
**CITY OF ENGLEWOOD
PROBABLE AREAS AFFECTED BY FLOODING
FROM THE 100-YEAR STORM**

March 1998

Prepared for:
Urban Drainage and Flood Control District
City of Englewood

Prepared by:
Turner Collie & Braden Inc.
999 Eighteenth Street, Suite 1500
Denver, Colorado 80202



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Table of Contents

1.0 Introduction

Purpose.....	1
Previous Floodplain Studies and Reports.....	2

2.0 Methodology

Hydrology.....	3
Hydraulics.....	3

3.0 Basin Floodplain Description

North Englewood and Yale Avenue Basins.....	4
Northeast Englewood Basin.....	4
South, South-Central and Central Englewood Basins.....	5
Sherman Street and High School Basins.....	6
Evans, Northwest, College View, Federal Boulevard and Bow Mar Basins.....	7
Conclusion.....	7

1.0 Introduction

Purpose

In accordance with Agreement No. 97-02.15A, the purpose of this study is to define the approximate 100-year floodplain boundaries for the smaller outfall areas within the City of Englewood. Excluded from this study are the major drainageways which are conveyed through the City. These drainageways include:

- Little Dry Creek
- Big Dry Creek
- South Platte River
- West Harvard Gulch

Using simplified methods, Turner Collie & Braden has completed an approximate floodplain delineation for the smaller outfall areas. The information found in this study should not be mistaken for the level of floodplain analysis detail normally completed as part of a Flood Hazard Area Delineation (FHAD) or a Federal Emergency Management Agency (FEMA) flood insurance study.

Since the analysis was based on simplified approximate methods, Turner Collie & Braden makes no guarantee as to the accuracy of the floodplain boundary.

The information contained in this report and illustrated on the floodplain definition mapping should be used by City personnel for information purposes only. It should not be used to establish regulatory floodplain zoning or flood insurance requirements.

Previous Floodplain Studies and Reports

There are no previous floodplain delineation reports for the City of Englewood with the exception of the major drainageways which traverse Englewood

2.0 Methodology

Hydrology

As part of the Outfall Systems Planning study being completed for the District and the City, peak flows have been computed at various design points throughout the City.

Hydraulics

A standard step backwater analysis was used to establish the floodplain boundary. The 100-year floodplain was conceptually delineated using the Hydrologic Engineering Center's River Analysis System (HEC-RAS) April 1997 Version 2.0 developed by the U.S. Army Corps of Engineers.

The runoff from the 100-year event was input into the model at several points along the drainageway. Runoff conveyed by the storm sewer system was deducted from the 100-year peak flow. This was done to estimate the magnitude of flow being conveyed overland creating the floodplain.

Cross sections were located at approximately 600 foot intervals along the flow path. The cross sections were selected using the most restrictive section within an area. This area was identified in an effort to locate the cross sections where a "choke" may exist that backs up water and would create a wider floodplain. These areas include locations where houses are closely spaced together or where large warehouse / buildings are encountered.

3.0 Basin Floodplain Description

North Englewood and Yale Avenue Basins

The North Englewood basin floodplain begins at Emerson and Dartmouth with a 100-year flow rate of 150 cfs which produces a water surface width of approximately 160 feet and a depth of 1.0 foot. The floodplain continues in a northerly direction to Cornell and Broadway where the flow path of the basin becomes less defined. At this location, the flow has accumulated to 348 cfs which produces a water surface width of 1174 feet and a depth of 0.3 feet. At the exit of the city, at Yale and Broadway, the 100-year runoff, which includes runoff contributed from the Yale Avenue basin, has accumulated to 388 cfs and creates a water surface width of 617 feet and a depth of 0.2 feet. See Drawing 1 and Appendix A for further illustration and conceptual floodplain limits.

Northeast Englewood Basin

The Northeast Englewood basin floodplain begins at the City boundary located at Floyd and University and receives runoff from a 417 acre watershed. At this location the 100-year flow rate is approximately 1140 cfs which creates a water surface width of 178 feet and a depth of 1.9 feet. At the outlet to the elementary school channel, the combined 100-year runoff is approximately 1766 cfs which produces a water surface width of 271 feet and a depth of 2.5 feet. At the exit of the city, at Yale and Washington, the runoff has increased to 2210 cfs with a corresponding water surface width of 101 feet and a depth of 3.5 feet. See Drawing 1 and Appendix B for further illustration and conceptual floodplain limits.

South, South-Central and Central Englewood Basins

The South Englewood basin floodplain begins at the City boundary located at Layton and Clarkson and receives runoff from a 311 acre watershed. At this location the 100-year flow rate is approximately 744 cfs and creates a water surface width of 172 feet and 0.9 feet deep. Just downstream at approximately Union and Broadway, the accumulated flow has increased to roughly 1152 cfs with a water surface width of 105 feet and 2.7 feet deep. At the inlet to the channel the flow has increased to 1475 cfs which creates a water surface width of 170 feet and a depth of 1.5 feet. Just downstream of the Stanford and Huron detention pond the 100-year runoff has accumulated to 1833 cfs with a corresponding water surface width of 122 feet and a depth of 2.9 feet.

The South-Central Englewood basin floodplain begins at the City boundary located at Stanford and Clarkson and receives runoff from a 75 acre watershed. At this location the 100-year flow rate is approximately 142 cfs with a corresponding water surface width of 230 feet and a depth of 1.3 feet. The runoff continues along the flow path to the northwest to Oxford and Broadway where the flow has increased to approximately 299 cfs with a water surface width of 180 feet and a depth of 1.2 feet. At Nassau and Fox the runoff has accumulated to 576 cfs which generates a water surface width of 202 feet and 1.6 feet deep.

The runoff from the South and South-Central Englewood basins combine in the general location of Oxford and Jason. The combined runoff continues north adjacent to Santa Fe

Drive through the Central Englewood basin. As expected, due to the very flat area in the Central Englewood basin, the water surface is very wide and shallow. At roughly Mansfield and Kalamath the combined runoff for the 100-year event is approximately 2680 cfs which generates a water surface width of 664 feet and 1.0 feet deep. This runoff discharges into the Hampden and Santa Fe Drive interchange where Hampden is located in a sag vertical curve. See Drawing 2 and Appendix C for further illustration and conceptual floodplain limits.

Sherman Street and High School Basins

Floodplains were not calculated for these watersheds for several reasons which are summarized below.

Due to the lack of a clearly defined flow path the runoff will most likely not concentrate in a defined manner. However, this does not preclude the possibility of localized sheet flow flooding problems in these areas.

Both the Sherman Street and High School basins are located within 5 blocks of Little Dry Creek and a regional detention pond located at the Englewood High School. Due to the proximity to the outfall and the flood control facility the water surface from the 100-year event would probably not be governed by the relatively small runoff from the watersheds but from the channel and pond which would control the water surface elevation.

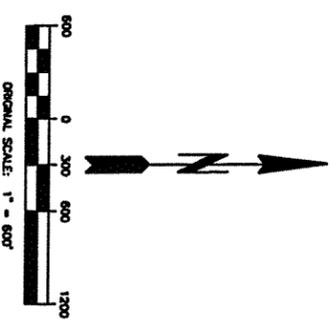
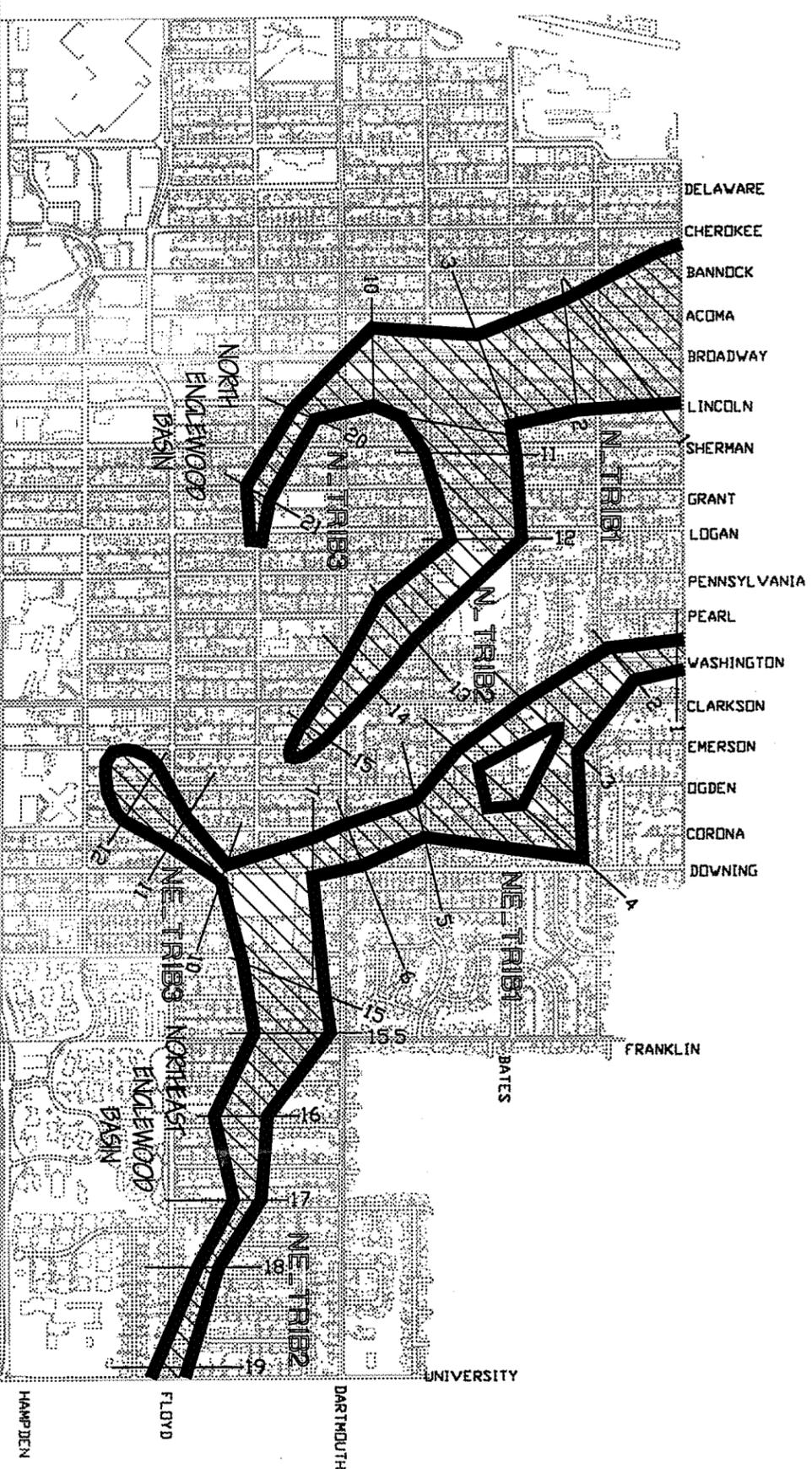
Evans, Northwest, College View, Federal Boulevard and Bow Mar Basins

Due to the lack of a clearly defined flow path the runoff will most likely not concentrate in a defined manner. However, this does not preclude the possibility of localized sheet flow flooding problems in these areas. In addition, the lower reaches of the College View and the Federal Boulevard and Bow Mar watersheds may be influenced by the floodplain created by the South Platte River.

Conclusion

As illustrated on Drawings 1 and 2, the floodplains in both the Northern and Southern portions of Englewood have the potential to impact many properties. The locations of greatest potential flood damage are those properties located in the low spot of the contours and within the boundaries of the natural drainage path of storm runoff.

Throughout the floodplain analysis several warnings were encountered during the HEC-RAS program runs. The warnings suggest that a greater number of cross sections are necessary to achieve more accurate results. However, at this conceptual level of analysis additional cross sections are not warranted.



PROBABLE AREAS
AFFECTED BY
FLOODING FROM THE
100-YEAR STORM



1
CROSS SECTION

NE_TRIB1
CATCHMENT
IDENTIFICATION
NUMBER

* SEE THE MARCH 1998 REPORT TITLED
"CITY OF ENGLEWOOD APPROXIMATE 100-YEAR
FLOODPLAIN DEFINITION" FOR ADDITIONAL INFORMATION

Note: This map illustrates probable areas of potential flooding during a 100-year storm and was prepared for informational purposes only for exclusive use by the
City of Englewood

Turner Collier & Braden Inc.
CONSULTING ENGINEERS
REPAIR SCHOOL 5002

DESIGNED _____
DRAWN _____
CHECKED _____
REVISED _____

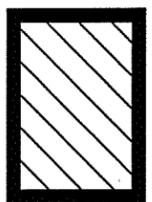
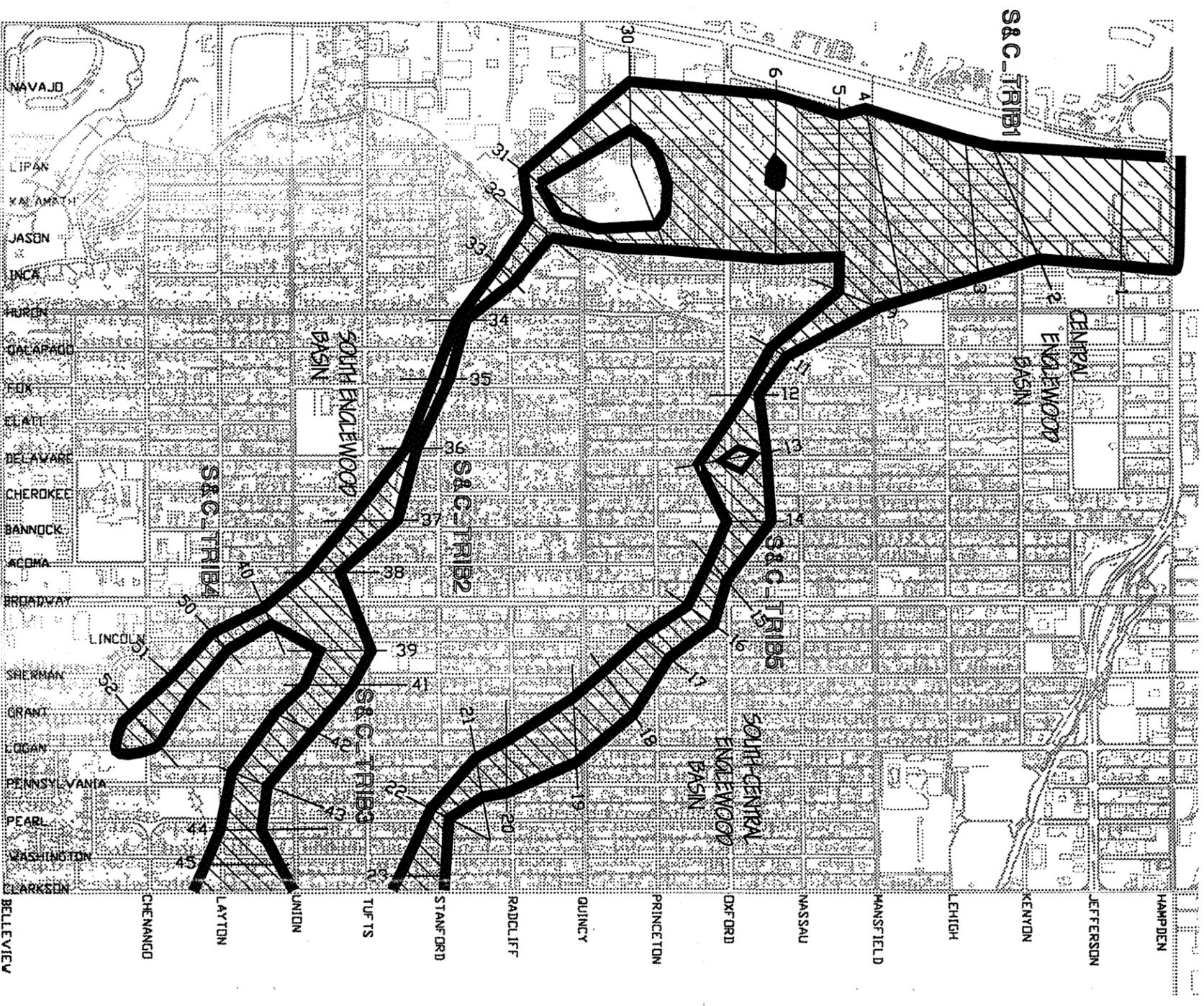
DATE _____
DATE _____
DATE _____

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CITY OF ENGLEWOOD

PROBABLE AREAS AFFECTED BY
FLOODING FROM THE
100-YEAR STORM

NORTHERN ENGLEWOOD

DWG. NO.
1



PROBABLE AREAS
AFFECTED BY
FLOODING FROM THE
100-YEAR STORM

1
CROSS SECTION

S&C_TRIB1
CATCHMENT
IDENTIFICATION
NUMBER

* SEE THE MARCH 1998 REPORT TITLED
"CITY OF ENGLEWOOD APPROXIMATE 100-YEAR
FLOODPLAIN DEFINITION" FOR ADDITIONAL INFORMATION

Note: This map illustrates probable areas of potential flooding during a 100-year storm and was prepared for informational purposes only for exclusive use by the City of Englewood

Tuner Collicott Braden Inc. CONSULTING ENGINEERS 5750 S. UNIVERSITY BLVD. DENVER, COLORADO 80202		DESIGNED _____ DRAWN _____ CHECKED _____ REVISION _____	DATE _____ DATE _____ DATE _____ DATE _____	URBAN DRAINAGE AND FLOOD CONTROL DISTRICT CITY OF ENGLEWOOD	PROBABLE AREAS AFFECTED BY FLOODING FROM THE 100-YEAR STORM	SOUTHERN ENGLEWOOD	DWG. NO. 2
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APPENDIX A

NORTH ENGLEWOOD AND YALE AVENUE BASINS

HEC-RAS Version 2.0 April 1997
 U.S. Army Corp of Engineers
 Hydrologic Engineering Center
 609 Second Street, Suite D
 Davis, California 95616-4687
 (916) 756-1104

```

X   X  XXXXXX   XXXX       XXXX       XX       XXXX
X   X  X X     X   X     X   X     X   X     X
X   X  X X     X   X     X   X     X   X     X
XXXXXXXX XXXX   X       XXX XXXX   XXXXXX   XXXX
X   X  X       X       X   X     X   X     X
X   X  X       X   X     X   X     X   X     X
X   X  XXXXXX   XXXX       X   X     X   X     XXXXX
  
```

PROJECT DATA

Project Title: North Englewood Backwater Calcs
 Project File : ew_n.prj
 Run Date and Time: 2/19/98 10:55:02 AM

Project in English units

PLAN DATA

Plan Title: North Englewood Backwater Calcs
 Plan File : c:\hec\ras\englewood\nrthew~1\ew_n.p02

Geometry Title: North Englewood Backwater Calcs
 Geometry File : c:\hec\ras\englewood\nrthew~1\ew_n.g01

Flow Title : North Englewood Backwater Calcs
 Flow File : c:\hec\ras\englewood\nrthew~1\ew_n.f01

Plan Summary Information:

Number of: Cross Sections = 11 Multitple Openings = 0
 Culverts = 0 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

Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: North Englewood Backwater Calcs
 Flow File : c:\hec\ras\englewood\nrthew~1\ew_n.f01

Flow Data (cfs)

```

*****
* River            Reach            RS            *            PF#1 *
* N_TRIB2        11-15            15            *            150 *
* N_TRIB2        11-15            13            *            257 *
* N_TRIB2        11-15            12            *            238 *
* N_TRIB3        20-21            21            *            44 *
* N_TRIB3        20-21            20            *            193 *
* N_TRIB1        1-10             10            *            348 *
* N_TRIB1        1-10             3             *            344 *
* N_TRIB1        1-10             1             *            388 *
*****
  
```

Boundary Conditions

```

*****
*****
* River          Reach          Profile          *          Upstream
Downstream      *
*****
* N_TRIB1       1-10           PF#1           *
Critical        *
*****
*****
*****

```

GEOMETRY DATA

Geometry Title: North Englewood Backwater Calcs
 Geometry File : c:\hec\ras\englewod\nrthew~1\ew_n.g01

Reach Connection Table

```

*****
* River          Reach          * Upstream Boundary * Downstream Boundary *
*****
* N_TRIB2       11-15           *                   * Corn&Brdwy          *
* N_TRIB3       20-21           *                   * Corn&Brdwy          *
* N_TRIB1       1-10           * Corn&Brdwy        *
*****

```

JUNCTION INFORMATION

Name: Corn&Brdwy
 Description:
 Energy computation Method

Length across Junction		Tributary		Reach	Length	Angle
River	Reach	River				
N_TRIB2	11-15	to N_TRIB1		1-10	200	
N_TRIB3	20-21	to N_TRIB1		1-10	200	

CROSS SECTION RIVER: N_TRIB2
 REACH: 11-15 RS: 15

INPUT

Description:

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5360	20	5358	60	5356	110	5355	111	5400
140	5400	141	5355	250	5355	251	5400	290	5400
291	5356	350	5358	380	5360				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	380	.035

