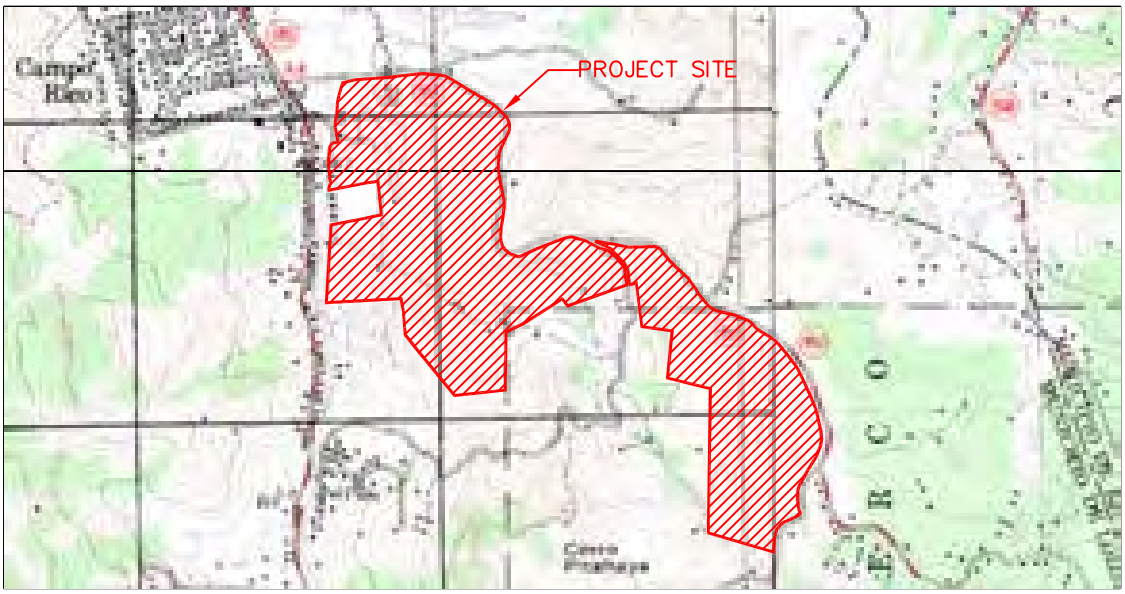
NAME *(AS IT APPEARS ON CARD)*: _____
(please print or type)

ADDRESS: _____
(*for your credit card receipt-please print or type*) _____

DAYTIME PHONE: _____

DESARROLLO ALTAMIRA II, INC.
San Juan, Puerto Rico

HYDROLOGIC–HYDRAULIC STUDY FOR NEW CASTLE DEVELOPMENT CANOVANAS, PUERTO RICO AMENDMENT NO. 1



July, 2009

C-A Engineering
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E–mail: caeng@caribe.net

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HYDROLOGIC-HYDRAULIC STUDY
FOR NEW CASTLE DEVELOPMENT
CANÓVANAS, PUERTO RICO
AMENDMENT NO.1

Casiano Ancalle, P.E.

July, 2009

I. INTRODUCTION

A housing development project named New Castle is to be constructed in the Municipality of Canóvanas. The site access is at state road PR-957 that is connected to state road PR-185. Río Canóvanas bounds the northern portion of the project site. The project consists on housing units, recreational facilities, and green areas.

According to the regulatory flood maps, a small part of the site is located in the floodway of Río Canóvanas, and another portion in the floodplain of its tributary crossing the project site. The project will be constructed outside of the floodway. Additionally, the development of the site is going to increase runoff. This increase will be mitigated according to Section 14.04 of the Puerto Rico Planning Board Regulation No. 3.

Purpose of Study

The purpose of the study to quantify the increase in runoff discharge due to the project development and provide means to mitigate this increase according to the Puerto Rico's Planning Board Regulation No. 3.

Approach

The following steps have been undertaken throughout the study:

Hydrologic Analysis: The following parameters were determined for the hydrologic analysis: drainage areas, average soil curve number and runoff lag time. Based on these parameters, discharge for 100-years frequency storm was determined for existing and proposed condition. HEC-1 model was used. Discharges for more recurrent storm events such as: 2-, 10-, 25-, 50- and 100-years, were also determined.

Runoff Discharge Mitigation Analysis: A mitigation analysis was made in order to counteract the impact of the proposed development. A mitigation pond was employed as a detention structure. HEC-1 model was used for the mitigation analysis. 2-, 10-, 25-, 50- and 100 frequency discharges were analyzed for mitigation.

Conclusions and recommendations were elaborated.

Authorization

Eng. Francisco Charles on behalf of Desarollos Altamira II, Inc. authorized this study, under a contract signed with Eng. Casiano Ancalle, principal of CA Engineering.

II. BACKGROUND INFORMATION

Location

The project is located in the Municipality of Canóvanas. The site bounds north with state road PR-957, west with Río Canóvanas, south with private properties, and east with the housing project Altamira I. The property access is through road PR-957 branching out from state road PR-185. The approximate total area of the project is 209.83 acres. Figure 1 illustrates the project site location on the USGS Quadrangle. Figure 2 shows the development layout.

Topography

The topography of the site slopes down to the northwest, towards Río Canóvanas. Ground elevations range from 220.00 to 45.00 meters (m.s.l.). See Figure 3.

Water Bodies

A storm watercourse crosses the site from southeast to northwest to discharge into Río Canóvanas. The majority of the project's site runoff discharges to this watercourse. A very small part discharges directly into Río Canóvanas.

Flooding

A small part of the project site is located in the Río Canóvanas floodway. But the project will not affect this area. A partial copy of sheets 860 and 780 of FEMA's flood map dated April 19, 2005 is included in Figure 7. Also, the storm watercourse crossing the project site is zoned floodable Zone A (without elevations), which is to say that FEMA did not perform a detailed study at this segment. The present study is based on a previous one where floods levels for this watercourse are determined.

Former Studies

Though no specific studies have been made for the project site in the past, two studies are very much related to it, FEMA's study for Río Canóvanas and CA Engineering's study for the storm watercourse crossing the project site. The segment of the river bounding the project site falls within the FEMA's study, its levels and flood footprint is used in this study. On February 2006, CA Engineering elaborated a HH study for the storm watercourse crossing the project site in order to delineate the flood footprint.

Field Information

Field data used in this study was taken from the topographic information provided by Eng. Francisco Charles. Results obtained in this study are strictly based on this information. The topography is tied to mean sea level reference. This fieldwork is included in the pocket attached to the back cover of this study as Appendix F.

Study Level

This study is intended as an aid to the design engineer in the preparation of the construction drawings for the recommended structures. Figures, schematics and drawings must not be used as construction drawings. The design engineer must elaborate the construction drawings in agreements with the recommendations of this study.

III. HYDROLOGIC ANALYSIS

The computer program entitled Flood Hydrograph Package (HEC-1), developed by the U.S. Army Corps of Engineers [1990], was used for the performance of the hydrologic analysis. Using this program, the Unit Hydrograph method and the Runoff Curve Number (CN) method, both developed by the Soil Conservation Service (SCS), were applied to determine the design hydrograph. This was computed by a process of translating the rainfall excess into a runoff hydrograph known as convolution.

Peak discharges for 2-, 10-, 25-, 50- and 100-year storm frequency were estimated for the existing condition and proposed condition.

Drainage Areas

Two drainage areas have been identified for the existing condition at the project site: P1 and P2. Area P1 was subdivided in P1A, P1B, P1C, P1D, P1E and P1F; and drainage area P2 was subdivided in P2A, P2B and P2C. Offsite areas considered in the hydrologic analysis were: E0, E1, E2, E3 and E4. (Figure 4) At proposed condition, the project site drainage areas were slightly modified to fit the development need: Area P1 was subdivided in nine areas; while Area P2 kept its three sub areas as shown in Figure 5. The total area of the project site is approximately 209.83 acres.

Table 1 shows the drainage areas taken into account for the hydrologic analysis, for both existing and proposed condition.

Table 1
Drainage Areas

	Name	**Area,** acres	
		Existing	**Proposed**
Project Areas	P1A	30.15	35.21
	P1B	8.95	--
	P1B1	--	6.62
	P1B2	--	9.09
	P1C	11.60	
	P1C1	--	19.00
	P1C2	--	12.73
	P1D	21.06	22.80
	P1E	45.23	18.69
	P1F	19.46	--
	P1F1	--	11.20
	P1F2	--	9.50
	P2A	13.39	22.20
	P2B	40.00	39.68
	P2C	19.99	11.50

Curve Numbers

Curve numbers were established. According to the SCS's Soil Maps, the project area is classified in ten types of soil: Mabi clay, Caguabo clay loam, Mucara silty clay loam, Toa silty, Aceituna Silty, Rio Arriba, Reilly land, Rock land, Humatas stony and los Guineos silty. Weighted curve numbers were estimated for each drainage area. A CN value of 93 was adopted for the developed site.

Appendix A includes the Curve Number computations for existing and proposed condition. Figure 6 shows the soil map corresponding to the project site and offsite areas.

Lag Time

The Lag Time (T_{Lag}) was estimated using the SCS method defined as:

$$T_{Lag} = \frac{L^{0.8}(S+1)^{0.7}}{1900\ Y^{0.5}}$$

where :

	L	=	channel length (ft)
	S	=	1000/CN - 10
	Y	=	average watershed slope

Detailed Lag Time calculations are shown in Appendix A.

Rainfall Data

The variation of rainfall volume with time was required as part of the storm input for the SCS Curve Number method. Therefore, the development of a design storm with a rainfall frequency and duration was necessary to compute the design hydrograph for the watershed. Rainfall data used in this study was obtained from NOAA's National Weather Service Atlas 14. The rainfall depths for 100, 50, 25, 10 and 2-years frequency for several durations was used and are shown in Table 2. Details of the rainfall depth information are shown in Appendix A.

Table 2
Rainfall for 2, 10, 25, 50 y 100 years

Duration *Hrs.*	**Precipitation** *Inches*				
	2-yr	***10-yr***	***25-yr***	***50-yr***	***100-yr***
0.083	0.53	0.72	0.84	0.93	1.02
0.25	0.93	1.27	1.47	1.63	1.78
1	2.21	3.02	3.50	3.87	4.24
2	2.97	4.31	5.11	5.73	6.36
3	3.33	5.02	6.05	6.88	7.74
6	4.18	6.71	8.31	9.61	10.97
12	5.10	8.51	10.67	12.46	14.33
24	6.03	10.33	13.19	15.59	18.16

Depth-Area Adjustment

Point rainfall estimates obtained from NOAA's National Weather Service, ATLAS 14 represent values for areas up to 10 mi^2; therefore, a depth-area adjustment should be applied to the rainfall data when the watershed area is greater. In this case, the watershed consists of 0.3880 mi^2. Hence, this adjustment was not applied.

Time Distribution of Rainfall

The triangular type methodology was used to distribute the rainfall depth in time. This method is considered acceptable for small areas.

Rainfall Extraction

Rainfall extraction such as vegetative interception, depressional storage, and infiltration were estimated using the SCS's Runoff Curve Number method. Though this method is used to predict runoff volume directly, the rainfall extraction is incorporated in the model as function of the curve number of the watershed.

Hydrologic Analysis Results

Hydrologic analysis was made for all the drainage areas. Individual and composite runoff hydrographs were obtained using HEC-1 methodology. Table 3 shows the summary of the results for this analysis. Input and output data for the HEC-1 model for existing and proposed condition are included in Appendix B and C, respectively.

Table 3
Peak Discharges

AREA		Peak Discharge, cfs				
		2-yr	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Existing	P1B	27	43	52	59	65
	P1C	49	75	90	101	112
	COMB1	74	116	140	158	176
	P2C	61	92	109	123	135
	CHANN	61	89	108	120	134
	P2B	134	198	233	261	287
	CHANN	130	189	222	249	271
	P2A	65	95	113	126	138
	CHANN	54	82	37	111	122
	COMB2	224	325	386	431	472
	E0	661	988	1173	1315	1451
	CHANN	662	987	1171	1313	1449
	E1	344	507	598	669	736
	COMB3	980	1454	1721	1928	2125
	COMB4	1178	1765	2097	2350	2592
	CHANN	1176	1753	2084	2337	2577
	E3	79	114	134	150	165
	CHANN	70	102	122	136	150
	P1F	78	114	134	150	165
	COMB5	148	216	256	286	315
	COMB6	1264	1891	2245	2517	2775
	CHANN	1256	1882	2236	2507	2765
	E2	168	243	286	319	351
	CHANN	150	221	261	292	323

	P1E	120	180	214	239	264
	COMB7	250	370	438	488	538
	COMB8	1489	2225	2639	2958	3260
	CHANN	1469	2200	2614	2931	3232
	P1D	69	108	130	146	162
	COMB9	1517	2274	2702	3030	3342
	CHANN	1507	2247	2673	3000	3311
	E4	64	92	109	121	133
	CHANN	57	80	95	103	114
	P1A	108	158	187	209	230
	COMB10	165	238	282	312	343
	COMB11	1611	2419	2878	3229	3561

AREA		**Peak Discharge, cfs**				
		2-yr	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Proposed	P1B1	23	32	37	42	46
	P1C1	16	22	26	29	32
	COMB1	39	54	63	70	77
	P2C	44	61	72	80	87
	CHANN	44	61	68	76	81
	P2B	144	203	237	263	289
	CHANN	139	195	227	252	276
	P2A	83	116	136	151	165
	CHANN	78	111	129	144	158
	COMB2	258	360	416	463	504
	E0	661	988	1173	1315	1451
	CHANN	662	987	1171	1313	1449
	E1	344	507	598	669	736
	COMB3	980	1454	1721	1928	2125
	COMB4	1212	1799	2127	2383	2623
	CHANN	1201	1787	2114	2369	2608
	E3	79	114	134	150	165
	PIPE	73	107	126	140	155
	P1F1	43	60	70	77	85
	COMB5	109	157	184	205	226

Proposed	COMB6	1282	1902	2249	2519	2773
	CHANN	1266	1884	2228	2498	2752
	P1F2	36	51	60	66	73
	COMB7	1293	1921	2271	2546	2804
	CHANN	1284	1911	2261	2535	2792
	E2	168	243	286	319	351
	CHANN	150	221	261	292	323
	P1E	70	98	114	127	139
	COMB8	217	310	365	405	444
	COMB9	1458	2158	2549	2855	3144
	CHANN	1437	2135	2525	2830	3117
	P1D	91	128	150	167	183
	COMB10	1499	2221	2626	2942	3240
	CHANN	1489	2211	2615	2931	3229
	P1C2	71	99	116	129	141
	COMB11	1550	2297	2716	3043	3351
	CHANN	1535	2280	2698	3025	3333
	E4	64	92	109	121	133
	PIPE	54	76	88	97	106
	P1A	107	150	175	195	214
	COMB12	149	210	244	271	297
	COMB13	1677	2481	2933	3287	3620
	P1B2	36	51	60	66	73
	COMB14	1701	2516	2973	3331	3669

The overall summation of the discharges at proposed condition is higher than that of the existing condition. This means that the development of the project area produces an increase in runoff that has to be mitigated as required by Puerto Rico Planning Board Regulation No. 3.

IV. RUNOFF DISCHARGE MITIGATION ANALYSIS

The development of the site will increase the runoff discharge. The Puerto Rico Planning Board Regulation No. 3 requires a flow mitigation structure wherever an increase in discharge is produced. Therefore, several flow detention structures will be included in the project.

Methodology

The computer program HEC-1 provides means for routing a hydrograph through detention structures. The purpose of detention is that the proposed condition peak discharge does not exceed the existing condition peak discharge.

Runoff Mitigation Structures

Runoff discharge mitigation for the whole project will be made by detention ponds located at the following areas: Area P2B, P2A, P1F1, P1D and P1A as shown in Figure 8.

Depth-Volume Relations

Volume-depth relations developed for the mitigation system is based on ponds with a 595-square-meter base area for Pond P2B, 1570-square-meter base area for Pond P2A, 392-square-meter base area for Pond P1F1 594-square-meter base area for Pond P1D, and 1,450 square-meter base area for Pond P1A. Bank slope for all ponds will be of 2H:1V. Volume-Depth curve computations are included in Appendix D.

Flow Rating Curve

Flow–Depth relation for all ponds was estimated according to the control structures assigned. The control structure for detention Pond P2B consists on three 2.0’-diameter orifices located at the bottom of the pond, three 2.3’-diameter orifices located at the 1.5 m above the bottom of the pond and a 7.32-meter long weir at 2.70 meter over the pond bottom. The control for Pond P2A is composed by a 2.0’-diameter orifice located at the bottom of the pond and a 9.14-meter long

weir at 2.8 meter above the pond bottom. For the Pond P1F1, the control consists of two 2.8'-diameter orifices located at the bottom of the pond, two 1.5'-diameter orifices located at the 1.8 m above the bottom of the pond and a 3.05-meter long weir at 2.58 meter above the pond bottom. For Pond P1D, the control consists of two 2.0'-diameter orifices located at the bottom of the pond, two 2.0'-diameter orifices located 1.7 m above the bottom and a 5.48-meter long weir at 2.75 meter above the pond bottom. And for Pond P1A: three 2.0'-diameter orifices located at the bottom of the pond, three 2.5'-diameter orifices located 1.65 m above the bottom of the pond, and a 7.32-meter long weir at 2.80 meter above the pond bottom. Flow through the orifices was computed using Torrecelli's formula. Appendix D shows the computations for the flow-depth relationship and the curves.

Results

The results of the detention analysis show that the proposed detention pond provides appropriate runoff mitigation for the 100-year frequency discharges. By routing the combined discharge through the detention pond, the 100-year discharge was reduced from 3,669 cfs to 3,550 cfs, which is less than the discharge computed for existing condition, 3,561 cfs; thus complying with Regulation No.3. Mitigation for more recurrent discharges was also verified.

Input and output data for the HEC-1 mitigation model are included in Appendix E. Table 4 shows the comparison of the discharges for existing, and proposed condition.

Table 4
Peak Discharges results for Existing, Proposed and Mitigation

AREA		Peak Discharge, cfs				
		2-yr	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Existing	P1B	27	43	52	59	65
	P1C	49	75	90	101	112
	COMB1	74	116	140	158	176
	P2C	61	92	109	123	135
	CHANN	61	89	108	120	134
	P2B	134	198	233	261	287
	CHANN	130	189	222	249	271
	P2A	65	95	113	126	138
	CHANN	54	82	37	111	122
	COMB2	224	325	386	431	472
	E0	661	988	1173	1315	1451
	CHANN	662	987	1171	1313	1449
	E1	344	507	598	669	736
	COMB3	980	1454	1721	1928	2125
	COMB4	1178	1765	2097	2350	2592
	CHANN	1176	1753	2084	2337	2577
	E3	79	114	134	150	165
	CHANN	70	102	122	136	150
	P1F	78	114	134	150	165
	COMB5	148	216	256	286	315
	COMB6	1264	1891	2245	2517	2775
	CHANN	1256	1882	2236	2507	2765
	E2	168	243	286	319	351
	CHANN	150	221	261	292	323
	P1E	120	180	214	239	264
	COMB7	250	370	438	488	538
	COMB8	1489	2225	2639	2958	3260
	CHANN	1469	2200	2614	2931	3232
	P1D	69	108	130	146	162
	COMB9	1517	2274	2702	3030	3342

Existing	CHANN	1507	2247	2673	3000	3311
	E4	64	92	109	121	133
	CHANN	57	80	95	103	114
	P1A	108	158	187	209	230
	COMB10	165	238	282	312	343
	COMB11	1611	2419	2878	3229	3561

AREA		**Peak Discharge, cfs**				
		2-yr	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Proposed	P1B1	23	32	37	42	46
	P1C1	16	22	26	29	32
	COMB1	39	54	63	70	77
	P2C	44	61	72	80	87
	CHANN	44	61	68	76	81
	P2B	144	203	237	263	289
	CHANN	139	195	227	252	276
	P2A	83	116	136	151	165
	CHANN	78	111	129	144	158
	COMB2	258	360	416	463	504
	E0	661	988	1173	1315	1451
	CHANN	662	987	1171	1313	1449
	E1	344	507	598	669	736
	COMB3	980	1454	1721	1928	2125
	COMB4	1212	1799	2127	2383	2623
	CHANN	1201	1787	2114	2369	2608
	E3	79	114	134	150	165
	PIPE	73	107	126	140	155
	P1F1	43	60	70	77	85
	COMB5	109	157	184	205	226
	COMB6	1282	1902	2249	2519	2773
	CHANN	1266	1884	2228	2498	2752
	P1F2	36	51	60	66	73
	COMB7	1293	1921	2271	2546	2804
	CHANN	1284	1911	2261	2535	2792
	E2	168	243	286	319	351

Proposed	CHANN	150	221	261	292	323
	P1E	70	98	114	127	139
	COMB8	217	310	365	405	444
	COMB9	1458	2158	2549	2855	3144
	CHANN	1437	2135	2525	2830	3117
	P1D	91	128	150	167	183
	COMB10	1499	2221	2626	2942	3240
	CHANN	1489	2211	2615	2931	3229
	P1C2	71	99	116	129	141
	COMB11	1550	2297	2716	3043	3351
	CHANN	1535	2280	2698	3025	3333
	E4	64	92	109	121	133
	PIPE	54	76	88	97	106
	P1A	107	150	175	195	214
	COMB12	149	210	244	271	297
	COMB13	1677	2481	2933	3287	3620
	P1B2	36	51	60	66	73
	COMB14	1701	2516	2973	3331	3669

AREA		**Peak Discharge, cfs**				
		2-yr	**10-yr**	**25-yr**	**50-yr**	**100-yr**
Proposed w/ Mitigation	P1B1	23	32	37	42	46
	P1C1	16	22	26	29	32
	COMB1	39	54	63	70	77
	P2C	44	61	72	80	87
	CHANN	44	61	68	76	81
	P2B	144	203	237	263	289
	POND	117	188	212	238	267
	CHANN	115	184	208	228	252
	P2A	83	116	136	151	165
	POND	33	41	53	87	119
	CHANN	33	41	53	82	112
	COMB2	182	280	315	356	432
	E0	661	988	1173	1315	1451
	CHANN	662	987	1171	1313	1449

Proposed w/ Mitigation	E1	344	507	598	669	736
	COMB3	980	1454	1721	1928	2125
	COMB4	1162	1722	2029	2284	2557
	CHANN	1160	1722	2028	2282	2555
	E3	79	114	134	150	165
	PIPE	73	107	126	140	155
	P1F1	43	60	70	77	85
	COMB5	109	157	184	205	226
	POND	97	130	154	170	186
	COMB6	1240	1839	2164	2433	2721
	CHANN	1235	1837	2161	2431	2718
	P1F2	36	51	60	66	73
	COMB7	1257	1867	2196	2470	2760
	CHANN	1254	1866	2194	2468	2758
	E2	168	243	286	319	351
	CHANN	150	221	261	292	323
	P1E	70	98	114	127	139
	COMB8	217	310	365	405	444
	COMB9	1390	2079	2455	2750	3058
	CHANN	1387	2061	2423	2719	3031
	P1D	91	128	150	167	183
	POND	63	96	114	127	139
	COMB10	1449	2148	2534	2840	3159
	CHANN	1446	2147	2526	2835	3158
	P1C2	71	99	116	129	141
	COMB11	1495	2215	2617	2933	3258
	CHANN	1490	2214	2606	2924	3254
	E4	64	92	109	121	133
	PIPE	54	76	88	97	106
	P1A	107	150	175	195	214
	COMB12	149	210	244	271	297
	POND	105	175	211	235	257
	COMB13	1589	2389	2817	3158	3511
	P1B2	36	51	60	66	73
	COMB14	1608	2417	2848	3193	3550

Mitigation Structure Dimensions and Accessories

Final dimensions for the detention pond will include a minimum free board of 0.6 meters. The detention pond will have the characteristics shown in Tables 5 through 9.

Table 5
Detention Pond P2B Characteristics

Pond P2B	Dimensions	Bottom Area	595 m^2
		Height	3.39 m
	Outlet Control	Orifice @ bottom	Three-2.0'Diameter
		Orifice @ 1.50 m bottom	Three-2.3'Diameter
		Weir Length @ 2.70m	7.32m

Table 6
Retention Pond P2A Characteristics

Pond P2A	Dimensions	Bottom Area	1570 m^2
		Height	3.64
	Outlet Control	Orifice @ bottom	One-2.0' Diameter
		Weir Length @ 2.80m	9.14 m

Table 7
Retention Pond P1F1 Characteristics

Pond P1F1	Dimensions	Bottom Area	392 m^2
		Height	3.18 m
	Outlet Control	Orifice @ bottom	Two-2.8'Diameter
		Orifice @ 1.80 m bottom	Two-1.5'Diameter
		Weir Length @ 2.58m	3.05 m

Table 8
Retention Pond P1D Characteristics

Pond P1D	Dimensions	Bottom Area	594 m^2
		Height	3.35 m
	Outlet Control	Orifice @ bottom	Two-2.0'Diameter
		Orifice @ 1.70 m bottom	Two-2.0'Diameter
		Weir Length @ 2.75m	5.48 m

Table 9
Retention Pond P1A Characteristics

Pond P1A	Dimensions	Bottom Area	1,450 m^2
		Height	3.43 m
	Outlet Control	Orifice @ bottom	Three-2.0'Diameter
		Orifice @ 1.65 m bottom	Three-2.5'Diameter
		Weir Length @ 2.80m	7.32 m

Schematic layout of the detention system is presented in Figure 9, 10, 11, 12 and 13.

Pond Discharge

The Pond P2B will discharge through a 6'x 6' box culvert into a storm watercourse that ends up in the storm watercourse crossing the project site, Pond P2A through a 48" diameter pipe, Pond P1F1 through a 66" diameter pipe, Pond P1D through a 60" diameter pipe and Pond P1A through a 6'x6' box culvert. All pond discharges must be provided with a headwall and energy dissipater.

VI. CONCLUSIONS AND RECOMMENDATIONS

The following are the conclusions of this study:

1. According to the FEMA's Flood Insurance Rate Map, a very small part of the project site is located in the floodway of Río Canóvanas. This part will not be developed.

2. Since FEMA does not have detailed study for the tributary crossing the site, the water surface elevations found in a previous study made by CA Engineering is used.

3. Proposed condition discharge is higher than that of the existing condition. Runoff mitigation is needed.

4. The proposed detention ponds reduce the increment in discharge due to the development from 3,669 cfs to 3,550 cfs which is lower than 3,561 cfs that belongs to existing condition.

5. The 100-year floodway footprint determined for the watercourse crossing the project site will not be affected by the development.

The following are the recommendations of this study:

1. The project site's roadway elevation must be at least 0.90 meters above the adjacent 100-year flood water elevation observed from the FEMA flood maps and from the levels indicated for the tributary in Figure 8. And the minimum floor elevation will be 0.45 meters above the adjacent roadway elevation.

2. The detention ponds will have the dimensions indicated in Table 5 through 9 of this study. The discharge headwall from the ponds will be followed by rip-rap or gabions to prevent erosion of the downstream areas

3. The engineer will make sure that the proposed drainage areas be graded in a way that the drainage area for this basin conform the areas indicated in this study.

4. Maintenance of the road crossing structures and the runoff mitigation pond outlets is necessary during operation. Maintenance shall consist on keeping the entrance free from clogging debris or vegetation.

Study Limits

All the recommendations specified in this study must be considered to assure the optimum performance of the proposed structures operation. The design engineer will be responsible for elaborating the drawings in conformance with the recommendations of this study.

The results of this study are based on free flow conditions through the hydraulic structures. Proper maintenance must be developed to assure this condition. On the event of the occurrence of any severe obstruction to the flow, the results and recommendations may be impaired. Finally, the design engineer must use results and recommendations included in this report only and exclusively for the intended purposes as indicated in this study.

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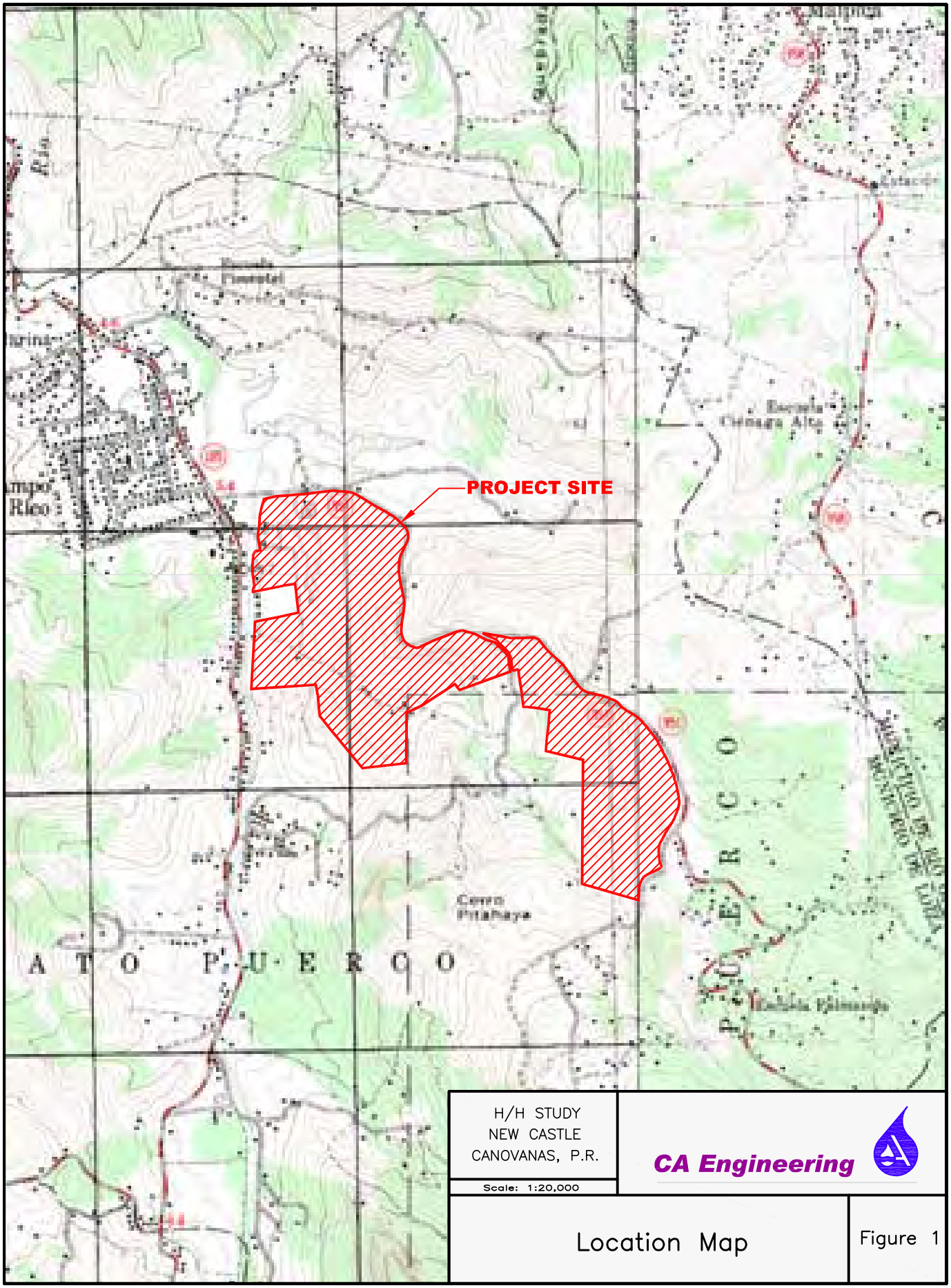
3. U.S. Soil Conservation Service, 1978. *Soil Survey of Humacao Area of Puerto Rico, Puerto Rico.* U.S. Department of Agriculture.

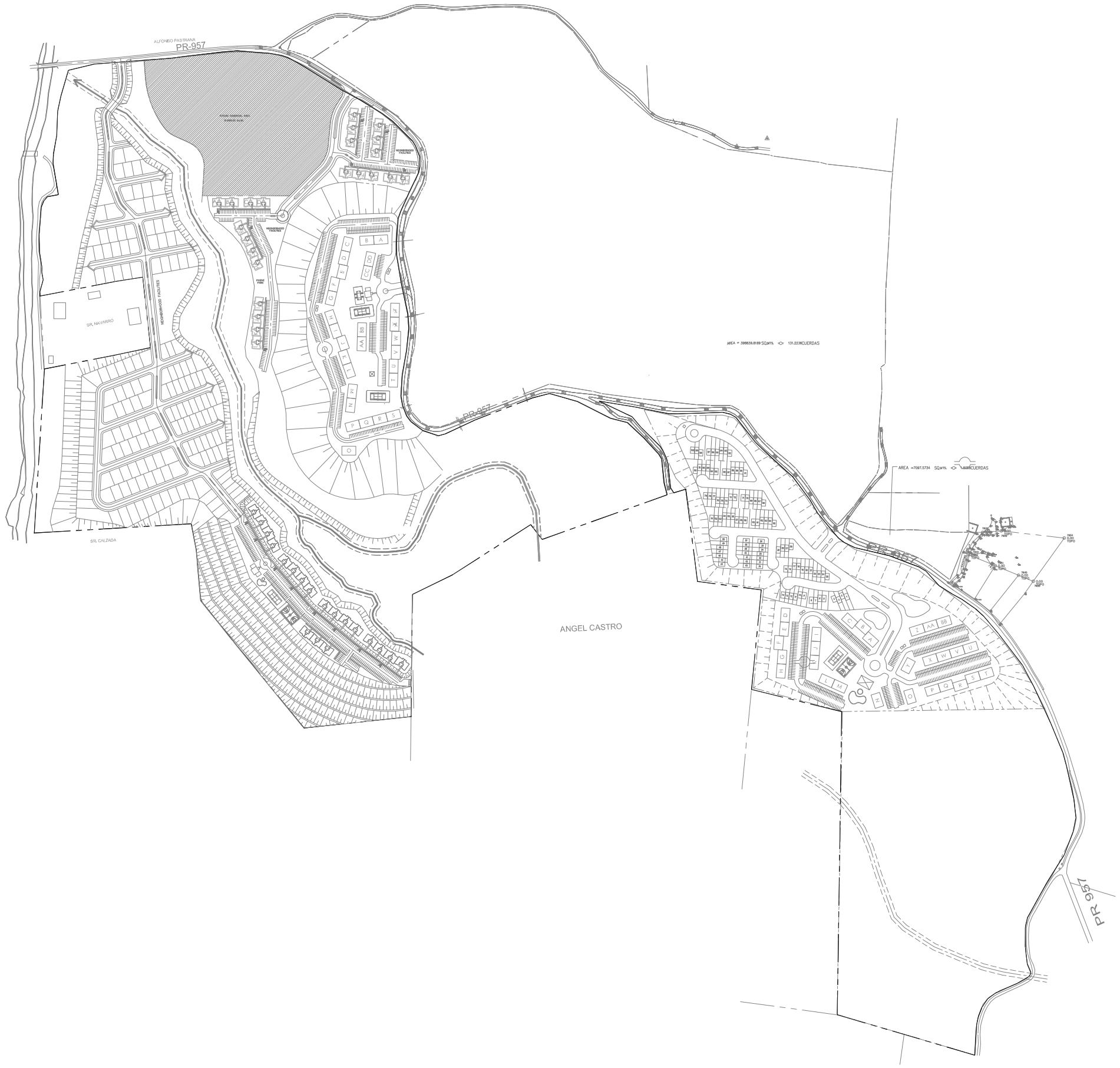
4. U.S. Army Corps of Engineers, 1990. *Flood Hydrograph Package (HEC-1), User's Manual.* Hydrologic Engineering Center. Davis, California.

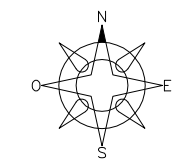
5. U.S.Geological Survey. *Topographic Quadrangles of Canovanas.* Puerto Rico, 1982.

6. CA Engineering, PSC, Hydrologic-Hydraulic Study for New Castle Development, Canóvanas, P.R.-July 2009 Revision.

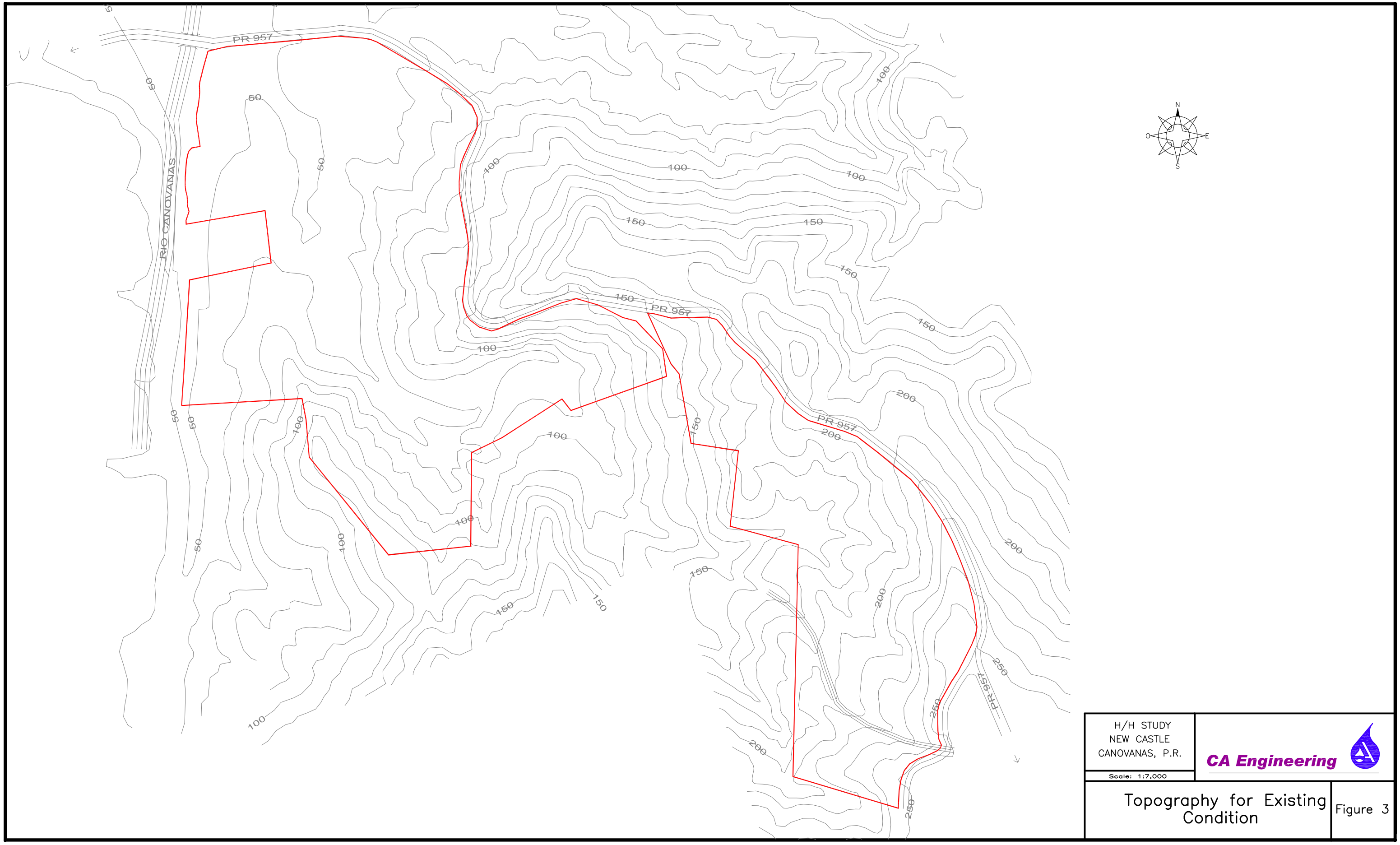
FIGURES


PROJECT SITE
Cerro Pitahaya
A T O P U E R C O
H/H STUDY
NEW CASTLE
CANOVANAS, P.R.
Scale: 1:20,000
CA Engineering
Location Map
Figure 1





H/H STUDY NEW CASTLE CANOVANAS, P.R.	CA Engineering
Scale: 1:7,000	
Proposed Development Layout	Figure 2



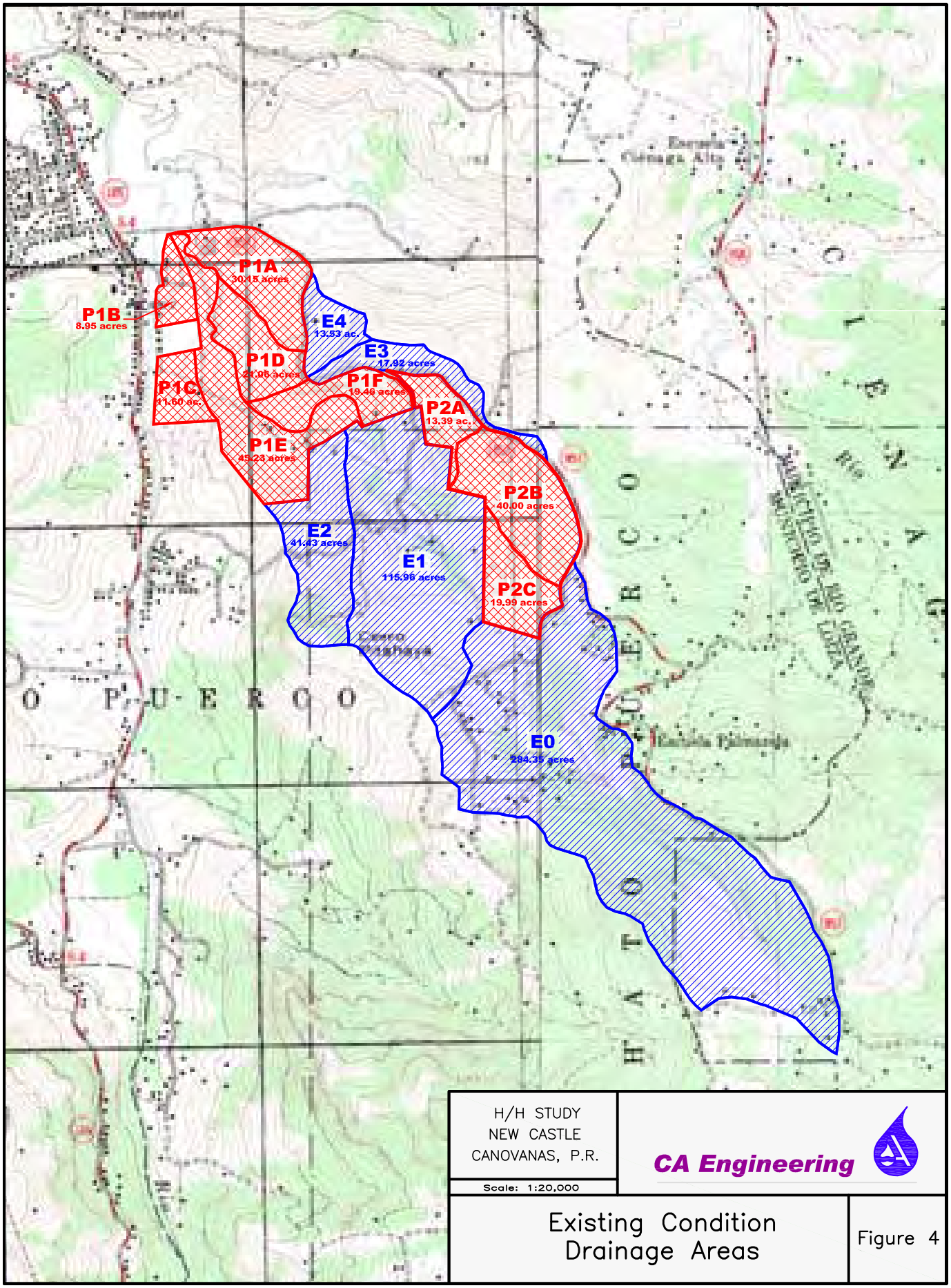
H/H STUDY
NEW CASTLE
CANOVANAS, P.R.

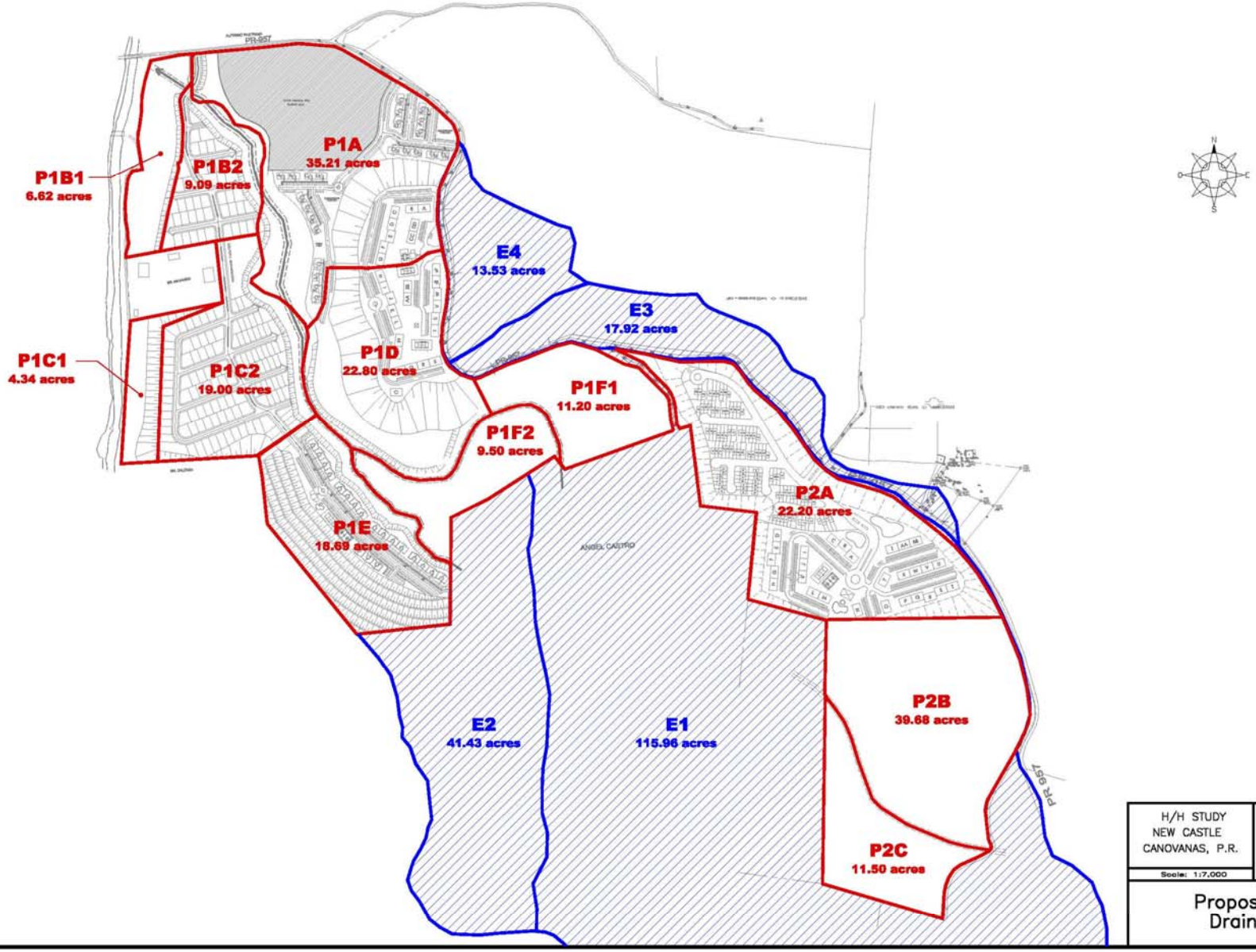
Scale: 1:7,000

CA Engineering

Topography for Existing Condition

Figure 3


P1A
30.15 acres
P1B
8.95 acres
P1C
11.60 ac.
P1D
21.06 acres
P1E
45.23 acres
P1F
19.46 acres
P2A
13.39 ac.
P2B
40.00 acres
P2C
19.99 acres
E0
284.35 acres
E1
115.96 acres
E2
41.43 acres
E3
17.92 acres
E4
13.53 ac.
H/H STUDY
NEW CASTLE
CANOVANAS, P.R.
Scale: 1:20,000
CA Engineering
Existing Condition
Drainage Areas
Figure 4



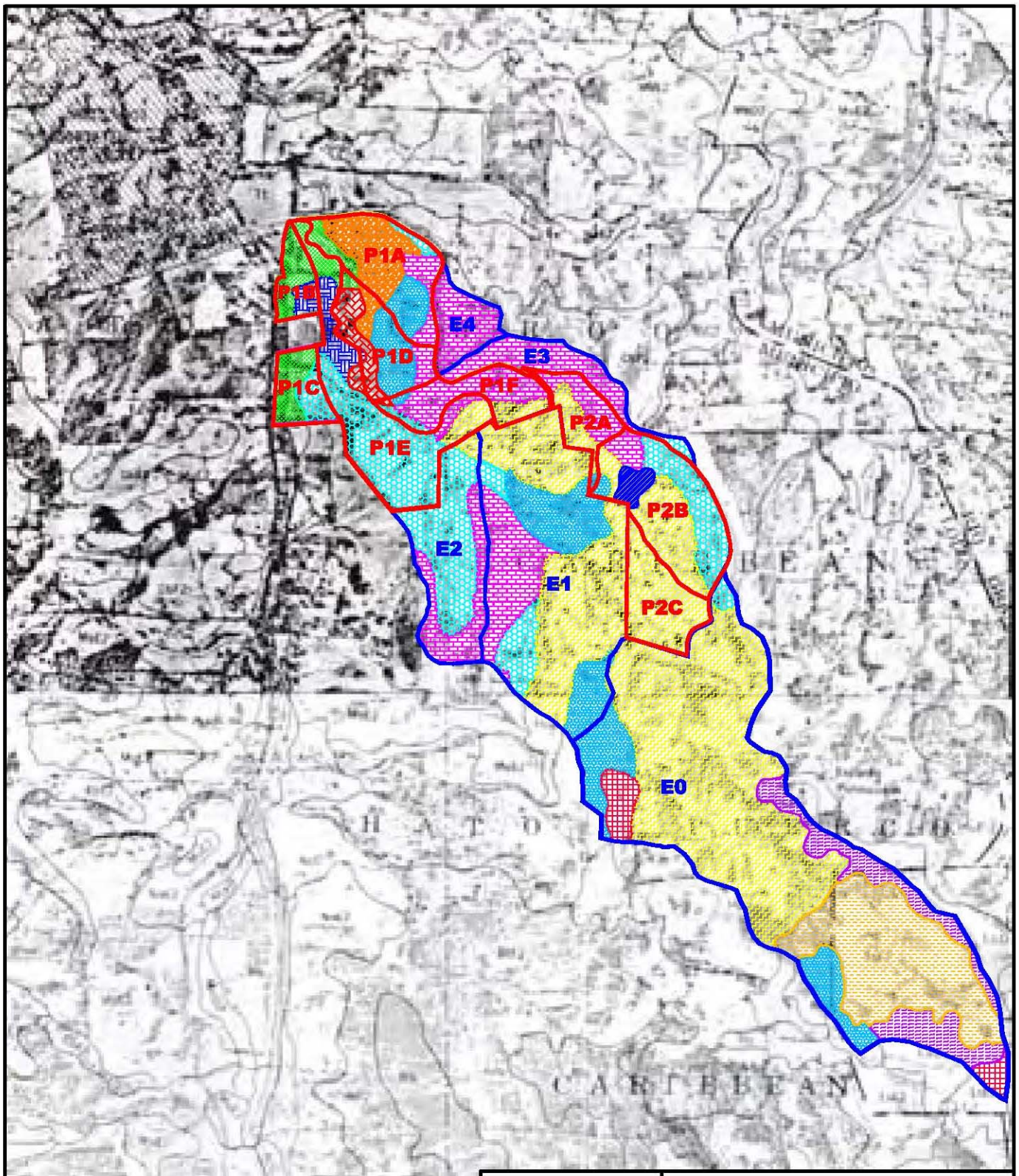
H/H STUDY
NEW CASTLE
CANOVANAS, P.R.

