HEC-RAS Version 3.0.1 Mar 2001
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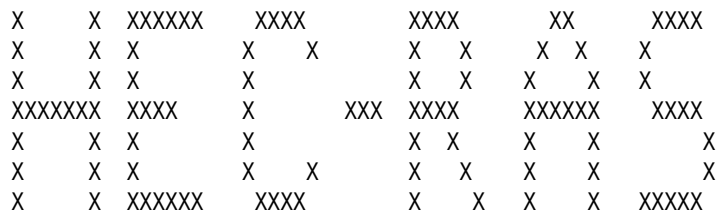

PROJECT DATA
Project Title: TK-3-28-05
Project File : tk.prj
Run Date and Time: 12/5/2005 2:21:53 PM

Project in English units

Project Description:
& R   SEDGWICK COUNTY FIS
      100-YR BACKWATER ANALYSIS
      MIDDLE
FORK CALFSKIN CREEK
      SEDGWICK COUNTY FIS
      100-YR BACKWATER
ANALYSIS
      MIDDLE FORK CALFSKIN CREEK

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PLAN DATA

Plan Title: Plan 08
Plan File : f:\HYDRO\Projects\Shadow Woods\hecras\Floodway\FWtrial\tk.p08

           Geometry Title: tk3-28
           Geometry File : f:\HYDRO\Projects\Shadow Woods\hecras\Floodway\FWtrial\tk.g05

           Flow Title    : Imported Flow 02
           Flow File     : f:\HYDRO\Projects\Shadow Woods\hecras\Floodway\FWtrial\tk.f02

Plan Summary Information:
Number of:  Cross Sections =   35    Mulitple Openings =    0
            Culverts       =    3    Inline Weirs      =    0
            Bridges        =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: Between every coordinate point (HEC2 Style)
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

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

River = RIVER-1          Reach = Reach-1
RS      Profile           Method  Value1  Value2
1.913   PF 2                   1    5500    5680
1.885   PF 2                   1    5400    5640
1.866   PF 2                   1    5370    5650
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1.858	PF 2	1	5330.2	5601.6
1.793	PF 2	1	5270	5427
1.736	PF 2	1	5250	5355
1.655	PF 2	1	5300	5500
1.595	PF 2	1	5170	5495
1.576	PF 2	1	5200	5450
1.565	PF 2	1	5200	5450
1.525	PF 2	1	5165	5240
1.493	PF 2	1	5130	5250
1.458	PF 2	1	5295	5450
1.420	PF 2	1	5175	5500
1.385	PF 2	1	5190	5595
1.351	PF 2	1	5200	5355
1.305	PF 2	1	5227	5799
1.269	PF 2	1	5529	5685
1.263	PF 2	1	5560	5690
1.239	PF 2	1	5685	5720
1.232	PF 2	1	5538	5577
1.192	PF 2	1	5126	5241
1.173	PF 2	1	5104.2	5334
1.147	PF 2	1	5265	5383
1.103	PF 2	1	5145	5682
1.071	PF 2	1	5200	5700
.963	PF 2	1	5200	6300
.859	PF 2	1	5750	5950
0.854	PF 2	1	5800	6069.9
0.848	PF 2	1	5880	6140.9
0.845	PF 2	1	5945	6060
0.83	PF 2	1	10280	10360
0.42	PF 2	1	10330	10390
0.07	PF 2	1	10260	10525
0	PF 2	1	10334	10650

FLOW DATA

Flow Title: Imported Flow 02
Flow File : f:\HYDRO\Projects\Shadow Woods\hecras\Floodway\FWtrial\tk.f02

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2
RIVER-1	Reach-1	1.913	1140	1140

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1		Known WS = 1322.37
RIVER-1	Reach-1	PF 2		Known WS = 1323.37

GEOMETRY DATA

Geometry Title: tk3-28
Geometry File : f:\HYDRO\Projects\Shadow Woods\hecras\Floodway\FWtrial\tk.g05

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1.913

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1380.7	5038.3	1380.8	5100.6	1379.2	5150	1378.1	5173.6	1377.5
5197.8	1377.3	5250	1376.9	5300.9	1376.6	5350	1376.1	5400	1375.7
5450	1375.2	5486.6	1374.9	5500	1374.6	55201374.206		5520.3	1374.2
5528.8	1374.4	55501373.249		5560.1	1372.7	55701373.106		55801373.516	
5596.7	1374.2	5599.721373.835		5605.8	1373.1	5608 1373.81		5608.9	1374.1
5650.6	1374.6	5698.5	1375.7						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5550	.07	5580	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5550	5580	125	147.8	160	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1375.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1375.19	Reach Len. (ft)	125.00	147.80	160.00
Crit W.S. (ft)	1375.19	Flow Area (sq ft)	63.40	63.76	83.63
E.G. Slope (ft/ft)	0.031053	Area (sq ft)	63.40	63.76	83.63
Q Total (cfs)	1140.00	Flow (cfs)	301.03	393.94	445.04
Top Width (ft)	224.79	Top Width (ft)	98.57	30.00	96.22
Vel Total (ft/s)	5.41	Avg. Vel. (ft/s)	4.75	6.18	5.32
Max Chl Dpth (ft)	2.49	Hydr. Depth (ft)	0.64	2.13	0.87
Conv. Total (cfs)	6469.3	Conv. (cfs)	1708.3	2235.5	2525.5
Length Wtd. (ft)	146.52	Wetted Per. (ft)	98.61	30.03	96.46
Min Ch El (ft)	1372.70	Shear (lb/sq ft)	1.25	4.12	1.68
Alpha	1.03	Stream Power (lb/ft s)	5.92	25.43	8.94
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	47.36	88.32	17.89
C & E Loss (ft)	0.13	Cum SA (acres)	44.58	27.57	14.30

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
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: 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 #PF 2

E.G. Elev (ft)	1375.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1375.75	Reach Len. (ft)	125.00	147.80	160.00
Crit W.S. (ft)		Flow Area (sq ft)	80.70	80.70	139.94
E.G. Slope (ft/ft)	0.009298	Area (sq ft)	80.70	80.70	139.94
Q Total (cfs)	1140.00	Flow (cfs)	301.47	319.27	519.25
Top Width (ft)	180.00	Top Width (ft)	50.00	30.00	100.00
Vel Total (ft/s)	3.78	Avg. Vel. (ft/s)	3.74	3.96	3.71
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)	1.61	2.69	1.40
Conv. Total (cfs)	11822.6	Conv. (cfs)	3126.5	3311.1	5385.0
Length Wtd. (ft)	147.56	Wetted Per. (ft)	51.19	30.03	100.73
Min Ch El (ft)	1372.70	Shear (lb/sq ft)	0.92	1.56	0.81
Alpha	1.00	Stream Power (lb/ft s)	3.42	6.17	2.99

Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	23.64	96.21	7.76
C & E Loss (ft)	0.06	Cum SA (acres)	10.65	27.14	3.78

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: RIVER-1
REACH: Reach-1 RS: 1.885

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1381.1	5100	1377.9	5200	1376.9	5216	1376.8	5255.2	1374
5295.6	1373.7	5350	1374.9	54001374.566		5454.9	1374.2	5480	1369.5
5500	1369.5	5540	1369.5	5583.3	1369.5	5587.5	1369.5	5588	1369.5
5602.3	1369.5	5621.8	1372.9	56401373.781		5663.1	1374.9	5717.8	1378.1

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5400	.07	5640	.051

Bank Sta: Left	Right	Lengths: Left Channel		Right	Coeff Contr.	Expan.
5400	5640	90	100.32	120	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1375.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1375.11	Reach Len. (ft)	90.00	100.32	120.00
Crit W.S. (ft)	1370.86	Flow Area (sq ft)	121.76	915.26	18.04
E.G. Slope (ft/ft)	0.000501	Area (sq ft)	121.76	915.26	18.04
Q Total (cfs)	1140.00	Flow (cfs)	70.57	1059.74	9.69
Top Width (ft)	426.90	Top Width (ft)	160.28	240.00	26.62
Vel Total (ft/s)	1.08	Avg. Vel. (ft/s)	0.58	1.16	0.54
Max Chl Dpth (ft)	5.61	Hydr. Depth (ft)	0.76	3.81	0.68
Conv. Total (cfs)	50909.2	Conv. (cfs)	3151.3	47325.1	432.8
Length Wtd. (ft)	100.32	Wetted Per. (ft)	160.33	240.75	26.65
Min Ch El (ft)	1369.50	Shear (lb/sq ft)	0.02	0.12	0.02
Alpha	1.09	Stream Power (lb/ft s)	0.01	0.14	0.01
Frctn Loss (ft)		Cum Volume (acre-ft)	47.10	86.66	17.71

C & E Loss (ft)	Cum SA (acres)	44.21	27.11	14.08

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1375.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.070	
W.S. Elev (ft)	1375.75	Reach Len. (ft)	90.00	100.32	120.00
Crit W.S. (ft)	1370.86	Flow Area (sq ft)		1070.24	
E.G. Slope (ft/ft)	0.000351	Area (sq ft)		1070.24	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	240.00	Top Width (ft)		240.00	
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)		1.07	
Max Chl Dpth (ft)	6.25	Hydr. Depth (ft)		4.46	
Conv. Total (cfs)	60890.4	Conv. (cfs)		60890.4	
Length Wtd. (ft)	100.32	Wetted Per. (ft)		243.91	
Min Ch El (ft)	1369.50	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)		Cum Volume (acre-ft)	23.53	94.26	7.51
C & E Loss (ft)		Cum SA (acres)	10.58	26.68	3.60

CULVERT RIVER: RIVER-1
REACH: Reach-1 RS: 1.873

INPUT
Description:
Distance from Upstream XS = 20
Deck/Roadway Width = 60
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 4

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
5000	1381		5300	1378.5		5520	1377	
5710	1379.5							

Upstream Bridge Cross Section Data
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1381.1	5100	1377.9	5200	1376.9	5216	1376.8	5255.2	1374
5295.6	1373.7	5350	1374.9	54001374.566		5454.9	1374.2	5480	1369.5
5500	1369.5	5540	1369.5	5583.3	1369.5	5587.5	1369.5	5588	1369.5

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  5602.3  1369.5  5621.8  1372.9    56401373.781  5663.1  1374.9  5717.8  1378.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5400     .07    5640    .051

Bank Sta: Left   Right    Coeff Contr.   Expan.
          5400    5640             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       4
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    5000    1381            5300  1378.5            5520    1377
    5710  1379.5

Downstream Bridge Cross Section Data
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000  1381.5    5016    1381  5032.6  1380.5  5076.1  1379.2  5090.2  1378.9
  5136.2  1377.6  5147.8  1377.5  5196.4  1377.2  5199.2    1377    5229    1376
  5255.4  1376.1  5272.4  1375.6  5345.6  1373.8  5357.4  1373.6  5365.3  1373.4
    5370 1372.67  5391.7  1369.3  5411.5    1369    5483  1368.6    55251368.965
    5574 1369.39  5598.2  1369.6  5599.5  1370.2  5634.8  1374.1    56501373.289
  5672.3  1372.1  5707.5  1380.2  5744.2  1381.3  5747.2  1381.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5370     .07    5650    .051

Bank Sta: Left   Right    Coeff Contr.   Expan.
          5370    5650             .1       .3

Upstream Embankment side slope              =       4 horiz. to 1.0 vertical
Downstream Embankment side slope            =       4 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =    1379
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1
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Culvert Name     Shape      Rise    Span
Culvert #1           Box       4      10
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                 10      85       .013                  .5                1
Number of Barrels =  4
Upstream   Elevation =  1369.6
Centerline Stations
    Sta.    Sta.    Sta.    Sta.
    5500    5512    5524    5536
Downstream Elevation =  1369.5
Centerline Stations
    Sta.    Sta.    Sta.    Sta.
    5500    5512    5524    5536

CULVERT OUTPUT    Profile #PF 1
Culvert ID : Culvert #1

  Culv Q (cfs)            1140.00    Culv Ful Lngh (ft)        85.00
  # Barrels                     4    Culv Vel US (ft/s)         7.13
  Q Barrel (cfs)           285.00    Culv Vel DS (ft/s)         7.13
  E.G. US. (ft)           1375.13    Culv Inv El Up (ft)     1369.60
  W.S. US. (ft)           1375.11    Culv Inv El Dn (ft)     1369.50
  E.G. DS (ft)            1373.75    Culv Frctn Ls (ft)         0.21
  W.S. DS (ft)            1373.74    Culv Ext Lss (ft)          0.77
  Delta EG (ft)              1.37    Culv Ent Lss (ft)          0.39
  Delta WS (ft)              1.37    Q Weir (cfs)
  E.G. IC (ft)            1374.42    Weir Sta Lft (ft)
  E.G. OC (ft)            1375.13    Weir Sta Rgt (ft)
  Culvert Control          Outlet    Weir Submerg
  Culv WS Inlet (ft)      1373.60    Weir Max Depth (ft)
  Culv WS Outlet (ft)     1373.50    Weir Avg Depth (ft)
  Culv Nml Depth (ft)                Wr Flw Area (sq ft)
  Culv Crt Depth (ft)        2.93    Min El Weir Flow (ft)   1379.00


CULVERT OUTPUT    Profile #PF 2
Culvert ID : Culvert #1

  Culv Q (cfs)            1140.00    Culv Ful Lngh (ft)        85.00
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# Barrels	4	Culv Vel US (ft/s)	7.13
Q Barrel (cfs)	285.00	Culv Vel DS (ft/s)	7.13
E.G. US. (ft)	1375.77	Culv Inv El Up (ft)	1369.60
W.S. US. (ft)	1375.75	Culv Inv El Dn (ft)	1369.50
E.G. DS (ft)	1374.39	Culv Frctn Ls (ft)	0.21
W.S. DS (ft)	1374.38	Culv Ext Lss (ft)	0.78
Delta EG (ft)	1.38	Culv Ent Lss (ft)	0.39
Delta WS (ft)	1.37	Q Weir (cfs)	
E.G. IC (ft)	1374.42	Weir Sta Lft (ft)	
E.G. OC (ft)	1375.77	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	1373.60	Weir Max Depth (ft)	
Culv WS Outlet (ft)	1373.50	Weir Avg Depth (ft)	
Culv Nml Depth (ft)		Wr Flw Area (sq ft)	
Culv Crt Depth (ft)	2.93	Min El Weir Flow (ft)	1379.00

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1.866

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1381.5	5016	1381	5032.6	1380.5	5076.1	1379.2	5090.2	1378.9
5136.2	1377.6	5147.8	1377.5	5196.4	1377.2	5199.2	1377	5229	1376
5255.4	1376.1	5272.4	1375.6	5345.6	1373.8	5357.4	1373.6	5365.3	1373.4
5370	1372.67	5391.7	1369.3	5411.5	1369	5483	1368.6	55251368.965	
5574	1369.39	5598.2	1369.6	5599.5	1370.2	5634.8	1374.1	56501373.289	
5672.3	1372.1	5707.5	1380.2	5744.2	1381.3	5747.2	1381.5		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5370	.07	5650	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5370	5650	35	43	85	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1373.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.053	0.070	0.051

W.S. Elev (ft)	1373.74	Reach Len. (ft)	35.00	43.00	85.00
Crit W.S. (ft)		Flow Area (sq ft)	5.74	1101.33	29.09
E.G. Slope (ft/ft)	0.000355	Area (sq ft)	5.74	1101.33	29.09
Q Total (cfs)	1140.00	Flow (cfs)	1.80	1122.34	15.86
Top Width (ft)	320.06	Top Width (ft)	20.71	269.93	29.42
Vel Total (ft/s)	1.00	Avg. Vel. (ft/s)	0.31	1.02	0.55
Max Chl Dpth (ft)	5.14	Hydr. Depth (ft)	0.28	4.08	0.99
Conv. Total (cfs)	60542.7	Conv. (cfs)	95.4	59604.9	842.4
Length Wtd. (ft)	43.30	Wetted Per. (ft)	20.77	270.53	29.63
Min Ch El (ft)	1368.60	Shear (lb/sq ft)	0.01	0.09	0.02
Alpha	1.02	Stream Power (lb/ft s)	0.00	0.09	0.01
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	46.96	84.34	17.64
C & E Loss (ft)	0.00	Cum SA (acres)	44.02	26.53	14.00

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.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1374.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.070	
W.S. Elev (ft)	1374.38	Reach Len. (ft)	35.00	43.00	85.00
Crit W.S. (ft)		Flow Area (sq ft)		1279.77	
E.G. Slope (ft/ft)	0.000236	Area (sq ft)		1279.77	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	280.00	Top Width (ft)		280.00	
Vel Total (ft/s)	0.89	Avg. Vel. (ft/s)		0.89	
Max Chl Dpth (ft)	5.78	Hydr. Depth (ft)		4.57	
Conv. Total (cfs)	74212.6	Conv. (cfs)		74212.6	
Length Wtd. (ft)	43.00	Wetted Per. (ft)		283.44	
Min Ch El (ft)	1368.60	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	23.53	91.56	7.51
C & E Loss (ft)	0.00	Cum SA (acres)	10.58	26.08	3.60

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: RIVER-1

REACH: Reach-1 RS: 1.858

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1380.9	5065.1	1379.1	5148.7	1377.1	5191.8	1376.6	5254.4	1375.9
5302.5	1374.7	5330.2	1370.3	5351.9	1368.7	5358.9	1370	5408	1371.7
5454.8	1372.8	5456.8	1372.8	5481.4	1372.4	5493.6	1370.3	5505.7	1369.8
5517	1372	5563.1	1370.6	5570.4	1369.3	55731369.517		5573.11369.525	
5601.6	1371.9	5639.4	1377.5	5729.4	1382.8	5749.9	1383.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5330.2	.07	5601.6	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5330.2	5601.6	260.1	340	360.06	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1373.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1373.69	Reach Len. (ft)	260.10	340.00	360.06
Crit W.S. (ft)		Flow Area (sq ft)	36.10	693.76	10.77
E.G. Slope (ft/ft)	0.001525	Area (sq ft)	36.10	693.76	10.77
Q Total (cfs)	1140.00	Flow (cfs)	55.69	1073.03	11.28
Top Width (ft)	304.78	Top Width (ft)	21.32	271.40	12.06
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	1.54	1.55	1.05
Max Chl Dpth (ft)	4.99	Hydr. Depth (ft)	1.69	2.56	0.89
Conv. Total (cfs)	29188.3	Conv. (cfs)	1425.8	27473.5	288.9
Length Wtd. (ft)	329.91	Wetted Per. (ft)	21.59	272.27	12.19
Min Ch El (ft)	1368.70	Shear (lb/sq ft)	0.16	0.24	0.08
Alpha	1.00	Stream Power (lb/ft s)	0.25	0.38	0.09
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	46.95	83.45	17.60
C & E Loss (ft)	0.00	Cum SA (acres)	44.00	26.26	13.96