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff Contr.	Expan.
	0	380	600	700	750		.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5356.01 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.02 * Wt. n-Val.      *         * 0.035 *
*
* E.G. Elev (ft)     * 5356.03 * Reach Len. (ft) * 600.00 * 700.00 * 750.00
*
* Crit W.S. (ft)     * 5355.38 * Flow Area (sq ft) *         * 135.98 *
*
* E.G. Slope (ft/ft) * 0.000857 * Area (sq ft)    *         * 135.98 *
*
* Q Total (cfs)      * 150.00 * Flow (cfs)      *         * 150.00 *
*
* Top Width (ft)     * 159.67 * Top Width (ft)  *         * 159.67 *
*

```



```

* Alpha * 1.00 * Stream Power (lb/ft s) * 0.87 *
* Frctn Loss (ft) * 11.55 * Cum Volume (acre-ft) * 7.34 *
* C & E Loss (ft) * 0.02 * Cum SA (acres) * 10.34 *

```

**

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
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: N TRIB2
REACH: 11-15 RS: 13

INPUT

Description:

Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5350	20	5350	21	5400	40	5400	41	5348
70	5346	100	5344	101	5400	130	5400	131	5344
170	5344	171	5400	200	5400	201	5343	211	5400
240	5400	241	5342	320	5342	330	5344	390	5344
391	5400	410	5400	411	5342	450	5342	451	5400
480	5400	481	5343	520	5344	521	5400	550	5400
551	5345	580	5346	620	5348	621	5400	660	5400
661	5348	790	5348	791	5400	840	5400	841	5348
930	5350								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	930	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 930 550 900 1300 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft) * 5342.52 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.27 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5342.79 * Reach Len. (ft) * 550.00 * 900.00 * 1300.00
*
* Crit W.S. (ft) * 5342.52 * Flow Area (sq ft) * * 61.99 *
*
* E.G. Slope (ft/ft) * 0.023577 * Area (sq ft) * * 61.99 *
*
* Q Total (cfs) * 257.00 * Flow (cfs) * * 257.00 *
*
* Top Width (ft) * 120.62 * Top Width (ft) * * 120.62 *
*
* Vel Total (ft/s) * 4.15 * Avg. Vel. (ft/s) * * 4.15 *
*
* Max Chl Dpth (ft) * 0.52 * Hydr. Depth (ft) * * 0.51 *
*
* Conv. Total (cfs) * 1673.7 * Conv. (cfs) * * 1673.7 *
*
* Length Wtd. (ft) * 900.00 * Wetted Per. (ft) * * 122.21 *
*
* Min Ch El (ft) * 5342.00 * Shear (lb/sq ft) * * 0.75 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * * 3.10 *
*

```

```

* Frctn Loss (ft)      *      12.87 * Cum Volume (acre-ft) *      *      6.64 *
*
* C & E Loss (ft)     *      0.06 * Cum SA (acres)      *      *      8.25 *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

```

CROSS SECTION      RIVER: N TRIB2
REACH: 11-15      RS: 12

```

INPUT

Description:

Station Elevation Data num= 56

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5334	20	5332	60	5330	80	5328	81	5400
100	5400	101	5328	110	5328	111	5400	150	5400
151	5328	170	5328	171	5400	220	5400	221	5328
390	5328	391	5400	430	5400	431	5328	470	5328
471	5400	500	5400	501	5328	510	5328	511	5400
560	5400	561	5327.5	570	5327.5	571	5400	600	5400
601	5327.5	640	5327.5	641	5400	670	5400	671	5328
760	5328	761	5400	790	5400	791	5328	800	5328
801	5400	830	5400	831	5329	840	5329	841	5400
880	5400	881	5330	900	5330	901	5400	930	5400
931	5332	950	5337	951	5400	1000	5400	1001	5333
1020	5334								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1020	.035

```

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
           0       1020           650     650           650           .1         .3

```

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5328.26 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.06 * Wt. n-Val.      *      * 0.035 *
*
* E.G. Elev (ft)     * 5328.31 * Reach Len. (ft) * 650.00 * 650.00 * 650.00
*
* Crit W.S. (ft)     * 5328.16 * Flow Area (sq ft) *      * 125.74 *
*
* E.G. Slope (ft/ft) * 0.009317 * Area (sq ft)    *      * 125.74 *
*
* Q Total (cfs)      * 238.00 * Flow (cfs)      *      * 238.00 *
*
* Top Width (ft)     * 393.69 * Top Width (ft)  *      * 393.69 *
*
* Vel Total (ft/s)   * 1.89 * Avg. Vel. (ft/s) *      * 1.89 *
*
* Max Chl Dpth (ft) * 0.76 * Hydr. Depth (ft) *      * 0.32 *
**

```

```

* Conv. Total (cfs)      * 2465.7 * Conv. (cfs)      *      * 2465.7 *
* Length Wtd. (ft)     * 650.00 * Wetted Per. (ft) *      * 400.54 *
* Min Ch El (ft)      * 5327.50 * Shear (lb/sq ft) *      * 0.18 *
* Alpha                * 1.00 * Stream Power (lb/ft s) *      * 0.35 *
* Frctn Loss (ft)     * 9.99 * Cum Volume (acre-ft) *      * 4.70 *
* C & E Loss (ft)     * 0.01 * Cum SA (acres) *      * 2.94 *

```

**

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
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: N_TRIB2
REACH: 11-15 RS: 11

INPUT

Description:

Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5322	1	5400	30	5400	31	5322	50	5322
51	5400	70	5400	71	5321	110	5321	111	5400
170	5400	171	5320	190	5320	191	5400	230	5400
231	5318	310	5319	311	5400	340	5400	341	5319
360	5319	361	5400	410	5400	411	5319	420	5319
421	5400	450	5400	451	5319	460	5319	461	5400
500	5400	501	5318	590	5317	591	5400	620	5400
621	5318	630	5318	631	5400	660	5400	661	5318
700	5318	701	5400	730	5400	731	5318	750	5318
751	5400	770	5400	771	5318	800	5318	801	5400
830	5400	831	5319	850	5319	851	5400	880	5400
881	5318	950	5320	951	5400	1010	5400	1011	5320
1020	5320	1021	5400	1060	5400	1061	5321	1070	5321
1071	5400	1110	5400	1111	5322				

Manning's n Values. num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1111	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 1111 1200 700 200 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

**

```

* W.S. Elev (ft)      * 5318.13 * Element          * Left OB * Channel * Right OB
* Vel Head (ft)      * 0.18 * Wt. n-Val.      *      * 0.035 *
* E.G. Elev (ft)     * 5318.31 * Reach Len. (ft) * 200.00 * 200.00 * 200.00
* Crit W.S. (ft)     * 5318.13 * Flow Area (sq ft) *      * 70.28 *
* E.G. Slope (ft/ft) * 0.026145 * Area (sq ft) *      * 70.28 *
* Q Total (cfs)      * 238.00 * Flow (cfs) *      * 238.00 *
* Top Width (ft)     * 200.22 * Top Width (ft) *      * 200.22 *
* Vel Total (ft/s)   * 3.39 * Avg. Vel. (ft/s) *      * 3.39 *

```

```

*
* Max Chl Dpth (ft)      *      1.13 * Hydr. Depth (ft)      *      *      0.35 *
*
* Conv. Total (cfs)     *    1471.9 * Conv. (cfs)           *      *    1471.9 *
*
* Length Wtd. (ft)     *    200.00 * Wetted Per. (ft)     *      *    202.80 *
*
* Min Ch El (ft)       *    5317.00 * Shear (lb/sq ft)     *      *    0.57 *
*
* Alpha                 *      1.00 * Stream Power (lb/ft s) *      *    1.92 *
*
* Frctn Loss (ft)      *      0.64 * Cum Volume (acre-ft) *      *    0.64 *
*
* C & E Loss (ft)      *      0.05 * Cum SA (acres)       *      *      *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: N TRIB3
REACH: 20-21 RS: 21

INPUT

Description:

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5350	70	5349	71	5400	100	5400	101	5349
110	5349	111	5400	130	5400	131	5348	160	5346
220	5344	380	5344	381	5400	510	5400	511	5345
610	5346	640	5348	680	5350				

Manning's n Values.

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	680	.035

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	0	680	600	700	750	.1		.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      *    5344.13 * Element           * Left OB * Channel * Right OB
*
* Vel Head (ft)      *      0.07 * Wt. n-Val.       *      *    0.035 *
*
* E.G. Elev (ft)     *    5344.20 * Reach Len. (ft)   *    600.00 *    700.00 *    750.00
*
* Crit W.S. (ft)     *    5344.13 * Flow Area (sq ft) *      *    20.79 *
*
* E.G. Slope (ft/ft) *    0.038991 * Area (sq ft)      *      *    20.79 *
*
* Q Total (cfs)      *     44.00 * Flow (cfs)        *      *    44.00 *
*
* Top Width (ft)     *    163.85 * Top Width (ft)    *      *    163.85 *
*
* Vel Total (ft/s)   *     2.12 * Avg. Vel. (ft/s)  *      *     2.12 *

```

```

*
* Max Chl Dpth (ft)      *      0.13 * Hydr. Depth (ft)      *      *      0.13 *
*
* Conv. Total (cfs)     *      222.8 * Conv. (cfs)           *      *      222.8 *
*
* Length Wtd. (ft)      *      *      * Wetted Per. (ft)      *      *      163.98 *
*
* Min Ch El (ft)        *      5344.00 * Shear (lb/sq ft)      *      *      0.31 *
*
* Alpha                  *      1.00 * Stream Power (lb/ft s) *      *      0.65 *
*
* Frctn Loss (ft)       *      *      * Cum Volume (acre-ft)  *      *      4.11 *
*
* C & E Loss (ft)       *      *      * Cum SA (acres)        *      *      1.32 *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

Warning - 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: N TRIB3
 REACH: 20-21 RS: 20

INPUT

Description:

Station Elevation Data		num= 28							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5332	50	5330	100	5328	200	5326	210	5325
211	5400	240	5400	241	5324	250	5324	251	5400
280	5400	281	5323	290	5323	291	5400	320	5400
321	5324	380	5324	381	5400	400	5400	401	5324
480	5326	520	5328	550	5330	570	5331	571	5400
610	5400	611	5331	660	5332				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	660	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	660		1000	500	1400	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5324.42 * Element              * Left OB * Channel * Right OB
*
* Vel Head (ft)       *      0.28 * Wt. n-Val.          *      *      0.035 *
*
* E.G. Elev (ft)      * 5324.71 * Reach Len. (ft)     * 200.00 * 200.00 * 200.00
*
* Crit W.S. (ft)      * 5324.42 * Flow Area (sq ft)   *      *      45.31 *
*
* E.G. Slope (ft/ft)  * 0.028454 * Area (sq ft)        *      *      45.31 *
*
* Q Total (cfs)       *      193.00 * Flow (cfs)          *      *      193.00 *
*
* Top Width (ft)      *      93.84 * Top Width (ft)      *      *      93.84 *
*
* Vel Total (ft/s)    *      4.26 * Avg. Vel. (ft/s)    *      *      4.26 *
*
* Max Chl Dpth (ft)   *      1.42 * Hydr. Depth (ft)    *      *      0.48 *

```

```

*
* Conv. Total (cfs)      * 1144.2 * Conv. (cfs)      *      * 1144.2 *
* Length Wtd. (ft)     * 200.00 * Wetted Per. (ft)  *      * 98.75 *
* Min Ch El (ft)      * 5323.00 * Shear (lb/sq ft) *      * 0.81 *
* Alpha                * 1.00 * Stream Power (lb/ft s) *      * 3.47 *
* Frctn Loss (ft)     * 0.58 * Cum Volume (acre-ft) *      * 0.58 *
* C & E Loss (ft)     * 0.08 * Cum SA (acres)    *      *      *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

CROSS SECTION RIVER: N TRIB1
 REACH: 1-10 RS: 10

INPUT

Description:

Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5308	200	5306	240	5306	241	6000	350	6000
351	5306	765	5306	770	5310	890	5308	891	5320
930	5320	931	5308	940	5308	941	5320	970	5320
971	5308	980	5308	981	5320	1010	5320	1011	5307
1030	5307	1031	5320	1060	5320	1061	5307	1070	5307
1071	5320	1100	5320	1101	5306	1130	5306	1131	5320
1160	5320	1161	5306	1380	5306	1381	5320	1430	5320
1431	5306	1660	5306	1661	5320	1670	5320	1671	5306
1800	5306	1801	5320	1830	5320	1831	5306	1910	5306
1911	5320	1940	5320	1941	5308	2050	5310		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	2050	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

0	2050	800	1000	50	.1	.3
---	------	-----	------	----	----	----

CROSS SECTION OUTPUT Profile #PF#1

```

*****
*
* W.S. Elev (ft)      * 5306.36 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.01 * Wt. n-Val.      *      * 0.035 *
*
* E.G. Elev (ft)     * 5306.37 * Reach Len. (ft) * 800.00 * 1000.00 * 50.00
*
* Crit W.S. (ft)     *      * Flow Area (sq ft) *      * 418.21 *
*

```

```

* E.G. Slope (ft/ft)      * 0.001532 * Area (sq ft)          *          * 418.21 *
*
* Q Total (cfs)           * 348.00 * Flow (cfs)             *          * 348.00 *
*
* Top Width (ft)         * 1175.84 * Top Width (ft)        *          * 1175.84 *
*
* Vel Total (ft/s)       * 0.83 * Avg. Vel. (ft/s)      *          * 0.83 *
*
* Max Chl Dpth (ft)      * 0.36 * Hydr. Depth (ft)     *          * 0.36 *
*
* Conv. Total (cfs)      * 8891.7 * Conv. (cfs)           *          * 8891.7 *
*
* Length Wtd. (ft)       * 1000.00 * Wetted Per. (ft)     *          * 1180.05 *
*
* Min Ch El (ft)         * 5306.00 * Shear (lb/sq ft)     *          * 0.03 *
*
* Alpha                   * 1.00 * Stream Power (lb/ft s) *          * 0.03 *
*
* Frctn Loss (ft)        * 3.99 * Cum Volume (acre-ft) *          * 11.17 *
*
* C & E Loss (ft)        * 0.01 * Cum SA (acres)       *          * 32.60 *

```

**

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

CROSS SECTION RIVER: N_TRIB1
REACH: 1-10 RS: 3

INPUT

Description:

Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5306	140	5306	141	5320	160	5320	161	5306
240	5306	241	5320	260	5320	261	5305	370	5304
420	5304	580	5302	880	5302	881	5320	920	5320
921	5302	980	5302	981	5320	1040	5321	1041	5302
1150	5302	1151	5320	1200	5320	1201	5302	1290	5304
1340	5306								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1340	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 1340 900 650 500 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

**
* W.S. Elev (ft) * 5302.25 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.12 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5302.38 * Reach Len. (ft) * 900.00 * 650.00 * 500.00
*
* Crit W.S. (ft) * 5302.25 * Flow Area (sq ft) * * 122.36 *
*
* E.G. Slope (ft/ft) * 0.028722 * Area (sq ft) * * 122.36 *
*
* Q Total (cfs) * 344.00 * Flow (cfs) * * 344.00 *
*
* Top Width (ft) * 499.57 * Top Width (ft) * * 499.57 *
*
* Vel Total (ft/s) * 2.81 * Avg. Vel. (ft/s) * * 2.81 *
*

```

* Max Chl Dpth (ft) * 0.25 * Hydr. Depth (ft) * 0.24 *
* Conv. Total (cfs) * 2029.8 * Conv. (cfs) * 2029.8 *
* Length Wtd. (ft) * 650.00 * Wetted Per. (ft) * 501.01 *
* Min Ch El (ft) * 5302.00 * Shear (lb/sq ft) * 0.44 *
* Alpha * 1.00 * Stream Power (lb/ft s) * 1.23 *
* Frctn Loss (ft) * 3.40 * Cum Volume (acre-ft) * 4.97 *
* C & E Loss (ft) * 0.03 * Cum SA (acres) * 13.37 *

```

**

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

CROSS SECTION RIVER: N_TRIB1
REACH: 1-10 RS: 2

INPUT

Description:

Station Elevation Data		num= 34							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5300	80	5300	81	5320	100	5320	101	5299
250	5298	280	5298	281	5320	330	5320	331	5298
360	5298	361	5320	390	5320	391	5298	470	5298
471	5320	550	5320	551	5298	650	5298	651	5320
690	5320	691	5298	700	5298	701	5320	740	5320
741	5298	840	5298	841	5320	860	5320	861	5298
1000	5298	1001	5320	1040	5320	1041	5300		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1041	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1041		10	400	800	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
* W.S. Elev (ft) * 5298.54 * Element * Left OB * Channel * Right OB
* Vel Head (ft) * 0.02 * Wt. n-Val. * 0.035 *
* E.G. Elev (ft) * 5298.56 * Reach Len. (ft) * 10.00 * 400.00 * 800.00
* Crit W.S. (ft) * * Flow Area (sq ft) * 282.09 *
* E.G. Slope (ft/ft) * 0.002113 * Area (sq ft) * 282.09 *
* Q Total (cfs) * 344.00 * Flow (cfs) * 344.00 *
* Top Width (ft) * 564.49 * Top Width (ft) * 564.49 *

```

```

*
* Vel Total (ft/s)      *      1.22 * Avg. Vel. (ft/s)      *      *      1.22 *
*
* Max Chl Dpth (ft)    *      0.54 * Hydr. Depth (ft)    *      *      0.50 *
*
* Conv. Total (cfs)    *    7482.7 * Conv. (cfs)         *      *    7482.7 *
*
* Length Wtd. (ft)     *    400.00 * Wetted Per. (ft)    *      *    571.18 *
*
* Min Ch El (ft)       *    5298.00 * Shear (lb/sq ft)    *      *      0.07 *
*
* Alpha                *      1.00 * Stream Power (lb/ft s) *      *      0.08 *
*
* Frctn Loss (ft)     *      2.20 * Cum Volume (acre-ft) *      *      1.95 *
*
* C & E Loss (ft)     *      0.01 * Cum SA (acres)      *      *      5.43 *
*
*****
**

```

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

CROSS SECTION RIVER: N_TRIB1
REACH: 1-10 RS: 1

INPUT

Description:

Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5320	20	5320	21	5300	70	5300	71	5320
90	5320	91	5299	150	5299	151	5320	190	5320
191	5298.5	220	5298.5	221	5320	260	5320	261	5298
360	5298	361	5320	380	5320	381	5297	500	5297
501	5320	670	5320	671	5296	950	5296	1010	5296
1011	5320	1050	5320	1051	5296	1090	5296	1091	5320
1130	5320	1131	5296	1360	5296	1450	5298	1500	5300

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1500	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 1500 0 0 0 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5296.23 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)       *      0.11 * Wt. n-Val.      *      *      0.035 *
*
* E.G. Elev (ft)      * 5296.35 * Reach Len. (ft) *      *      *
*
* Crit W.S. (ft)      * 5296.23 * Flow Area (sq ft) *      *      142.60 *
*
* E.G. Slope (ft/ft)  * 0.029061 * Area (sq ft)     *      *      142.60 *
*
* Q Total (cfs)       *    388.00 * Flow (cfs)       *      *      388.00 *
*
* Top Width (ft)      *    617.53 * Top Width (ft)   *      *      617.53 *
*
* Vel Total (ft/s)    *      2.72 * Avg. Vel. (ft/s) *      *      2.72 *
*
* Max Chl Dpth (ft)   *      0.23 * Hydr. Depth (ft) *      *      0.23 *
*
* Conv. Total (cfs)   *    2276.0 * Conv. (cfs)      *      *    2276.0 *
*

```

```

* Length Wtd. (ft)      *          * Wetted Per. (ft)      *          * 618.65 *
* Min Ch El (ft)      * 5296.00 * Shear (lb/sq ft)      *          * 0.42 *
* Alpha                * 1.00    * Stream Power (lb/ft s) *          * 1.14 *
* Frctn Loss (ft)     *          * Cum Volume (acre-ft)  *          *      *
* C & E Loss (ft)     *          * Cum SA (acres)        *          *      *
*****
**

```

Warning - Divided flow computed for this cross-section.

SUMMARY OF MANNING'S N VALUES

```

River: N_TRIB2
*****
* Reach      * River Sta. * n1      * n2      * n3      *
*****
*11-15      * 15         * .035*   .035*   .035*
*11-15      * 14         * .035*   .035*   .035*
*11-15      * 13         * .035*   .035*   .035*
*11-15      * 12         * .035*   .035*   .035*
*11-15      * 11         * .035*   .035*   .035*
*****

```

```

River: N_TRIB3
*****
* Reach      * River Sta. * n1      * n2      * n3      *
*****
*20-21      * 21         * .035*   .035*   .035*
*20-21      * 20         * .035*   .035*   .035*
*****

```

```

River: N_TRIB1
*****
* Reach      * River Sta. * n1      * n2      * n3      *
*****
*1-10       * 10         * .035*   .035*   .035*
*1-10       * 3          * .035*   .035*   .035*
*1-10       * 2          * .035*   .035*   .035*
*1-10       * 1          * .035*   .035*   .035*
*****

```

SUMMARY OF REACH LENGTHS