Scale: 1:7,000

CA Engineering

Proposed Condition Drainage Areas

Figure 5



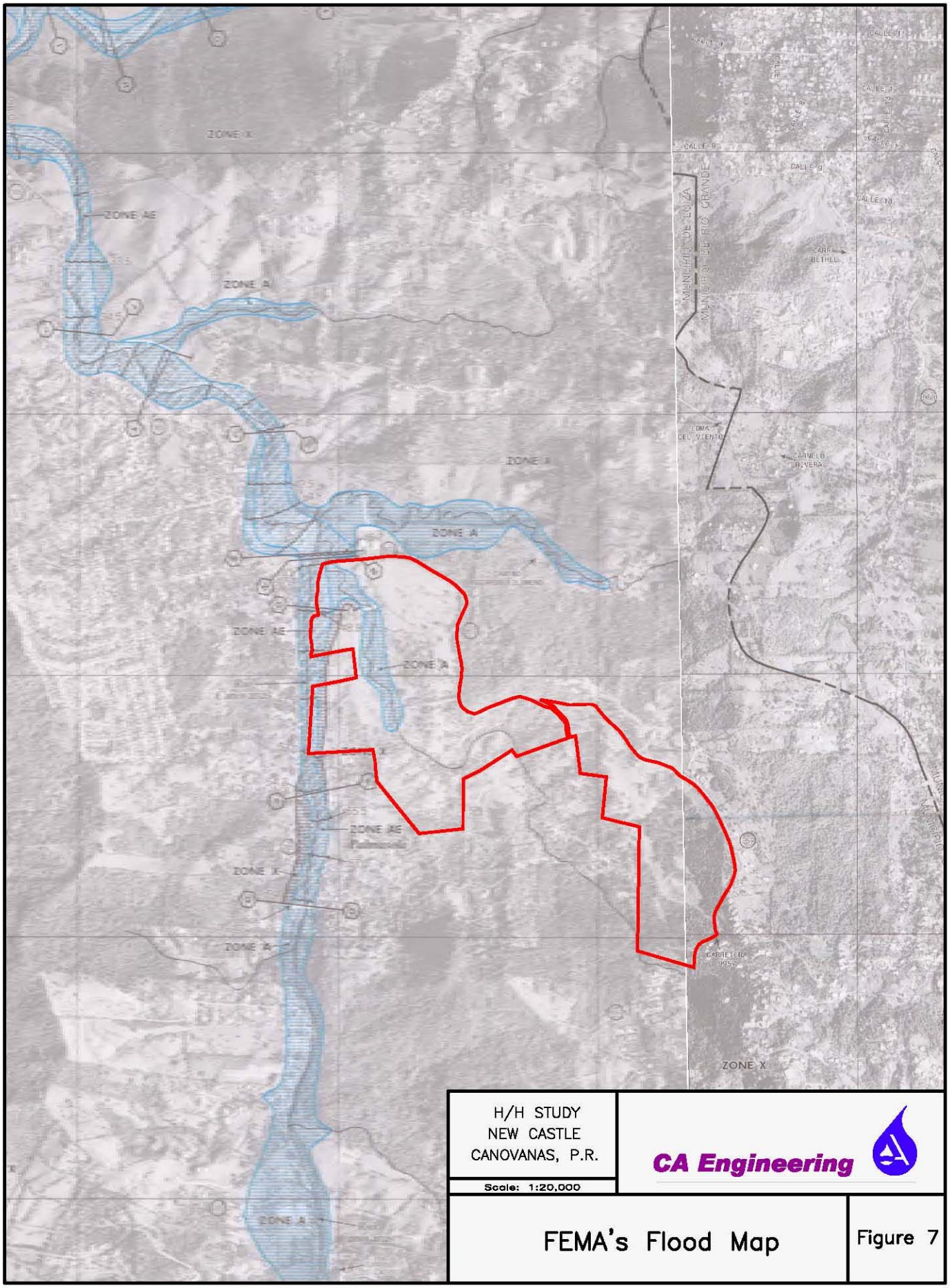
H/H STUDY
NEW CASTLE
CANOVANAS, P.R.

Scale: 1:20,000

CA Engineering

Soils Map

Figure 6



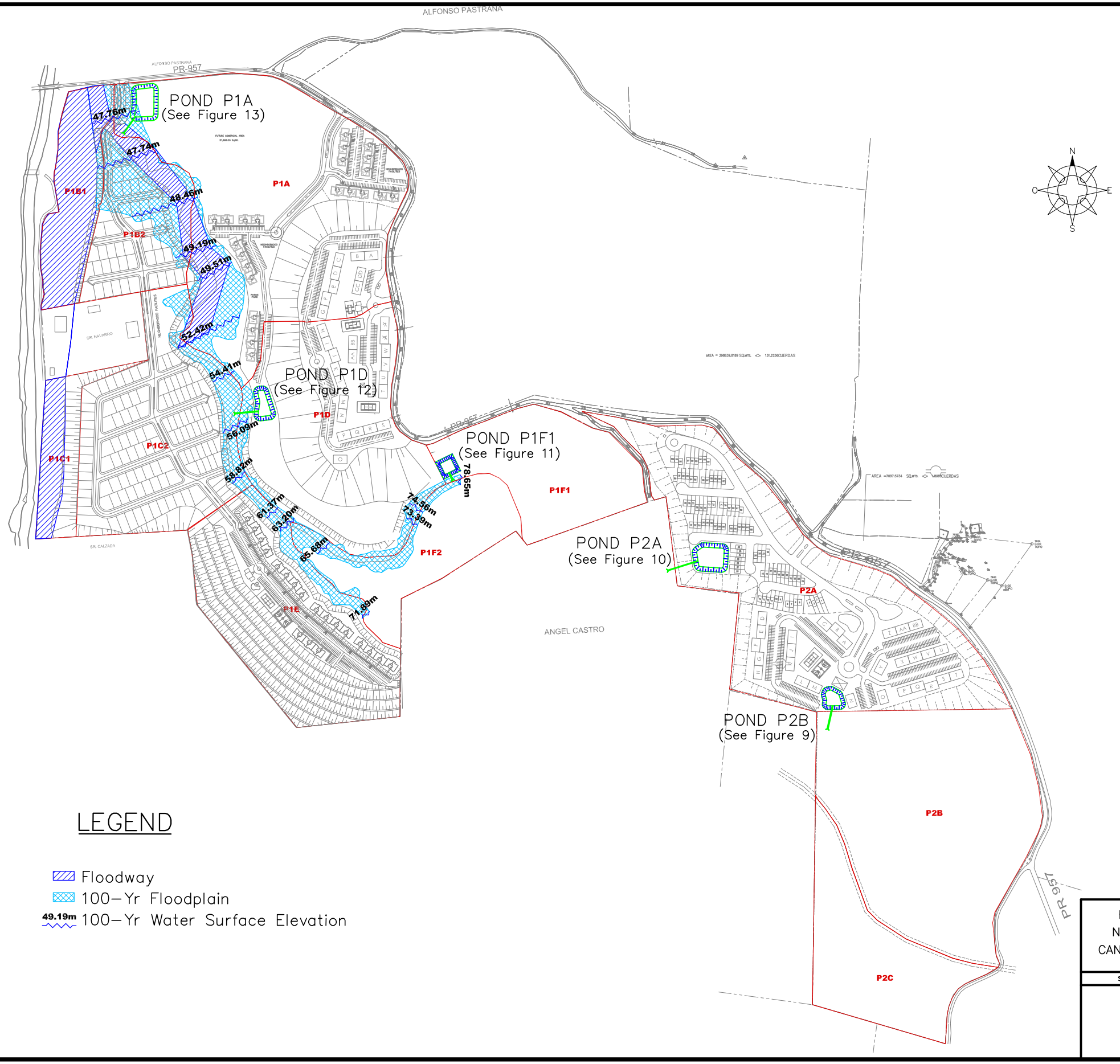
H/H STUDY
NEW CASTLE
CANOVANAS, P.R.

Scale: 1:20,000

CA Engineering

FEMA's Flood Map

Figure 7



LEGEND

- Floodway
- 100–Yr Floodplain
- 49.19m 100–Yr Water Surface Elevation

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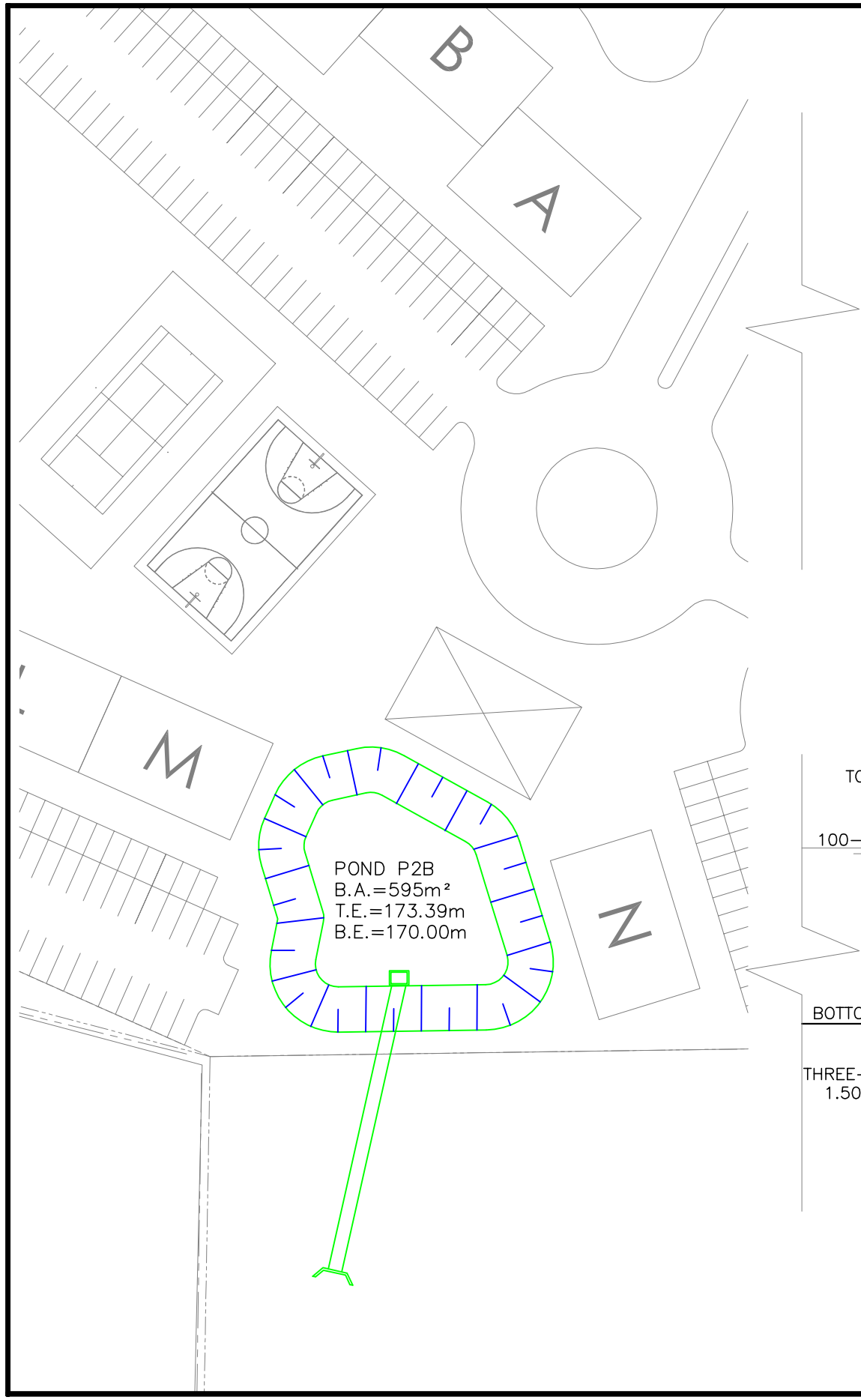
NEW CASTLE
CANOVANAS, P.R.

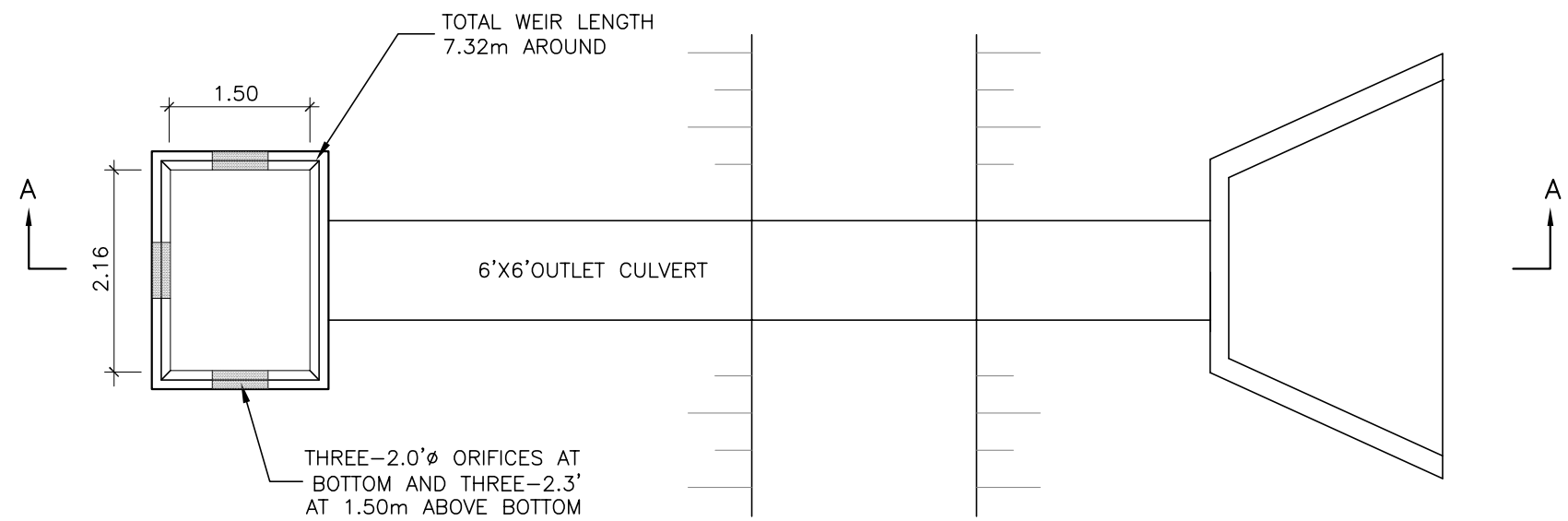
Scale: 1:7,000

CA Engineering

Layout of
Proposed Structures

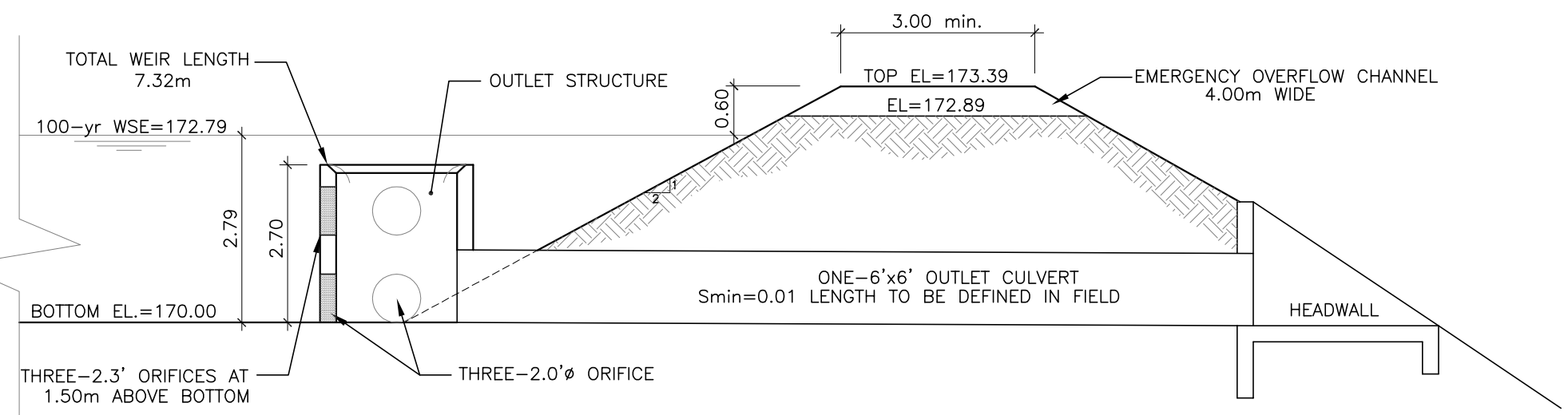
Figure 8





PLAN VIEW

NTS

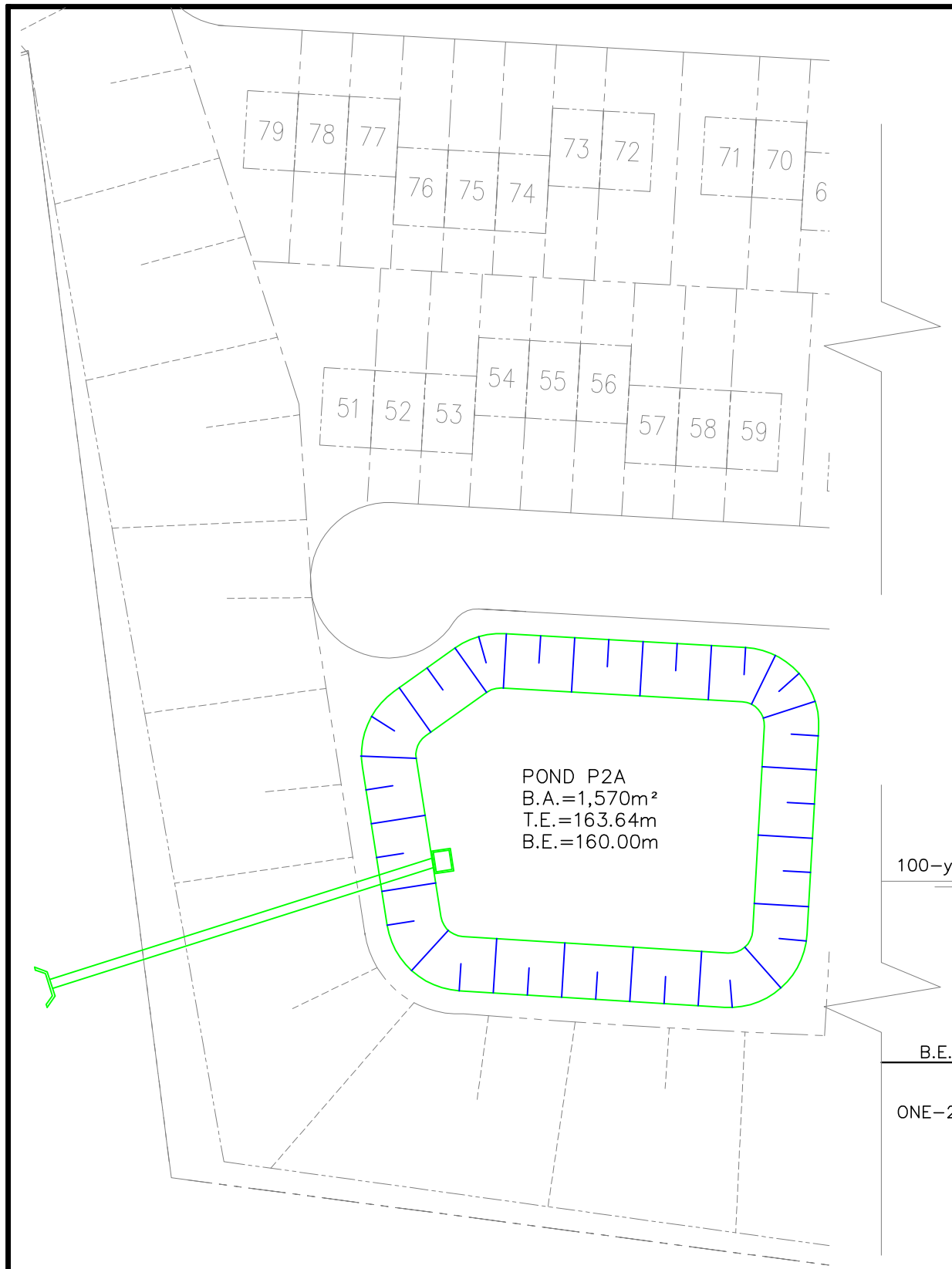


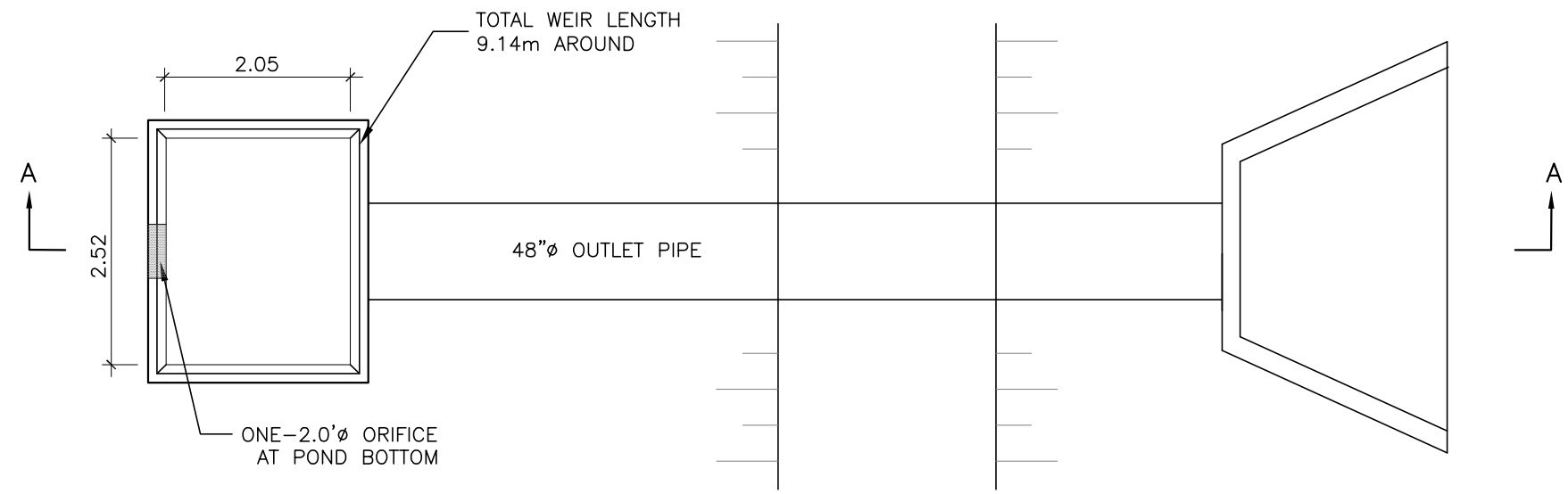
SECTION A–A

NTS

OUTLET STRUCTURE

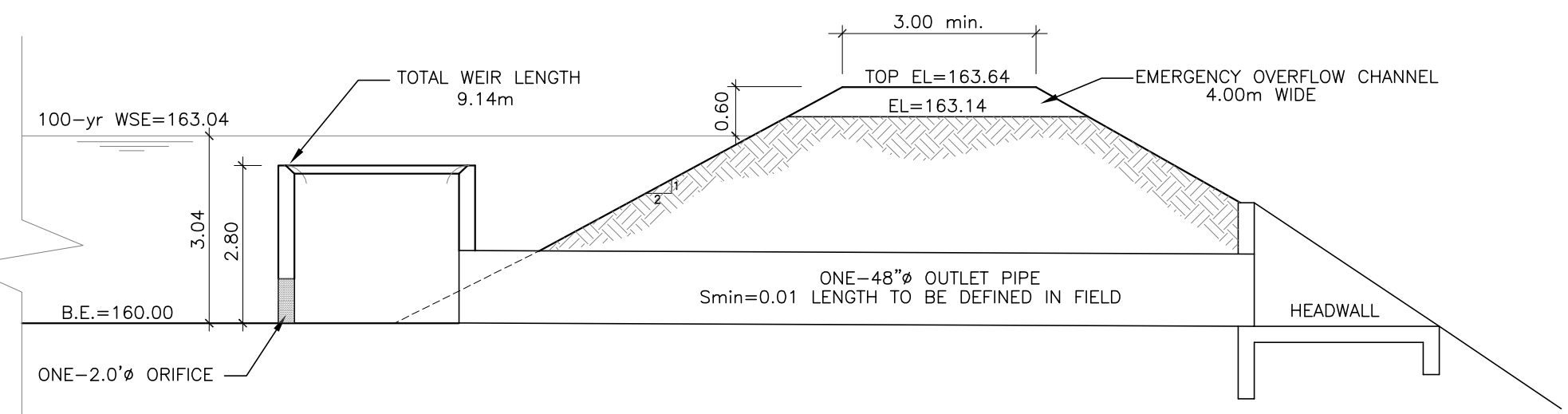
H/H STUDY NEW CASTLE CANOVANAS, P.R.	CA Engineering
Scale: NTS	
Schematics of Detention Pond P2B	Figure 9





PLAN VIEW

NTS

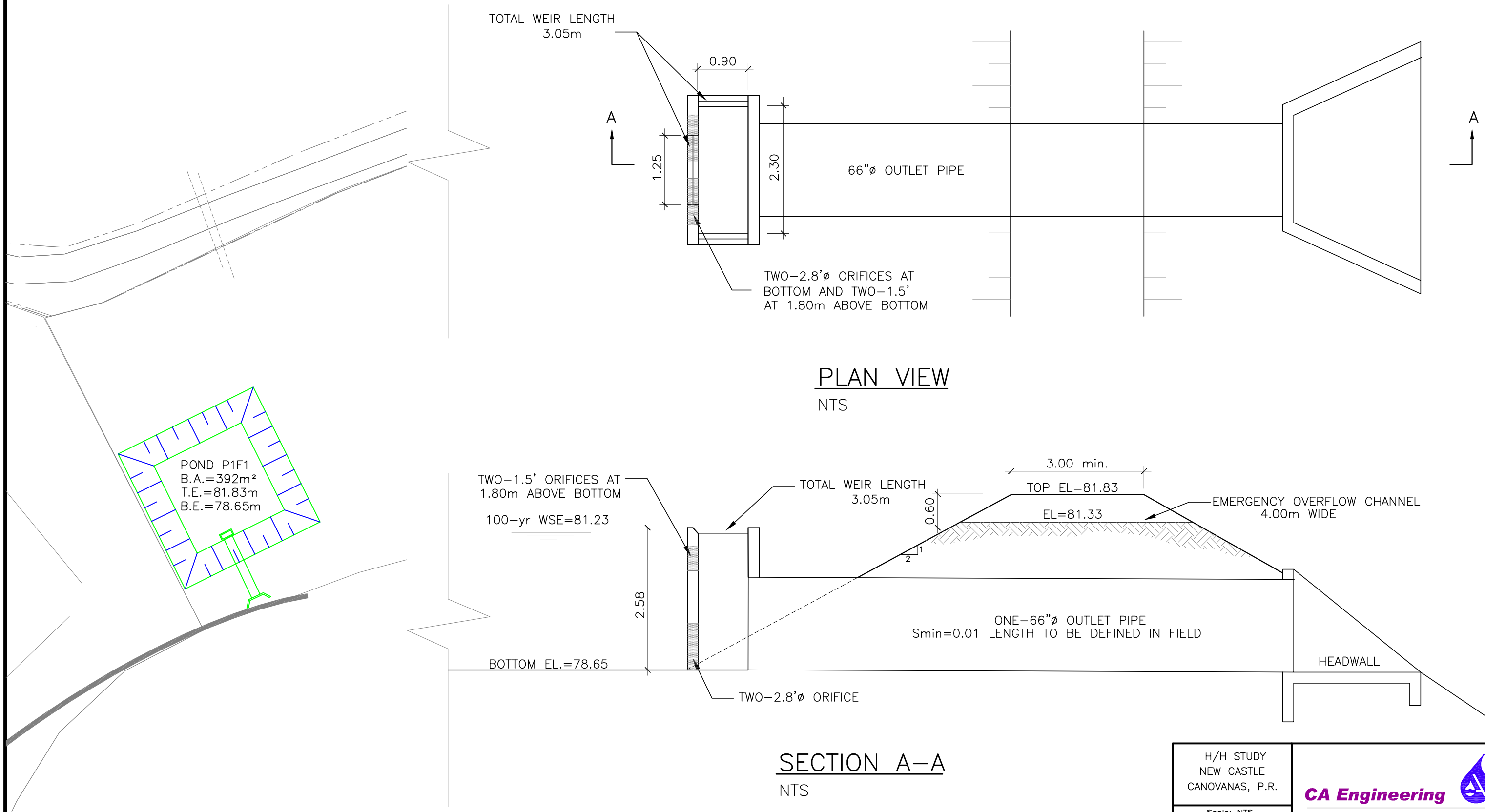


SECTION A-A

NTS

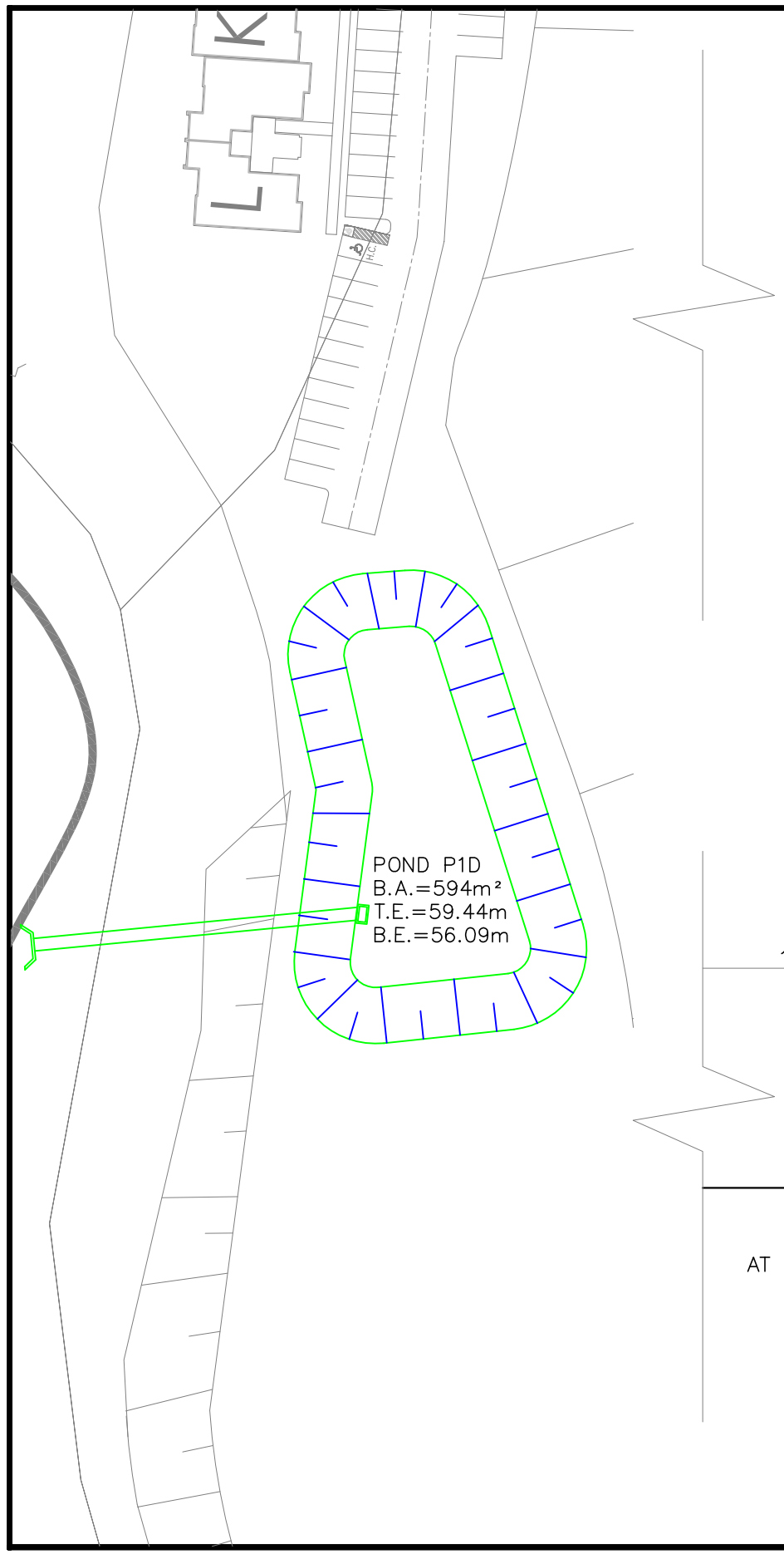
OUTLET STRUCTURE

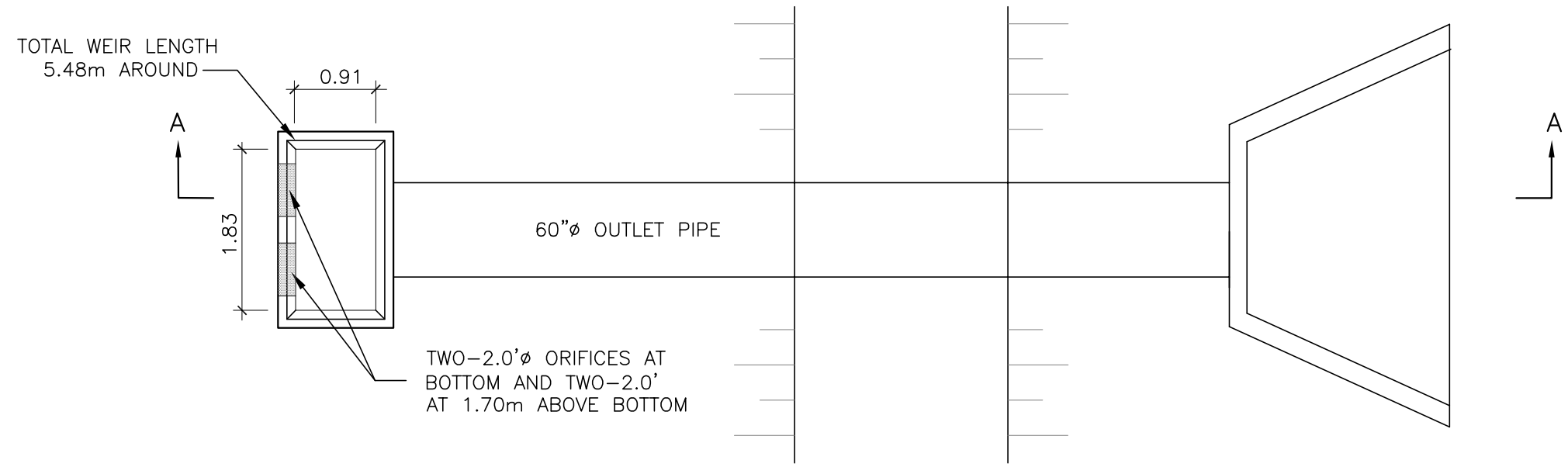
H/H STUDY NEW CASTLE CANOVANAS, P.R.	CA Engineering
Scale: NTS	
Schematics of Detention Pond P2A	Figure 10



OUTLET STRUCTURE

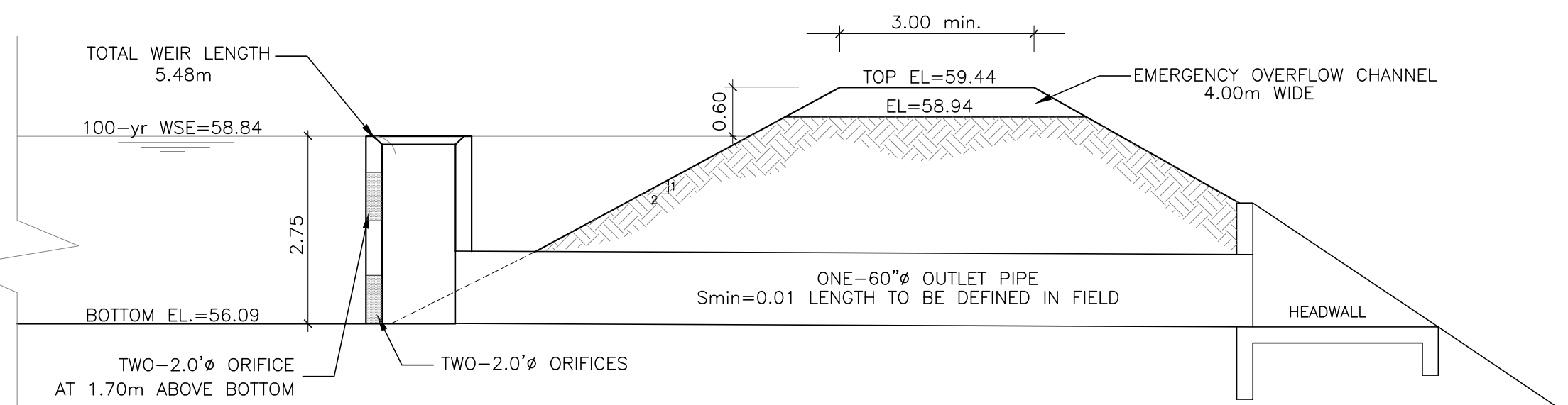
H/H STUDY NEW CASTLE CANOVANAS, P.R.	CA Engineering
Scale: NTS	
Schematics of Detention Pond P1F1	Figure 11





PLAN VIEW

NTS

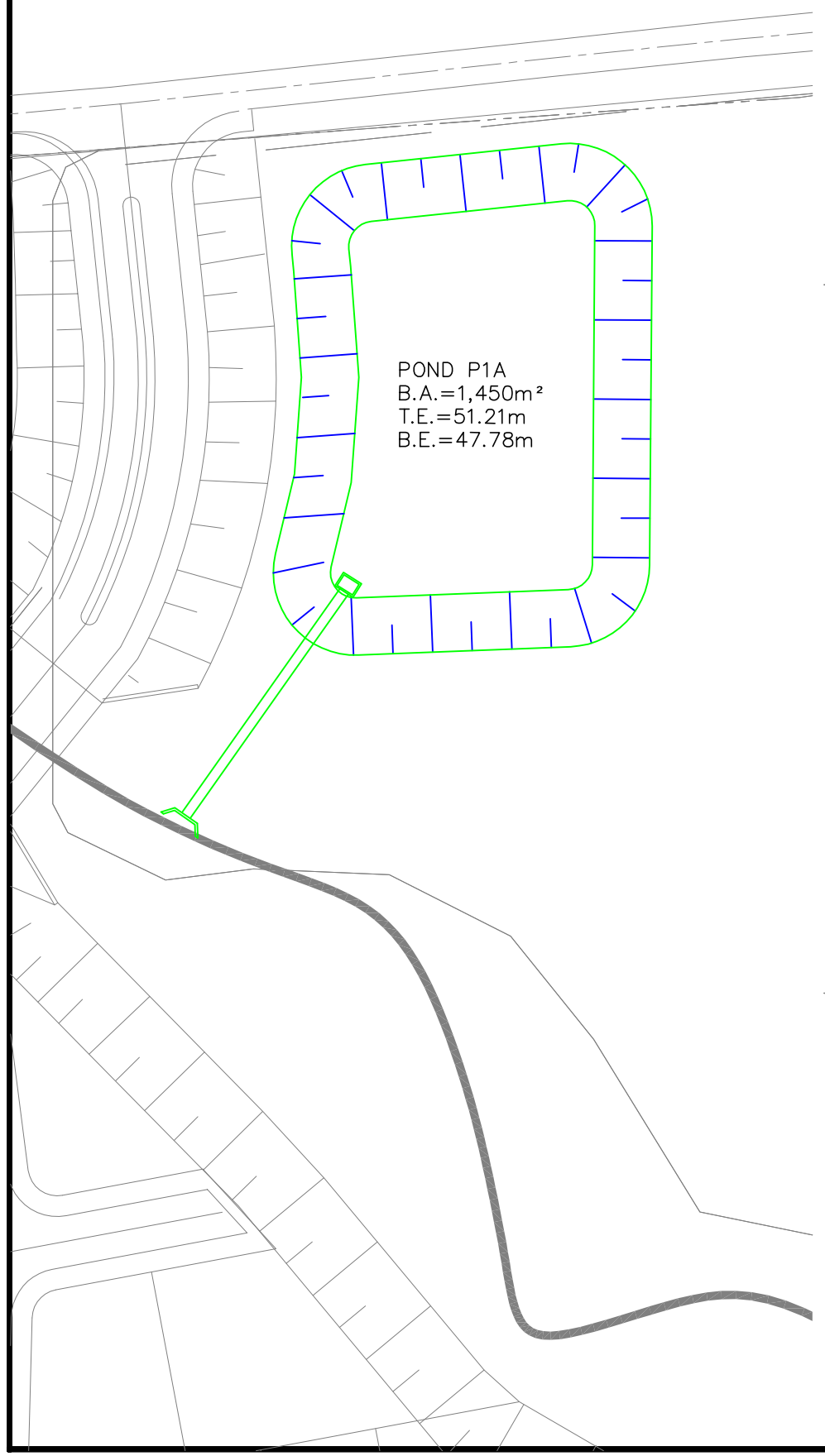


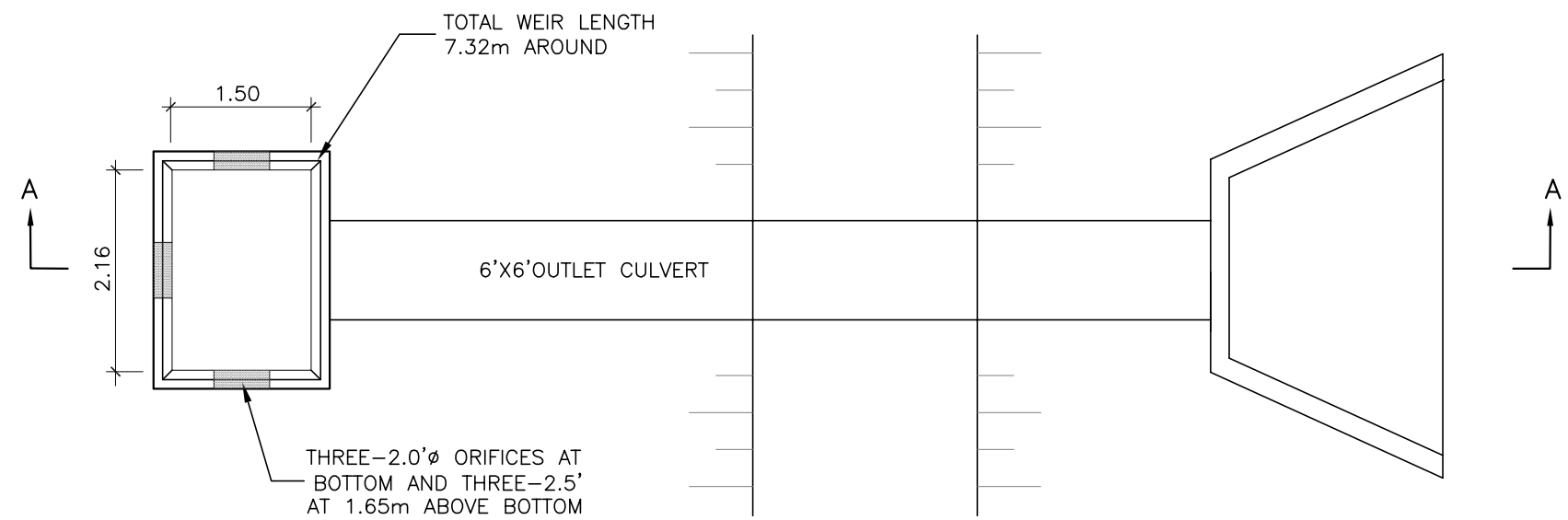
SECTION A–A

NTS

OUTLET STRUCTURE

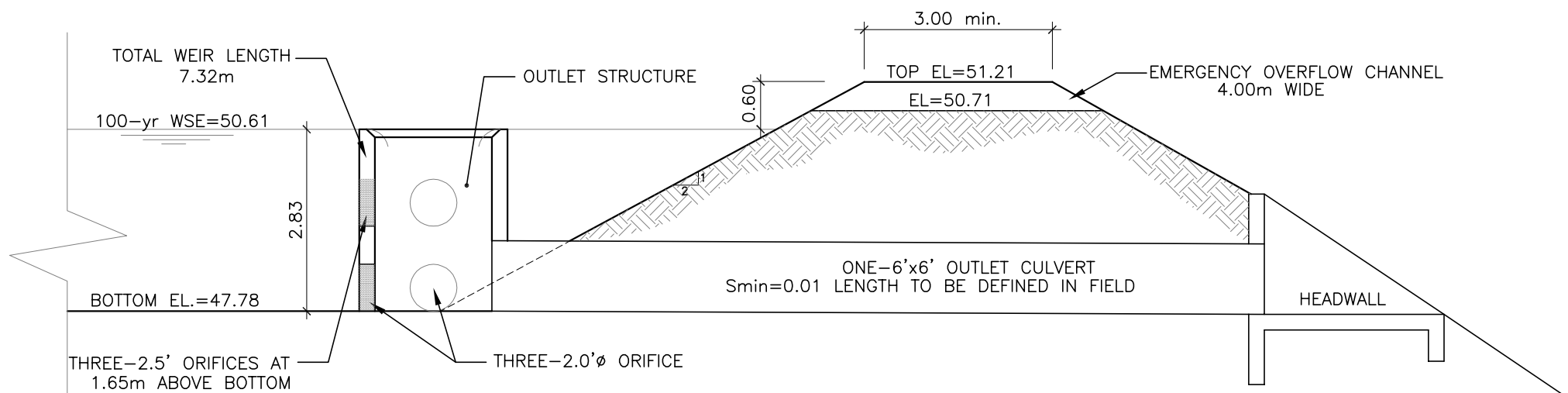
H/H STUDY NEW CASTLE CANOVANAS, P.R.	CA Engineering
Scale: NTS	
Schematics of Detention Pond P1D	Figure 12





PLAN VIEW

NTS



SECTION A-A

NTS

OUTLET STRUCTURE

H/H STUDY NEW CASTLE CANOVANAS, P.R.	CA Engineering
Scale: NTS	
Schematics of Detention Pond P1A	Figure 13

APPENDIXES

APPENDIX A

HYDROLOGIC PARAMETERS ESTIMATION

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Puerto Rico 18.33525 N 65.883306 W 360 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 3, Version 3
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006
Extracted: Mon Mar 3 2008

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.42	0.58	0.74	1.19	1.76	2.32	2.59	3.20	3.88	4.57	5.87	6.68	8.20	9.80	13.74	17.24	21.62	26.10
2	0.53	0.73	0.93	1.49	2.21	2.97	3.33	4.18	5.10	6.03	7.75	8.79	10.64	12.58	17.38	21.64	27.02	32.47
5	0.64	0.88	1.12	1.80	2.67	3.73	4.27	5.58	6.97	8.36	10.75	12.14	14.28	16.30	21.49	26.14	32.20	38.05
10	0.72	0.99	1.27	2.04	3.02	4.31	5.02	6.71	8.51	10.33	13.30	15.09	17.52	19.62	25.05	29.93	36.55	42.64
25	0.84	1.15	1.47	2.36	3.50	5.11	6.05	8.31	10.67	13.19	17.02	19.42	22.28	24.45	30.09	35.21	42.53	48.85
50	0.93	1.27	1.63	2.61	3.87	5.73	6.88	9.61	12.46	15.59	20.14	23.10	26.30	28.50	34.27	39.45	47.28	53.71
100	1.02	1.39	1.78	2.86	4.24	6.36	7.74	10.97	14.33	18.16	23.50	27.11	30.66	32.88	38.63	43.79	52.12	58.56
200	1.11	1.52	1.95	3.12	4.62	7.02	8.64	12.41	16.34	20.95	27.17	31.53	35.47	37.74	43.38	48.40	57.16	63.59
500	1.23	1.69	2.17	3.47	5.14	7.93	9.89	14.45	19.19	24.97	32.48	37.97	42.43	44.77	50.17	54.97	64.02	70.34
1000	1.33	1.82	2.34	3.74	5.55	8.64	10.88	16.08	21.51	28.28	36.88	43.35	48.20	50.61	55.72	60.25	69.60	75.61