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 #PF 2

E.G. Elev (ft)	1374.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.070	
W.S. Elev (ft)	1374.35	Reach Len. (ft)	260.10	340.00	360.06
Crit W.S. (ft)		Flow Area (sq ft)		873.49	
E.G. Slope (ft/ft)	0.000824	Area (sq ft)		873.49	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	271.40	Top Width (ft)		271.40	
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)		1.31	
Max Chl Dpth (ft)	5.65	Hydr. Depth (ft)		3.22	
Conv. Total (cfs)	39704.0	Conv. (cfs)		39704.0	
Length Wtd. (ft)	340.00	Wetted Per. (ft)		278.77	
Min Ch El (ft)	1368.70	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.21	
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	23.53	90.49	7.51
C & E Loss (ft)	0.01	Cum SA (acres)	10.58	25.81	3.60

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: RIVER-1
REACH: Reach-1 RS: 1.793

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1378.4	5051.6	1376.4	5097.9	1374.9	5150	1373.1	5172.9	1372.1
5178.9	1372.2	5200	1371.9	5250	1371.3	52701370.992		5276	1370.9
5284.2	1370.7	5300	1371	5315.5	1371.1	5325.5	1371.2	5330.5	1371.3
5332.6	1369.7	5340.9	1368.5	5349.6	1370.3	5353.4	1370.9	5418.7	1370.6
5423	1370.1	54271370.396		5450	1372.1	5500	1376	5539.1	1378.7
5550	1379.3	5575.5	1380.5						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5270	.07	5427	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5270	5427	209.1	300	311.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1372.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1372.90	Reach Len. (ft)	209.10	300.00	311.10
Crit W.S. (ft)		Flow Area (sq ft)	129.62	353.20	42.04
E.G. Slope (ft/ft)	0.003722	Area (sq ft)	129.62	353.20	42.04
Q Total (cfs)	1140.00	Flow (cfs)	259.71	782.34	97.96
Top Width (ft)	305.61	Top Width (ft)	115.38	157.00	33.23
Vel Total (ft/s)	2.17	Avg. Vel. (ft/s)	2.00	2.22	2.33
Max Chl Dpth (ft)	4.40	Hydr. Depth (ft)	1.12	2.25	1.26
Conv. Total (cfs)	18685.3	Conv. (cfs)	4256.7	12823.0	1605.6
Length Wtd. (ft)	274.04	Wetted Per. (ft)	115.40	157.91	33.33
Min Ch El (ft)	1368.50	Shear (lb/sq ft)	0.26	0.52	0.29
Alpha	1.01	Stream Power (lb/ft s)	0.52	1.15	0.68
Frctn Loss (ft)	1.17	Cum Volume (acre-ft)	46.45	79.36	17.38
C & E Loss (ft)	0.00	Cum SA (acres)	43.60	24.59	13.77

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 #PF 2

E.G. Elev (ft)	1373.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.070	
W.S. Elev (ft)	1373.83	Reach Len. (ft)	209.10	300.00	311.10
Crit W.S. (ft)	1371.83	Flow Area (sq ft)		499.39	
E.G. Slope (ft/ft)	0.002624	Area (sq ft)		499.39	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	157.00	Top Width (ft)		157.00	
Vel Total (ft/s)	2.28	Avg. Vel. (ft/s)		2.28	
Max Chl Dpth (ft)	5.33	Hydr. Depth (ft)		3.18	
Conv. Total (cfs)	22254.5	Conv. (cfs)		22254.5	
Length Wtd. (ft)	300.00	Wetted Per. (ft)		164.18	
Min Ch El (ft)	1368.50	Shear (lb/sq ft)		0.50	
Alpha	1.00	Stream Power (lb/ft s)		1.14	
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	23.53	85.14	7.51
C & E Loss (ft)	0.02	Cum SA (acres)	10.58	24.14	3.60

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less

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         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: The parabolic search method failed to converge on critical depth.  The program will try the
         cross section slice/secant method to find critical depth.

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 1.736

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000  1377.3    5050  1375.8  5095.9  1373.6  5142.6  1369.9  5170.9  1370.1
    5200  1370.3  5232.8  1370.8 5235.861370.655    52501369.983    52681369.128
  5268.6  1369.1    53551370.086    5400  1370.6  5446.6  1373.9  5459.8  1375.2
  5512.9  1379.1  5518.1  1379.2  5565.5  1381.3  5616.3  1383.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5250     .07    5355    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5250    5355           433.01     430  313.04             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
888       F

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1371.80    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.09    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1371.71    Reach Len. (ft)         433.01     430.00     313.04
  Crit W.S. (ft)           1370.87    Flow Area (sq ft)       173.17     222.79      69.95
  E.G. Slope (ft/ft)      0.004957    Area (sq ft)            173.17     222.79      69.95
  Q Total (cfs)            1140.00    Flow (cfs)              423.79     549.71     166.51
  Top Width (ft)            295.80    Top Width (ft)          130.19     105.00      60.61
  Vel Total (ft/s)            2.45    Avg. Vel. (ft/s)          2.45       2.47       2.38
  Max Chl Dpth (ft)           2.61    Hydr. Depth (ft)          1.33       2.12       1.15
  Conv. Total (cfs)        16192.2    Conv. (cfs)             6019.3     7807.9     2365.0
  Length Wtd. (ft)          422.13    Wetted Per. (ft)        130.29     105.03      60.66
  Min Ch El (ft)           1369.10    Shear (lb/sq ft)          0.41       0.66       0.36
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Alpha	1.00	Stream Power (lb/ft s)	1.01	1.62	0.85
Frctn Loss (ft)	0.66	Cum Volume (acre-ft)	45.73	77.38	16.98
C & E Loss (ft)	0.02	Cum SA (acres)	43.01	23.69	13.44

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 parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1372.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.070	
W.S. Elev (ft)	1372.21	Reach Len. (ft)	433.01	430.00	313.04
Crit W.S. (ft)	1371.13	Flow Area (sq ft)		275.47	
E.G. Slope (ft/ft)	0.011091	Area (sq ft)		275.47	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	105.00	Top Width (ft)		105.00	
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)		4.14	
Max Chl Dpth (ft)	3.11	Hydr. Depth (ft)		2.62	
Conv. Total (cfs)	10824.8	Conv. (cfs)		10824.8	
Length Wtd. (ft)	430.78	Wetted Per. (ft)		109.37	
Min Ch El (ft)	1369.10	Shear (lb/sq ft)		1.74	
Alpha	1.00	Stream Power (lb/ft s)		7.22	
Frctn Loss (ft)	1.20	Cum Volume (acre-ft)	23.53	82.47	7.51
C & E Loss (ft)	0.06	Cum SA (acres)	10.58	23.23	3.60

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: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1.655

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1376	5050	1374.7	5076.8	1374.2	5100	1373.4	5105	1372
5113	1370	5228	1370	5235.5	1370.9	5250	1370.3	5272.9	1368.9
5300	1368	5309.7	1367.3	5319	1366.9	5334.8	1365.1	5390	1364.042
5397.4	1363.9	5415.7	1363.5	5491.9	1363.4	5500	1367.403	5509.3	1372
5534	1372	5538	1372	5542	1372	5546	1372	5550	1372
5589.9	1377.9	5610.3	1378.3	5617	1378.5	5688.3	1378.9		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5390	.07	5500	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5390	5500	324.06	315.15	190.08	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
5000	5700	1368

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1371.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1371.08	Reach Len. (ft)	324.06	315.15	190.08
Crit W.S. (ft)		Flow Area (sq ft)	521.77	339.27	13.35
E.G. Slope (ft/ft)	0.000761	Area (sq ft)	521.77	339.27	13.35
Q Total (cfs)	1140.00	Flow (cfs)	703.19	420.87	15.94
Top Width (ft)	398.78	Top Width (ft)	281.34	110.00	7.45
Vel Total (ft/s)	1.30	Avg. Vel. (ft/s)	1.35	1.24	1.19
Max Chl Dpth (ft)	3.08	Hydr. Depth (ft)	1.85	3.08	1.79
Conv. Total (cfs)	41332.6	Conv. (cfs)	25495.4	15259.3	577.9
Length Wtd. (ft)	316.76	Wetted Per. (ft)	281.59	110.00	8.17
Min Ch El (ft)	1368.00	Shear (lb/sq ft)	0.09	0.15	0.08
Alpha	1.01	Stream Power (lb/ft s)	0.12	0.18	0.09
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	42.27	74.61	16.69
C & E Loss (ft)	0.01	Cum SA (acres)	40.96	22.62	13.19

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 #PF 2

E.G. Elev (ft)	1371.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.053	0.070	
W.S. Elev (ft)	1371.15	Reach Len. (ft)	324.06	315.15	190.08
Crit W.S. (ft)		Flow Area (sq ft)	283.70	346.74	
E.G. Slope (ft/ft)	0.001245	Area (sq ft)	283.70	346.74	
Q Total (cfs)	1140.00	Flow (cfs)	592.15	547.85	
Top Width (ft)	200.00	Top Width (ft)	90.00	110.00	
Vel Total (ft/s)	1.81	Avg. Vel. (ft/s)	2.09	1.58	
Max Chl Dpth (ft)	3.15	Hydr. Depth (ft)	3.15	3.15	
Conv. Total (cfs)	32313.3	Conv. (cfs)	16784.5	15528.8	
Length Wtd. (ft)	317.46	Wetted Per. (ft)	93.15	113.15	
Min Ch El (ft)	1368.00	Shear (lb/sq ft)	0.24	0.24	
Alpha	1.06	Stream Power (lb/ft s)	0.49	0.38	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	22.12	79.40	7.51
C & E Loss (ft)	0.02	Cum SA (acres)	10.13	22.17	3.60

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: RIVER-1
REACH: Reach-1 RS: 1.595

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1373.9	5005.8	1374	5028.7	1373.1	5053.3	1372.6	5071.4	1372.3
5100	1369.5	5115.4	1369.1	5143	1367.7	5149.7	1366.7	51701364.162	
5174.5	1363.6	5210.1	1363.9	5228.2	1363.9	5263.2	1363.8	5292.2	1363.5
5313.3	1363.6	5485.4	1363.5	5495	1366.22	5515.4	1372	5525.3	1372
5541.1	1372	5559	1372	5586.8	1372	5634.1	1375.4	5666.8	1377.2
5681	1378.1	5707.4	1377.6	5753.7	1378.8	5765.2	1379.2	5792.2	1380.8

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5170	.07	5495	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5170	5495	169	100	95	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1371.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1371.08	Reach Len. (ft)	169.00	100.00	95.00
Crit W.S. (ft)		Flow Area (sq ft)	254.64	2405.72	41.65
E.G. Slope (ft/ft)	0.000029	Area (sq ft)	254.64	2405.72	41.65
Q Total (cfs)	1140.00	Flow (cfs)	92.73	1035.85	11.42
Top Width (ft)	428.27	Top Width (ft)	86.12	325.00	17.15
Vel Total (ft/s)	0.42	Avg. Vel. (ft/s)	0.36	0.43	0.27
Max Chl Dpth (ft)	7.58	Hydr. Depth (ft)	2.96	7.40	2.43
Conv. Total (cfs)	213281.5	Conv. (cfs)	17347.8	193796.7	2137.0
Length Wtd. (ft)	107.06	Wetted Per. (ft)	86.47	325.42	17.82
Min Ch El (ft)	1363.50	Shear (lb/sq ft)	0.01	0.01	0.00
Alpha	1.01	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	39.38	64.68	16.57
C & E Loss (ft)	0.00	Cum SA (acres)	39.59	21.05	13.14

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1371.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.070	
W.S. Elev (ft)	1371.15	Reach Len. (ft)	169.00	100.00	95.00
Crit W.S. (ft)		Flow Area (sq ft)		2429.44	
E.G. Slope (ft/ft)	0.000035	Area (sq ft)		2429.44	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	325.00	Top Width (ft)		325.00	
Vel Total (ft/s)	0.47	Avg. Vel. (ft/s)		0.47	
Max Chl Dpth (ft)	7.65	Hydr. Depth (ft)		7.48	
Conv. Total (cfs)	192323.9	Conv. (cfs)		192323.9	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		337.34	
Min Ch El (ft)	1363.50	Shear (lb/sq ft)		0.02	
Alpha	1.00	Stream Power (lb/ft s)		0.01	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	21.06	69.35	7.51
C & E Loss (ft)	0.00	Cum SA (acres)	9.79	20.60	3.60

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: RIVER-1
REACH: Reach-1 RS: 1.576

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INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    4900  1373.8    5000    1373    5050  1372.7  5065.9  1372.6  5100.8    1371
    5134  1368.7  5143.6  1368.4    5150  1369.1  5183.5  1367.3    52001361.202
  5201.9  1360.5    5221  1360.5  5239.9  1360.5  5245.5  1360.5  5262.1  1360.5
  5269.4  1360.5  5298.1  1360.5  5312.5  1368.4  5343.4  1367.6  5367.3  1367.7
  5400.8  1366.6  5437.1  1366.1    54501367.366    54771367.366    5481    1368
    5485    1369    5489    1370    5493    1371  5497.2    1372  5524.3    1372
  5586.3    1372  5615.7  1373.3  5669.9  1375.9  5691.4  1377.7    5694  1377.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    4900    .053    5200     .07    5450    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5200    5450              116      58     174             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1371.08    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.00    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1371.07    Reach Len. (ft)         116.00      58.00     174.00
  Crit W.S. (ft)           1362.11    Flow Area (sq ft)       288.46    1667.29     132.49
  E.G. Slope (ft/ft)      0.000056    Area (sq ft)            288.46    1667.29     132.49
  Q Total (cfs)            1140.00    Flow (cfs)              146.10     929.03      64.88
  Top Width (ft)            394.07    Top Width (ft)          100.77     250.00      43.30
  Vel Total (ft/s)            0.55    Avg. Vel. (ft/s)          0.51       0.56       0.49
  Max Chl Dpth (ft)          10.57    Hydr. Depth (ft)          2.86       6.67       3.06
  Conv. Total (cfs)       152960.6    Conv. (cfs)             19602.8   124652.8     8705.0
  Length Wtd. (ft)            58.00    Wetted Per. (ft)        102.03     252.24      43.73
  Min Ch El (ft)           1360.50    Shear (lb/sq ft)          0.01       0.02       0.01
  Alpha                       1.01    Stream Power (lb/ft s)    0.00       0.01       0.01
  Frctn Loss (ft)                     Cum Volume (acre-ft)      38.33      60.00      16.38
  C & E Loss (ft)                     Cum SA (acres)            39.23      20.39      13.07