```

River: N_TRIB2
*****
* Reach      * River Sta. * Left    * Channel * Right   *
*****
*11-15      * 15         * 600*    700*    750*
*11-15      * 14         * 500*    500*    500*
*11-15      * 13         * 550*    900*    1300*
*11-15      * 12         * 650*    650*    650*
*11-15      * 11         * 1200*   700*    200*
*****

```

```

River: N_TRIB3
*****
* Reach      * River Sta. * Left    * Channel * Right   *
*****
*20-21      * 21         * 600*    700*    750*
*20-21      * 20         * 1000*   500*    1400*
*****

```

```

River: N_TRIB1
*****
* Reach      * River Sta. * Left    * Channel * Right   *
*****

```

```

*1-10      *    10      *      800*    1000*    50*
*1-10      *     3      *      900*    650*    500*
*1-10      *     2      *      10*    400*    800*
*1-10      *     1      *       0*     0*     0*
*****

```

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: N_TRIB2

```

*****
* Reach      * River Sta. * Contr. * Expan. *
*****
*11-15      *    15      *   .1*   .3*
*11-15      *    14      *   .1*   .3*
*11-15      *    13      *   .1*   .3*
*11-15      *    12      *   .1*   .3*
*11-15      *    11      *   .1*   .3*
*****

```

River: N_TRIB3

```

*****
* Reach      * River Sta. * Contr. * Expan. *
*****
*20-21      *    21      *   .1*   .3*
*20-21      *    20      *   .1*   .3*
*****

```

River: N_TRIB1

```

*****
* Reach      * River Sta. * Contr. * Expan. *
*****
*1-10      *    10      *   .1*   .3*
*1-10      *     3      *   .1*   .3*
*1-10      *     2      *   .1*   .3*
*1-10      *     1      *   .1*   .3*
*****

```

Profile Output Table - Standard Table 2

```

*****
* River      * Reach      * River Sta * E.G. Elev *W.S. Elev * Vel Head *Frctn Loss *C
& E Loss *  Q Left *Q Channel * Q Right *Top Width *
*           *         *         *         *         *         *         *
* (ft) * (cfs) * (cfs) * (cfs) * (ft) *
*****
* N_TRIB1    * 1-10      * 10      * 5306.37 * 5306.36 * 0.01 * 3.99 *
0.01 *      * 348.00 *      * 1175.84 *
* N_TRIB1    * 1-10      * 3       * 5302.38 * 5302.25 * 0.12 * 3.40 *
0.03 *      * 344.00 *      * 499.57 *
* N_TRIB1    * 1-10      * 2       * 5298.56 * 5298.54 * 0.02 * 2.20 *
0.01 *      * 344.00 *      * 564.49 *
* N_TRIB1    * 1-10      * 1       * 5296.35 * 5296.23 * 0.11 * *
*           * 388.00 *
* N_TRIB3    * 20-21     * 21      * 5344.20 * 5344.13 * 0.07 * *
*           * 44.00 *
*           * 163.85 *
* N_TRIB3    * 20-21     * 20      * 5324.71 * 5324.42 * 0.28 * 0.58 *
0.08 *      * 193.00 *      * 93.84 *
* N_TRIB2    * 11-15     * 15      * 5356.03 * 5356.01 * 0.02 * 1.67 *
0.01 *      * 150.00 *      * 159.67 *
* N_TRIB2    * 11-15     * 14      * 5354.36 * 5354.26 * 0.10 * 11.55 *
0.02 *      * 150.00 *      * 242.13 *
* N_TRIB2    * 11-15     * 13      * 5342.79 * 5342.52 * 0.27 * 12.87 *
0.06 *      * 257.00 *      * 120.62 *
* N_TRIB2    * 11-15     * 12      * 5328.31 * 5328.26 * 0.06 * 9.99 *
0.01 *      * 238.00 *      * 393.69 *
* N_TRIB2    * 11-15     * 11      * 5318.31 * 5318.13 * 0.18 * 0.64 *
0.05 *      * 238.00 *      * 200.22 *
*****
*****

```

Profile Output Table - Standard Table 1

```

*****
* River      * Reach      * River Sta *      Q Total *Min Ch El *W.S. Elev *Crit W.S.
*E.G. Elev *E.G. Slope * Vel Chnl *Flow Area *Top Width *Froude # Chl *
*          *          *          *          *          *          *          *
(ft) *      (ft/ft) *      (ft/s) *      (sq ft) *      (ft) *          *          *
*****
* N TRIB1   * 1-10      * 10       *          * 348.00 * 5306.00 * 5306.36 *
5306.37 * 0.001532 * 0.83 * 418.21 * 1175.84 * 0.25 *
* N TRIB1   * 1-10      * 3        *          * 344.00 * 5302.00 * 5302.25 * 5302.25 *
5302.38 * 0.028722 * 2.81 * 122.36 * 499.57 * 1.00 *
* N TRIB1   * 1-10      * 2        *          * 344.00 * 5298.00 * 5298.54 *
5298.56 * 0.002113 * 1.22 * 282.09 * 564.49 * 0.30 *
* N TRIB1   * 1-10      * 1        *          * 388.00 * 5296.00 * 5296.23 * 5296.23 *
5296.35 * 0.029061 * 2.72 * 142.60 * 617.53 * 1.00 *
* N TRIB3   * 20-21     * 21       *          * 44.00 * 5344.00 * 5344.13 * 5344.13 *
5344.20 * 0.038991 * 2.12 * 20.79 * 163.85 * 1.05 *
* N TRIB3   * 20-21     * 20       *          * 193.00 * 5323.00 * 5324.42 * 5324.42 *
5324.71 * 0.028454 * 4.26 * 45.31 * 93.84 * 1.08 *
* N TRIB2   * 11-15     * 15       *          * 150.00 * 5355.00 * 5356.01 * 5355.38 *
5356.03 * 0.000857 * 1.10 * 135.98 * 159.67 * 0.21 *
* N TRIB2   * 11-15     * 14       *          * 150.00 * 5354.00 * 5354.26 * 5354.24 *
5354.36 * 0.022475 * 2.50 * 59.89 * 242.13 * 0.89 *
* N TRIB2   * 11-15     * 13       *          * 257.00 * 5342.00 * 5342.52 * 5342.52 *
5342.79 * 0.023577 * 4.15 * 61.99 * 120.62 * 1.02 *
* N TRIB2   * 11-15     * 12       *          * 238.00 * 5327.50 * 5328.26 * 5328.16 *
5328.31 * 0.009317 * 1.89 * 125.74 * 393.69 * 0.59 *
* N TRIB2   * 11-15     * 11       *          * 238.00 * 5317.00 * 5318.13 * 5318.13 *
5318.31 * 0.026145 * 3.39 * 70.28 * 200.22 * 1.01 *
*****
*****

```

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : North EW

River: N_TRIB2 Reach: 11-15 RS: 15 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: N_TRIB2 Reach: 11-15 RS: 14 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

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.

River: N_TRIB2 Reach: 11-15 RS: 13 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: N_TRIB2 Reach: 11-15 RS: 12 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance)

is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

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.

River: N_TRIB2 Reach: 11-15 RS: 11 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: N_TRIB3 Reach: 20-21 RS: 21 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

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

River: N_TRIB3 Reach: 20-21 RS: 20 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: N_TRIB1 Reach: 1-10 RS: 10 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: N_TRIB1 Reach: 1-10 RS: 3 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: N_TRIB1 Reach: 1-10 RS: 2 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: N_TRIB1 Reach: 1-10 RS: 1 Profile: 1

Warning - Divided flow computed for this cross-section.

APPENDIX B

NORTHEAST ENGLEWOOD BASIN

HEC-RAS Version 2.0 April 1997
 U.S. Army Corp of Engineers
 Hydrologic Engineering Center
 609 Second Street, Suite D
 Davis, California 95616-4687
 (916) 756-1104

```

X      X  XXXXXX   XXXX       XXXX       XX       XXXX
X      X  X       X  X       X  X       X  X       X
X      X  X       X       X  X       X  X       X
XXXXXXXX XXXX     X       XXX XXXX     XXXXXX     XXXX
X      X  X       X       X  X       X  X       X
X      X  X       X  X       X  X       X  X       X
X      X  XXXXXX   XXXX     X  X       X  X       XXXXX
  
```

PROJECT DATA

Project Title: Northeast Englewood Backwater Calcs
 Project File : ew_ne.prj
 Run Date and Time: 2/18/98 8:07:44 AM

Project in English units

PLAN DATA

Plan Title: Northeast Englewood Backwater Calcs
 Plan File : c:\hec\ras\englewod\nrthea-1\ew_ne.p04

Geometry Title: Northeast Englewood Backwater Calcs
 Geometry File : c:\hec\ras\englewod\nrthea-1\ew_ne.g01

Flow Title : Northeast Englewood Backwater Calcs
 Flow File : c:\hec\ras\englewod\nrthea-1\ew_ne.f02

Plan Summary Information:

Number of: Cross Sections =	16	Multitple Openings =	0
Culverts =	0	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

Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Northeast Englewood Backwater Calcs
 Flow File : c:\hec\ras\englewod\nrthea-1\ew_ne.f02

Flow Data (cfs)

```

*****
* River      Reach      RS      *      PF#1 *
* NE_TRIB1   1-7      7      *      1766 *
* NE_TRIB1   1-7      5      *      1969 *
* NE_TRIB1   1-7      3      *      2115 *
* NE_TRIB1   1-7      2      *      2210 *
* NE_TRIB2   15-19    19     *      1140 *
* NE_TRIB2   15-19    16     *      1277 *
* NE_TRIB2   15-19    15.5   *      1552 *
* NE_TRIB2   15-19    15     *      1690 *
* NE_TRIB3   10-12    12     *      20 *
* NE_TRIB3   10-12    10     *      33 *
*****
  
```

Boundary Conditions

```
*****
*****
* River      Reach      Profile      *      Upstream
Downstream  *
*****
* NE_TRIB1   1-7         PF#1         *
Critical    *
*****
*****
```

GEOMETRY DATA

Geometry Title: Northeast Englewood Backwater Calcs
 Geometry File : c:\hec\ras\englewod\nrthea-1\ew_ne.g01

Reach Connection Table

```
*****
* River      Reach      * Upstream Boundary * Downstream Boundary *
*****
* NE_TRIB2   15-19      *          * Elem_chan *
* NE_TRIB3   10-12      *          * Elem_chan *
* NE_TRIB1   1-7         * Elem_chan *
*****
```

JUNCTION INFORMATION

Name: Elem_chan
 Description:
 Energy computation Method

Length across Junction		Tributary		Reach	Length	Angle
River	Reach	River				
NE_TRIB2	15-19	to NE_TRIB1	1-7		100	
NE_TRIB3	10-12	to NE_TRIB1	1-7		100	

CROSS SECTION RIVER: NE_TRIB2
 REACH: 15-19 RS: 19

INPUT

Description:

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5400	70	5399	71	6000	110	6000	111	5398
210	5397	211	6000	240	6000	241	5396	290	5394
360	5393	361	6000	390	6000	391	5392	490	5392
491	6000	540	6000	541	5393	560	5393	561	6000
620	6000	621	5394	640	5394	641	6000	700	6000
701	5396	710	5396	711	6000	770	6000	771	5397
780	5397	781	6000	840	6000	841	5397	850	5397
851	6000	920	6000	921	5398	930	5398	931	6000
990	6000	991	5399	1000	5399	1001	6000	1070	6000
1071	5400								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1071	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1071		800	800	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```
*****
**
* W.S. Elev (ft) * 5393.62 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.59 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5394.21 * Reach Len. (ft) * 800.00 * 800.00 * 800.00
```

```

*
* Crit W.S. (ft)          * 5393.62 * Flow Area (sq ft)      *          * 185.56 *
*
* E.G. Slope (ft/ft)     * 0.018118 * Area (sq ft)          *          * 185.56 *
*
* Q Total (cfs)          * 1140.00 * Flow (cfs)            *          * 1140.00 *
*
* Top Width (ft)         * 161.38 * Top Width (ft)        *          * 161.38 *
*
* Vel Total (ft/s)       * 6.14 * Avg. Vel. (ft/s)      *          * 6.14 *
*
* Max Chl Dpth (ft)     * 1.62 * Hydr. Depth (ft)      *          * 1.15 *
*
* Conv. Total (cfs)     * 8469.3 * Conv. (cfs)           *          * 8469.3 *
*
* Length Wtd. (ft)      * 800.00 * Wetted Per. (ft)      *          * 166.47 *
*
* Min Ch El (ft)        * 5392.00 * Shear (lb/sq ft)      *          * 1.26 *
*
* Alpha                  * 1.00 * Stream Power (lb/ft s) *          * 7.75 *
*
* Frctn Loss (ft)       * 8.07 * Cum Volume (acre-ft)  *          * 17.50 *
*
* C & E Loss (ft)       * 0.04 * Cum SA (acres)        *          * 9.58 *
*

```

**

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

CROSS SECTION RIVER: NE_TRIB2
REACH: 15-19 RS: 18

INPUT

Description:

Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5390	20	5390	21	6000	80	6000	81	5388
180	5388	181	6000	230	6000	231	5388	240	5388
241	6000	270	6000	271	5386	280	5384	300	5384
301	6000	370	6000	371	5382	430	5381	470	5382
471	6000	530	6000	531	5384	540	5384	541	6000
600	6000	601	5385	610	5385	611	6000	670	6000
671	5386	680	5386	681	6000	750	6000	751	5388
760	5388	761	6000	810	6000	811	5390		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	811	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 811 650 550 600 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft) * 5383.61 * Element * Left OB * Channel * Right OB

```

*
* Vel Head (ft) * 0.46 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5384.07 * Reach Len. (ft) * 650.00 * 550.00 * 600.00
*
* Crit W.S. (ft) * * Flow Area (sq ft) * * 208.45 *
*
* E.G. Slope (ft/ft) * 0.006418 * Area (sq ft) * * 208.45 *
*
* Q Total (cfs) * 1140.00 * Flow (cfs) * * 1140.00 *
*
* Top Width (ft) * 99.01 * Top Width (ft) * * 99.01 *
*
* Vel Total (ft/s) * 5.47 * Avg. Vel. (ft/s) * * 5.47 *
*
* Max Chl Dpth (ft) * 2.61 * Hydr. Depth (ft) * * 2.11 *
*
* Conv. Total (cfs) * 14230.0 * Conv. (cfs) * * 14230.0 *
*
* Length Wtd. (ft) * 550.00 * Wetted Per. (ft) * * 102.23 *
*
* Min Ch El (ft) * 5381.00 * Shear (lb/sq ft) * * 0.82 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * * 4.47 *
*
* Frctn Loss (ft) * 5.32 * Cum Volume (acre-ft) * * 13.89 *
*
* C & E Loss (ft) * 0.04 * Cum SA (acres) * * 7.19 *
*
*****
**

```

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.

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: NE_TRIB2
REACH: 15-19 RS: 17

INPUT

Description:

Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5384	40	5382	110	5381.5	111	5395	140	5395
141	5381.5	230	5381	231	5395	280	5395	281	5380.5
300	5380.5	301	5395	350	5395	351	5380.5	380	5380.5
381	5395	450	5395	451	5380	460	5380	461	5395
520	5395	521	5378	530	5378	531	5395	590	5395
591	5376	600	5376	601	5395	660	5395	661	5376
730	5376	740	5378	741	5395	800	5395	801	5380
820	5380	821	5395	860	5395	861	5381	870	5381
871	5395	930	5395	931	5382	950	5384		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	950	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 950 700 700 650 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft) * 5377.84 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.87 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5378.71 * Reach Len. (ft) * 700.00 * 700.00 * 650.00
*
* Crit W.S. (ft) * 5377.84 * Flow Area (sq ft) * * 151.94 *

```

```

*
* E.G. Slope (ft/ft)      * 0.016204 * Area (sq ft)          *          * 151.94 *
*
* Q Total (cfs)          * 1140.00 * Flow (cfs)          *          * 1140.00 *
*
* Top Width (ft)        * 87.47 * Top Width (ft)      *          * 87.47 *
*
* Vel Total (ft/s)      * 7.50 * Avg. Vel. (ft/s)    *          * 7.50 *
*
* Max Chl Dpth (ft)    * 1.84 * Hydr. Depth (ft)   *          * 1.74 *
*
* Conv. Total (cfs)    * 8955.5 * Conv. (cfs)        *          * 8955.5 *
*
* Length Wtd. (ft)     * 700.00 * Wetted Per. (ft)   *          * 92.88 *
*
* Min Ch El (ft)       * 5376.00 * Shear (lb/sq ft)   *          * 1.65 *
*
* Alpha                 * 1.00 * Stream Power (lb/ft s) *          * 12.42 *
*
* Frctn Loss (ft)      * 3.88 * Cum Volume (acre-ft) *          * 11.61 *
*
* C & E Loss (ft)      * 0.21 * Cum SA (acres)     *          * 6.01 *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

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

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: NE_TRIB2
REACH: 15-19 RS: 16

INPUT

Description:

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5374	10	5372	11	5390	50	5390	51	5370
70	5370	71	5390	110	5390	111	5369	130	5369
131	5390	170	5390	171	5369	190	5369	191	5390
230	5390	231	5368	250	5368	251	5390	290	5390
291	5368	310	5368	311	5390	350	5390	351	5368
400	5368	430	5370	431	5390	480	5390	481	5371
490	5371	491	5390	540	5390	541	5372	550	5372
551	5390	600	5390	601	5373	610	5373	611	5390
660	5390	661	5373	670	5373	671	5390	720	5390
721	5374								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	721	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 721 900 700 650 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5370.71 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      *      0.19 * Wt. n-Val.      *      *      0.035 *
*
* E.G. Elev (ft)     * 5370.89 * Reach Len. (ft) * 900.00 * 700.00 * 650.00
*
* Crit W.S. (ft)     *      * Flow Area (sq ft) *      *      365.83 *
*
* E.G. Slope (ft/ft) * 0.002953 * Area (sq ft)    *      *      365.83 *
*
* Q Total (cfs)      * 1277.00 * Flow (cfs)      *      * 1277.00 *
*
* Top Width (ft)     * 175.05 * Top Width (ft)  *      *      175.05 *
*
* Vel Total (ft/s)   *      3.49 * Avg. Vel. (ft/s) *      *      3.49 *
*
* Max Chl Dpth (ft) *      2.71 * Hydr. Depth (ft) *      *      2.09 *
*
* Conv. Total (cfs)  * 23500.3 * Conv. (cfs)     *      * 23500.3 *
*
* Length Wtd. (ft)  * 700.00 * Wetted Per. (ft) *      *      196.55 *
*
* Min Ch El (ft)    * 5368.00 * Shear (lb/sq ft) *      *      0.34 *
*
* Alpha              *      1.00 * Stream Power (lb/ft s) *      *      1.20 *
*
* Frctn Loss (ft)   *      4.80 * Cum Volume (acre-ft) *      *      7.45 *
*
* C & E Loss (ft)   *      0.04 * Cum SA (acres)  *      *      3.90 *
*
*****
**

```

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

CROSS SECTION RIVER: NE_TRIB2
REACH: 15-19 RS: 15.5

INPUT

Description:

Station Elevation Data		num= 59		Sta		Elev		Sta		Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5370	10	5370	11	6000	60	6000	61	5369		
80	5369	81	6000	120	6000	121	5368	140	5366		
141	6000	190	6000	191	5365	270	5364	271	6000		
320	6000	321	5364	330	5364	331	6000	380	6000		
381	5362	390	5362	391	6000	440	6000	441	5362		
450	5362	451	6000	500	6000	501	5363	510	5363		
511	6000	560	6000	561	5363	570	5363	571	6000		
620	6000	621	5364	640	5364	641	6000	680	6000		
681	5365	700	5365	701	6000	740	6000	741	5365		
760	5365	761	6000	800	6000	801	5365	810	5365		
811	6000	850	6000	851	5365	910	5366	940	5368		
941	6000	1000	6000	1001	5369	1050	5370				

Manning's n Values		num= 3		Sta		n Val	
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1050	.035		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1050		300	300	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**