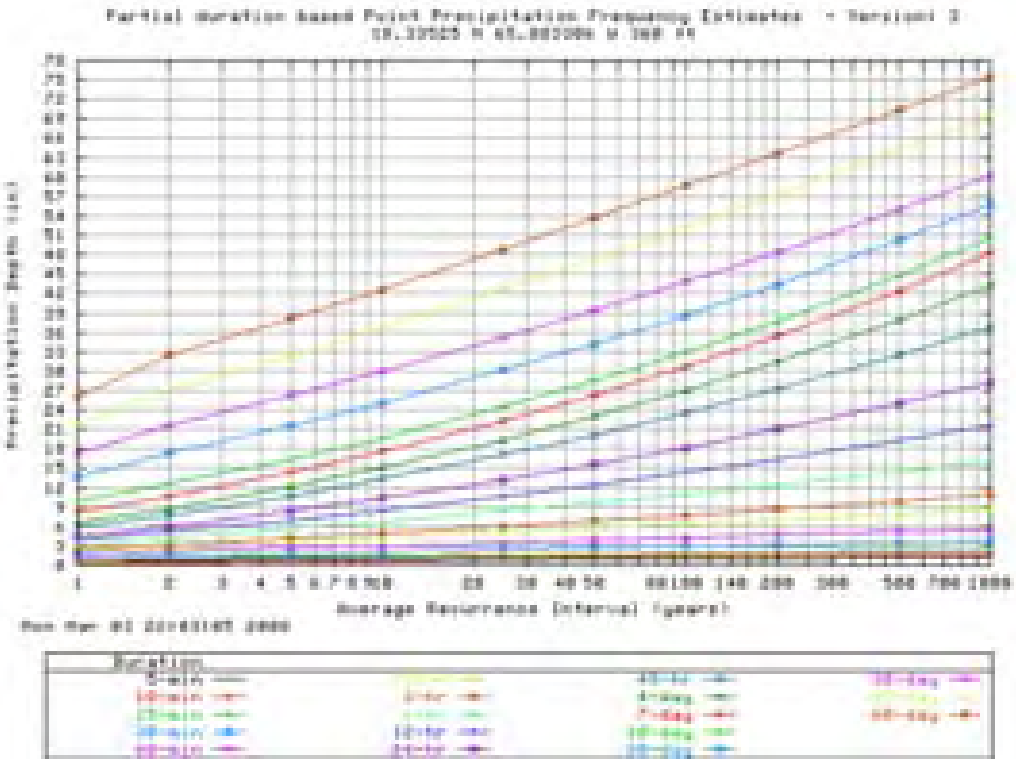
* These precipitation frequency estimates are based on a partial duration maxima series. **ARI** is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

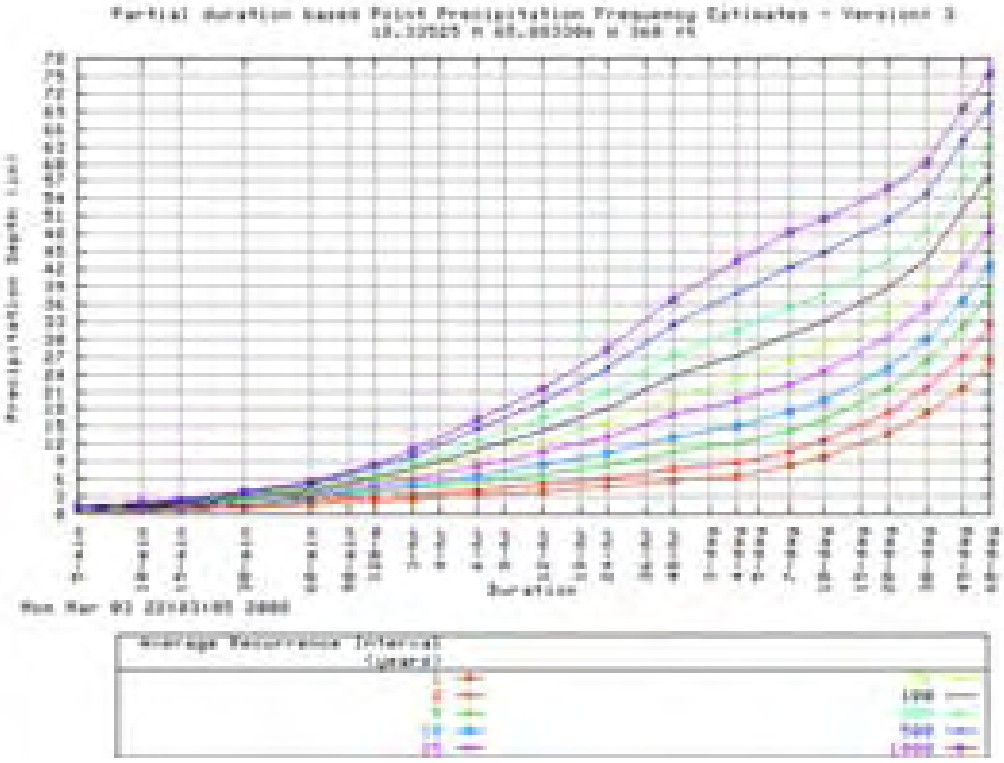
* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)																		
ARI (years)**	**5 min**	**10 min**	**15 min**	**30 min**	**60 min**	**120 min**	**3 hr**	**6 hr**	**12 hr**	**24 hr**	**48 hr**	**4 day**	**7 day**	**10 day**	**20 day**	**30 day**	**45 day**	**60 day**
1	0.46	0.63	0.81	1.30	1.93	2.57	2.90	3.63	4.46	5.21	6.80	7.70	9.25	10.90	15.04	18.68	23.30	27.93
2	0.58	0.79	1.02	1.63	2.42	3.29	3.78	4.80	5.84	6.87	8.98	10.12	12.04	14.03	19.00	23.47	29.11	34.75
5	0.73	1.00	1.28	2.05	3.04	4.16	4.86	6.42	7.98	9.52	12.48	14.06	16.24	18.31	23.58	28.34	34.73	40.72
10	0.80	1.09	1.41	2.25	3.34	4.82	5.73	7.73	9.74	11.76	15.45	17.47	19.93	22.08	27.55	32.54	39.50	45.69
25	0.93	1.27	1.62	2.60	3.86	5.72	6.93	9.62	10.93	15.01	19.80	22.47	25.41	27.64	33.30	38.40	46.14	52.52
50	1.03	1.41	1.81	2.89	4.29	6.46	7.93	11.19	12.88	17.77	23.52	26.76	30.04	32.29	38.05	43.18	51.48	57.93
100	1.14	1.55	1.99	3.19	4.73	7.22	8.99	12.88	14.86	20.74	27.52	31.51	35.15	37.44	43.09	48.13	56.89	63.38
200	1.25	1.71	2.19	3.50	5.20	8.03	10.11	14.68	17.05	24.00	31.98	36.73	40.80	43.15	48.55	53.35	62.66	69.07
500	1.40	1.91	2.45	3.92	5.82	9.15	11.66	17.24	20.13	28.77	38.49	44.45	49.05	51.46	56.45	60.98	70.58	76.94
1000	1.52	2.08	2.67	4.27	6.33	10.06	12.95	19.38	22.64	32.74	43.97	51.01	56.00	58.46	63.01	67.16	77.10	83.16

* The **upper** bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are **greater** than.
** These precipitation frequency estimates are based on a partial duration series. **ARI** is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

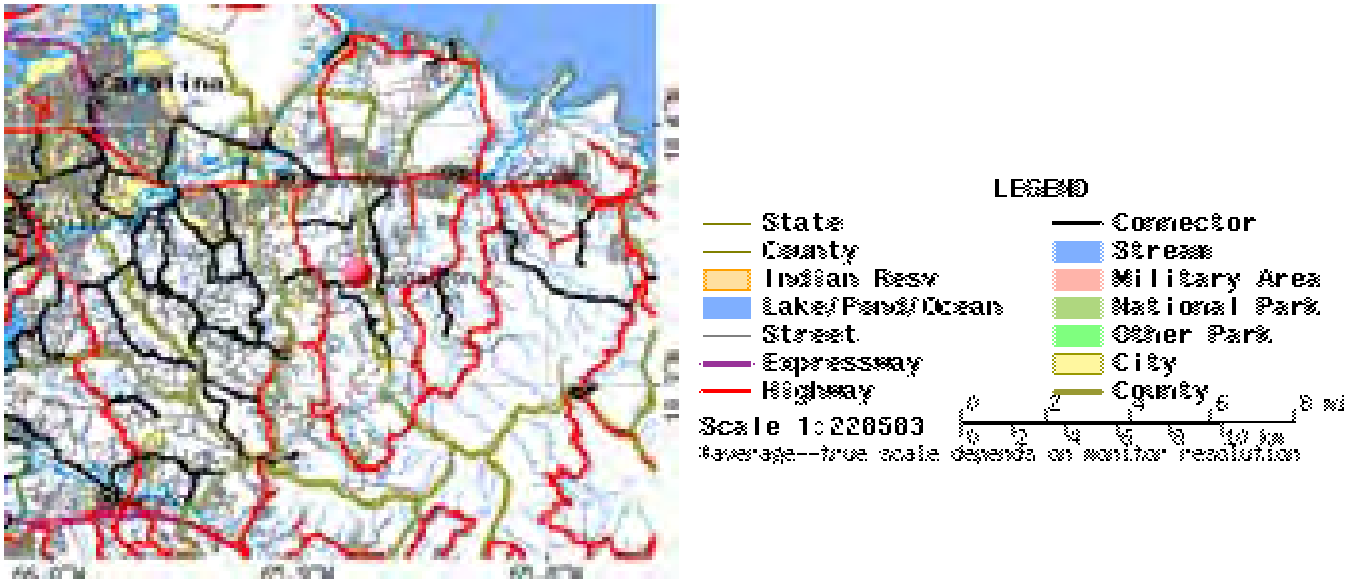
* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)																		
ARI (years)**	**5 min**	**10 min**	**15 min**	**30 min**	**60 min**	**120 min**	**3 hr**	**6 hr**	**12 hr**	**24 hr**	**48 hr**	**4 day**	**7 day**	**10 day**	**20 day**	**30 day**	**45 day**	**60 day**
1	0.39	0.53	0.68	1.09	1.62	2.10	2.33	2.85	3.41	4.05	5.11	5.87	7.29	8.84	12.60	15.99	20.16	24.43
2	0.49	0.67	0.85	1.37	2.03	2.69	2.99	3.72	4.49	5.33	6.75	7.73	9.49	11.34	15.94	20.10	25.21	30.40
5	0.63	0.87	1.11	1.78	2.64	3.37	3.83	4.93	6.10	7.36	9.29	10.57	12.63	14.60	19.61	24.18	29.97	35.55
10	0.72	0.98	1.26	2.02	2.99	3.88	4.47	5.90	7.40	9.04	11.40	13.03	15.35	17.43	22.75	27.57	33.88	39.73
25	0.78	1.06	1.36	2.18	3.24	4.56	5.34	7.21	9.16	11.42	14.38	16.57	19.30	21.46	27.07	32.19	39.13	45.30
50	0.85	1.17	1.50	2.40	3.56	5.08	6.01	8.26	10.56	13.36	16.82	19.49	22.52	24.75	30.51	35.81	43.24	49.52
100	0.93	1.27	1.63	2.60	3.86	5.58	6.67	9.30	12.00	15.40	19.37	22.63	25.95	28.27	34.07	39.48	47.33	53.72
200	1.00	1.37	1.76	2.81	4.17	6.10	7.37	10.38	13.49	17.60	22.09	25.99	29.67	32.06	37.91	43.27	51.55	57.93
500	1.10	1.51	1.93	3.10	4.59	6.79	8.31	11.91	15.58	20.66	25.91	30.76	34.92	37.48	43.30	48.62	57.19	63.48
1000	1.18	1.61	2.07	3.31	4.91	7.32	9.04	13.10	17.24	23.13	29.01	34.68	39.20	41.88	47.60	52.90	61.71	67.76

* The **lower** bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are **less** than.
** These precipitation frequency estimates are based on a partial duration maxima series. **ARI** is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.


Partial duration based Point Precipitation Frequency Estimates - Version: 3
Precipitation Depth (in)
Average Recurrence Interval (years)
Duration


Partial duration based Point Precipitation Frequency Estimates - Version: 3
Precipitation Depth (in)
Duration
Average Recurrence Interval (years)

Maps -


LEGEND
State
County
Indian Resv
Lake/Pond/Ocean
Street
Expressway
Highway
Connector
Stream
Military Area
National Park
Other Park
City
County
Scale 1:220503
Average--true scale depends on monitor resolution

Project: New Castle, Canovanas, PR
PHYSIOGRAFIC INFORMATION AND CN ESTIMATION

The following soil type was found in the project vicinity

Symbol	Name	TYPE	CN
MuE2	Mucara Silty Clay loam, 20 to 40 percent slope	D	89
Tt	Toa Silty clay Loam	B	79
AcC	Aceituna silty clay loam, 5 to 12 percent slopes	B	79
RrC2	Rio Arriba clay, 5 to 12 percent slope	D	89
Re	Reilly soils	A	68
Rs	Rock land	D	89
CbF2	Caaguabo clay loam, 20 to 60 percent slopes	D	89
HuF	Humatas-stony land complex, 40 to 60 percent slop	C	86
MaD2	Mabi clay, 12 to 20 percent slopes	D	89
LsE2	Los Guineos silty clayloam, 20 to 40 percent	C	86
LsF2	Los Guineos silty clayloam, 40 to 60 percent	C	86
LsD	Los Guineos silty clayloam, 12 to 20 percent	C	86

PHYSIOGRAFIC INFORMATION: PROJECT AREA P1A

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
RrC2	D	89	14.55
Rs	D	89	5.42
MuE2	D	89	1.45
CbF2	D	89	5.62
Tt	B	79	3.11
Total (acres)			30.15
Total (km2)			0.122
Total (mi2)			0.0471
Weighted CN			87.97

PHYSIOGRAFIC INFORMATION: PROJECT AREA P1B

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	6.51
AcC	B	79	2.44
Total (acres)			8.95
Total (km2)			0.036
Total (mi2)			0.0140
Weighted CN			79.00

PHYSIOGRAFIC INFORMATION: PROJECT AREA P1C

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	7.10
MuE2	D	89	4.50
Total (acres)			11.60
Total (km2)			0.047
Total (mi2)			0.0181
Weighted CN			82.88

PHYSIOGRAFIC INFORMATION: PROJECT AREA P1D

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	0.84
Re	A	68	6.97
Rs	D	89	8.20
CbF2	D	89	2.64
RrC2	D	89	2.41
Total (acres)			21.06
Total (km2)			0.085
Total (mi2)			0.0329
Weighted CN			81.65

PHYSIOGRAFIC INFORMATION: PROJECT AREA E0

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
HuF	C	86	129.51
Rs	D	89	21.64
LsE2	C	86	9.42
LsF2	C	86	59.13
LsD	C	86	28.65
Total (acres)			248.35
Total (km2)			1.005
Total (mi2)			0.3880
Weighted CN			86.26

PHYSIOGRAFIC INFORMATION: PROJECT AREA E1

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
HuF	C	86	58.93
MuE2	D	89	10.32
Rs	D	89	25.12
CbF2	D	89	21.59
Total (acres)			115.96
Total (km2)			0.469
Total (mi2)			0.1812
Weighted CN			87.48

PHYSIOGRAFIC INFORMATION: PROJECT AREA E2

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
MuE2	D	89	25.70
CbF2	D	89	14.35
HuF	C	86	1.38
Total (acres)			41.43
Total (km2)			0.168
Total (mi2)			0.0647
Weighted CN			88.90

PHYSIOGRAFIC INFORMATION: PROJECT AREA E3

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
CbF2	D	89	16.34
MuE2	D	89	1.58
Total (acres)			17.92
Total (km2)			0.073
Total (mi2)			0.0280
Weighted CN			89.00

Project: New Castle, Canovanas, PR
PHYSIOGRAFIC INFORMATION AND CN ESTIMATION

PHYSIOGRAFIC INFORMATION: PROJECT AREA P1E

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Tt	B	79	3.53
Re	A	68	1.10
AcC	B	79	6.40
MuE2	D	89	24.43
CbF2	D	89	2.07
HuF	C	86	7.70
Total (acres)			45.23
Total (km2)			0.183
Total (mi2)			0.0707
Weighted CN			85.78

PHYSIOGRAFIC INFORMATION: PROJECT AREA P1F

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
MuE2	D	89	1.53
Rs	D	89	0.53
CbF2	D	89	14.05
HuF	C	86	3.35
Total (acres)			19.46
Total (km2)			0.079
Total (mi2)			0.0304
Weighted CN			88.48

PHYSIOGRAFIC INFORMATION: PROJECT AREA P2A

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
Rs	D	89	0.76
CbF2	D	89	7.46
HuF	C	86	5.17
Total (acres)			13.39
Total (km2)			0.054
Total (mi2)			0.0209
Weighted CN			87.84

PHYSIOGRAFIC INFORMATION: PROJECT AREA P2B

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
MuE2	D	89	16.07
MaD2	D	89	3.32
CbF2	D	89	3.47
HuF	C	86	17.14
Total (acres)			40.00
Total (km2)			0.162
Total (mi2)			0.0625
Weighted CN			87.71

PHYSIOGRAFIC INFORMATION: PROJECT AREA P2C

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
HuF	C	86	19.99
Total (acres)			19.99
Total (km2)			0.081
Total (mi2)			0.0312
Weighted CN			86.00

PHYSIOGRAFIC INFORMATION: PROJECT AREA E4

		Existing Conditions	
Soil	HSG	Curve Number	Area (acre)
CbF2	D	89	13.53
Total (acres)			13.53
Total (km2)			0.055
Total (mi2)			0.0211
Weighted CN			89.00

Project: New Castle, Canovanas, Puerto Rico
LAG TIME COMPUTATIONS - SCS

SCS's Method Lag = {L^0.8 * (S+1)^0.7} / (1900 * Y^0.5)

	AREA	Length		High Elevation	Low Elevation	DH		Slope	[L^0.8]	[CN]	[S]	[(S+1)^0.7]	[Y^0.5]	Lag
		[m]	[ft]	[m]	[m]	[m]	[ft]							(hrs)
Existing	P1A	**452.0**	1,483	**90.00**	**50.00**	40.0	131.2	0.0885	344.2831	**87.97**	1.2825	1.7819	2.9748	**0.11**
	P1B	**224.0**	735	**55.00**	**45.00**	10.0	32.8	0.0446	196.3376	**79.00**	1.4493	1.8721	2.1129	**0.09**
	P1C	**229.0**	751	**80.00**	**50.00**	30.0	98.4	0.1310	199.8358	**82.88**	1.3721	1.8306	3.6195	**0.05**
	P1D	**387.0**	1,270	**100.00**	**50.00**	50.0	164.1	0.1292	304.0701	**81.65**	1.3957	1.8433	3.5944	**0.08**
	P1E	**839.0**	2,753	**90.00**	**50.00**	40.0	131.2	0.0477	564.6958	**85.78**	1.3196	1.8021	2.1835	**0.25**
	P1F	**360.0**	1,181	**120.00**	**70.00**	50.0	164.1	0.1389	286.9769	**88.48**	1.2742	1.7774	3.7268	**0.07**
	P2A	**187.0**	614	**200.00**	**150.00**	50.0	164.1	0.2674	169.9332	**87.84**	1.2847	1.7831	5.1709	**0.03**
	P2B	**585.0**	1,919	**220.00**	**170.00**	50.0	164.1	0.0855	423.1844	**87.71**	1.2868	1.7843	2.9235	**0.14**
	P2C	**452.0**	1,483	**220.00**	**200.00**	20.0	65.6	0.0442	344.2831	**86.00**	1.3158	1.8001	2.1035	**0.16**
	E0	**1,635.0**	5,364	**425.00**	**200.00**	225.0	738.2	0.1376	962.9843	**86.26**	1.3113	1.7976	3.7096	**0.25**
	E1	**850.0**	2,789	**160.00**	**100.00**	60.0	196.9	0.0706	570.6110	**87.48**	1.2907	1.7864	2.6568	**0.20**
	E2	**467.0**	1,532	**200.00**	**100.00**	100.0	328.1	0.2141	353.3934	**88.90**	1.2674	1.7737	4.6274	**0.07**
	E3	**300.0**	984	**180.00**	**130.00**	50.0	164.1	0.1667	248.0287	**89.00**	1.2658	1.7728	4.0825	**0.06**
	E4	**256.0**	840	**150.00**	**100.00**	50.0	164.1	0.1953	218.4726	**89.00**	1.2658	1.7728	4.4194	**0.05**
Proposed	P1A	**573.0**	1,880	**70.00**	**55.00**	15.0	49.2	0.0262	416.2255	**93.00**	1.2048	1.7392	1.6180	**0.24**
	P1B1	**224.0**	735	**50.00**	**47.00**	3.0	9.8	0.0134	196.3376	**93.00**	1.2048	1.7392	1.1573	**0.16**
	P1B2	**204.0**	669	**57.00**	**47.00**	10.0	32.8	0.0490	182.1835	**93.00**	1.2048	1.7392	2.2140	**0.08**
	P1C1	**318.0**	1,043	**57.00**	**48.00**	9.0	29.5	0.0283	259.8643	**93.00**	1.2048	1.7392	1.6823	**0.14**
	P1C2	**324.0**	1,063	**66.00**	**55.00**	11.0	36.1	0.0340	263.7795	**93.00**	1.2048	1.7392	1.8426	**0.13**
	P1D	**366.0**	1,201	**100.00**	**60.00**	40.0	131.2	0.1093	290.7970	**93.00**	1.2048	1.7392	3.3059	**0.08**
	P1E	**405.0**	1,329	**100.00**	**80.00**	20.0	65.6	0.0494	315.3327	**93.00**	1.2048	1.7392	2.2222	**0.13**
	P1F1	**300.0**	984	**100.00**	**90.00**	10.0	32.8	0.0333	248.0287	**93.00**	1.2048	1.7392	1.8257	**0.12**
	P1F2	**242.0**	794	**90.00**	**80.00**	10.0	32.8	0.0413	208.8610	**93.00**	1.2048	1.7392	2.0328	**0.09**
	P2A	**415.0**	1,362	**170.00**	**150.00**	20.0	65.6	0.0482	321.5463	**93.00**	1.2048	1.7392	2.1953	**0.13**
	P2B	**661.0**	2,169	**240.00**	**180.00**	60.0	196.9	0.0908	466.6230	**93.00**	1.2048	1.7392	3.0128	**0.14**
	P2C	**440.0**	1,444	**240.00**	**210.00**	30.0	98.4	0.0682	336.9513	**93.00**	1.2048	1.7392	2.6112	**0.12**
	E0	**1,635.0**	5,364	**425.00**	**200.00**	225.0	738.2	0.1376	962.9843	**86.26**	1.3113	1.7976	3.7096	**0.25**
	E1	**850.0**	2,789	**160.00**	**100.00**	60.0	196.9	0.0706	570.6110	**87.48**	1.2907	1.7864	2.6568	**0.20**
	E2	**467.0**	1,532	**200.00**	**100.00**	100.0	328.1	0.2141	353.3934	**88.90**	1.2674	1.7737	4.6274	**0.07**
	E3	**300.0**	984	**180.00**	**130.00**	50.0	164.1	0.1667	248.0287	**89.00**	1.2658	1.7728	4.0825	**0.06**
	E4	**256.0**	840	**150.00**	**100.00**	50.0	164.1	0.1953	218.4726	**89.00**	1.2658	1.7728	4.4194	**0.05**

APPENDIX B

HEC-1 RESULTS FOR EXISTING CONDITION

```
*                                      *                                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998              *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
*            VERSION 4.1               *                                                    *          609 SECOND STREET           *
*  RGMHEC2000                HEC-1.COM *                                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE   23JUL09  TIME  16:18:22  *                                                    *           (916) 756-1104             *
*                                      *                                                    *                                      *
****************************************                                                    ****************************************
```

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

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

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

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

  1           ID        HYDROLOGIC ANALYSIS
  2           ID        PROJECT: NEW CASTLE, CANOVANAS, PR
  3           ID        TRIANGULAR DISTRIBUTION
  4           ID        FREQUENCY OF OCCURRENCE: 2-, 10-, 25-, 50- & 100-YEARS
  5           ID        EXISTING CONDITION
  6           IT       5                    300
  7           IO       4
  8           JP       5

  9           KK     P1B
 10           KP       1
 11           BA  0.0140
 12           LS       0      79
 13           UD    0.09
 14           IN      15
 15           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 16           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 17           KP       2
 18           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 19           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 20           KP       3
 21           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 22           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 23           KP       4
 24           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 25           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 26           KP       5
 27           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 28           PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 29           KK     P1C
 30           KP       1
 31           BA  0.0181
 32           LS       0   82.88
 33           UD    0.05
 34           IN      15
 35           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 36           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 37           KP       2
 38           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 39           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 40           KP       3
 41           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 42           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 43           KP       4
 44           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 45           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 46           KP       5
 47           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 48           PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
```



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


 49           KK   COMB1
 50           HC       2

 51           KK     P2C
 52           KP       1
 53           BA  0.0312
 54           LS       0      86
 55           UD    0.16
 56           IN      15
 57           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 58           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 59           KP       2
 60           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 61           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 62           KP       3
 63           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 64           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 65           KP       4
 66           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 67           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 68           KP       5
 69           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
```

```
  70          PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

  71          KK   CHANN
  72          KM   ROUTING THROUGH OPEN CHANNEL
  73          KO       5                              21
  74          RD  2260.6    0.08   0.045            TRAP      12    1.00

  75          KK     P2B
  76          KP       1
  77          BA  0.0625
  78          LS       0   87.71
  79          UD    0.14
  80          IN      15
  81          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
  82          PH                    0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
  83          KP       2
  84          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
  85          PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
  86          KP       3
  87          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
  88          PH                    0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
  89          KP       4
  90          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
  91          PH                    0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
  92          KP       5
  93          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
  94          PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
1                                             HEC-1 INPUT                                          PAGE  3

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


  95          KK   CHANN
  96          KM   ROUTING THROUGH OPEN CHANNEL
  97          KO       5                              21
  98          RD    1977    0.08   0.045            TRAP      12    1.00

  99          KK     P2A
 100          KP       1
 101          BA  0.0209
 102          LS       0   87.84
 103          UD    0.03
 104          IN      15
 105          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 106          PH                    0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 107          KP       2
 108          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 109          PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 110          KP       3
 111          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 112          PH                    0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 113          KP       4
 114          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 115          PH                    0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 116          KP       5
 117          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 118          PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 119          KK   CHANN
 120          KM   ROUTING THROUGH OPEN CHANNEL
 121          KO       5                              21
 122          RD  917.36    0.08   0.045            TRAP      12    1.00

 123          KK   COMB2
 124          HC       3

 125          KK      E0
 126          KP       1
 127          BA  0.3880
 128          LS       0   86.26
 129          UD    0.25
 130          IN      15
 131          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 132          PH                    0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 133          KP       2
 134          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 135          PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 136          KP       3
 137          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 138          PH                    0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 139          KP       4
```

```
          140          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          141          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          142          KP       5
          143          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          144          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
1                                                HEC-1 INPUT                                                PAGE  4

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


          145          KK   CHANN
          146          KM   ROUTING THROUGH OPEN CHANNEL
          147          KO       5                              21
          148          RD    3261    0.08   0.045            TRAP      12    1.00

          149          KK      E1
          150          KP       1
          151          BA  0.1812
          152          LS       0   87.48
          153          UD    0.20
          154          IN      15
          155          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
          156          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
          157          KP       2
          158          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          159          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          160          KP       3
          161          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
          162          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
          163          KP       4
          164          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          165          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          166          KP       5
          167          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          168          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

          169          KK   COMB3
          170          HC       2

          171          KK   COMB4
          172          HC       2

          173          KK   CHANN
          174          KM   ROUTING THROUGH OPEN CHANNEL
          175          KO       5                              21
          176          RD     547    0.08   0.045            TRAP      12    1.00

          177          KK      E3
          178          KP       1
          179          BA  0.0280
          180          LS       0      89
          181          UD    0.06
          182          IN      15
          183          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
          184          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
          185          KP       2
          186          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          187          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          188          KP       3
          189          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
          190          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
          191          KP       4
          192          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          193          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
1                                                HEC-1 INPUT                                                PAGE  5

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

          194          KP       5
          195          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          196          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

          197          KK   CHANN
          198          KM   ROUTING THROUGH OPEN CHANNEL
          199          KO       5                              21
          200          RD  763.98    0.08   0.045            TRAP      12    1.00

          201          KK     P1F
          202          KP       1
          203          BA  0.0304
          204          LS       0   88.48
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 205          UD    0.07
 206          IN      15
 207          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 208          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 209          KP       2
 210          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 211          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 212          KP       3
 213          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 214          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 215          KP       4
 216          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 217          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 218          KP       5
 219          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 220          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 221          KK   COMB5
 222          HC       2

 223          KK   COMB6
 224          HC       2

 225          KK   CHANN
 226          KM   ROUTING THROUGH OPEN CHANNEL
 227          KO       5                            21
 228          RD     515    0.08   0.045            TRAP      12    1.00

 229          KK      E2
 230          KP       1
 231          BA  0.0647
 232          LS       0   88.90
 233          UD    0.07
 234          IN      15
 235          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 236          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 237          KP       2
 238          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 239          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 240          KP       3
 241          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 242          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
1                                          HEC-1 INPUT                                                    PAGE  6

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

 243          KP       4
 244          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 245          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 246          KP       5
 247          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 248          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 249          KK   CHANN
 250          KM   ROUTING THROUGH OPEN CHANNEL
 251          KO       5                            21
 252          RD     974    0.08   0.045            TRAP      12    1.00

 253          KK     P1E
 254          KP       1
 255          BA  0.0707
 256          LS       0   85.78
 257          UD    0.25
 258          IN      15
 259          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 260          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 261          KP       2
 262          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 263          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 264          KP       3
 265          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 266          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 267          KP       4
 268          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 269          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 270          KP       5
 271          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 272          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 273          KK   COMB7
 274          HC       2
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 275          KK   COMB8
 276          HC       2

 277          KK   CHANN
 278          KM   ROUTING THROUGH OPEN CHANNEL
 279          KO       5                              21
 280          RD    1698    0.08   0.045            TRAP      12    1.00

 281          KK     P1D
 282          KP       1
 283          BA  0.0329
 284          LS       0   81.65
 285          UD    0.08
 286          IN      15
 287          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 288          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 289          KP       2
 290          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 291          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
1                                          HEC-1 INPUT                                                PAGE  7

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

 292          KP       3
 293          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 294          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 295          KP       4
 296          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 297          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 298          KP       5
 299          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 300          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 301          KK   COMB9
 302          HC       2

 303          KK   CHANN
 304          KM   ROUTING THROUGH OPEN CHANNEL
 305          KO       5                              21
 306          RD    1932    0.08   0.045            TRAP      12    1.00

 307          KK      E4
 308          KP       1
 309          BA  0.0211
 310          LS       0      89
 311          UD    0.05
 312          IN      15
 313          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 314          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 315          KP       2
 316          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 317          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 318          KP       3
 319          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 320          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 321          KP       4
 322          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 323          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 324          KP       5
 325          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 326          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 327          KK   CHANN
 328          KM   ROUTING THROUGH OPEN CHANNEL
 329          KO       5                              21
 330          RD    1811    0.08   0.045            TRAP      12    1.00

 331          KK     P1A
 332          KP       1
 333          BA  0.0471
 334          LS       0   87.97
 335          UD    0.11
 336          IN      15
 337          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 338          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 339          KP       2
 340          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 341          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
1                                          HEC-1 INPUT                                                PAGE  8
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          LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

           342          KP       3
           343          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
           344          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
           345          KP       4
           346          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
           347          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
           348          KP       5
           349          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
           350          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

           351          KK  COMB10
           352          HC       2

           353          KK  COMB11
           354          HC       2
           355          ZZ
1****************************************                                                    ****************************************
 *                                      *                                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                    *          609 SECOND STREET           *
 *  RGMHEC2000               HEC-1.COM  *                                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   23JUL09  TIME  16:18:22  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************


                                 HYDROLOGIC ANALYSIS
                                 PROJECT: NEW CASTLE, CANOVANAS, PR
                                 TRIANGULAR DISTRIBUTION
                                 FREQUENCY OF OCCURRENCE: 2-, 10-, 25-, 50- & 100-YEARS
                                 EXISTING CONDITION

    7 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

      JP          MULTI-PLAN OPTION
                        NPLAN           5  NUMBER OF PLANS

      JR          MULTI-RATIO OPTION
                      RATIOS OF RUNOFF
                     1.00


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


             **************
             *            *
    9 KK     *       P1B  *
             *            *
             **************
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

  10 KP        PLAN  1 FOR STATION      P1B
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  16 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.

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

  17 KP        PLAN  2 FOR STATION      P1B
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  19 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.

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

  20 KP        PLAN  3 FOR STATION      P1B
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA
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 22 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .01

 12 LS           SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 13 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.


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

 23 KP         PLAN  4 FOR STATION      P1B
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 11 BA           SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 25 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

 12 LS           SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 13 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                37.       45.       17.        6.        2.        1.        0.


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

 26 KP         PLAN  5 FOR STATION      P1B
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 11 BA           SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 28 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .01

 12 LS           SCS LOSS RATE
                       STRTL         .53  INITIAL ABSTRACTION
                      CRVNBR       79.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA
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```
 13 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               37.       45.       17.        6.        2.        1.        0.


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


           **************
           *            *
 29 KK     *       P1C  *
           *            *
           **************


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

 30 KP        PLAN  1 FOR STATION      P1C
                            TRIANGULAR DISTRIBUTION 2-YRS STORM

              SUBBASIN RUNOFF DATA

 31 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

 36 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .02

 32 LS          SCS LOSS RATE
                      STRTL         .41  INITIAL ABSTRACTION
                     CRVNBR       82.88  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 33 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .05  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 5 END-OF-PERIOD ORDINATES
               94.       36.        8.        2.        0.


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

 37 KP        PLAN  2 FOR STATION      P1C
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

              SUBBASIN RUNOFF DATA

 31 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

 39 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .02

 32 LS          SCS LOSS RATE
                      STRTL         .41  INITIAL ABSTRACTION
                     CRVNBR       82.88  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 33 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .05  LAG
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                                                  ***

                                                UNIT HYDROGRAPH
                                            5 END-OF-PERIOD ORDINATES
                94.       36.        8.        2.        0.

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

  40 KP        PLAN  3 FOR STATION      P1C
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  42 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .02

  32 LS          SCS LOSS RATE
                       STRTL         .41  INITIAL ABSTRACTION
                      CRVNBR       82.88  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                            5 END-OF-PERIOD ORDINATES
                94.       36.        8.        2.        0.

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

  43 KP        PLAN  4 FOR STATION      P1C
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  45 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .02

  32 LS          SCS LOSS RATE
                       STRTL         .41  INITIAL ABSTRACTION
                      CRVNBR       82.88  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                            5 END-OF-PERIOD ORDINATES
                94.       36.        8.        2.        0.

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

  46 KP        PLAN  5 FOR STATION      P1C
                                TRIANGULAR DISTRIBUTION 100-YRS STORM
```

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              SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  48 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .02

  32 LS          SCS LOSS RATE
                       STRTL         .41  INITIAL ABSTRACTION
                      CRVNBR       82.88  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                                 ***

                                                            UNIT HYDROGRAPH
                                                         5 END-OF-PERIOD ORDINATES
               94.       36.        8.        2.        0.


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


            **************
            *            *
  49 KK     *     COMB1  *
            *            *
            **************

  50 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***


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


            **************
            *            *
  51 KK     *       P2C  *
            *            *
            **************


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

  52 KP        PLAN  1 FOR STATION      P2C
                            TRIANGULAR DISTRIBUTION 2-YRS STORM

              SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

  58 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .03

  54 LS          SCS LOSS RATE
                       STRTL         .33  INITIAL ABSTRACTION
                      CRVNBR       86.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
```

```
                TLAG         .16  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            12 END-OF-PERIOD ORDINATES
          25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
           0.        0.


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

  59 KP        PLAN  2 FOR STATION      P2C
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

  61 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .03

  54 LS          SCS LOSS RATE
                       STRTL         .33  INITIAL ABSTRACTION
                      CRVNBR       86.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            12 END-OF-PERIOD ORDINATES
          25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
           0.        0.


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

  62 KP        PLAN  3 FOR STATION      P2C
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

  64 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

  54 LS          SCS LOSS RATE
                       STRTL         .33  INITIAL ABSTRACTION
                      CRVNBR       86.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            12 END-OF-PERIOD ORDINATES
          25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
           0.        0.


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***
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 65 KP        PLAN  4 FOR STATION      P2C
                          TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 53 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 67 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .03

 54 LS          SCS LOSS RATE
                      STRTL         .33  INITIAL ABSTRACTION
                     CRVNBR       86.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 55 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
               25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
                0.        0.


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

 68 KP        PLAN  5 FOR STATION      P2C
                          TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 53 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 70 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .03

 54 LS          SCS LOSS RATE
                      STRTL         .33  INITIAL ABSTRACTION
                     CRVNBR       86.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 55 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
               25.       71.       68.       38.       19.       10.        5.        3.        1.        1.
                0.        0.


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


            **************
            *            *
 71 KK      *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 73 KO          OUTPUT CONTROL VARIABLES
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                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .083  TIME INTERVAL IN HOURS


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


          **************
          *            *
  75 KK   *       P2B  *
          *            *
          **************


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

  76 KP        PLAN  1 FOR STATION      P2B
                            TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  82 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .06

  78 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.71  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                  10 END-OF-PERIOD ORDINATES
                67.      166.      133.       62.       30.       14.        7.        3.        2.        1.


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

  83 KP        PLAN  2 FOR STATION      P2B
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  85 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .06

  78 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.71  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
```

```
                TLAG         .14  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
          67.      166.      133.       62.       30.       14.        7.        3.        2.        1.

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

 86 KP        PLAN  3 FOR STATION      P2B
                         TRIANGULAR DISTRIBUTION 25-YRS STORM

              SUBBASIN RUNOFF DATA

 77 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

 88 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .06

 78 LS          SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.71  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 79 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
          67.      166.      133.       62.       30.       14.        7.        3.        2.        1.

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

 89 KP        PLAN  4 FOR STATION      P2B
                         TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 77 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

 91 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .06

 78 LS          SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.71  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 79 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
          67.      166.      133.       62.       30.       14.        7.        3.        2.        1.

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

 92 KP        PLAN  5 FOR STATION      P2B
                         TRIANGULAR DISTRIBUTION 100-YRS STORM
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```
              SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  94 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.71  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                              ***

                                                        UNIT HYDROGRAPH
                                                   10 END-OF-PERIOD ORDINATES
                 67.      166.      133.       62.       30.       14.        7.        3.        2.        1.


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


            **************
            *            *
  95 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

  97 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
  99 KK     *       P2A  *
            *            *
            **************


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

 100 KP        PLAN  1 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 106 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00
```

```
                                                STORM AREA =     .02

 102 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.84  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .03  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 5 END-OF-PERIOD ORDINATES
               120.       34.        7.        1.        0.


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

 107 KP        PLAN  2 FOR STATION      P2A
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 109 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .02

 102 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.84  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .03  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 5 END-OF-PERIOD ORDINATES
               120.       34.        7.        1.        0.


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

 110 KP        PLAN  3 FOR STATION      P2A
                             TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 112 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .02

 102 LS          SCS LOSS RATE
                       STRTL         .28  INITIAL ABSTRACTION
                      CRVNBR       87.84  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .03  LAG
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                                                  ***

                                                UNIT HYDROGRAPH
                                            5 END-OF-PERIOD ORDINATES
              120.       34.        7.        1.        0.

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

 113 KP       PLAN  4 FOR STATION      P2A
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 101 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

 115 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .02

 102 LS         SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.84  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .03  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                            5 END-OF-PERIOD ORDINATES
              120.       34.        7.        1.        0.

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

 116 KP       PLAN  5 FOR STATION      P2A
                            TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 101 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                PRECIPITATION DATA

 118 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .02

 102 LS         SCS LOSS RATE
                      STRTL         .28  INITIAL ABSTRACTION
                     CRVNBR       87.84  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .03  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                            5 END-OF-PERIOD ORDINATES
              120.       34.        7.        1.        0.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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            **************
            *            *
 119 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 121 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


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            *            *
 123 KK     *     COMB2  *
            *            *
            **************

 124 HC          HYDROGRAPH COMBINATION
                       ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


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            *            *
 125 KK     *        E0  *
            *            *
            **************


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

 126 KP        PLAN  1 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 132 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                     STORM AREA =     .39

 128 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 129 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                  ***

                                                          UNIT HYDROGRAPH
                                                     17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 133 KP        PLAN  2 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 135 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .39

 128 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 129 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

 136 KP        PLAN  3 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 138 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .39

 128 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 129 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

 139 KP        PLAN  4 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA
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141 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .39

128 LS           SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

129 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

142 KP         PLAN  5 FOR STATION       E0
                            TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

127 BA           SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

144 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .39

128 LS           SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

129 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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


            **************
            *            *
145 KK      *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

147 KO           OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 149 KK     *        E1  *
            *            *
            **************


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

 150 KP        PLAN  1 FOR STATION       E1
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 156 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                   14 END-OF-PERIOD ORDINATES
                 88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                  6.        3.        2.        1.


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

 157 KP        PLAN  2 FOR STATION       E1
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 159 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                   14 END-OF-PERIOD ORDINATES
                 88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                  6.        3.        2.        1.
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 160 KP        PLAN  3 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 162 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
                 88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                  6.        3.        2.        1.


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

 163 KP        PLAN  4 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 165 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
                 88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                  6.        3.        2.        1.


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

 166 KP        PLAN  5 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA
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                PRECIPITATION DATA

 168 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .18

 152 LS         SCS LOSS RATE
                      STRTL         .29  INITIAL ABSTRACTION
                     CRVNBR       87.48  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .20  LAG

                                                                ***

                                                        UNIT HYDROGRAPH
                                                   14 END-OF-PERIOD ORDINATES
               88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                6.        3.        2.        1.


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


           **************
           *            *
 169 KK    *     COMB3  *
           *            *
           **************

 170 HC         HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***


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


           **************
           *            *
 171 KK    *     COMB4  *
           *            *
           **************

 172 HC         HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***


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


           **************
           *            *
 173 KK    *     CHANN  *
           *            *
           **************
                         ROUTING THROUGH OPEN CHANNEL

 175 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 177 KK     *        E3  *
            *            *
            **************


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

 178 KP        PLAN  1 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 179 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 184 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .03

 180 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                    6 END-OF-PERIOD ORDINATES
               124.       69.       18.        5.        1.        0.


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

 185 KP        PLAN  2 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 179 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 187 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .03

 180 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                    6 END-OF-PERIOD ORDINATES
               124.       69.       18.        5.        1.        0.


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

 188 KP        PLAN  3 FOR STATION       E3
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                                TRIANGULAR DISTRIBUTION 25-YRS STORM

              SUBBASIN RUNOFF DATA

 179 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 190 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                  STORM AREA =     .03

 180 LS         SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
              124.       69.       18.        5.        1.        0.


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

 191 KP       PLAN  4 FOR STATION       E3
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 179 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 193 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                  STORM AREA =     .03

 180 LS         SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
              124.       69.       18.        5.        1.        0.


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

 194 KP       PLAN  5 FOR STATION       E3
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 179 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 196 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00
```

```
                                                STORM AREA =     .03

 180 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
              124.       69.       18.        5.        1.        0.


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


            **************
            *            *
 197 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 199 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 201 KK     *       P1F  *
            *            *
            **************


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

 202 KP        PLAN  1 FOR STATION      P1F
                            TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 203 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 208 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .03

 204 LS          SCS LOSS RATE
                      STRTL         .26  INITIAL ABSTRACTION
                     CRVNBR       88.48  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

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                                                  UNIT HYDROGRAPH
                                              6 END-OF-PERIOD ORDINATES
              112.       88.       25.        7.        2.        1.

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

 209 KP       PLAN  2 FOR STATION      P1F
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

              SUBBASIN RUNOFF DATA

 203 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 211 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .03

 204 LS         SCS LOSS RATE
                      STRTL         .26  INITIAL ABSTRACTION
                     CRVNBR       88.48  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                     ***

                                                  UNIT HYDROGRAPH
                                              6 END-OF-PERIOD ORDINATES
              112.       88.       25.        7.        2.        1.

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

 212 KP       PLAN  3 FOR STATION      P1F
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

              SUBBASIN RUNOFF DATA

 203 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 214 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

 204 LS         SCS LOSS RATE
                      STRTL         .26  INITIAL ABSTRACTION
                     CRVNBR       88.48  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                     ***

                                                  UNIT HYDROGRAPH
                                              6 END-OF-PERIOD ORDINATES
              112.       88.       25.        7.        2.        1.

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

 215 KP       PLAN  4 FOR STATION      P1F
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 203 BA         SUBBASIN CHARACTERISTICS
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                    TAREA         .03  SUBBASIN AREA

               PRECIPITATION DATA

 217 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                  STORM AREA =     .03

 204 LS        SCS LOSS RATE
                    STRTL         .26  INITIAL ABSTRACTION
                   CRVNBR       88.48  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
             112.       88.       25.        7.        2.        1.


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

 218 KP      PLAN  5 FOR STATION      P1F
                              TRIANGULAR DISTRIBUTION 100-YRS STORM

             SUBBASIN RUNOFF DATA

 203 BA        SUBBASIN CHARACTERISTICS
                    TAREA         .03  SUBBASIN AREA

               PRECIPITATION DATA

 220 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                  STORM AREA =     .03

 204 LS        SCS LOSS RATE
                    STRTL         .26  INITIAL ABSTRACTION
                   CRVNBR       88.48  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
             112.       88.       25.        7.        2.        1.


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


           **************
           *            *
 221 KK    *     COMB5  *
           *            *
           **************

 222 HC        HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


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            *            *
 223 KK     *     COMB6  *
            *            *
            **************

 224 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***


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


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            *            *
 225 KK     *     CHANN  *
            *            *
            **************
                             ROUTING THROUGH OPEN CHANNEL

 227 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS



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


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            *            *
 229 KK     *        E2  *
            *            *
            **************


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

 230 KP        PLAN  1 FOR STATION       E2
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 236 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .06

 232 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                                 ***

                                                          UNIT HYDROGRAPH
                                                       6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***
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 237 KP        PLAN  2 FOR STATION       E2
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 239 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                 STORM AREA =     .06

 232 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       88.90  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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

 240 KP        PLAN  3 FOR STATION       E2
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 242 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                 STORM AREA =     .06

 232 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       88.90  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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

 243 KP        PLAN  4 FOR STATION       E2
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 245 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
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```
                .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .06

 232 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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

 246 KP        PLAN  5 FOR STATION       E2
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 248 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .06

 232 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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


            **************
            *            *
 249 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 251 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


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            *            *
 253 KK     *       P1E  *
            *            *
            **************

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

 254 KP        PLAN  1 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 255 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .07  SUBBASIN AREA

                 PRECIPITATION DATA

 260 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .07

 256 LS          SCS LOSS RATE
                       STRTL         .33  INITIAL ABSTRACTION
                      CRVNBR       85.78  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 257 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                 5.        3.        2.        1.        1.        1.        0.

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

 261 KP        PLAN  2 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 255 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .07  SUBBASIN AREA

                 PRECIPITATION DATA

 263 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .07

 256 LS          SCS LOSS RATE
                       STRTL         .33  INITIAL ABSTRACTION
                      CRVNBR       85.78  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 257 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                 5.        3.        2.        1.        1.        1.        0.

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

 264 KP        PLAN  3 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 25-YRS STORM
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                SUBBASIN RUNOFF DATA

 255 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .07  SUBBASIN AREA

                  PRECIPITATION DATA

 266 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .07

 256 LS           SCS LOSS RATE
                        STRTL         .33  INITIAL ABSTRACTION
                       CRVNBR       85.78  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 257 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .25  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                 21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                  5.        3.        2.        1.        1.        1.        0.


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

 267 KP          PLAN  4 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

                SUBBASIN RUNOFF DATA

 255 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .07  SUBBASIN AREA

                  PRECIPITATION DATA

 269 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .07

 256 LS           SCS LOSS RATE
                        STRTL         .33  INITIAL ABSTRACTION
                       CRVNBR       85.78  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 257 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .25  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                 21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                  5.        3.        2.        1.        1.        1.        0.


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

 270 KP          PLAN  5 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

                SUBBASIN RUNOFF DATA

 255 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .07  SUBBASIN AREA

                  PRECIPITATION DATA

 272 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00
```

```
                                                STORM AREA =     .07

 256 LS          SCS LOSS RATE
                       STRTL         .33  INITIAL ABSTRACTION
                      CRVNBR       85.78  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 257 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                 21.       71.      113.      113.       88.       53.       33.       21.       13.        8.
                  5.        3.        2.        1.        1.        1.        0.


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


            **************
            *            *
 273 KK     *     COMB7  *
            *            *
            **************

 274 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
 275 KK     *     COMB8  *
            *            *
            **************

 276 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
 277 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 279 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 281 KK     *       P1D  *
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            *            *
            **************

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

 282 KP        PLAN  1 FOR STATION      P1D
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 283 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 288 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .03

 284 LS          SCS LOSS RATE
                       STRTL         .45  INITIAL ABSTRACTION
                      CRVNBR       81.65  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 285 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               102.      103.       33.       11.        4.        1.        0.