CROSS SECTION OUTPUT    Profile #PF 2

  E.G. Elev (ft)           1371.15    Element                 Left OB    Channel   Right OB
```

Vel Head (ft)	0.01	Wt. n-Val.		0.070	
W.S. Elev (ft)	1371.14	Reach Len. (ft)	116.00	58.00	174.00
Crit W.S. (ft)	1362.11	Flow Area (sq ft)		1684.72	
E.G. Slope (ft/ft)	0.000087	Area (sq ft)		1684.72	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	250.00	Top Width (ft)		250.00	
Vel Total (ft/s)	0.68	Avg. Vel. (ft/s)		0.68	
Max Chl Dpth (ft)	10.64	Hydr. Depth (ft)		6.74	
Conv. Total (cfs)	122432.9	Conv. (cfs)		122432.9	
Length Wtd. (ft)	58.00	Wetted Per. (ft)		265.96	
Min Ch El (ft)	1360.50	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)		Cum Volume (acre-ft)	21.06	64.63	7.51
C & E Loss (ft)		Cum SA (acres)	9.79	19.94	3.60

CULVERT RIVER: RIVER-1
REACH: Reach-1 RS: 1.573

INPUT
Description:
Distance from Upstream XS = .5
Deck/Roadway Width = 57
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 2

Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
5000	1370	0	5700	1370	0

Upstream Bridge Cross Section Data
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
4900	1373.8	5000	1373	5050	1372.7	5065.9	1372.6	5100.8	1371
5134	1368.7	5143.6	1368.4	5150	1369.1	5183.5	1367.3	52001361.202	
5201.9	1360.5	5221	1360.5	5239.9	1360.5	5245.5	1360.5	5262.1	1360.5
5269.4	1360.5	5298.1	1360.5	5312.5	1368.4	5343.4	1367.6	5367.3	1367.7
5400.8	1366.6	5437.1	1366.1	54501367.366		54771367.366		5481	1368
5485	1369	5489	1370	5493	1371	5497.2	1372	5524.3	1372
5586.3	1372	5615.7	1373.3	5669.9	1375.9	5691.4	1377.7	5694	1377.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
    4900    .053    5200     .07    5450    .051

Bank Sta: Left   Right    Coeff Contr.   Expan.
          5200    5450             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    5000    1370       0    5700    1370       0

Downstream Bridge Cross Section Data
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000  1374.6  5073.1  1373.3  5114.4  1371.9  5142.3    1370  5161.8  1365.7
  5184.9  1362.7    52001362.601  5245.8  1362.3  5257.7  1359.7  5280.9  1359.7
  5297.2  1362.3    52981362.325    5313  1362.8  5333.8  1362.1  5362.3  1362.7
    5488  1362.7    5492    1363    5496    1364    5500    1365    5520    1371
    5524    1372  5648.4  1373.7  5690.3  1377.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5200     .07  5297.2    .051

Bank Sta: Left   Right    Coeff Contr.   Expan.
          5200  5297.2             .1       .3

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         =  1363.9
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular    1.67
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
```

```
                .5      57       .013                  .5               1
Upstream   Elevation =  1360.5
           Centerline Station =  5261.8
Downstream Elevation =  1359.5
           Centerline Station =  5268

CULVERT OUTPUT    Profile #PF 1
Culvert ID : Culvert #1

  Culv Q (cfs)              28.72    Culv Ful Lngh (ft)        57.00
  # Barrels                     1    Culv Vel US (ft/s)        13.11
  Q Barrel (cfs)            28.72    Culv Vel DS (ft/s)        13.11
  E.G. US. (ft)           1371.08    Culv Inv El Up (ft)     1360.50
  W.S. US. (ft)           1371.07    Culv Inv El Dn (ft)     1359.50
  E.G. DS (ft)            1364.70    Culv Frctn Ls (ft)         2.40
  W.S. DS (ft)            1364.67    Culv Ext Lss (ft)          2.64
  Delta EG (ft)              6.37    Culv Ent Lss (ft)          1.33
  Delta WS (ft)              6.40    Q Weir (cfs)            1111.28
  E.G. IC (ft)            1371.08    Weir Sta Lft (ft)       5099.06
  E.G. OC (ft)            1371.08    Weir Sta Rgt (ft)       5493.33
  Culvert Control          Outlet    Weir Submerg               0.00
  Culv WS Inlet (ft)      1362.17    Weir Max Depth (ft)        1.08
  Culv WS Outlet (ft)     1361.17    Weir Avg Depth (ft)        1.05
  Culv Nml Depth (ft)        1.67    Wr Flw Area (sq ft)      414.28
  Culv Crt Depth (ft)        1.67    Min El Weir Flow (ft)   1370.01


Note:    The normal depth exceeds the height of the culvert.  The program assumes that the normal
         depth is equal to the height of the culvert.
Note:    Culvert critical depth exceeds the height of the culvert.

CULVERT OUTPUT    Profile #PF 2
Culvert ID : Culvert #1

  Culv Q (cfs)              27.55    Culv Ful Lngh (ft)        57.00
  # Barrels                     1    Culv Vel US (ft/s)        12.58
  Q Barrel (cfs)            27.55    Culv Vel DS (ft/s)        12.58
  E.G. US. (ft)           1371.15    Culv Inv El Up (ft)     1360.50
  W.S. US. (ft)           1371.14    Culv Inv El Dn (ft)     1359.50
  E.G. DS (ft)            1365.29    Culv Frctn Ls (ft)         2.21
  W.S. DS (ft)            1365.25    Culv Ext Lss (ft)          2.42
  Delta EG (ft)              5.86    Culv Ent Lss (ft)          1.23
```

Delta WS (ft)	5.89	Q Weir (cfs)	1221.83
E.G. IC (ft)	1371.47	Weir Sta Lft (ft)	5097.55
E.G. OC (ft)	1371.15	Weir Sta Rgt (ft)	5493.63
Culvert Control	Outlet	Weir Submerg	0.00
Culv WS Inlet (ft)	1362.17	Weir Max Depth (ft)	1.15
Culv WS Outlet (ft)	1361.17	Weir Avg Depth (ft)	1.12
Culv Nml Depth (ft)	1.67	Wr Flw Area (sq ft)	441.63
Culv Crt Depth (ft)	1.67	Min El Weir Flow (ft)	1370.01

Warning: During subcritical analysis, while trying to calculate culvert and weir flow, the program could not get a balance of energy within the specified tolerance and number of trials. The program used the solution with the minimum error.
Warning: During the culvert inlet computations, the program could not balance the culvert/weir flow. The reported inlet energy grade answer may not be valid.
Warning: During the culvert outlet computations, the program could not balance the culvert/weir flow. The reported outlet energy grade answer may not be valid.
Note: The normal depth exceeds the height of the culvert. The program assumes that the normal depth is equal to the height of the culvert.
Note: Culvert critical depth exceeds the height of the culvert.

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1.565

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1374.6	5073.1	1373.3	5114.4	1371.9	5142.3	1370	5161.8	1365.7
5184.9	1362.7	52001362.601		5245.8	1362.3	5257.7	1359.7	5280.9	1359.7
5297.2	1362.3	52981362.325		5313	1362.8	5333.8	1362.1	5362.3	1362.7
5488	1362.7	5492	1363	5496	1364	5500	1365	5520	1371
5524	1372	5648.4	1373.7	5690.3	1377.8				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5200	.07	5297.2	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5200	5297.2	220.08	210	267.96	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1364.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1364.67	Reach Len. (ft)	220.08	210.00	267.96
Crit W.S. (ft)		Flow Area (sq ft)	45.38	320.27	404.48
E.G. Slope (ft/ft)	0.001019	Area (sq ft)	45.38	320.27	404.48
Q Total (cfs)	1140.00	Flow (cfs)	56.66	478.85	604.49
Top Width (ft)	328.93	Top Width (ft)	30.25	97.20	201.47
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	1.25	1.50	1.49
Max Chl Dpth (ft)	4.97	Hydr. Depth (ft)	1.50	3.29	2.01
Conv. Total (cfs)	35718.6	Conv. (cfs)	1775.2	15003.4	18939.9
Length Wtd. (ft)	236.56	Wetted Per. (ft)	30.38	97.69	201.71
Min Ch El (ft)	1359.70	Shear (lb/sq ft)	0.09	0.21	0.13
Alpha	1.00	Stream Power (lb/ft s)	0.12	0.31	0.19
Frctn Loss (ft)	0.45	Cum Volume (acre-ft)	37.89	58.68	15.30
C & E Loss (ft)	0.01	Cum SA (acres)	39.06	20.16	12.59

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 #PF 2

E.G. Elev (ft)	1365.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.070	0.051
W.S. Elev (ft)	1365.25	Reach Len. (ft)	220.08	210.00	267.96
Crit W.S. (ft)		Flow Area (sq ft)		377.03	406.08
E.G. Slope (ft/ft)	0.000742	Area (sq ft)		377.03	406.08
Q Total (cfs)	1140.00	Flow (cfs)		527.05	612.95
Top Width (ft)	250.00	Top Width (ft)		97.20	152.80
Vel Total (ft/s)	1.46	Avg. Vel. (ft/s)		1.40	1.51
Max Chl Dpth (ft)	5.55	Hydr. Depth (ft)		3.88	2.66
Conv. Total (cfs)	41840.9	Conv. (cfs)		19343.9	22497.0
Length Wtd. (ft)	225.58	Wetted Per. (ft)		100.34	155.38
Min Ch El (ft)	1359.70	Shear (lb/sq ft)		0.17	0.12
Alpha	1.00	Stream Power (lb/ft s)		0.24	0.18
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	21.06	63.26	6.70
C & E Loss (ft)	0.03	Cum SA (acres)	9.79	19.71	3.29

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: RIVER-1
REACH: Reach-1 RS: 1.525

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1371.7	5040.1	1368.8	5070.2	1365.3	5090.8	1364.5	5125.6	1363.8
5147.7	1363.9	5154.4	1364.3	51651363.391		5168.4	1363.1	5186.4	1359.7
5220.4	1361.2	52401361.447		5284	1362	5290	1362	5294	1363
5296	1364	5300	1365	5474.3	1371.7	5482.1	1371.7	5518.8	1371.8
5542.8	1373.6	5568.6	1374	5602.9	1376.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5165	.07	5240	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5165	5240	104.04	169.02	212.04	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1364.23	Element			
Vel Head (ft)	0.16	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1364.07	Reach Len. (ft)	104.04	169.02	212.04
Crit W.S. (ft)		Flow Area (sq ft)	9.63	227.83	123.13
E.G. Slope (ft/ft)	0.004845	Area (sq ft)	9.63	227.83	123.13
Q Total (cfs)	1140.00	Flow (cfs)	7.06	703.77	429.17
Top Width (ft)	177.62	Top Width (ft)	46.34	75.00	56.28
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)	0.73	3.09	3.49
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	0.21	3.04	2.19
Conv. Total (cfs)	16378.2	Conv. (cfs)	101.4	10111.0	6165.8
Length Wtd. (ft)	183.32	Wetted Per. (ft)	46.38	75.37	56.65
Min Ch El (ft)	1359.70	Shear (lb/sq ft)	0.06	0.91	0.66
Alpha	1.05	Stream Power (lb/ft s)	0.05	2.82	2.29
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	37.75	57.36	13.68
C & E Loss (ft)	0.04	Cum SA (acres)	38.86	19.74	11.79

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.

CROSS SECTION OUTPUT    Profile #PF 2

  E.G. Elev (ft)           1364.87    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.29    Wt. n-Val.                          0.070
  W.S. Elev (ft)           1364.58    Reach Len. (ft)          104.04     169.02     212.04
  Crit W.S. (ft)                      Flow Area (sq ft)                   266.07
  E.G. Slope (ft/ft)       0.008164   Area (sq ft)                        266.07
  Q Total (cfs)            1140.00    Flow (cfs)                         1140.00
  Top Width (ft)             75.00    Top Width (ft)                       75.00
  Vel Total (ft/s)            4.28    Avg. Vel. (ft/s)                     4.28
  Max Chl Dpth (ft)           4.88    Hydr. Depth (ft)                     3.55
  Conv. Total (cfs)        12617.1    Conv. (cfs)                       12617.1
  Length Wtd. (ft)          169.02    Wetted Per. (ft)                     79.69
  Min Ch El (ft)           1359.70    Shear (lb/sq ft)                     1.70
  Alpha                       1.00    Stream Power (lb/ft s)               7.29
  Frctn Loss (ft)             0.46    Cum Volume (acre-ft)       21.06     61.71       5.45
  C & E Loss (ft)             0.07    Cum SA (acres)              9.79     19.29       2.82


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: RIVER-1
REACH: Reach-1            RS: 1.493

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000  1371.2  5036.7  1367.7  5053.9  1368.9    5100  1365.1    51101363.392
    51301359.976  5132.2  1359.6    5250 1359.69    5288    1360    5304    1360
    5308    1361    5312    1362    5316    1363    5320    1364    5324    1365
  5401.8  1365.2    5467  1365.3  5541.4  1366.1  5550.7  1366.5  5618.6  1370.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5130     .07    5250    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5130    5250           152.95  185.06  337.06             .1       .3
```

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1363.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1363.94	Reach Len. (ft)	152.95	185.06	337.06
Crit W.S. (ft)		Flow Area (sq ft)	45.94	514.81	249.53
E.G. Slope (ft/ft)	0.000545	Area (sq ft)	45.94	514.81	249.53
Q Total (cfs)	1140.00	Flow (cfs)	50.48	673.65	415.87
Top Width (ft)	212.95	Top Width (ft)	23.19	120.00	69.75
Vel Total (ft/s)	1.41	Avg. Vel. (ft/s)	1.10	1.31	1.67
Max Chl Dpth (ft)	4.34	Hydr. Depth (ft)	1.98	4.29	3.58
Conv. Total (cfs)	48817.4	Conv. (cfs)	2161.6	28847.2	17808.5
Length Wtd. (ft)	222.40	Wetted Per. (ft)	23.53	120.03	70.24
Min Ch El (ft)	1359.60	Shear (lb/sq ft)	0.07	0.15	0.12
Alpha	1.05	Stream Power (lb/ft s)	0.07	0.19	0.20
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	37.68	55.92	12.77
C & E Loss (ft)	0.00	Cum SA (acres)	38.78	19.37	11.49

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 #PF 2

E.G. Elev (ft)	1364.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.070	
W.S. Elev (ft)	1364.28	Reach Len. (ft)	152.95	185.06	337.06
Crit W.S. (ft)		Flow Area (sq ft)		555.56	
E.G. Slope (ft/ft)	0.001333	Area (sq ft)		555.56	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	120.00	Top Width (ft)		120.00	
Vel Total (ft/s)	2.05	Avg. Vel. (ft/s)		2.05	
Max Chl Dpth (ft)	4.68	Hydr. Depth (ft)		4.63	
Conv. Total (cfs)	31229.4	Conv. (cfs)		31229.4	
Length Wtd. (ft)	185.06	Wetted Per. (ft)		128.92	
Min Ch El (ft)	1359.60	Shear (lb/sq ft)		0.36	
Alpha	1.00	Stream Power (lb/ft s)		0.74	
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	21.06	60.11	5.45
C & E Loss (ft)	0.00	Cum SA (acres)	9.79	18.91	2.82

```
CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 1.458

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000  1371.2    5041  1369.6  5102.4  1366.1  5124.8  1366.7  5180.2  1365.1
  5192.7  1364.1  5231.6  1363.6  5244.3  1363.7  5269.8  1363.4    52951360.229
    5300  1359.6    5450 1361.76    5550  1363.2  5557.5  1364.2  5580.1  1365.7
  5599.9  1367.6  5630.1  1370.9  5675.8    1373  5698.1    1374

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5295     .07    5450    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5295    5450             158   385.2     240             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1363.77    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.05    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1363.72    Reach Len. (ft)         158.00     385.20     240.00
  Crit W.S. (ft)                      Flow Area (sq ft)        53.94     475.33     125.22
  E.G. Slope (ft/ft)      0.001707    Area (sq ft)             53.94     475.33     125.22
  Q Total (cfs)            1140.00    Flow (cfs)               87.05     879.73     173.22
  Top Width (ft)            331.80    Top Width (ft)           72.89     155.00     103.92
  Vel Total (ft/s)            1.74    Avg. Vel. (ft/s)          1.61       1.85       1.38
  Max Chl Dpth (ft)           4.12    Hydr. Depth (ft)          0.74       3.07       1.20
  Conv. Total (cfs)        27591.9    Conv. (cfs)            2106.8    21292.5     4192.6
  Length Wtd. (ft)          351.10    Wetted Per. (ft)         73.09     155.06     103.96
  Min Ch El (ft)           1359.60    Shear (lb/sq ft)          0.08       0.33       0.13
  Alpha                       1.03    Stream Power (lb/ft s)    0.13       0.60       0.18
  Frctn Loss (ft)             0.50    Cum Volume (acre-ft)     37.50      53.81      11.32
  C & E Loss (ft)             0.00    Cum SA (acres)           38.61      18.78      10.81