```

```

* W.S. Elev (ft)      * 5365.46 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.59 * Wt. n-Val.      *      * 0.035 *
*
* E.G. Elev (ft)     * 5366.05 * Reach Len. (ft) * 300.00 * 300.00 * 300.00
*
* Crit W.S. (ft)     * 5365.46 * Flow Area (sq ft) *      * 251.52 *
*
* E.G. Slope (ft/ft) * 0.021170 * Area (sq ft)    *      * 251.52 *
*
* Q Total (cfs)      * 1552.00 * Flow (cfs)      *      * 1552.00 *
*
* Top Width (ft)     * 217.28 * Top Width (ft)  *      * 217.28 *
*
* Vel Total (ft/s)   * 6.17 * Avg. Vel. (ft/s) *      * 6.17 *
*
* Max Chl Dpth (ft) * 3.46 * Hydr. Depth (ft) *      * 1.16 *
*
* Conv. Total (cfs)  * 10666.7 * Conv. (cfs)     *      * 10666.7 *
*
* Length Wtd. (ft)  * 300.00 * Wetted Per. (ft) *      * 251.92 *
*
* Min Ch El (ft)    * 5362.00 * Shear (lb/sq ft) *      * 1.32 *
*
* Alpha              * 1.00 * Stream Power (lb/ft s) *      * 8.14 *
*
* Frctn Loss (ft)   * 5.46 * Cum Volume (acre-ft) *      * 2.49 *
*
* C & E Loss (ft)   * 0.01 * Cum SA (acres)   *      * 0.75 *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: NE_TRIB2
REACH: 15-19 RS: 15

INPUT

Description:

Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5364	110	5363	111	5380	140	5380	141	5363
220	5362	260	5361	261	5380	310	5380	311	5360
370	5358	400	5356	530	5356	560	5358	561	5380
580	5380	581	5360	630	5360	631	5380	690	5380
691	5361	700	5361	701	5380	740	5380	741	5361
950	5362	980	5363	981	5380	1020	5380	1021	5363
1120	5364								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1120	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 1120 1100 750 500 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

**

```

* W.S. Elev (ft)      * 5357.63 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.70 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)     * 5358.33 * Reach Len. (ft)  * 100.00 * 100.00 * 100.00
*
* Crit W.S. (ft)     * 5357.63 * Flow Area (sq ft) *          * 251.12 *
*
* E.G. Slope (ft/ft) * 0.015988 * Area (sq ft)     *          * 251.12 *
*
* Q Total (cfs)      * 1690.00 * Flow (cfs)       *          * 1690.00 *
*
* Top Width (ft)     * 178.79 * Top Width (ft)   *          * 178.79 *
*
* Vel Total (ft/s)   * 6.73 * Avg. Vel. (ft/s) *          * 6.73 *
*
* Max Chl Dpth (ft) * 1.63 * Hydr. Depth (ft) *          * 1.40 *
*
* Conv. Total (cfs)  * 13365.6 * Conv. (cfs)      *          * 13365.6 *
*
* Length Wtd. (ft)   * 100.00 * Wetted Per. (ft) *          * 178.90 *
*
* Min Ch El (ft)     * 5356.00 * Shear (lb/sq ft) *          * 1.40 *
*
* Alpha              * 1.00 * Stream Power (lb/ft s) *          * 9.43 *
*
* Frctn Loss (ft)    * 1.37 * Cum Volume (acre-ft) *          * 0.48 *
*
* C & E Loss (ft)    * 0.08 * Cum SA (acres)    *          *          *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: NE_TRIB3
REACH: 10-12 RS: 12

INPUT

Description:

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5370	20	5368	60	5366	80	5364	170	5362
171	5385	220	5385	221	5361	350	5361	351	5385
390	5385	391	5360	410	5360	480	5360	481	5385
490	5385	491	5361	550	5362	551	5385	590	5385
591	5364	600	5366	690	5368	710	5370		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	710	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	710		400	400	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5364.20 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.00 * Wt. n-Val.      *          * 0.035 *

```

```

*
* E.G. Elev (ft)      * 5364.20 * Reach Len. (ft)      * 400.00 * 400.00 * 400.00
*
* Crit W.S. (ft)     *          * Flow Area (sq ft)    *          * 1056.72 *
*
* E.G. Slope (ft/ft) * 0.000000 * Area (sq ft)         *          * 1056.72 *
*
* Q Total (cfs)       * 20.00 * Flow (cfs)           *          * 20.00 *
*
* Top Width (ft)      * 370.88 * Top Width (ft)       *          * 370.88 *
*
* Vel Total (ft/s)    * 0.02 * Avg. Vel. (ft/s)     *          * 0.02 *
*
* Max Chl Dpth (ft)   * 4.20 * Hydr. Depth (ft)     *          * 2.85 *
*
* Conv. Total (cfs)   * 86802.6 * Conv. (cfs)          *          * 86802.6 *
*
* Length Wtd. (ft)    * 400.00 * Wetted Per. (ft)     *          * 392.64 *
*
* Min Ch El (ft)      * 5360.00 * Shear (lb/sq ft)     *          * 0.00 *
*
* Alpha               * 1.00 * Stream Power (lb/ft s) *          * 0.00 *
*
* Frctn Loss (ft)     * 0.00 * Cum Volume (acre-ft) *          * 7.46 *
*
* C & E Loss (ft)     * 0.00 * Cum SA (acres)       *          * 4.18 *
*

```

**

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 RIVER: NE_TRIB3
REACH: 10-12 RS: 11

INPUT

Description:

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5374	50	5373	51	5390	70	5390	71	5372
170	5370	220	5369	221	5390	290	5390	291	5368
330	5366	360	5365	361	5390	390	5390	391	5364
430	5364	431	5390	460	5390	461	5364	660	5364
680	5366	740	5368	780	5370	800	5370	801	5390
850	5390	851	5371	920	5372	980	5374		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	980	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.	
	0	980		400	500	600	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5364.20 * Element              * Left OB * Channel * Right OB
*
* Vel Head (ft)       * 0.00 * Wt. n-Val.          *          * 0.035 *
*
* E.G. Elev (ft)      * 5364.20 * Reach Len. (ft)     * 400.00 * 500.00 * 600.00
*
* Crit W.S. (ft)      *          * Flow Area (sq ft)    *          * 47.61 *
*
* E.G. Slope (ft/ft)  * 0.000849 * Area (sq ft)         *          * 47.61 *
*
* Q Total (cfs)       * 20.00 * Flow (cfs)           *          * 20.00 *
*
* Top Width (ft)      * 240.02 * Top Width (ft)       *          * 240.02 *
*

```

```

* Vel Total (ft/s)      *      0.42 * Avg. Vel. (ft/s)      *      *      0.42 *
*
* Max Chl Dpth (ft)    *      0.20 * Hydr. Depth (ft)      *      *      0.20 *
*
* Conv. Total (cfs)    *     686.5 * Conv. (cfs)           *      *     686.5 *
*
* Length Wtd. (ft)     *     500.00 * Wetted Per. (ft)      *      *     240.60 *
*
* Min Ch El (ft)       *    5364.00 * Shear (lb/sq ft)      *      *      0.01 *
*
* Alpha                 *      1.00 * Stream Power (lb/ft s) *      *      0.00 *
*
* Frctn Loss (ft)      *      1.92 * Cum Volume (acre-ft)  *      *      2.39 *
*
* C & E Loss (ft)      *      0.01 * Cum SA (acres)        *      *      1.38 *

```

**

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

CROSS SECTION RIVER: NE_TRIB3
REACH: 10-12 RS: 10

INPUT

Description:

Station Elevation Data		num= 36		Sta Elev		Sta Elev		Sta Elev		Sta Elev	
0	5370	10	5368	80	5367	81	5385	130	5385		
131	5366.5	140	5366	200	5364	210	5364	211	5385		
250	5385	251	5363	270	5363	271	5385	300	5385		
301	5363	350	5362	390	5362	420	5362	421	5385		
460	5385	461	5363	580	5364	690	5364	750	5366		
780	5366	781	5385	820	5385	821	5366	840	5366		
841	5385	870	5385	871	5366	890	5366	930	5368		
1000	5370										

Manning's n Values		num= 3		Sta n Val	
0	.035	0	.035	1000	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.	
	0	1000		550	700	900	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5362.19 * Element                * Left OB * Channel * Right OB
*
* Vel Head (ft)       * 0.09 * Wt. n-Val.            *      * 0.035 *
*
* E.G. Elev (ft)      * 5362.27 * Reach Len. (ft)       * 100.00 * 100.00 * 100.00
*
* Crit W.S. (ft)      * 5362.19 * Flow Area (sq ft)     *      * 14.06 *
*
* E.G. Slope (ft/ft)  * 0.030717 * Area (sq ft)          *      * 14.06 *
*
* Q Total (cfs)       * 33.00 * Flow (cfs)            *      * 33.00 *
*
* Top Width (ft)      * 79.24 * Top Width (ft)        *      * 79.24 *
*
* Vel Total (ft/s)    * 2.35 * Avg. Vel. (ft/s)      *      * 2.35 *
*
* Max Chl Dpth (ft)   * 0.19 * Hydr. Depth (ft)      *      * 0.18 *
*
* Conv. Total (cfs)   * 188.3 * Conv. (cfs)           *      * 188.3 *
*

```

```

* Length Wtd. (ft)      * 100.00 * Wetted Per. (ft)      *      *      * 79.43 *
* Min Ch El (ft)      * 5362.00 * Shear (lb/sq ft)      *      *      * 0.34 *
* Alpha                * 1.00 * Stream Power (lb/ft s) *      *      * 0.80 *
* Frctn Loss (ft)     * 1.05 * Cum Volume (acre-ft)  *      *      * 0.21 *
* C & E Loss (ft)     * 0.04 * Cum SA (acres)        *      *      *

```

**

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
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: NE_TRIB1
REACH: 1-7 RS: 7

INPUT

Description:

Station Elevation Data num= 44
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

0 5360 30 5358 60 5356 90 5355 91 5370
110 5370 111 5354 180 5352 220 5352 221 5370
250 5370 251 5350 270 5348 340 5348 380 5350
440 5350 520 5350 530 5352 540 5353 541 5370
580 5370 581 5353 600 5353 601 5370 630 5370
631 5353 710 5354 711 5370 750 5370 751 5354
900 5354 901 5370 930 5370 931 5355 1000 5356
1001 5370 1020 5370 1021 5356 1160 5358 1180 5358
1181 5370 1230 5370 1231 5359 1330 5360

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val

0 .035 0 .035 1330 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 1330 150 450 700 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

**
* W.S. Elev (ft) * 5350.49 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.44 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5350.93 * Reach Len. (ft) * 150.00 * 450.00 * 700.00
*
* Crit W.S. (ft) * * Flow Area (sq ft) * * 332.41 *
*
* E.G. Slope (ft/ft) * 0.011995 * Area (sq ft) * * 332.41 *
*
* Q Total (cfs) * 1766.00 * Flow (cfs) * * 1766.00 *
*
* Top Width (ft) * 271.49 * Top Width (ft) * * 271.49 *

```

*
* Vel Total (ft/s)      *      5.31 * Avg. Vel. (ft/s)      *      *      5.31 *
*
* Max Chl Dpth (ft)    *      2.49 * Hydr. Depth (ft)      *      *      1.22 *
*
* Conv. Total (cfs)    * 16124.6 * Conv. (cfs)           *      * 16124.6 *
*
* Length Wtd. (ft)     *  450.00 * Wetted Per. (ft)      *      *  272.17 *
*
* Min Ch El (ft)       * 5348.00 * Shear (lb/sq ft)      *      *   0.91 *
*
* Alpha                *      1.00 * Stream Power (lb/ft s) *      *   4.86 *
*
* Frctn Loss (ft)      *      3.37 * Cum Volume (acre-ft)  *      *   40.14 *
*
* C & E Loss (ft)      *      0.05 * Cum SA (acres)        *      *   31.50 *
*
*****
**

```

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: NE_TRIB1
 REACH: 1-7 RS: 6

INPUT

Description:

Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5358	20	5356	30	5354	70	5352	110	5350
150	5348	180	5346	250	5344	280	5345	281	5370
310	5370	311	5345	320	5345	321	5370	360	5370
361	5346	390	5346	480	5346	481	5370	520	5370
521	5348	600	5350	620	5352	630	5352	631	5370
660	5370	661	5353	740	5354	810	5354	970	5354
971	5370	1010	5370	1011	5354	1070	5354	1071	5370
1130	5370	1131	5355	1160	5356	1210	5356	1230	5356
1231	5370	1270	5370	1271	5358				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1271	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1271		600	500	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5347.24 * Element                * Left OB * Channel * Right OB
*
* Vel Head (ft)       *      0.28 * Wt. n-Val.            *      *      0.035 *
*
* E.G. Elev (ft)      * 5347.52 * Reach Len. (ft)       * 600.00 * 500.00 * 500.00
*
* Crit W.S. (ft)      *      * Flow Area (sq ft)      *      * 419.04 *
*
* E.G. Slope (ft/ft)  * 0.005106 * Area (sq ft)          *      * 419.04 *
*
* Q Total (cfs)       * 1766.00 * Flow (cfs)            *      * 1766.00 *
*
* Top Width (ft)      *  247.00 * Top Width (ft)        *      *  247.00 *
*
* Vel Total (ft/s)    *      4.21 * Avg. Vel. (ft/s)      *      *   4.21 *
*
* Max Chl Dpth (ft)   *      3.24 * Hydr. Depth (ft)      *      *   1.70 *
*
* Conv. Total (cfs)   * 24713.6 * Conv. (cfs)           *      * 24713.6 *

```

```

*
* Length Wtd. (ft)      * 500.00 * Wetted Per. (ft)      *          * 255.93 *
*
* Min Ch El (ft)      * 5344.00 * Shear (lb/sq ft)      *          * 0.52 *
*
* Alpha                * 1.00 * Stream Power (lb/ft s) *          * 2.20 *
*
* Frctn Loss (ft)     * 4.17 * Cum Volume (acre-ft)  *          * 36.26 *
*
* C & E Loss (ft)     * 0.04 * Cum SA (acres)        *          * 28.82 *
*

```

```

*****
**

```

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

```

CROSS SECTION          RIVER: NE_TRIB1
REACH: 1-7             RS: 5

```

INPUT

Description:

```

Station Elevation Data      num=      27
Sta      Elev      Sta      Elev      Sta      Elev      Sta      Elev      Sta      Elev
*****
0        5352      10       5350      20       5348      150      5346      250      5344
260     5344      290     5344      291     5360      350     5360      351     5344
380     5342      390     5340      410     5340      460     5341      461     5360
510     5360      511     5341      610     5342      680     5344      750     5346
930     5348      950     5348      951     5360      1030    5360      1031    5349
1060    5350      1110    5352

```

```

Manning's n Values        num=      3
Sta      n Val      Sta      n Val      Sta      n Val
*****
0        .035      0        .035      1110     .035

```

```

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
              0     1110              350     800     1300              .1       .3

```

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5342.66 * Element                * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.65 * Wt. n-Val.            *          * 0.035 *
*
* E.G. Elev (ft)     * 5343.31 * Reach Len. (ft)       * 350.00 * 800.00 * 1300.00
*
* Crit W.S. (ft)     * 5342.61 * Flow Area (sq ft)     *          * 303.60 *
*
* E.G. Slope (ft/ft) * 0.014753 * Area (sq ft)          *          * 303.60 *
*
* Q Total (cfs)      * 1969.00 * Flow (cfs)            *          * 1969.00 *
*
* Top Width (ft)     * 211.85 * Top Width (ft)        *          * 211.85 *
*
* Vel Total (ft/s)   * 6.49 * Avg. Vel. (ft/s)      *          * 6.49 *
*
* Max Chl Dpth (ft) * 2.66 * Hydr. Depth (ft)     *          * 1.43 *
*
* Conv. Total (cfs)  * 16210.7 * Conv. (cfs)           *          * 16210.7 *
*
* Length Wtd. (ft)   * 800.00 * Wetted Per. (ft)     *          * 215.25 *
*
* Min Ch El (ft)     * 5340.00 * Shear (lb/sq ft)     *          * 1.30 *
*
* Alpha              * 1.00 * Stream Power (lb/ft s) *          * 8.43 *
*
* Frctn Loss (ft)   * 6.54 * Cum Volume (acre-ft) *          * 32.11 *

```

*
 * C & E Loss (ft) * 0.16 * Cum SA (acres) * * 26.18 *
 *

 **

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

CROSS SECTION RIVER: NE_TRIB1
 REACH: 1-7 RS: 4

INPUT

Description:

Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5350	70	5348	120	5347	121	5360	150	5360
151	5346	170	5346	171	5360	180	5360	181	5345
230	5344	280	5342	310	5340	320	5338	370	5336
540	5336	620	5338	640	5340	641	5360	670	5360
680	5342	790	5342	910	5340	930	5338	1030	5336
1130	5335	1131	5360	1170	5360	1171	5335	1190	5335
1191	5360	1230	5360	1231	5335	1400	5335	1401	5360
1420	5360	1421	5335	1480	5335	1481	5360	1520	5360
1521	5335	1630	5336	1670	5337	1671	5360	1711	5337
1760	5338	1840	5340	1860	5342	1870	5344		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1870	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1870		650	600	900	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5336.48	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.13	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5336.61	* Reach Len. (ft)	* 650.00	* 600.00	* 900.00
* Crit W.S. (ft)	* 5336.12	* Flow Area (sq ft)	* 670.52		
* E.G. Slope (ft/ft)	* 0.005186	* Area (sq ft)	* 670.52		
* Q Total (cfs)	* 1969.00	* Flow (cfs)	* 1969.00		
* Top Width (ft)	* 700.95	* Top Width (ft)	* 700.95		
* Vel Total (ft/s)	* 2.94	* Avg. Vel. (ft/s)	* 2.94		
* Max Chl Dpth (ft)	* 1.48	* Hydr. Depth (ft)	* 0.96		
* Conv. Total (cfs)	* 27340.7	* Conv. (cfs)	* 27340.7		
* Length Wtd. (ft)	* 600.00	* Wetted Per. (ft)	* 712.36		
* Min Ch El (ft)	* 5335.00	* Shear (lb/sq ft)	* 0.30		
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 0.89		
* Frctn Loss (ft)	* 5.47	* Cum Volume (acre-ft)	* 23.17		

*

* C & E Loss (ft) * 0.02 * Cum SA (acres) * * 17.80 *

**

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

CROSS SECTION RIVER: NE_TRIB1
REACH: 1-7 RS: 3

INPUT

Description:

Station Elevation Data		num= 23		Sta		Elev		Sta		Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5340	110	5338	111	5355	200	5355	201	5337		
230	5336	350	5330	400	5330	640	5330	790	5330		
910	5330	980	5332	1000	5334	1001	5355	1030	5355		
1031	5334.2	1100	5335	1101	5355	1120	5355	1121	5335.5		
1150	5336	1210	5338	1250	5340						

Manning's n Values		num= 3		Sta		n Val	
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1250	.035		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1250		800	700	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5330.76	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.36	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5331.12	* Reach Len. (ft)	* 800.00	* 700.00	* 700.00
* Crit W.S. (ft)	* 5330.76	* Flow Area (sq ft)	* 440.76		
* E.G. Slope (ft/ft)	* 0.019350	* Area (sq ft)	* 440.76		
* Q Total (cfs)	* 2115.00	* Flow (cfs)	* 2115.00		
* Top Width (ft)	* 601.73	* Top Width (ft)	* 601.73		
* Vel Total (ft/s)	* 4.80	* Avg. Vel. (ft/s)	* 4.80		
* Max Chl Dpth (ft)	* 0.76	* Hydr. Depth (ft)	* 0.73		
* Conv. Total (cfs)	* 15204.5	* Conv. (cfs)	* 15204.5		
* Length Wtd. (ft)	* 700.00	* Wetted Per. (ft)	* 601.76		
* Min Ch El (ft)	* 5330.00	* Shear (lb/sq ft)	* 0.88		
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 4.25		
* Frctn Loss (ft)	* 0.41	* Cum Volume (acre-ft)	* 15.52		
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 8.83		

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth.

This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

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: NE_TRIB1
 REACH: 1-7 RS: 2

INPUT

Description:

Station Elevation Data		num= 21		Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5332	90	5330	140	5330	141	5345	160	5345	160	5345
161	5328	180	5326	190	5326	191	5345	230	5345	230	5345
231	5325	250	5324	350	5324	380	5324	381	5345	381	5345
430	5345	431	5325	470	5326	500	5328	510	5330	510	5330
560	5332										

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	560	.035				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	560		700	500	300	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5328.05	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.13	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5328.18	* Reach Len. (ft)	* 700.00	* 500.00	* 300.00
* Crit W.S. (ft)		* Flow Area (sq ft)		* 766.03	
* E.G. Slope (ft/ft)	* 0.001092	* Area (sq ft)		* 766.03	
* Q Total (cfs)	* 2210.00	* Flow (cfs)		* 2210.00	
* Top Width (ft)	* 247.85	* Top Width (ft)		* 247.85	
* Vel Total (ft/s)	* 2.88	* Avg. Vel. (ft/s)		* 2.88	
* Max Chl Dpth (ft)	* 4.05	* Hydr. Depth (ft)		* 3.09	
* Conv. Total (cfs)	* 66886.2	* Conv. (cfs)		* 66886.2	
* Length Wtd. (ft)	* 500.00	* Wetted Per. (ft)		* 259.72	
* Min Ch El (ft)	* 5324.00	* Shear (lb/sq ft)		* 0.20	
* Alpha	* 1.00	* Stream Power (lb/ft s)		* 0.58	
* Frctn Loss (ft)	* 1.33	* Cum Volume (acre-ft)		* 5.82	
* C & E Loss (ft)	* 0.11	* Cum SA (acres)		* 2.00	

Warning - Divided flow computed for this cross-section.

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

for additional cross sections.

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

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: NE_TRIB1
 REACH: 1-7 RS: 1

INPUT

Description:

Station Elevation Data		num= 31		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5334	65	5333	66	5348	80	5348	81	5333
140	5332.5	141	5348	180	5348	181	5332	200	5330
210	5330	211	5348	250	5348	251	5328	310	5327
311	5348	350	5348	351	5326	360	5324	370	5322
420	5322	430	5324	440	5324.2	440	5348	500	5348
501	5325	530	5326	580	5328	590	5330	600	5332
610	5334								

Manning's n Values		num= 3		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	610	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	610		0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5325.50	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 1.23	* Wt. n-Val.	*	* 0.035	*
* E.G. Elev (ft)	* 5326.74	* Reach Len. (ft)	*	*	*
* Crit W.S. (ft)	* 5325.50	* Flow Area (sq ft)	*	* 248.04	*
* E.G. Slope (ft/ft)	* 0.013777	* Area (sq ft)	*	* 248.04	*
* Q Total (cfs)	* 2210.00	* Flow (cfs)	*	* 2210.00	*
* Top Width (ft)	* 101.39	* Top Width (ft)	*	* 101.39	*
* Vel Total (ft/s)	* 8.91	* Avg. Vel. (ft/s)	*	* 8.91	*
* Max Chl Dpth (ft)	* 3.50	* Hydr. Depth (ft)	*	* 2.45	*
* Conv. Total (cfs)	* 18828.6	* Conv. (cfs)	*	* 18828.6	*
* Length Wtd. (ft)	*	* Wetted Per. (ft)	*	* 103.74	*
* Min Ch El (ft)	* 5322.00	* Shear (lb/sq ft)	*	* 2.06	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 18.32	*
* Frctn Loss (ft)	*	* Cum Volume (acre-ft)	*	*	*
* C & E Loss (ft)	*	* Cum SA (acres)	*	*	*

Warning - Divided flow computed for this cross-section.

SUMMARY OF MANNING'S N VALUES

River:NE_TRIB2