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

 289 KP        PLAN  2 FOR STATION      P1D
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 283 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 291 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .03

 284 LS          SCS LOSS RATE
                       STRTL         .45  INITIAL ABSTRACTION
                      CRVNBR       81.65  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 285 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               102.      103.       33.       11.        4.        1.        0.

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

 292 KP        PLAN  3 FOR STATION      P1D
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 283 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA
```

```
                PRECIPITATION DATA

 294 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

 284 LS         SCS LOSS RATE
                      STRTL         .45  INITIAL ABSTRACTION
                     CRVNBR       81.65  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 285 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
              102.      103.       33.       11.        4.        1.        0.


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

 295 KP       PLAN  4 FOR STATION      P1D
                             TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 283 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 297 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .03

 284 LS         SCS LOSS RATE
                      STRTL         .45  INITIAL ABSTRACTION
                     CRVNBR       81.65  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 285 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
              102.      103.       33.       11.        4.        1.        0.


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

 298 KP       PLAN  5 FOR STATION      P1D
                             TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 283 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                PRECIPITATION DATA

 300 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .03

 284 LS         SCS LOSS RATE
                      STRTL         .45  INITIAL ABSTRACTION
                     CRVNBR       81.65  CURVE NUMBER
```

```
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 285 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
              102.      103.       33.       11.        4.        1.        0.


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


           **************
           *            *
 301 KK    *     COMB9  *
           *            *
           **************

 302 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


           **************
           *            *
 303 KK    *     CHANN  *
           *            *
           **************
                           ROUTING THROUGH OPEN CHANNEL

 305 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


           **************
           *            *
 307 KK    *        E4  *
           *            *
           **************


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

 308 KP        PLAN  1 FOR STATION       E4
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 314 PH                               DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .02
```

```
 310 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .05  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              5 END-OF-PERIOD ORDINATES
                 109.       42.       10.        2.        1.

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

 315 KP        PLAN  2 FOR STATION       E4
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

                SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 317 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .02

 310 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .05  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              5 END-OF-PERIOD ORDINATES
                 109.       42.       10.        2.        1.

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

 318 KP        PLAN  3 FOR STATION       E4
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

                SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 320 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .02

 310 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .05  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              5 END-OF-PERIOD ORDINATES
                 109.       42.       10.        2.        1.
```

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

 321 KP        PLAN  4 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 323 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .02

 310 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                   5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 324 KP        PLAN  5 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 326 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .02

 310 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                   5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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


            **************
            *            *
 327 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL
```

```
 329 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 331 KK     *       P1A  *
            *            *
            **************


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

 332 KP        PLAN  1 FOR STATION      P1A
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 333 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 338 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .05

 334 LS          SCS LOSS RATE
                       STRTL         .27  INITIAL ABSTRACTION
                      CRVNBR       87.97  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 335 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .11  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                      9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.


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

 339 KP        PLAN  2 FOR STATION      P1A
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 333 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 341 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .05

 334 LS          SCS LOSS RATE
                       STRTL         .27  INITIAL ABSTRACTION
                      CRVNBR       87.97  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA
```

```
 335 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .11  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.

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

 342 KP        PLAN  3 FOR STATION      P1A
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 333 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 344 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .05

 334 LS          SCS LOSS RATE
                      STRTL         .27  INITIAL ABSTRACTION
                     CRVNBR       87.97  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 335 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .11  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.

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

 345 KP        PLAN  4 FOR STATION      P1A
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 333 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 347 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .05

 334 LS          SCS LOSS RATE
                      STRTL         .27  INITIAL ABSTRACTION
                     CRVNBR       87.97  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 335 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .11  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.

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

 348 KP        PLAN  5 FOR STATION      P1A
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                              TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

  333 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .05  SUBBASIN AREA

                  PRECIPITATION DATA

  350 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .05

  334 LS          SCS LOSS RATE
                        STRTL         .27  INITIAL ABSTRACTION
                       CRVNBR       87.97  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

  335 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .11  LAG

                                                                  ***

                                                              UNIT HYDROGRAPH
                                                          9 END-OF-PERIOD ORDINATES
                85.      150.       77.       31.       13.        5.        2.        1.        0.


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


            **************
            *            *
  351 KK    *    COMB10  *
            *            *
            **************

  352 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


            **************
            *            *
  353 KK    *    COMB11  *
            *            *
            **************

  354 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***
1

              PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                          TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO FLOWS
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                        1.00

 HYDROGRAPH AT
+                   P1B       .01     1   FLOW          27.
                                          TIME        12.17
                                        2   FLOW          43.
                                          TIME        12.17
                                        3   FLOW          52.
                                          TIME        12.17
                                        4   FLOW          59.
                                          TIME        12.17
```

```
                                        5   FLOW          65.
                                            TIME        12.17

 HYDROGRAPH AT
+                    P1C       .02     1   FLOW          49.
                                            TIME        12.08
                                        2   FLOW          75.
                                            TIME        12.08
                                        3   FLOW          90.
                                            TIME        12.08
                                        4   FLOW         101.
                                            TIME        12.08
                                        5   FLOW         112.
                                            TIME        12.08

  2 COMBINED AT
+                  COMB1       .03     1   FLOW          74.
                                            TIME        12.08
                                        2   FLOW         116.
                                            TIME        12.08
                                        3   FLOW         140.
                                            TIME        12.08
                                        4   FLOW         158.
                                            TIME        12.08
                                        5   FLOW         176.
                                            TIME        12.08

 HYDROGRAPH AT
+                    P2C       .03     1   FLOW          61.
                                            TIME        12.17
                                        2   FLOW          92.
                                            TIME        12.17
                                        3   FLOW         109.
                                            TIME        12.17
                                        4   FLOW         123.
                                            TIME        12.17
                                        5   FLOW         135.
                                            TIME        12.17

 ROUTED TO
+                  CHANN       .03     1   FLOW          61.
                                            TIME        12.25
                                        2   FLOW          89.
                                            TIME        12.25
                                        3   FLOW         108.
                                            TIME        12.25
                                        4   FLOW         120.
                                            TIME        12.25
                                        5   FLOW         134.
                                            TIME        12.25

 HYDROGRAPH AT
+                    P2B       .06     1   FLOW         134.
                                            TIME        12.17
                                        2   FLOW         198.
                                            TIME        12.17
                                        3   FLOW         233.
                                            TIME        12.17
                                        4   FLOW         261.
                                            TIME        12.17
                                        5   FLOW         287.
                                            TIME        12.17

 ROUTED TO
+                  CHANN       .06     1   FLOW         130.
                                            TIME        12.25
                                        2   FLOW         189.
                                            TIME        12.25
                                        3   FLOW         222.
                                            TIME        12.25
                                        4   FLOW         249.
                                            TIME        12.25
                                        5   FLOW         271.
                                            TIME        12.25

 HYDROGRAPH AT
+                    P2A       .02     1   FLOW          65.
                                            TIME        12.08
                                        2   FLOW          95.
                                            TIME        12.08
                                        3   FLOW         113.
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                                        TIME        12.08
                                    4   FLOW         126.
                                        TIME        12.08
                                    5   FLOW         138.
                                        TIME        12.08

 ROUTED TO
+                   CHANN       .02     1   FLOW          54.
                                            TIME        12.08
                                    2   FLOW          82.
                                            TIME        12.08
                                    3   FLOW          97.
                                            TIME        12.08
                                    4   FLOW         111.
                                            TIME        12.08
                                    5   FLOW         122.
                                            TIME        12.08

  3 COMBINED AT
+                   COMB2       .11     1   FLOW         224.
                                            TIME        12.25
                                    2   FLOW         325.
                                            TIME        12.25
                                    3   FLOW         386.
                                            TIME        12.25
                                    4   FLOW         431.
                                            TIME        12.25
                                    5   FLOW         472.
                                            TIME        12.25

 HYDROGRAPH AT
+                      E0       .39     1   FLOW         661.
                                            TIME        12.33
                                    2   FLOW         988.
                                            TIME        12.25
                                    3   FLOW        1173.
                                            TIME        12.25
                                    4   FLOW        1315.
                                            TIME        12.25
                                    5   FLOW        1451.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .39     1   FLOW         662.
                                            TIME        12.33
                                    2   FLOW         987.
                                            TIME        12.33
                                    3   FLOW        1171.
                                            TIME        12.33
                                    4   FLOW        1313.
                                            TIME        12.33
                                    5   FLOW        1449.
                                            TIME        12.33

 HYDROGRAPH AT
+                      E1       .18     1   FLOW         344.
                                            TIME        12.25
                                    2   FLOW         507.
                                            TIME        12.25
                                    3   FLOW         598.
                                            TIME        12.25
                                    4   FLOW         669.
                                            TIME        12.25
                                    5   FLOW         736.
                                            TIME        12.25

  2 COMBINED AT
+                   COMB3       .57     1   FLOW         980.
                                            TIME        12.33
                                    2   FLOW        1454.
                                            TIME        12.33
                                    3   FLOW        1721.
                                            TIME        12.33
                                    4   FLOW        1928.
                                            TIME        12.33
                                    5   FLOW        2125.
                                            TIME        12.33

  2 COMBINED AT
+                   COMB4       .68     1   FLOW        1178.
                                            TIME        12.25
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                                        2   FLOW        1765.
                                            TIME        12.25
                                        3   FLOW        2097.
                                            TIME        12.25
                                        4   FLOW        2350.
                                            TIME        12.25
                                        5   FLOW        2592.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .68     1   FLOW        1176.
                                            TIME        12.33
                                        2   FLOW        1753.
                                            TIME        12.25
                                        3   FLOW        2084.
                                            TIME        12.25
                                        4   FLOW        2337.
                                            TIME        12.25
                                        5   FLOW        2577.
                                            TIME        12.25

 HYDROGRAPH AT
+                      E3       .03     1   FLOW          79.
                                            TIME        12.08
                                        2   FLOW         114.
                                            TIME        12.08
                                        3   FLOW         134.
                                            TIME        12.08
                                        4   FLOW         150.
                                            TIME        12.08
                                        5   FLOW         165.
                                            TIME        12.08

 ROUTED TO
+                   CHANN       .03     1   FLOW          70.
                                            TIME        12.08
                                        2   FLOW         102.
                                            TIME        12.08
                                        3   FLOW         122.
                                            TIME        12.08
                                        4   FLOW         136.
                                            TIME        12.08
                                        5   FLOW         150.
                                            TIME        12.08

 HYDROGRAPH AT
+                     P1F       .03     1   FLOW          78.
                                            TIME        12.08
                                        2   FLOW         114.
                                            TIME        12.08
                                        3   FLOW         134.
                                            TIME        12.08
                                        4   FLOW         150.
                                            TIME        12.08
                                        5   FLOW         165.
                                            TIME        12.08

  2 COMBINED AT
+                   COMB5       .06     1   FLOW         148.
                                            TIME        12.08
                                        2   FLOW         216.
                                            TIME        12.08
                                        3   FLOW         256.
                                            TIME        12.08
                                        4   FLOW         286.
                                            TIME        12.08
                                        5   FLOW         315.
                                            TIME        12.08

  2 COMBINED AT
+                   COMB6       .74     1   FLOW        1264.
                                            TIME        12.25
                                        2   FLOW        1891.
                                            TIME        12.25
                                        3   FLOW        2245.
                                            TIME        12.25
                                        4   FLOW        2517.
                                            TIME        12.25
                                        5   FLOW        2775.
                                            TIME        12.25
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 ROUTED TO
+                  CHANN       .74     1   FLOW        1256.
                                           TIME        12.25
                                       2   FLOW        1882.
                                           TIME        12.25
                                       3   FLOW        2236.
                                           TIME        12.25
                                       4   FLOW        2507.
                                           TIME        12.25
                                       5   FLOW        2765.
                                           TIME        12.25

 HYDROGRAPH AT
+                     E2       .06     1   FLOW         168.
                                           TIME        12.08
                                       2   FLOW         243.
                                           TIME        12.08
                                       3   FLOW         286.
                                           TIME        12.08
                                       4   FLOW         319.
                                           TIME        12.08
                                       5   FLOW         351.
                                           TIME        12.08

 ROUTED TO
+                  CHANN       .06     1   FLOW         150.
                                           TIME        12.08
                                       2   FLOW         221.
                                           TIME        12.08
                                       3   FLOW         261.
                                           TIME        12.08
                                       4   FLOW         292.
                                           TIME        12.08
                                       5   FLOW         323.
                                           TIME        12.08

 HYDROGRAPH AT
+                    P1E       .07     1   FLOW         120.
                                           TIME        12.33
                                       2   FLOW         180.
                                           TIME        12.25
                                       3   FLOW         214.
                                           TIME        12.25
                                       4   FLOW         239.
                                           TIME        12.25
                                       5   FLOW         264.
                                           TIME        12.25

  2 COMBINED AT
+                  COMB7       .14     1   FLOW         250.
                                           TIME        12.17
                                       2   FLOW         370.
                                           TIME        12.17
                                       3   FLOW         438.
                                           TIME        12.17
                                       4   FLOW         488.
                                           TIME        12.17
                                       5   FLOW         538.
                                           TIME        12.17

  2 COMBINED AT
+                  COMB8       .88     1   FLOW        1489.
                                           TIME        12.25
                                       2   FLOW        2225.
                                           TIME        12.25
                                       3   FLOW        2639.
                                           TIME        12.25
                                       4   FLOW        2958.
                                           TIME        12.25
                                       5   FLOW        3260.
                                           TIME        12.25

 ROUTED TO
+                  CHANN       .88     1   FLOW        1469.
                                           TIME        12.25
                                       2   FLOW        2200.
                                           TIME        12.25
                                       3   FLOW        2614.
                                           TIME        12.25
                                       4   FLOW        2931.
                                           TIME        12.25
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                                        5   FLOW        3232.
                                            TIME        12.25

 HYDROGRAPH AT
+                    P1D       .03     1   FLOW          69.
                                            TIME        12.08
                                        2   FLOW         108.
                                            TIME        12.08
                                        3   FLOW         130.
                                            TIME        12.08
                                        4   FLOW         146.
                                            TIME        12.08
                                        5   FLOW         162.
                                            TIME        12.08

  2 COMBINED AT
+                  COMB9       .91     1   FLOW        1517.
                                            TIME        12.25
                                        2   FLOW        2274.
                                            TIME        12.25
                                        3   FLOW        2702.
                                            TIME        12.25
                                        4   FLOW        3030.
                                            TIME        12.25
                                        5   FLOW        3342.
                                            TIME        12.25

 ROUTED TO
+                  CHANN       .91     1   FLOW        1507.
                                            TIME        12.33
                                        2   FLOW        2247.
                                            TIME        12.25
                                        3   FLOW        2673.
                                            TIME        12.25
                                        4   FLOW        3000.
                                            TIME        12.25
                                        5   FLOW        3311.
                                            TIME        12.25

 HYDROGRAPH AT
+                     E4       .02     1   FLOW          64.
                                            TIME        12.08
                                        2   FLOW          92.
                                            TIME        12.08
                                        3   FLOW         109.
                                            TIME        12.08
                                        4   FLOW         121.
                                            TIME        12.08
                                        5   FLOW         133.
                                            TIME        12.08

 ROUTED TO
+                  CHANN       .02     1   FLOW          57.
                                            TIME        12.17
                                        2   FLOW          80.
                                            TIME        12.17
                                        3   FLOW          95.
                                            TIME        12.17
                                        4   FLOW         103.
                                            TIME        12.17
                                        5   FLOW         114.
                                            TIME        12.17

 HYDROGRAPH AT
+                    P1A       .05     1   FLOW         108.
                                            TIME        12.17
                                        2   FLOW         158.
                                            TIME        12.17
                                        3   FLOW         187.
                                            TIME        12.17
                                        4   FLOW         209.
                                            TIME        12.17
                                        5   FLOW         230.
                                            TIME        12.17

  2 COMBINED AT
+                 COMB10       .07     1   FLOW         165.
                                            TIME        12.17
                                        2   FLOW         238.
                                            TIME        12.17
                                        3   FLOW         282.
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                                        TIME        12.17
                                   4    FLOW         312.
                                        TIME        12.17
                                   5    FLOW         343.
                                        TIME        12.17

  2 COMBINED AT
+                 COMB11       .98     1    FLOW        1611.
                                        TIME        12.25
                                   2    FLOW        2419.
                                        TIME        12.25
                                   3    FLOW        2878.
                                        TIME        12.25
                                   4    FLOW        3229.
                                        TIME        12.25
                                   5    FLOW        3561.
                                        TIME        12.25
1
                                        SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                            (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                   INTERPOLATED TO
                                                                                 COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                     PEAK

                                (MIN)     (CFS)      (MIN)     (IN)     (MIN)     (CFS)     (MIN)       (IN)

           FOR PLAN = 1  RATIO=  .00
              CHANN  MANE         4.68     61.49    735.17      4.44      5.00     61.09    735.00        4.45

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .7392E+01 EXCESS= .0000E+00 OUTFLOW= .7392E+01 BASIN STORAGE= .2403E-02 PERCENT ERROR=    .0

           FOR PLAN = 2  RATIO=  .00
              CHANN  MANE         4.09     90.67    736.55      8.60      5.00     89.27    735.00        8.60

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1431E+02 EXCESS= .0000E+00 OUTFLOW= .1431E+02 BASIN STORAGE= .3104E-02 PERCENT ERROR=    .0

           FOR PLAN = 3  RATIO=  .00
              CHANN  MANE         3.87    108.76    734.44     11.42      5.00    108.28    735.00       11.42

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1901E+02 EXCESS= .0000E+00 OUTFLOW= .1901E+02 BASIN STORAGE= .2499E-02 PERCENT ERROR=    .0

           FOR PLAN = 4  RATIO=  .00
              CHANN  MANE         3.72    120.40    736.99     13.80      5.00    120.25    735.00       13.79

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2295E+02 EXCESS= .0000E+00 OUTFLOW= .2296E+02 BASIN STORAGE= .2623E-02 PERCENT ERROR=    .0

           FOR PLAN = 5  RATIO=  .00
              CHANN  MANE         3.60    134.17    735.03     16.34      5.00    134.10    735.00       16.35

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2719E+02 EXCESS= .0000E+00 OUTFLOW= .2719E+02 BASIN STORAGE= .3152E-02 PERCENT ERROR=    .0

           FOR PLAN = 1  RATIO=  .00
              CHANN  MANE         3.16    129.66    732.43      4.62      5.00    129.64    735.00        4.62

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1541E+02 EXCESS= .0000E+00 OUTFLOW= .1541E+02 BASIN STORAGE= .1414E-02 PERCENT ERROR=    .0

           FOR PLAN = 2  RATIO=  .00
              CHANN  MANE         2.78    194.43    733.45      8.82      5.00    188.51    735.00        8.81

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2940E+02 EXCESS= .0000E+00 OUTFLOW= .2940E+02 BASIN STORAGE= .1484E-02 PERCENT ERROR=    .0

           FOR PLAN = 3  RATIO=  .00
              CHANN  MANE         2.63    229.24    733.48     11.64      5.00    221.50    735.00       11.63

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3881E+02 EXCESS= .0000E+00 OUTFLOW= .3881E+02 BASIN STORAGE= .1739E-02 PERCENT ERROR=    .0
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          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.53    256.84    732.25     14.03      5.00    249.09    735.00       14.03

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4675E+02 EXCESS= .0000E+00 OUTFLOW= .4675E+02 BASIN STORAGE= .1822E-02 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         2.45    279.57    733.86     16.58      5.00    270.74    735.00       16.58

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5526E+02 EXCESS= .0000E+00 OUTFLOW= .5526E+02 BASIN STORAGE= .1660E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.86     59.95    725.79      4.64      5.00     53.88    725.00        4.64

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5166E+01 EXCESS= .0000E+00 OUTFLOW= .5167E+01 BASIN STORAGE= .5693E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.64     89.49    726.17      8.84      5.00     81.56    725.00        8.84

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9849E+01 EXCESS= .0000E+00 OUTFLOW= .9849E+01 BASIN STORAGE= .8099E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.55    105.85    727.04     11.66      5.00     96.97    725.00       11.67

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1300E+02 EXCESS= .0000E+00 OUTFLOW= .1300E+02 BASIN STORAGE= .6467E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.50    121.16    726.39     14.05      5.00    110.97    725.00       14.06

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1566E+02 EXCESS= .0000E+00 OUTFLOW= .1566E+02 BASIN STORAGE= .7168E-03 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         1.45    133.76    726.59     16.60      5.00    121.64    725.00       16.61

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1851E+02 EXCESS= .0000E+00 OUTFLOW= .1851E+02 BASIN STORAGE= .7539E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         3.07    661.79    740.00      4.46      5.00    661.78    740.00        4.46

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9235E+02 EXCESS= .0000E+00 OUTFLOW= .9235E+02 BASIN STORAGE= .2851E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         2.69    990.66    738.92      8.63      5.00    987.38    740.00        8.63

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1786E+03 EXCESS= .0000E+00 OUTFLOW= .1786E+03 BASIN STORAGE= .3920E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         2.54   1175.19    738.60     11.45      5.00   1170.65    740.00       11.44

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2369E+03 EXCESS= .0000E+00 OUTFLOW= .2369E+03 BASIN STORAGE= .4526E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.44   1315.03    738.11     13.82      5.00   1313.46    740.00       13.82

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2860E+03 EXCESS= .0000E+00 OUTFLOW= .2860E+03 BASIN STORAGE= .5737E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         2.37   1451.23    738.01     16.37      5.00   1449.08    740.00       16.37
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .3387E+03 EXCESS= .0000E+00 OUTFLOW= .3387E+03 BASIN STORAGE= .5889E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .43   1178.38    735.97      4.52      5.00   1175.66    740.00        4.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1647E+03 EXCESS= .0000E+00 OUTFLOW= .1647E+03 BASIN STORAGE= .6272E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .37   1764.33    735.44      8.69      5.00   1753.35    735.00        8.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3170E+03 EXCESS= .0000E+00 OUTFLOW= .3170E+03 BASIN STORAGE= .8699E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .35   2095.55    735.61     11.51      5.00   2083.86    735.00       11.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4198E+03 EXCESS= .0000E+00 OUTFLOW= .4198E+03 BASIN STORAGE= .1000E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .34   2349.32    735.38     13.89      5.00   2336.79    735.00       13.89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5066E+03 EXCESS= .0000E+00 OUTFLOW= .5066E+03 BASIN STORAGE= .1221E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .33   2589.73    735.50     16.44      5.00   2577.26    735.00       16.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5996E+03 EXCESS= .0000E+00 OUTFLOW= .5996E+03 BASIN STORAGE= .1269E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.46     76.46    726.90      4.76      5.00     69.50    725.00        4.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7114E+01 EXCESS= .0000E+00 OUTFLOW= .7114E+01 BASIN STORAGE= .6296E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.29    109.15    727.07      8.98      5.00    102.37    725.00        8.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1341E+02 EXCESS= .0000E+00 OUTFLOW= .1341E+02 BASIN STORAGE= .6114E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.22    132.97    726.24     11.82      5.00    121.50    725.00       11.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1764E+02 EXCESS= .0000E+00 OUTFLOW= .1764E+02 BASIN STORAGE= .5006E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.18    147.63    726.29     14.20      5.00    136.10    725.00       14.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2120E+02 EXCESS= .0000E+00 OUTFLOW= .2120E+02 BASIN STORAGE= .6424E-03 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         1.14    160.66    726.48     16.76      5.00    149.90    725.00       16.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2502E+02 EXCESS= .0000E+00 OUTFLOW= .2502E+02 BASIN STORAGE= .5151E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .39   1264.16    735.47      4.53      5.00   1256.44    735.00        4.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1795E+03 EXCESS= .0000E+00 OUTFLOW= .1795E+03 BASIN STORAGE= .6249E-02 PERCENT ERROR=    .0
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          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .34   1889.72    735.52      8.71      5.00   1882.47    735.00        8.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3449E+03 EXCESS= .0000E+00 OUTFLOW= .3449E+03 BASIN STORAGE= .8748E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .32   2242.50    735.55     11.53      5.00   2235.68    735.00       11.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4566E+03 EXCESS= .0000E+00 OUTFLOW= .4566E+03 BASIN STORAGE= .1028E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .31   2515.00    735.36     13.91      5.00   2507.35    735.00       13.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5507E+03 EXCESS= .0000E+00 OUTFLOW= .5507E+03 BASIN STORAGE= .1209E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .30   2771.81    735.43     16.46      5.00   2764.51    735.00       16.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6517E+03 EXCESS= .0000E+00 OUTFLOW= .6517E+03 BASIN STORAGE= .1276E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.45    164.99    727.12      4.75      5.00    149.85    725.00        4.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1640E+02 EXCESS= .0000E+00 OUTFLOW= .1640E+02 BASIN STORAGE= .6384E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.28    237.68    727.14      8.97      5.00    221.01    725.00        8.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3095E+02 EXCESS= .0000E+00 OUTFLOW= .3095E+02 BASIN STORAGE= .7691E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.21    283.68    726.11     11.80      5.00    261.25    725.00       11.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4072E+02 EXCESS= .0000E+00 OUTFLOW= .4072E+02 BASIN STORAGE= .7664E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.17    312.69    725.87     14.18      5.00    292.24    725.00       14.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4894E+02 EXCESS= .0000E+00 OUTFLOW= .4894E+02 BASIN STORAGE= .8463E-03 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         1.13    345.98    725.94     16.74      5.00    322.76    725.00       16.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5777E+02 EXCESS= .0000E+00 OUTFLOW= .5777E+02 BASIN STORAGE= .7256E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.22   1487.15    736.27      4.54      5.00   1469.18    735.00        4.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2126E+03 EXCESS= .0000E+00 OUTFLOW= .2126E+03 BASIN STORAGE= .2477E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.07   2218.51    736.44      8.72      5.00   2200.20    735.00        8.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4082E+03 EXCESS= .0000E+00 OUTFLOW= .4082E+03 BASIN STORAGE= .3561E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.01   2632.59    736.26     11.54      5.00   2613.82    735.00       11.54
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW= .5403E+03 EXCESS= .0000E+00 OUTFLOW= .5403E+03 BASIN STORAGE= .4126E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .97   2950.20    736.19     13.92      5.00   2931.19    735.00       13.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6516E+03 EXCESS= .0000E+00 OUTFLOW= .6516E+03 BASIN STORAGE= .4719E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .94   3247.54    736.33     16.47      5.00   3232.43    735.00       16.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7710E+03 EXCESS= .0000E+00 OUTFLOW= .7710E+03 BASIN STORAGE= .5258E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.38   1516.70    737.28      4.52      5.00   1507.06    740.00        4.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2197E+03 EXCESS= .0000E+00 OUTFLOW= .2197E+03 BASIN STORAGE= .3633E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.21   2269.36    736.45      8.70      5.00   2247.01    735.00        8.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4224E+03 EXCESS= .0000E+00 OUTFLOW= .4224E+03 BASIN STORAGE= .4959E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.14   2694.54    736.58     11.52      5.00   2672.61    735.00       11.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5593E+03 EXCESS= .0000E+00 OUTFLOW= .5593E+03 BASIN STORAGE= .5737E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.10   3021.78    736.53     13.89      5.00   2999.96    735.00       13.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6747E+03 EXCESS= .0000E+00 OUTFLOW= .6747E+03 BASIN STORAGE= .6747E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         1.06   3334.37    736.36     16.45      5.00   3310.93    735.00       16.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7987E+03 EXCESS= .0000E+00 OUTFLOW= .7986E+03 BASIN STORAGE= .7467E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         3.70     58.45    729.55      4.77      5.00     56.79    730.00        4.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5362E+01 EXCESS= .0000E+00 OUTFLOW= .5363E+01 BASIN STORAGE= .1367E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         3.28     86.11    728.02      9.00      5.00     79.84    730.00        8.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1012E+02 EXCESS= .0000E+00 OUTFLOW= .1013E+02 BASIN STORAGE= .1769E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         3.10     99.97    729.49     11.80      5.00     95.00    730.00       11.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1328E+02 EXCESS= .0000E+00 OUTFLOW= .1328E+02 BASIN STORAGE= .1344E-02 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.99    112.83    727.54     14.21      5.00    103.40    730.00       14.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1599E+02 EXCESS= .0000E+00 OUTFLOW= .1599E+02 BASIN STORAGE= .1705E-02 PERCENT ERROR=    .0
```

```
          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         2.90    130.08    728.00     16.77      5.00    113.59    730.00       16.75

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1888E+02 EXCESS= .0000E+00 OUTFLOW= .1888E+02 BASIN STORAGE= .1667E-02 PERCENT ERROR=    .0



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

APPENDIX C

HEC-1 RESULTS FOR PROPOSED CONDITION

```
*                                      *                                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998              *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
*            VERSION 4.1               *                                                    *          609 SECOND STREET           *
*  RGMHEC2000               HEC-1.COM  *                                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE   23JUL09  TIME  16:57:13  *                                                    *           (916) 756-1104             *
*                                      *                                                    *                                      *
****************************************                                                    ****************************************
```

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

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

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

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

  1           ID        HYDROLOGIC ANALYSIS
  2           ID        PROJECT: NEW CASTLE, CANOVANAS, PR
  3           ID        TRIANGULAR DISTRIBUTION
  4           ID        FREQUENCY OF OCCURRENCE: 2-, 10-, 25-, 50- & 100-YEARS
  5           ID        PROPOSED  CONDITION
  6           IT       5                    300
  7           IO       4
  8           JP       5

  9           KK    P1B1
 10           KP       1
 11           BA  0.0103
 12           LS       0      93
 13           UD    0.16
 14           IN      15
 15           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 16           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 17           KP       2
 18           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 19           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 20           KP       3
 21           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 22           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 23           KP       4
 24           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 25           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 26           KP       5
 27           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 28           PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 29           KK    P1C1
 30           KP       1
 31           BA  0.0068
 32           LS       0      93
 33           UD    0.14
 34           IN      15
 35           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 36           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 37           KP       2
 38           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 39           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 40           KP       3
 41           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 42           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 43           KP       4
 44           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 45           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 46           KP       5
 47           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 48           PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
```



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


 49           KK   COMB1
 50           HC       2

 51           KK     P2C
 52           KP       1
 53           BA   0.0180
 54           LS       0      93
 55           UD    0.12
 56           IN      15
 57           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 58           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 59           KP       2
 60           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 61           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 62           KP       3
 63           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 64           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 65           KP       4
 66           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 67           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 68           KP       5
 69           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
```

```
  70          PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

  71          KK   CHANN
  72          KM   ROUTING THROUGH OPEN CHANNEL
  73          KO       5                              21
  74          RD  2260.6    0.08   0.045            TRAP      12    1.00

  75          KK     P2B
  76          KP       1
  77          BA  0.0620
  78          LS       0      93
  79          UD    0.14
  80          IN      15
  81          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
  82          PH                    0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
  83          KP       2
  84          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
  85          PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
  86          KP       3
  87          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
  88          PH                    0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
  89          KP       4
  90          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
  91          PH                    0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
  92          KP       5
  93          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
  94          PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
1                                            HEC-1 INPUT                                          PAGE  3

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


  95          KK   CHANN
  96          KM   ROUTING THROUGH OPEN CHANNEL
  97          KO       5                              21
  98          RD    1977    0.08   0.045            TRAP      12    1.00

  99          KK     P2A
 100          KP       1
 101          BA  0.0347
 102          LS       0      93
 103          UD    0.13
 104          IN      15
 105          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 106          PH                    0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 107          KP       2
 108          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 109          PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 110          KP       3
 111          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 112          PH                    0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 113          KP       4
 114          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 115          PH                    0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 116          KP       5
 117          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 118          PH                    1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 119          KK   CHANN
 120          KM   ROUTING THROUGH OPEN CHANNEL
 121          KO       5                              21
 122          RD  917.36    0.08   0.045            TRAP      12    1.00

 123          KK   COMB2
 124          HC       3

 125          KK      E0
 126          KP       1
 127          BA  0.3880
 128          LS       0   86.26
 129          UD    0.25
 130          IN      15
 131          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 132          PH                    0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 133          KP       2
 134          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 135          PH                    0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 136          KP       3
 137          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 138          PH                    0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 139          KP       4
```

```
 140          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 141          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 142          KP       5
 143          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 144          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
1                                          HEC-1 INPUT                                          PAGE  4

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


 145          KK   CHANN
 146          KM   ROUTING THROUGH OPEN CHANNEL
 147          KO       5                              21
 148          RD    3261    0.08   0.045            TRAP      12    1.00

 149          KK      E1
 150          KP       1
 151          BA  0.1812
 152          LS       0   87.48
 153          UD    0.20
 154          IN      15
 155          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 156          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 157          KP       2
 158          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 159          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 160          KP       3
 161          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 162          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 163          KP       4
 164          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 165          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 166          KP       5
 167          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 168          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 169          KK   COMB3
 170          HC       2

 171          KK   COMB4
 172          HC       2

 173          KK   CHANN
 174          KM   ROUTING THROUGH OPEN CHANNEL
 175          KO       5                              21
 176          RD     547    0.08   0.045            TRAP      12    1.00

 177          KK      E3
 178          KP       1
 179          BA  0.0280
 180          LS       0      89
 181          UD    0.06
 182          IN      15
 183          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 184          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 185          KP       2
 186          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 187          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 188          KP       3
 189          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 190          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 191          KP       4
 192          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 193          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
1                                          HEC-1 INPUT                                          PAGE  5

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

 194          KP       5
 195          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 196          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 197          KK    PIPE
 198          KM   ROUTING THROUGH PIPE
 199          KO       5                              21
 200          RD     600   0.008   0.013            CIRC       4

 201          KK    P1F1
 202          KP       1
 203          BA  0.0175
 204          LS       0      93
```

```
 205          UD    0.12
 206          IN      15
 207          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 208          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 209          KP       2
 210          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 211          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 212          KP       3
 213          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 214          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 215          KP       4
 216          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 217          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 218          KP       5
 219          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 220          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 221          KK   COMB5
 222          HC       2

 223          KK   COMB6
 224          HC       2

 225          KK   CHANN
 226          KM   ROUTING THROUGH OPEN CHANNEL
 227          KO       5                            21
 228          RD     964    0.08   0.045            TRAP      12    1.00

 229          KK    P1F2
 230          KP       1
 231          BA  0.0148
 232          LS       0      93
 233          UD    0.09
 234          IN      15
 235          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 236          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 237          KP       2
 238          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 239          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 240          KP       3
 241          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 242          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
1                                          HEC-1 INPUT                                                    PAGE  6

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

 243          KP       4
 244          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 245          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 246          KP       5
 247          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 248          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 249          KK   COMB7
 250          HC       2

 251          KK   CHANN
 252          KM   ROUTING THROUGH OPEN CHANNEL
 253          KO       5                            21
 254          RD     515    0.08   0.045            TRAP      12    1.00

 255          KK      E2
 256          KP       1
 257          BA  0.0647
 258          LS       0   88.90
 259          UD    0.07
 260          IN      15
 261          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 262          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 263          KP       2
 264          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 265          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 266          KP       3
 267          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 268          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 269          KP       4
 270          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 271          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 272          KP       5
 273          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 274          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
```

```
 275          KK   CHANN
 276          KM   ROUTING THROUGH OPEN CHANNEL
 277          KO       5                              21
 278          RD     974    0.08   0.045            TRAP      12    1.00

 279          KK     P1E
 280          KP       1
 281          BA  0.0292
 282          LS       0      93
 283          UD    0.13
 284          IN      15
 285          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 286          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 287          KP       2
 288          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 289          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 290          KP       3
 291          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 292          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
1                                          HEC-1 INPUT                                                PAGE  7

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

 293          KP       4
 294          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 295          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 296          KP       5
 297          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 298          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 299          KK   COMB8
 300          HC       2

 301          KK   COMB9
 302          HC       2

 303          KK   CHANN
 304          KM   ROUTING THROUGH OPEN CHANNEL
 305          KO       5                              21
 306          RD    1698    0.08   0.045            TRAP      12    1.00

 307          KK     P1D
 308          KP       1
 309          BA  0.0356
 310          LS       0      93
 311          UD    0.08
 312          IN      15
 313          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 314          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 315          KP       2
 316          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 317          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 318          KP       3
 319          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 320          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 321          KP       4
 322          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 323          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 324          KP       5
 325          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 326          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 327          KK  COMB10
 328          HC       2

 329          KK   CHANN
 330          KM   ROUTING THROUGH OPEN CHANNEL
 331          KO       5                              21
 332          RD     741    0.08   0.045            TRAP      12    1.00

 333          KK    P1C2
 334          KP       1
 335          BA  0.0297
 336          LS       0      93
 337          UD    0.13
 338          IN      15
 339          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 340          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
1                                          HEC-1 INPUT                                                PAGE  8
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 341          KP       2
 342          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 343          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 344          KP       3
 345          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 346          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 347          KP       4
 348          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 349          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 350          KP       5
 351          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 352          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 353          KK  COMB11
 354          HC       2

 355          KK   CHANN
 356          KM   ROUTING THROUGH OPEN CHANNEL
 357          KO       5                              21
 358          RD    1181    0.08   0.045            TRAP      12    1.00

 359          KK      E4
 360          KP       1
 361          BA  0.0211
 362          LS       0      89
 363          UD    0.05
 364          IN      15
 365          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 366          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 367          KP       2
 368          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 369          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 370          KP       3
 371          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 372          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 373          KP       4
 374          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 375          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 376          KP       5
 377          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 378          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 379          KK    PIPE
 380          KM   ROUTING THROUGH PIPE
 381          KO       5                              21
 382          RD    1975   0.008   0.013            CIRC       4

 383          KK     P1A
 384          KP       1
 385          BA  0.0550
 386          LS       0      93
 387          UD    0.24
 388          IN      15
 389          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 390          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
1                                          HEC-1 INPUT                                          PAGE  9

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

 391          KP       2
 392          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 393          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 394          KP       3
 395          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 396          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 397          KP       4
 398          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 399          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 400          KP       5
 401          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 402          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 403          KK  COMB12
 404          HC       2

 405          KK  COMB13
 406          HC       2

 407          KK    P1B2
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          408          KP       1
          409          BA  0.0142
          410          LS       0      93
          411          UD    0.08
          412          IN      15
          413          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
          414          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
          415          KP       2
          416          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          417          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          418          KP       3
          419          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
          420          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
          421          KP       4
          422          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          423          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          424          KP       5
          425          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          426          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

          427          KK  COMB14
          428          HC       2
          429          ZZ
1****************************************                                                  ****************************************
 *                                      *                                                  *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                  *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                                  *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                                  *          609 SECOND STREET           *
 *  RGMHEC2000               HEC-1.COM  *                                                  *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   23JUL09  TIME  16:57:13  *                                                  *           (916) 756-1104             *
 *                                      *                                                  *                                      *
 ****************************************                                                  ****************************************


                                HYDROLOGIC ANALYSIS
                                PROJECT: NEW CASTLE, CANOVANAS, PR
                                TRIANGULAR DISTRIBUTION
                                FREQUENCY OF OCCURRENCE: 2-, 10-, 25-, 50- & 100-YEARS
                                PROPOSED  CONDITION

   7 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

     JP          MULTI-PLAN OPTION
                       NPLAN           5  NUMBER OF PLANS

     JR          MULTI-RATIO OPTION
                     RATIOS OF RUNOFF
                    1.00


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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              **************
              *            *
    9 KK      *      P1B1  *
              *            *
              **************


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

   10 KP        PLAN  1 FOR STATION     P1B1
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

                SUBBASIN RUNOFF DATA

   11 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .01  SUBBASIN AREA

                  PRECIPITATION DATA

   16 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                     STORM AREA =     .01

   12 LS          SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

   13 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                  8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                  0.        0.


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

   17 KP        PLAN  2 FOR STATION     P1B1
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

                SUBBASIN RUNOFF DATA

   11 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .01  SUBBASIN AREA

                  PRECIPITATION DATA

   19 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                     STORM AREA =     .01

   12 LS          SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

   13 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                  8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                  0.        0.


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

   20 KP        PLAN  3 FOR STATION     P1B1
                                TRIANGULAR DISTRIBUTION 25-YRS STORM
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              SUBBASIN RUNOFF DATA

  11 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

  22 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .01

  12 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                0.        0.


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

  23 KP         PLAN  4 FOR STATION     P1B1
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

  11 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

  25 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

  12 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                0.        0.


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

  26 KP         PLAN  5 FOR STATION     P1B1
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

  11 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

  28 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
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                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                 8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                 0.        0.


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


           **************
           *            *
  29 KK    *      P1C1  *
           *            *
           **************


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

  30 KP        PLAN  1 FOR STATION     P1C1
                            TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  36 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .01

  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

  37 KP        PLAN  2 FOR STATION     P1C1
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  39 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00
```

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                                                STORM AREA =     .01

  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

  40 KP        PLAN  3 FOR STATION     P1C1
                             TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  42 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .01

  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

  43 KP        PLAN  4 FOR STATION     P1C1
                             TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  45 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                        ***
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```
                                                    UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

  46 KP        PLAN  5 FOR STATION     P1C1
                              TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  48 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .01

  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                          ***

                                                    UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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


            **************
            *            *
  49 KK     *     COMB1  *
            *            *
            **************

  50 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
  51 KK     *       P2C  *
            *            *
            **************


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

  52 KP        PLAN  1 FOR STATION      P2C
                              TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  58 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
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                .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .02

  54 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
               27.       54.       34.       14.        6.        3.        1.        1.        0.


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

  59 KP        PLAN  2 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  61 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .02

  54 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
               27.       54.       34.       14.        6.        3.        1.        1.        0.


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

  62 KP        PLAN  3 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  64 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .02

  54 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .12  LAG

                                                          ***
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                                                    UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                27.       54.       34.       14.        6.        3.        1.        1.        0.

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

  65 KP        PLAN  4 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  67 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .02

  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                    UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                27.       54.       34.       14.        6.        3.        1.        1.        0.

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

  68 KP        PLAN  5 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  70 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .02

  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                    UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                27.       54.       34.       14.        6.        3.        1.        1.        0.


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


            **************
            *            *
  71 KK     *     CHANN  *
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          *           *
          **************
                         ROUTING THROUGH OPEN CHANNEL

  73 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


          **************
          *            *
  75 KK   *       P2B  *
          *            *
          **************


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

  76 KP        PLAN  1 FOR STATION      P2B
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  82 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .06

  78 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                    10 END-OF-PERIOD ORDINATES
                67.      164.      132.       61.       30.       14.        7.        3.        2.        1.


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

  83 KP        PLAN  2 FOR STATION      P2B
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  85 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .06

  78 LS          SCS LOSS RATE
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```
                    STRTL         .15  INITIAL ABSTRACTION
                   CRVNBR       93.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .14  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
                67.      164.      132.       61.       30.       14.        7.        3.        2.        1.

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

  86 KP        PLAN  3 FOR STATION      P2B
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                    TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  88 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS          SCS LOSS RATE
                    STRTL         .15  INITIAL ABSTRACTION
                   CRVNBR       93.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .14  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
                67.      164.      132.       61.       30.       14.        7.        3.        2.        1.

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

  89 KP        PLAN  4 FOR STATION      P2B
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                    TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  91 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS          SCS LOSS RATE
                    STRTL         .15  INITIAL ABSTRACTION
                   CRVNBR       93.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .14  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
                67.      164.      132.       61.       30.       14.        7.        3.        2.        1.
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

  92 KP        PLAN  5 FOR STATION      P2B
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  94 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .06

  78 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
               67.      164.      132.       61.       30.       14.        7.        3.        2.        1.


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


            **************
            *            *
  95 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

  97 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
  99 KK     *       P2A  *
            *            *
            **************


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

 100 KP        PLAN  1 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA
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 106 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .03

 102 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 44.       98.       71.       30.       14.        6.        3.        1.        1.        0.


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

 107 KP        PLAN  2 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 109 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .03

 102 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 44.       98.       71.       30.       14.        6.        3.        1.        1.        0.


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

 110 KP        PLAN  3 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 112 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

 102 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD           SCS DIMENSIONLESS UNITGRAPH
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                TLAG         .13  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
          44.       98.       71.       30.       14.        6.        3.        1.        1.        0.

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

 113 KP        PLAN  4 FOR STATION      P2A
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 115 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .03

 102 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
          44.       98.       71.       30.       14.        6.        3.        1.        1.        0.

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

 116 KP        PLAN  5 FOR STATION      P2A
                            TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 101 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 118 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .03

 102 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 103 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
          44.       98.       71.       30.       14.        6.        3.        1.        1.        0.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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            **************
            *            *
 119 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 121 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 123 KK     *     COMB2  *
            *            *
            **************

 124 HC          HYDROGRAPH COMBINATION
                       ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


            **************
            *            *
 125 KK     *        E0  *
            *            *
            **************


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

 126 KP        PLAN  1 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 132 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                     STORM AREA =     .39

 128 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 129 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                  ***

                                                          UNIT HYDROGRAPH
                                                     17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 133 KP        PLAN  2 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 135 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .39

 128 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 129 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

 136 KP        PLAN  3 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 138 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .39

 128 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 129 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

 139 KP        PLAN  4 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 127 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA
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141 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .39

128 LS           SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

129 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

142 KP         PLAN  5 FOR STATION       E0
                            TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

127 BA           SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

144 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .39

128 LS           SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

129 UD           SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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


            **************
            *            *
145 KK      *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

147 KO           OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
 149 KK     *        E1  *
            *            *
            **************


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

 150 KP        PLAN  1 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 156 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                   14 END-OF-PERIOD ORDINATES
                  88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                   6.        3.        2.        1.


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

 157 KP        PLAN  2 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 159 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                   14 END-OF-PERIOD ORDINATES
                  88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                   6.        3.        2.        1.
```

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

 160 KP        PLAN  3 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 162 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
                 88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                  6.        3.        2.        1.


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

 163 KP        PLAN  4 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 165 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .18

 152 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
                 88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                  6.        3.        2.        1.


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

 166 KP        PLAN  5 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 151 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA
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                PRECIPITATION DATA

 168 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .18

 152 LS         SCS LOSS RATE
                      STRTL         .29  INITIAL ABSTRACTION
                     CRVNBR       87.48  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 153 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .20  LAG

                                                                ***

                                                        UNIT HYDROGRAPH
                                                   14 END-OF-PERIOD ORDINATES
               88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                6.        3.        2.        1.