CROSS SECTION OUTPUT    Profile #PF 2

  E.G. Elev (ft)           1364.02    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.08    Wt. n-Val.                          0.070
```

W.S. Elev (ft)	1363.94	Reach Len. (ft)	158.00	385.20	240.00
Crit W.S. (ft)		Flow Area (sq ft)		509.12	
E.G. Slope (ft/ft)	0.002396	Area (sq ft)		509.12	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	155.00	Top Width (ft)		155.00	
Vel Total (ft/s)	2.24	Avg. Vel. (ft/s)		2.24	
Max Chl Dpth (ft)	4.34	Hydr. Depth (ft)		3.28	
Conv. Total (cfs)	23288.6	Conv. (cfs)		23288.6	
Length Wtd. (ft)	372.86	Wetted Per. (ft)		160.95	
Min Ch El (ft)	1359.60	Shear (lb/sq ft)		0.47	
Alpha	1.00	Stream Power (lb/ft s)		1.06	
Frctn Loss (ft)	0.58	Cum Volume (acre-ft)	21.06	57.85	5.45
C & E Loss (ft)	0.01	Cum SA (acres)	9.79	18.33	2.82

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: RIVER-1
REACH: Reach-1 RS: 1.420

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1372.4	5029.5	1371.5	5072.3	1367.9	5130.7	1364.1	5150	1363.6
51551362.985		51751360.523		5182.5	1359.6	5322.4	1359.6	53301362.037	
53351363.641		5338.3	1364.7	5343.9	1364.4	5352.9	1362.8	5379.9	1362
5392.2	1361.5	5408.2	1361.6	5428.4	1362.5	5453.1	1362.4	5477.5	1362.4
5500	1362.4	5554.8	1364	5600	1366.4				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5175	.07	5330	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5175	5330	213.94	185.06	173.09	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1363.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.053	0.070	0.051

W.S. Elev (ft)	1363.23	Reach Len. (ft)	213.94	185.06	173.09
Crit W.S. (ft)		Flow Area (sq ft)	29.82	550.35	164.54
E.G. Slope (ft/ft)	0.001186	Area (sq ft)	29.82	550.35	164.54
Q Total (cfs)	1140.00	Flow (cfs)	36.94	934.77	168.29
Top Width (ft)	358.79	Top Width (ft)	22.01	155.00	181.78
Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)	1.24	1.70	1.02
Max Chl Dpth (ft)	3.63	Hydr. Depth (ft)	1.35	3.55	0.91
Conv. Total (cfs)	33096.8	Conv. (cfs)	1072.5	27138.4	4885.9
Length Wtd. (ft)	185.59	Wetted Per. (ft)	22.18	155.44	182.06
Min Ch El (ft)	1359.60	Shear (lb/sq ft)	0.10	0.26	0.07
Alpha	1.10	Stream Power (lb/ft s)	0.12	0.45	0.07
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	37.35	49.28	10.52
C & E Loss (ft)	0.00	Cum SA (acres)	38.44	17.41	10.03

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1363.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.070	0.051
W.S. Elev (ft)	1363.39	Reach Len. (ft)	213.94	185.06	173.09
Crit W.S. (ft)		Flow Area (sq ft)		575.23	177.38
E.G. Slope (ft/ft)	0.001075	Area (sq ft)		575.23	177.38
Q Total (cfs)	1140.00	Flow (cfs)		946.20	193.80
Top Width (ft)	309.66	Top Width (ft)		155.00	154.66
Vel Total (ft/s)	1.51	Avg. Vel. (ft/s)		1.64	1.09
Max Chl Dpth (ft)	3.79	Hydr. Depth (ft)		3.71	1.15
Conv. Total (cfs)	34770.7	Conv. (cfs)		28859.8	5910.9
Length Wtd. (ft)	184.04	Wetted Per. (ft)		158.31	155.96
Min Ch El (ft)	1359.60	Shear (lb/sq ft)		0.24	0.08
Alpha	1.07	Stream Power (lb/ft s)		0.40	0.08
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	21.06	53.06	4.96
C & E Loss (ft)	0.00	Cum SA (acres)	9.79	16.96	2.40

Warning: Divided flow computed for this cross-section.

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1.385

INPUT

Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1372.4	5026.3	1371.8	5087.1	1367.7	5136	1364.5	5172.4	1361.9
51901360.148		5195.5	1359.6	55951362.738		5602.9	1362.8	5635.2	1364.4
5657.4	1365.5	5718.9	1367.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5190	.07	5595	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5190	5595	176.94	180	205.02	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1362.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1362.95	Reach Len. (ft)	176.94	180.00	205.02
Crit W.S. (ft)		Flow Area (sq ft)	41.48	726.68	1.61
E.G. Slope (ft/ft)	0.002185	Area (sq ft)	41.48	726.68	1.61
Q Total (cfs)	1140.00	Flow (cfs)	74.78	1064.57	0.65
Top Width (ft)	448.08	Top Width (ft)	32.24	405.00	10.84
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	1.80	1.46	0.40
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)	1.29	1.79	0.15
Conv. Total (cfs)	24389.2	Conv. (cfs)	1599.9	22775.4	13.9
Length Wtd. (ft)	180.00	Wetted Per. (ft)	32.36	405.04	10.84
Min Ch El (ft)	1359.60	Shear (lb/sq ft)	0.17	0.24	0.02
Alpha	1.01	Stream Power (lb/ft s)	0.32	0.36	0.01
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	37.18	46.57	10.19
C & E Loss (ft)	0.01	Cum SA (acres)	38.31	16.22	9.64

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1363.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.070	
W.S. Elev (ft)	1363.15	Reach Len. (ft)	176.94	180.00	205.02
Crit W.S. (ft)		Flow Area (sq ft)		808.89	
E.G. Slope (ft/ft)	0.001772	Area (sq ft)		808.89	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	405.00	Top Width (ft)		405.00	

Vel Total (ft/s)	1.41	Avg. Vel. (ft/s)	1.41		
Max Chl Dpth (ft)	3.55	Hydr. Depth (ft)	2.00		
Conv. Total (cfs)	27078.3	Conv. (cfs)	27078.3		
Length Wtd. (ft)	180.00	Wetted Per. (ft)	408.45		
Min Ch El (ft)	1359.60	Shear (lb/sq ft)	0.22		
Alpha	1.00	Stream Power (lb/ft s)	0.31		
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	21.06	50.12	4.61
C & E Loss (ft)	0.01	Cum SA (acres)	9.79	15.77	2.09

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1.351

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5027.7	1368.9	5062.6	1368.3	5123.1	1365.9	5176	1362.2	52001360.106	
5205.8	1359.6	5350.8	1359.6	53551360.456		53651362.494		5366.5	1362.8
5408.2	1363	5459.7	1362.7	5493.1	1362.8	5562.9	1362.6	5603.8	1363.7
5628.7	1364.3	5695.5	1366.3						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5027.7	.053	5200	.07	5355	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5200	5355	570	244	92	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1362.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1362.38	Reach Len. (ft)	570.00	244.00	92.00
Crit W.S. (ft)		Flow Area (sq ft)	29.79	428.28	9.12
E.G. Slope (ft/ft)	0.003562	Area (sq ft)	29.79	428.28	9.12
Q Total (cfs)	1140.00	Flow (cfs)	56.74	1067.99	15.27
Top Width (ft)	191.09	Top Width (ft)	26.63	155.00	9.46
Vel Total (ft/s)	2.44	Avg. Vel. (ft/s)	1.90	2.49	1.67
Max Chl Dpth (ft)	2.78	Hydr. Depth (ft)	1.12	2.76	0.96
Conv. Total (cfs)	19099.8	Conv. (cfs)	950.6	17893.3	255.8
Length Wtd. (ft)	254.09	Wetted Per. (ft)	26.73	155.11	9.66

Min Ch El (ft)	1359.60	Shear (lb/sq ft)	0.25	0.61	0.21
Alpha	1.02	Stream Power (lb/ft s)	0.47	1.53	0.35
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	37.03	44.18	10.17
C & E Loss (ft)	0.03	Cum SA (acres)	38.19	15.07	9.60

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 #PF 2

E.G. Elev (ft)	1362.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.070	
W.S. Elev (ft)	1362.67	Reach Len. (ft)	570.00	244.00	92.00
Crit W.S. (ft)		Flow Area (sq ft)		472.46	
E.G. Slope (ft/ft)	0.003047	Area (sq ft)		472.46	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	155.00	Top Width (ft)		155.00	
Vel Total (ft/s)	2.41	Avg. Vel. (ft/s)		2.41	
Max Chl Dpth (ft)	3.07	Hydr. Depth (ft)		3.05	
Conv. Total (cfs)	20652.5	Conv. (cfs)		20652.5	
Length Wtd. (ft)	244.00	Wetted Per. (ft)		159.88	
Min Ch El (ft)	1359.60	Shear (lb/sq ft)		0.56	
Alpha	1.00	Stream Power (lb/ft s)		1.36	
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	21.06	47.47	4.61
C & E Loss (ft)	0.03	Cum SA (acres)	9.79	14.61	2.09

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: RIVER-1
REACH: Reach-1 RS: 1.305

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1369.3	5102	1365.8	5121	1365.1	5178	1363.2	5227	1359.6
5799	1359.6	5815	1361.9	5836	1362.4	5876	1364.2	5904	1365.1
5952	1367.1	6018	1369.2						

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5227     .07    5799    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5227    5799               89     188     155             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1362.26    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.01    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1362.25    Reach Len. (ft)          89.00     188.00     155.00
  Crit W.S. (ft)                      Flow Area (sq ft)        47.94    1518.12      26.70
  E.G. Slope (ft/ft)      0.000314    Area (sq ft)             47.94    1518.12      26.70
  Q Total (cfs)            1140.00    Flow (cfs)               28.71    1094.66      16.63
  Top Width (ft)            638.99    Top Width (ft)           36.13     572.00      30.87
  Vel Total (ft/s)            0.72    Avg. Vel. (ft/s)          0.60       0.72       0.62
  Max Chl Dpth (ft)           2.65    Hydr. Depth (ft)          1.33       2.65       0.86
  Conv. Total (cfs)        64332.9    Conv. (cfs)             1620.1    61774.5      938.3
  Length Wtd. (ft)          186.09    Wetted Per. (ft)         36.22     572.00      31.04
  Min Ch El (ft)           1359.60    Shear (lb/sq ft)          0.03       0.05       0.02
  Alpha                       1.00    Stream Power (lb/ft s)    0.02       0.04       0.01
  Frctn Loss (ft)             0.17    Cum Volume (acre-ft)     36.52      38.73      10.13
  C & E Loss (ft)             0.02    Cum SA (acres)           37.78      13.03       9.55


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 #PF 2

  E.G. Elev (ft)           1362.60    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.01    Wt. n-Val.                          0.070
  W.S. Elev (ft)           1362.59    Reach Len. (ft)          89.00     188.00     155.00
  Crit W.S. (ft)                      Flow Area (sq ft)                 1709.30
  E.G. Slope (ft/ft)      0.000233    Area (sq ft)                      1709.30
  Q Total (cfs)            1140.00    Flow (cfs)                        1140.00
  Top Width (ft)            572.00    Top Width (ft)                     572.00
  Vel Total (ft/s)            0.67    Avg. Vel. (ft/s)                     0.67
  Max Chl Dpth (ft)           2.99    Hydr. Depth (ft)                     2.99
  Conv. Total (cfs)        74757.2    Conv. (cfs)                       74757.2
  Length Wtd. (ft)          188.00    Wetted Per. (ft)                   577.98
```

Min Ch El (ft)	1359.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	21.06	41.36	4.61
C & E Loss (ft)	0.01	Cum SA (acres)	9.79	12.58	2.09

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: RIVER-1
REACH: Reach-1 RS: 1.269

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1369.8	5071	1367.4	5130	1364.4	5169	1363.4	5200	1364.6
5244	1365.6	5298	1365.6	5324	1364.6	5360	1364.7	5402	1364.4
5472	1364	5525	1363.9	55291	363.118	5547	1359.6	5673	1359.7
5685	1360.2	5700	1362.1	5725	1363.3	5779	1364.8	5824	1366.5
5894	1368.5	5929	1369.1						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5529	.07	5685	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5529	5685	1	30	30	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1362.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.070	0.051
W.S. Elev (ft)	1361.89	Reach Len. (ft)	1.00	30.00	30.00
Crit W.S. (ft)	1360.95	Flow Area (sq ft)		319.42	11.32
E.G. Slope (ft/ft)	0.009796	Area (sq ft)		319.42	11.32
Q Total (cfs)	1140.00	Flow (cfs)		1110.95	29.05
Top Width (ft)	163.10	Top Width (ft)		149.73	13.37
Vel Total (ft/s)	3.45	Avg. Vel. (ft/s)		3.48	2.57
Max Chl Dpth (ft)	2.29	Hydr. Depth (ft)		2.13	0.85
Conv. Total (cfs)	11518.1	Conv. (cfs)		11224.6	293.5
Length Wtd. (ft)	30.00	Wetted Per. (ft)		149.97	13.47

Min Ch El (ft)	1359.60	Shear (lb/sq ft)		1.30	0.51
Alpha	1.01	Stream Power (lb/ft s)		4.53	1.32
Frctn Loss (ft)		Cum Volume (acre-ft)	36.48	34.76	10.06
C & E Loss (ft)		Cum SA (acres)	37.74	11.47	9.48

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1362.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.070	
W.S. Elev (ft)	1362.33	Reach Len. (ft)	1.00	30.00	30.00
Crit W.S. (ft)	1360.94	Flow Area (sq ft)		384.62	
E.G. Slope (ft/ft)	0.005771	Area (sq ft)		384.62	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	151.94	Top Width (ft)		151.94	
Vel Total (ft/s)	2.96	Avg. Vel. (ft/s)		2.96	
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)		2.53	
Conv. Total (cfs)	15006.8	Conv. (cfs)		15006.8	
Length Wtd. (ft)	30.00	Wetted Per. (ft)		154.34	
Min Ch El (ft)	1359.60	Shear (lb/sq ft)		0.90	
Alpha	1.00	Stream Power (lb/ft s)		2.66	
Frctn Loss (ft)		Cum Volume (acre-ft)	21.06	36.84	4.61
C & E Loss (ft)		Cum SA (acres)	9.79	11.02	2.09

CULVERT RIVER: RIVER-1
REACH: Reach-1 RS: 1.266

INPUT
Description:
Distance from Upstream XS = .5
Deck/Roadway Width = 29
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 21

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
5000	1369.8	0	5071	1367.4	0	5130	1364.4	0
5169	1363.4	0	5200	1364.6	0	5244	1365.6	0
5298	1365.6	0	5324	1364.6	0	5360	1364.7	0
5402	1364.4	0	5472	1364	0	5525	1363.9	0
5547	1360	0	5673	1360	0	5685	1360.2	0
5700	1362.1	0	5725	1363.3	0	5779	1364.8	0

```
    5824  1366.5       0    5894  1368.5       0    5929  1369.1       0

Upstream Bridge Cross Section Data
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000  1369.8    5071  1367.4    5130  1364.4    5169  1363.4    5200  1364.6
    5244  1365.6    5298  1365.6    5324  1364.6    5360  1364.7    5402  1364.4
    5472    1364    5525  1363.9    55291363.118    5547  1359.6    5673  1359.7
    5685  1360.2    5700  1362.1    5725  1363.3    5779  1364.8    5824  1366.5
    5894  1368.5    5929  1369.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5529     .07    5685    .051

Bank Sta: Left   Right    Coeff Contr.   Expan.
          5529    5685             .1       .3

Downstream  Deck/Roadway Coordinates
    num=      21
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    5000  1369.8       0    5071  1367.4       0    5130  1364.4       0
    5169  1363.4       0    5200  1364.6       0    5244  1365.6       0
    5298  1365.6       0    5324  1364.6       0    5360  1364.7       0
    5402  1364.4       0    5472    1364       0    5525  1363.9       0
    5547    1360       0    5673    1360       0    5685  1360.2       0
    5700  1362.1       0    5725  1363.3       0    5779  1364.8       0
    5824  1366.5       0    5894  1368.5       0    5929  1369.1       0

Downstream Bridge Cross Section Data
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000  1369.8    5071  1367.4    5130  1364.4    5169  1363.4    5200  1364.6
    5244  1365.6    5298  1365.6    5324  1364.6    5360  1364.7    5402  1364.4
    5472    1364    5525  1363.9    5547  1359.6    5560 1359.61    5673  1359.7
    5685  1360.2    5700  1362.1    5725  1363.3    5779  1364.8    5824  1366.5
    5894  1368.5    5929  1369.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5560     .07    5673    .051
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```
Bank Sta: Left   Right    Coeff Contr.   Expan.
          5560    5673             .1       .3

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         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     1.5
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                .5      29       .013                  .5                1
Upstream   Elevation =  1358
           Centerline Station =  5680
Downstream Elevation =  1357
           Centerline Station =  5680

CULVERT OUTPUT    Profile #PF 1
Culvert ID : Culvert #1

  Culv Q (cfs)              3.73    Culv Ful Lngh (ft)        29.00
  # Barrels                    1    Culv Vel US (ft/s)         2.11
  Q Barrel (cfs)            3.73    Culv Vel DS (ft/s)         2.11
  E.G. US. (ft)          1362.08    Culv Inv El Up (ft)     1358.00
  W.S. US. (ft)          1361.89    Culv Inv El Dn (ft)     1357.00
  E.G. DS (ft)           1362.01    Culv Frctn Ls (ft)         0.04
  W.S. DS (ft)           1361.80    Culv Ext Lss (ft)
  Delta EG (ft)             0.07    Culv Ent Lss (ft)          0.03
  Delta WS (ft)             0.09    Q Weir (cfs)            1136.27
  E.G. IC (ft)           1362.10    Weir Sta Lft (ft)       5535.10
  E.G. OC (ft)           1362.08    Weir Sta Rgt (ft)       5700.22
  Culvert Control         Outlet    Weir Submerg               0.85
  Culv WS Inlet (ft)     1359.50    Weir Max Depth (ft)        2.11
  Culv WS Outlet (ft)    1358.50    Weir Avg Depth (ft)        1.92
```

Culv Nml Depth (ft)		Wr Flw Area (sq ft)	317.02
Culv Crt Depth (ft)	0.74	Min El Weir Flow (ft)	1360.01

CULVERT OUTPUT Profile #PF 2
Culvert ID : Culvert #1

Culv Q (cfs)	3.34	Culv Ful Lngh (ft)	29.00
# Barrels	1	Culv Vel US (ft/s)	1.89
Q Barrel (cfs)	3.34	Culv Vel DS (ft/s)	1.89
E.G. US. (ft)	1362.47	Culv Inv El Up (ft)	1358.00
W.S. US. (ft)	1362.33	Culv Inv El Dn (ft)	1357.00
E.G. DS (ft)	1362.41	Culv Frctn Ls (ft)	0.03
W.S. DS (ft)	1362.22	Culv Ext Lss (ft)	
Delta EG (ft)	0.06	Culv Ent Lss (ft)	0.03
Delta WS (ft)	0.11	Q Weir (cfs)	1136.67
E.G. IC (ft)	1362.46	Weir Sta Lft (ft)	5533.11
E.G. OC (ft)	1362.47	Weir Sta Rgt (ft)	5707.54
Culvert Control	Outlet	Weir Submerg	0.94
Culv WS Inlet (ft)	1359.50	Weir Max Depth (ft)	2.46
Culv WS Outlet (ft)	1358.50	Weir Avg Depth (ft)	2.16
Culv Nml Depth (ft)		Wr Flw Area (sq ft)	376.66
Culv Crt Depth (ft)	0.70	Min El Weir Flow (ft)	1360.01

Warning: During the culvert inlet computations, the program could not balance the culvert/weir flow.
The reported inlet energy grade answer may not be valid.