```

*****
* Reach * River Sta. * n1 * n2 * n3 *
*****
*15-19 * 19 * .035* .035* .035*
*15-19 * 18 * .035* .035* .035*
*15-19 * 17 * .035* .035* .035*
*15-19 * 16 * .035* .035* .035*
*15-19 * 15.5 * .035* .035* .035*
*15-19 * 15 * .035* .035* .035*
*****

```

River:NE_TRIB3

```

*****
* Reach * River Sta. * n1 * n2 * n3 *
*****
*10-12 * 12 * .035* .035* .035*
*10-12 * 11 * .035* .035* .035*
*10-12 * 10 * .035* .035* .035*
*****

```

River:NE_TRIB1

```

*****
* Reach * River Sta. * n1 * n2 * n3 *
*****
*1-7 * 7 * .035* .035* .035*
*1-7 * 6 * .035* .035* .035*
*1-7 * 5 * .035* .035* .035*
*1-7 * 4 * .035* .035* .035*
*1-7 * 3 * .035* .035* .035*
*1-7 * 2 * .035* .035* .035*
*1-7 * 1 * .035* .035* .035*
*****

```

SUMMARY OF REACH LENGTHS

River: NE_TRIB2

```

*****
* Reach * River Sta. * Left * Channel * Right *
*****
*15-19 * 19 * 800* 800* 800*
*15-19 * 18 * 650* 550* 600*
*15-19 * 17 * 700* 700* 650*
*15-19 * 16 * 900* 700* 650*
*15-19 * 15.5 * 300* 300* 300*
*15-19 * 15 * 1100* 750* 500*
*****

```

River: NE_TRIB3

```

*****
* Reach * River Sta. * Left * Channel * Right *
*****
*10-12 * 12 * 400* 400* 400*
*10-12 * 11 * 400* 500* 600*
*10-12 * 10 * 550* 700* 900*
*****

```

River: NE_TRIB1

```

*****
* Reach * River Sta. * Left * Channel * Right *
*****
*1-7 * 7 * 150* 450* 700*
*1-7 * 6 * 600* 500* 500*
*1-7 * 5 * 350* 800* 1300*
*1-7 * 4 * 650* 600* 900*
*1-7 * 3 * 800* 700* 700*
*1-7 * 2 * 700* 500* 300*
*1-7 * 1 * 0* 0* 0*
*****

```

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
 River: NE_TRIB2

```

*****
* Reach * River Sta. * Contr. * Expan. *
*****
*15-19 * 19 * .1* .3*
*15-19 * 18 * .1* .3*
*15-19 * 17 * .1* .3*
*15-19 * 16 * .1* .3*
*15-19 * 15.5 * .1* .3*
*15-19 * 15 * .1* .3*
*****
  
```

River: NE_TRIB3

```

*****
* Reach * River Sta. * Contr. * Expan. *
*****
*10-12 * 12 * .1* .3*
*10-12 * 11 * .1* .3*
*10-12 * 10 * .1* .3*
*****
  
```

River: NE_TRIB1

```

*****
* Reach * River Sta. * Contr. * Expan. *
*****
*1-7 * 7 * .1* .3*
*1-7 * 6 * .1* .3*
*1-7 * 5 * .1* .3*
*1-7 * 4 * .1* .3*
*1-7 * 3 * .1* .3*
*1-7 * 2 * .1* .3*
*1-7 * 1 * .1* .3*
*****
  
```

Profile Output Table - Standard Table 2

```

*****
* River * Reach * River Sta * E.G. Elev *W.S. Elev * Vel Head *Frctn Loss *C
& E Loss * Q Left *Q Channel * Q Right *Top Width *
* * * * * (ft) * (ft) * (ft) * (ft) *
(ft) * (cfs) * (cfs) * (cfs) *
*****
* NE_TRIB1 * 1-7 * 7 * 5350.93 * 5350.49 * 0.44 * 3.37 *
0.05 * * 1766.00 * * 271.49 *
* NE_TRIB1 * 1-7 * 6 * 5347.52 * 5347.24 * 0.28 * 4.17 *
0.04 * * 1766.00 * * 247.00 *
* NE_TRIB1 * 1-7 * 5 * 5343.31 * 5342.66 * 0.65 * 6.54 *
0.16 * * 1969.00 * * 211.85 *
* NE_TRIB1 * 1-7 * 4 * 5336.61 * 5336.48 * 0.13 * 5.47 *
0.02 * * 1969.00 * * 700.95 *
* NE_TRIB1 * 1-7 * 3 * 5331.12 * 5330.76 * 0.36 * 0.41 *
0.01 * * 2115.00 * * 601.73 *
* NE_TRIB1 * 1-7 * 2 * 5328.18 * 5328.05 * 0.13 * 1.33 *
0.11 * * 2210.00 * * 247.85 *
* NE_TRIB1 * 1-7 * 1 * 5326.74 * 5325.50 * 1.23 *
* * 2210.00 * * 101.39 *
* NE_TRIB3 * 10-12 * 12 * 5364.20 * 5364.20 * 0.00 * 0.00 *
0.00 * * 20.00 * * 370.88 *
* NE_TRIB3 * 10-12 * 11 * 5364.20 * 5364.20 * 0.00 * 1.92 *
0.01 * * 20.00 * * 240.02 *
* NE_TRIB3 * 10-12 * 10 * 5362.27 * 5362.19 * 0.09 * 1.05 *
0.04 * * 33.00 * * 79.24 *
* NE_TRIB2 * 15-19 * 19 * 5394.21 * 5393.62 * 0.59 * 8.07 *
0.04 * * 1140.00 * * 161.38 *
* NE_TRIB2 * 15-19 * 18 * 5384.07 * 5383.61 * 0.46 * 5.32 *
0.04 * * 1140.00 * * 99.01 *
* NE_TRIB2 * 15-19 * 17 * 5378.71 * 5377.84 * 0.87 * 3.88 *
0.21 * * 1140.00 * * 87.47 *
* NE_TRIB2 * 15-19 * 16 * 5370.89 * 5370.71 * 0.19 * 4.80 *
0.04 * * 1277.00 * * 175.05 *
* NE_TRIB2 * 15-19 * 15.5 * 5366.05 * 5365.46 * 0.59 * 5.46 *
0.01 * * 1552.00 * * 217.28 *
  
```

```

* NE_TRIB2      * 15-19      * 15      *      * 5358.33 * 5357.63 *      * 0.70 *      * 1.37 *
0.08 *          * 1690.00 *          *      * 178.79 *
*****
*****

```

Profile Output Table - Standard Table 1

```

*****
*****
* River      * Reach      * River Sta *      * Q Total *Min Ch El *W.S. Elev *Crit W.S.
*E.G. Elev *E.G. Slope * Vel Chnl *Flow Area *Top Width *Froude # Chl *
*          *          *          *          *          *          *          *
*          *          *          *          *          *          *          *
(ft) *      (ft/ft) *      (ft/s) *      (sq ft) *      (ft) *          *          *
*****
*****
* NE_TRIB1   * 1-7        * 7        *      * 1766.00 * 5348.00 * 5350.49 *
5350.93 * 0.011995 * 5.31 * 332.41 * 271.49 * 0.85 *
* NE_TRIB1   * 1-7        * 6        *      * 1766.00 * 5344.00 * 5347.24 *
5347.52 * 0.005106 * 4.21 * 419.04 * 247.00 * 0.57 *
* NE_TRIB1   * 1-7        * 5        *      * 1969.00 * 5340.00 * 5342.66 * 5342.61 *
5343.31 * 0.014753 * 6.49 * 303.60 * 211.85 * 0.95 *
* NE_TRIB1   * 1-7        * 4        *      * 1969.00 * 5335.00 * 5336.48 * 5336.12 *
5336.61 * 0.005186 * 2.94 * 670.52 * 700.95 * 0.53 *
* NE_TRIB1   * 1-7        * 3        *      * 2115.00 * 5330.00 * 5330.76 * 5330.76 *
5331.12 * 0.019350 * 4.80 * 440.76 * 601.73 * 0.99 *
* NE_TRIB1   * 1-7        * 2        *      * 2210.00 * 5324.00 * 5328.05 *
5328.18 * 0.001092 * 2.88 * 766.03 * 247.85 * 0.29 *
* NE_TRIB1   * 1-7        * 1        *      * 2210.00 * 5322.00 * 5325.50 * 5325.50 *
5326.74 * 0.013777 * 8.91 * 248.04 * 101.39 * 1.00 *
* NE_TRIB3   * 10-12     * 12       *      * 20.00 * 5360.00 * 5364.20 *
5364.20 * 0.000000 * 0.02 * 1056.72 * 370.88 * 0.00 *
* NE_TRIB3   * 10-12     * 11       *      * 20.00 * 5364.00 * 5364.20 *
5364.20 * 0.000849 * 0.42 * 47.61 * 240.02 * 0.17 *
* NE_TRIB3   * 10-12     * 10       *      * 33.00 * 5362.00 * 5362.19 * 5362.19 *
5362.27 * 0.030717 * 2.35 * 14.06 * 79.24 * 0.98 *
* NE_TRIB2   * 15-19     * 19       *      * 1140.00 * 5392.00 * 5393.62 * 5393.62 *
5394.21 * 0.018118 * 6.14 * 185.56 * 161.38 * 1.01 *
* NE_TRIB2   * 15-19     * 18       *      * 1140.00 * 5381.00 * 5383.61 *
5384.07 * 0.006418 * 5.47 * 208.45 * 99.01 * 0.66 *
* NE_TRIB2   * 15-19     * 17       *      * 1140.00 * 5376.00 * 5377.84 * 5377.84 *
5378.71 * 0.016204 * 7.50 * 151.94 * 87.47 * 1.00 *
* NE_TRIB2   * 15-19     * 16       *      * 1277.00 * 5368.00 * 5370.71 *
5370.89 * 0.002953 * 3.49 * 365.83 * 175.05 * 0.43 *
* NE_TRIB2   * 15-19     * 15.5     *      * 1552.00 * 5362.00 * 5365.46 * 5365.46 *
5366.05 * 0.021170 * 6.17 * 251.52 * 217.28 * 1.01 *
* NE_TRIB2   * 15-19     * 15       *      * 1690.00 * 5356.00 * 5357.63 * 5357.63 *
5358.33 * 0.015988 * 6.73 * 251.12 * 178.79 * 1.00 *
*****
*****

```

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : NE_EW

```

River: NE_TRIB2 Reach: 15-19 RS: 19 Profile: 1
Warning - The energy equation could not be balanced within the specified number of
iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The 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.
River: NE_TRIB2 Reach: 15-19 RS: 18 Profile: 1
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.
River: NE_TRIB2 Reach: 15-19 RS: 17 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

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

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: NE_TRIB2 Reach: 15-19 RS: 16 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: NE_TRIB2 Reach: 15-19 RS: 15.5 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: NE_TRIB2 Reach: 15-19 RS: 15 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: NE_TRIB3 Reach: 10-12 RS: 12 Profile: 1

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.

River: NE_TRIB3 Reach: 10-12 RS: 11 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: NE_TRIB3 Reach: 10-12 RS: 10 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and

previous cross section. This may indicate

the need for additional cross sections.

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

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.

River: NE_TRIB1 Reach: 1-7 RS: 7 Profile: 1

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.

River: NE_TRIB1 Reach: 1-7 RS: 6 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: NE_TRIB1 Reach: 1-7 RS: 5 Profile: 1

Warning - Divided flow computed for this cross-section.

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

sections.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: NE_TRIB1 Reach: 1-7 RS: 4 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: NE_TRIB1 Reach: 1-7 RS: 3 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

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.

River: NE_TRIB1 Reach: 1-7 RS: 2 Profile: 1

Warning - Divided flow computed for this cross-section.

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

sections.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: NE_TRIB1 Reach: 1-7 RS: 1 Profile: 1

Warning - Divided flow computed for this cross-section.

APPENDIX C

SOUTH, SOUTH-CENTRAL AND CENTRAL ENGLEWOOD BASINS

HEC-RAS Version 2.0 April 1997
 U.S. Army Corp of Engineers
 Hydrologic Engineering Center
 609 Second Street, Suite D
 Davis, California 95616-4687
 (916) 756-1104

```

X      X XXXXXX   XXXX       XXXX       XX       XXXX
X      X X       X X       X X       X X       X
X      X X       X       X X       X X       X
XXXXXXXX XXXX   X       XXX XXXX   XXXXXX   XXXX
X      X X       X       X X       X X       X
X      X X       X X       X X       X X       X
X      X XXXXXX   XXXX       X X       X X       XXXXX
  
```

PROJECT DATA

Project Title: South & Central Englewood Backwater Calc
 Project File : ew_s&c.prj
 Run Date and Time: 2/18/98 10:17:58 AM

Project in English units

PLAN DATA

Plan Title: South & Central Englewood Backwater Calc
 Plan File : c:\hec\ras\englewood\south&~1\ew_s&c.p05

Geometry Title: South & Central Englewood Backwater Calc
 Geometry File : c:\hec\ras\englewood\south&~1\ew_s&c.g03

Flow Title : South & Central Englewood Backwater Calc
 Flow File : c:\hec\ras\englewood\south&~1\ew_s&c.f02

Plan Summary Information:

Number of: Cross Sections =	39	Multiple Openings =	0
Culverts =	0	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

Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: South & Central Englewood Backwater Calc
 Flow File : c:\hec\ras\englewood\south&~1\ew_s&c.f02

Flow Data (cfs)

```

*****
* River      Reach      RS      *      PF#1 *
* S&C_TRIB1  1-4      4      *      2680 *
* S&C_TRIB1  1-4      2      *      2846 *
* S&C_TRIB1  1-4      1      *      3097 *
* S&C_TRIB5  9-23     23     *      142  *
* S&C_TRIB5  9-23     20     *      245  *
* S&C_TRIB5  9-23     15     *      299  *
* S&C_TRIB5  9-23     14     *      239  *
* S&C_TRIB5  9-23     12     *      412  *
* S&C_TRIB5  9-23     9      *      576  *
* S&C_TRIB2  5-38     38     *      1152 *
* S&C_TRIB2  5-38     37     *      1475 *
  
```

```

* S&C_TRIB2      5-38      36      *      2157 *
* S&C_TRIB2      5-38      33      *      1833 *
* S&C_TRIB2      5-38      30      *      1895 *
* S&C_TRIB2      5-38      6       *      1963 *
* S&C_TRIB2      5-38      5       *      2126 *
* S&C_TRIB3      39-45     45      *      744  *
* S&C_TRIB3      39-45     42      *      944  *
* S&C_TRIB4      40-52     52      *      166  *
* S&C_TRIB4      40-52     50      *      201  *
*****

```

Boundary Conditions

```

*****
*****
* River          Reach          Profile          *          Upstream
Downstream      *
*****
* S&C_TRIB1      1-4          PF#1          *
Critical      *
*****
*****

```

GEOMETRY DATA

Geometry Title: South & Central Englewood Backwater Calc
Geometry File : c:\hec\ras\englewood\south&~1\ew_s&c.g03

Reach Connection Table

```

*****
* River          Reach          * Upstream Boundary * Downstream Boundary *
*****
* S&C_TRIB1      1-4          * NAS_JAS          *
* S&C_TRIB5      9-23          *          * NAS_JAS          *
* S&C_TRIB2      5-38          * un&brdy          * NAS_JAS          *
* S&C_TRIB3      39-45          *          * un&brdy          *
* S&C_TRIB4      40-52          *          * un&brdy          *
*****

```

JUNCTION INFORMATION

Name: un&brdy
Description:
Energy computation Method

Length across Junction		Tributary		Reach	Length	Angle
River	Reach	River	Reach			
S&C_TRIB3	39-45	to S&C_TRIB2	5-38		200	
S&C_TRIB4	40-52	to S&C_TRIB2	5-38		200	

Name: NAS_JAS
Description:
Energy computation Method

Length across Junction		Tributary		Reach	Length	Angle
River	Reach	River	Reach			
S&C_TRIB5	9-23	to S&C_TRIB1	1-4		200	
S&C_TRIB2	5-38	to S&C_TRIB1	1-4		200	

CROSS SECTION RIVER: S&C_TRIB1
REACH: 1-4 RS: 4

INPUT

Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5314	20	5312	120	5312	121	5400	180	5400
181	5311	520	5311	521	5400	880	5400	881	5311
950	5311	951	5400	1080	5400	1081	5311	1160	5311
1161	5400	1220	5400	1221	5311	1290	5311	1291	5400
1390	5400	1391	5312	1780	5312	1810	5314		

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 1810 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 1810 950 750 650 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

 **
 * W.S. Elev (ft) * 5312.14 * Element * Left OB * Channel * Right OB
 *
 * Vel Head (ft) * 0.23 * Wt. n-Val. * * 0.035 *
 *
 * E.G. Elev (ft) * 5312.37 * Reach Len. (ft) * 950.00 * 750.00 * 650.00
 *
 * Crit W.S. (ft) * 5312.05 * Flow Area (sq ft) * * 700.70 *
 *
 * E.G. Slope (ft/ft) * 0.014057 * Area (sq ft) * * 700.70 *
 *
 * Q Total (cfs) * 2680.00 * Flow (cfs) * * 2680.00 *
 *
 * Top Width (ft) * 1048.56 * Top Width (ft) * * 1048.56 *
 *
 * Vel Total (ft/s) * 3.82 * Avg. Vel. (ft/s) * * 3.82 *
 *
 * Max Chl Dpth (ft) * 1.14 * Hydr. Depth (ft) * * 0.67 *
 *
 * Conv. Total (cfs) * 22604.5 * Conv. (cfs) * * 22604.5 *
 *
 * Length Wtd. (ft) * 750.00 * Wetted Per. (ft) * * 1057.86 *
 *
 * Min Ch El (ft) * 5311.00 * Shear (lb/sq ft) * * 0.58 *
 *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * 2.22 *
 *
 * Frctn Loss (ft) * 3.00 * Cum Volume (acre-ft) * * 45.51 *
 *
 * C & E Loss (ft) * 0.05 * Cum SA (acres) * * 37.95 *
 *

 **

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

CROSS SECTION RIVER: S&C_TRIB1
 REACH: 1-4 RS: 3

INPUT
 Description:
 Station Elevation Data num= 17
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

 0 5310 20 5308 50 5306 150 5306 151 5400
 270 5400 271 5306 350 5306 351 5400 430 5400
 431 5308 530 5308 531 5400 590 5400 591 5308
 1200 5309 1290 5310

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 1290 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 1290 200 400 700 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