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


           **************
           *            *
 169 KK    *     COMB3  *
           *            *
           **************

 170 HC         HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***


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


           **************
           *            *
 171 KK    *     COMB4  *
           *            *
           **************

 172 HC         HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***


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


           **************
           *            *
 173 KK    *     CHANN  *
           *            *
           **************
                         ROUTING THROUGH OPEN CHANNEL

 175 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS
```

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


            **************
            *            *
 177 KK     *        E3  *
            *            *
            **************


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

 178 KP        PLAN  1 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 179 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 184 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .03

 180 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                     6 END-OF-PERIOD ORDINATES
               124.       69.       18.        5.        1.        0.


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

 185 KP        PLAN  2 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 179 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 187 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .03

 180 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                              ***

                                                         UNIT HYDROGRAPH
                                                     6 END-OF-PERIOD ORDINATES
               124.       69.       18.        5.        1.        0.


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

 188 KP        PLAN  3 FOR STATION       E3
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                                TRIANGULAR DISTRIBUTION 25-YRS STORM

                SUBBASIN RUNOFF DATA

 179 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

 190 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                     STORM AREA =     .03

 180 LS           SCS LOSS RATE
                        STRTL         .25  INITIAL ABSTRACTION
                       CRVNBR       89.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .06  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  6 END-OF-PERIOD ORDINATES
                124.       69.       18.        5.        1.        0.


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

 191 KP         PLAN  4 FOR STATION       E3
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

                SUBBASIN RUNOFF DATA

 179 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

 193 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                     STORM AREA =     .03

 180 LS           SCS LOSS RATE
                        STRTL         .25  INITIAL ABSTRACTION
                       CRVNBR       89.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .06  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  6 END-OF-PERIOD ORDINATES
                124.       69.       18.        5.        1.        0.


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

 194 KP         PLAN  5 FOR STATION       E3
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

                SUBBASIN RUNOFF DATA

 179 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

 196 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00
```

```
                                                STORM AREA =     .03

 180 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 181 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .06  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
              124.       69.       18.        5.        1.        0.


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


            **************
            *            *
 197 KK     *      PIPE  *
            *            *
            **************
                           ROUTING THROUGH PIPE

 199 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 201 KK     *      P1F1  *
            *            *
            **************


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

 202 KP        PLAN  1 FOR STATION     P1F1
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 203 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 208 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .02

 204 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .12  LAG

                                                          ***
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                                                UNIT HYDROGRAPH
                                            9 END-OF-PERIOD ORDINATES
                26.       53.       33.       14.        6.        3.        1.        1.        0.

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

 209 KP        PLAN  2 FOR STATION     P1F1
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 203 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 211 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .02

 204 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                        ***

                                                UNIT HYDROGRAPH
                                            9 END-OF-PERIOD ORDINATES
                26.       53.       33.       14.        6.        3.        1.        1.        0.

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

 212 KP        PLAN  3 FOR STATION     P1F1
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 203 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 214 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .02

 204 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                        ***

                                                UNIT HYDROGRAPH
                                            9 END-OF-PERIOD ORDINATES
                26.       53.       33.       14.        6.        3.        1.        1.        0.

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

 215 KP        PLAN  4 FOR STATION     P1F1
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 203 BA          SUBBASIN CHARACTERISTICS
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                    TAREA         .02  SUBBASIN AREA

               PRECIPITATION DATA

 217 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .02

 204 LS        SCS LOSS RATE
                    STRTL         .15  INITIAL ABSTRACTION
                   CRVNBR       93.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
               26.       53.       33.       14.        6.        3.        1.        1.        0.


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

 218 KP       PLAN  5 FOR STATION     P1F1
                              TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 203 BA        SUBBASIN CHARACTERISTICS
                    TAREA         .02  SUBBASIN AREA

               PRECIPITATION DATA

 220 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
               ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
               5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .02

 204 LS        SCS LOSS RATE
                    STRTL         .15  INITIAL ABSTRACTION
                   CRVNBR       93.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

 205 UD        SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
               26.       53.       33.       14.        6.        3.        1.        1.        0.


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


            **************
            *            *
 221 KK     *     COMB5  *
            *            *
            **************

 222 HC        HYDROGRAPH COMBINATION
                    ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


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            *            *
 223 KK     *     COMB6  *
            *            *
            **************

 224 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


            **************
            *            *
 225 KK     *     CHANN  *
            *            *
            **************
                            ROUTING THROUGH OPEN CHANNEL

 227 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 229 KK     *      P1F2  *
            *            *
            **************


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

 230 KP        PLAN  1 FOR STATION     P1F2
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 236 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .01

 232 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                                  ***

                                                          UNIT HYDROGRAPH
                                                       7 END-OF-PERIOD ORDINATES
                39.       48.       18.        7.        2.        1.        0.


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

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 237 KP        PLAN  2 FOR STATION     P1F2
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 239 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                 STORM AREA =     .01

 232 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                39.       48.       18.        7.        2.        1.        0.


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

 240 KP        PLAN  3 FOR STATION     P1F2
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 242 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                 STORM AREA =     .01

 232 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                39.       48.       18.        7.        2.        1.        0.


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

 243 KP        PLAN  4 FOR STATION     P1F2
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 245 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
```

```
                .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

 232 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               39.       48.       18.        7.        2.        1.        0.


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

 246 KP        PLAN  5 FOR STATION     P1F2
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 231 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 248 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .01

 232 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 233 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               39.       48.       18.        7.        2.        1.        0.


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


            **************
            *            *
 249 KK     *     COMB7  *
            *            *
            **************

 250 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***


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


            **************
            *            *
 251 KK     *     CHANN  *
            *            *
            **************
                            ROUTING THROUGH OPEN CHANNEL

 253 KO          OUTPUT CONTROL VARIABLES
```

```
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE
                    IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                     IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT        .083  TIME INTERVAL IN HOURS


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


          **************
          *            *
 255 KK   *        E2  *
          *            *
          **************


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

 256 KP       PLAN  1 FOR STATION       E2
                            TRIANGULAR DISTRIBUTION 2-YRS STORM

              SUBBASIN RUNOFF DATA

 257 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

 262 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .06

 258 LS         SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 259 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                            ***

                                                        UNIT HYDROGRAPH
                                                   6 END-OF-PERIOD ORDINATES
              238.      188.       53.       15.        5.        1.


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

 263 KP       PLAN  2 FOR STATION       E2
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

              SUBBASIN RUNOFF DATA

 257 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

 265 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .06

 258 LS         SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 259 UD         SCS DIMENSIONLESS UNITGRAPH
```

```
                TLAG         .07  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            6 END-OF-PERIOD ORDINATES
          238.      188.       53.       15.        5.        1.

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

 266 KP        PLAN  3 FOR STATION       E2
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 257 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 268 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .06

 258 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 259 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            6 END-OF-PERIOD ORDINATES
          238.      188.       53.       15.        5.        1.

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

 269 KP        PLAN  4 FOR STATION       E2
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 257 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 271 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .06

 258 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 259 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            6 END-OF-PERIOD ORDINATES
          238.      188.       53.       15.        5.        1.

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

 272 KP        PLAN  5 FOR STATION       E2
                            TRIANGULAR DISTRIBUTION 100-YRS STORM
```

```
              SUBBASIN RUNOFF DATA

 257 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 274 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                 STORM AREA =     .06

 258 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       88.90  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 259 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  6 END-OF-PERIOD ORDINATES
              238.      188.       53.       15.        5.        1.


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


           **************
           *            *
 275 KK    *     CHANN  *
           *            *
           **************
                          ROUTING THROUGH OPEN CHANNEL

 277 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


           **************
           *            *
 279 KK    *       P1E  *
           *            *
           **************


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

 280 KP        PLAN  1 FOR STATION      P1E
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

              SUBBASIN RUNOFF DATA

 281 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 286 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00
```

```
                                                STORM AREA =     .03

 282 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 283 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.


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

 287 KP        PLAN  2 FOR STATION      P1E
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 281 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 289 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .03

 282 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 283 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.


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

 290 KP        PLAN  3 FOR STATION      P1E
                             TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 281 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 292 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

 282 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 283 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
```

```
                                                  10 END-OF-PERIOD ORDINATES
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.

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

 293 KP        PLAN  4 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 281 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 295 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .03

 282 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 283 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                  10 END-OF-PERIOD ORDINATES
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.

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

 296 KP        PLAN  5 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 281 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 298 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .03

 282 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 283 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                  10 END-OF-PERIOD ORDINATES
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.


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


            **************
            *            *
 299 KK     *     COMB8  *
            *            *
            **************
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 300 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***


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


            **************
            *            *
 301 KK     *     COMB9  *
            *            *
            **************

 302 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***


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


            **************
            *            *
 303 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 305 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 307 KK     *       P1D  *
            *            *
            **************


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

 308 KP        PLAN  1 FOR STATION      P1D
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .04  SUBBASIN AREA

                 PRECIPITATION DATA

 314 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .04

 310 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA
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 311 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
               110.      112.       36.       12.        4.        1.        0.

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

 315 KP        PLAN  2 FOR STATION      P1D
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                 PRECIPITATION DATA

 317 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .04

 310 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
               110.      112.       36.       12.        4.        1.        0.

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

 318 KP        PLAN  3 FOR STATION      P1D
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 309 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                 PRECIPITATION DATA

 320 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .04

 310 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
               110.      112.       36.       12.        4.        1.        0.

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

 321 KP        PLAN  4 FOR STATION      P1D
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                              TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 309 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                PRECIPITATION DATA

 323 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .04

 310 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
              110.      112.       36.       12.        4.        1.        0.


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

 324 KP       PLAN  5 FOR STATION      P1D
                              TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 309 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                PRECIPITATION DATA

 326 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .04

 310 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 311 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
              110.      112.       36.       12.        4.        1.        0.


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


            **************
            *            *
 327 KK     *    COMB10  *
            *            *
            **************

 328 HC         HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

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


            **************
            *            *
 329 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 331 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 333 KK     *      P1C2  *
            *            *
            **************


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

 334 KP        PLAN  1 FOR STATION     P1C2
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 335 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 340 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                     STORM AREA =     .03

 336 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 337 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                            ***

                                                       UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


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

 341 KP        PLAN  2 FOR STATION     P1C2
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 335 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 343 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
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                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .03

 336 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 337 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


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

 344 KP        PLAN  3 FOR STATION     P1C2
                             TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 335 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 346 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

 336 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 337 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


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

 347 KP        PLAN  4 FOR STATION     P1C2
                             TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 335 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 349 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .03

 336 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 337 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG
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                                                  ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
              38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


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

 350 KP        PLAN  5 FOR STATION     P1C2
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 335 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 352 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .03

 336 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 337 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                            10 END-OF-PERIOD ORDINATES
              38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


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


            **************
            *            *
 353 KK     *    COMB11  *
            *            *
            **************

 354 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                  ***


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


            **************
            *            *
 355 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 357 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS
```

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


            **************
            *            *
 359 KK     *        E4  *
            *            *
            **************


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

 360 KP        PLAN  1 FOR STATION       E4
                            TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 361 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 366 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .02

 362 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 363 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                            ***

                                                        UNIT HYDROGRAPH
                                                    5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 367 KP        PLAN  2 FOR STATION       E4
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 361 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 369 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .02

 362 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 363 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                            ***

                                                        UNIT HYDROGRAPH
                                                    5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***
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 370 KP        PLAN  3 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 361 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 372 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                 STORM AREA =     .02

 362 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 363 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 373 KP        PLAN  4 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 361 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 375 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                 STORM AREA =     .02

 362 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 363 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 376 KP        PLAN  5 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 361 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 378 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
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                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .02

 362 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 363 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .05  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  5 END-OF-PERIOD ORDINATES
              109.       42.       10.        2.        1.


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


           **************
           *            *
 379 KK    *      PIPE  *
           *            *
           **************
                         ROUTING THROUGH PIPE

 381 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


           **************
           *            *
 383 KK    *       P1A  *
           *            *
           **************


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

 384 KP        PLAN  1 FOR STATION      P1A
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 385 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 390 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .05

 386 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 387 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .24  LAG

                                                          ***
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```
                                                  UNIT HYDROGRAPH
                                             16 END-OF-PERIOD ORDINATES
                18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                 3.        2.        1.        1.        1.        0.

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

 391 KP        PLAN  2 FOR STATION      P1A
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 385 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 393 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .05

 386 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 387 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .24  LAG

                                                          ***

                                                  UNIT HYDROGRAPH
                                             16 END-OF-PERIOD ORDINATES
                18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                 3.        2.        1.        1.        1.        0.

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

 394 KP        PLAN  3 FOR STATION      P1A
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 385 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 396 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .05

 386 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 387 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .24  LAG

                                                          ***

                                                  UNIT HYDROGRAPH
                                             16 END-OF-PERIOD ORDINATES
                18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                 3.        2.        1.        1.        1.        0.

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

 397 KP        PLAN  4 FOR STATION      P1A
                            TRIANGULAR DISTRIBUTION 50-YRS STORM
```

```
              SUBBASIN RUNOFF DATA

 385 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 399 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .05

 386 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 387 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .24  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 16 END-OF-PERIOD ORDINATES
                18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                 3.        2.        1.        1.        1.        0.


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

 400 KP       PLAN  5 FOR STATION      P1A
                               TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 385 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 402 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .05

 386 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 387 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .24  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 16 END-OF-PERIOD ORDINATES
                18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                 3.        2.        1.        1.        1.        0.


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


             **************
             *            *
 403 KK      *    COMB12  *
             *            *
             **************

 404 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

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


            **************
            *            *
 405 KK     *    COMB13  *
            *            *
            **************

 406 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***



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


            **************
            *            *
 407 KK     *      P1B2  *
            *            *
            **************


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

 408 KP        PLAN  1 FOR STATION     P1B2
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 409 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 414 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .01

 410 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 411 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                                 ***

                                                          UNIT HYDROGRAPH
                                                       7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.


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

 415 KP        PLAN  2 FOR STATION     P1B2
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 409 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 417 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .01
```

```
 410 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 411 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.

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

 418 KP        PLAN  3 FOR STATION     P1B2
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 409 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 420 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .01

 410 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 411 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.

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

 421 KP        PLAN  4 FOR STATION     P1B2
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 409 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 423 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

 410 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 411 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.
```

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

 424 KP        PLAN  5 FOR STATION     P1B2
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 409 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 426 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .01

 410 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 411 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                                 ***

                                                          UNIT HYDROGRAPH
                                                       7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.


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


            **************
            *            *
 427 KK     *    COMB14  *
            *            *
            **************

 428 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***
1

               PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                 FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                 TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO FLOWS
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                        1.00

 HYDROGRAPH AT
+                  P1B1       .01     1   FLOW          23.
                                           TIME        12.17
                                        2   FLOW          32.
                                           TIME        12.17
                                        3   FLOW          37.
                                           TIME        12.17
                                        4   FLOW          42.
                                           TIME        12.17
                                        5   FLOW          46.
                                           TIME        12.17

 HYDROGRAPH AT
+                  P1C1       .01     1   FLOW          16.
                                           TIME        12.17
                                        2   FLOW          22.
                                           TIME        12.17
                                        3   FLOW          26.
                                           TIME        12.17
                                        4   FLOW          29.
```

```
                                        TIME        12.17
                                    5   FLOW          32.
                                        TIME        12.17

  2 COMBINED AT
+                   COMB1       .02     1   FLOW          39.
                                        TIME        12.17
                                    2   FLOW          54.
                                        TIME        12.17
                                    3   FLOW          63.
                                        TIME        12.17
                                    4   FLOW          70.
                                        TIME        12.17
                                    5   FLOW          77.
                                        TIME        12.17

 HYDROGRAPH AT
+                     P2C       .02     1   FLOW          44.
                                        TIME        12.17
                                    2   FLOW          61.
                                        TIME        12.17
                                    3   FLOW          72.
                                        TIME        12.17
                                    4   FLOW          80.
                                        TIME        12.17
                                    5   FLOW          87.
                                        TIME        12.17

 ROUTED TO
+                   CHANN       .02     1   FLOW          44.
                                        TIME        12.25
                                    2   FLOW          61.
                                        TIME        12.25
                                    3   FLOW          68.
                                        TIME        12.25
                                    4   FLOW          76.
                                        TIME        12.25
                                    5   FLOW          81.
                                        TIME        12.25

 HYDROGRAPH AT
+                     P2B       .06     1   FLOW         144.
                                        TIME        12.17
                                    2   FLOW         203.
                                        TIME        12.17
                                    3   FLOW         237.
                                        TIME        12.17
                                    4   FLOW         263.
                                        TIME        12.17
                                    5   FLOW         289.
                                        TIME        12.17

 ROUTED TO
+                   CHANN       .06     1   FLOW         139.
                                        TIME        12.25
                                    2   FLOW         195.
                                        TIME        12.25
                                    3   FLOW         227.
                                        TIME        12.25
                                    4   FLOW         252.
                                        TIME        12.25
                                    5   FLOW         276.
                                        TIME        12.25

 HYDROGRAPH AT
+                     P2A       .03     1   FLOW          83.
                                        TIME        12.17
                                    2   FLOW         116.
                                        TIME        12.17
                                    3   FLOW         136.
                                        TIME        12.17
                                    4   FLOW         151.
                                        TIME        12.17
                                    5   FLOW         165.
                                        TIME        12.17

 ROUTED TO
+                   CHANN       .03     1   FLOW          78.
                                        TIME        12.17
                                    2   FLOW         111.
                                        TIME        12.17
```

```
                                        3   FLOW         129.
                                            TIME        12.17
                                        4   FLOW         144.
                                            TIME        12.17
                                        5   FLOW         158.
                                            TIME        12.17

  3 COMBINED AT
+                   COMB2       .11     1   FLOW         258.
                                            TIME        12.25
                                        2   FLOW         360.
                                            TIME        12.25
                                        3   FLOW         416.
                                            TIME        12.25
                                        4   FLOW         463.
                                            TIME        12.25
                                        5   FLOW         504.
                                            TIME        12.25

 HYDROGRAPH AT
+                      E0       .39     1   FLOW         661.
                                            TIME        12.33
                                        2   FLOW         988.
                                            TIME        12.25
                                        3   FLOW        1173.
                                            TIME        12.25
                                        4   FLOW        1315.
                                            TIME        12.25
                                        5   FLOW        1451.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .39     1   FLOW         662.
                                            TIME        12.33
                                        2   FLOW         987.
                                            TIME        12.33
                                        3   FLOW        1171.
                                            TIME        12.33
                                        4   FLOW        1313.
                                            TIME        12.33
                                        5   FLOW        1449.
                                            TIME        12.33

 HYDROGRAPH AT
+                      E1       .18     1   FLOW         344.
                                            TIME        12.25
                                        2   FLOW         507.
                                            TIME        12.25
                                        3   FLOW         598.
                                            TIME        12.25
                                        4   FLOW         669.
                                            TIME        12.25
                                        5   FLOW         736.
                                            TIME        12.25

  2 COMBINED AT
+                   COMB3       .57     1   FLOW         980.
                                            TIME        12.33
                                        2   FLOW        1454.
                                            TIME        12.33
                                        3   FLOW        1721.
                                            TIME        12.33
                                        4   FLOW        1928.
                                            TIME        12.33
                                        5   FLOW        2125.
                                            TIME        12.33

  2 COMBINED AT
+                   COMB4       .68     1   FLOW        1212.
                                            TIME        12.25
                                        2   FLOW        1799.
                                            TIME        12.25
                                        3   FLOW        2127.
                                            TIME        12.25
                                        4   FLOW        2383.
                                            TIME        12.25
                                        5   FLOW        2623.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .68     1   FLOW        1201.
```

```
                                        TIME        12.25
                                    2   FLOW        1787.
                                        TIME        12.25
                                    3   FLOW        2114.
                                        TIME        12.25
                                    4   FLOW        2369.
                                        TIME        12.25
                                    5   FLOW        2608.
                                        TIME        12.25

 HYDROGRAPH AT
+                    E3       .03     1   FLOW          79.
                                        TIME        12.08
                                    2   FLOW         114.
                                        TIME        12.08
                                    3   FLOW         134.
                                        TIME        12.08
                                    4   FLOW         150.
                                        TIME        12.08
                                    5   FLOW         165.
                                        TIME        12.08

 ROUTED TO
+                   PIPE       .03     1   FLOW          73.
                                        TIME        12.08
                                    2   FLOW         107.
                                        TIME        12.08
                                    3   FLOW         126.
                                        TIME        12.08
                                    4   FLOW         140.
                                        TIME        12.08
                                    5   FLOW         155.
                                        TIME        12.08

 HYDROGRAPH AT
+                   P1F1       .02     1   FLOW          43.
                                        TIME        12.17
                                    2   FLOW          60.
                                        TIME        12.17
                                    3   FLOW          70.
                                        TIME        12.17
                                    4   FLOW          77.
                                        TIME        12.17
                                    5   FLOW          85.
                                        TIME        12.17

  2 COMBINED AT
+                  COMB5       .05     1   FLOW         109.
                                        TIME        12.08
                                    2   FLOW         157.
                                        TIME        12.08
                                    3   FLOW         184.
                                        TIME        12.08
                                    4   FLOW         205.
                                        TIME        12.08
                                    5   FLOW         226.
                                        TIME        12.08

  2 COMBINED AT
+                  COMB6       .73     1   FLOW        1282.
                                        TIME        12.25
                                    2   FLOW        1902.
                                        TIME        12.25
                                    3   FLOW        2249.
                                        TIME        12.25
                                    4   FLOW        2519.
                                        TIME        12.25
                                    5   FLOW        2773.
                                        TIME        12.25

 ROUTED TO
+                  CHANN       .73     1   FLOW        1266.
                                        TIME        12.25
                                    2   FLOW        1884.
                                        TIME        12.25
                                    3   FLOW        2228.
                                        TIME        12.25
                                    4   FLOW        2498.
                                        TIME        12.25
                                    5   FLOW        2752.
                                        TIME        12.25
```

```
 HYDROGRAPH AT
+                    P1F2       .01     1   FLOW          36.
                                           TIME        12.17
                                        2  FLOW          51.
                                           TIME        12.17
                                        3  FLOW          60.
                                           TIME        12.17
                                        4  FLOW          66.
                                           TIME        12.17
                                        5  FLOW          73.
                                           TIME        12.17

  2 COMBINED AT
+                   COMB7       .74     1   FLOW        1293.
                                           TIME        12.25
                                        2  FLOW        1921.
                                           TIME        12.25
                                        3  FLOW        2271.
                                           TIME        12.25
                                        4  FLOW        2546.
                                           TIME        12.25
                                        5  FLOW        2804.
                                           TIME        12.25

 ROUTED TO
+                   CHANN       .74     1   FLOW        1284.
                                           TIME        12.25
                                        2  FLOW        1911.
                                           TIME        12.25
                                        3  FLOW        2261.
                                           TIME        12.25
                                        4  FLOW        2535.
                                           TIME        12.25
                                        5  FLOW        2792.
                                           TIME        12.25

 HYDROGRAPH AT
+                      E2       .06     1   FLOW         168.
                                           TIME        12.08
                                        2  FLOW         243.
                                           TIME        12.08
                                        3  FLOW         286.
                                           TIME        12.08
                                        4  FLOW         319.
                                           TIME        12.08
                                        5  FLOW         351.
                                           TIME        12.08

 ROUTED TO
+                   CHANN       .06     1   FLOW         150.
                                           TIME        12.08
                                        2  FLOW         221.
                                           TIME        12.08
                                        3  FLOW         261.
                                           TIME        12.08
                                        4  FLOW         292.
                                           TIME        12.08
                                        5  FLOW         323.
                                           TIME        12.08

 HYDROGRAPH AT
+                     P1E       .03     1   FLOW          70.
                                           TIME        12.17
                                        2  FLOW          98.
                                           TIME        12.17
                                        3  FLOW         114.
                                           TIME        12.17
                                        4  FLOW         127.
                                           TIME        12.17
                                        5  FLOW         139.
                                           TIME        12.17

  2 COMBINED AT
+                   COMB8       .09     1   FLOW         217.
                                           TIME        12.17
                                        2  FLOW         310.
                                           TIME        12.17
                                        3  FLOW         365.
                                           TIME        12.17
                                        4  FLOW         405.
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                                        TIME        12.17
                                    5   FLOW         444.
                                        TIME        12.17

  2 COMBINED AT
+                  COMB9       .84     1   FLOW        1458.
                                         TIME        12.25
                                    2   FLOW        2158.
                                         TIME        12.25
                                    3   FLOW        2549.
                                         TIME        12.25
                                    4   FLOW        2855.
                                         TIME        12.25
                                    5   FLOW        3144.
                                         TIME        12.25

 ROUTED TO
+                  CHANN       .84     1   FLOW        1437.
                                         TIME        12.25
                                    2   FLOW        2135.
                                         TIME        12.25
                                    3   FLOW        2525.
                                         TIME        12.25
                                    4   FLOW        2830.
                                         TIME        12.25
                                    5   FLOW        3117.
                                         TIME        12.25

 HYDROGRAPH AT
+                    P1D       .04     1   FLOW          91.
                                         TIME        12.08
                                    2   FLOW         128.
                                         TIME        12.08
                                    3   FLOW         150.
                                         TIME        12.08
                                    4   FLOW         167.
                                         TIME        12.08
                                    5   FLOW         183.
                                         TIME        12.08

  2 COMBINED AT
+                 COMB10       .87     1   FLOW        1499.
                                         TIME        12.25
                                    2   FLOW        2221.
                                         TIME        12.25
                                    3   FLOW        2626.
                                         TIME        12.25
                                    4   FLOW        2942.
                                         TIME        12.25
                                    5   FLOW        3240.
                                         TIME        12.25

 ROUTED TO
+                  CHANN       .87     1   FLOW        1489.
                                         TIME        12.25
                                    2   FLOW        2211.
                                         TIME        12.25
                                    3   FLOW        2615.
                                         TIME        12.25
                                    4   FLOW        2931.
                                         TIME        12.25
                                    5   FLOW        3229.
                                         TIME        12.25

 HYDROGRAPH AT
+                   P1C2       .03     1   FLOW          71.
                                         TIME        12.17
                                    2   FLOW          99.
                                         TIME        12.17
                                    3   FLOW         116.
                                         TIME        12.17
                                    4   FLOW         129.
                                         TIME        12.17
                                    5   FLOW         141.
                                         TIME        12.17

  2 COMBINED AT
+                 COMB11       .90     1   FLOW        1550.
                                         TIME        12.25
                                    2   FLOW        2297.
                                         TIME        12.25
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                                        3   FLOW        2716.
                                            TIME        12.25
                                        4   FLOW        3043.
                                            TIME        12.25
                                        5   FLOW        3351.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .90     1   FLOW        1535.
                                            TIME        12.25
                                        2   FLOW        2280.
                                            TIME        12.25
                                        3   FLOW        2698.
                                            TIME        12.25
                                        4   FLOW        3025.
                                            TIME        12.25
                                        5   FLOW        3333.
                                            TIME        12.25

 HYDROGRAPH AT
+                      E4       .02     1   FLOW          64.
                                            TIME        12.08
                                        2   FLOW          92.
                                            TIME        12.08
                                        3   FLOW         109.
                                            TIME        12.08
                                        4   FLOW         121.
                                            TIME        12.08
                                        5   FLOW         133.
                                            TIME        12.08

 ROUTED TO
+                    PIPE       .02     1   FLOW          54.
                                            TIME        12.17
                                        2   FLOW          76.
                                            TIME        12.17
                                        3   FLOW          88.
                                            TIME        12.17
                                        4   FLOW          97.
                                            TIME        12.17
                                        5   FLOW         106.
                                            TIME        12.17

 HYDROGRAPH AT
+                     P1A       .05     1   FLOW         107.
                                            TIME        12.25
                                        2   FLOW         150.
                                            TIME        12.25
                                        3   FLOW         175.
                                            TIME        12.25
                                        4   FLOW         195.
                                            TIME        12.25
                                        5   FLOW         214.
                                            TIME        12.25

  2 COMBINED AT
+                  COMB12       .08     1   FLOW         149.
                                            TIME        12.17
                                        2   FLOW         210.
                                            TIME        12.17
                                        3   FLOW         244.
                                            TIME        12.17
                                        4   FLOW         271.
                                            TIME        12.17
                                        5   FLOW         297.
                                            TIME        12.17

  2 COMBINED AT
+                  COMB13       .98     1   FLOW        1677.
                                            TIME        12.25
                                        2   FLOW        2481.
                                            TIME        12.25
                                        3   FLOW        2933.
                                            TIME        12.25
                                        4   FLOW        3287.
                                            TIME        12.25
                                        5   FLOW        3620.
                                            TIME        12.25

 HYDROGRAPH AT
+                    P1B2       .01     1   FLOW          36.
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                                        TIME        12.08
                                    2   FLOW          51.
                                        TIME        12.08
                                    3   FLOW          60.
                                        TIME        12.08
                                    4   FLOW          66.
                                        TIME        12.08
                                    5   FLOW          73.
                                        TIME        12.08

  2 COMBINED AT
+                 COMB14       .99     1   FLOW        1701.
                                        TIME        12.25
                                    2   FLOW        2516.
                                        TIME        12.25
                                    3   FLOW        2973.
                                        TIME        12.25
                                    4   FLOW        3331.
                                        TIME        12.25
                                    5   FLOW        3669.
                                        TIME        12.25
1
                                        SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                            (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                    INTERPOLATED TO
                                                                                  COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                     PEAK

                                (MIN)     (CFS)      (MIN)     (IN)     (MIN)     (CFS)     (MIN)       (IN)

           FOR PLAN = 1  RATIO=  .00
              CHANN  MANE         5.00     44.02    735.00      5.21      5.00     44.02    735.00        5.21

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5004E+01 EXCESS= .0000E+00 OUTFLOW= .5004E+01 BASIN STORAGE= .1838E-02 PERCENT ERROR=    .0

           FOR PLAN = 2  RATIO=  .00
              CHANN  MANE         4.68     61.28    734.67      9.49      5.00     60.59    735.00        9.50

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9110E+01 EXCESS= .0000E+00 OUTFLOW= .9111E+01 BASIN STORAGE= .1824E-02 PERCENT ERROR=    .0

           FOR PLAN = 3  RATIO=  .00
              CHANN  MANE         4.45     70.34    733.45     12.33      5.00     67.52    735.00       12.32

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1183E+02 EXCESS= .0000E+00 OUTFLOW= .1183E+02 BASIN STORAGE= .1824E-02 PERCENT ERROR=    .0

           FOR PLAN = 4  RATIO=  .00
              CHANN  MANE         4.29     78.66    734.00     14.73      5.00     76.28    735.00       14.74

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1414E+02 EXCESS= .0000E+00 OUTFLOW= .1414E+02 BASIN STORAGE= .1874E-02 PERCENT ERROR=    .0

           FOR PLAN = 5  RATIO=  .00
              CHANN  MANE         4.16     84.84    732.81     17.28      5.00     81.00    735.00       17.27

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1659E+02 EXCESS= .0000E+00 OUTFLOW= .1659E+02 BASIN STORAGE= .1762E-02 PERCENT ERROR=    .0

           FOR PLAN = 1  RATIO=  .00
              CHANN  MANE         3.08    142.23    733.47      5.21      5.00    138.79    735.00        5.21

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1724E+02 EXCESS= .0000E+00 OUTFLOW= .1724E+02 BASIN STORAGE= .1728E-02 PERCENT ERROR=    .0

           FOR PLAN = 2  RATIO=  .00
              CHANN  MANE         2.75    199.12    732.42      9.48      5.00    195.14    735.00        9.48

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3135E+02 EXCESS= .0000E+00 OUTFLOW= .3135E+02 BASIN STORAGE= .1707E-02 PERCENT ERROR=    .0

           FOR PLAN = 3  RATIO=  .00
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   CHANN  MANE         2.62    233.60    732.40     12.33      5.00    227.48    735.00       12.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4077E+02 EXCESS= .0000E+00 OUTFLOW= .4077E+02 BASIN STORAGE= .1665E-02 PERCENT ERROR=    .0

     FOR PLAN = 4  RATIO=  .00
   CHANN  MANE         2.53    261.27    732.49     14.72      5.00    252.35    735.00       14.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4868E+02 EXCESS= .0000E+00 OUTFLOW= .4868E+02 BASIN STORAGE= .1999E-02 PERCENT ERROR=    .0

     FOR PLAN = 5  RATIO=  .00
   CHANN  MANE         2.45    286.33    732.56     17.29      5.00    275.64    735.00       17.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5717E+02 EXCESS= .0000E+00 OUTFLOW= .5717E+02 BASIN STORAGE= .1708E-02 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
   CHANN  MANE         1.72     80.87    731.13      5.21      5.00     78.08    730.00        5.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9645E+01 EXCESS= .0000E+00 OUTFLOW= .9645E+01 BASIN STORAGE= .6664E-03 PERCENT ERROR=    .0

     FOR PLAN = 2  RATIO=  .00
   CHANN  MANE         1.54    114.76    731.82      9.48      5.00    110.56    730.00        9.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1754E+02 EXCESS= .0000E+00 OUTFLOW= .1754E+02 BASIN STORAGE= .5689E-03 PERCENT ERROR=    .0

     FOR PLAN = 3  RATIO=  .00
   CHANN  MANE         1.46    134.03    731.71     12.33      5.00    129.43    730.00       12.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2281E+02 EXCESS= .0000E+00 OUTFLOW= .2281E+02 BASIN STORAGE= .6818E-03 PERCENT ERROR=    .0

     FOR PLAN = 4  RATIO=  .00
   CHANN  MANE         1.41    148.07    731.95     14.72      5.00    143.80    730.00       14.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2724E+02 EXCESS= .0000E+00 OUTFLOW= .2724E+02 BASIN STORAGE= .6258E-03 PERCENT ERROR=    .0

     FOR PLAN = 5  RATIO=  .00
   CHANN  MANE         1.37    162.39    731.89     17.29      5.00    157.86    730.00       17.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3199E+02 EXCESS= .0000E+00 OUTFLOW= .3199E+02 BASIN STORAGE= .6627E-03 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
   CHANN  MANE         3.07    661.79    740.00      4.46      5.00    661.78    740.00        4.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9235E+02 EXCESS= .0000E+00 OUTFLOW= .9235E+02 BASIN STORAGE= .2851E-01 PERCENT ERROR=    .0

     FOR PLAN = 2  RATIO=  .00
   CHANN  MANE         2.69    990.66    738.92      8.63      5.00    987.38    740.00        8.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1786E+03 EXCESS= .0000E+00 OUTFLOW= .1786E+03 BASIN STORAGE= .3920E-01 PERCENT ERROR=    .0

     FOR PLAN = 3  RATIO=  .00
   CHANN  MANE         2.54   1175.19    738.60     11.45      5.00   1170.65    740.00       11.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2369E+03 EXCESS= .0000E+00 OUTFLOW= .2369E+03 BASIN STORAGE= .4526E-01 PERCENT ERROR=    .0

     FOR PLAN = 4  RATIO=  .00
   CHANN  MANE         2.44   1315.03    738.11     13.82      5.00   1313.46    740.00       13.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2860E+03 EXCESS= .0000E+00 OUTFLOW= .2860E+03 BASIN STORAGE= .5737E-01 PERCENT ERROR=    .0
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          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         2.37   1451.23    738.01     16.37      5.00   1449.08    740.00       16.37

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3387E+03 EXCESS= .0000E+00 OUTFLOW= .3387E+03 BASIN STORAGE= .5889E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .42   1211.79    735.77      4.62      5.00   1200.87    735.00        4.62

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1687E+03 EXCESS= .0000E+00 OUTFLOW= .1687E+03 BASIN STORAGE= .6189E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .37   1798.13    735.52      8.81      5.00   1786.64    735.00        8.82

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3215E+03 EXCESS= .0000E+00 OUTFLOW= .3215E+03 BASIN STORAGE= .8605E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .35   2124.81    735.31     11.64      5.00   2113.97    735.00       11.64

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4245E+03 EXCESS= .0000E+00 OUTFLOW= .4245E+03 BASIN STORAGE= .9878E-02 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .34   2381.04    735.43     14.02      5.00   2369.41    735.00       14.02

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5112E+03 EXCESS= .0000E+00 OUTFLOW= .5112E+03 BASIN STORAGE= .1210E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .33   2621.25    735.46     16.57      5.00   2608.25    735.00       16.57

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .6045E+03 EXCESS= .0000E+00 OUTFLOW= .6045E+03 BASIN STORAGE= .1265E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              PIPE  MANE          .81     77.14    725.87      4.76      5.00     73.40    725.00        4.77

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .7115E+01 EXCESS= .0000E+00 OUTFLOW= .7115E+01 BASIN STORAGE= .8820E-04 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
              PIPE  MANE          .75    110.62    725.59      8.98      5.00    106.55    725.00        8.98

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1341E+02 EXCESS= .0000E+00 OUTFLOW= .1341E+02 BASIN STORAGE= .7419E-04 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
              PIPE  MANE          .73    129.66    726.16     11.81      5.00    125.60    725.00       11.82

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1764E+02 EXCESS= .0000E+00 OUTFLOW= .1764E+02 BASIN STORAGE= .8094E-04 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
              PIPE  MANE          .71    144.69    725.46     14.20      5.00    140.34    725.00       14.20

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2120E+02 EXCESS= .0000E+00 OUTFLOW= .2120E+02 BASIN STORAGE= .8281E-04 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
              PIPE  MANE          .70    160.78    725.76     16.76      5.00    155.19    725.00       16.76

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2502E+02 EXCESS= .0000E+00 OUTFLOW= .2502E+02 BASIN STORAGE= .8791E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .73   1282.00    735.74      4.64      5.00   1266.11    735.00        4.65
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1807E+03 EXCESS= .0000E+00 OUTFLOW= .1807E+03 BASIN STORAGE= .1186E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .64   1900.62    735.68      8.84      5.00   1883.90    735.00        8.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3438E+03 EXCESS= .0000E+00 OUTFLOW= .3438E+03 BASIN STORAGE= .1712E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .60   2245.15    735.85     11.66      5.00   2228.10    735.00       11.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4537E+03 EXCESS= .0000E+00 OUTFLOW= .4537E+03 BASIN STORAGE= .1970E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .58   2512.85    735.43     14.04      5.00   2498.04    735.00       14.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5462E+03 EXCESS= .0000E+00 OUTFLOW= .5462E+03 BASIN STORAGE= .2324E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .56   2770.10    735.54     16.60      5.00   2751.51    735.00       16.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6457E+03 EXCESS= .0000E+00 OUTFLOW= .6457E+03 BASIN STORAGE= .2498E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .39   1292.82    735.50      4.66      5.00   1283.66    735.00        4.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1848E+03 EXCESS= .0000E+00 OUTFLOW= .1848E+03 BASIN STORAGE= .6900E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .34   1920.18    735.48      8.85      5.00   1910.93    735.00        8.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3513E+03 EXCESS= .0000E+00 OUTFLOW= .3513E+03 BASIN STORAGE= .9937E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .32   2270.52    735.31     11.68      5.00   2260.64    735.00       11.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4634E+03 EXCESS= .0000E+00 OUTFLOW= .4634E+03 BASIN STORAGE= .1151E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .31   2544.14    735.27     14.06      5.00   2534.68    735.00       14.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5579E+03 EXCESS= .0000E+00 OUTFLOW= .5579E+03 BASIN STORAGE= .1339E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .30   2801.39    735.53     16.61      5.00   2792.16    735.00       16.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6594E+03 EXCESS= .0000E+00 OUTFLOW= .6594E+03 BASIN STORAGE= .1457E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.45    164.99    727.12      4.75      5.00    149.85    725.00        4.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1640E+02 EXCESS= .0000E+00 OUTFLOW= .1640E+02 BASIN STORAGE= .6384E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.28    237.68    727.14      8.97      5.00    221.01    725.00        8.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3095E+02 EXCESS= .0000E+00 OUTFLOW= .3095E+02 BASIN STORAGE= .7691E-03 PERCENT ERROR=    .0
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          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.21    283.68    726.11     11.80      5.00    261.25    725.00       11.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4072E+02 EXCESS= .0000E+00 OUTFLOW= .4072E+02 BASIN STORAGE= .7664E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.17    312.69    725.87     14.18      5.00    292.24    725.00       14.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4894E+02 EXCESS= .0000E+00 OUTFLOW= .4894E+02 BASIN STORAGE= .8463E-03 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         1.13    345.98    725.94     16.74      5.00    322.76    725.00       16.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5777E+02 EXCESS= .0000E+00 OUTFLOW= .5777E+02 BASIN STORAGE= .7256E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.23   1454.94    736.48      4.68      5.00   1436.90    735.00        4.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2094E+03 EXCESS= .0000E+00 OUTFLOW= .2094E+03 BASIN STORAGE= .2759E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.08   2152.88    736.31      8.88      5.00   2134.55    735.00        8.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3970E+03 EXCESS= .0000E+00 OUTFLOW= .3970E+03 BASIN STORAGE= .3851E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.02   2537.10    736.58     11.71      5.00   2525.15    735.00       11.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5234E+03 EXCESS= .0000E+00 OUTFLOW= .5234E+03 BASIN STORAGE= .4434E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .98   2851.81    735.99     14.09      5.00   2830.29    735.00       14.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6298E+03 EXCESS= .0000E+00 OUTFLOW= .6298E+03 BASIN STORAGE= .5076E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .95   3136.02    735.76     16.65      5.00   3116.91    735.00       16.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7441E+03 EXCESS= .0000E+00 OUTFLOW= .7441E+03 BASIN STORAGE= .5670E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .53   1498.06    735.88      4.71      5.00   1488.67    735.00        4.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2193E+03 EXCESS= .0000E+00 OUTFLOW= .2193E+03 BASIN STORAGE= .1375E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .47   2220.13    735.47      8.91      5.00   2211.11    735.00        8.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4151E+03 EXCESS= .0000E+00 OUTFLOW= .4151E+03 BASIN STORAGE= .1887E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .44   2623.94    735.49     11.74      5.00   2615.45    735.00       11.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5469E+03 EXCESS= .0000E+00 OUTFLOW= .5468E+03 BASIN STORAGE= .2169E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .43   2939.67    735.48     14.12      5.00   2931.24    735.00       14.12
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .6578E+03 EXCESS= .0000E+00 OUTFLOW= .6578E+03 BASIN STORAGE= .2465E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .41   3237.15    735.44     16.68      5.00   3229.20    735.00       16.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7770E+03 EXCESS= .0000E+00 OUTFLOW= .7770E+03 BASIN STORAGE= .2767E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .84   1548.55    736.62      4.72      5.00   1534.54    735.00        4.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2276E+03 EXCESS= .0000E+00 OUTFLOW= .2276E+03 BASIN STORAGE= .2516E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .74   2291.37    735.53      8.93      5.00   2279.87    735.00        8.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4301E+03 EXCESS= .0000E+00 OUTFLOW= .4301E+03 BASIN STORAGE= .3380E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .70   2709.09    735.47     11.76      5.00   2697.88    735.00       11.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5664E+03 EXCESS= .0000E+00 OUTFLOW= .5664E+03 BASIN STORAGE= .3911E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .67   3039.20    735.72     14.14      5.00   3025.12    735.00       14.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6812E+03 EXCESS= .0000E+00 OUTFLOW= .6812E+03 BASIN STORAGE= .4353E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .65   3343.58    735.90     16.70      5.00   3333.02    735.00       16.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8044E+03 EXCESS= .0000E+00 OUTFLOW= .8044E+03 BASIN STORAGE= .4959E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              PIPE  MANE         2.79     60.34    727.62      4.77      5.00     54.46    730.00        4.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5368E+01 EXCESS= .0000E+00 OUTFLOW= .5367E+01 BASIN STORAGE= .2896E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
              PIPE  MANE         2.59     87.24    728.00      8.98      5.00     76.04    730.00        8.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1011E+02 EXCESS= .0000E+00 OUTFLOW= .1011E+02 BASIN STORAGE= .4248E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
              PIPE  MANE         2.51     99.04    726.86     11.81      5.00     88.18    730.00       11.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1329E+02 EXCESS= .0000E+00 OUTFLOW= .1329E+02 BASIN STORAGE= .2949E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
              PIPE  MANE         2.45    110.90    728.35     14.20      5.00     97.33    730.00       14.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1598E+02 EXCESS= .0000E+00 OUTFLOW= .1598E+02 BASIN STORAGE= .3104E-03 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
              PIPE  MANE         2.41    119.63    726.56     16.75      5.00    106.18    730.00       16.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1885E+02 EXCESS= .0000E+00 OUTFLOW= .1885E+02 BASIN STORAGE= .2537E-03 PERCENT ERROR=    .0

*** NORMAL END OF HEC-1 ***
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APPENDIX D

DETENTION STRUCTURE VOLUME

AND DISCHARGE TO DEPTH RELATIONS

Project: New Castle
Canovanas, Puerto Rico.
Description: Pond P1A

FLOW RATING CURVE		DEL	**0.36**									
Structure	Head	m	0	**0.36**	**0.72**	**1.08**	**1.44**	**1.8**	**2.16**	**2.52**	**2.88**	**3.24**
		ft	0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Diameter (feet)		**2**	2	2	2	2	2	2	2	2	2
	Number		**3**	3	3	3	3	3	3	3	3	3
	Head over CL (feet)		-1	0.181	1.3616	2.5424	3.7232	4.904	6.0848	7.2656	8.4464	9.6272
ORIF #1	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	19.62	53.836	73.56426	89.0232	102.17	113.807	124.36	134.085	143.1512
	Head over invert (feet)		0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Velocity (fps)		0	6.244	17.136	23.41618	28.3369	32.521	36.2257	39.5849	42.6805	45.56633
	Invert El (m)		**1.65**	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
	(feet)		5.412	5.412	5.412	5.412	5.412	5.412	5.412	5.412	5.412	5.412
	Diameter (feet)		**2.5**	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Number		**3**	3	3	3	3	3	3	3	3	3
ORIF #2	Head over CL (feet)		-6.662	-5.481	-4.3	-3.1196	-1.9388	-0.758	0.4228	1.6036	2.7844	3.9652
	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	0	0	0	0	0	46.874	91.2878	120.29	143.5481
	Velocity (fps)		0	0	0	0	0	0	9.54908	18.597	24.5053	29.24331
	Invert El (m)		**70**	70	70	70	70	70	70	70	70	70
	(feet)		229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6
V-notch	ALFA, degres		**90**	90	90	90	90	90	90	90	90	90
	Cc		**0.585**	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
	Head over weir (feet)		-229.6	-228.4	-227.2	-226.058	-224.88	-223.7	-222.515	-221.33	-220.15	-218.9728
	Flow (cfs)		0	0	0	0	0	0	0	0	0	0
9.184	Invert El (m)		**2.8**	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Rect	(feet)		9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184
WEIR	Width (feet)		**24**	24	24	24	24	24	24	24	24	24
	Cc		**0.66**	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	Head over weir (feet)		-9.184	-8.003	-6.822	-5.6416	-4.4608	-3.28	-2.0992	-0.9184	0.2624	1.4432
	Flow (cfs)		0	0	0	0	0	0	0	0	9.02148	116.3648
	FLOW SUMMATION (cfs)		0	19.62	53.836	73.56426	89.0232	102.17	160.681	215.648	263.397	403.0641
RECTANGULAR LAGOON				1450								
39.622066	Lado A de la Base, ft		**130**	130	130	130	130	130	130	130	130	130
36.574215	Lado B de la Base, ft		**120**	120	120	120	120	120	120	120	120	120
	h (ft)		**0**	**1.181**	**2.3616**	**3.5424**	**4.7232**	**5.904**	**7.0848**	**8.2656**	**9.4464**	**10.6272**
	Slope 1:		**2**	2	2	2	2	2	2	2	2	2
	Area (sqft)		15600	16803	18051	19343	20680	22062	23488	24959	26474	28034
	(acre)		**0.36**	**0.39**	**0.41**	**0.44**	**0.48**	**0.51**	**0.54**	**0.57**	**0.61**	**0.64**
	Volume, acre-ft		**0.00**	**0.44**	**0.91**	**1.42**	**1.97**	**2.55**	**3.18**	**3.85**	**4.57**	**5.33**
	Lado A del Tope		130	134.7	139.45	144.1696	148.893	153.62	158.339	163.062	167.786	172.5088
	Lado B del Tope		120	124.7	129.45	134.1696	138.893	143.62	148.339	153.062	157.786	162.5088

Project: New Castle
Canovanas, Puerto Rico.
Description: Pond P1D

FLOW RATING CURVE		DEL	**0.36**									
Structure	Head	m	0	**0.36**	**0.72**	**1.08**	**1.44**	**1.8**	**2.16**	**2.52**	**2.88**	**3.24**
		ft	0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Diameter (feet)		**2**	2	2	2	2	2	2	2	2	2
	Number		**2**	2	2	2	2	2	2	2	2	2
	Head over CL (feet)		-1	0.181	1.3616	2.5424	3.7232	4.904	6.0848	7.2656	8.4464	9.6272
ORIF #1	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	13.08	35.89	49.04284	59.3488	68.113	75.8712	82.9067	89.3901	95.43411
	Head over invert (feet)		0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Velocity (fps)		0	4.163	11.424	15.61078	18.8913	21.681	24.1505	26.3899	28.4537	30.37755
	Invert El (m)		**1.7**	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
	(feet)		5.576	5.576	5.576	5.576	5.576	5.576	5.576	5.576	5.576	5.576
	Diameter (feet)		**2**	2	2	2	2	2	2	2	2	2
	Number		**2**	2	2	2	2	2	2	2	2	2
ORIF #2	Head over CL (feet)		-6.576	-5.395	-4.214	-3.0336	-1.8528	-0.672	0.5088	1.6896	2.8704	4.0512
	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	0	0	0	0	0	21.9395	39.9803	52.1105	61.90782
	Velocity (fps)		0	0	0	0	0	0	6.98355	12.7261	16.5872	19.70582
	Invert El (m)		**70**	70	70	70	70	70	70	70	70	70
	(feet)		229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6
V-notch	ALFA, degres		**90**	90	90	90	90	90	90	90	90	90
	Cc		**0.585**	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
	Head over weir (feet)		-229.6	-228.4	-227.2	-226.058	-224.88	-223.7	-222.515	-221.33	-220.15	-218.9728
	Flow (cfs)		0	0	0	0	0	0	0	0	0	0
9.184	Invert El (m)		**2.8**	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Rect	(feet)		9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184
WEIR	Width (feet)		**18**	18	18	18	18	18	18	18	18	18
	Cc		**0.66**	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	Head over weir (feet)		-9.184	-8.003	-6.822	-5.6416	-4.4608	-3.28	-2.0992	-0.9184	0.2624	1.4432
	Flow (cfs)		0	0	0	0	0	0	0	0	6.76611	87.27364
	FLOW SUMMATION (cfs)		0	13.08	35.89	49.04284	59.3488	68.113	97.8107	122.887	148.267	244.6156
RECTANGULAR LAGOON				594.9								
24.38281	Lado A de la Base, ft		**80**	80	80	80	80	80	80	80	80	80
24.38281	Lado B de la Base, ft		**80**	80	80	80	80	80	80	80	80	80
	h (ft)		**0**	**1.181**	**2.3616**	**3.5424**	**4.7232**	**5.904**	**7.0848**	**8.2656**	**9.4464**	**10.6272**
	Slope 1:		**2**	2	2	2	2	2	2	2	2	2
	Area (sqft)		6400	7178	8001	8868	9780	10736	11737	12783	13873	15008
	(acre)		**0.15**	**0.16**	**0.18**	**0.20**	**0.22**	**0.25**	**0.27**	**0.29**	**0.32**	**0.34**
	Volume, acre-ft		**0.00**	**0.18**	**0.39**	**0.62**	**0.88**	**1.16**	**1.48**	**1.82**	**2.20**	**2.61**
	Lado A del Tope		80	84.72	89.446	94.1696	98.8928	103.62	108.339	113.062	117.786	122.5088
	Lado B del Tope		80	84.72	89.446	94.1696	98.8928	103.62	108.339	113.062	117.786	122.5088

Project: New Castle
Canovanas, Puerto Rico.
Description: Pond P1F1

FLOW RATING CURVE		DEL	**0.36**									
Structure	Head	m	0	**0.36**	**0.72**	**1.08**	**1.44**	**1.8**	**2.16**	**2.52**	**2.88**	**3.24**
		ft	0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Diameter (feet)		**2.8**	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	Number		**2**	2	2	2	2	2	2	2	2	2
	Head over CL (feet)		-1.4	-0.219	0.9616	2.1424	3.3232	4.504	5.6848	6.8656	8.0464	9.2272
ORIF #1	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	0	59.116	88.23888	109.898	127.94	143.737	157.961	171.006	183.1238
	Head over invert (feet)		0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Velocity (fps)		0	0	9.6006	14.33023	17.8476	20.778	23.3432	25.6532	27.7718	29.73978
	Invert El (m)		**1.8**	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	(feet)		5.904	5.904	5.904	5.904	5.904	5.904	5.904	5.904	5.904	5.904
	Diameter (feet)		**1.5**	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Number		**2**	2	2	2	2	2	2	2	2	2
ORIF #2	Head over CL (feet)		-6.654	-5.473	-4.292	-3.1116	-1.9308	-0.75	0.4308	1.6116	2.7924	3.9732
	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	0	0	0	0	0	11.3557	21.9637	28.9111	34.48628
	Velocity (fps)		0	0	0	0	0	0	6.426	12.4289	16.3603	19.5152
	Invert El (m)		**70**	70	70	70	70	70	70	70	70	70
	(feet)		229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6
V-notch	ALFA, degres		**90**	90	90	90	90	90	90	90	90	90
	Cc		**0.585**	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
	Head over weir (feet)		-229.6	-228.4	-227.2	-226.058	-224.88	-223.7	-222.515	-221.33	-220.15	-218.9728
	Flow (cfs)		0	0	0	0	0	0	0	0	0	0
8.856	Invert El (m)		**2.7**	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Rect	(feet)		8.856	8.856	8.856	8.856	8.856	8.856	8.856	8.856	8.856	8.856
WEIR	Width (feet)		**10**	10	10	10	10	10	10	10	10	10
	Cc		**0.66**	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	Head over weir (feet)		-8.856	-7.675	-6.494	-5.3136	-4.1328	-2.952	-1.7712	-0.5904	0.5904	1.7712
	Flow (cfs)		0	0	0	0	0	0	0	0	12.6865	65.92076
	FLOW SUMMATION (cfs)		0	0	59.116	88.23888	109.898	127.94	155.092	179.924	212.603	283.5308
RECTANGULAR LAGOON				392.7								
19.811033	Lado A de la Base, ft		**65**	65	65	65	65	65	65	65	65	65
19.811033	Lado B de la Base, ft		**65**	65	65	65	65	65	65	65	65	65
	h (ft)		**0**	**1.181**	**2.3616**	**3.5424**	**4.7232**	**5.904**	**7.0848**	**8.2656**	**9.4464**	**10.6272**
	Slope 1:		**2**	2	2	2	2	2	2	2	2	2
	Area (sqft)		4225	4861	5542	6268	7038	7853	8712	9616	10565	11558
	(acre)		**0.10**	**0.11**	**0.13**	**0.14**	**0.16**	**0.18**	**0.20**	**0.22**	**0.24**	**0.27**
	Volume, acre-ft		**0.00**	**0.12**	**0.27**	**0.43**	**0.61**	**0.82**	**1.05**	**1.31**	**1.61**	**1.93**
	Lado A del Tope		65	69.72	74.446	79.1696	83.8928	88.616	93.3392	98.0624	102.786	107.5088
	Lado B del Tope		65	69.72	74.446	79.1696	83.8928	88.616	93.3392	98.0624	102.786	107.5088

Project: New Castle
Canovanas, Puerto Rico.
Description: Pond P2A

FLOW RATING CURVE		DEL	**0.36**									
Structure	Head	m	0	**0.36**	**0.72**	**1.08**	**1.44**	**1.8**	**2.16**	**2.52**	**2.88**	**3.24**
		ft	0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Diameter (feet)		**2**	2	2	2	2	2	2	2	2	2
	Number		**1**	1	1	1	1	1	1	1	1	1
	Head over CL (feet)		-1	0.181	1.3616	2.5424	3.7232	4.904	6.0848	7.2656	8.4464	9.6272
ORIF #1	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	6.539	17.945	24.52142	29.6744	34.056	37.9356	41.4533	44.6951	47.71706
	Head over invert (feet)		0	1.181	2.3616	3.5424	4.7232	5.904	7.0848	8.2656	9.4464	10.6272
	Velocity (fps)		0	2.081	5.7121	7.805392	9.44563	10.84	12.0752	13.195	14.2268	15.18878
	Invert El (m)		**1.5**	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	(feet)		4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92
	Diameter (feet)		**1**	1	1	1	1	1	1	1	1	1
	Number		**0**	0	0	0	0	0	0	0	0	0
ORIF #2	Head over CL (feet)		-5.42	-4.239	-3.058	-1.8776	-0.6968	0.484	1.6648	2.8456	4.0264	5.2072
	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	0	0	0	0	0	0	0	0	0
	Velocity (fps)		0	0	0	0	0	0	0	0	0	0
	Invert El (m)		**70**	70	70	70	70	70	70	70	70	70
	(feet)		229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6
V-notch	ALFA, degres		**90**	90	90	90	90	90	90	90	90	90
	Cc		**0.585**	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
	Head over weir (feet)		-229.6	-228.4	-227.2	-226.058	-224.88	-223.7	-222.515	-221.33	-220.15	-218.9728
	Flow (cfs)		0	0	0	0	0	0	0	0	0	0
9.184	Invert El (m)		**2.8**	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Rect	(feet)		9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184	9.184
WEIR	Width (feet)		**30**	30	30	30	30	30	30	30	30	30
	Cc		**0.66**	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	Head over weir (feet)		-9.184	-8.003	-6.822	-5.6416	-4.4608	-3.28	-2.0992	-0.9184	0.2624	1.4432
	Flow (cfs)		0	0	0	0	0	0	0	0	11.2768	145.4561
	FLOW SUMMATION (cfs)		0	6.539	17.945	24.52142	29.6744	34.056	37.9356	41.4533	55.9719	193.1731
RECTANGULAR LAGOON				1571								
39.622066	Lado A de la Base, ft		**130**	130	130	130	130	130	130	130	130	130
39.622066	Lado B de la Base, ft		**130**	130	130	130	130	130	130	130	130	130
	h (ft)		**0**	**1.181**	**2.3616**	**3.5424**	**4.7232**	**5.904**	**7.0848**	**8.2656**	**9.4464**	**10.6272**
	Slope 1:		**2**	2	2	2	2	2	2	2	2	2
	Area (sqft)		16900	18150	19445	20785	22169	23598	25071	26589	28152	29759
	(acre)		**0.39**	**0.42**	**0.45**	**0.48**	**0.51**	**0.54**	**0.58**	**0.61**	**0.65**	**0.68**
	Volume, acre-ft		**0.00**	**0.48**	**0.99**	**1.53**	**2.12**	**2.75**	**3.42**	**4.13**	**4.89**	**5.70**
	Lado A del Tope		130	134.7	139.45	144.1696	148.893	153.62	158.339	163.062	167.786	172.5088
	Lado B del Tope		130	134.7	139.45	144.1696	148.893	153.62	158.339	163.062	167.786	172.5088

Project: New Castle
Canovanas, Puerto Rico.
Description: Pond P2B

FLOW RATING CURVE		DEL	**0.37**									
Structure	Head	m	0	**0.37**	**0.74**	**1.11**	**1.48**	**1.85**	**2.22**	**2.59**	**2.96**	**3.33**
		ft	0	1.214	2.4272	3.6408	4.8544	6.068	7.2816	8.4952	9.7088	10.9224
	Diameter (feet)		**2**	2	2	2	2	2	2	2	2	2
	Number		**3**	3	3	3	3	3	3	3	3	3
	Head over CL (feet)		-1	0.214	1.4272	2.6408	3.8544	5.068	6.2816	7.4952	8.7088	9.9224
ORIF #1	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	21.32	55.117	74.97434	90.5781	103.86	115.633	126.31	136.152	145.3293
	Head over invert (feet)		0	1.214	2.4272	3.6408	4.8544	6.068	7.2816	8.4952	9.7088	10.9224
	Velocity (fps)		0	6.787	17.544	23.86502	28.8318	33.061	36.8069	40.2055	43.3384	46.25965
	Invert El (m)		**1.5**	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	(feet)		4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92
	Diameter (feet)		**2.3**	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	Number		**3**	3	3	3	3	3	3	3	3	3
ORIF #2	Head over CL (feet)		-6.07	-4.856	-3.643	-2.4292	-1.2156	-0.002	1.2116	2.4252	3.6388	4.8524
	Discharge Coef		**0.61**	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
	Flow (cfs)		0	0	0	0	0	0	67.1615	95.0199	116.391	134.4061
	Velocity (fps)		0	0	0	0	0	0	16.1649	22.8701	28.0139	32.34985
	Invert El (m)		**70**	70	70	70	70	70	70	70	70	70
	(feet)		229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6
V-notch	ALFA, degres		**90**	90	90	90	90	90	90	90	90	90
	Cc		**0.585**	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585	0.585
	Head over weir (feet)		-229.6	-228.4	-227.2	-225.959	-224.75	-223.53	-222.318	-221.1	-219.89	-218.6776
	Flow (cfs)		0	0	0	0	0	0	0	0	0	0
8.856	Invert El (m)		**2.7**	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
Rect	(feet)		8.856	8.856	8.856	8.856	8.856	8.856	8.856	8.856	8.856	8.856
WEIR	Width (feet)		**24**	24	24	24	24	24	24	24	24	24
	Cc		**0.66**	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
	Head over weir (feet)		-8.856	-7.642	-6.429	-5.2152	-4.0016	-2.788	-1.5744	-0.3608	0.8528	2.0664
	Flow (cfs)		0	0	0	0	0	0	0	0	52.857	199.3672
	FLOW SUMMATION (cfs)		0	21.32	55.117	74.97434	90.5781	103.86	182.794	221.33	305.4	479.1026
RECTANGULAR LAGOON				594.9								
24.38281	Lado A de la Base, ft		**80**	80	80	80	80	80	80	80	80	80
24.38281	Lado B de la Base, ft		**80**	80	80	80	80	80	80	80	80	80
	h (ft)		**0**	**1.214**	**2.4272**	**3.6408**	**4.8544**	**6.068**	**7.2816**	**8.4952**	**9.7088**	**10.9224**
	Slope 1:		**2**	2	2	2	2	2	2	2	2	2
	Area (sqft)		6400	7200	8048	8942	9884	10873	11909	12992	14122	15299
	(acre)		**0.15**	**0.17**	**0.18**	**0.21**	**0.23**	**0.25**	**0.27**	**0.30**	**0.32**	**0.35**
	Volume, acre-ft		**0.00**	**0.19**	**0.40**	**0.64**	**0.91**	**1.20**	**1.53**	**1.89**	**2.29**	**2.72**
	Lado A del Tope		80	84.85	89.709	94.5632	99.4176	104.27	109.126	113.981	118.835	123.6896
	Lado B del Tope		80	84.85	89.709	94.5632	99.4176	104.27	109.126	113.981	118.835	123.6896

APPENDIX E

HEC-1 RESULTS FOR PROPOSED CONDITION W/MITIGATION