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 1.263

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1369.8	5071	1367.4	5130	1364.4	5169	1363.4	5200	1364.6
5244	1365.6	5298	1365.6	5324	1364.6	5360	1364.7	5402	1364.4
5472	1364	5525	1363.9	5547	1359.6	5560	1359.61	5673	1359.7
5685	1360.2	5700	1362.1	5725	1363.3	5779	1364.8	5824	1366.5
5894	1368.5	5929	1369.1						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5560	.07	5673	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5560	5673	19.95	129	105	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1362.01	Element			
Vel Head (ft)	0.20	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1361.80	Reach Len. (ft)	19.95	129.00	105.00
Crit W.S. (ft)		Flow Area (sq ft)	41.00	242.75	32.39
E.G. Slope (ft/ft)	0.009773	Area (sq ft)	41.00	242.75	32.39
Q Total (cfs)	1140.00	Flow (cfs)	170.17	848.15	121.68
Top Width (ft)	161.93	Top Width (ft)	24.27	113.00	24.66
Vel Total (ft/s)	3.61	Avg. Vel. (ft/s)	4.15	3.49	3.76
Max Chl Dpth (ft)	2.20	Hydr. Depth (ft)	1.69	2.15	1.31
Conv. Total (cfs)	11531.4	Conv. (cfs)	1721.3	8579.3	1230.8
Length Wtd. (ft)	116.31	Wetted Per. (ft)	24.49	113.00	24.77
Min Ch El (ft)	1359.61	Shear (lb/sq ft)	1.02	1.31	0.80
Alpha	1.01	Stream Power (lb/ft s)	4.24	4.58	3.00
Frctn Loss (ft)	1.81	Cum Volume (acre-ft)	36.48	34.57	10.05
C & E Loss (ft)	0.07	Cum SA (acres)	37.74	11.38	9.46

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 #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	1362.41	Element			
Vel Head (ft)	0.19	Wt. n-Val.		0.070	0.051
W.S. Elev (ft)	1362.22	Reach Len. (ft)	19.95	129.00	105.00
Crit W.S. (ft)		Flow Area (sq ft)		289.45	35.70
E.G. Slope (ft/ft)	0.007697	Area (sq ft)		289.45	35.70
Q Total (cfs)	1140.00	Flow (cfs)		993.93	146.07
Top Width (ft)	130.00	Top Width (ft)		113.00	17.00
Vel Total (ft/s)	3.51	Avg. Vel. (ft/s)		3.43	4.09

Max Chl Dpth (ft)	2.61	Hydr. Depth (ft)		2.56		2.10
Conv. Total (cfs)	12993.8	Conv. (cfs)		11328.9		1665.0
Length Wtd. (ft)	127.46	Wetted Per. (ft)		115.61		18.43
Min Ch El (ft)	1359.61	Shear (lb/sq ft)		1.20		0.93
Alpha	1.01	Stream Power (lb/ft s)		4.13		3.81
Frctn Loss (ft)	1.55	Cum Volume (acre-ft)	21.06	36.61		4.59
C & E Loss (ft)	0.07	Cum SA (acres)	9.79	10.92		2.08

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 RIVER: RIVER-1
REACH: Reach-1 RS: 1.239

INPUT
Description:
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5070	1367.2	5102	1366.2	5148	1364	5177	1362.7	5200	1363.7
5228	1364.3	5251	1363.7	5301	1363.7	5316	1364.3	5363	1364.2
5404	1365.4	5538	1364.5	5565	1365	5572	1365.1	5579	1363.5
5585	1362.6	5588	1362.5	5597	1363.7	5606	1364.2	5612	1364.4
5626	1365.4	5635	1365.2	5645	1363.8	56501362.961		56751358.768	
5676	1358.6	56851357.475		5700	1355.6	5711	1353.1	5720	1357.9
57251358.162		5741	1359	5752	1361.1	5764	1363.2	5777	1363.9
5831	1364.7	5840	1365						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5070	.053	5685	.07	5720	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5685	5720	50	35	20	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1360.13	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.95	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1359.17	Reach Len. (ft)	50.00	35.00	20.00
Crit W.S. (ft)		Flow Area (sq ft)	11.19	125.63	15.25
E.G. Slope (ft/ft)	0.028378	Area (sq ft)	11.19	125.63	15.25
Q Total (cfs)	1140.00	Flow (cfs)	54.43	1022.23	63.34
Top Width (ft)	69.32	Top Width (ft)	12.41	35.00	21.90
Vel Total (ft/s)	7.50	Avg. Vel. (ft/s)	4.86	8.14	4.15
Max Chl Dpth (ft)	6.07	Hydr. Depth (ft)	0.90	3.59	0.70
Conv. Total (cfs)	6767.3	Conv. (cfs)	323.1	6068.2	376.0
Length Wtd. (ft)	34.83	Wetted Per. (ft)	12.53	36.60	21.95
Min Ch El (ft)	1353.10	Shear (lb/sq ft)	1.58	6.08	1.23
Alpha	1.09	Stream Power (lb/ft s)	7.70	49.48	5.11
Frctn Loss (ft)	1.12	Cum Volume (acre-ft)	36.46	34.02	9.99
C & E Loss (ft)	0.00	Cum SA (acres)	37.73	11.16	9.41

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 #PF 2

E.G. Elev (ft)	1360.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.		0.070	
W.S. Elev (ft)	1359.91	Reach Len. (ft)	50.00	35.00	20.00
Crit W.S. (ft)	1358.80	Flow Area (sq ft)		151.30	
E.G. Slope (ft/ft)	0.022117	Area (sq ft)		151.30	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	35.00	Top Width (ft)		35.00	
Vel Total (ft/s)	7.53	Avg. Vel. (ft/s)		7.53	
Max Chl Dpth (ft)	6.81	Hydr. Depth (ft)		4.32	
Conv. Total (cfs)	7665.5	Conv. (cfs)		7665.5	
Length Wtd. (ft)	35.00	Wetted Per. (ft)		41.03	
Min Ch El (ft)	1353.10	Shear (lb/sq ft)		5.09	
Alpha	1.00	Stream Power (lb/ft s)		38.36	
Frctn Loss (ft)	1.17	Cum Volume (acre-ft)	21.06	35.96	4.55
C & E Loss (ft)	0.06	Cum SA (acres)	9.79	10.70	2.06

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.

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Warning: The cross section had to be extended vertically during the critical depth 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: The parabolic search method failed to converge on critical depth.  The program will try the
         cross section slice/secant method to find critical depth.

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 1.232

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000    1359  5020.7  1357.6  5037.2  1357.4    5094  1352.7    5150  1351.5
    5200  1351.6  5281.2  1349.9  5333.5  1350.2  5351.4  1350.6  5367.6  1351.3
  5428.4  1349.9  5459.7  1352.6  5490.9  1360.4  5501.8  1359.2    55301357.058
    55351356.678    5538 1356.45    55481355.691  5549.2  1355.6  5561.5  1352.8
  5574.1  1356.7    55751356.707    55771356.723    55801356.746    5587  1356.8
  5612.6  1360.9  5649.6  1363.7  5676.2  1364.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5538     .07    5577    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5538    5577           249.92  210.98  216.92             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
888       F
Left Levee      Station=  5490.9      Elevation=  1360.4

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1359.00    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.95    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1358.05    Reach Len. (ft)         249.92     210.98     216.92
  Crit W.S. (ft)           1358.05    Flow Area (sq ft)        16.78     115.38      17.71
  E.G. Slope (ft/ft)      0.036445    Area (sq ft)             16.78     115.38      17.71
  Q Total (cfs)            1140.00    Flow (cfs)               87.55     948.39     104.07
  Top Width (ft)             77.80    Top Width (ft)           21.02      39.00      17.79
  Vel Total (ft/s)            7.61    Avg. Vel. (ft/s)          5.22       8.22       5.88
  Max Chl Dpth (ft)           8.15    Hydr. Depth (ft)          0.80       2.96       1.00
```

Conv. Total (cfs)	5971.6	Conv. (cfs)	458.6	4967.9	545.1
Length Wtd. (ft)	214.04	Wetted Per. (ft)	21.08	39.94	17.88
Min Ch El (ft)	1352.80	Shear (lb/sq ft)	1.81	6.57	2.25
Alpha	1.06	Stream Power (lb/ft s)	9.45	54.03	13.24
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	36.45	33.93	9.98
C & E Loss (ft)	0.27	Cum SA (acres)	37.71	11.13	9.40

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.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1359.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.48	Wt. n-Val.		0.070	
W.S. Elev (ft)	1358.08	Reach Len. (ft)	249.92	210.98	216.92
Crit W.S. (ft)	1358.08	Flow Area (sq ft)		116.78	
E.G. Slope (ft/ft)	0.055686	Area (sq ft)		116.78	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	39.00	Top Width (ft)		39.00	
Vel Total (ft/s)	9.76	Avg. Vel. (ft/s)		9.76	
Max Chl Dpth (ft)	5.28	Hydr. Depth (ft)		2.99	
Conv. Total (cfs)	4830.9	Conv. (cfs)		4830.9	
Length Wtd. (ft)	210.98	Wetted Per. (ft)		42.93	
Min Ch El (ft)	1352.80	Shear (lb/sq ft)		9.46	
Alpha	1.00	Stream Power (lb/ft s)		92.32	
Frctn Loss (ft)	1.20	Cum Volume (acre-ft)	21.06	35.85	4.55
C & E Loss (ft)	0.42	Cum SA (acres)	9.79	10.67	2.06

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.
Warning: The parabolic search method failed to converge on critical depth.  The program will try the
         cross section slice/secant method to find critical depth.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION          RIVER: RIVER-1
REACH: Reach-1            RS: 1.192

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    5000    1357  5014.6  1355.8  5033.3  1354.7    5050  1353.9  5084.9  1352.9
    51261348.342  5137.2  1347.1  5235.9  1347.2    52411348.258  5249.4    1350
  5267.6  1350.1  5274.2  1348.7  5283.2  1347.7  5290.3  1350.1  5294.5    1351
  5321.2  1351.3    5350  1352.3  5404.9  1354.9  5426.8  1356.4  5444.1  1361.1
  5515.7  1361.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5126     .07    5241    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5126    5241             182     100     123             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1351.28    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.06    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1351.22    Reach Len. (ft)         182.00     100.00     123.00
  Crit W.S. (ft)                      Flow Area (sq ft)        37.27     458.37      99.27
  E.G. Slope (ft/ft)      0.001414    Area (sq ft)             37.27     458.37      99.27
```

Q Total (cfs)	1140.00	Flow (cfs)	49.85	918.96	171.19
Top Width (ft)	213.74	Top Width (ft)	25.92	115.00	72.81
Vel Total (ft/s)	1.92	Avg. Vel. (ft/s)	1.34	2.00	1.72
Max Chl Dpth (ft)	4.12	Hydr. Depth (ft)	1.44	3.99	1.36
Conv. Total (cfs)	30311.8	Conv. (cfs)	1325.4	24434.6	4551.9
Length Wtd. (ft)	103.79	Wetted Per. (ft)	26.08	115.18	73.69
Min Ch El (ft)	1347.10	Shear (lb/sq ft)	0.13	0.35	0.12
Alpha	1.03	Stream Power (lb/ft s)	0.17	0.70	0.21
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	36.29	32.54	9.69
C & E Loss (ft)	0.01	Cum SA (acres)	37.58	10.76	9.17

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1351.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.070	
W.S. Elev (ft)	1351.39	Reach Len. (ft)	182.00	100.00	123.00
Crit W.S. (ft)		Flow Area (sq ft)		478.75	
E.G. Slope (ft/ft)	0.002019	Area (sq ft)		478.75	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	115.00	Top Width (ft)		115.00	
Vel Total (ft/s)	2.38	Avg. Vel. (ft/s)		2.38	
Max Chl Dpth (ft)	4.29	Hydr. Depth (ft)		4.16	
Conv. Total (cfs)	25371.4	Conv. (cfs)		25371.4	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		121.37	
Min Ch El (ft)	1347.10	Shear (lb/sq ft)		0.50	
Alpha	1.00	Stream Power (lb/ft s)		1.18	
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	21.06	34.41	4.55
C & E Loss (ft)	0.02	Cum SA (acres)	9.79	10.30	2.06

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: RIVER-1
REACH: Reach-1 RS: 1.173

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1356.7	5014.5	1355.4	5029.3	1353.7	5082.8	1351.5	5104.2	1351

```
  5130.3  1349.3  5148.9  1348.5  5163.7  1347.1  5327.8  1347.1    53341348.189
    5350    1351  5359.7  1353.2  5394.3  1355.2  5420.8    1356  5440.8  1357.1
  5483.1  1358.5  5496.3  1359.1    5508  1359.2    5526  1360.4    5550  1361.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053  5104.2     .07    5334    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        5104.2    5334             195  136.95  100.05             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1351.16    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.03    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1351.13    Reach Len. (ft)         195.00     136.95     100.05
  Crit W.S. (ft)                      Flow Area (sq ft)         0.35     798.66      24.56
  E.G. Slope (ft/ft)      0.000820    Area (sq ft)              0.35     798.66      24.56
  Q Total (cfs)            1140.00    Flow (cfs)                0.04    1113.03      26.93
  Top Width (ft)            251.81    Top Width (ft)            5.45     229.80      16.56
  Vel Total (ft/s)            1.38    Avg. Vel. (ft/s)          0.13       1.39       1.10
  Max Chl Dpth (ft)           4.03    Hydr. Depth (ft)          0.06       3.48       1.48
  Conv. Total (cfs)        39814.4    Conv. (cfs)               1.6    38872.3      940.5
  Length Wtd. (ft)          139.75    Wetted Per. (ft)          5.45     230.03      16.82
  Min Ch El (ft)           1347.10    Shear (lb/sq ft)          0.00       0.18       0.07
  Alpha                       1.00    Stream Power (lb/ft s)    0.00       0.25       0.08
  Frctn Loss (ft)             0.16    Cum Volume (acre-ft)     36.21      31.09       9.52
  C & E Loss (ft)             0.00    Cum SA (acres)           37.51      10.36       9.05


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 #PF 2

  E.G. Elev (ft)           1351.35    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.03    Wt. n-Val.                         0.070
  W.S. Elev (ft)           1351.32    Reach Len. (ft)         195.00     136.95     100.05
  Crit W.S. (ft)                      Flow Area (sq ft)                  843.40
  E.G. Slope (ft/ft)      0.000732    Area (sq ft)                       843.40
  Q Total (cfs)            1140.00    Flow (cfs)                        1140.00
  Top Width (ft)            229.80    Top Width (ft)                     229.80
```

Vel Total (ft/s)	1.35	Avg. Vel. (ft/s)	1.35		
Max Chl Dpth (ft)	4.22	Hydr. Depth (ft)	3.67		
Conv. Total (cfs)	42148.2	Conv. (cfs)	42148.2		
Length Wtd. (ft)	136.95	Wetted Per. (ft)	233.49		
Min Ch El (ft)	1347.10	Shear (lb/sq ft)	0.16		
Alpha	1.00	Stream Power (lb/ft s)	0.22		
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	21.06	32.89	4.55
C & E Loss (ft)	0.01	Cum SA (acres)	9.79	9.91	2.06

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: RIVER-1
REACH: Reach-1 RS: 1.147

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1353.9	5053	1351.9	5109.9	1351	5143.6	1353.1	5168.7	1350.1
5252.6	1349.8	5261.6	1348.5	52651348.158		5275.5	1347.1	5376.4	1347.1
53831348.282		5403.2	1351.9	5417.7	1354.7	5452.4	1355.1	5467.7	1356.2
5485.5	1356.7	5513	1358.5	5544.7	1359.3				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5000	.053	5265	.07	5383	.051

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5265	5383	240	232.08	388.08	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1350.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.053	0.070	0.051
W.S. Elev (ft)	1350.92	Reach Len. (ft)	240.00	232.08	388.08
Crit W.S. (ft)		Flow Area (sq ft)	109.11	441.51	19.45
E.G. Slope (ft/ft)	0.001831	Area (sq ft)	109.11	441.51	19.45
Q Total (cfs)	1140.00	Flow (cfs)	145.52	965.61	28.87
Top Width (ft)	235.91	Top Width (ft)	103.18	118.00	14.74
Vel Total (ft/s)	2.00	Avg. Vel. (ft/s)	1.33	2.19	1.48

Max Chl Dpth (ft)	3.82	Hydr. Depth (ft)	1.06	3.74	1.32
Conv. Total (cfs)	26644.0	Conv. (cfs)	3401.0	22568.2	674.8
Length Wtd. (ft)	235.66	Wetted Per. (ft)	103.34	118.16	14.97
Min Ch El (ft)	1347.10	Shear (lb/sq ft)	0.12	0.43	0.15
Alpha	1.08	Stream Power (lb/ft s)	0.16	0.93	0.22
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	35.97	29.15	9.47
C & E Loss (ft)	0.02	Cum SA (acres)	37.27	9.82	9.01

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 #PF 2

E.G. Elev (ft)	1351.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.070	
W.S. Elev (ft)	1351.08	Reach Len. (ft)	240.00	232.08	388.08
Crit W.S. (ft)		Flow Area (sq ft)		460.61	
E.G. Slope (ft/ft)	0.002360	Area (sq ft)		460.61	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	118.00	Top Width (ft)		118.00	
Vel Total (ft/s)	2.47	Avg. Vel. (ft/s)		2.47	
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)		3.90	
Conv. Total (cfs)	23466.4	Conv. (cfs)		23466.4	
Length Wtd. (ft)	232.08	Wetted Per. (ft)		123.89	
Min Ch El (ft)	1347.10	Shear (lb/sq ft)		0.55	
Alpha	1.00	Stream Power (lb/ft s)		1.36	
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	21.06	30.84	4.55
C & E Loss (ft)	0.03	Cum SA (acres)	9.79	9.36	2.06

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: RIVER-1
REACH: Reach-1 RS: 1.103

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5000	1355.2	5034	1352.8	5048.3	1351.3	5082.2	1350	5123.8	1350.2

```
    51451348.107  5155.2  1347.1  5404.9  1347.1  5417.8  1348.9  5447.6  1349.5
  5462.8  1347.1  5672.9  1347.1    56821348.096  5713.1  1351.5  5739.9  1355.9
  5759.9    1359  5799.9  1362.6  5848.6  1363.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    5000    .053    5145     .07    5682    .051

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5145    5682             90.96  232.08  233.04             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1350.88    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.00    Wt. n-Val.               0.053      0.070      0.051
  W.S. Elev (ft)           1350.88    Reach Len. (ft)          90.96     232.08     233.04
  Crit W.S. (ft)                      Flow Area (sq ft)        79.03    1927.06      35.37
  E.G. Slope (ft/ft)      0.000131    Area (sq ft)             79.03    1927.06      35.37
  Q Total (cfs)            1140.00    Flow (cfs)               27.52    1097.83      14.66
  Top Width (ft)            648.14    Top Width (ft)           85.71     537.00      25.42
  Vel Total (ft/s)            0.56    Avg. Vel. (ft/s)          0.35       0.57       0.41
  Max Chl Dpth (ft)           3.78    Hydr. Depth (ft)          0.92       3.59       1.39
  Conv. Total (cfs)        99513.1    Conv. (cfs)              2401.9    95831.8     1279.4
  Length Wtd. (ft)          227.69    Wetted Per. (ft)         85.83     537.42      25.58
  Min Ch El (ft)           1347.10    Shear (lb/sq ft)          0.01       0.03       0.01
  Alpha                       1.02    Stream Power (lb/ft s)    0.00       0.02       0.00
  Frctn Loss (ft)             0.04    Cum Volume (acre-ft)     35.45      22.84       9.22
  C & E Loss (ft)             0.00    Cum SA (acres)           36.75       8.07       8.83


CROSS SECTION OUTPUT    Profile #PF 2

  E.G. Elev (ft)           1351.07    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.00    Wt. n-Val.                           0.070
  W.S. Elev (ft)           1351.06    Reach Len. (ft)          90.96     232.08     233.04
  Crit W.S. (ft)                      Flow Area (sq ft)                 2025.71
  E.G. Slope (ft/ft)      0.000122    Area (sq ft)                      2025.71
  Q Total (cfs)            1140.00    Flow (cfs)                        1140.00
  Top Width (ft)            537.00    Top Width (ft)                     537.00
  Vel Total (ft/s)            0.56    Avg. Vel. (ft/s)                     0.56
  Max Chl Dpth (ft)           3.96    Hydr. Depth (ft)                     3.77
  Conv. Total (cfs)       103389.3    Conv. (cfs)                      103389.3
```