**
* W.S. Elev (ft)      * 5309.25 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.07 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)     * 5309.32 * Reach Len. (ft)  * 200.00 * 400.00 * 700.00
*
* Crit W.S. (ft)     *          * Flow Area (sq ft) *          * 1240.57 *
*
* E.G. Slope (ft/ft) * 0.001854 * Area (sq ft)     *          * 1240.57 *
*
* Q Total (cfs)      * 2680.00 * Flow (cfs)       *          * 2680.00 *
*
* Top Width (ft)     * 952.14 * Top Width (ft)   *          * 952.14 *
*
* Vel Total (ft/s)   * 2.16 * Avg. Vel. (ft/s) *          * 2.16 *
*
* Max. Chl Dpth (ft) * 3.25 * Hydr. Depth (ft) *          * 1.30 *
*
* Conv. Total (cfs)  * 62242.5 * Conv. (cfs)      *          * 62242.5 *
*
* Length Wtd. (ft)   * 400.00 * Wetted Per. (ft) *          * 965.63 *
*
* Min Ch El (ft)     * 5306.00 * Shear (lb/sq ft) *          * 0.15 *
*
* Alpha              * 1.00 * Stream Power (lb/ft s) *          * 0.32 *
*
* Frctn Loss (ft)    * 0.65 * Cum Volume (acre-ft) *          * 28.79 *
*
* C & E Loss (ft)    * 0.00 * Cum SA (acres)   *          * 20.72 *
*
*****
**

```

Warning - Divided flow computed for this cross-section.

CROSS SECTION RIVER: S&C_TRIB1
REACH: 1-4 RS: 2

INPUT

Description:

Station Elevation Data		num= 28									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5310	40	5308	150	5308	151	5400	250	5400		
251	5308	310	5308	311	5400	420	5400	421	5307		
470	5307	471	5400	590	5400	591	5306	940	5306		
1010	5308	1011	5400	1140	5400	1141	5308	1180	5308		
1181	5400	1260	5400	1261	5309	1320	5309	1321	5400		
1400	5400	1401	5309.5	1450	5310						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1450	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1450		1200	850	600	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5308.59 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.08 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)     * 5308.67 * Reach Len. (ft)  * 1200.00 * 850.00 * 600.00
*
* Crit W.S. (ft)     *          * Flow Area (sq ft) *          * 1216.94 *
*
* E.G. Slope (ft/ft) * 0.001443 * Area (sq ft)     *          * 1216.94 *
*
* Q Total (cfs)      * 2846.00 * Flow (cfs)       *          * 2846.00 *
*
* Top Width (ft)     * 687.83 * Top Width (ft)   *          * 687.83 *

```

```

*
* Vel Total (ft/s)      *      2.34 * Avg. Vel. (ft/s)      *      *      2.34 *
*
* Max Chl Dpth (ft)    *      2.59 * Hydr. Depth (ft)      *      *      1.77 *
*
* Conv. Total (cfs)    * 74908.9 * Conv. (cfs)           *      * 74908.9 *
*
* Length Wtd. (ft)     *      850.00 * Wetted Per. (ft)      *      *      697.04 *
*
* Min Ch El (ft)       *      5306.00 * Shear (lb/sq ft)      *      *      0.16 *
*
* Alpha                 *      1.00 * Stream Power (lb/ft s) *      *      0.37 *
*
* Frctn Loss (ft)      *      3.19 * Cum Volume (acre-ft)  *      *      17.51 *
*
* C & E Loss (ft)      *      0.04 * Cum SA (acres)        *      *      13.19 *
*
*****
**

```

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

CROSS SECTION RIVER: S&C_TRIB1
REACH: 1-4 RS: 1

INPUT

Description:

```

Station Elevation Data      num=      11
Sta      Elev      Sta      Elev      Sta      Elev      Sta      Elev      Sta      Elev
*****
0      5308      10      5306      60      5304      90      5304      400      5304
401      5400      700      5400      701      5304      850      5304      1150      5306
1250      5308

```

```

Manning's n Values      num=      3
Sta      n Val      Sta      n Val      Sta      n Val
*****
0      .035      0      .035      1250      .035

```

```

Bank Sta: Left      Right      Lengths: Left Channel      Right      Coeff Contr.      Expan.
0      1250      100      100      100      .1      .3

```

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5305.00 * Element      * Left OB * Channel * Right OB
*
* Vel Head (ft)      *      0.45 * Wt. n-Val.      *      *      0.035 *
*
* E.G. Elev (ft)      * 5305.45 * Reach Len. (ft) *      *      *
*
* Crit W.S. (ft)      * 5305.00 * Flow Area (sq ft) *      *      577.81 *
*
* E.G. Slope (ft/ft) * 0.019277 * Area (sq ft)      *      *      577.81 *
*
* Q Total (cfs)      * 3097.00 * Flow (cfs)      *      *      3097.00 *
*
* Top Width (ft)      *      664.36 * Top Width (ft) *      *      664.36 *
*
* Vel Total (ft/s)    *      5.36 * Avg. Vel. (ft/s) *      *      5.36 *
*
* Max Chl Dpth (ft)  *      1.00 * Hydr. Depth (ft) *      *      0.87 *
*
* Conv. Total (cfs)  * 22306.1 * Conv. (cfs)      *      *      22306.1 *
*
* Length Wtd. (ft)   *      * Wetted Per. (ft) *      *      666.37 *
*
* Min Ch El (ft)     * 5304.00 * Shear (lb/sq ft) *      *      1.04 *
*

```

```

* Alpha * 1.00 * Stream Power (lb/ft s) * 5.59 *
*
* Frctn Loss (ft) * Cum Volume (acre-ft) *
*
* C & E Loss (ft) * Cum SA (acres) *
*
*****
**

```

Warning - Divided flow computed for this cross-section.

```

CROSS SECTION RIVER: S&C_TRIB5
REACH: 9-23 RS: 23

```

INPUT

Description:

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5412	110	5410	111	6000	150	6000	151	5410
200	5409	220	5409	221	6000	250	6000	251	5410
290	5410	291	6000	340	6000	341	5410	380	5410
381	6000	400	6000	401	5410	460	5410	540	5412

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	540	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	540		700	600	500	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft) * 5410.26 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.03 * Wt. n-Val. * 0.035 *
*
* E.G. Elev (ft) * 5410.29 * Reach Len. (ft) * 700.00 * 600.00 * 500.00
*
* Crit W.S. (ft) * 5409.83 * Flow Area (sq ft) * 100.54 *
*
* E.G. Slope (ft/ft) * 0.003402 * Area (sq ft) * 100.54 *
*
* Q Total (cfs) * 142.00 * Flow (cfs) * 142.00 *
*
* Top Width (ft) * 230.40 * Top Width (ft) * 230.40 *
*
* Vel Total (ft/s) * 1.41 * Avg. Vel. (ft/s) * 1.41 *
*
* Max Chl Dpth (ft) * 1.26 * Hydr. Depth (ft) * 0.44 *
*
* Conv. Total (cfs) * 2434.4 * Conv. (cfs) * 2434.4 *
*
* Length Wtd. (ft) * 600.00 * Wetted Per. (ft) * 233.45 *
*
* Min Ch El (ft) * 5409.00 * Shear (lb/sq ft) * 0.09 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * 0.13 *
*
* Frctn Loss (ft) * 3.61 * Cum Volume (acre-ft) * 23.56 *
*
* C & E Loss (ft) * 0.01 * Cum SA (acres) * 31.78 *
*
*****
**

```

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

CROSS SECTION
REACH: 9-23

RIVER: S&C_TRIB5
RS: 22

INPUT

Description:

Station Elevation Data		num= 13							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5410	70	5408	270	5407	271	6000	290	6000
291	5406	360	5406	530	5408	600	5408	601	6000
640	6000	641	5408	800	5410				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	800	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 800 800 450 50 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```
*****
**
* W.S. Elev (ft)            * 5406.55 * Element                    * Left OB * Channel * Right OB
*
* Vel Head (ft)            * 0.12 * Wt. n-Val.                *        * 0.035 *
*
* E.G. Elev (ft)            * 5406.67 * Reach Len. (ft)           * 800.00 * 450.00 * 50.00
*
* Crit W.S. (ft)            *            * Flow Area (sq ft)        *        * 50.90 *
*
* E.G. Slope (ft/ft)        * 0.013007 * Area (sq ft)              *        * 50.90 *
*
* Q Total (cfs)             * 142.00 * Flow (cfs)                *        * 142.00 *
*
* Top Width (ft)            * 115.82 * Top Width (ft)            *        * 115.82 *
*
* Vel Total (ft/s)          * 2.79 * Avg. Vel. (ft/s)         *        * 2.79 *
*
* Max Chl Dpth (ft)        * 0.55 * Hydr. Depth (ft)         *        * 0.44 *
*
* Conv. Total (cfs)         * 1245.1 * Conv. (cfs)               *        * 1245.1 *
*
* Length Wtd. (ft)         * 450.00 * Wetted Per. (ft)         *        * 116.36 *
*
* Min Ch El (ft)            * 5406.00 * Shear (lb/sq ft)         *        * 0.36 *
*
* Alpha                     * 1.00 * Stream Power (lb/ft s) *        * 0.99 *
*
* Frctn Loss (ft)          * 2.01 * Cum Volume (acre-ft)     *        * 22.51 *
*
* C & E Loss (ft)          * 0.03 * Cum SA (acres)            *        * 29.40 *
*
*****
**
```

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
REACH: 9-23

RIVER: S&C_TRIB5
RS: 21

INPUT

Description:

Station Elevation Data		num= 26							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5410	40	5408	120	5406	121	6000	170	6000
171	5406	380	5404	410	5404	411	6000	490	6000
491	5404	600	5404	601	6000	630	6000	631	5404

750	5406	800	5406	801	6000	820	6000	821	5407
900	5408	940	5408	941	6000	960	6000	961	5409
1050	5410								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
*****	*****	*****	*****	*****	*****
0	.035	0	.035	1050	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1050		350	300	250	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

```
*****
**
* W.S. Elev (ft)                    * 5404.61 * Element                    * Left OB * Channel * Right OB
*
* Vel Head (ft)                    * 0.02 * Wt. n-Val.                    *                    * 0.035 *
*
* E.G. Elev (ft)                    * 5404.63 * Reach Len. (ft)                    * 350.00 * 300.00 * 250.00
*
* Crit W.S. (ft)                    * 5404.30 * Flow Area (sq ft)                    *                    * 115.04 *
*
* E.G. Slope (ft/ft)                    * 0.002270 * Area (sq ft)                    *                    * 115.04 *
*
* Q Total (cfs)                    * 142.00 * Flow (cfs)                    *                    * 142.00 *
*
* Top Width (ft)                    * 238.86 * Top Width (ft)                    *                    * 238.86 *
*
* Vel Total (ft/s)                    * 1.23 * Avg. Vel. (ft/s)                    *                    * 1.23 *
*
* Max Chl Dpth (ft)                    * 0.61 * Hydr. Depth (ft)                    *                    * 0.48 *
*
* Conv. Total (cfs)                    * 2980.5 * Conv. (cfs)                    *                    * 2980.5 *
*
* Length Wtd. (ft)                    * 300.00 * Wetted Per. (ft)                    *                    * 241.29 *
*
* Min Ch El (ft)                    * 5404.00 * Shear (lb/sq ft)                    *                    * 0.07 *
*
* Alpha                    * 1.00 * Stream Power (lb/ft s)                    *                    * 0.08 *
*
* Frctn Loss (ft)                    * 2.40 * Cum Volume (acre-ft)                    *                    * 21.66 *
*
* C & E Loss (ft)                    * 0.01 * Cum SA (acres)                    *                    * 27.57 *
*
*****
**
```

Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
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: S&C_TRIB5
REACH: 9-23 RS: 20

INPUT

Description:

Station Elevation Data		num=		39					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
0	5406	70	5404	100	5404	101	6000	140	6000
141	5403	170	5403	171	6000	200	6000	201	5402
220	5402	221	6000	240	6000	241	5402	280	5402
281	6000	320	6000	321	5402	420	5402	421	6000
440	6000	441	5402	450	5402	451	6000	470	6000
471	5402	540	5401	541	6000	570	6000	571	5401
600	5402	601	6000	630	6000	631	5402	740	5402
741	6000	790	6000	791	5403	930	5406		

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 930 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 930 650 700 900 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

 **
 * W.S. Elev (ft) * 5402.09 * Element * Left OB * Channel * Right OB
 *
 * Vel Head (ft) * 0.13 * Wt. n-Val. * * 0.035 *
 *
 * E.G. Elev (ft) * 5402.23 * Reach Len. (ft) * 650.00 * 700.00 * 900.00
 *
 * Crit W.S. (ft) * 5402.09 * Flow Area (sq ft) * * 83.79 *
 *
 * E.G. Slope (ft/ft) * 0.035154 * Area (sq ft) * * 83.79 *
 *
 * Q Total (cfs) * 245.00 * Flow (cfs) * * 245.00 *
 *
 * Top Width (ft) * 373.01 * Top Width (ft) * * 373.01 *
 *
 * Vel Total (ft/s) * 2.92 * Avg. Vel. (ft/s) * * 2.92 *
 *
 * Max Chl Dpth (ft) * 1.09 * Hydr. Depth (ft) * * 0.22 *
 *
 * Conv. Total (cfs) * 1306.7 * Conv. (cfs) * * 1306.7 *
 *
 * Length Wtd. (ft) * 700.00 * Wetted Per. (ft) * * 376.35 *
 *
 * Min Ch El (ft) * 5401.00 * Shear (lb/sq ft) * * 0.49 *
 *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * 1.43 *
 *
 * Frctn Loss (ft) * 3.10 * Cum Volume (acre-ft) * * 20.97 *
 *
 * C & E Loss (ft) * 0.03 * Cum SA (acres) * * 25.46 *
 *

 **

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

CROSS SECTION RIVER: S&C_TRIB5
 REACH: 9-23 RS: 19

INPUT

Description:

Station Elevation Data num= 23
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

 0 5400 70 5400 71 6000 100 6000 101 5398
 250 5396 251 6000 280 6000 281 5396 380 5396
 381 6000 430 6000 431 5396 570 5396 571 6000
 600 6000 601 5396 700 5396 701 6000 720 6000

721 5396 810 5398 870 5400

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .035 0 .035 870 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 870 400 500 650 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft) * 5396.59 * Element * Left OB * Channel * Right OB
* Vel Head (ft) * 0.02 * Wt. n-Val. * 0.035 *
* E.G. Elev (ft) * 5396.61 * Reach Len. (ft) * 400.00 * 500.00 * 650.00
* Crit W.S. (ft) * * Flow Area (sq ft) * 217.89 *
* E.G. Slope (ft/ft) * 0.001637 * Area (sq ft) * 217.89 *
* Q Total (cfs) * 245.00 * Flow (cfs) * 245.00 *
* Top Width (ft) * 406.73 * Top Width (ft) * 406.73 *
* Vel Total (ft/s) * 1.12 * Avg. Vel. (ft/s) * 1.12 *
* Max Chl Dpth (ft) * 0.59 * Hydr. Depth (ft) * 0.54 *
* Conv. Total (cfs) * 6055.1 * Conv. (cfs) * 6055.1 *
* Length Wtd. (ft) * 500.00 * Wetted Per. (ft) * 411.44 *
* Min Ch El (ft) * 5396.00 * Shear (lb/sq ft) * 0.05 *
* Alpha * 1.00 * Stream Power (lb/ft s) * 0.06 *
* Frctn Loss (ft) * 2.19 * Cum Volume (acre-ft) * 18.55 *
* C & E Loss (ft) * 0.01 * Cum SA (acres) * 19.19 *

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

CROSS SECTION RIVER: S&C_TRIB5
REACH: 9-23 RS: 18

INPUT

Description:

Station Elevation Data num= 26
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
0 5400 110 5398 111 6000 160 6000 161 5396
210 5394 310 5394 311 6000 350 6000 351 5394
370 5394 371 6000 380 6000 381 5394 400 5394
401 6000 420 6000 421 5394 500 5394 501 6000
560 6000 561 5394 650 5394 660 5396 740 5398
780 5400

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
0 .035 0 .035 780 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5394.27 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.13 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)     * 5394.40 * Reach Len. (ft) * 400.00 * 500.00 * 650.00
*
* Crit W.S. (ft)     * 5394.27 * Flow Area (sq ft) *          * 83.70 *
*
* E.G. Slope (ft/ft) * 0.027964 * Area (sq ft)    *          * 83.70 *
*
* Q Total (cfs)      * 245.00 * Flow (cfs)      *          * 245.00 *
*
* Top Width (ft)     * 313.97 * Top Width (ft)  *          * 313.97 *
*
* Vel Total (ft/s)   * 2.93 * Avg. Vel. (ft/s) *          * 2.93 *
*
* Max Chl Dpth (ft)  * 0.27 * Hydr. Depth (ft) *          * 0.27 *
*
* Conv. Total (cfs)  * 1465.1 * Conv. (cfs)     *          * 1465.1 *
*
* Length Wtd. (ft)   * 500.00 * Wetted Per. (ft) *          * 316.18 *
*
* Min Ch El (ft)     * 5394.00 * Shear (lb/sq ft) *          * 0.46 *
*
* Alpha              * 1.00 * Stream Power (lb/ft s) *          * 1.35 *
*
* Frctn Loss (ft)    * 0.63 * Cum Volume (acre-ft) *          * 16.82 *
*
* C & E Loss (ft)    * 0.04 * Cum SA (acres)   *          * 15.06 *
*
*****
**

```

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 - Divided flow computed for this cross-section.

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

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

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.

CROSS SECTION RIVER: S&C_TRIB5
 REACH: 9-23 RS: 17

INPUT

Description:

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5396	20	5394	70	5398	71	6000	100	6000
101	5392	150	5390	420	5390	430	5390	431	6000
460	6000	461	5391	500	5391	501	6000	540	6000
541	5392	550	5392	551	6000	570	6000	571	5393
600	5394	601	6000	620	6000	621	5394	640	5394
641	6000	670	6000	671	5395	720	5396		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	720	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	720		500	500	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)          * 5391.06 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)          * 0.01 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)         * 5391.07 * Reach Len. (ft) * 500.00 * 500.00 * 500.00
*
* Crit W.S. (ft)         *          * Flow Area (sq ft) *          * 311.58 *
*
* E.G. Slope (ft/ft)     * 0.000395 * Area (sq ft)     *          * 311.58 *
*
* Q Total (cfs)          * 245.00 * Flow (cfs)       *          * 245.00 *
*
* Top Width (ft)         * 344.88 * Top Width (ft)   *          * 344.88 *
*
* Vel Total (ft/s)       * 0.79 * Avg. Vel. (ft/s) *          * 0.79 *
*
* Max Chl Dpth (ft)     * 1.06 * Hydr. Depth (ft) *          * 0.90 *
*
* Conv. Total (cfs)      * 12333.8 * Conv. (cfs)      *          * 12333.8 *
*
* Length Wtd. (ft)      * 500.00 * Wetted Per. (ft) *          * 346.07 *
*
* Min Ch El (ft)        * 5390.00 * Shear (lb/sq ft) *          * 0.02 *
*
* Alpha                  * 1.00 * Stream Power (lb/ft s) *          * 0.02 *
*
* Frctn Loss (ft)       * 0.57 * Cum Volume (acre-ft) *          * 14.55 *
*
* C & E Loss (ft)       * 0.01 * Cum SA (acres)   *          * 11.28 *
*
*****
**

```

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 RIVER: S&C_TRIB5
REACH: 9-23 RS: 16

INPUT

Description:
Station Elevation Data num= 4
Sta Elev Sta Elev Sta Elev Sta Elev

0 5392 80 5390 320 5390 380 5392

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val

0 .035 0 .035 380 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	380		500	400	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)          * 5390.40 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)          * 0.09 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)         * 5390.49 * Reach Len. (ft) * 500.00 * 400.00 * 300.00
*

```

```

* Crit W.S. (ft)          * 5390.31 * Flow Area (sq ft)      *          * 101.05 *
*
* E.G. Slope (ft/ft)     * 0.011965 * Area (sq ft)          *          * 101.05 *
*
* Q Total (cfs)          * 245.00 * Flow (cfs)            *          * 245.00 *
*
* Top Width (ft)         * 267.86 * Top Width (ft)        *          * 267.86 *
*
* Vel Total (ft/s)       * 2.42 * Avg. Vel. (ft/s)      *          * 2.42 *
*
* Max Chl Dpth (ft)      * 0.40 * Hydr. Depth (ft)     *          * 0.38 *
*
* Conv. Total (cfs)      * 2239.8 * Conv. (cfs)           *          * 2239.8 *
*
* Length Wtd. (ft)       * 400.00 * Wetted Per. (ft)     *          * 267.87 *
*
* Min Ch El (ft)         * 5390.00 * Shear (lb/sq ft)     *          * 0.28 *
*
* Alpha                   * 1.00 * Stream Power (lb/ft s) *          * 0.68 *
*
* Frctn Loss (ft)        * 6.12 * Cum Volume (acre-ft)  *          * 12.18 *
*
* C & E Loss (ft)        * 0.01 * Cum SA (acres)       *          * 7.76 *

```

**

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: S&C_TRIB5
REACH: 9-23 RS: 15

INPUT

Description:

Station Elevation Data num= 25
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

 0 5390 40 5389 41 6000 60 6000 61 5389
 100 5388 101 6000 140 6000 141 5387 160 5387
 161 6000 170 6000 171 5386 210 5384 250 5383
 320 5384 321 6000 380 6000 381 5384 440 5384
 530 5386 580 5388 710 5388 750 5388 800 5390

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 800 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 800 300 650 900 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