```
*                                      *                                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998              *                                                    *    HYDROLOGIC ENGINEERING CENTER     *
*            VERSION 4.1               *                                                    *          609 SECOND STREET           *
*  RGMHEC2000               HEC-1.COM  *                                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE   28JUL09  TIME  08:16:06  *                                                    *           (916) 756-1104             *
*                                      *                                                    *                                      *
****************************************                                                    ****************************************
```

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

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

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

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

  1           ID        HYDROLOGIC ANALYSIS
  2           ID        PROJECT: CAMPO RICO NEW CASTLE, CANOVANAS, PR
  3           ID        TRIANGULAR DISTRIBUTION
  4           ID        FREQUENCY OF OCCURRENCE: 2-, 10-, 25-, 50- & 100-YEARS
  5           ID        PROPOSED  CONDITION & MITIGATION
  6           IT       5                     300
  7           IO       4
  8           JP       5

  9           KK    P1B1
 10           KP       1
 11           BA  0.0103
 12           LS       0      93
 13           UD    0.16
 14           IN      15
 15           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 16           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 17           KP       2
 18           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 19           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 20           KP       3
 21           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 22           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 23           KP       4
 24           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 25           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 26           KP       5
 27           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 28           PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 29           KK    P1C1
 30           KP       1
 31           BA  0.0068
 32           LS       0      93
 33           UD    0.14
 34           IN      15
 35           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 36           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 37           KP       2
 38           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 39           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 40           KP       3
 41           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 42           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 43           KP       4
 44           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 45           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 46           KP       5
 47           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 48           PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
```



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


 49           KK   COMB1
 50           HC       2

 51           KK     P2C
 52           KP       1
 53           BA   0.018
 54           LS       0      93
 55           UD    0.12
 56           IN      15
 57           KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 58           PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 59           KP       2
 60           KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 61           PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 62           KP       3
 63           KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 64           PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 65           KP       4
 66           KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 67           PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 68           KP       5
 69           KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
```

```
 70          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 71          KK   CHANN
 72          KM   ROUTING THROUGH OPEN CHANNEL
 73          KO       5                              21
 74          RD  2260.6    0.08   0.045            TRAP      12    1.00

 75          KK     P2B
 76          KP       1
 77          BA  0.0620
 78          LS       0      93
 79          UD    0.14
 80          IN      15
 81          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 82          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 83          KP       2
 84          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 85          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 86          KP       3
 87          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 88          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 89          KP       4
 90          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 91          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 92          KP       5
 93          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 94          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
1                                          HEC-1 INPUT                                          PAGE  3

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


 95          KK    POND
 96          KM   RUNOFF MITIGATION POND CALCULATION
 97          KO    3.00    1.00                     21
 98          RS    1.00    ELEV    0.00
 99          SQ    0.00   21.32   55.12   74.97   90.58  103.86  182.79   221.3  305.40  479.10
100          SV   0.000   0.190   0.403   0.642   0.908   1.204   1.532   1.893   2.289   2.723
101          SE    0.00    1.21    2.43    3.64    4.85    6.07    7.28    8.50    9.71   10.92

102          KK   CHANN
103          KM   ROUTING THROUGH OPEN CHANNEL
104          KO       5                              21
105          RD    1977    0.08   0.045            TRAP      12    1.00

106          KK     P2A
107          KP       1
108          BA  0.0347
109          LS       0      93
110          UD    0.13
111          IN      15
112          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
113          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
114          KP       2
115          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
116          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
117          KP       3
118          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
119          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
120          KP       4
121          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
122          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
123          KP       5
124          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
125          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

126          KK    POND
127          KM   RUNOFF MITIGATION POND CALCULATION
128          KO    3.00    1.00                     21
129          RS    1.00    ELEV    0.00
130          SQ    0.00    6.54   17.95   24.52   29.67   34.06   37.94    41.5   55.97  193.17
131          SV   0.000   0.476   0.986   1.534   2.120   2.747   3.417   4.130   4.890   5.697
132          SE    0.00    1.18    2.36    3.54    4.72    5.90    7.08    8.27    9.45   10.63

133          KK   CHANN
134          KM   ROUTING THROUGH OPEN CHANNEL
135          KO       5                              21
136          RD  917.36    0.08   0.045            TRAP      12    1.00

137          KK   COMB2
138          HC       3
```

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


           139          KK      E0
           140          KP       1
           141          BA  0.3880
           142          LS       0   86.26
           143          UD    0.25
           144          IN      15
           145          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
           146          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
           147          KP       2
           148          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
           149          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
           150          KP       3
           151          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
           152          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
           153          KP       4
           154          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
           155          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
           156          KP       5
           157          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
           158          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

           159          KK   CHANN
           160          KM   ROUTING THROUGH OPEN CHANNEL
           161          KO       5                            21
           162          RD    3261    0.08   0.045            TRAP      12    1.00

           163          KK      E1
           164          KP       1
           165          BA  0.1812
           166          LS       0   87.48
           167          UD    0.20
           168          IN      15
           169          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
           170          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
           171          KP       2
           172          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
           173          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
           174          KP       3
           175          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
           176          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
           177          KP       4
           178          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
           179          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
           180          KP       5
           181          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
           182          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

           183          KK   COMB3
           184          HC       2
```



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


           185          KK   COMB4
           186          HC       2

           187          KK   CHANN
           188          KM   ROUTING THROUGH OPEN CHANNEL
           189          KO       5                            21
           190          RD     547    0.08   0.045            TRAP      12    1.00

           191          KK      E3
           192          KP       1
           193          BA  0.0280
           194          LS       0      89
           195          UD    0.06
           196          IN      15
           197          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
           198          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
           199          KP       2
           200          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
           201          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
           202          KP       3
           203          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
           204          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
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```
 205          KP       4
 206          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 207          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 208          KP       5
 209          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 210          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 211          KK    PIPE
 212          KM   ROUTING THROUGH PIPE
 213          KO       5                          21
 214          RD     600   0.008   0.013            CIRC       4

 215          KK    P1F1
 216          KP       1
 217          BA  0.0175
 218          LS       0      93
 219          UD    0.12
 220          IN      15
 221          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 222          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 223          KP       2
 224          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 225          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 226          KP       3
 227          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 228          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 229          KP       4
 230          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 231          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 232          KP       5
 233          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 234          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16
1                                          HEC-1 INPUT                                          PAGE  6

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


 235          KK   COMB5
 236          HC       2

 237          KK    POND
 238          KM   RUNOFF MITIGATION POND CALCULATION
 239          KO    3.00    1.00                      21
 240          RS    1.00    ELEV    0.00
 241          SQ    0.00    0.00   59.12   88.24  109.90  127.94  155.09   179.9  212.60  283.53
 242          SV   0.000   0.123   0.265   0.427   0.611   0.819   1.053   1.314   1.605   1.927
 243          SE    0.00    1.18    2.36    3.54    4.72    5.90    7.08    8.27    9.45   10.63

 244          KK   COMB6
 245          HC       2

 246          KK   CHANN
 247          KM   ROUTING THROUGH OPEN CHANNEL
 248          KO       5                          21
 249          RD     964    0.08   0.045            TRAP      12    1.00

 250          KK    P1F2
 251          KP       1
 252          BA  0.0148
 253          LS       0      93
 254          UD    0.09
 255          IN      15
 256          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 257          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 258          KP       2
 259          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 260          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 261          KP       3
 262          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 263          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 264          KP       4
 265          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 266          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 267          KP       5
 268          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 269          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 270          KK   COMB7
 271          HC       2

 272          KK   CHANN
```

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 273          KM   ROUTING THROUGH OPEN CHANNEL
 274          KO       5                            21
 275          RD     515    0.08   0.045            TRAP      12    1.00

 276          KK      E2
 277          KP       1
 278          BA  0.0647
 279          LS       0   88.90
 280          UD    0.07
 281          IN      15
1                                          HEC-1 INPUT                                                    PAGE  7

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

 282          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 283          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 284          KP       2
 285          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 286          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 287          KP       3
 288          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 289          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 290          KP       4
 291          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 292          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 293          KP       5
 294          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 295          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 296          KK   CHANN
 297          KM   ROUTING THROUGH OPEN CHANNEL
 298          KO       5                            21
 299          RD     974    0.08   0.045            TRAP      12    1.00

 300          KK     P1E
 301          KP       1
 302          BA  0.0292
 303          LS       0      93
 304          UD    0.13
 305          IN      15
 306          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 307          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 308          KP       2
 309          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 310          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 311          KP       3
 312          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 313          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 314          KP       4
 315          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 316          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 317          KP       5
 318          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 319          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 320          KK   COMB8
 321          HC       2

 322          KK   COMB9
 323          HC       2

 324          KK   CHANN
 325          KM   ROUTING THROUGH OPEN CHANNEL
 326          KO       5                            21
 327          RD    1698    0.08   0.045            TRAP      12    1.00
1                                          HEC-1 INPUT                                                    PAGE  8

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


 328          KK     P1D
 329          KP       1
 330          BA  0.0356
 331          LS       0      93
 332          UD    0.08
 333          IN      15
 334          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 335          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 336          KP       2
 337          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 338          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
```

```
 339          KP       3
 340          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 341          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 342          KP       4
 343          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 344          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 345          KP       5
 346          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 347          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 348          KK    POND
 349          KM   RUNOFF MITIGATION POND CALCULATION
 350          KO    3.00    1.00                        21
 351          RS    1.00    ELEV    0.00
 352          SQ    0.00   13.08   35.89   49.04   59.35   68.11   97.81   122.9  148.27  244.62
 353          SV   0.000   0.184   0.391   0.621   0.878   1.162   1.476   1.822   2.200   2.614
 354          SE    0.00    1.18    2.36    3.54    4.72    5.90    7.08    8.27    9.45   10.63

 355          KK  COMB10
 356          HC       2

 357          KK   CHANN
 358          KM   ROUTING THROUGH OPEN CHANNEL
 359          KO       5                              21
 360          RD     741    0.08   0.045            TRAP      12    1.00

 361          KK    P1C2
 362          KP       1
 363          BA  0.0297
 364          LS       0      93
 365          UD    0.13
 366          IN      15
 367          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 368          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 369          KP       2
 370          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 371          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 372          KP       3
 373          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 374          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 375          KP       4
 376          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 377          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
1                                          HEC-1 INPUT                                          PAGE  9

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

 378          KP       5
 379          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 380          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 381          KK  COMB11
 382          HC       2

 383          KK   CHANN
 384          KM   ROUTING THROUGH OPEN CHANNEL
 385          KO       5                              21
 386          RD    1181    0.08   0.045            TRAP      12    1.00

 387          KK      E4
 388          KP       1
 389          BA  0.0211
 390          LS       0      89
 391          UD    0.05
 392          IN      15
 393          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
 394          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
 395          KP       2
 396          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
 397          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
 398          KP       3
 399          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
 400          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
 401          KP       4
 402          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
 403          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
 404          KP       5
 405          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
 406          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

 407          KK    PIPE
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          408          KM   ROUTING THROUGH PIPE
          409          KO       5                            21
          410          RD    1975   0.008   0.013            CIRC       4

          411          KK     P1A
          412          KP       1
          413          BA  0.0550
          414          LS       0      93
          415          UD    0.24
          416          IN      15
          417          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
          418          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
          419          KP       2
          420          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          421          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          422          KP       3
          423          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
          424          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
          425          KP       4
          426          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          427          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
1                                                  HEC-1 INPUT                                          PAGE 10

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

          428          KP       5
          429          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          430          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

          431          KK  COMB12
          432          HC       2

          433          KK    POND
          434          KM   RUNOFF MITIGATION POND CALCULATION
          435          KO    3.00    1.00                         21
          436          RS    1.00    ELEV    0.00
          437          SQ    0.00   19.62   53.84   73.56   89.02  102.17  160.68   215.6  263.40  403.06
          438          SV   0.000   0.440   0.913   1.422   1.969   2.555   3.182   3.852   4.567   5.328
          439          SE    0.00    1.18    2.36    3.54    4.72    5.90    7.08    8.27    9.45   10.63

          440          KK  COMB13
          441          HC       2

          442          KK    P1B2
          443          KP       1
          444          BA  0.0142
          445          LS       0      93
          446          UD    0.08
          447          IN      15
          448          KM        TRIANGULAR DISTRIBUTION 2-YRS STORM
          449          PH                   0.53    0.93    2.21    2.97    3.33    4.18    5.10    6.03
          450          KP       2
          451          KM        TRIANGULAR DISTRIBUTION 10-YRS STORM
          452          PH                   0.72    1.27    3.02    4.31    5.02    6.71    8.51   10.33
          453          KP       3
          454          KM        TRIANGULAR DISTRIBUTION 25-YRS STORM
          455          PH                   0.84    1.47    3.50    5.11    6.05    8.31   10.67   13.19
          456          KP       4
          457          KM        TRIANGULAR DISTRIBUTION 50-YRS STORM
          458          PH                   0.93    1.63    3.87    5.73    6.88    9.61   12.46   15.59
          459          KP       5
          460          KM        TRIANGULAR DISTRIBUTION 100-YRS STORM
          461          PH                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16

          462          KK  COMB14
          463          HC       2
          464          ZZ
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                    *          609 SECOND STREET           *
 *  RGMHEC2000               HEC-1.COM  *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   28JUL09  TIME  08:16:06  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************
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                              HYDROLOGIC ANALYSIS
                              PROJECT: CAMPO RICO NEW CASTLE, CANOVANAS, PR
                              TRIANGULAR DISTRIBUTION
                              FREQUENCY OF OCCURRENCE: 2-, 10-, 25-, 50- & 100-YEARS
                              PROPOSED  CONDITION & MITIGATION

  7 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

    JP          MULTI-PLAN OPTION
                      NPLAN           5  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF RUNOFF
                   1.00


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


            **************
            *            *
  9 KK      *      P1B1  *
            *            *
            **************


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

 10 KP        PLAN  1 FOR STATION     P1B1
                              TRIANGULAR DISTRIBUTION 2-YRS STORM

              SUBBASIN RUNOFF DATA

 11 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 16 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .01

 12 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 13 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                                  ***

                                                             UNIT HYDROGRAPH
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                                                  12 END-OF-PERIOD ORDINATES
                 8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                 0.        0.


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

  17 KP        PLAN  2 FOR STATION     P1B1
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  19 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                  12 END-OF-PERIOD ORDINATES
                 8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                 0.        0.


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

  20 KP        PLAN  3 FOR STATION     P1B1
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  11 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  22 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .01

  12 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  13 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                  12 END-OF-PERIOD ORDINATES
                 8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                 0.        0.


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

  23 KP        PLAN  4 FOR STATION     P1B1
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA
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 11 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 25 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

 12 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 13 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                0.        0.


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

 26 KP        PLAN  5 FOR STATION     P1B1
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 11 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 28 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .01

 12 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 13 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .16  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 12 END-OF-PERIOD ORDINATES
                8.       24.       22.       13.        6.        3.        2.        1.        0.        0.
                0.        0.


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


            **************
            *            *
 29 KK      *      P1C1  *
            *            *
            **************


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

 30 KP        PLAN  1 FOR STATION     P1C1
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

              SUBBASIN RUNOFF DATA
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 31 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 36 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .01

 32 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 33 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

 37 KP        PLAN  2 FOR STATION     P1C1
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

              SUBBASIN RUNOFF DATA

 31 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 39 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .01

 32 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 33 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

 40 KP        PLAN  3 FOR STATION     P1C1
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

              SUBBASIN RUNOFF DATA

 31 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 42 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .01
```

```
  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

  43 KP        PLAN  4 FOR STATION     P1C1
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  45 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.


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

  46 KP        PLAN  5 FOR STATION     P1C1
                            TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

  31 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

  48 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .01

  32 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  33 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .14  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                 7.       18.       15.        7.        3.        2.        1.        0.        0.        0.
```

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


            **************
            *            *
  49 KK     *     COMB1  *
            *            *
            **************

  50 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***



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


            **************
            *            *
  51 KK     *       P2C  *
            *            *
            **************


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

  52 KP        PLAN  1 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  58 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .02

  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                                  ***

                                                          UNIT HYDROGRAPH
                                                       9 END-OF-PERIOD ORDINATES
                27.       54.       34.       14.        6.        3.        1.        1.        0.


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

  59 KP        PLAN  2 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  61 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .02
```

```
  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                27.       54.       34.       14.        6.        3.        1.        1.        0.


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

  62 KP        PLAN  3 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  64 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                     STORM AREA =     .02

  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                27.       54.       34.       14.        6.        3.        1.        1.        0.


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

  65 KP        PLAN  4 FOR STATION      P2C
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  67 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                     STORM AREA =     .02

  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
```

```
                27.       54.       34.       14.        6.        3.        1.        1.        0.

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

  68 KP        PLAN  5 FOR STATION      P2C
                             TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

  70 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                 STORM AREA =     .02

  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                27.       54.       34.       14.        6.        3.        1.        1.        0.


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


            **************
            *            *
  71 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

  73 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
  75 KK     *       P2B  *
            *            *
            **************


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

  76 KP        PLAN  1 FOR STATION      P2B
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA
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                PRECIPITATION DATA

  82 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
               67.      164.      132.       61.       30.       14.        7.        3.        2.        1.


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

  83 KP        PLAN  2 FOR STATION      P2B
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

  85 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
               67.      164.      132.       61.       30.       14.        7.        3.        2.        1.


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

  86 KP        PLAN  3 FOR STATION      P2B
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                PRECIPITATION DATA

  88 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA
```

```
  79 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                67.      164.      132.       61.       30.       14.        7.        3.        2.        1.


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

  89 KP        PLAN  4 FOR STATION      P2B
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  91 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                67.      164.      132.       61.       30.       14.        7.        3.        2.        1.


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

  92 KP        PLAN  5 FOR STATION      P2B
                            TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

  77 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

  94 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .06

  78 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  79 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .14  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                67.      164.      132.       61.       30.       14.        7.        3.        2.        1.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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```
              **************
              *            *
   95 KK      *      POND  *
              *            *
              **************
                              RUNOFF MITIGATION POND CALCULATION

   97 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .083  TIME INTERVAL IN HOURS


                 HYDROGRAPH ROUTING DATA

   98 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        ELEV  TYPE OF INITIAL CONDITION
                       RSVRIC         .00  INITIAL CONDITION
                            X         .00 WORKING R AND D COEFFICIENT

  100 SV            STORAGE          .0        .2        .4        .6        .9       1.2       1.5       1.9       2.3       2.7


  101 SE          ELEVATION         .00      1.21      2.43      3.64      4.85      6.07      7.28      8.50      9.71     10.92


   99 SQ          DISCHARGE          0.       21.       55.       75.       91.      104.      183.      221.      305.      479.

                                                                  ***

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      305. TO      479.
                 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.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     117.     12.33                 26.          9.          8.           8.
                         (INCHES)  3.908       5.212       5.212        5.212
                          (AC-FT)    13.         17.         17.          17.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.33                  0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      6.27     12.33                 1.38         .47         .45          .45

                          CUMULATIVE AREA =     .06 SQ MI


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

                 PLAN  2 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      305. TO      479.
                 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.)

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

                          HYDROGRAPH AT STATION     POND
```

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                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     188.     12.25                44.         16.         15.          15.
                         (INCHES)  6.524       9.478       9.478        9.478
                          (AC-FT)    22.         31.         31.          31.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        2.     12.25                 0.          0.          0.           0.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.43     12.25                2.17         .82         .79          .79

                         CUMULATIVE AREA =     .06 SQ MI


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

                PLAN  3 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      305. TO      479.
                 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.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     212.     12.25                54.         21.         20.          20.
                         (INCHES)  8.154      12.327      12.327       12.327
                          (AC-FT)    27.         41.         41.          41.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        2.     12.25                 0.          0.          0.           0.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      8.21     12.25                2.61        1.05        1.01         1.01

                         CUMULATIVE AREA =     .06 SQ MI


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

                PLAN  4 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      305. TO      479.
                 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.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     238.     12.25                63.         25.         24.          24.
                         (INCHES)  9.471      14.720      14.720       14.720
                          (AC-FT)    31.         49.         49.          49.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
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                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        2.     12.25                     1.          0.          0.           0.

  PEAK STAGE    TIME                           MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      8.75     12.25                    2.96        1.24        1.19         1.19

                         CUMULATIVE AREA =     .06 SQ MI


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

                PLAN  5 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN      305. TO      479.
                 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.)

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

                           HYDROGRAPH AT STATION     POND
                             FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     267.     12.25                     72.         29.         28.          28.
                         (INCHES)    10.843      17.285      17.285       17.285
                          (AC-FT)       36.         57.         57.          57.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        2.     12.25                     1.          0.          0.           0.

  PEAK STAGE    TIME                           MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      9.16     12.25                    3.34        1.44        1.38         1.38

                         CUMULATIVE AREA =     .06 SQ MI


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


            **************
            *            *
  102 KK    *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

  104 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           5  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
  106 KK    *       P2A  *
            *            *
            **************
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 107 KP        PLAN  1 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 108 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 113 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                     STORM AREA =     .03

 109 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 110 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                44.       98.       71.       30.       14.        6.        3.        1.        1.        0.

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

 114 KP        PLAN  2 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 108 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 116 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                     STORM AREA =     .03

 109 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 110 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                44.       98.       71.       30.       14.        6.        3.        1.        1.        0.

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

 117 KP        PLAN  3 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 108 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA
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 119 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

 109 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 110 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                44.       98.       71.       30.       14.        6.        3.        1.        1.        0.


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

 120 KP        PLAN  4 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 108 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 122 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .03

 109 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 110 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                44.       98.       71.       30.       14.        6.        3.        1.        1.        0.


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

 123 KP        PLAN  5 FOR STATION      P2A
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 108 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 125 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .03

 109 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 110 UD           SCS DIMENSIONLESS UNITGRAPH
```

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                    TLAG         .13  LAG

                                                          ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
              44.       98.       71.       30.       14.        6.        3.        1.        1.        0.


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


           **************
           *            *
 126 KK    *      POND  *
           *            *
           **************
                         RUNOFF MITIGATION POND CALCULATION

 128 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

 129 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 131 SV            STORAGE          .0        .5       1.0       1.5       2.1       2.7       3.4       4.1       4.9       5.7


 132 SE          ELEVATION         .00      1.18      2.36      3.54      4.72      5.90      7.08      8.27      9.45     10.63


 130 SQ          DISCHARGE          0.        7.       18.       25.       30.       34.       38.       42.       56.      193.

                                                          ***

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

                        HYDROGRAPH AT STATION     POND
                          FOR PLAN 1, RATIO = 1.00

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                         (CFS)
+      33.     12.58                 14.          5.          5.           5.
                       (INCHES)    3.854       5.187       5.187        5.187
                        (AC-FT)      7.         10.         10.          10.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                    6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        3.     12.58                  1.          0.          0.           0.

 PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                    6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      5.49     12.58                 2.26         .79         .76          .76

                        CUMULATIVE AREA =     .03 SQ MI


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

              PLAN  2 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1
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      ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION     POND
                          FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                         (CFS)
+      41.     12.58                24.          9.          8.           8.
                       (INCHES)    6.430       9.429       9.429        9.429
                        (AC-FT)     12.         17.         17.          17.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        4.     12.58                 2.          1.          1.           1.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.99     12.58                3.94        1.48        1.43         1.43

                        CUMULATIVE AREA =     .03 SQ MI


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

                PLAN  3 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                        HYDROGRAPH AT STATION     POND
                          FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                         (CFS)
+      53.     12.58                30.         11.         11.          11.
                       (INCHES)    7.963      12.259      12.259       12.259
                        (AC-FT)     15.         23.         23.          23.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        5.     12.58                 2.          1.          1.           1.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      9.21     12.58                4.94        1.91        1.84         1.84

                        CUMULATIVE AREA =     .03 SQ MI


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

                PLAN  4 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                        HYDROGRAPH AT STATION     POND
                          FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                         (CFS)
+      87.     12.42                34.         14.         13.          13.
                       (INCHES)    9.167      14.635      14.635       14.635
                        (AC-FT)     17.         27.         27.          27.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        5.     12.42                 3.          1.          1.           1.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
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                                    6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      9.71     12.42                 5.57        2.22        2.14         2.14

                        CUMULATIVE AREA =     .03 SQ MI


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

                PLAN  5 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     119.     12.33                 39.         16.         15.          15.
                        (INCHES)    10.417      17.181      17.181       17.181
                         (AC-FT)       19.         32.         32.          32.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                    6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        5.     12.33                  3.          1.          1.           1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                    6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      9.99     12.33                 6.17        2.53        2.44         2.44

                        CUMULATIVE AREA =     .03 SQ MI


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


            **************
            *            *
  133 KK    *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

  135 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           5  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
  137 KK    *     COMB2  *
            *            *
            **************

  138 HC          HYDROGRAPH COMBINATION
                        ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


 *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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              **************
              *            *
 139 KK       *        E0  *
              *            *
              **************


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

 140 KP        PLAN  1 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 141 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 146 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .39

 142 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 143 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

 147 KP        PLAN  2 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 141 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .39  SUBBASIN AREA

                 PRECIPITATION DATA

 149 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .39

 142 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 143 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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

 150 KP        PLAN  3 FOR STATION       E0
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                                TRIANGULAR DISTRIBUTION 25-YRS STORM

                SUBBASIN RUNOFF DATA

 141 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .39  SUBBASIN AREA

                  PRECIPITATION DATA

 152 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                     STORM AREA =     .39

 142 LS           SCS LOSS RATE
                        STRTL         .32  INITIAL ABSTRACTION
                       CRVNBR       86.26  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 143 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                 28.       18.       11.        7.        5.        3.        1.


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

 153 KP         PLAN  4 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

                SUBBASIN RUNOFF DATA

 141 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .39  SUBBASIN AREA

                  PRECIPITATION DATA

 155 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                     STORM AREA =     .39

 142 LS           SCS LOSS RATE
                        STRTL         .32  INITIAL ABSTRACTION
                       CRVNBR       86.26  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 143 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .25  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 17 END-OF-PERIOD ORDINATES
                114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                 28.       18.       11.        7.        5.        3.        1.


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

 156 KP         PLAN  5 FOR STATION       E0
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

                SUBBASIN RUNOFF DATA

 141 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .39  SUBBASIN AREA

                  PRECIPITATION DATA

 158 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
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                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .39

 142 LS          SCS LOSS RATE
                       STRTL         .32  INITIAL ABSTRACTION
                      CRVNBR       86.26  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 143 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .25  LAG

                                                                ***

                                                        UNIT HYDROGRAPH
                                                   17 END-OF-PERIOD ORDINATES
               114.      390.      620.      620.      483.      289.      180.      117.       72.       45.
                28.       18.       11.        7.        5.        3.        1.


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


            **************
            *            *
 159 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 161 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


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            *            *
 163 KK     *        E1  *
            *            *
            **************


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

 164 KP        PLAN  1 FOR STATION       E1
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 165 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 170 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .18

 166 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 167 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG
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                                                UNIT HYDROGRAPH
                                           14 END-OF-PERIOD ORDINATES
                88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                 6.        3.        2.        1.

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

 171 KP        PLAN  2 FOR STATION       E1
                            TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 165 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 173 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .18

 166 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 167 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                           14 END-OF-PERIOD ORDINATES
                88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                 6.        3.        2.        1.

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

 174 KP        PLAN  3 FOR STATION       E1
                            TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 165 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .18  SUBBASIN AREA

                 PRECIPITATION DATA

 176 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .18

 166 LS          SCS LOSS RATE
                       STRTL         .29  INITIAL ABSTRACTION
                      CRVNBR       87.48  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 167 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .20  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                           14 END-OF-PERIOD ORDINATES
                88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                 6.        3.        2.        1.

***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***
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177 KP        PLAN  4 FOR STATION       E1
                              TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

165 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .18  SUBBASIN AREA

                PRECIPITATION DATA

179 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .18

166 LS          SCS LOSS RATE
                      STRTL         .29  INITIAL ABSTRACTION
                     CRVNBR       87.48  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

167 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
                88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                 6.        3.        2.        1.


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

180 KP        PLAN  5 FOR STATION       E1
                              TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

165 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .18  SUBBASIN AREA

                PRECIPITATION DATA

182 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .18

166 LS          SCS LOSS RATE
                      STRTL         .29  INITIAL ABSTRACTION
                     CRVNBR       87.48  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

167 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .20  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 14 END-OF-PERIOD ORDINATES
                88.      291.      361.      289.      161.       92.       52.       30.       17.       10.
                 6.        3.        2.        1.


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


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            *            *
183 KK      *     COMB3  *
            *            *
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184 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
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                                                    UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
                 124.       69.       18.        5.        1.        0.

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

 199 KP          PLAN  2 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

                 SUBBASIN RUNOFF DATA

 193 BA            SUBBASIN CHARACTERISTICS
                         TAREA         .03  SUBBASIN AREA

                   PRECIPITATION DATA

 201 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                   ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                   5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                     .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                     STORM AREA =     .03

 194 LS            SCS LOSS RATE
                         STRTL         .25  INITIAL ABSTRACTION
                        CRVNBR       89.00  CURVE NUMBER
                         RTIMP         .00  PERCENT IMPERVIOUS AREA

 195 UD            SCS DIMENSIONLESS UNITGRAPH
                          TLAG         .06  LAG

                                                          ***

                                                    UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
                 124.       69.       18.        5.        1.        0.

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

 202 KP          PLAN  3 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

                 SUBBASIN RUNOFF DATA

 193 BA            SUBBASIN CHARACTERISTICS
                         TAREA         .03  SUBBASIN AREA

                   PRECIPITATION DATA

 204 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                   ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                   5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                     .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                     STORM AREA =     .03

 194 LS            SCS LOSS RATE
                         STRTL         .25  INITIAL ABSTRACTION
                        CRVNBR       89.00  CURVE NUMBER
                         RTIMP         .00  PERCENT IMPERVIOUS AREA

 195 UD            SCS DIMENSIONLESS UNITGRAPH
                          TLAG         .06  LAG

                                                          ***

                                                    UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
                 124.       69.       18.        5.        1.        0.

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

 205 KP          PLAN  4 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

                 SUBBASIN RUNOFF DATA
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 193 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 207 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .03

 194 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 195 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                                  ***

                                                              UNIT HYDROGRAPH
                                                          6 END-OF-PERIOD ORDINATES
               124.       69.       18.        5.        1.        0.


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

 208 KP        PLAN  5 FOR STATION       E3
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 193 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 210 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .03

 194 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 195 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .06  LAG

                                                                  ***

                                                              UNIT HYDROGRAPH
                                                          6 END-OF-PERIOD ORDINATES
               124.       69.       18.        5.        1.        0.


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


            **************
            *            *
 211 KK     *      PIPE  *
            *            *
            **************
                            ROUTING THROUGH PIPE

 213 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


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            *            *
 215 KK     *      P1F1  *
            *            *
            **************


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

 226 KP        PLAN  3 FOR STATION     P1F1
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 217 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 228 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .02

 218 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 219 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                 26.       53.       33.       14.        6.        3.        1.        1.        0.

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

 229 KP        PLAN  4 FOR STATION     P1F1
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 217 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 231 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .02

 218 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 219 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 9 END-OF-PERIOD ORDINATES
                 26.       53.       33.       14.        6.        3.        1.        1.        0.

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

 232 KP        PLAN  5 FOR STATION     P1F1
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 217 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA
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 234 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .02

 218 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 219 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .12  LAG

                                                                  ***

                                                            UNIT HYDROGRAPH
                                                        9 END-OF-PERIOD ORDINATES
                26.       53.       33.       14.        6.        3.        1.        1.        0.


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


            **************
            *            *
 235 KK     *     COMB5  *
            *            *
            **************

 236 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


            **************
            *            *
 237 KK     *      POND  *
            *            *
            **************
                            RUNOFF MITIGATION POND CALCULATION

 239 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           3  PRINT CONTROL
                       IPLOT           1  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


               HYDROGRAPH ROUTING DATA

 240 RS          STORAGE ROUTING
                       NSTPS           1  NUMBER OF SUBREACHES
                        ITYP        ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC         .00  INITIAL CONDITION
                           X         .00 WORKING R AND D COEFFICIENT

 242 SV            STORAGE          .0        .1        .3        .4        .6        .8       1.1       1.3       1.6       1.9

 243 SE          ELEVATION         .00      1.18      2.36      3.54      4.72      5.90      7.08      8.27      9.45     10.63

 241 SQ          DISCHARGE          0.        0.       59.       88.      110.      128.      155.      180.      213.      284.

                                                                  ***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       59.
                THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
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                THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+      97.     12.17                 18.          6.          6.           6.
                         (INCHES)     3.750       4.888       4.888        4.888
                          (AC-FT)      9.         12.         12.          12.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.17                  0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      4.04     12.17                 1.58        1.11        1.07         1.07

                         CUMULATIVE AREA =     .05 SQ MI


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

                PLAN  2 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       59.
                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.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     130.     12.25                 31.         11.         11.          11.
                         (INCHES)     6.403       9.124       9.124        9.124
                          (AC-FT)     16.         22.         22.          22.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.25                  0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      6.00     12.25                 1.94        1.34        1.29         1.29

                         CUMULATIVE AREA =     .05 SQ MI


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

                PLAN  3 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       59.
                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.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
```

```
+     154.     12.17                    39.         15.         14.          14.
                        (INCHES)     8.053      11.962      11.962       11.962
                         (AC-FT)      20.         29.         29.          29.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.17                     0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.03     12.17                    2.16        1.46        1.41         1.41

                         CUMULATIVE AREA =     .05 SQ MI


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

                PLAN  4 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       59.
                 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.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     170.     12.25                   46.         18.         17.          17.
                        (INCHES)     9.385      14.350      14.350       14.350
                         (AC-FT)      23.         35.         35.          35.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.25                     0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.79     12.25                    2.34        1.55        1.49         1.49

                         CUMULATIVE AREA =     .05 SQ MI


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

                PLAN  5 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

 *** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN        0. TO       59.
                 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.)

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     186.     12.25                   53.         21.         20.          20.
                        (INCHES)    10.772      16.912      16.912       16.912
                         (AC-FT)      26.         41.         41.          41.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.25                     0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
```

```
+   (FEET)      (HR)
      8.49     12.25                  2.54        1.64        1.58         1.58

                        CUMULATIVE AREA =     .05 SQ MI


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


            **************
            *            *
 244 KK     *     COMB6  *
            *            *
            **************

 245 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                 ***


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


            **************
            *            *
 246 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 248 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


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


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            *            *
 250 KK     *      P1F2  *
            *            *
            **************


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

 251 KP        PLAN  1 FOR STATION     P1F2
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 252 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 257 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .01

 253 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA
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 254 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .09  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
                39.       48.       18.        7.        2.        1.        0.

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

 258 KP        PLAN  2 FOR STATION     P1F2
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 252 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 260 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .01

 253 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 254 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .09  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
                39.       48.       18.        7.        2.        1.        0.

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

 261 KP        PLAN  3 FOR STATION     P1F2
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 252 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 263 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .01

 253 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 254 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .09  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
                39.       48.       18.        7.        2.        1.        0.

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

 264 KP        PLAN  4 FOR STATION     P1F2
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                              TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 252 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 266 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .01

 253 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 254 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               39.       48.       18.        7.        2.        1.        0.


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

 267 KP        PLAN  5 FOR STATION     P1F2
                              TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 252 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

 269 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .01

 253 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 254 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .09  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
               39.       48.       18.        7.        2.        1.        0.


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


            **************
            *            *
 270 KK     *     COMB7  *
            *            *
            **************

 271 HC         HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

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


            **************
            *            *
 272 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 274 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS



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


            **************
            *            *
 276 KK     *        E2  *
            *            *
            **************


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

 277 KP        PLAN  1 FOR STATION       E2
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 278 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 283 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .06

 279 LS          SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       88.90  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 280 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .07  LAG

                                                          ***

                                                      UNIT HYDROGRAPH
                                                  6 END-OF-PERIOD ORDINATES
               238.      188.       53.       15.        5.        1.


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

 284 KP        PLAN  2 FOR STATION       E2
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 278 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 286 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
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                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .06

 279 LS           SCS LOSS RATE
                        STRTL         .25  INITIAL ABSTRACTION
                       CRVNBR       88.90  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 280 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
                238.      188.       53.       15.        5.        1.


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

 287 KP         PLAN  3 FOR STATION       E2
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

                SUBBASIN RUNOFF DATA

 278 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .06  SUBBASIN AREA

                  PRECIPITATION DATA

 289 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .06

 279 LS           SCS LOSS RATE
                        STRTL         .25  INITIAL ABSTRACTION
                       CRVNBR       88.90  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 280 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .07  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 6 END-OF-PERIOD ORDINATES
                238.      188.       53.       15.        5.        1.


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

 290 KP         PLAN  4 FOR STATION       E2
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

                SUBBASIN RUNOFF DATA

 278 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .06  SUBBASIN AREA

                  PRECIPITATION DATA

 292 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .06

 279 LS           SCS LOSS RATE
                        STRTL         .25  INITIAL ABSTRACTION
                       CRVNBR       88.90  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 280 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .07  LAG
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                                                  ***

                                                UNIT HYDROGRAPH
                                            6 END-OF-PERIOD ORDINATES
              238.      188.       53.       15.        5.        1.


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

 293 KP        PLAN  5 FOR STATION       E2
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 278 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .06  SUBBASIN AREA

                 PRECIPITATION DATA

 295 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                 STORM AREA =     .06

 279 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       88.90  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 280 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .07  LAG

                                                  ***

                                                UNIT HYDROGRAPH
                                            6 END-OF-PERIOD ORDINATES
              238.      188.       53.       15.        5.        1.


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


            **************
            *            *
 296 KK     *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

 298 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 300 KK     *       P1E  *
            *            *
            **************


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

 301 KP        PLAN  1 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 2-YRS STORM
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                SUBBASIN RUNOFF DATA

 302 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

 307 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .03

 303 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 304 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                       UNIT HYDROGRAPH
                                                  10 END-OF-PERIOD ORDINATES
                 37.       82.       60.       26.       12.        5.        2.        1.        1.        0.


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

 308 KP        PLAN  2 FOR STATION      P1E
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

                SUBBASIN RUNOFF DATA

 302 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

 310 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .03

 303 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 304 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                       UNIT HYDROGRAPH
                                                  10 END-OF-PERIOD ORDINATES
                 37.       82.       60.       26.       12.        5.        2.        1.        1.        0.


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

 311 KP        PLAN  3 FOR STATION      P1E
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

                SUBBASIN RUNOFF DATA

 302 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA

 313 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .03
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 303 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 304 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.

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

 314 KP        PLAN  4 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 302 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 316 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .03

 303 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 304 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.

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

 317 KP        PLAN  5 FOR STATION      P1E
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 302 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 319 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                   STORM AREA =     .03

 303 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 304 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                        ***

                                                   UNIT HYDROGRAPH
                                              10 END-OF-PERIOD ORDINATES
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```
                37.       82.       60.       26.       12.        5.        2.        1.        1.        0.

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


            **************
            *            *
 320 KK     *     COMB8  *
            *            *
            **************

 321 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***


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


            **************
            *            *
 322 KK     *     COMB9  *
            *            *
            **************

 323 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***


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


            **************
            *            *
 324 KK     *     CHANN  *
            *            *
            **************
                          ROUTING THROUGH OPEN CHANNEL

 326 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 328 KK     *       P1D  *
            *            *
            **************

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

 329 KP        PLAN  1 FOR STATION      P1D
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 330 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .04  SUBBASIN AREA

                 PRECIPITATION DATA
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 335 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .04

 331 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 332 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                110.      112.       36.       12.        4.        1.        0.


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

 336 KP         PLAN  2 FOR STATION      P1D
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

                SUBBASIN RUNOFF DATA

 330 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .04  SUBBASIN AREA

                  PRECIPITATION DATA

 338 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .04

 331 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 332 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                110.      112.       36.       12.        4.        1.        0.