Length Wtd. (ft)	232.08	Wetted Per. (ft)	543.35		
Min Ch El (ft)	1347.10	Shear (lb/sq ft)	0.03		
Alpha	1.00	Stream Power (lb/ft s)	0.02		
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	21.06	24.22	4.55
C & E Loss (ft)	0.00	Cum SA (acres)	9.79	7.61	2.06

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: RIVER-1
REACH: Reach-1 RS: 1.071

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5071.4	1357.5	5079.9	1357.2	5108.8	1351.4	5148.9	1349.4	5166.2	1350
5175.4	1350.7	52001347.843		5206.4	1347.1	5507.2	1347.1	5523.7	1349.8
5538	1349.5	5591.3	1349.6	5607.6	1349.4	5622.4	1348.1	5632.4	1348
5667.5	1348.9	5694.7	1348.6	5700	1348.8	5729.1	1349.9	5750	1350
5784.4	1350.8	5801.3	1351.5	5833.6	1352.4	5857.2	1353.5	5885.3	1356.5
5921.9	1361.6								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5071.4	.05	5200	.07	5700	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5200	5700	50.04	169.02	480.06	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1350.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.050	0.070	0.050
W.S. Elev (ft)	1350.84	Reach Len. (ft)	50.04	169.02	480.06
Crit W.S. (ft)		Flow Area (sq ft)	83.25	1502.31	76.74
E.G. Slope (ft/ft)	0.000254	Area (sq ft)	83.25	1502.31	76.74
Q Total (cfs)	1140.00	Flow (cfs)	43.70	1057.51	38.79
Top Width (ft)	665.14	Top Width (ft)	79.88	500.00	85.26
Vel Total (ft/s)	0.69	Avg. Vel. (ft/s)	0.52	0.70	0.51
Max Chl Dpth (ft)	3.74	Hydr. Depth (ft)	1.04	3.00	0.90

Conv. Total (cfs)	71549.4	Conv. (cfs)	2742.7	66371.8	2434.8
Length Wtd. (ft)	185.36	Wetted Per. (ft)	80.12	500.34	85.29
Min Ch El (ft)	1347.10	Shear (lb/sq ft)	0.02	0.05	0.01
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.03	0.01
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	35.28	13.70	8.92
C & E Loss (ft)	0.02	Cum SA (acres)	36.57	5.31	8.53

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 #PF 2

E.G. Elev (ft)	1351.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.070	
W.S. Elev (ft)	1351.02	Reach Len. (ft)	50.04	169.02	480.06
Crit W.S. (ft)		Flow Area (sq ft)		1594.77	
E.G. Slope (ft/ft)	0.000245	Area (sq ft)		1594.77	
Q Total (cfs)	1140.00	Flow (cfs)		1140.00	
Top Width (ft)	500.00	Top Width (ft)		500.00	
Vel Total (ft/s)	0.71	Avg. Vel. (ft/s)		0.71	
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)		3.19	
Conv. Total (cfs)	72796.6	Conv. (cfs)		72796.6	
Length Wtd. (ft)	169.02	Wetted Per. (ft)		505.74	
Min Ch El (ft)	1347.10	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	21.06	14.57	4.55
C & E Loss (ft)	0.03	Cum SA (acres)	9.79	4.85	2.06

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: RIVER-1
REACH: Reach-1 RS: .963

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5029.9	1358.7	5116.2	1350.8	51321349.849		5151.1	1348.7	5167	1350.2
5179.03	1352	5200	1352.18	5260.79	1352.7	5381	1352.7	5500.44	1352.7

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 6005.11  1352.7  6095.2  1352.7  6129.6  1352.9  6164.7  1349.7  6179.3  1348.6
    6295  1348.8    63001348.657    6309  1348.4  6343.7  1351.6  6375.1  1352.5
  6434.4    1355    6480    1356

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  5029.9    .065    5200     .07    6300    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          5200    6300           875.05     550  480.15             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1350.67    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.20    Wt. n-Val.               0.065      0.070      0.065
  W.S. Elev (ft)           1350.47    Reach Len. (ft)         875.05     550.00     480.15
  Crit W.S. (ft)           1349.90    Flow Area (sq ft)        42.39     235.68      40.63
  E.G. Slope (ft/ft)      0.015665    Area (sq ft)             42.39     235.68      40.63
  Q Total (cfs)            1140.00    Flow (cfs)              124.31     870.45     145.25
  Top Width (ft)            222.21    Top Width (ft)           47.07     143.72      31.42
  Vel Total (ft/s)             3.58    Avg. Vel. (ft/s)         2.93       3.69       3.57
  Max Chl Dpth (ft)            2.07    Hydr. Depth (ft)         0.90       1.64       1.29
  Conv. Total (cfs)         9108.2    Conv. (cfs)              993.2     6954.6     1160.5
  Length Wtd. (ft)          563.56    Wetted Per. (ft)         47.21     143.80      31.52
  Min Ch El (ft)           1348.60    Shear (lb/sq ft)         0.88       1.60       1.26
  Alpha                        1.01    Stream Power (lb/ft s)   2.58       5.92       4.51
  Frctn Loss (ft)              8.77    Cum Volume (acre-ft)     35.21      10.33      8.28
  C & E Loss (ft)              0.02    Cum SA (acres)           36.50       4.06       7.89


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.