 **
 * W.S. Elev (ft) * 5384.17 * Element * Left OB * Channel * Right OB
 *
 * Vel Head (ft) * 0.19 * Wt. n-Val. * * 0.035 *
 *
 * E.G. Elev (ft) * 5384.36 * Reach Len. (ft) * 300.00 * 650.00 * 900.00
 *
 * Crit W.S. (ft) * 5384.13 * Flow Area (sq ft) * * 85.18 *
 *
 * E.G. Slope (ft/ft) * 0.018612 * Area (sq ft) * * 85.18 *
 *
 * Q Total (cfs) * 299.00 * Flow (cfs) * * 299.00 *
 *
 * Top Width (ft) * 180.15 * Top Width (ft) * * 180.15 *
 *
 * Vel Total (ft/s) * 3.51 * Avg. Vel. (ft/s) * * 3.51 *
 *
 * Max Chl Dpth (ft) * 1.17 * Hydr. Depth (ft) * * 0.47 *
 *
 * Conv. Total (cfs) * 2191.7 * Conv. (cfs) * * 2191.7 *

```

*
* Length Wtd. (ft)          * 650.00 * Wetted Per. (ft)          *          * 180.51 *
*
* Min Ch El (ft)          * 5383.00 * Shear (lb/sq ft)          *          * 0.55 *
*
* Alpha                    * 1.00 * Stream Power (lb/ft s) *          * 1.92 *
*
* Frctn Loss (ft)         * 11.76 * Cum Volume (acre-ft)     *          * 11.33 *
*
* C & E Loss (ft)         * 0.06 * Cum SA (acres)           *          * 5.70 *
*
*****
**

```

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

CROSS SECTION RIVER: S&C_TRIB5
REACH: 9-23 RS: 14

INPUT

Description:

Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5380	70	5378	80	5380	110	5380	111	6000
140	6000	141	5380	160	5380	161	6000	190	6000
191	5378	200	5378	201	6000	240	6000	241	5376
260	5374	270	5372	290	5372	291	6000	330	6000
331	5370	350	5370	351	6000	410	6000	411	5372
430	5374	431	5376	432	6000	460	6000	461	5378
490	5378	491	6000	520	6000	521	5379	540	5379
541	6000	560	6000	561	5380				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	561	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 561 650 600 600 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)          * 5371.76 * Element                * Left OB * Channel * Right OB
*
* Vel Head (ft)          * 0.80 * Wt. n-Val.             *          * 0.035 *
*
* E.G. Elev (ft)         * 5372.55 * Reach Len. (ft)        * 650.00 * 600.00 * 600.00
*
* Crit W.S. (ft)         * 5371.70 * Flow Area (sq ft)      *          * 33.38 *
*
* E.G. Slope (ft/ft)     * 0.016801 * Area (sq ft)           *          * 33.38 *
*
* Q Total (cfs)          * 239.00 * Flow (cfs)              *          * 239.00 *
*
* Top Width (ft)         * 19.01 * Top Width (ft)         *          * 19.01 *
*
* Vel Total (ft/s)       * 7.16 * Avg. Vel. (ft/s)       *          * 7.16 *
*
* Max Chl Dpth (ft)      * 1.76 * Hydr. Depth (ft)       *          * 1.76 *
*
* Conv. Total (cfs)      * 1843.9 * Conv. (cfs)             *          * 1843.9 *
*
* Length Wtd. (ft)      * 600.00 * Wetted Per. (ft)       *          * 22.50 *
*
* Min Ch El (ft)        * 5370.00 * Shear (lb/sq ft)       *          * 1.56 *
*
* Alpha                  * 1.00 * Stream Power (lb/ft s) *          * 11.14 *

```

```

*
* Frctn Loss (ft)          *    11.80 * Cum Volume (acre-ft) *          *    10.44 *
*
* C & E Loss (ft)         *     0.17 * Cum SA (acres) *          *     4.22 *
*
*****
**

```

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

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

```

CROSS SECTION          RIVER: S&C_TRIB5
REACH: 9-23           RS: 13

```

INPUT

Description:

Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5370	1	6000	20	6000	21	5368	50	5368
51	6000	80	6000	81	5366	90	5366	91	6000
130	6000	131	5364	150	5363	151	6000	180	6000
181	5362	200	5362	201	6000	230	6000	231	5360
260	5360	261	6000	290	6000	291	5359.5	370	5360
440	5362	470	5364	560	5366	700	5364	750	5362
790	5360	791	6000	880	6000	881	5364	890	5364
891	6000	930	6000	931	5366	940	5366	941	6000
980	5368	1000	5370						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1000	.035

```

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
              0     1000              700   550     500              .1       .3

```

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)          * 5360.35 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft)          * 0.24 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft)         * 5360.59 * Reach Len. (ft) * 700.00 * 550.00 * 500.00
*
* Crit W.S. (ft)         * 5360.35 * Flow Area (sq ft) * * 60.99 *
*
* E.G. Slope (ft/ft)     * 0.023174 * Area (sq ft) * * 60.99 *
*
* Q Total (cfs)          * 239.00 * Flow (cfs) * * 239.00 *
*
* Top Width (ft)         * 127.29 * Top Width (ft) * * 127.29 *
*
* Vel Total (ft/s)       * 3.92 * Avg. Vel. (ft/s) * * 3.92 *
*
* Max Chl Dpth (ft)      * 0.85 * Hydr. Depth (ft) * * 0.48 *
*
* Conv. Total (cfs)      * 1570.0 * Conv. (cfs) * * 1570.0 *
*
* Length Wtd. (ft)       * 550.00 * Wetted Per. (ft) * * 129.20 *
*
* Min Ch El (ft)         * 5359.50 * Shear (lb/sq ft) * * 0.68 *
*
* Alpha                  * 1.00 * Stream Power (lb/ft s) * * 2.68 *
*
* Frctn Loss (ft)        * 7.01 * Cum Volume (acre-ft) * * 9.79 *
*
* C & E Loss (ft)        * 0.00 * Cum SA (acres) * * 3.21 *
*
*****

```

**

Warning - The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

CROSS SECTION RIVER: S&C_TRIB5
REACH: 9-23 RS: 12

INPUT

Description:

Station Elevation Data		num= 35							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5360	10	5360	11	6000	40	6000	60	5359
100	5358	110	5358	120	5356	130	5354	170	5354
240	5352	241	6000	260	6000	261	5350	290	5348
330	5346	350	5346	351	6000	390	6000	391	5345
420	5346	450	5348	460	5350	470	5350	471	6000
510	6000	511	5352	520	5354	521	6000	560	6000
561	5356	570	5358	571	6000	610	6000	611	5360

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	611	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	611		650	500	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5347.18	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.28	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5347.46	* Reach Len. (ft)	* 650.00	* 500.00	* 350.00
* Crit W.S. (ft)	* 5346.92	* Flow Area (sq ft)	* 96.80		
* E.G. Slope (ft/ft)	* 0.009636	* Area (sq ft)	* 96.80		
* Q Total (cfs)	* 412.00	* Flow (cfs)	* 412.00		
* Top Width (ft)	* 90.35	* Top Width (ft)	* 90.35		
* Vel Total (ft/s)	* 4.26	* Avg. Vel. (ft/s)	* 4.26		
* Max Chl Dpth (ft)	* 2.18	* Hydr. Depth (ft)	* 1.07		
* Conv. Total (cfs)	* 4197.0	* Conv. (cfs)	* 4197.0		
* Length Wtd. (ft)	* 500.00	* Wetted Per. (ft)	* 93.78		
* Min Ch El (ft)	* 5345.00	* Shear (lb/sq ft)	* 0.62		
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 2.64		

```

*
* Frctn Loss (ft)          *      6.75 * Cum Volume (acre-ft)  *      *      8.80 *
*
* C & E Loss (ft)        *      0.02 * Cum SA (acres)      *      *      1.84 *
*
*****
**

```

```

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

```

```

CROSS SECTION          RIVER: S&C_TRIB5
REACH: 9-23           RS: 11

```

INPUT

Description:

Station Elevation Data		num=		19							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5350	170	5348	190	5346	200	5344	210	5342		
220	5340	290	5339	291	5400	340	5400	341	5339		
360	5339	361	5400	390	5400	391	5340	400	5342		
410	5344	420	5346	450	5348	460	5350				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	460	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.	
	0	460		700	750	800	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)          * 5340.26 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)          * 0.44 * Wt. n-Val.      *      * 0.035 *
*
* E.G. Elev (ft)        * 5340.70 * Reach Len. (ft) * 700.00 * 750.00 * 800.00
*
* Crit W.S. (ft)        * 5340.26 * Flow Area (sq ft) *      * 77.66 *
*
* E.G. Slope (ft/ft)    * 0.020602 * Area (sq ft)     *      * 77.66 *
*
* Q Total (cfs)         * 412.00 * Flow (cfs)       *      * 412.00 *
*
* Top Width (ft)        * 91.55 * Top Width (ft)   *      * 91.55 *
*
* Vel Total (ft/s)      * 5.31 * Avg. Vel. (ft/s) *      * 5.31 *
*
* Max Chl Dpth (ft)     * 1.26 * Hydr. Depth (ft) *      * 0.85 *
*
* Conv. Total (cfs)     * 2870.4 * Conv. (cfs)      *      * 2870.4 *
*
* Length Wtd. (ft)     * 750.00 * Wetted Per. (ft) *      * 95.60 *
*
* Min Ch El (ft)       * 5339.00 * Shear (lb/sq ft) *      * 1.04 *
*
* Alpha                 * 1.00 * Stream Power (lb/ft s) *      * 5.54 *
*
* Frctn Loss (ft)      * 16.27 * Cum Volume (acre-ft) *      * 7.79 *
*
* C & E Loss (ft)      * 0.03 * Cum SA (acres)   *      * 0.79 *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

CROSS SECTION RIVER: S&C_TRIB5
REACH: 9-23 RS: 9

INPUT

Description:

Station Elevation Data		num= 20		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5318	10	5318	11	5400	40	5400	41	5318
200	5316	320	5315	321	5400	350	5400	351	5315
400	5314	401	5400	430	5400	431	5314	460	5315
461	5400	520	5400	521	5315	600	5316	610	5318

Manning's n Values		num= 3		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	610	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	610		1650	800	200	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5315.62	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.32	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5315.95	* Reach Len. (ft)	* 200.00	* 200.00	* 200.00
* Crit W.S. (ft)	* 5315.62	* Flow Area (sq ft)	* 126.06		
* E.G. Slope (ft/ft)	* 0.022518	* Area (sq ft)	* 126.06		
* Q Total (cfs)	* 576.00	* Flow (cfs)	* 576.00		
* Top Width (ft)	* 201.86	* Top Width (ft)	* 201.86		
* Vel Total (ft/s)	* 4.57	* Avg. Vel. (ft/s)	* 4.57		
* Max Chl Dpth (ft)	* 1.62	* Hydr. Depth (ft)	* 0.62		
* Conv. Total (cfs)	* 3838.4	* Conv. (cfs)	* 3838.4		
* Length Wtd. (ft)	* 200.00	* Wetted Per. (ft)	* 207.56		
* Min Ch El (ft)	* 5314.00	* Shear (lb/sq ft)	* 0.85		
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 3.90		
* Frctn Loss (ft)	* 3.03	* Cum Volume (acre-ft)	* 1.09		
* C & E Loss (ft)	* 0.03	* Cum SA (acres)			

Warning - The energy equation could not be balanced within the specified number of iterations. The

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

CROSS SECTION RIVER: S&C_TRIB2
 REACH: 5-38 RS: 38

INPUT

Description:

Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5388	30	5387	31	6000	60	6000	61	5386
140	5384	141	6000	170	6000	171	5383	200	5382
201	6000	240	6000	241	5380	250	5380	251	6000
280	6000	281	5379	310	5378	311	6000	350	6000
351	5378	380	5379	381	6000	400	6000	401	5379
430	5380	431	6000	460	6000	461	5380	470	5380
471	6000	500	6000	501	5381	510	5381	511	6000
560	6000	561	5382	580	5382	581	6000	620	6000
621	5384	640	5384	641	6000	670	6000	671	5384
680	5384	681	6000	710	6000	711	5384	770	5384
780	5386	800	5386	801	6000	830	6000	831	5387
840	5387	841	6000	880	6000	881	5388		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	881	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 881 500 550 550 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```
*****
**
* W.S. Elev (ft) * 5380.66 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.70 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5381.37 * Reach Len. (ft) * 500.00 * 550.00 * 550.00
*
* Crit W.S. (ft) * 5380.57 * Flow Area (sq ft) * * 171.20 *
*
* E.G. Slope (ft/ft) * 0.015413 * Area (sq ft) * * 171.20 *
*
* Q Total (cfs) * 1152.00 * Flow (cfs) * * 1152.00 *
*
* Top Width (ft) * 105.02 * Top Width (ft) * * 105.02 *
*
* Vel Total (ft/s) * 6.73 * Avg. Vel. (ft/s) * * 6.73 *
*
* Max Chl Dpth (ft) * 2.66 * Hydr. Depth (ft) * * 1.63 *
*
* Conv. Total (cfs) * 9279.3 * Conv. (cfs) * * 9279.3 *
*
* Length Wtd. (ft) * 550.00 * Wetted Per. (ft) * * 118.67 *
*
* Min Ch El (ft) * 5378.00 * Shear (lb/sq ft) * * 1.39 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * * 9.34 *
*
* Frctn Loss (ft) * 9.19 * Cum Volume (acre-ft) * * 66.85 *
```

*
 * C & E Loss (ft) * 0.01 * Cum SA (acres) * 52.00 *
 *

 **

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 RIVER: S&C_TRIB2
 REACH: 5-38 RS: 37

INPUT

Description:

Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5380	10	5378	11	6000	60	6000	61	5378
80	5378	81	6000	120	6000	121	5376	140	5376
141	6000	180	6000	181	5374	200	5374	201	6000
240	6000	241	5373	260	5373	261	6000	300	6000
301	5373	310	5373	311	6000	350	6000	351	5372
370	5370	440	5370	441	6000	470	6000	471	5370
500	5370	501	6000	520	6000	521	5370	540	5370
541	6000	570	6000	571	5370	590	5370	591	6000
620	6000	621	5371	640	5371	641	6000	670	6000
671	5372	690	5372	691	6000	720	6000	721	5372
730	5372	731	6000	770	6000	771	5374	780	5374
781	6000	820	6000	821	5376	830	5378	831	6000
870	6000	871	5380						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	871	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 871 800 700 650 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

 **
 * W.S. Elev (ft) * 5371.50 * Element * Left OB * Channel * Right OB
 *
 * Vel Head (ft) * 0.67 * Wt. n-Val. * * 0.035 *
 *
 * E.G. Elev (ft) * 5372.16 * Reach Len. (ft) * 800.00 * 700.00 * 650.00
 *
 * Crit W.S. (ft) * 5371.50 * Flow Area (sq ft) * * 224.95 *
 *
 * E.G. Slope (ft/ft) * 0.017952 * Area (sq ft) * * 224.95 *
 *
 * Q Total (cfs) * 1475.00 * Flow (cfs) * * 1475.00 *
 *
 * Top Width (ft) * 170.23 * Top Width (ft) * * 170.23 *
 *
 * Vel Total (ft/s) * 6.56 * Avg. Vel. (ft/s) * * 6.56 *
 *
 * Max Chl Dpth (ft) * 1.50 * Hydr. Depth (ft) * * 1.32 *
 *
 * Conv. Total (cfs) * 11008.7 * Conv. (cfs) * * 11008.7 *
 *
 * Length Wtd. (ft) * 700.00 * Wetted Per. (ft) * * 181.77 *
 *
 * Min Ch El (ft) * 5370.00 * Shear (lb/sq ft) * * 1.39 *
 *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * 9.09 *
 *
 * Frctn Loss (ft) * 9.00 * Cum Volume (acre-ft) * * 64.35 *
 *
 * C & E Loss (ft) * 0.05 * Cum SA (acres) * * 50.26 *
 *

**

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 velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth.

This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: S&C_TRIB2
REACH: 5-38 RS: 36

INPUT

Description:

Station Elevation Data		num= 36		Sta	Elev	Sta	Elev	Sta	Elev
0	5376	10	5374	11	6000	80	6000	81	5370
100	5368	110	5368	111	6000	130	6000	131	5367
160	5367	161	6000	200	6000	201	5366	210	5364
220	5362	230	5360	240	5358	280	5358	300	5360
310	5362	320	5364	340	5365	341	6000	370	6000
371	5366	390	5368	400	5370	401	6000	430	6000
431	5372	440	5372	441	6000	500	6000	501	5373
550	5376								

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	550	.035				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	550		650	650	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5361.76	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 1.17	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5362.93	* Reach Len. (ft)	* 650.00	* 650.00	* 650.00
* Crit W.S. (ft)		* Flow Area (sq ft)	* 248.33		
* E.G. Slope (ft/ft)	* 0.010530	* Area (sq ft)	* 248.33		
* Q Total (cfs)	* 2157.00	* Flow (cfs)	* 2157.00		
* Top Width (ft)	* 87.56	* Top Width (ft)	* 87.56		
* Vel Total (ft/s)	* 8.69	* Avg. Vel. (ft/s)	* 8.69		
* Max Chl Dpth (ft)	* 3.76	* Hydr. Depth (ft)	* 2.84		
* Conv. Total (cfs)	* 21020.2	* Conv. (cfs)	* 21020.2		
* Length Wtd. (ft)	* 650.00	* Wetted Per. (ft)	* 88.20		
* Min Ch El (ft)	* 5358.00	* Shear (lb/sq ft)	* 1.85		

```

*
* Alpha * 1.00 * Stream Power (lb/ft s) * 16.08 *
*
* Frctn Loss (ft) * 4.50 * Cum Volume (acre-ft) * 60.55 *
*
* C & E Loss (ft) * 0.20 * Cum SA (acres) * 48.19 *
*
*****
**

```

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: S&C_TRIB2
 REACH: 5-38 RS: 35

INPUT

Description:

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5370	20	5368	21	6000	50	6000	51	5366
70	5366	71	6000	120	6000	121	5364	130	5363
131	6000	180	6000	181	5360	200	5359	201	6000
250	6000	251	5358	280	5356	340	5354	350	5352
360	5352	370	5354	380	5356	400	5358	420	5360
430	5362	450	5364	490	5365	491	6000	520	6000
521	5366	530	5368	540	5370				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	540	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	540		550	550	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft) * 5357.73 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.50 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5358.23 * Reach Len. (ft) * 550.00 * 550.00 * 550.00
*
* Crit W.S. (ft) * * Flow Area (sq ft) * * 379.52 *
*
* E.G. Slope (ft/ft) * 0.004883 * Area (sq ft) * * 379.52 *
*
* Q Total (cfs) * 2157.00 * Flow (cfs) * * 2157.00 *
*
* Top Width (ft) * 142.36 * Top Width (ft) * * 142.36 *
*
* Vel Total (ft/s) * 5.68 * Avg. Vel. (ft/s) * * 5.68 *
*
* Max Chl Dpth (ft) * 5.73 * Hydr. Depth (ft) * * 2.67 *
*
* Conv. Total (cfs) * 30866.9 * Conv. (cfs) * * 30866.9 *
*
* Length Wtd. (ft) * 550.00 * Wetted Per. (ft) * * 143.13 *
*
* Min Ch El (ft) * 5352.00 * Shear (lb/sq ft) * * 0.81 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * * 4.59 *
*
* Frctn Loss (ft) * 4.09 * Cum Volume (acre-ft) * * 55.86 *
*

```

* C & E Loss (ft) * 0.10 * Cum SA (acres) * * 46.47 *

**

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: S&C_TRIB2
REACH: 5-38 RS: 34

INPUT

Description:

Station Elevation Data		num= 30									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5366	1	6000	40	6000	41	5364	60	5362		
70	5360	100	5358	140	5358	141	6000	220	6000		
221	5357	240	5356	260	5354	270	5352	280	5350		
300	5348	310	5348	330	5350	340	5352	350	5354		
380	5356	390	5356	391	6000	430	6000	431	5357		
450	5357	451	6000	500	6000	501	5360	540	5366		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	540	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	540		750	550	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5352.57	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 1.47	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5354.04	* Reach Len. (ft)	* 750.00	* 550.00	* 400.00
* Crit W.S. (ft)	* 5352.57	* Flow Area (sq ft)	* 221.55		
* E.G. Slope (ft/ft)	* 0.012720	* Area (sq ft)	* 221.55		
* Q Total (cfs)	* 2157.00	* Flow (cfs)	* 2157.00		
* Top Width (ft)	* 75.70	* Top Width (ft)	* 75.70		
* Vel Total (ft/s)	* 9.74	* Avg. Vel. (ft/s)	* 9.74		
* Max Chl Dpth (ft)	* 4.57	* Hydr. Depth (ft)	* 2.93		
* Conv. Total (cfs)	* 19125.0	* Conv. (cfs)	* 19125.0		
* Length Wtd. (ft)	* 550.00	* Wetted Per. (ft)	* 76.41		
* Min Ch El (ft)	* 5348.00	* Shear (lb/sq ft)	* 2.30		
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 22.42		
* Frctn Loss (ft)	* 7.61	* Cum Volume (acre-ft)	* 52.07		
* C & E Loss (ft)	* 0.15	* Cum SA (acres)	* 45.10		

**

Warning - The energy equation could not be balanced within the specified number of

iterations. The

program used critical depth for the water surface and continued on with the calculations.