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

 339 KP         PLAN  3 FOR STATION      P1D
                                 TRIANGULAR DISTRIBUTION 25-YRS STORM

                SUBBASIN RUNOFF DATA

 330 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .04  SUBBASIN AREA

                  PRECIPITATION DATA

 341 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .04

 331 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 332 UD           SCS DIMENSIONLESS UNITGRAPH
```

```
                TLAG         .08  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
          110.      112.       36.       12.        4.        1.        0.


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

 342 KP        PLAN  4 FOR STATION      P1D
                            TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 330 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                 PRECIPITATION DATA

 344 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .04

 331 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 332 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
          110.      112.       36.       12.        4.        1.        0.


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

 345 KP        PLAN  5 FOR STATION      P1D
                            TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 330 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .04  SUBBASIN AREA

                 PRECIPITATION DATA

 347 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .04

 331 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 332 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .08  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            7 END-OF-PERIOD ORDINATES
          110.      112.       36.       12.        4.        1.        0.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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              **************
              *            *
  348 KK      *      POND  *
              *            *
              **************
                              RUNOFF MITIGATION POND CALCULATION

  350 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           3  PRINT CONTROL
                        IPLOT           1  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

  351 RS          STORAGE ROUTING
                        NSTPS           1  NUMBER OF SUBREACHES
                         ITYP        ELEV  TYPE OF INITIAL CONDITION
                       RSVRIC         .00  INITIAL CONDITION
                            X         .00 WORKING R AND D COEFFICIENT

  353 SV            STORAGE          .0        .2        .4        .6        .9       1.2       1.5       1.8       2.2       2.6


  354 SE          ELEVATION         .00      1.18      2.36      3.54      4.72      5.90      7.08      8.27      9.45     10.63


  352 SQ          DISCHARGE          0.       13.       36.       49.       59.       68.       98.      123.      148.      245.


                                                                  ***

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+      63.     12.25                15.          5.          5.           5.
                         (INCHES)  3.908       5.212       5.212        5.212
                          (AC-FT)     7.         10.         10.          10.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.25                 0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      5.19     12.25                1.20         .41         .40          .40

                         CUMULATIVE AREA =     .04 SQ MI


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

                PLAN  2 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+      96.     12.25                25.          9.          9.           9.
                         (INCHES)  6.522       9.478       9.478        9.478
                          (AC-FT)    12.         18.         18.          18.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        1.     12.25                 0.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
```

```
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.01     12.25                    1.97         .75         .72          .72

                          CUMULATIVE AREA =     .04 SQ MI


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

                PLAN  3 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                            HYDROGRAPH AT STATION     POND
                              FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                             (CFS)
+     114.     12.25                    31.         12.         11.          11.
                          (INCHES)     8.152      12.327      12.327       12.327
                           (AC-FT)       15.         23.         23.          23.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        2.     12.25                     0.          0.          0.           0.

  PEAK STAGE    TIME                           MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.83     12.25                    2.36         .95         .92          .92

                          CUMULATIVE AREA =     .04 SQ MI


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

                PLAN  4 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                            HYDROGRAPH AT STATION     POND
                              FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                             (CFS)
+     127.     12.25                    36.         14.         14.          14.
                          (INCHES)     9.473      14.720      14.721       14.721
                           (AC-FT)       18.         28.         28.          28.

 PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        2.     12.25                     0.          0.          0.           0.

  PEAK STAGE    TIME                           MAXIMUM AVERAGE STAGE
                                        6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      8.44     12.25                    2.67        1.12        1.08         1.08

                          CUMULATIVE AREA =     .04 SQ MI


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

                PLAN  5 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                            HYDROGRAPH AT STATION     POND
                              FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                           MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     24.92-HR
```

```
+   (CFS)       (HR)
                          (CFS)
+     139.     12.25                  42.         17.         16.          16.
                        (INCHES)    10.845      17.285      17.286       17.286
                         (AC-FT)       21.         33.         33.          33.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        2.     12.25                   1.          0.          0.           0.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      9.03     12.25                  3.00        1.30        1.25         1.25

                         CUMULATIVE AREA =     .04 SQ MI


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


            **************
            *            *
  355 KK    *    COMB10  *
            *            *
            **************

  356 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***


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


            **************
            *            *
  357 KK    *     CHANN  *
            *            *
            **************
                           ROUTING THROUGH OPEN CHANNEL

  359 KO          OUTPUT CONTROL VARIABLES
                        IPRNT           5  PRINT CONTROL
                        IPLOT           0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
                        IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                         IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                        ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                        ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                       TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
  361 KK    *      P1C2  *
            *            *
            **************


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

  362 KP        PLAN  1 FOR STATION     P1C2
                                TRIANGULAR DISTRIBUTION 2-YRS STORM

                SUBBASIN RUNOFF DATA

  363 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .03  SUBBASIN AREA

                  PRECIPITATION DATA
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 368 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                STORM AREA =     .03

 364 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 365 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


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

 369 KP        PLAN  2 FOR STATION     P1C2
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 363 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 371 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                STORM AREA =     .03

 364 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 365 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .13  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 10 END-OF-PERIOD ORDINATES
                 38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


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

 372 KP        PLAN  3 FOR STATION     P1C2
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 363 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 374 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .03

 364 LS           SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA
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 365 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                           10 END-OF-PERIOD ORDINATES
                38.       84.       61.       26.       12.        5.        2.        1.        1.        0.

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

 375 KP        PLAN  4 FOR STATION     P1C2
                                 TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 363 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 377 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .03

 364 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 365 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                           10 END-OF-PERIOD ORDINATES
                38.       84.       61.       26.       12.        5.        2.        1.        1.        0.

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

 378 KP        PLAN  5 FOR STATION     P1C2
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 363 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .03  SUBBASIN AREA

                 PRECIPITATION DATA

 380 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .03

 364 LS          SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 365 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .13  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                           10 END-OF-PERIOD ORDINATES
                38.       84.       61.       26.       12.        5.        2.        1.        1.        0.


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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            **************
            *            *
 381 KK     *    COMB11  *
            *            *
            **************

 382 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***


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


            **************
            *            *
 383 KK     *     CHANN  *
            *            *
            **************
                             ROUTING THROUGH OPEN CHANNEL

 385 KO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


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


            **************
            *            *
 387 KK     *        E4  *
            *            *
            **************

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

 388 KP        PLAN  1 FOR STATION       E4
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 389 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 394 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .02

 390 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 391 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                                  ***

                                                        UNIT HYDROGRAPH
                                                     5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 395 KP        PLAN  2 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 389 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 397 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .02

 390 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 391 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                             ***

                                                         UNIT HYDROGRAPH
                                                     5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 398 KP        PLAN  3 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 389 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 400 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .02

 390 LS          SCS LOSS RATE
                       STRTL         .25  INITIAL ABSTRACTION
                      CRVNBR       89.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 391 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .05  LAG

                                                             ***

                                                         UNIT HYDROGRAPH
                                                     5 END-OF-PERIOD ORDINATES
               109.       42.       10.        2.        1.


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

 401 KP        PLAN  4 FOR STATION       E4
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 389 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .02  SUBBASIN AREA

                 PRECIPITATION DATA

 403 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
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                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                    .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .02

 390 LS           SCS LOSS RATE
                        STRTL         .25  INITIAL ABSTRACTION
                       CRVNBR       89.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 391 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .05  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                      5 END-OF-PERIOD ORDINATES
                 109.       42.       10.        2.        1.


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

 404 KP          PLAN  5 FOR STATION       E4
                                 TRIANGULAR DISTRIBUTION 100-YRS STORM

                 SUBBASIN RUNOFF DATA

 389 BA           SUBBASIN CHARACTERISTICS
                        TAREA         .02  SUBBASIN AREA

                  PRECIPITATION DATA

 406 PH                                 DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .02

 390 LS           SCS LOSS RATE
                        STRTL         .25  INITIAL ABSTRACTION
                       CRVNBR       89.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

 391 UD           SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .05  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                      5 END-OF-PERIOD ORDINATES
                 109.       42.       10.        2.        1.


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


             **************
             *            *
 407 KK      *      PIPE  *
             *            *
             **************
                            ROUTING THROUGH PIPE

 409 KO           OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE
                       IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                        IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                       ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                       ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                      TIMINT        .083  TIME INTERVAL IN HOURS


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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              **************
              *            *
 411 KK       *       P1A  *
              *            *
              **************


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

 412 KP        PLAN  1 FOR STATION      P1A
                                 TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 413 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 418 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .05

 414 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 415 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .24  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 16 END-OF-PERIOD ORDINATES
                18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                 3.        2.        1.        1.        1.        0.


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

 419 KP        PLAN  2 FOR STATION      P1A
                                 TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 413 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .05  SUBBASIN AREA

                 PRECIPITATION DATA

 421 PH                                DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .05

 414 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 415 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .24  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 16 END-OF-PERIOD ORDINATES
                18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                 3.        2.        1.        1.        1.        0.


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

 422 KP        PLAN  3 FOR STATION      P1A
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                              TRIANGULAR DISTRIBUTION 25-YRS STORM

              SUBBASIN RUNOFF DATA

 413 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .05  SUBBASIN AREA

                PRECIPITATION DATA

 424 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                STORM AREA =     .05

 414 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 415 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .24  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 16 END-OF-PERIOD ORDINATES
               18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                3.        2.        1.        1.        1.        0.


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

 425 KP        PLAN  4 FOR STATION      P1A
                              TRIANGULAR DISTRIBUTION 50-YRS STORM

              SUBBASIN RUNOFF DATA

 413 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .05  SUBBASIN AREA

                PRECIPITATION DATA

 427 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                  .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                STORM AREA =     .05

 414 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 415 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .24  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 16 END-OF-PERIOD ORDINATES
               18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                3.        2.        1.        1.        1.        0.


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

 428 KP        PLAN  5 FOR STATION      P1A
                              TRIANGULAR DISTRIBUTION 100-YRS STORM

              SUBBASIN RUNOFF DATA

 413 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .05  SUBBASIN AREA

                PRECIPITATION DATA

 430 PH                             DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
```

```
                5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                 1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .05

 414 LS         SCS LOSS RATE
                      STRTL         .15  INITIAL ABSTRACTION
                     CRVNBR       93.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 415 UD         SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .24  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     16 END-OF-PERIOD ORDINATES
               18.       61.       93.       89.       66.       38.       24.       15.        9.        6.
                3.        2.        1.        1.        1.        0.


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


           **************
           *            *
 431 KK    *    COMB12  *
           *            *
           **************

 432 HC         HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                ***


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


           **************
           *            *
 433 KK    *      POND  *
           *            *
           **************
                          RUNOFF MITIGATION POND CALCULATION

 435 KO         OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           1  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE
                      IPNCH           0  PUNCH COMPUTED HYDROGRAPH
                       IOUT          21  SAVE HYDROGRAPH ON THIS UNIT
                      ISAV1           1  FIRST ORDINATE PUNCHED OR SAVED
                      ISAV2         300  LAST ORDINATE PUNCHED OR SAVED
                     TIMINT        .083  TIME INTERVAL IN HOURS


              HYDROGRAPH ROUTING DATA

 436 RS         STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 438 SV           STORAGE          .0        .4        .9       1.4       2.0       2.6       3.2       3.9       4.6       5.3

 439 SE         ELEVATION         .00      1.18      2.36      3.54      4.72      5.90      7.08      8.27      9.45     10.63

 437 SQ         DISCHARGE          0.       20.       54.       74.       89.      102.      161.      216.      263.      403.

                                                                ***

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

                          HYDROGRAPH AT STATION     POND
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```
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     105.     12.50                31.         10.         10.          10.
                        (INCHES)  3.832       5.087       5.087        5.087
                         (AC-FT)    16.         21.         21.          21.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        3.     12.50                 1.          0.          0.           0.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      5.95     12.50               1.70         .58         .56          .56

                         CUMULATIVE AREA =     .08 SQ MI


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

                PLAN  2 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                           HYDROGRAPH AT STATION     POND
                             FOR PLAN 2, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     175.     12.33                53.         19.         18.          18.
                        (INCHES)  6.454       9.335       9.335        9.335
                         (AC-FT)    26.         38.         38.          38.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        3.     12.33                 1.          0.          0.           0.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      7.39     12.33               2.62        1.01         .97          .97

                         CUMULATIVE AREA =     .08 SQ MI


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

                PLAN  3 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                           HYDROGRAPH AT STATION     POND
                             FOR PLAN 3, RATIO = 1.00

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+     211.     12.33                66.         25.         24.          24.
                        (INCHES)  8.091      12.178      12.178       12.178
                         (AC-FT)    33.         49.         49.          49.

 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        4.     12.33                 1.          1.          0.           0.

  PEAK STAGE    TIME                        MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      8.17     12.33               3.13        1.28        1.23         1.23
```

```
                        CUMULATIVE AREA =     .08 SQ MI


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

                PLAN  4 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 4, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     235.     12.33                 77.         30.         29.          29.
                         (INCHES)    9.409      14.567      14.567       14.567
                          (AC-FT)     38.         59.         59.          59.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        4.     12.33                  1.          1.          1.           1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      8.74     12.33                 3.55        1.50        1.45         1.45

                        CUMULATIVE AREA =     .08 SQ MI


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

                PLAN  5 INPUT DATA FOR STATION     POND ARE SAME AS FOR PLAN  1

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

                          HYDROGRAPH AT STATION     POND
                            FOR PLAN 5, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                            (CFS)
+     257.     12.33                 88.         35.         34.          34.
                         (INCHES)   10.780      17.126      17.127       17.127
                          (AC-FT)     44.         70.         70.          70.

 PEAK STORAGE   TIME                         MAXIMUM AVERAGE STORAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+  (AC-FT)      (HR)
        4.     12.33                  2.          1.          1.           1.

  PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                     6-HR       24-HR       72-HR     24.92-HR
+   (FEET)      (HR)
      9.30     12.33                 4.02        1.74        1.68         1.68

                        CUMULATIVE AREA =     .08 SQ MI


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


            **************
            *            *
  440 KK    *    COMB13  *
            *            *
            **************

  441 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

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


            **************
            *            *
 442 KK     *      P1B2  *
            *            *
            **************


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

 443 KP        PLAN  1 FOR STATION     P1B2
                             TRIANGULAR DISTRIBUTION 2-YRS STORM

               SUBBASIN RUNOFF DATA

 444 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 449 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .53     .93    2.21    2.97    3.33    4.18    5.10    6.03     .00     .00     .00     .00

                                                   STORM AREA =     .01

 445 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 446 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.


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

 450 KP        PLAN  2 FOR STATION     P1B2
                             TRIANGULAR DISTRIBUTION 10-YRS STORM

               SUBBASIN RUNOFF DATA

 444 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 452 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .72    1.27    3.02    4.31    5.02    6.71    8.51   10.33     .00     .00     .00     .00

                                                   STORM AREA =     .01

 445 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 446 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                          ***

                                                     UNIT HYDROGRAPH
                                                 7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.
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***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***     ***

 453 KP        PLAN  3 FOR STATION     P1B2
                                TRIANGULAR DISTRIBUTION 25-YRS STORM

               SUBBASIN RUNOFF DATA

 444 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 455 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .84    1.47    3.50    5.11    6.05    8.31   10.67   13.19     .00     .00     .00     .00

                                                   STORM AREA =     .01

 445 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 446 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                   7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.


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

 456 KP        PLAN  4 FOR STATION     P1B2
                                TRIANGULAR DISTRIBUTION 50-YRS STORM

               SUBBASIN RUNOFF DATA

 444 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 458 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
                 ..... HYDRO-35 ......   ............... TP-40 ...............   ........... TP-49 ...........
                 5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   .93    1.63    3.87    5.73    6.88    9.61   12.46   15.59     .00     .00     .00     .00

                                                   STORM AREA =     .01

 445 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 446 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .08  LAG

                                                             ***

                                                        UNIT HYDROGRAPH
                                                   7 END-OF-PERIOD ORDINATES
                44.       45.       14.        5.        2.        1.        0.


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

 459 KP        PLAN  5 FOR STATION     P1B2
                                TRIANGULAR DISTRIBUTION 100-YRS STORM

               SUBBASIN RUNOFF DATA

 444 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                 PRECIPITATION DATA

 461 PH                              DEPTHS FOR   0-PERCENT HYPOTHETICAL STORM
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                  ..... HYDRO-35 .....   ............... TP-40 ...............   ........... TP-49 ...........
                  5-MIN  15-MIN  60-MIN    2-HR    3-HR    6-HR   12-HR   24-HR   2-DAY   4-DAY   7-DAY  10-DAY
                   1.02    1.78    4.24    6.36    7.74   10.97   14.33   18.16     .00     .00     .00     .00

                                                STORM AREA =     .01

  445 LS          SCS LOSS RATE
                        STRTL         .15  INITIAL ABSTRACTION
                       CRVNBR       93.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

  446 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .08  LAG

                                                                  ***

                                                          UNIT HYDROGRAPH
                                                      7 END-OF-PERIOD ORDINATES
                 44.       45.       14.        5.        2.        1.        0.


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


             **************
             *            *
  462 KK     *    COMB14  *
             *            *
             **************

  463 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***
1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                  FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                                TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO FLOWS
 OPERATION       STATION     AREA    PLAN            RATIO 1
                                                        1.00

 HYDROGRAPH AT
+                   P1B1       .01     1   FLOW          23.
                                           TIME        12.17
                                        2   FLOW          32.
                                           TIME        12.17
                                        3   FLOW          37.
                                           TIME        12.17
                                        4   FLOW          42.
                                           TIME        12.17
                                        5   FLOW          46.
                                           TIME        12.17

 HYDROGRAPH AT
+                   P1C1       .01     1   FLOW          16.
                                           TIME        12.17
                                        2   FLOW          22.
                                           TIME        12.17
                                        3   FLOW          26.
                                           TIME        12.17
                                        4   FLOW          29.
                                           TIME        12.17
                                        5   FLOW          32.
                                           TIME        12.17