CROSS SECTION OUTPUT    Profile #PF 2

  E.G. Elev (ft)           1350.85    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.35    Wt. n-Val.                         0.070
  W.S. Elev (ft)           1350.51    Reach Len. (ft)         875.05     550.00     480.15
  Crit W.S. (ft)           1350.05    Flow Area (sq ft)                  241.41
  E.G. Slope (ft/ft)      0.025331    Area (sq ft)                       241.41
  Q Total (cfs)            1140.00    Flow (cfs)                        1140.00
```

Top Width (ft)	144.16	Top Width (ft)		144.16		
Vel Total (ft/s)	4.72	Avg. Vel. (ft/s)		4.72		
Max Chl Dpth (ft)	1.91	Hydr. Depth (ft)		1.67		
Conv. Total (cfs)	7162.8	Conv. (cfs)		7162.8		
Length Wtd. (ft)	551.43	Wetted Per. (ft)		146.09		
Min Ch El (ft)	1348.60	Shear (lb/sq ft)		2.61		
Alpha	1.00	Stream Power (lb/ft s)		12.34		
Frctn Loss (ft)	8.76	Cum Volume (acre-ft)	21.06	11.01	4.55	
C & E Loss (ft)	0.02	Cum SA (acres)	9.79	3.60	2.06	

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: RIVER-1
REACH: Reach-1 RS: .859

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5215.3	1349	5229.1	1348.4	5311.1	1347.4	5383.2	1344.4	5409.1	1346
5574.3	1345.3	5644.2	1344.2	5794.7	1341.2	5805.8	1338.9	5881.8	1338.8
58851339.486		58901340.557		58951341.629		5900	1342.7	5914.5	1343.1
6000	1343.1	6050	1343.2	6150	1343.4	6250	1344.8	6355.5	1346.7
6471.8	1349.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5215.3	.05	5794.7	.07	5890	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5794.7	5890	70	26	36	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1341.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.050	0.070	0.050
W.S. Elev (ft)	1341.53	Reach Len. (ft)	70.00	26.00	36.00
Crit W.S. (ft)		Flow Area (sq ft)	2.77	235.48	2.22

E.G. Slope (ft/ft)	0.015442	Area (sq ft)	2.77	235.48	2.22
Q Total (cfs)	1140.00	Flow (cfs)	3.08	1131.92	5.00
Top Width (ft)	116.50	Top Width (ft)	16.66	95.30	4.55
Vel Total (ft/s)	4.74	Avg. Vel. (ft/s)	1.12	4.81	2.25
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	0.17	2.47	0.49
Conv. Total (cfs)	9173.9	Conv. (cfs)	24.8	9108.9	40.2
Length Wtd. (ft)	32.44	Wetted Per. (ft)	16.66	95.72	4.65
Min Ch El (ft)	1338.80	Shear (lb/sq ft)	0.16	2.37	0.46
Alpha	1.02	Stream Power (lb/ft s)	0.18	11.40	1.04
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	34.76	7.35	8.04
C & E Loss (ft)	0.10	Cum SA (acres)	35.86	2.55	7.69

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 #PF 2

E.G. Elev (ft)	1342.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.050	0.070	0.050
W.S. Elev (ft)	1341.79	Reach Len. (ft)	70.00	26.00	36.00
Crit W.S. (ft)		Flow Area (sq ft)	8.65	259.80	3.53
E.G. Slope (ft/ft)	0.010890	Area (sq ft)	8.65	259.80	3.53
Q Total (cfs)	1140.00	Flow (cfs)	11.85	1119.80	8.35
Top Width (ft)	130.50	Top Width (ft)	29.46	95.30	5.74
Vel Total (ft/s)	4.19	Avg. Vel. (ft/s)	1.37	4.31	2.36
Max Chl Dpth (ft)	2.99	Hydr. Depth (ft)	0.29	2.73	0.62
Conv. Total (cfs)	10924.1	Conv. (cfs)	113.6	10730.6	80.0
Length Wtd. (ft)	31.97	Wetted Per. (ft)	29.47	95.72	5.87
Min Ch El (ft)	1338.80	Shear (lb/sq ft)	0.20	1.85	0.41
Alpha	1.04	Stream Power (lb/ft s)	0.27	7.95	0.97
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	20.97	7.84	4.53
C & E Loss (ft)	0.07	Cum SA (acres)	9.50	2.09	2.03

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: RIVER-1
REACH: Reach-1 RS: 0.854

INPUT

Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5325.8	1348.6	5429.4	1344.4	5446.1	1345.5	5589.5	1345.2	5635.7	1344.4
5651.4	1341.6	5875.4	1339.7	6023.7	1339.2	6069.9	1340.1	6187.3	1340.6
6201.6	1343.1	6382.6	1346	6421.7	1346.4	6505.8	1349.2	6633.4	1352.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5325.8	.05	5875.4	.07	6069.9	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5875.4	6069.9	72	32	38	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1341.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.050	0.070	0.050
W.S. Elev (ft)	1341.62	Reach Len. (ft)	72.00	32.00	38.00
Crit W.S. (ft)		Flow Area (sq ft)	217.86	413.33	152.39
E.G. Slope (ft/ft)	0.001904	Area (sq ft)	217.86	413.33	152.39
Q Total (cfs)	1140.00	Flow (cfs)	277.30	632.75	229.95
Top Width (ft)	541.88	Top Width (ft)	224.13	194.50	123.25
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)	1.27	1.53	1.51
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)	0.97	2.13	1.24
Conv. Total (cfs)	26127.9	Conv. (cfs)	6355.5	14502.2	5270.2
Length Wtd. (ft)	39.91	Wetted Per. (ft)	224.14	194.51	123.34
Min Ch El (ft)	1339.20	Shear (lb/sq ft)	0.12	0.25	0.15
Alpha	1.02	Stream Power (lb/ft s)	0.15	0.39	0.22
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	34.58	7.16	7.98
C & E Loss (ft)	0.03	Cum SA (acres)	35.67	2.47	7.64

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 #PF 2

E.G. Elev (ft)	1341.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.050	0.070	
W.S. Elev (ft)	1341.79	Reach Len. (ft)	72.00	32.00	38.00
Crit W.S. (ft)		Flow Area (sq ft)	133.31	445.46	

E.G. Slope (ft/ft)	0.002672	Area (sq ft)	133.31	445.46	
Q Total (cfs)	1140.00	Flow (cfs)	295.64	844.36	
Top Width (ft)	269.90	Top Width (ft)	75.40	194.50	
Vel Total (ft/s)	1.97	Avg. Vel. (ft/s)	2.22	1.90	
Max Chl Dpth (ft)	2.59	Hydr. Depth (ft)	1.77	2.29	
Conv. Total (cfs)	22054.0	Conv. (cfs)	5719.4	16334.6	
Length Wtd. (ft)	40.28	Wetted Per. (ft)	76.85	196.20	
Min Ch El (ft)	1339.20	Shear (lb/sq ft)	0.29	0.38	
Alpha	1.01	Stream Power (lb/ft s)	0.64	0.72	
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	20.86	7.63	4.53
C & E Loss (ft)	0.01	Cum SA (acres)	9.41	2.00	2.03

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: RIVER-1
REACH: Reach-1 RS: 0.848

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
5325.2	1350.3	5467.7	1344.3	5481.5	1345.3	5618.6	1344.9	5632.5	1341.6
5642.1	1343.2	5665.3	1343.1	5670.8	1342.3	5855.7	1340.9	5938.3	1340.4
5987	1339.6	6054.5	1340	6140.9	1340.7	6228.2	1341.3	6231.3	1341.8
6254	1341.9	6261.1	1340.3	6276.9	1343.1	6381.6	1344.7	6497.4	1346.5
6548.8	1348.7	6662.5	1351.4						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
5325.2	.05	5938.3	.07	6140.9	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
5938.3	6140.9	45	15	102	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1341.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.050	0.070	0.050
W.S. Elev (ft)	1341.07	Reach Len. (ft)	45.00	15.00	102.00
Crit W.S. (ft)	1341.07	Flow Area (sq ft)	36.04	198.97	12.62

E.G. Slope (ft/ft)	0.054415	Area (sq ft)	36.04	198.97	12.62
Q Total (cfs)	1140.00	Flow (cfs)	134.39	973.42	32.20
Top Width (ft)	367.72	Top Width (ft)	104.35	202.60	60.77
Vel Total (ft/s)	4.60	Avg. Vel. (ft/s)	3.73	4.89	2.55
Max Chl Dpth (ft)	1.46	Hydr. Depth (ft)	0.35	0.98	0.21
Conv. Total (cfs)	4887.0	Conv. (cfs)	576.1	4172.9	138.0
Length Wtd. (ft)	27.28	Wetted Per. (ft)	104.35	202.61	60.92
Min Ch El (ft)	1339.60	Shear (lb/sq ft)	1.17	3.34	0.70
Alpha	1.05	Stream Power (lb/ft s)	4.38	16.32	1.80
Frctn Loss (ft)	0.63	Cum Volume (acre-ft)	34.37	6.94	7.90
C & E Loss (ft)	0.04	Cum SA (acres)	35.40	2.32	7.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
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: 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 #PF 2

E.G. Elev (ft)	1341.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.050	0.070	
W.S. Elev (ft)	1341.40	Reach Len. (ft)	45.00	15.00	102.00
Crit W.S. (ft)		Flow Area (sq ft)	48.03	266.96	
E.G. Slope (ft/ft)	0.020104	Area (sq ft)	48.03	266.96	
Q Total (cfs)	1140.00	Flow (cfs)	176.53	963.47	
Top Width (ft)	260.90	Top Width (ft)	58.30	202.60	
Vel Total (ft/s)	3.62	Avg. Vel. (ft/s)	3.68	3.61	
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)	0.82	1.32	
Conv. Total (cfs)	8040.1	Conv. (cfs)	1245.0	6795.1	
Length Wtd. (ft)	23.12	Wetted Per. (ft)	58.95	203.31	
Min Ch El (ft)	1339.60	Shear (lb/sq ft)	1.02	1.65	
Alpha	1.00	Stream Power (lb/ft s)	3.76	5.95	
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	20.71	7.37	4.53
C & E Loss (ft)	0.00	Cum SA (acres)	9.30	1.86	2.03

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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: RIVER-1
REACH: Reach-1            RS: 0.845

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  5363.4  1352.3  5411.6  1349.3  5523.2  1344.2  5547.6  1345.6  5614.8  1344.9
  5630.1  1341.9  5638.4  1343.6  5661.7  1343.5  5679.3  1342.6  5759.9  1341.7
  5859.7  1340.4    5885  1339.6  5974.8  1338.5  5991.3    1338  6031.1  1338.2
  6052.7  1339.2  6120.7  1340.6  6137.5  1339.6  6167.8  1340.9    6292  1341.3
  6311.7    1342  6334.7    1342  6334.7  1342.1    6357  1343.1  6406.8  1344.4
    6440  1344.4  6570.8  1346.6  6703.6  1350.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  5363.4     .05  5974.8     .07  6052.7     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        5974.8  6052.7               81      81      81             .1       .3

CROSS SECTION OUTPUT    Profile #PF 1

  E.G. Elev (ft)           1340.53    Element                 Left OB    Channel   Right OB
  Vel Head (ft)               0.21    Wt. n-Val.               0.050      0.070      0.050
  W.S. Elev (ft)           1340.32    Reach Len. (ft)          81.00      81.00      81.00
  Crit W.S. (ft)                      Flow Area (sq ft)       121.81     157.21      40.54
  E.G. Slope (ft/ft)      0.012572    Area (sq ft)            121.81     157.21      40.54
  Q Total (cfs)            1140.00    Flow (cfs)              457.03     597.37      85.60
  Top Width (ft)            273.29    Top Width (ft)          112.45      77.90      82.94
  Vel Total (ft/s)            3.57    Avg. Vel. (ft/s)          3.75       3.80       2.11
  Max Chl Dpth (ft)           2.32    Hydr. Depth (ft)          1.08       2.02       0.49
  Conv. Total (cfs)        10167.3    Conv. (cfs)             4076.1     5327.7      763.5
  Length Wtd. (ft)            81.00   Wetted Per. (ft)        112.47      77.93      82.99
  Min Ch El (ft)           1338.00    Shear (lb/sq ft)          0.85       1.58       0.38
  Alpha                       1.06    Stream Power (lb/ft s)    3.19       6.02       0.81
  Frctn Loss (ft)             0.39    Cum Volume (acre-ft)      34.29      6.87       7.84
  C & E Loss (ft)             0.04    Cum SA (acres)            35.28      2.27       7.39
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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.

CROSS SECTION OUTPUT    Profile #PF 2

  E.G. Elev (ft)           1341.35    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.22    Wt. n-Val.                0.050      0.070      0.050
  W.S. Elev (ft)           1341.13    Reach Len. (ft)           81.00      81.00      81.00
  Crit W.S. (ft)                      Flow Area (sq ft)         72.80     220.24      13.51
  E.G. Slope (ft/ft)      0.007020    Area (sq ft)              72.80     220.24      13.51
  Q Total (cfs)            1140.00    Flow (cfs)               313.14     783.03      43.84
  Top Width (ft)            115.00    Top Width (ft)            29.80      77.90       7.30
  Vel Total (ft/s)            3.72    Avg. Vel. (ft/s)           4.30       3.56       3.25
  Max Chl Dpth (ft)           3.13    Hydr. Depth (ft)           2.44       2.83       1.85
  Conv. Total (cfs)        13605.8    Conv. (cfs)              3737.2     9345.3      523.2
  Length Wtd. (ft)            81.00   Wetted Per. (ft)          32.06      77.93       9.08
  Min Ch El (ft)           1338.00    Shear (lb/sq ft)           1.00       1.24       0.65
  Alpha                       1.02    Stream Power (lb/ft s)     4.28       4.40       2.12
  Frctn Loss (ft)             0.34    Cum Volume (acre-ft)      20.65       7.29       4.51
  C & E Loss (ft)             0.01    Cum SA (acres)             9.26       1.81       2.02


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: RIVER-1
REACH: Reach-1            RS: 0.83

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9550    1350    9750    1345   10000  1343.1   10100    1342   10200  1340.2
   10280  1337.4   10318  1336.6   10328  1335.9   10335  1335.5   10340    1336
   10344  1336.6   10473  1341.4   10500  1341.4   10600  1341.3   10700    1341
   11300    1345   11650    1350

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9550     .05   10318     .07   10344     .05
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Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10318	10344	1649.21	2165.65 1050.28	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1340.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.050	0.070	0.050
W.S. Elev (ft)	1340.01	Reach Len. (ft)	1649.21	2165.65	1050.28
Crit W.S. (ft)	1338.45	Flow Area (sq ft)	211.60	103.89	156.18
E.G. Slope (ft/ft)	0.002524	Area (sq ft)	211.60	103.89	156.18
Q Total (cfs)	1140.00	Flow (cfs)	529.13	278.25	332.61
Top Width (ft)	230.17	Top Width (ft)	112.55	26.00	91.62
Vel Total (ft/s)	2.42	Avg. Vel. (ft/s)	2.50	2.68	2.13
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	1.88	4.00	1.70
Conv. Total (cfs)	22689.2	Conv. (cfs)	10531.3	5538.0	6619.9
Length Wtd. (ft)	1681.36	Wetted Per. (ft)	112.60	26.11	91.68
Min Ch El (ft)	1335.50	Shear (lb/sq ft)	0.30	0.63	0.27
Alpha	1.02	Stream Power (lb/ft s)	0.74	1.68	0.57
Frctn Loss (ft)	9.05	Cum Volume (acre-ft)	33.98	6.63	7.66
C & E Loss (ft)	0.03	Cum SA (acres)	35.08	2.17	7.23

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 #PF 2

E.G. Elev (ft)	1341.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.050	0.070	0.050
W.S. Elev (ft)	1340.81	Reach Len. (ft)	1649.21	2165.65	1050.28
Crit W.S. (ft)		Flow Area (sq ft)	144.78	124.71	62.60
E.G. Slope (ft/ft)	0.002825	Area (sq ft)	144.78	124.71	62.60
Q Total (cfs)	1140.00	Flow (cfs)	526.69	399.08	214.23
Top Width (ft)	80.00	Top Width (ft)	38.00	26.00	16.00
Vel Total (ft/s)	3.43	Avg. Vel. (ft/s)	3.64	3.20	3.42
Max Chl Dpth (ft)	5.31	Hydr. Depth (ft)	3.81	4.80	3.91
Conv. Total (cfs)	21449.4	Conv. (cfs)	9909.8	7508.7	4030.8
Length Wtd. (ft)	1705.78	Wetted Per. (ft)	41.42	26.11	19.63
Min Ch El (ft)	1335.50	Shear (lb/sq ft)	0.62	0.84	0.56

Alpha	1.01	Stream Power (lb/ft s)	2.24	2.70	1.93
Frctn Loss (ft)	9.05	Cum Volume (acre-ft)	20.45	6.97	4.44
C & E Loss (ft)	0.05	Cum SA (acres)	9.19	1.71	2.00

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: RIVER-1
REACH: Reach-1 RS: 0.42

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9500	1345	10000	1333.9	10100	1332.8	10200	1331.5	10242	1331
10385	1327.8	10387	1326.2	10390	1325.3	10391	1325.8	10395	1328.5
10400	1330.6	10500	1332.5	10600	1333.2	10725	1335	11400	1340
11700	1345								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9500	.05	10385	.072	10400	.05

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10385	10400	1300.55	1850	849.15	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1331.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.050	0.072	0.000
W.S. Elev (ft)	1330.61	Reach Len. (ft)	1300.55	1850.00	849.15
Crit W.S. (ft)	1330.21	Flow Area (sq ft)	175.99	45.95	0.00
E.G. Slope (ft/ft)	0.018462	Area (sq ft)	175.99	45.95	0.00
Q Total (cfs)	1140.00	Flow (cfs)	890.59	249.41	0.00
Top Width (ft)	140.76	Top Width (ft)	125.42	15.00	0.35
Vel Total (ft/s)	5.14	Avg. Vel. (ft/s)	5.06	5.43	0.09
Max Chl Dpth (ft)	5.31	Hydr. Depth (ft)	1.40	3.06	0.00
Conv. Total (cfs)	8390.2	Conv. (cfs)	6554.5	1835.6	0.0
Length Wtd. (ft)	1252.30	Wetted Per. (ft)	125.45	17.06	0.35

Min Ch El (ft)	1325.30	Shear (lb/sq ft)	1.62	3.10	
Alpha	1.00	Stream Power (lb/ft s)	8.18	16.85	
Frctn Loss (ft)	6.85	Cum Volume (acre-ft)	26.64	2.91	5.78
C & E Loss (ft)	0.12	Cum SA (acres)	30.57	1.16	6.12

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 #PF 2

E.G. Elev (ft)	1331.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.050	0.072	
W.S. Elev (ft)	1331.24	Reach Len. (ft)	1300.55	1850.00	849.15
Crit W.S. (ft)		Flow Area (sq ft)	155.51	24.96	
E.G. Slope (ft/ft)	0.013376	Area (sq ft)	155.51	24.96	
Q Total (cfs)	1140.00	Flow (cfs)	1040.88	99.12	
Top Width (ft)	60.00	Top Width (ft)	55.00	5.00	
Vel Total (ft/s)	6.32	Avg. Vel. (ft/s)	6.69	3.97	
Max Chl Dpth (ft)	5.94	Hydr. Depth (ft)	2.83	4.99	
Conv. Total (cfs)	9857.0	Conv. (cfs)	9000.0	857.0	
Length Wtd. (ft)	1227.64	Wetted Per. (ft)	57.23	11.64	
Min Ch El (ft)	1325.30	Shear (lb/sq ft)	2.27	1.79	
Alpha	1.06	Stream Power (lb/ft s)	15.19	7.11	
Frctn Loss (ft)	6.70	Cum Volume (acre-ft)	14.76	3.25	3.69
C & E Loss (ft)	0.18	Cum SA (acres)	7.43	0.94	1.81

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: RIVER-1
REACH: Reach-1 RS: 0.07

INPUT
Description:

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8700	1335	8875	1330	9400	1325	10000	1323.5	10100	1323.3
10200	1322.8	10312	1323.3	10322	1322.1	10327	1320.7	10329	1319.1
10331	1320.6	10340	1323	10400	1323	10500	1322.8	10600	1322.5
11200	1325	12000	1330	12600	1335				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
8700	.06	10312	.07	10340	.065

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10312	10340	1499.98	370	1.11	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1324.05	Element			
Vel Head (ft)	0.02	Wt. n-Val.	0.060	0.070	0.065
W.S. Elev (ft)	1324.03	Reach Len. (ft)	1499.98	370.00	1.11
Crit W.S. (ft)	1323.39	Flow Area (sq ft)	325.35	63.06	591.81
E.G. Slope (ft/ft)	0.002583	Area (sq ft)	325.35	63.06	591.81
Q Total (cfs)	1140.00	Flow (cfs)	343.21	112.53	684.26
Top Width (ft)	1177.27	Top Width (ft)	522.79	28.00	626.47
Vel Total (ft/s)	1.16	Avg. Vel. (ft/s)	1.05	1.78	1.16
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)	0.62	2.25	0.94
Conv. Total (cfs)	22429.4	Conv. (cfs)	6752.6	2214.0	13462.8
Length Wtd. (ft)	923.73	Wetted Per. (ft)	522.79	29.64	626.48
Min Ch El (ft)	1319.10	Shear (lb/sq ft)	0.10	0.34	0.15
Alpha	1.07	Stream Power (lb/ft s)	0.11	0.61	0.18
Frctn Loss (ft)	1.65	Cum Volume (acre-ft)	19.16	0.59	0.01
C & E Loss (ft)	0.00	Cum SA (acres)	20.89	0.24	0.01

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 #PF 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	1325.02	Element			
Vel Head (ft)	0.07	Wt. n-Val.	0.060	0.070	0.065
W.S. Elev (ft)	1324.96	Reach Len. (ft)	1499.98	370.00	1.11
Crit W.S. (ft)	1323.78	Flow Area (sq ft)	92.20	89.10	377.98

E.G. Slope (ft/ft)	0.002944	Area (sq ft)	92.20	89.10	377.98
Q Total (cfs)	1140.00	Flow (cfs)	177.22	213.73	749.06
Top Width (ft)	265.00	Top Width (ft)	52.00	28.00	185.00
Vel Total (ft/s)	2.04	Avg. Vel. (ft/s)	1.92	2.40	1.98
Max Chl Dpth (ft)	5.86	Hydr. Depth (ft)	1.77	3.18	2.04
Conv. Total (cfs)	21011.7	Conv. (cfs)	3266.3	3939.3	13806.0
Length Wtd. (ft)	804.35	Wetted Per. (ft)	53.89	29.64	187.23
Min Ch El (ft)	1319.10	Shear (lb/sq ft)	0.31	0.55	0.37
Alpha	1.02	Stream Power (lb/ft s)	0.60	1.33	0.74
Frctn Loss (ft)	1.61	Cum Volume (acre-ft)	11.06	0.83	0.00
C & E Loss (ft)	0.01	Cum SA (acres)	5.84	0.24	0.00

Warning: The cross section had to be extended vertically during the critical depth 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: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: RIVER-1
REACH: Reach-1 RS: 0

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8900	1335	9400	1330	9540	1325	10000	1321.9	10100	1320.8
10200	1320.4	10211	1320.6	10252	1320.8	10290	1320.6	10297	1320.5
10400	1321.4	10490	1322	10600	1321.1	10621	1320.8	10629	1319.5
10638	1319.2	10647	1319.6	10650	1322.1	10750	1322.2	10900	1322.8
11015	1321.9	11600	1325	12400	1330	13000	1335		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
8900	.051	10621	.068	10650	.052

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
10621	10650	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1322.40	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.03	Wt. n-Val.	0.051	0.068	0.052
W.S. Elev (ft)	1322.37	Reach Len. (ft)			
Crit W.S. (ft)	1321.38	Flow Area (sq ft)	787.20	76.23	60.57
E.G. Slope (ft/ft)	0.001312	Area (sq ft)	787.20	76.23	60.57
Q Total (cfs)	1140.00	Flow (cfs)	1004.89	112.30	22.80
Top Width (ft)	1010.98	Top Width (ft)	690.74	29.00	291.24
Vel Total (ft/s)	1.23	Avg. Vel. (ft/s)	1.28	1.47	0.38
Max Chl Dpth (ft)	3.17	Hydr. Depth (ft)	1.14	2.63	0.21
Conv. Total (cfs)	31469.8	Conv. (cfs)	27740.2	3100.2	629.4
Length Wtd. (ft)		Wetted Per. (ft)	690.76	30.02	291.25
Min Ch El (ft)	1319.20	Shear (lb/sq ft)	0.09	0.21	0.02
Alpha	1.09	Stream Power (lb/ft s)	0.12	0.31	0.01
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1323.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.051	0.068	
W.S. Elev (ft)	1323.37	Reach Len. (ft)			
Crit W.S. (ft)	1322.12	Flow Area (sq ft)	550.37	105.23	
E.G. Slope (ft/ft)	0.001446	Area (sq ft)	550.37	105.23	
Q Total (cfs)	1140.00	Flow (cfs)	943.73	196.27	
Top Width (ft)	316.00	Top Width (ft)	287.00	29.00	
Vel Total (ft/s)	1.74	Avg. Vel. (ft/s)	1.71	1.87	
Max Chl Dpth (ft)	4.17	Hydr. Depth (ft)	1.92	3.63	
Conv. Total (cfs)	29977.0	Conv. (cfs)	24815.8	5161.2	
Length Wtd. (ft)		Wetted Per. (ft)	289.56	31.29	
Min Ch El (ft)	1319.20	Shear (lb/sq ft)	0.17	0.30	
Alpha	1.00	Stream Power (lb/ft s)	0.29	0.57	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

SUMMARY OF MANNING'S N VALUES

River:RIVER-1

Reach	River Sta.	n1	n2	n3
Reach-1	1.913	.053	.07	.051
Reach-1	1.885	.053	.07	.051
Reach-1	1.873	Culvert		
Reach-1	1.866	.053	.07	.051
Reach-1	1.858	.053	.07	.051
Reach-1	1.793	.053	.07	.051
Reach-1	1.736	.053	.07	.051
Reach-1	1.655	.053	.07	.051
Reach-1	1.595	.053	.07	.051
Reach-1	1.576	.053	.07	.051
Reach-1	1.573	Culvert		
Reach-1	1.565	.053	.07	.051
Reach-1	1.525	.053	.07	.051
Reach-1	1.493	.053	.07	.051
Reach-1	1.458	.053	.07	.051
Reach-1	1.420	.053	.07	.051
Reach-1	1.385	.053	.07	.051
Reach-1	1.351	.053	.07	.051
Reach-1	1.305	.053	.07	.051
Reach-1	1.269	.053	.07	.051
Reach-1	1.266	Culvert		
Reach-1	1.263	.053	.07	.051
Reach-1	1.239	.053	.07	.051
Reach-1	1.232	.053	.07	.051
Reach-1	1.192	.053	.07	.051
Reach-1	1.173	.053	.07	.051
Reach-1	1.147	.053	.07	.051
Reach-1	1.103	.053	.07	.051
Reach-1	1.071	.05	.07	.05
Reach-1	.963	.065	.07	.065
Reach-1	.859	.05	.07	.05
Reach-1	0.854	.05	.07	.05
Reach-1	0.848	.05	.07	.05
Reach-1	0.845	.05	.07	.05
Reach-1	0.83	.05	.07	.05
Reach-1	0.42	.05	.072	.05

Reach-1	0.07	.06	.07	.065
Reach-1	0	.051	.068	.052

SUMMARY OF REACH LENGTHS

River: RIVER-1

Reach	River Sta.	Left	Channel	Right
Reach-1	1.913	125	147.8	160
Reach-1	1.885	90	100.32	120
Reach-1	1.873	Culvert		
Reach-1	1.866	35	43	85
Reach-1	1.858	260.1	340	360.06
Reach-1	1.793	209.1	300	311.1
Reach-1	1.736	433.01	430	313.04
Reach-1	1.655	324.06	315.15	190.08
Reach-1	1.595	169	100	95
Reach-1	1.576	116	58	174
Reach-1	1.573	Culvert		
Reach-1	1.565	220.08	210	267.96
Reach-1	1.525	104.04	169.02	212.04
Reach-1	1.493	152.95	185.06	337.06
Reach-1	1.458	158	385.2	240
Reach-1	1.420	213.94	185.06	173.09
Reach-1	1.385	176.94	180	205.02
Reach-1	1.351	570	244	92
Reach-1	1.305	89	188	155
Reach-1	1.269	1	30	30
Reach-1	1.266	Culvert		
Reach-1	1.263	19.95	129	105
Reach-1	1.239	50	35	20
Reach-1	1.232	249.92	210.98	216.92
Reach-1	1.192	182	100	123
Reach-1	1.173	195	136.95	100.05
Reach-1	1.147	240	232.08	388.08
Reach-1	1.103	90.96	232.08	233.04
Reach-1	1.071	50.04	169.02	480.06
Reach-1	.963	875.05	550	480.15

Reach-1	.859	70	26	36
Reach-1	0.854	72	32	38
Reach-1	0.848	45	15	102
Reach-1	0.845	81	81	81
Reach-1	0.83	1649.21	2165.65	1050.28
Reach-1	0.42	1300.55	1850	849.15
Reach-1	0.07	1499.98	370	1.11
Reach-1	0	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: RIVER-1

Reach	River Sta.	Contr.	Expan.
Reach-1	1.913	.1	.3
Reach-1	1.885	.1	.3
Reach-1	1.873	Culvert	
Reach-1	1.866	.1	.3
Reach-1	1.858	.1	.3
Reach-1	1.793	.1	.3
Reach-1	1.736	.1	.3
Reach-1	1.655	.1	.3
Reach-1	1.595	.1	.3
Reach-1	1.576	.1	.3
Reach-1	1.573	Culvert	
Reach-1	1.565	.1	.3
Reach-1	1.525	.1	.3
Reach-1	1.493	.1	.3
Reach-1	1.458	.1	.3
Reach-1	1.420	.1	.3
Reach-1	1.385	.1	.3
Reach-1	1.351	.1	.3
Reach-1	1.305	.1	.3
Reach-1	1.269	.1	.3
Reach-1	1.266	Culvert	
Reach-1	1.263	.1	.3
Reach-1	1.239	.1	.3
Reach-1	1.232	.1	.3

Reach-1	1.192	.1	.3
Reach-1	1.173	.1	.3
Reach-1	1.147	.1	.3
Reach-1	1.103	.1	.3
Reach-1	1.071	.1	.3
Reach-1	.963	.1	.3
Reach-1	.859	.1	.3
Reach-1	0.854	.1	.3
Reach-1	0.848	.1	.3
Reach-1	0.845	.1	.3
Reach-1	0.83	.1	.3
Reach-1	0.42	.1	.3
Reach-1	0.07	.1	.3
Reach-1	0	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	1.913	1140.00	1372.70	1375.19	1375.19	1375.66	0.031053	6.18	210.78	224.79	0.75
Reach-1	1.913	1140.00	1372.70	1375.75		1375.98	0.009298	3.96	301.35	180.00	0.43
Reach-1	1.885	1140.00	1369.50	1375.11	1370.86	1375.13	0.000501	1.16	1055.06	426.90	0.10
Reach-1	1.885	1140.00	1369.50	1375.75	1370.86	1375.77	0.000351	1.07	1070.24	240.00	0.09
Reach-1	1.873	Culvert									
Reach-1	1.866	1140.00	1368.60	1373.74		1373.75	0.000355	1.02	1136.16	320.06	0.09
Reach-1	1.866	1140.00	1368.60	1374.38		1374.39	0.000236	0.89	1279.77	280.00	0.07
Reach-1	1.858	1140.00	1368.70	1373.69		1373.72	0.001525	1.55	740.63	304.78	0.17
Reach-1	1.858	1140.00	1368.70	1374.35		1374.38	0.000824	1.31	873.49	271.40	0.13
Reach-1	1.793	1140.00	1368.50	1372.90		1372.97	0.003722	2.22	524.85	305.61	0.26
Reach-1	1.793	1140.00	1368.50	1373.83	1371.83	1373.91	0.002624	2.28	499.39	157.00	0.23
Reach-1	1.736	1140.00	1369.10	1371.71	1370.87	1371.80	0.004957	2.47	465.91	295.80	0.30
Reach-1	1.736	1140.00	1369.10	1372.21	1371.13	1372.47	0.011091	4.14	275.47	105.00	0.45
Reach-1	1.655	1140.00	1368.00	1371.08		1371.11	0.000761	1.24	874.38	398.78	0.12

Reach-1	1.655	1140.00	1368.00	1371.15		1371.21	0.001245	1.58	630.44	200.00	0.16
Reach-1	1.595	1140.00	1363.50	1371.08		1371.08	0.000029	0.43	2702.01	428.27	0.03
Reach-1	1.595	1140.00	1363.50	1371.15		1371.16	0.000035	0.47	2429.44	325.00	0.03
Reach-1	1.576	1140.00	1360.50	1371.07	1362.11	1371.08	0.000056	0.56	2088.25	394.07	0.04
Reach-1	1.576	1140.00	1360.50	1371.14	1362.11	1371.15	0.000087	0.68	1684.72	250.00	0.05
Reach-1	1.573	Culvert									
Reach-1	1.565	1140.00	1359.70	1364.67		1364.70	0.001019	1.50	770.13	328.93	0.15
Reach-1	1.565	1140.00	1359.70	1365.25		1365.29	0.000742	1.40	783.11	250.00	0.13
Reach-1	1.525	1140.00	1359.70	1364.07		1364.23	0.004845	3.09	360.60	177.62	0.31
Reach-1	1.525	1140.00	1359.70	1364.58		1364.87	0.008164	4.28	266.07	75.00	0.40
Reach-1	1.493	1140.00	1359.60	1363.94		1363.97	0.000545	1.31	810.28	212.95	0.11
Reach-1	1.493	1140.00	1359.60	1364.28		1364.34	0.001333	2.05	555.56	120.00	0.17
Reach-1	1.458	1140.00	1359.60	1363.72		1363.77	0.001707	1.85	654.49	331.80	0.19
Reach-1	1.458	1140.00	1359.60	1363.94		1364.02	0.002396	2.24	509.12	155.00	0.22
Reach-1	1.420	1140.00	1359.60	1363.23		1363.27	0.001186	1.70	744.71	358.79	0.16
Reach-1	1.420	1140.00	1359.60	1363.39		1363.43	0.001075	1.64	752.61	309.66	0.15
Reach-1	1.385	1140.00	1359.60	1362.95		1362.98	0.002185	1.46	769.76	448.08	0.19
Reach-1	1.385	1140.00	1359.60	1363.15		1363.18	0.001772	1.41	808.89	405.00	0.18
Reach-1	1.351	1140.00	1359.60	1362.38		1362.48	0.003562	2.49	467.19	191.09	0.26
Reach-1	1.351	1140.00	1359.60	1362.67		1362.76	0.003047	2.41	472.46	155.00	0.24
Reach-1	1.305	1140.00	1359.60	1362.25		1362.26	0.000314	0.72	1592.75	638.99	0.08
Reach-1	1.305	1140.00	1359.60	1362.59		1362.60	0.000233	0.67	1709.30	572.00	0.07
Reach-1	1.269	1140.00	1359.60	1361.89	1360.95	1362.08	0.009796	3.48	330.74	163.10	0.42
Reach-1	1.269	1140.00	1359.60	1362.33	1360.94	1362.46	0.005771	2.96	384.62	151.94	0.33
Reach-1	1.266	Culvert									
Reach-1	1.263	1140.00	1359.61	1361.80		1362.01	0.009773	3.49	316.13	161.93	0.42
Reach-1	1.263	1140.00	1359.61	1362.22		1362.41	0.007697	3.43	325.14	130.00	0.38

Reach-1	1.239	1140.00	1353.10	1359.17		1360.13	0.028378	8.14	152.07	69.32	0.76
Reach-1	1.239	1140.00	1353.10	1359.91	1358.80	1360.79	0.022117	7.53	151.30	35.00	0.64
Reach-1	1.232	1140.00	1352.80	1358.05	1358.05	1359.00	0.036445	8.22	149.86	77.80	0.84
Reach-1	1.232	1140.00	1352.80	1358.08	1358.08	1359.56	0.055686	9.76	116.78	39.00	0.99
Reach-1	1.192	1140.00	1347.10	1351.22		1351.28	0.001414	2.00	594.91	213.74	0.18
Reach-1	1.192	1140.00	1347.10	1351.39		1351.48	0.002019	2.38	478.75	115.00	0.21
Reach-1	1.173	1140.00	1347.10	1351.13		1351.16	0.000820	1.39	823.57	251.81	0.13
Reach-1	1.173	1140.00	1347.10	1351.32		1351.35	0.000732	1.35	843.40	229.80	0.12
Reach-1	1.147	1140.00	1347.10	1350.92		1350.99	0.001831	2.19	570.08	235.91	0.20
Reach-1	1.147	1140.00	1347.10	1351.08		1351.18	0.002360	2.47	460.61	118.00	0.22
Reach-1	1.103	1140.00	1347.10	1350.88		1350.88	0.000131	0.57	2041.46	648.14	0.05
Reach-1	1.103	1140.00	1347.10	1351.06		1351.07	0.000122	0.56	2025.71	537.00	0.05
Reach-1	1.071	1140.00	1347.10	1350.84		1350.84	0.000254	0.70	1662.29	665.14	0.07
Reach-1	1.071	1140.00	1347.10	1351.02		1351.03	0.000245	0.71	1594.77	500.00	0.07
Reach-1	.963	1140.00	1348.60	1350.47	1349.90	1350.67	0.015665	3.69	318.70	222.21	0.51
Reach-1	.963	1140.00	1348.60	1350.51	1350.05	1350.85	0.025331	4.72	241.41	144.16	0.64
Reach-1	.859	1140.00	1338.80	1341.53		1341.89	0.015442	4.81	240.46	116.50	0.54
Reach-1	.859	1140.00	1338.80	1341.79		1342.07	0.010890	4.31	271.98	130.50	0.46
Reach-1	0.854	1140.00	1339.20	1341.62		1341.66	0.001904	1.53	783.59	541.88	0.19
Reach-1	0.854	1140.00	1339.20	1341.79		1341.85	0.002672	1.90	578.76	269.90	0.22
Reach-1	0.848	1140.00	1339.60	1341.07	1341.07	1341.41	0.054415	4.89	247.64	367.72	0.87
Reach-1	0.848	1140.00	1339.60	1341.40		1341.60	0.020104	3.61	314.98	260.90	0.55
Reach-1	0.845	1140.00	1338.00	1340.32		1340.53	0.012572	3.80	319.56	273.29	0.47
Reach-1	0.845	1140.00	1338.00	1341.13		1341.35	0.007020	3.56	306.55	115.00	0.37
Reach-1	0.83	1140.00	1335.50	1340.01	1338.45	1340.10	0.002524	2.68	471.67	230.17	0.24
Reach-1	0.83	1140.00	1335.50	1340.81		1341.00	0.002825	3.20	332.08	80.00	0.26
Reach-1	0.42	1140.00	1325.30	1330.61	1330.21	1331.02	0.018462	5.43	221.94	140.76	0.55
Reach-1	0.42	1140.00	1325.30	1331.24		1331.90	0.013376	3.97	180.48	60.00	0.31

Reach-1	0.07		1140.00	1319.10	1324.03	1323.39	1324.05	0.002583	1.78	980.21	1177.27	0.21
Reach-1	0.07		1140.00	1319.10	1324.96	1323.78	1325.02	0.002944	2.40	559.28	265.00	0.24
Reach-1	0		1140.00	1319.20	1322.37	1321.38	1322.40	0.001312	1.47	923.99	1010.98	0.16
Reach-1	0		1140.00	1319.20	1323.37	1322.12	1323.42	0.001446	1.87	655.60	316.00	0.17

Profile Output Table - Standard Table 2

Reach	River Sta	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Reach-1	1.913	1375.66	1375.19	0.47	0.23	0.13	301.03	393.94	445.04	224.79
Reach-1	1.913	1375.98	1375.75	0.22	0.15	0.06	301.47	319.27	519.25	180.00
Reach-1	1.885	1375.13	1375.11	0.02			70.57	1059.74	9.69	426.90
Reach-1	1.885	1375.77	1375.75	0.02				1140.00		240.00
Reach-1	1.873	Culvert								
Reach-1	1.866	1373.75	1373.74	0.02	0.03	0.00	1.80	1122.34	15.86	320.06
Reach-1	1.866	1374.39	1374.38	0.01	0.02	0.00		1140.00		280.00
Reach-1	1.858	1373.72	1373.69	0.04	0.75	0.00	55.69	1073.03	11.28	304.78
Reach-1	1.858	1374.38	1374.35	0.03	0.46	0.01		1140.00		271.40
Reach-1	1.793	1372.97	1372.90	0.07	1.17	0.00	259.71	782.34	97.96	305.61
Reach-1	1.793	1373.91	1373.83	0.08	1.43	0.02		1140.00		157.00
Reach-1	1.736	1371.80	1371.71	0.09	0.66	0.02	423.79	549.71	166.51	295.80
Reach-1	1.736	1372.47	1372.21	0.27	1.20	0.06		1140.00		105.00
Reach-1	1.655	1371.11	1371.08	0.03	0.03	0.01	703.19	420.87	15.94	398.78
Reach-1	1.655	1371.21	1371.15	0.05	0.03	0.02	592.15	547.85		200.00
Reach-1	1.595	1371.08	1371.08	0.00	0.00	0.00	92.73	1035.85	11.42	428.27
Reach-1	1.595	1371.16	1371.15	0.00	0.01	0.00		1140.00		325.00
Reach-1	1.576	1371.08	1371.07	0.00			146.10	929.03	64.88	394.07
Reach-1	1.576	1371.15	1371.14	0.01				1140.00		250.00
Reach-1	1.573	Culvert								

Reach-1	1.565		1364.70	1364.67	0.03	0.45	0.01	56.66	478.85	604.49	328.93
Reach-1	1.565		1365.29	1365.25	0.03	0.40	0.03		527.05	612.95	250.00
Reach-1	1.525		1364.23	1364.07	0.16	0.22	0.04	7.06	703.77	429.17	177.62
Reach-1	1.525		1364.87	1364.58	0.29	0.46	0.07		1140.00		75.00
Reach-1	1.493		1363.97	1363.94	0.03	0.20	0.00	50.48	673.65	415.87	212.95
Reach-1	1.493		1364.34	1364.28	0.07	0.32	0.00		1140.00		120.00
Reach-1	1.458		1363.77	1363.72	0.05	0.50	0.00	87.05	879.73	173.22	331.80
Reach-1	1.458		1364.02	1363.94	0.08	0.58	0.01		1140.00		155.00
Reach-1	1.420		1363.27	1363.23	0.04	0.29	0.00	36.94	934.77	168.29	358.79
Reach-1	1.420		1363.43	1363.39	0.04	0.25	0.00		946.20	193.80	309.66
Reach-1	1.385		1362.98	1362.95	0.03	0.49	0.01	74.78	1064.57	0.65	448.08
Reach-1	1.385		1363.18	1363.15	0.03	0.41	0.01		1140.00		405.00
Reach-1	1.351		1362.48	1362.38	0.09	0.19	0.03	56.74	1067.99	15.27	191.09
Reach-1	1.351		1362.76	1362.67	0.09	0.14	0.03		1140.00		155.00
Reach-1	1.305		1362.26	1362.25	0.01	0.17	0.02	28.71	1094.66	16.63	638.99
Reach-1	1.305		1362.60	1362.59	0.01	0.12	0.01		1140.00		572.00
Reach-1	1.269		1362.08	1361.89	0.19				1110.95	29.05	163.10
Reach-1	1.269		1362.46	1362.33	0.14				1140.00		151.94
Reach-1	1.266		Culvert								
Reach-1	1.263		1362.01	1361.80	0.20	1.81	0.07	170.17	848.15	121.68	161.93
Reach-1	1.263		1362.41	1362.22	0.19	1.55	0.07		993.93	146.07	130.00
Reach-1	1.239		1360.13	1359.17	0.95	1.12	0.00	54.43	1022.23	63.34	69.32
Reach-1	1.239		1360.79	1359.91	0.88	1.17	0.06		1140.00		35.00
Reach-1	1.232		1359.00	1358.05	0.95	0.85	0.27	87.55	948.39	104.07	77.80
Reach-1	1.232		1359.56	1358.08	1.48	1.20	0.42		1140.00		39.00
Reach-1	1.192		1351.28	1351.22	0.06	0.11	0.01	49.85	918.96	171.19	213.74
Reach-1	1.192		1351.48	1351.39	0.09	0.11	0.02		1140.00		115.00

Reach-1	1.173	1351.16	1351.13	0.03	0.16	0.00	0.04	1113.03	26.93	251.81
Reach-1	1.173	1351.35	1351.32	0.03	0.17	0.01		1140.00		229.80
Reach-1	1.147	1350.99	1350.92	0.07	0.08	0.02	145.52	965.61	28.87	235.91
Reach-1	1.147	1351.18	1351.08	0.10	0.07	0.03		1140.00		118.00
Reach-1	1.103	1350.88	1350.88	0.00	0.04	0.00	27.52	1097.83	14.66	648.14
Reach-1	1.103	1351.07	1351.06	0.00	0.04	0.00		1140.00		537.00
Reach-1	1.071	1350.84	1350.84	0.01	0.15	0.02	43.70	1057.51	38.79	665.14
Reach-1	1.071	1351.03	1351.02	0.01	0.14	0.03		1140.00		500.00
Reach-1	.963	1350.67	1350.47	0.20	8.77	0.02	124.31	870.45	145.25	222.21
Reach-1	.963	1350.85	1350.51	0.35	8.76	0.02		1140.00		144.16
Reach-1	.859	1341.89	1341.53	0.36	0.14	0.10	3.08	1131.92	5.00	116.50
Reach-1	.859	1342.07	1341.79	0.28	0.15	0.07	11.85	1119.80	8.35	130.50
Reach-1	0.854	1341.66	1341.62	0.03	0.22	0.03	277.30	632.75	229.95	541.88
Reach-1	0.854	1341.85	1341.79	0.06	0.23	0.01	295.64	844.36		269.90
Reach-1	0.848	1341.41	1341.07	0.35	0.63	0.04	134.39	973.42	32.20	367.72
Reach-1	0.848	1341.60	1341.40	0.20	0.26	0.00	176.53	963.47		260.90
Reach-1	0.845	1340.53	1340.32	0.21	0.39	0.04	457.03	597.37	85.60	273.29
Reach-1	0.845	1341.35	1341.13	0.22	0.34	0.01	313.14	783.03	43.84	115.00
Reach-1	0.83	1340.10	1340.01	0.09	9.05	0.03	529.13	278.25	332.61	230.17
Reach-1	0.83	1341.00	1340.81	0.18	9.05	0.05	526.69	399.08	214.23	80.00
Reach-1	0.42	1331.02	1330.61	0.41	6.85	0.12	890.59	249.41	0.00	140.76
Reach-1	0.42	1331.90	1331.24	0.66	6.70	0.18	1040.88	99.12		60.00
Reach-1	0.07	1324.05	1324.03	0.02	1.65	0.00	343.21	112.53	684.26	1177.27
Reach-1	0.07	1325.02	1324.96	0.07	1.61	0.01	177.22	213.73	749.06	265.00
Reach-1	0	1322.40	1322.37	0.03			1004.89	112.30	22.80	1010.98
Reach-1	0	1323.42	1323.37	0.05			943.73	196.27		316.00