  2 COMBINED AT
+                  COMB1       .02     1   FLOW          39.
                                           TIME        12.17
                                        2   FLOW          54.
                                           TIME        12.17
                                        3   FLOW          63.
                                           TIME        12.17
                                        4   FLOW          70.
                                           TIME        12.17
                                        5   FLOW          77.
                                           TIME        12.17
```

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 HYDROGRAPH AT
+                    P2C       .02     1   FLOW          44.
                                           TIME        12.17
                                       2   FLOW          61.
                                           TIME        12.17
                                       3   FLOW          72.
                                           TIME        12.17
                                       4   FLOW          80.
                                           TIME        12.17
                                       5   FLOW          87.
                                           TIME        12.17

 ROUTED TO
+                  CHANN       .02     1   FLOW          44.
                                           TIME        12.25
                                       2   FLOW          61.
                                           TIME        12.25
                                       3   FLOW          68.
                                           TIME        12.25
                                       4   FLOW          76.
                                           TIME        12.25
                                       5   FLOW          81.
                                           TIME        12.25

 HYDROGRAPH AT
+                    P2B       .06     1   FLOW         144.
                                           TIME        12.17
                                       2   FLOW         203.
                                           TIME        12.17
                                       3   FLOW         237.
                                           TIME        12.17
                                       4   FLOW         263.
                                           TIME        12.17
                                       5   FLOW         289.
                                           TIME        12.17

 ROUTED TO
+                   POND       .06     1   FLOW         117.
                                           TIME        12.33
                                       2   FLOW         188.
                                           TIME        12.25
                                       3   FLOW         212.
                                           TIME        12.25
                                       4   FLOW         238.
                                           TIME        12.25
                                       5   FLOW         267.
                                           TIME        12.25

                                       ** PEAK STAGES IN FEET **
                                       1   STAGE        6.27
                                           TIME        12.33
                                       2   STAGE        7.43
                                           TIME        12.25
                                       3   STAGE        8.21
                                           TIME        12.25
                                       4   STAGE        8.75
                                           TIME        12.25
                                       5   STAGE        9.16
                                           TIME        12.25

 ROUTED TO
+                  CHANN       .06     1   FLOW         115.
                                           TIME        12.33
                                       2   FLOW         184.
                                           TIME        12.25
                                       3   FLOW         208.
                                           TIME        12.25
                                       4   FLOW         228.
                                           TIME        12.33
                                       5   FLOW         252.
                                           TIME        12.25

 HYDROGRAPH AT
+                    P2A       .03     1   FLOW          83.
                                           TIME        12.17
                                       2   FLOW         116.
                                           TIME        12.17
                                       3   FLOW         136.
                                           TIME        12.17
                                       4   FLOW         151.
```

```
                                        TIME        12.17
                                    5   FLOW         165.
                                        TIME        12.17

 ROUTED TO
+                   POND       .03     1   FLOW          33.
                                        TIME        12.58
                                    2   FLOW          41.
                                        TIME        12.58
                                    3   FLOW          53.
                                        TIME        12.58
                                    4   FLOW          87.
                                        TIME        12.42
                                    5   FLOW         119.
                                        TIME        12.33

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE        5.49
                                        TIME        12.58
                                    2   STAGE        7.99
                                        TIME        12.58
                                    3   STAGE        9.21
                                        TIME        12.58
                                    4   STAGE        9.71
                                        TIME        12.42
                                    5   STAGE        9.99
                                        TIME        12.33

 ROUTED TO
+                  CHANN       .03     1   FLOW          33.
                                        TIME        12.58
                                    2   FLOW          41.
                                        TIME        12.67
                                    3   FLOW          53.
                                        TIME        12.58
                                    4   FLOW          82.
                                        TIME        12.42
                                    5   FLOW         112.
                                        TIME        12.33

  3 COMBINED AT
+                  COMB2       .11     1   FLOW         182.
                                        TIME        12.33
                                    2   FLOW         280.
                                        TIME        12.25
                                    3   FLOW         315.
                                        TIME        12.25
                                    4   FLOW         356.
                                        TIME        12.33
                                    5   FLOW         432.
                                        TIME        12.33

 HYDROGRAPH AT
+                     E0       .39     1   FLOW         661.
                                        TIME        12.33
                                    2   FLOW         988.
                                        TIME        12.25
                                    3   FLOW        1173.
                                        TIME        12.25
                                    4   FLOW        1315.
                                        TIME        12.25
                                    5   FLOW        1451.
                                        TIME        12.25

 ROUTED TO
+                  CHANN       .39     1   FLOW         662.
                                        TIME        12.33
                                    2   FLOW         987.
                                        TIME        12.33
                                    3   FLOW        1171.
                                        TIME        12.33
                                    4   FLOW        1313.
                                        TIME        12.33
                                    5   FLOW        1449.
                                        TIME        12.33

 HYDROGRAPH AT
+                     E1       .18     1   FLOW         344.
                                        TIME        12.25
                                    2   FLOW         507.
                                        TIME        12.25
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                                        3   FLOW         598.
                                            TIME        12.25
                                        4   FLOW         669.
                                            TIME        12.25
                                        5   FLOW         736.
                                            TIME        12.25

  2 COMBINED AT
+                   COMB3       .57     1   FLOW         980.
                                            TIME        12.33
                                        2   FLOW        1454.
                                            TIME        12.33
                                        3   FLOW        1721.
                                            TIME        12.33
                                        4   FLOW        1928.
                                            TIME        12.33
                                        5   FLOW        2125.
                                            TIME        12.33

  2 COMBINED AT
+                   COMB4       .68     1   FLOW        1162.
                                            TIME        12.33
                                        2   FLOW        1722.
                                            TIME        12.33
                                        3   FLOW        2029.
                                            TIME        12.33
                                        4   FLOW        2284.
                                            TIME        12.33
                                        5   FLOW        2557.
                                            TIME        12.33

 ROUTED TO
+                   CHANN       .68     1   FLOW        1160.
                                            TIME        12.33
                                        2   FLOW        1722.
                                            TIME        12.33
                                        3   FLOW        2028.
                                            TIME        12.33
                                        4   FLOW        2282.
                                            TIME        12.33
                                        5   FLOW        2555.
                                            TIME        12.33

 HYDROGRAPH AT
+                      E3       .03     1   FLOW          79.
                                            TIME        12.08
                                        2   FLOW         114.
                                            TIME        12.08
                                        3   FLOW         134.
                                            TIME        12.08
                                        4   FLOW         150.
                                            TIME        12.08
                                        5   FLOW         165.
                                            TIME        12.08

 ROUTED TO
+                    PIPE       .03     1   FLOW          73.
                                            TIME        12.08
                                        2   FLOW         107.
                                            TIME        12.08
                                        3   FLOW         126.
                                            TIME        12.08
                                        4   FLOW         140.
                                            TIME        12.08
                                        5   FLOW         155.
                                            TIME        12.08

 HYDROGRAPH AT
+                    P1F1       .02     1   FLOW          43.
                                            TIME        12.17
                                        2   FLOW          60.
                                            TIME        12.17
                                        3   FLOW          70.
                                            TIME        12.17
                                        4   FLOW          77.
                                            TIME        12.17
                                        5   FLOW          85.
                                            TIME        12.17

  2 COMBINED AT
+                   COMB5       .05     1   FLOW         109.
```

```
                                        TIME        12.08
                                    2   FLOW         157.
                                        TIME        12.08
                                    3   FLOW         184.
                                        TIME        12.08
                                    4   FLOW         205.
                                        TIME        12.08
                                    5   FLOW         226.
                                        TIME        12.08

 ROUTED TO
+                    POND       .05     1   FLOW          97.
                                        TIME        12.17
                                    2   FLOW         130.
                                        TIME        12.25
                                    3   FLOW         154.
                                        TIME        12.17
                                    4   FLOW         170.
                                        TIME        12.25
                                    5   FLOW         186.
                                        TIME        12.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE        4.04
                                        TIME        12.17
                                    2   STAGE        6.00
                                        TIME        12.25
                                    3   STAGE        7.03
                                        TIME        12.17
                                    4   STAGE        7.79
                                        TIME        12.25
                                    5   STAGE        8.49
                                        TIME        12.25

  2 COMBINED AT
+                   COMB6       .73     1   FLOW        1240.
                                        TIME        12.33
                                    2   FLOW        1839.
                                        TIME        12.33
                                    3   FLOW        2164.
                                        TIME        12.25
                                    4   FLOW        2433.
                                        TIME        12.33
                                    5   FLOW        2721.
                                        TIME        12.33

 ROUTED TO
+                   CHANN       .73     1   FLOW        1235.
                                        TIME        12.33
                                    2   FLOW        1837.
                                        TIME        12.33
                                    3   FLOW        2161.
                                        TIME        12.33
                                    4   FLOW        2431.
                                        TIME        12.33
                                    5   FLOW        2718.
                                        TIME        12.33

 HYDROGRAPH AT
+                    P1F2       .01     1   FLOW          36.
                                        TIME        12.17
                                    2   FLOW          51.
                                        TIME        12.17
                                    3   FLOW          60.
                                        TIME        12.17
                                    4   FLOW          66.
                                        TIME        12.17
                                    5   FLOW          73.
                                        TIME        12.17

  2 COMBINED AT
+                   COMB7       .74     1   FLOW        1257.
                                        TIME        12.33
                                    2   FLOW        1867.
                                        TIME        12.33
                                    3   FLOW        2196.
                                        TIME        12.33
                                    4   FLOW        2470.
                                        TIME        12.33
                                    5   FLOW        2760.
                                        TIME        12.33
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```
 ROUTED TO
+                   CHANN       .74     1   FLOW        1254.
                                            TIME        12.33
                                        2   FLOW        1866.
                                            TIME        12.33
                                        3   FLOW        2194.
                                            TIME        12.33
                                        4   FLOW        2468.
                                            TIME        12.33
                                        5   FLOW        2758.
                                            TIME        12.33

 HYDROGRAPH AT
+                     E2       .06     1   FLOW         168.
                                            TIME        12.08
                                        2   FLOW         243.
                                            TIME        12.08
                                        3   FLOW         286.
                                            TIME        12.08
                                        4   FLOW         319.
                                            TIME        12.08
                                        5   FLOW         351.
                                            TIME        12.08

 ROUTED TO
+                   CHANN       .06     1   FLOW         150.
                                            TIME        12.08
                                        2   FLOW         221.
                                            TIME        12.08
                                        3   FLOW         261.
                                            TIME        12.08
                                        4   FLOW         292.
                                            TIME        12.08
                                        5   FLOW         323.
                                            TIME        12.08

 HYDROGRAPH AT
+                    P1E       .03     1   FLOW          70.
                                            TIME        12.17
                                        2   FLOW          98.
                                            TIME        12.17
                                        3   FLOW         114.
                                            TIME        12.17
                                        4   FLOW         127.
                                            TIME        12.17
                                        5   FLOW         139.
                                            TIME        12.17

  2 COMBINED AT
+                   COMB8       .09     1   FLOW         217.
                                            TIME        12.17
                                        2   FLOW         310.
                                            TIME        12.17
                                        3   FLOW         365.
                                            TIME        12.17
                                        4   FLOW         405.
                                            TIME        12.17
                                        5   FLOW         444.
                                            TIME        12.17

  2 COMBINED AT
+                   COMB9       .84     1   FLOW        1390.
                                            TIME        12.33
                                        2   FLOW        2079.
                                            TIME        12.25
                                        3   FLOW        2455.
                                            TIME        12.25
                                        4   FLOW        2750.
                                            TIME        12.25
                                        5   FLOW        3058.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .84     1   FLOW        1387.
                                            TIME        12.33
                                        2   FLOW        2061.
                                            TIME        12.33
                                        3   FLOW        2423.
                                            TIME        12.33
                                        4   FLOW        2719.
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                                        TIME        12.33
                                    5   FLOW        3031.
                                        TIME        12.33

 HYDROGRAPH AT
+                    P1D       .04     1   FLOW          91.
                                        TIME        12.08
                                    2   FLOW         128.
                                        TIME        12.08
                                    3   FLOW         150.
                                        TIME        12.08
                                    4   FLOW         167.
                                        TIME        12.08
                                    5   FLOW         183.
                                        TIME        12.08

 ROUTED TO
+                   POND       .04     1   FLOW          63.
                                        TIME        12.25
                                    2   FLOW          96.
                                        TIME        12.25
                                    3   FLOW         114.
                                        TIME        12.25
                                    4   FLOW         127.
                                        TIME        12.25
                                    5   FLOW         139.
                                        TIME        12.25

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE        5.19
                                        TIME        12.25
                                    2   STAGE        7.01
                                        TIME        12.25
                                    3   STAGE        7.83
                                        TIME        12.25
                                    4   STAGE        8.44
                                        TIME        12.25
                                    5   STAGE        9.03
                                        TIME        12.25

  2 COMBINED AT
+                 COMB10       .87     1   FLOW        1449.
                                        TIME        12.33
                                    2   FLOW        2148.
                                        TIME        12.33
                                    3   FLOW        2534.
                                        TIME        12.25
                                    4   FLOW        2840.
                                        TIME        12.25
                                    5   FLOW        3159.
                                        TIME        12.33

 ROUTED TO
+                  CHANN       .87     1   FLOW        1446.
                                        TIME        12.33
                                    2   FLOW        2147.
                                        TIME        12.33
                                    3   FLOW        2526.
                                        TIME        12.33
                                    4   FLOW        2835.
                                        TIME        12.33
                                    5   FLOW        3158.
                                        TIME        12.33

 HYDROGRAPH AT
+                   P1C2       .03     1   FLOW          71.
                                        TIME        12.17
                                    2   FLOW          99.
                                        TIME        12.17
                                    3   FLOW         116.
                                        TIME        12.17
                                    4   FLOW         129.
                                        TIME        12.17
                                    5   FLOW         141.
                                        TIME        12.17

  2 COMBINED AT
+                 COMB11       .90     1   FLOW        1495.
                                        TIME        12.33
                                    2   FLOW        2215.
                                        TIME        12.33
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                                        3   FLOW        2617.
                                            TIME        12.25
                                        4   FLOW        2933.
                                            TIME        12.25
                                        5   FLOW        3258.
                                            TIME        12.25

 ROUTED TO
+                   CHANN       .90     1   FLOW        1490.
                                            TIME        12.33
                                        2   FLOW        2214.
                                            TIME        12.33
                                        3   FLOW        2606.
                                            TIME        12.33
                                        4   FLOW        2924.
                                            TIME        12.33
                                        5   FLOW        3254.
                                            TIME        12.33

 HYDROGRAPH AT
+                      E4       .02     1   FLOW          64.
                                            TIME        12.08
                                        2   FLOW          92.
                                            TIME        12.08
                                        3   FLOW         109.
                                            TIME        12.08
                                        4   FLOW         121.
                                            TIME        12.08
                                        5   FLOW         133.
                                            TIME        12.08

 ROUTED TO
+                    PIPE       .02     1   FLOW          54.
                                            TIME        12.17
                                        2   FLOW          76.
                                            TIME        12.17
                                        3   FLOW          88.
                                            TIME        12.17
                                        4   FLOW          97.
                                            TIME        12.17
                                        5   FLOW         106.
                                            TIME        12.17

 HYDROGRAPH AT
+                     P1A       .05     1   FLOW         107.
                                            TIME        12.25
                                        2   FLOW         150.
                                            TIME        12.25
                                        3   FLOW         175.
                                            TIME        12.25
                                        4   FLOW         195.
                                            TIME        12.25
                                        5   FLOW         214.
                                            TIME        12.25

  2 COMBINED AT
+                  COMB12       .08     1   FLOW         149.
                                            TIME        12.17
                                        2   FLOW         210.
                                            TIME        12.17
                                        3   FLOW         244.
                                            TIME        12.17
                                        4   FLOW         271.
                                            TIME        12.17
                                        5   FLOW         297.
                                            TIME        12.17

 ROUTED TO
+                    POND       .08     1   FLOW         105.
                                            TIME        12.50
                                        2   FLOW         175.
                                            TIME        12.33
                                        3   FLOW         211.
                                            TIME        12.33
                                        4   FLOW         235.
                                            TIME        12.33
                                        5   FLOW         257.
                                            TIME        12.33

                                        ** PEAK STAGES IN FEET **
                                        1   STAGE        5.95
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```
                                        TIME        12.50
                                    2   STAGE        7.39
                                        TIME        12.33
                                    3   STAGE        8.17
                                        TIME        12.33
                                    4   STAGE        8.74
                                        TIME        12.33
                                    5   STAGE        9.30
                                        TIME        12.33

  2 COMBINED AT
+                 COMB13       .98     1   FLOW        1589.
                                        TIME        12.33
                                    2   FLOW        2389.
                                        TIME        12.33
                                    3   FLOW        2817.
                                        TIME        12.33
                                    4   FLOW        3158.
                                        TIME        12.33
                                    5   FLOW        3511.
                                        TIME        12.33

 HYDROGRAPH AT
+                   P1B2       .01     1   FLOW          36.
                                        TIME        12.08
                                    2   FLOW          51.
                                        TIME        12.08
                                    3   FLOW          60.
                                        TIME        12.08
                                    4   FLOW          66.
                                        TIME        12.08
                                    5   FLOW          73.
                                        TIME        12.08

  2 COMBINED AT
+                 COMB14       .99     1   FLOW        1608.
                                        TIME        12.33
                                    2   FLOW        2417.
                                        TIME        12.33
                                    3   FLOW        2848.
                                        TIME        12.33
                                    4   FLOW        3193.
                                        TIME        12.33
                                    5   FLOW        3550.
                                        TIME        12.33
1
                                        SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                            (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                  INTERPOLATED TO
                                                                                COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                     PEAK

                              (MIN)     (CFS)      (MIN)     (IN)     (MIN)     (CFS)     (MIN)       (IN)

           FOR PLAN = 1  RATIO=  .00
              CHANN  MANE         5.00     44.02    735.00      5.21      5.00     44.02    735.00        5.21


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5004E+01 EXCESS= .0000E+00 OUTFLOW= .5004E+01 BASIN STORAGE= .1838E-02 PERCENT ERROR=    .0


           FOR PLAN = 2  RATIO=  .00
              CHANN  MANE         4.68     61.28    734.67      9.49      5.00     60.59    735.00        9.50


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9110E+01 EXCESS= .0000E+00 OUTFLOW= .9111E+01 BASIN STORAGE= .1824E-02 PERCENT ERROR=    .0


           FOR PLAN = 3  RATIO=  .00
              CHANN  MANE         4.45     70.34    733.45     12.33      5.00     67.52    735.00       12.32


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1183E+02 EXCESS= .0000E+00 OUTFLOW= .1183E+02 BASIN STORAGE= .1824E-02 PERCENT ERROR=    .0


           FOR PLAN = 4  RATIO=  .00
              CHANN  MANE         4.29     78.66    734.00     14.73      5.00     76.28    735.00       14.74


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1414E+02 EXCESS= .0000E+00 OUTFLOW= .1414E+02 BASIN STORAGE= .1874E-02 PERCENT ERROR=    .0
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          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         4.16     84.84    732.81     17.28      5.00     81.00    735.00       17.27

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1659E+02 EXCESS= .0000E+00 OUTFLOW= .1659E+02 BASIN STORAGE= .1762E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         3.31    115.51    740.34      5.21      5.00    114.87    740.00        5.21

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1723E+02 EXCESS= .0000E+00 OUTFLOW= .1723E+02 BASIN STORAGE= .2704E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         2.83    183.97    734.92      9.48      5.00    183.95    735.00        9.48

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3135E+02 EXCESS= .0000E+00 OUTFLOW= .3135E+02 BASIN STORAGE= .4253E-02 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         2.71    209.04    735.39     12.33      5.00    207.55    735.00       12.33

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4077E+02 EXCESS= .0000E+00 OUTFLOW= .4077E+02 BASIN STORAGE= .5102E-02 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.61    233.28    738.63     14.72      5.00    227.79    740.00       14.71

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .4867E+02 EXCESS= .0000E+00 OUTFLOW= .4867E+02 BASIN STORAGE= .5526E-02 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         2.51    259.54    738.76     17.29      5.00    251.66    735.00       17.28

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5716E+02 EXCESS= .0000E+00 OUTFLOW= .5716E+02 BASIN STORAGE= .6340E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         2.35     32.54    755.11      5.18      5.00     32.53    755.00        5.18

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9600E+01 EXCESS= .0000E+00 OUTFLOW= .9595E+01 BASIN STORAGE= .9482E-02 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         2.18     40.67    757.75      9.42      5.00     40.66    760.00        9.42

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1745E+02 EXCESS= .0000E+00 OUTFLOW= .1744E+02 BASIN STORAGE= .1497E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.99     53.08    753.54     12.25      5.00     52.99    755.00       12.25

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2268E+02 EXCESS= .0000E+00 OUTFLOW= .2267E+02 BASIN STORAGE= .1876E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.69     85.73    747.08     14.63      5.00     82.06    745.00       14.63

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .2708E+02 EXCESS= .0000E+00 OUTFLOW= .2707E+02 BASIN STORAGE= .2140E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         1.52    116.75    740.92     17.17      5.00    112.28    740.00       17.18

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3180E+02 EXCESS= .0000E+00 OUTFLOW= .3178E+02 BASIN STORAGE= .2444E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         3.07    661.79    740.00      4.46      5.00    661.78    740.00        4.46
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .9235E+02 EXCESS= .0000E+00 OUTFLOW= .9235E+02 BASIN STORAGE= .2851E-01 PERCENT ERROR=    .0


          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         2.69    990.66    738.92      8.63      5.00    987.38    740.00        8.63


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1786E+03 EXCESS= .0000E+00 OUTFLOW= .1786E+03 BASIN STORAGE= .3920E-01 PERCENT ERROR=    .0


          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         2.54   1175.19    738.60     11.45      5.00   1170.65    740.00       11.44


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2369E+03 EXCESS= .0000E+00 OUTFLOW= .2369E+03 BASIN STORAGE= .4526E-01 PERCENT ERROR=    .0


          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         2.44   1315.03    738.11     13.82      5.00   1313.46    740.00       13.82


CONTINUITY SUMMARY (AC-FT) - INFLOW= .2860E+03 EXCESS= .0000E+00 OUTFLOW= .2860E+03 BASIN STORAGE= .5737E-01 PERCENT ERROR=    .0


          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         2.37   1451.23    738.01     16.37      5.00   1449.08    740.00       16.37


CONTINUITY SUMMARY (AC-FT) - INFLOW= .3387E+03 EXCESS= .0000E+00 OUTFLOW= .3387E+03 BASIN STORAGE= .5889E-01 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .43   1160.60    740.45      4.62      5.00   1160.09    740.00        4.62


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1686E+03 EXCESS= .0000E+00 OUTFLOW= .1686E+03 BASIN STORAGE= .9708E-02 PERCENT ERROR=    .0


          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .37   1721.85    739.96      8.81      5.00   1721.57    740.00        8.81


CONTINUITY SUMMARY (AC-FT) - INFLOW= .3214E+03 EXCESS= .0000E+00 OUTFLOW= .3214E+03 BASIN STORAGE= .1431E-01 PERCENT ERROR=    .0


          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .35   2028.65    739.84     11.63      5.00   2028.02    740.00       11.63


CONTINUITY SUMMARY (AC-FT) - INFLOW= .4243E+03 EXCESS= .0000E+00 OUTFLOW= .4243E+03 BASIN STORAGE= .1727E-01 PERCENT ERROR=    .0


          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .34   2282.56    740.04     14.01      5.00   2282.47    740.00       14.01


CONTINUITY SUMMARY (AC-FT) - INFLOW= .5110E+03 EXCESS= .0000E+00 OUTFLOW= .5110E+03 BASIN STORAGE= .2034E-01 PERCENT ERROR=    .0


          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .33   2555.61    740.07     16.57      5.00   2555.47    740.00       16.57


CONTINUITY SUMMARY (AC-FT) - INFLOW= .6042E+03 EXCESS= .0000E+00 OUTFLOW= .6042E+03 BASIN STORAGE= .2223E-01 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .00
              PIPE  MANE          .81     77.14    725.87      4.76      5.00     73.40    725.00        4.77


CONTINUITY SUMMARY (AC-FT) - INFLOW= .7115E+01 EXCESS= .0000E+00 OUTFLOW= .7115E+01 BASIN STORAGE= .8820E-04 PERCENT ERROR=    .0


          FOR PLAN = 2  RATIO=  .00
              PIPE  MANE          .75    110.62    725.59      8.98      5.00    106.55    725.00        8.98


CONTINUITY SUMMARY (AC-FT) - INFLOW= .1341E+02 EXCESS= .0000E+00 OUTFLOW= .1341E+02 BASIN STORAGE= .7419E-04 PERCENT ERROR=    .0
```

```
          FOR PLAN = 3  RATIO=  .00
              PIPE  MANE          .73    129.66    726.16     11.81      5.00    125.60    725.00       11.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1764E+02 EXCESS= .0000E+00 OUTFLOW= .1764E+02 BASIN STORAGE= .8094E-04 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
              PIPE  MANE          .71    144.69    725.46     14.20      5.00    140.34    725.00       14.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2120E+02 EXCESS= .0000E+00 OUTFLOW= .2120E+02 BASIN STORAGE= .8281E-04 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
              PIPE  MANE          .70    160.78    725.76     16.76      5.00    155.19    725.00       16.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2502E+02 EXCESS= .0000E+00 OUTFLOW= .2502E+02 BASIN STORAGE= .8791E-04 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .74   1236.42    740.40      4.64      5.00   1235.42    740.00        4.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1805E+03 EXCESS= .0000E+00 OUTFLOW= .1805E+03 BASIN STORAGE= .1808E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .65   1839.58    736.27      8.83      5.00   1837.39    740.00        8.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3435E+03 EXCESS= .0000E+00 OUTFLOW= .3435E+03 BASIN STORAGE= .2699E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .61   2167.14    736.07     11.65      5.00   2161.01    740.00       11.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4533E+03 EXCESS= .0000E+00 OUTFLOW= .4533E+03 BASIN STORAGE= .3236E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .59   2432.09    739.83     14.03      5.00   2431.31    740.00       14.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5459E+03 EXCESS= .0000E+00 OUTFLOW= .5459E+03 BASIN STORAGE= .3744E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .57   2717.87    739.61     16.59      5.00   2717.83    740.00       16.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6453E+03 EXCESS= .0000E+00 OUTFLOW= .6452E+03 BASIN STORAGE= .4189E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .39   1254.49    740.07      4.65      5.00   1254.01    740.00        4.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1846E+03 EXCESS= .0000E+00 OUTFLOW= .1846E+03 BASIN STORAGE= .1024E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .34   1865.80    740.06      8.84      5.00   1865.64    740.00        8.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3511E+03 EXCESS= .0000E+00 OUTFLOW= .3511E+03 BASIN STORAGE= .1513E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .33   2194.56    740.06     11.67      5.00   2194.46    740.00       11.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4631E+03 EXCESS= .0000E+00 OUTFLOW= .4631E+03 BASIN STORAGE= .1819E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .31   2468.16    739.96     14.05      5.00   2467.99    740.00       14.05
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW= .5575E+03 EXCESS= .0000E+00 OUTFLOW= .5575E+03 BASIN STORAGE= .2078E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .30   2758.11    740.03     16.60      5.00   2757.93    740.00       16.60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6589E+03 EXCESS= .0000E+00 OUTFLOW= .6589E+03 BASIN STORAGE= .2345E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.45    164.99    727.12      4.75      5.00    149.85    725.00        4.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1640E+02 EXCESS= .0000E+00 OUTFLOW= .1640E+02 BASIN STORAGE= .6384E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.28    237.68    727.14      8.97      5.00    221.01    725.00        8.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3095E+02 EXCESS= .0000E+00 OUTFLOW= .3095E+02 BASIN STORAGE= .7691E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.21    283.68    726.11     11.80      5.00    261.25    725.00       11.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4072E+02 EXCESS= .0000E+00 OUTFLOW= .4072E+02 BASIN STORAGE= .7664E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.17    312.69    725.87     14.18      5.00    292.24    725.00       14.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4894E+02 EXCESS= .0000E+00 OUTFLOW= .4894E+02 BASIN STORAGE= .8463E-03 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE         1.13    345.98    725.94     16.74      5.00    322.76    725.00       16.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5777E+02 EXCESS= .0000E+00 OUTFLOW= .5777E+02 BASIN STORAGE= .7256E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE         1.25   1387.97    739.61      4.68      5.00   1387.18    740.00        4.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2092E+03 EXCESS= .0000E+00 OUTFLOW= .2092E+03 BASIN STORAGE= .3817E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE         1.09   2079.53    736.75      8.88      5.00   2060.80    740.00        8.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3968E+03 EXCESS= .0000E+00 OUTFLOW= .3968E+03 BASIN STORAGE= .5573E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE         1.03   2453.01    736.58     11.70      5.00   2422.65    740.00       11.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5231E+03 EXCESS= .0000E+00 OUTFLOW= .5230E+03 BASIN STORAGE= .6561E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE         1.00   2749.46    736.24     14.08      5.00   2719.10    740.00       14.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6294E+03 EXCESS= .0000E+00 OUTFLOW= .6294E+03 BASIN STORAGE= .7563E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .96   3057.84    736.73     16.64      5.00   3031.37    740.00       16.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7437E+03 EXCESS= .0000E+00 OUTFLOW= .7436E+03 BASIN STORAGE= .8469E-01 PERCENT ERROR=    .0
```

```
          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .54   1446.68    740.49      4.70      5.00   1445.80    740.00        4.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2191E+03 EXCESS= .0000E+00 OUTFLOW= .2191E+03 BASIN STORAGE= .1819E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .47   2147.11    739.97      8.90      5.00   2146.89    740.00        8.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4148E+03 EXCESS= .0000E+00 OUTFLOW= .4148E+03 BASIN STORAGE= .2659E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .45   2535.18    735.79     11.73      5.00   2526.47    740.00       11.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5465E+03 EXCESS= .0000E+00 OUTFLOW= .5465E+03 BASIN STORAGE= .3112E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .43   2841.61    735.94     14.11      5.00   2834.73    740.00       14.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6574E+03 EXCESS= .0000E+00 OUTFLOW= .6574E+03 BASIN STORAGE= .3575E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .42   3159.20    739.91     16.66      5.00   3158.42    740.00       16.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7765E+03 EXCESS= .0000E+00 OUTFLOW= .7765E+03 BASIN STORAGE= .3980E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             CHANN  MANE          .85   1491.41    740.51      4.72      5.00   1489.70    740.00        4.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2274E+03 EXCESS= .0000E+00 OUTFLOW= .2274E+03 BASIN STORAGE= .3205E-01 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
             CHANN  MANE          .74   2214.21    740.00      8.92      5.00   2214.20    740.00        8.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4299E+03 EXCESS= .0000E+00 OUTFLOW= .4299E+03 BASIN STORAGE= .4560E-01 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
             CHANN  MANE          .70   2618.22    736.17     11.75      5.00   2605.69    740.00       11.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5660E+03 EXCESS= .0000E+00 OUTFLOW= .5660E+03 BASIN STORAGE= .5370E-01 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
             CHANN  MANE          .68   2934.43    735.90     14.13      5.00   2923.54    740.00       14.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6807E+03 EXCESS= .0000E+00 OUTFLOW= .6807E+03 BASIN STORAGE= .6110E-01 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
             CHANN  MANE          .66   3262.17    736.24     16.68      5.00   3254.12    740.00       16.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8039E+03 EXCESS= .0000E+00 OUTFLOW= .8039E+03 BASIN STORAGE= .6823E-01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              PIPE  MANE         2.79     60.34    727.62      4.77      5.00     54.46    730.00        4.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5368E+01 EXCESS= .0000E+00 OUTFLOW= .5367E+01 BASIN STORAGE= .2896E-03 PERCENT ERROR=    .0

          FOR PLAN = 2  RATIO=  .00
              PIPE  MANE         2.59     87.24    728.00      8.98      5.00     76.04    730.00        8.98
```

```
CONTINUITY SUMMARY (AC-FT) - INFLOW= .1011E+02 EXCESS= .0000E+00 OUTFLOW= .1011E+02 BASIN STORAGE= .4248E-03 PERCENT ERROR=    .0

          FOR PLAN = 3  RATIO=  .00
              PIPE  MANE         2.51     99.04    726.86     11.81      5.00     88.18    730.00       11.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1329E+02 EXCESS= .0000E+00 OUTFLOW= .1329E+02 BASIN STORAGE= .2949E-03 PERCENT ERROR=    .0

          FOR PLAN = 4  RATIO=  .00
              PIPE  MANE         2.45    110.90    728.35     14.20      5.00     97.33    730.00       14.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1598E+02 EXCESS= .0000E+00 OUTFLOW= .1598E+02 BASIN STORAGE= .3104E-03 PERCENT ERROR=    .0

          FOR PLAN = 5  RATIO=  .00
              PIPE  MANE         2.41    119.63    726.56     16.75      5.00    106.18    730.00       16.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1885E+02 EXCESS= .0000E+00 OUTFLOW= .1885E+02 BASIN STORAGE= .2537E-03 PERCENT ERROR=    .0



*** NORMAL END OF HEC-1 ***
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APPENDIX F

FIELD WORK

ANEJO 29: ESTUDIO DE RUIDO

ESTUDIO DE RUIDO
PROYECTO RESIDENCIAL "CAMPO RICO NEW CASTLE"
CARRETERA PR-957, KM. 0.20
BO. HATO PUERCO, CANOVANAS, PUERTO RICO

CONSULTA NUM: 2005-80-0872-JPU
CASO NUM.: 07XJ2-CET-00-02877
REF C#06-00014281

Preparado para:

DESARROLLOS ALTAMIRA II, INC.
San Juan, Puerto Rico

Preparado por:

Héctor W. Vega Pacheco, M.S.C.E., P.E.
Consultor del Estudio

Marzo 2009

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Análisis de Ruido en Receptores más cercanos a Carretera PR-957
Condición de Tránsito Año 1999 y Condición Crítica Asumida

ESTUDIO DE RUIDO
PROYECTO RESIDENCIAL/COMERCIAL CAMPO RICO NEW CASTLE
CARRETERA PR-957, KM. 0.20
BO. HATO PUERCO, CANOVANAS, PUERTO RICO
CONSULTA NUM 2005-80-0872-JPU, ACT Ref. C#06-00014281

1. INTRODUCCION

1.1 Trasfondo

Se propone el desarrollo de un proyecto combinado comercial / residencial que consistirá de lo siguiente:

- 255 unidades de vivienda unifamiliar
- 263 unidades de vivienda tipo hileras
- 570 unidades de vivienda multifamiliares
- 160,500 pies cuadrados de área comercial

El proyecto estará localizado a lo largo de la Carretera PR-957 en el Barrio Hato Puerco del Municipio de Canóvanas. El proyecto se conocerá como "Campo Rico New Castle". La localización del proyecto se muestra en la Figura 1. La configuración y topografía del proyecto se incluyen como Apéndice A. El acceso a las diferentes fases del proyecto será directamente desde la Carretera PR-957. Como puede observarse en el Apéndice A, hacia el este del proyecto se encuentra la Carretera PR-957, la cual es en la actualidad una carretera de dos (2) carriles de aproximadamente 12 pies de ancho cada uno, pendientes medianas y con un volumen de tránsito moderado.

Como parte del proceso de consulta y evaluación ambiental del proyecto a las agencias pertinentes, se consultó a la Autoridad de Carreteras y Transportación (ACT) de Puerto Rico sobre los requisitos de la agencia para endosar el proyecto propuesto. Mediante carta con fecha del 5 de diciembre de 2008, la ACT establece, como parte de sus comentarios a la DIA Preliminar del proyecto, que debe realizarse un estudio de sonido ambiental en donde se

determinen los niveles de ruido a que estarán expuestas las residencias debido al tránsito actual y proyectado a 20 años en las vías estatales y proveer como parte del desarrollo las medidas de mitigación necesarias para no sobrepasar los niveles permitidos por la reglamentación vigente. La copia de la carta de la ACT donde se solicita el estudio de ruido se incluye como Apéndice B.

Las vías de tránsito existentes en el sector son las carreteras PR-957 y PR-185. El estudio de ruido que se presenta en este documento considera los volúmenes de tránsito proyectados para la Carretera PR-957, según provistos por la ACT. La carretera PR-957 discurre a través del proyecto y se encuentra cercana a las unidades de vivienda propuestas. La carretera PR-185 no fue incluida en el análisis debido a que se encuentra a una distancia mínima de entre 90 y 100 metros de la unidad de vivienda más cercana. Además existe una zona de amortiguamiento entre la Carretera PR-185 y el proyecto, a través de la cual discurre el Río Canóvanas.

2. ESTUDIO DE RUIDO

Este informe resume los hallazgos y resultados del Estudio de Ruido realizado para el proyecto residencial "Campo Rico New Castle". El mismo fue realizado para cumplir con los requisitos de la ACT.

2.1 Definiciones

Los niveles de ruido especificados en este documento se presentan en unidades de decibeles en la escala A (dBA). La escala A representa la frecuencia que más se asemeja a las características del oído humano promedio para varias intensidades de sonido. Por ejemplo, un aumento de 10 dBA en los niveles de ruido al oído humano es como si se duplicara el ruido, y un aumento de 3 dBA es apenas perceptible.

Los valores de ruido resultantes son presentados como niveles de ruido equivalentes (L_{eq}). El valor de Leq es utilizado típicamente por el Departamento de Transportación Federal (DOT por sus siglas en inglés) y el mismo es definido como el nivel de sonido constante, en dBA, que puede producir la misma energía de sonido que un sonido variable medido durante un periodo de tiempo específico. El valor L_{10} es el valor típicamente utilizado por la Junta de Calidad Ambiental (JCA) y es definido como el sonido, en dBA, que es excedido el 10% del tiempo durante un periodo de tiempo específico. La agencia DOT ha establecido que en el caso de tránsito vehicular el valor de L_{10} es aproximadamente 3dBA mayor que el valor de L_{eq}.

2.2 Criterios de la Junta de Calidad Ambiental

Los niveles de ruido (L_{10}) recomendados por la Junta de Calidad Ambiental en su reglamento de ruido para diferentes zonas se presentan en la Tabla 1. De acuerdo a la JCA, los niveles de ruido no deben exceder de 65 dBA para un área residencial. Si los niveles de ruido estimados para la condición futura son mayores que los niveles recomendados, el proyecto causará algún impacto adverso, el cual será mayor o menor, dependiendo de cuánto se aleje del nivel recomendado.

Los estándares establecidos por la JCA se basan en una fuente de ruido que es fija y no móvil como lo es el ruido producido por el tránsito vehicular en una carretera.

2.3 Criterios de la Administración Federal de Carreteras (FHWA) y la Autoridad de Carreteras y Transportación

El ruido producido por el tránsito vehicular en una carretera es representativo del ruido producido por una fuente móvil, como lo ha establecido la FHWA. De acuerdo a la FHWA, los niveles de ruido producidos por el tránsito en una carretera no deben exceder de 67 dBA para un área residencial (medido en L_{eq}). Si los niveles de ruido estimados para la condición futura son mayores de 67 dBA, el proyecto causará algún impacto adverso, el cual será mayor o menor, dependiendo de cuánto se aleje de este valor recomendado. Este valor estándar ha sido adoptado por la ACT en sus evaluaciones. La ACT también establece que, debido al margen de error del programa, el valor de 66 dBA será criterio de la agencia para solicitar que se establezcan medidas de mitigación.

2.4 Niveles de Ruido Proyectados Basados en Datos de Tránsito

Se realizó un análisis considerando las condiciones de tránsito basado en los datos de tránsito existentes en la ACT (Año 1999) y futuras (condición asumida a 20 años) en la Carretera PR-957. Para el análisis se utilizó la alineación y sección de carretera existente. La carretera existente con relación al proyecto propuesto se muestra en el Apéndice A. Mediante este análisis se determinará si es necesario proveer medidas de mitigación en el proyecto propuesto.

2.5.1 Modelo de Predicción de Niveles de Ruido

Para predecir los niveles de ruido para las condiciones de tránsito proyectadas se utilizó el modelo de computadora "Stamina 2.0" de la "Federal Highway Administration" (FHWA, versión 3, marzo 1983). El programa "Stamina 2.0" toma en consideración varios parámetros que afectan la intensidad del ruido, tales como el número total de vehículos, por ciento de vehículos livianos y pesados, distancia entre el receptor y la fuente de ruido, tipo de superficie reflectora y las barreras entre el receptor y la fuente. La localización de la carretera y de los receptores es

definida por coordenadas. Se ubicó la Carretera PR-957 con respecto al proyecto para definir las distancias y las diferencias en elevaciones del proyecto con respecto a la carretera (ver Apéndice A y Apéndice D). El análisis se realizó considerando todo el tránsito en una dirección, según los datos provistos por la ACT. Como se indicó anteriormente, la carretera PR-185 no fue incluida en el análisis debido a su distancia del proyecto.

Las condiciones de tránsito críticas existentes y futuras deben obtenerse de los datos de tránsito para la Carretera PR-957. Los resultados del programa "Stamina 2.0" son presentados en términos de L_{eq} y L_{10}.

2.5.2 Datos de Tránsito

Los datos de tránsito requeridos por el modelo de predicción de ruido fueron obtenidos del Área de Programación y Estudios Especiales de la ACT. Los datos de tránsito fueron provistos para el Año 1999. Para la condición futura o crítica se hizo una presunción y se duplicó el volumen de tránsito. Entre los datos provistos por la ACT se incluyen los valores de tránsito diario promedio (AADT), porcentaje del AADT en la hora de diseño (K), porcentaje de camiones (T) con relación al AADT, distribución direccional (D) y volumen de diseño a un Nivel de Servicio C (LOS = C). Copia de los datos de tránsito provistos por la ACT se incluye en el Apéndice C.

Los datos de tránsito utilizados para el análisis de ruido a ser producido por la Carretera PR-957 son los siguientes:

- AADT = 2,500 vpd (Año 1999, se aumentó en 100% para condición crítica = 5,000 vpd)
- Porciento de AADT en la hora pico = 9%
- Distribución direccional = 100%
- Porciento de camiones = 2% (asumido)
- Velocidad de 35 MPH (56 KPH)

Los cómputos de los parámetros requeridos por el modelo se incluyen como Apéndice D, para el Año 1999 y la condición crítica asumida.

2.5.3 Resultados del Modelo y Análisis de Resultados

El programa "Stamina 2.0" fue ejecutado para estimar los niveles de ruido a ser producidos en el proyecto propuesto por el tránsito de la Carretera PR-957. Basado en los resultados del modelo, se determinará si medidas de mitigación serán necesarias para el proyecto propuesto. Los resultados del modelo se compararon con los criterios utilizados por la FHWA.

Para el análisis con el programa "Stamina 2.0" se simularon como receptores aquellos solares más cercanos a la carretera (ver Apéndice E). Se analizaron aproximadamente 2.4 kilómetros de la carretera y se establecieron 19 puntos receptores asociados con las unidades de vivienda propuestas (R-1 hasta R-19). Se utilizaron las elevaciones del plano topográfico preparado para el proyecto propuesto.

La localización de los receptores utilizados en el análisis con el modelo de ruido se muestra en el Apéndice D. En los receptores la elevación fue subida 1.5 metros sobre el nivel de terreno existente, considerando esto como la altura promedio de una persona que esté localizada en el lugar del receptor.

Los resultados del modelo sobre los niveles de ruido a que estarían expuestas las residencias más cercanas a la carretera se presentan en el Apéndice E y se resumen en la Tabla 2. Los resultados se muestran para las condiciones de tránsito para el año 1999 y la condición crítica. Estos resultados son presumiendo que no habrá ningún tipo de muro o barrera entre la carretera y los receptores. Como se muestra en el Apéndice E y la Tabla 2, los niveles de ruido estimados en los receptores cercanos a la Carretera PR-957 se encuentran por debajo del nivel de 66 dBA. Considerando la condición futura el nivel de ruido máximo computado fue en el receptor R-4, el cual será de 63.8 dbA, por debajo del estándar de la ACT. **Los niveles de ruido computados se encuentran por debajo del nivel requerido por la ACT para la construcción de una barrera de atenuación de sonido para el proyecto.**

3. CONCLUSIONES

3.1 Conclusiones

- De acuerdo a las observaciones de campo la fuente principal de ruido en el proyecto propuesto lo es el tránsito en la Carretera PR-957.

- Como se muestra en el Apéndice E y la Tabla 2, los niveles de ruido estimados en los receptores más cercanos a la Carretera PR-957 se encuentran por debajo del nivel de 66 dBA, para las condiciones de tránsito existentes y futuras.

- Los niveles de ruido computados se encuentran por debajo del nivel requerido por la ACT para la construcción de una barrera de atenuación de sonido para el proyecto, por lo que esta no es necesaria para el proyecto residencial "Campo Rico New Castle".

HÉCTOR W. VEGA PACHECO
INGENIERO
LICENCIADO
LIC. #10142
PUERTO RICO

Ing. Héctor W. Vega Pacheco
Licencia Núm. 10142

REFERENCIAS

Junta de Calidad Ambiental, "Reglamento Para el Control de la Contaminación por Ruido", 1987

U.S. Department of Transportation, "Highway Noise Fundamentals", Documents 1 through 5, September 1980

U.S. Department of Transportation, "Highway Noise", FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108, December 1978

TABLAS

TABLA 1

NIVEL DE EMISIONES DE RUIDO (dBA)
LIMITES PERMITIDOS POR LA JCA
NIVEL DE SONIDO EXCEDIDO EN 10% DEL PERIODO DE MEDICION (L_{10})

FUENTE EMISORA	ZONAS RECEPTORAS							
	ZONA I (RES.)		ZONA II (RES.)		ZONA III (IND.)		ZONA IV (TRANQ.)	
	DIURNO	NOCTURNO	DIURNO	NOCTURNO	DIURNO	NOCTURNO	DIURNO	NOCTURNO
ZONA I (RES.)	60	50	65	55	70	60	50	45
ZONA II (COM.)	65	50	70	60	75	65	50	45
ZONA III (IND.)	65	50	70	65	75	75	50	45

Ajuste por ruido ambiental:

A. Si el ruido ambiental es menor que el nivel establecido en la Tabla 2 por más de 5 dBA, aplicarán los límites establecidos en la Tabla 3.
B. Si el ruido ambiental es menor que el nivel establecido en la Tabla 2 por menos de 5 dBA, se le añadirán 3 dBA a los límites de la Tabla 3.
C. Si el ruido ambiental es mayor que el nivel establecido en la Tabla 2, se le añadirán 5 dBA a los límites de la Tabla 3.

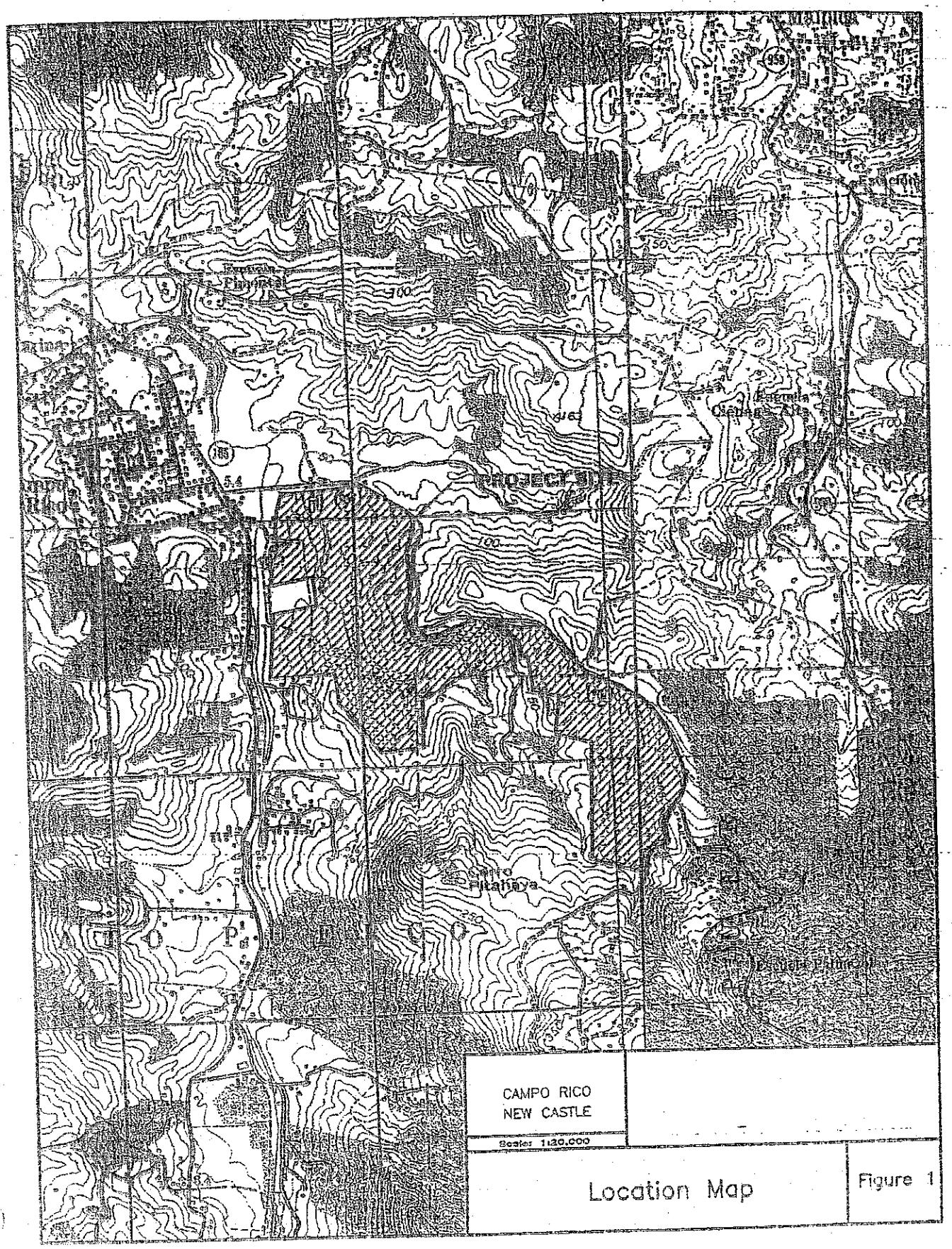
Fuente: Reglamento para el Control de la Contaminación por Ruido (JCA, 1987)

TABLA 2
NIVELES DE RUIDO ESTIMADOS
PROYECTO CAMPO RICO NEW CASTLE - SIN BARRERA DE MITIGACION
TRANSITO VEHICULAR EN CARRETERA PR-957

RECEPTOR	DESCRIPCION	DISTANCIA APROX. DESDE EL CENTRO DE CARRETERA PR-957 (metros)	NIVEL DE RUIDO ESTIMADO Condición de Tránsito Año 1999	NIVEL DE RUIDO ESTIMADO Condición de Tránsito Crítica Asumida
			(L_{eq}, dbA)	(L_{eq}, dbA)
R-1	Solar	13	57.6	60.6
R-2	Solar	13	60.5	63.5
R-3	Solar	14	58.7	61.8
R-4	Solar	13	60.7	63.8
R-5	Solar	14	55.7	58.8
R-6	Solar	25	54.4	57.4
R-7	Apartamento	19	55.8	58.8
R-8	Apartamento	24	55.9	58.9
R-9	Apartamento	17	57.5	60.6
R-10	Apartamento	26	54.8	57.8
R-11	Apartamento	12	58.9	61.9
R-12	Apartamento	15	57.8	60.8
R-13	Solar	12	58.0	61.1
R-14	Solar	54	49.5	52.5
R-15	Apartamento	60	50.4	51.4
R-16	Apartamento	31	51.0	54.0
R-17	Apartamento	65	46.8	49.9
R-18	Apartamento	40	51.5	54.5
R-19	Apartamento	50	43.2	46.3

- Resultados del modelo "Stamina 2.0" de la Administración Federal de Carreteras (ver Apéndice D)

FIGURAS



Location Map

Figure 1

APENDICES

APENDICE A

TOPOGRAFIA, CONFIGURACION DEL PROYECTO Y LOCALIZACION DE CARRETERA PR-957

APENDICE B

CARTA DE LA ACT SOLICITANDO ESTUDIO DE RUIDO

Ref.C#06-00014281

5 de diciembre de 2008

Arq. Federico Del Monte
Secretario Auxiliar
Planificación y Servicios Técnicos
Departamento de la Vivienda
PO Box 21365
San Juan, PR 00928-1365

DECLARACIÓN DE IMPACTO AMBIENTAL PRELIMINAR (DIA-P)
PROYECTO RESIDENCIAL
"CAMPO RICO NEW CASTLE"
(255 RESIDENCIAS UNIFAMILIARES, 263 VIVIENDAS DEL TIPO HILERAS
570 VIVIENDAS MULTIFAMILIARES
Y 160,500 PIES CUADRADOS DE ÁREA COMERCIAL)
CARRETERA PR-957, KM 0.20
BARRIO HATO PUERCO, CANÓVANAS
CONSULTA NÚM.: 2005-00-0872-JPU
CASO NÚM.:07XJ2-CET00-02877

Estimado arquitecto Del Monte:

Hacemos referencia a su comunicación del 10 de septiembre de 2008, relacionada con este asunto.

La Oficina de Estudios Ambientales de esta Autoridad evaluó el documento ambiental mencionado en el asunto e informó que el proponente deberá someter a esta Autoridad un estudio de sonido ambiental en donde se determinen los niveles de ruido al que estarán expuestas las viviendas debido al tránsito actual y proyectado a 20 años en la Carretera PR-957 y proveer como parte del desarrollo las medidas de mitigación que resulten necesarias construir para no sobrepasar los niveles de ruido permitidos por la reglamentación vigente.

El Área de Diseño de esta Autoridad evaluó el estudio hidrológico-hidráulico (H-H) incluido en el documento ambiental del proyecto mencionado en el asunto e informó que se deberán cumplir con las siguientes recomendaciones y requisitos:

1. Se deberá extender el análisis hasta el cruce de la obra hidráulica existente en la Carretera PR-957. Se deben tomar las transversales del área para evidenciar el efecto sobre la obra de la Carretera PR-957 en el modelo.

2. Se deberá revisar la sección transversal #14, en donde se presentó un aumento en el nivel base de 1.43 metros.

3. Se deberán revisar los coeficientes de contracción y expansión en todas las secciones inmediatas aguas arriba y aguas abajo de los puentes propuestos. Dado que éstos representan una contracción significativa se deberá utilizar 0.3 y 0.5.

4. Se deberá someter a esta Autoridad la carta de endoso o aprobación del Departamento de Recursos Naturales y Ambientales al estudio H-H.

La División de Estudios de Tránsito de esta Área evaluó el estudio de tránsito incluido en dicha Declaración de Impacto Ambiental preliminar e informó que para poder continuar con las evaluación del mismo se deberán cumplir con las siguientes recomendaciones y requisitos:

1. Los conteos vehiculares no pueden ser mayor de un año (1), a la fecha que el reporte es recibido en esta Autoridad.

2. Se deberán realizar conteos vehiculares en las rampas de acceso a la Carretera PR-66, existentes en este sector.

3. Se deberán presentar los resultados de los análisis de capacidad (nivel de servicio, demora promedio y cola máxima) por carril o grupo de carriles, por acceso y por intersección.

4. Se deberá incluir el itinerario de construcción del proyecto, por fases de construcción hasta el año estimado de apertura del proyecto completo. Además, se deberá incluir el número y el tipo de unidades de vivienda a ser construidas por fases y del área comercial.

5. Si del análisis se concluye que se necesitan mejoras geométricas o la instalación de un sistema de semáforos en las intersecciones evaluadas, dichas mejoras se deberán describir claramente e ilustrarlas en los planos. Además, se deberá incluir los análisis operacionales de dicha mejoras.

6. Se deberán someter los archivos originales de las corridas electrónicas del programa utilizado para los análisis de capacidad.

7. Se deberán presentar fotos de los accesos de las intersecciones evaluadas e identificarlas a que accesos y/o intersección pertenecen.

8. Se deberán someter los planos que incluyan las mejoras propuestas en el estudio de tránsito, para la evaluación y recomendación correspondiente.

Además, se deberán cumplir con las siguientes recomendaciones y requisitos:

1. La media sección futura de la Carretera PR-185 será de 10.30 metros, medidos desde el eje central de la misma. No obstante, si en el estudio se determina que es necesario ampliar la misma, se deberán construir dichas mejoras recomendadas como parte del proyecto mencionado en el asunto.

Se deberán cumplir con los demás comentarios informados en nuestra comunicación del 29 de mayo de 2007, dirigida a la Junta de Planificación, no enmendados por esta carta, las cuales continúan vigentes.

El proponente deberá someter a la Oficina de Control de Accesos de esta Área dos copias del estudio de tránsito corregido, dos copias del estudio de sonido ambiental y cuatro copias de los planos corregidos, de acuerdo a nuestros comentarios y a las recomendaciones de dichos estudios, para la evaluación correspondiente. Las mismas deberán estar firmadas y selladas por un profesional colegiado autorizado.

Esta comunicación tiene vigencia de un año, no constituye una autorización ni endoso para comenzar obra de construcción alguna y aplica a la Declaración de Impacto Ambiental Preliminar del proyecto "Campo Rico New Castle" de 255 residencias unifamiliares, 263 vivienda de tipo hileras, 570 viviendas multifamiliares y 160,500.00 pies cuadrados de área comercial, a construirse en la propiedad de referencia. Cualquier otro proyecto a desarrollarse en esta propiedad, deberá ser sometido a esta Autoridad para la evaluación y comentarios que apliquen.

Para cualquier aclaración o información adicional relacionada con este asunto, puede comunicarse con la División de Asesoramiento al Proponente de la Oficina de Control de Accesos de esta Área al 787-721-8787, extensión 2805, haciendo referencia al número de control de esta carta. Las llamadas y visitas serán atendidas los días laborables de 8:30 a 11:00 de la mañana y de 1:00 a 2:30 de la tarde.

Cordialmente,

Samuel Forestier Castillo
Director
Área de Ingeniería de Tránsito y Operaciones

5005-JZH-MDR-GAG-wrs
Ref.C#06-0001428!

Copia: Sr. Teófilo de Jesús Nieves
Director
Área de Asesoramiento Científico
Junta de Calidad Ambiental
PO Box 11488
San Juan, PR 00910

APENDICE C

DATOS DE TRANSITO PROVISTOS POR LA ACT

ÁREA DE PROGRAMACIÓN Y ESTUDIOS ESPECIALES
OFICINA DE RECOPILACIÓN DE DATOS Y ANÁLISIS DE TRÁNSITO
DATOS DE TRÁNSITO

Núm	PR	Km	Municipio	Descripción	Año	AADT[1]	K[2]	D[3]	T[4]
1	957	3.10	Canóvanas	Entre PR-185 y PR-9957	1999	2,500	9%	100%	—
2	185	6.75	Canóvanas	Entre PR-957 y PR-186	2007	13,218	7%	61%	8%

[1]Tránsito Promedio Anual Diario (AADT, por sus siglas en inglés), total en ambas direcciones.
[2]Porcentaje del AADT, en la hora de diseño.
[3]Porcentaje direccional en la hora de diseño.
[4]Porcentaje de camiones en la hora de diseño.

APENDICE D

COMPUTOS DE PARAMETROS PARA MODELO DE PREDICCION DE NIVELES DE RUIDO Y LOCALIZACION DE RECEPTORES

Estudio Ruido Ampliación New Castle
Canóvanas, PR

AADT (1999) = 2,500 vpd

K = 9% D = 100%

T = ?, Asumir 2%

V = 35 MPH (56 KPH)

ADDT (Futuro) = 5,000 vpd (Asumido)

Distribución vehicular

1999		
A	MT	H
220	3	2
Futuro		
440	6	4

Estudio Ruido Campo Rio New Castle

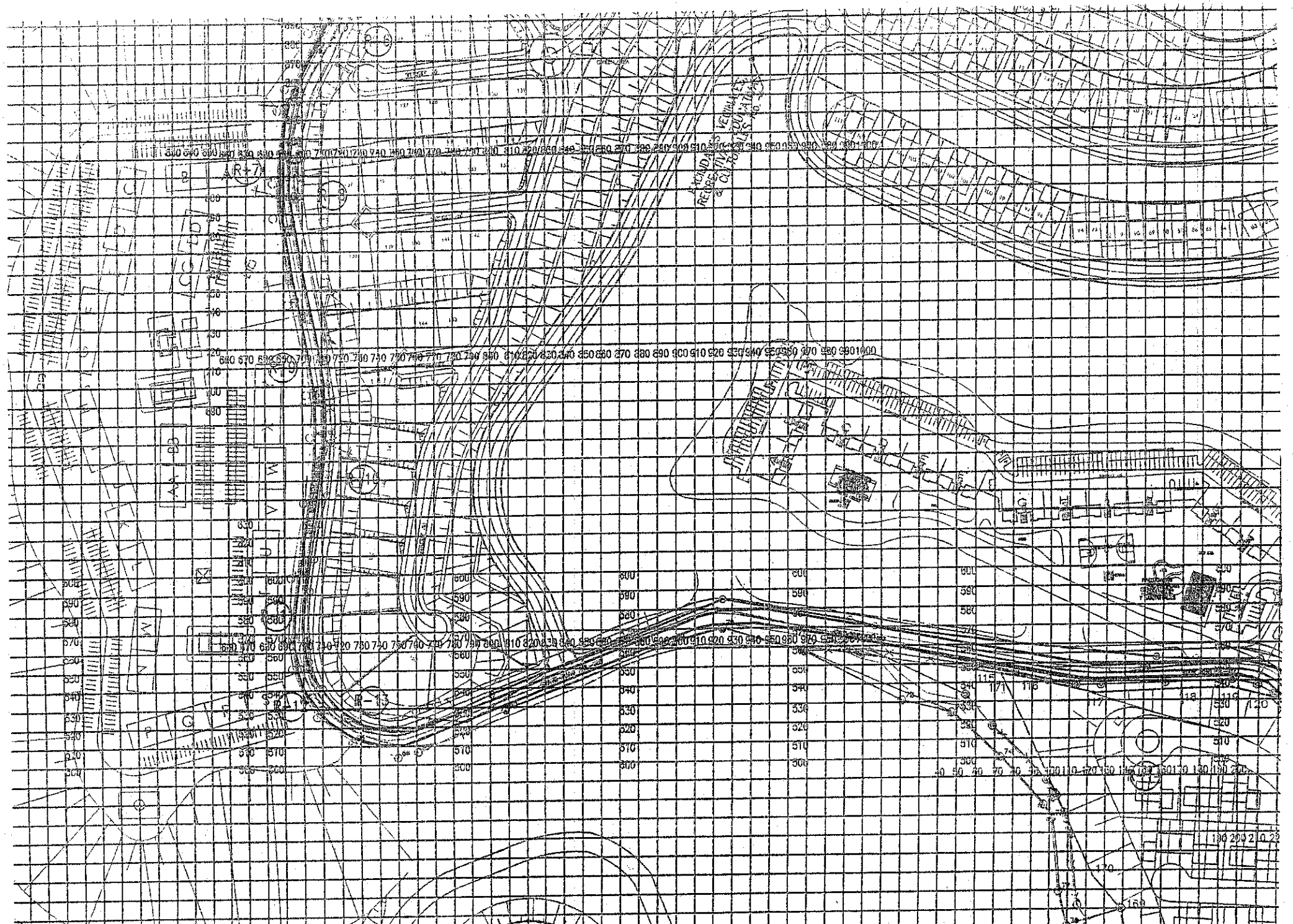
Coordenadas PR-957

	X	Y	Z
1)	120	1085	48
2)	280	1100	49
3)	370	1110	50
4)	430	1115	52
5)	460	1115	54
6)	480	1115	55
7)	515	1115	56
8)	550	1090	57
9)	580	1000	60
10)	670	1015	69
11)	700	985	73
12)	720	960	77
13)	725	930	80
14)	722	900	83
15)	695	850	88
16)	690	820	91
17)	693	780	95
18)	700	740	100
19)	710	695	104
20)	708	660	107
21)	700	590	113
22)	697	560	115
23)	703	540	116
24)	720	528	118
25)	740	514	120
26)	760	517	125
27)	842	548	130
28)	920	577	135
29)	940	578	145
30)	1060	555	148
31)	1120	545	148
32)	1200	545	150
33)	1220	538	150
34)	1255	495	155
35)	1300	455	160
36)	1330	420	165
37)	1370	365	170

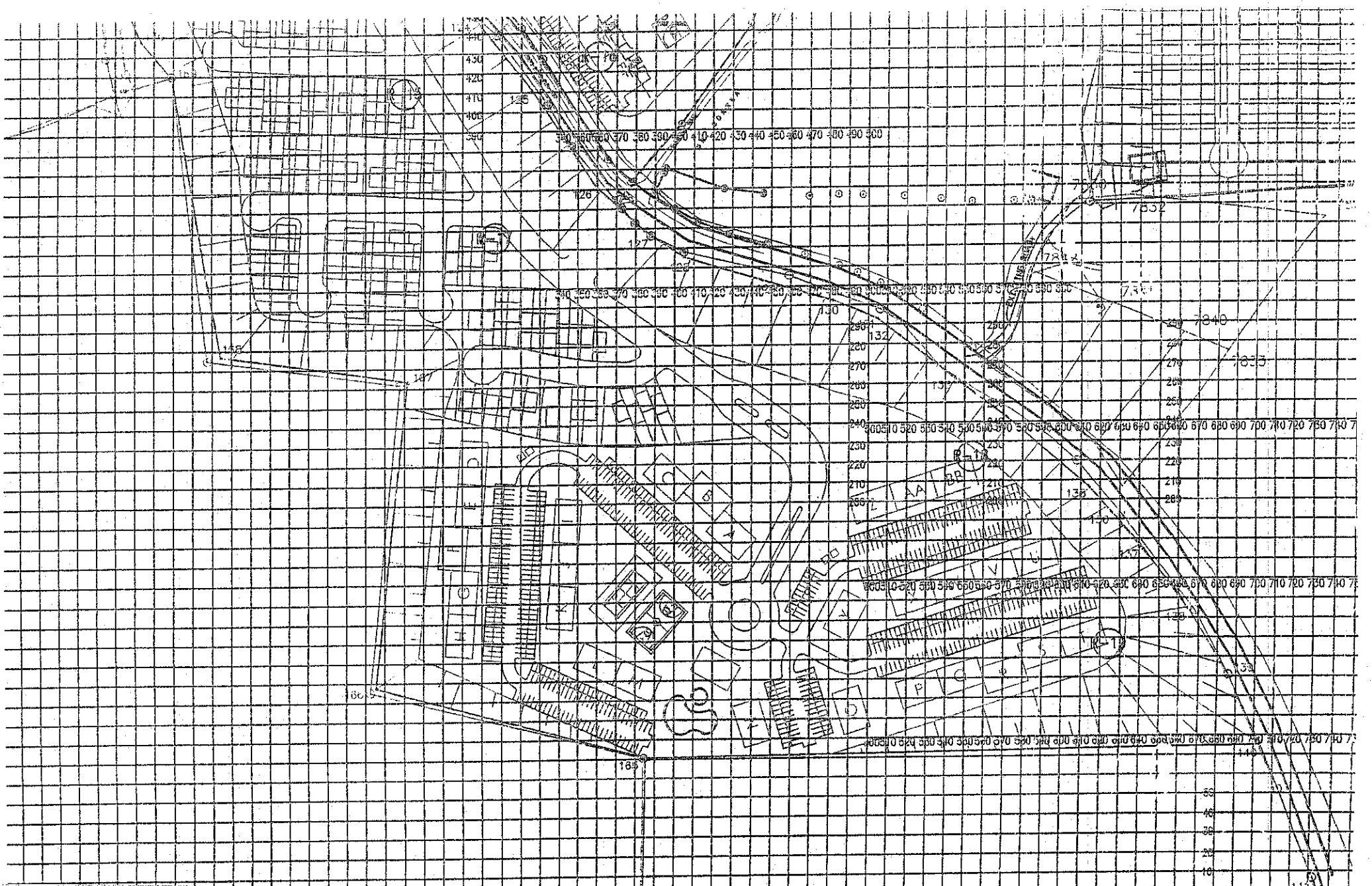
X	Y	Z
1410	335	175
1490	313	185
1510	302	190
1596	240	200
1620	220	20
1660	170	200
1690	120	215
1710	80	220
1740	0	230

Receptores

	X	Y	Z
(1) -	350	1095	51.5
(2) -	435	1105	53.5
(3) -	585	1083	61.5
(4)	630	1028	66
(5)	730	980	78.5
(6)	740	880	84.5
(7)	670	815	92.5
(8)	713	800	103.5
(9)	690	710	108.5
(10)	732	650	116.5
(11)	686	580	117.5
(12)	692	532	119.5
(13)	735	535	151.5
(14)	1150	490	190
(15)	1260	410	200
(16)	1360	425	210
(17)	1308	338	
(18)	1553	221	202
(19)	1523	130	212



PHASE III
584 UNITS
AREA=164.741006 SQ.MI.
39.3703 CDAS



APENDICE E

CORRIDA DEL PROGRAMA STAMINA 2.O
ANALISIS DE RUIDO EN RECEPTORES
A LO LARGO DE LA CARRETERA PR-957
CONDICIONES DE TRANSITO AÑO 1999 Y CONDICION CRITICA ASUMIDA

R95799.STA

1999 AADT

STAMINA 2.0/BCR
FHWA VERSION 3 (MARCH 1983)
TRAFFIC NOISE PREDICTION MODEL

(INPUT UNITS- METRIC , OUTPUT UNITS- METRIC)

NOISE STUDY CAMPO RICO NEW CASTLE ROAD PR-957, CANOVANAS

PROGRAM INITIALIZATION PARAMETERS

HEIGHT	CODE	DESCRIPTION
0.00	1	RECEIVER HEIGHT ADJUSTMENT
1.00	2	A-WEIGHTED SOUND LEVEL ONLY
0.00	3	HEIGHT ADJUSTMENT FOR PASSENGER CARS (CARS)
2.44	4	HEIGHT ADJUSTMENT FOR HEAVY TRUCKS (HT)
0.70	5	HEIGHT ADJUSTMENT FOR MEDIUM TRUCKS (MT)

ROADWAY 1 PR957(A)

VEHICLE TYPE	VEHICLES/HOUR	SPEED
CARS	220.	56.
HT	2.	56.
MT	3.	56.

	COORDINATES			
	X	Y	Z	GRADE
PT1	120.	1085.	48.	
PT2	280.	2000.	49.	
PT3	320.	1110.	50.	
PT4	430.	1115.	52.	
PT5	460.	1115.	54.	
PT6	480.	1115.	55.	
PT7	515.	1105.	56.	
PT8	550.	1090.	57.	
PT9	580.	1070.	60.	
PT10	670.	1015.	69.	
PT11	700.	985.	73.	
PT12	720.	960.	77.	
PT13	725.	930.	80.	
PT14	722.	900.	83.	
PT15	695.	850.	88.	

ROADWAY 2 PR957(B)

VEHICLE TYPE	VEHICLES/HOUR	SPEED
CARS	220.	56.
HT	2.	56.
MT	3.	56.

	COORDINATES			
	X	Y	Z	GRADE
PT15	695.	850.	88.	
PT16	690.	820.	91.	
PT17	693.	780.	95.	
PT18	700.	740.	100.	
PT19	710.	695.	104.	
PT20	708.	660.	107.	
PT21	700.	590.	113.	
PT22	697.	560.	115.	
PT23	703.	540.	113.	
PT24	720.	523.	118.	
PT25	740.	514.	120.	
PT26	760.	517.	125.	
PT27	842.	548.	130.	
PT28	920.	577.	135.	
PT29	940.	578.	145.	

ROADWAY 3 PR957(C)

VEHICLE TYPE	VEHICLES/HOUR	SPEED
CARS	220.	56.
HT	2.	56.
MT	3.	56.

	COORDINATES			
	X	Y	Z	GRADE
PT30	1060.	555.	148.	
PT31	1120.	545.	148.	
PT32	1200.	545.	150.	
PT33	1220.	538.	150.	
PT34	1255.	495.	155.	
PT35	1300.	455.	160.	
PT36	1330.	420.	165.	
PT37	1370.	365.	170.	
PT38	1410.	335.	175.	
PT39	1490.	313.	185.	
PT40	1510.	302.	190.	
PT41	1596.	240.	200.	
PT42	1620.	220.	200.	
PT43	1660.	170.	200.	
PT44	1690.	120.	215.	

RECEPTORS ALONG PR-9

	COORDINATES		
	X	Y	Z
R-1	350.	1095.	51.
R-2	435.	1105.	53.
R-3	585.	1083.	61.
R-4	630.	1028.	66.
R-5	730.	980.	78.
R-6	740.	880.	84.
R-7	670.	815.	92.
R-8	713.	800.	92.
R-9	690.	710.	105.
R-10	732.	650.	108.
R-11	686.	580.	116.
R-12	692.	532.	117.
R-13	735.	535.	119.
R-14	1150.	490.	151.
R-15	1260.	410.	190.
R-16	1360.	425.	200.
R-17	1308.	338.	210.
R-18	1553.	221.	202.
R-19	1523.	130.	212.

ALPHA FACTORS - RECEIVER ACROSS,ROADWAY DOWN

```
1 * 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
    0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
2 * 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
    0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
3 * 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
    0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
```

SHIELDING FACTORS - RECEIVER ACROSS,ROADWAY DOWN

```
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 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
    0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
    0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

RECEIVER	LEQ(H)	L10
R-1	57.6	60.0

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT

1	2	3
	48.3	56.9

RECEIVER	LEQ(H)	L10
R-2	60.5	62.6

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT					
1	2	3	4	5	6
	41.2	55.6	58.2	46.3	43.0

RECEIVER	LEQ(H)	L10
R-3	58.7	61.0

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT			
1	7	8	9
	45.0	55.9	54.8

RECEIVER	LEQ(H)	L10
R-4	60.7	62.9

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT		
1	9	10
	60.5	44.1

RECEIVER	LEQ(H)	L10
R-5	55.7	58.2

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT					
1	9	10	11	12	13
	41.1	46.8	53.1	48.9	41.6

RECEIVER	LEQ(H)	L10
R-6	54.4	57.1

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT			
1	12	13	14
	41.3	47.6	52.0
2	1		
	41.4		

RECEIVER	LEQ(H)	L10
R-17	46.8	50.1

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT
3	7
	42.2

RECEIVER	LEQ(H)	L10
R-18	51.5	54.4

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT		
3	11	12	13
	49.5	43.3	41.4

RECEIVER	LEQ(H)	L10
R-19	43.2	46.7

NO ROADWAY SEGMENTS EXCEED 40.0 DBA

100% more traffic
Future Cond

STAMINA 2.0/BCR
FHWA VERSION 3 (MARCH 1983)
TRAFFIC NOISE PREDICTION MODEL

(INPUT UNITS- METRIC , OUTPUT UNITS- METRIC)

NOISE STUDY CAMPO RICO NEW CASTLE ROAD PR-957, CANOVANAS

PROGRAM INITIALIZATION PARAMETERS

HEIGHT	CODE	DESCRIPTION
0.00	1	RECEIVER HEIGHT ADJUSTMENT
1.00	2	A-WEIGHTED SOUND LEVEL ONLY
0.00	3	HEIGHT ADJUSTMENT FOR PASSENGER CARS (CARS)
2.44	4	HEIGHT ADJUSTMENT FOR HEAVY TRUCKS (HT)
0.70	5	HEIGHT ADJUSTMENT FOR MEDIUM TRUCKS (MT)

ROADWAY 1 PR957(A)

VEHICLE TYPE	VEHICLES/HOUR	SPEED
CARS	440.	56.
HT	4.	56.
MT	6.	56.

	COORDINATES			GRADE
	X	Y	Z	
PT1	120.	1085.	48.	
PT2	280.	2000.	49.	
PT3	320.	1110.	50.	
PT4	430.	1115.	52.	
PT5	460.	1115.	54.	
PT6	480.	1115.	55.	
PT7	515.	1105.	56.	
PT8	550.	1090.	57.	
PT9	580.	1070.	60.	
PT10	670.	1015.	69.	
PT11	700.	985.	73.	
PT12	720.	960.	77.	
PT13	725.	930.	80.	
PT14	722.	900.	83.	
PT15	695.	850.	88.	

ROADWAY 2 PR957(B)

VEHICLE TYPE	VEHICLES/HOUR	SPEED
CARS	440.	56.
HT	4.	56.
MT	6.	56.

	COORDINATES			GRADE
	X	Y	Z	
PT15	695.	850.	88.	
PT16	690.	820.	91.	
PT17	693.	780.	95.	
PT18	700.	740.	100.	
PT19	710.	695.	104.	
PT20	708.	660.	107.	
PT21	700.	590.	113.	
PT22	697.	560.	115.	
PT23	703.	540.	113.	
PT24	720.	523.	118.	
PT25	740.	514.	120.	
PT26	760.	517.	125.	
PT27	842.	548.	130.	
PT28	920.	577.	135.	
PT29	940.	578.	145.	

ROADWAY 3 PR957(C)

VEHICLE TYPE	VEHICLES/HOUR	SPEED
CARS	440.	56.
HT	4.	56.
MT	6.	56.

	COORDINATES			GRADE
	X	Y	Z	
PT30	1060.	555.	148.	
PT31	1120.	545.	148.	
PT32	1200.	545.	150.	
PT33	1220.	538.	150.	
PT34	1255.	495.	155.	
PT35	1300.	455.	160.	
PT36	1330.	420.	165.	
PT37	1370.	365.	170.	
PT38	1410.	335.	175.	
PT39	1490.	313.	185.	
PT40	1510.	302.	190.	
PT41	1596.	240.	200.	
PT42	1620.	220.	200.	
PT43	1660.	170.	200.	
PT44	1690.	120.	215.	

RECEPTORS ALONG PR-9

	COORDINATES		
	X	Y	Z
R-1	350.	1095.	51.
R-2	435.	1105.	53.
R-3	585.	1083.	61.
R-4	630.	1028.	66.
R-5	730.	980.	78.
R-6	740.	880.	84.
R-7	670.	815.	92.
R-8	713.	800.	92.
R-9	690.	710.	105.
R-10	732.	650.	108.
R-11	686.	580.	116.
R-12	692.	532.	117.
R-13	735.	535.	119.
R-14	1150.	490.	151.
R-15	1260.	410.	190.
R-16	1360.	425.	200.
R-17	1308.	338.	210.
R-18	1553.	221.	202.
R-19	1523.	130.	212.

ALPHA FACTORS - RECEIVER ACROSS, ROADWAY DOWN

```
1 * 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
    0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
2 * 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
    0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
3 * 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
    0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
```

SHIELDING FACTORS - RECEIVER ACROSS, ROADWAY DOWN

```
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 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
    0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
3 * 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
    0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

RECEIVER	LEQ(H)	L10
R-1	60.6	63.5

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT

1	1	2	3	4
	40.5	51.3	59.9	40.1

RECEIVER	LEQ(H)	L10
R-2	63.5	66.1

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT

1	2	3	4	5	6	7
	44.2	58.6	61.2	49.3	46.0	41.1

RECEIVER	LEQ(H)	L10
R-3	61.8	64.5

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT

1	6	7	8	9
	41.6	48.1	58.9	57.8

RECEIVER	LEQ(H)	L10
R-4	63.8	66.4

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT

1	8	9	10	11
	42.7	63.5	47.1	40.3

RECEIVER	LEQ(H)	L10
R-5	58.8	61.7

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT

1	9	10	11	12	13	14
	44.1	49.8	56.1	51.9	44.6	42.0

RECEIVER	LEQ(H)	L10
R-6	57.4	60.5

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT			
1	11	12	13	14
	40.3	44.3	50.6	55.0
2	1	2		
	44.5	41.7		

RECEIVER	LEQ(H)	L10
R-7	58.8	61.8

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT			
1	14			
	47.2			
2	1	2	3	4
	53.5	55.8	47.0	41.3

RECEIVER	LEQ(H)	L10
R-8	58.9	62.0

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT			
1	14			
	46.1			
2	1	2	3	4
	49.9	56.5	50.9	43.9

RECEIVER	LEQ(H)	L10
R-9	60.6	63.4

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT				
2	2	3	4	5	6
	42.2	49.3	59.1	51.8	46.0

RECEIVER	LEQ(H)	L10
R-10	57.8	60.9

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT				
2	4	5	6	7	12
	45.6	52.0	55.2	41.9	40.5

RECEIVER	LEQ(H)	L10
R-11	61.9	64.6

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT							
	5	6	7	8	9	10	12
2	40.4	54.8	60.1	50.8	45.6	41.4	42.1

RECEIVER	LEQ(H)	L10
R-12	60.8	63.5

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT							
	6	7	8	9	10	11	12
2	45.0	49.5	56.2	57.1	48.7	43.6	44.2

RECEIVER	LEQ(H)	L10
R-13	61.1	64.1

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT								
	6	7	8	9	10	11	12	13
2	44.5	46.4	48.6	54.5	56.8	53.2	51.0	40.1

RECEIVER	LEQ(H)	L10
R-14	52.5	56.0

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT					
	1	2	3	4	5
3	44.9	49.5	40.6	43.2	40.1

RECEIVER	LEQ(H)	L10
R-15	51.4	54.9

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY SEGMENT				
	4	5	6	7
3	41.0	45.7	45.6	44.0

RECEIVER	LEQ(H)	L10
R-16	54.0	57.4

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT				
3	5	6	7	8	9
	42.5	47.4	51.0	43.8	40.9

RECEIVER	LEQ(H)	L10
R-17	49.9	53.4

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT			
3	6	7	8	9
	40.5	45.3	42.9	40.3

RECEIVER	LEQ(H)	L10
R-18	54.5	57.8

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT			
3	9	11	12	13
	40.1	52.5	46.3	44.4

RECEIVER	LEQ(H)	L10
R-19	46.3	49.8

ROADWAY SEGMENT SOUND LEVEL CONTRIBUTIONS EXCEEDING 40.0 DBA

ROADWAY	SEGMENT
3	11
	40.9