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

for additional cross sections.

Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

Warning - During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth.

This indicates

that there is not a valid subcritical answer. The program defaulted to

critical depth.

CROSS SECTION RIVER: S&C_TRIB2
REACH: 5-38 RS: 33

INPUT

Description:

Station Elevation Data		num= 23		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5360	10	5358	40	5356	80	5356	90	5354
110	5352	120	5350	130	5348	140	5346	150	5344
151	6000	210	6000	211	5342	240	5342	310	5344
350	5346	360	5348	370	5350	400	5352	410	5354
430	5356	460	5358	500	5360				

Manning's n Values		num= 3		Sta n Val		Sta n Val		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	500	.035				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	500		500	500	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5344.94	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.97	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5345.91	* Reach Len. (ft)	* 500.00	* 500.00	* 500.00
* Crit W.S. (ft)	* 5344.94	* Flow Area (sq ft)	* 232.40		
* E.G. Slope (ft/ft)	* 0.015353	* Area (sq ft)	* 232.40		
* Q Total (cfs)	* 1833.00	* Flow (cfs)	* 1833.00		
* Top Width (ft)	* 122.57	* Top Width (ft)	* 122.57		
* Vel Total (ft/s)	* 7.89	* Avg. Vel. (ft/s)	* 7.89		
* Max Chl Dpth (ft)	* 2.94	* Hydr. Depth (ft)	* 1.90		
* Conv. Total (cfs)	* 14793.6	* Conv. (cfs)	* 14793.6		
* Length Wtd. (ft)	* 500.00	* Wetted Per. (ft)	* 126.59		
* Min Ch El (ft)	* 5342.00	* Shear (lb/sq ft)	* 1.76		
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 13.88		
* Frctn Loss (ft)	* 8.00	* Cum Volume (acre-ft)	* 49.20		
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	* 43.84		

Warning - The energy equation could not be balanced within the specified number of

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

CROSS SECTION RIVER: S&C_TRIB2
 REACH: 5-38 RS: 32

INPUT

Description:

Station Elevation Data		num= 27		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5350	100	5340	190	5338	191	6000	230	6000
231	5336	290	5334	350	5334	370	5335	371	6000
400	6000	401	5336	430	5336	431	6000	450	6000
451	5336	540	5338	560	5338	561	6000	600	6000
601	5339	670	5340	710	5341	711	6000	750	6000
751	5342	870	5350						

Manning's n Values		num= 3		Sta n Val	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	870	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	870		300	300	400	.1
							.3

CROSS SECTION OUTPUT Profile #PF#1

```
*****
**
* W.S. Elev (ft) * 5336.31 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.75 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5337.06 * Reach Len. (ft) * 300.00 * 300.00 * 400.00
*
* Crit W.S. (ft) * 5336.31 * Flow Area (sq ft) * * 263.50 *
*
* E.G. Slope (ft/ft) * 0.016690 * Area (sq ft) * * 263.50 *
*
* Q Total (cfs) * 1833.00 * Flow (cfs) * * 1833.00 *
*
* Top Width (ft) * 181.87 * Top Width (ft) * * 181.87 *
*
* Vel Total (ft/s) * 6.96 * Avg. Vel. (ft/s) * * 6.96 *
*
* Max Chl Dpth (ft) * 2.31 * Hydr. Depth (ft) * * 1.45 *
*
* Conv. Total (cfs) * 14188.6 * Conv. (cfs) * * 14188.6 *
*
* Length Wtd. (ft) * 300.00 * Wetted Per. (ft) * * 184.47 *
*
* Min Ch El (ft) * 5334.00 * Shear (lb/sq ft) * * 1.49 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * * 10.35 *
*
* Frctn Loss (ft) * 5.38 * Cum Volume (acre-ft) * * 46.36 *
*
* C & E Loss (ft) * 0.09 * Cum SA (acres) * * 42.10 *
*****
**
```

Warning - The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
 Warning - Divided flow computed for this cross-section.
 Warning - The 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.

CROSS SECTION RIVER: S&C_TRIB2
 REACH: 5-38 RS: 31

INPUT

Description:
 Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5330	20	5328	110	5328	170	5326	240	5326
241	6000	250	6000	251	5326	350	5328	450	5329
550	5330	551	6000	670	6000	671	5330	720	5329.5
760	5330	920	5330	1000	5328	1170	5326	1280	5328
1290	5330								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1290	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

0	1290	1500	750	300	.1	.3
---	------	------	-----	-----	----	----

CROSS SECTION OUTPUT Profile #PF#1

```
*****
**
* W.S. Elev (ft) * 5327.48 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.44 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5327.92 * Reach Len. (ft) * 1500.00 * 750.00 * 300.00
*
* Crit W.S. (ft) * 5327.48 * Flow Area (sq ft) * * 342.64 *
*
* E.G. Slope (ft/ft) * 0.019330 * Area (sq ft) * * 342.64 *
*
* Q Total (cfs) * 1833.00 * Flow (cfs) * * 1833.00 *
*
* Top Width (ft) * 394.11 * Top Width (ft) * * 394.11 *
*
* Vel Total (ft/s) * 5.35 * Avg. Vel. (ft/s) * * 5.35 *
*
* Max Chl Dpth (ft) * 1.48 * Hydr. Depth (ft) * * 0.87 *
*
* Conv. Total (cfs) * 13184.0 * Conv. (cfs) * * 13184.0 *
*
* Length Wtd. (ft) * 750.00 * Wetted Per. (ft) * * 397.12 *
*
* Min Ch El (ft) * 5326.00 * Shear (lb/sq ft) * * 1.04 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * * 5.57 *
*
* Frctn Loss (ft) * 3.67 * Cum Volume (acre-ft) * * 44.27 *
*
* C & E Loss (ft) * 0.11 * Cum SA (acres) * * 40.11 *
*****
**
```

Warning - The energy equation could not be balanced within the specified number of

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

CROSS SECTION RIVER: S&C_TRIB2
 REACH: 5-38 RS: 30

INPUT

Description:

Station Elevation Data		num= 18									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5320	90	5320	91	6000	390	6000	391	5319		
620	5318	750	5318	840	5320	1120	5322	1280	5322		
1610	5320	1790	5319	1791	6000	1810	6000	1811	5319		
1830	5318	1900	5318	1950	5320						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1950	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1950		1400	1300	1000	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5319.79	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.08	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5319.87	* Reach Len. (ft)	* 1400.00	* 1300.00	* 1000.00
* Crit W.S. (ft)		* Flow Area (sq ft)		* 846.26	
* E.G. Slope (ft/ft)	* 0.002235	* Area (sq ft)		* 846.26	
* Q Total (cfs)	* 1895.00	* Flow (cfs)		* 1895.00	
* Top Width (ft)	* 715.51	* Top Width (ft)		* 715.51	
* Vel Total (ft/s)	* 2.24	* Avg. Vel. (ft/s)		* 2.24	
* Max Chl Dpth (ft)	* 1.79	* Hydr. Depth (ft)		* 1.18	
* Conv. Total (cfs)	* 40088.1	* Conv. (cfs)		* 40088.1	
* Length Wtd. (ft)	* 1300.00	* Wetted Per. (ft)		* 718.01	
* Min Ch El (ft)	* 5318.00	* Shear (lb/sq ft)		* 0.16	
* Alpha	* 1.00	* Stream Power (lb/ft s)		* 0.37	
* Frctn Loss (ft)	* 5.27	* Cum Volume (acre-ft)		* 34.03	
* C & E Loss (ft)	* 0.01	* Cum SA (acres)		* 30.56	

Warning - Divided flow computed for this cross-section.

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

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

CROSS SECTION RIVER: S&C_TRIB2
 REACH: 5-38 RS: 6

INPUT

Description:

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5316	210	5314	211	5400	280	5400	281	5314
420	5314	421	5400	510	5400	511	5313	700	5313
800	5314	850	5316	920	5316	1000	5314	1200	5314
1201	5400	1260	5400	1261	5314	1360	5314	1361	5400
1390	5400	1391	5314	1500	5314	1501	5400	1530	5400
1531	5314	1640	5316						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1640	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	1640		550	550	.1	.3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5314.44	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.15	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5314.59	* Reach Len. (ft)	* 550.00	* 550.00	* 550.00
* Crit W.S. (ft)		* Flow Area (sq ft)		* 632.19	
* E.G. Slope (ft/ft)	* 0.009092	* Area (sq ft)		* 632.19	
* Q Total (cfs)	* 1963.00	* Flow (cfs)		* 1963.00	
* Top Width (ft)	* 935.71	* Top Width (ft)		* 935.71	
* Vel Total (ft/s)	* 3.11	* Avg. Vel. (ft/s)		* 3.11	
* Max Chl Dpth (ft)	* 1.44	* Hydr. Depth (ft)		* 0.68	
* Conv. Total (cfs)	* 20586.8	* Conv. (cfs)		* 20586.8	
* Length Wtd. (ft)	* 550.00	* Wetted Per. (ft)		* 941.09	
* Min Ch El (ft)	* 5313.00	* Shear (lb/sq ft)		* 0.38	
* Alpha	* 1.00	* Stream Power (lb/ft s)		* 1.18	
* Frctn Loss (ft)	* 1.48	* Cum Volume (acre-ft)		* 11.97	
* C & E Loss (ft)	* 0.03	* Cum SA (acres)		* 5.92	

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

CROSS SECTION RIVER: S&C_TRIB2

REACH: 5-38

RS: 5

INPUT

Description:

Station Elevation Data				num= 34					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5314	90	5312	150	5312	151	5400	270	5400
271	5312	340	5312	341	5400	420	5400	421	5312
520	5312	521	5400	600	5400	601	5312	800	5312
801	5400	820	5311	1050	5311	1051	5400	1120	5400
1121	5312	1190	5312	1191	5400	1230	5400	1231	5312
1340	5312	1341	5400	1380	5400	1381	5312	1460	5312
1461	5400	1490	5400	1491	5313	1520	5314		

Manning's n Values				num= 3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	1520	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	0	1520		250	400		.1	.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft) * 5313.03 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.05 * Wt. n-Val. * * 0.035 *
*
* E.G. Elev (ft) * 5313.08 * Reach Len. (ft) * 200.00 * 200.00 * 200.00
*
* Crit W.S. (ft) * 5312.29 * Flow Area (sq ft) * * 1199.40 *
*
* E.G. Slope (ft/ft) * 0.001330 * Area (sq ft) * * 1199.40 *
*
* Q Total (cfs) * 2126.00 * Flow (cfs) * * 2126.00 *
*
* Top Width (ft) * 962.10 * Top Width (ft) * * 962.10 *
*
* Vel Total (ft/s) * 1.77 * Avg. Vel. (ft/s) * * 1.77 *
*
* Max Chl Dpth (ft) * 2.03 * Hydr. Depth (ft) * * 1.25 *
*
* Conv. Total (cfs) * 58298.4 * Conv. (cfs) * * 58298.4 *
*
* Length Wtd. (ft) * 200.00 * Wetted Per. (ft) * * 979.07 *
*
* Min Ch El (ft) * 5311.00 * Shear (lb/sq ft) * * 0.10 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * * 0.18 *
*
* Frctn Loss (ft) * 0.70 * Cum Volume (acre-ft) * * 3.56 *
*
* C & E Loss (ft) * 0.02 * Cum SA (acres) * * *
*
*****
**

```

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 RIVER: S&C_TRIB3
REACH: 39-45 RS: 45

INPUT

Description:

Station Elevation Data				num= 48					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5410	1	6000	50	6000	51	5409	60	5409
61	6000	110	6000	111	5409	130	5409	131	6000
180	6000	181	5408	260	5408	261	6000	300	6000

301	5408	320	5408	321	6000	360	6000	361	5408
380	5408	381	6000	430	6000	431	5408	450	5408
451	6000	480	6000	481	5408	500	5408	501	6000
550	6000	551	5408	560	5408	561	6000	610	6000
611	5408	620	5409	621	6000	670	6000	671	5409
680	5409	681	6000	720	6000	721	5409	780	5409
781	6000	790	6000	791	5410				

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 791 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 791 300 300 450 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

 **
 * W.S. Elev (ft) * 5408.87 * Element * Left OB * Channel * Right OB
 *
 * Vel Head (ft) * 0.40 * Wt. n-Val. * * 0.035 *
 *
 * E.G. Elev (ft) * 5409.27 * Reach Len. (ft) * 300.00 * 300.00 * 450.00
 *
 * Crit W.S. (ft) * 5408.87 * Flow Area (sq ft) * * 145.78 *
 *
 * E.G. Slope (ft/ft) * 0.019589 * Area (sq ft) * * 145.78 *
 *
 * Q Total (cfs) * 744.00 * Flow (cfs) * * 744.00 *
 *
 * Top Width (ft) * 171.83 * Top Width (ft) * * 171.83 *
 *
 * Vel Total (ft/s) * 5.10 * Avg. Vel. (ft/s) * * 5.10 *
 *
 * Max Chl Dpth (ft) * 0.87 * Hydr. Depth (ft) * * 0.85 *
 *
 * Conv. Total (cfs) * 5315.8 * Conv. (cfs) * * 5315.8 *
 *
 * Length Wtd. (ft) * 300.00 * Wetted Per. (ft) * * 183.13 *
 *
 * Min Ch El (ft) * 5408.00 * Shear (lb/sq ft) * * 0.97 *
 *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * 4.97 *
 *
 * Frctn Loss (ft) * 2.54 * Cum Volume (acre-ft) * * 11.37 *
 *
 * C & E Loss (ft) * 0.07 * Cum SA (acres) * * 9.38 *
 *

 **

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
 Warning - Divided flow computed for this cross-section.
 Warning - The 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.


```
*****
      0   5406   50   5404   130   5402   131   6000   170   6000
     171  5402   180   5402   181   6000   220   6000   221   5401
     230  5401   231   6000   260   6000   261   5400   380   5402
     590  5403   591   6000   620   6000   621   5403   630   5403
     631  6000   670   6000   671   5403   810   5404   920   5405
     921  6000   930   6000   931   5405   980   5406
```

```
Manning's n Values      num=      3
  Sta   n Val      Sta   n Val      Sta   n Val
*****
      0   .035      0   .035      980   .035
```

```
Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
           0       980           650     600           600           .1           .3
```

CROSS SECTION OUTPUT Profile #PF#1

```
*****
**
* W.S. Elev (ft)      * 5402.07 * Element      * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.45 * Wt. n-Val.   *         * 0.035 *
*
* E.G. Elev (ft)     * 5402.52 * Reach Len. (ft) * 650.00 * 600.00 * 600.00
*
* Crit W.S. (ft)     * 5402.07 * Flow Area (sq ft) *         * 138.26 *
*
* E.G. Slope (ft/ft) * 0.019362 * Area (sq ft) *         * 138.26 *
*
* Q Total (cfs)      * 744.00 * Flow (cfs) *         * 744.00 *
*
* Top Width (ft)     * 154.59 * Top Width (ft) *         * 154.59 *
*
* Vel Total (ft/s)   * 5.38 * Avg. Vel. (ft/s) *         * 5.38 *
*
* Max Chl Dpth (ft) * 2.07 * Hydr. Depth (ft) *         * 0.89 *
*
* Conv. Total (cfs)  * 5346.9 * Conv. (cfs) *         * 5346.9 *
*
* Length Wtd. (ft)   * 600.00 * Wetted Per. (ft) *         * 159.02 *
*
* Min Ch El (ft)     * 5400.00 * Shear (lb/sq ft) *         * 1.05 *
*
* Alpha              * 1.00 * Stream Power (lb/ft s) *         * 5.66 *
*
* Frctn Loss (ft)    * 4.66 * Cum Volume (acre-ft) *         * 8.42 *
*
* C & E Loss (ft)    * 0.10 * Cum SA (acres) *         * 6.72 *
**
*****
```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

```
CROSS SECTION      RIVER: S&C_TRIB3
REACH: 39-45      RS: 42
```

```
INPUT
Description:
```

Station Elevation Data		num= 17		Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5400	50	5398	80	5396	160	5396	161	6000		
190	6000	191	5396	280	5396	350	5396	351	6000		
400	6000	401	5396	510	5396	511	6000	520	6000		
521	5396	570	5400								

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	570	.035				

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 570 200 450 800 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

* W.S. Elev (ft)	* 5396.96	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.12	* Wt. n-Val.	* 0.035		
* E.G. Elev (ft)	* 5397.07	* Reach Len. (ft)	* 200.00	* 450.00	* 800.00
* Crit W.S. (ft)		* Flow Area (sq ft)		* 346.08	
* E.G. Slope (ft/ft)	* 0.004675	* Area (sq ft)		* 346.08	
* Q Total (cfs)	* 944.00	* Flow (cfs)		* 944.00	
* Top Width (ft)	* 374.13	* Top Width (ft)		* 374.13	
* Vel Total (ft/s)	* 2.73	* Avg. Vel. (ft/s)		* 2.73	
* Max Chl Dpth (ft)	* 0.96	* Hydr. Depth (ft)		* 0.93	
* Conv. Total (cfs)	* 13806.2	* Conv. (cfs)		* 13806.2	
* Length Wtd. (ft)	* 450.00	* Wetted Per. (ft)		* 379.94	
* Min Ch El (ft)	* 5396.00	* Shear (lb/sq ft)		* 0.27	
* Alpha	* 1.00	* Stream Power (lb/ft s)		* 0.73	
* Frctn Loss (ft)	* 2.24	* Cum Volume (acre-ft)		* 5.08	
* C & E Loss (ft)	* 0.01	* Cum SA (acres)		* 3.08	

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 RIVER: S&C_TRIB3
 REACH: 39-45 RS: 41

INPUT Description:

Station Elevation Data		num= 76		Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5400	1	6000	20	6000	50	5398	140	5396		
141	6000	180	6000	181	5395	200	5395	201	6000		
240	6000	241	5394	250	5394	251	6000	290	6000		
291	5393	300	5393	301	6000	340	6000	341	5393		
350	5393	351	6000	390	6000	391	5392	400	5392		
401	6000	440	6000	441	5391	450	5391	451	6000		
490	6000	491	5391	500	5391	501	6000	520	6000		
521	5391	540	5391	541	6000	590	6000	591	5391		
600	5391	601	6000	640	6000	641	5394	650	5394		
651	6000	680	6000	681	5394	700	5394	701	6000		

730	6000	731	5394	810	5396	811	6000	850	6000
851	5397	860	5397	861	6000	900	6000	901	5398
910	5398	911	6000	950	6000	951	5398	960	5398
961	6000	1000	6000	1001	5399	1020	5399	1021	6000
1100	6000	1101	5399	1120	5399	1121	6000	1150	6000
1151	5400								

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 1151 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 1151 300 300 300 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

 **
 * W.S. Elev (ft) * 5394.59 * Element * Left OB * Channel * Right OB
 *
 * Vel Head (ft) * 0.23 * Wt. n-Val. * * 0.035 *
 *
 * E.G. Elev (ft) * 5394.82 * Reach Len. (ft) * 300.00 * 300.00 * 300.00
 *
 * Crit W.S. (ft) * 5393.35 * Flow Area (sq ft) * * 245.93 *
 *
 * E.G. Slope (ft/ft) * 0.005303 * Area (sq ft) * * 245.93 *
 *
 * Q Total (cfs) * 944.00 * Flow (cfs) * * 944.00 *
 *
 * Top Width (ft) * 133.39 * Top Width (ft) * * 133.39 *
 *
 * Vel Total (ft/s) * 3.84 * Avg. Vel. (ft/s) * * 3.84 *
 *
 * Max Chl Dpth (ft) * 3.59 * Hydr. Depth (ft) * * 1.84 *
 *
 * Conv. Total (cfs) * 12963.3 * Conv. (cfs) * * 12963.3 *
 *
 * Length Wtd. (ft) * 300.00 * Wetted Per. (ft) * * 177.76 *
 *
 * Min Ch El (ft) * 5391.00 * Shear (lb/sq ft) * * 0.46 *
 *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * 1.76 *
 *
 * Frctn Loss (ft) * 2.81 * Cum Volume (acre-ft) * * 2.03 *
 *
 * C & E Loss (ft) * 0.02 * Cum SA (acres) * * 0.46 *
 *

 **

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

CROSS SECTION RIVER: S&C_TRIB3
 REACH: 39-45 RS: 39

INPUT

Description:

Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5396	40	5394	80	5394	81	6000	120	6000
121	5394	130	5394	131	6000	170	6000	171	5393
180	5393	181	6000	320	6000	321	5391	330	5391
331	6000	360	6000	361	5391	390	5391	391	6000
420	6000	421	5391	430	5391	431	6000	470	6000
471	5390	490	5390	491	6000	520	6000	521	5390
540	5390	541	6000	570	6000	571	5390	580	5390
581	6000	620	6000	621	5390	630	5390	631	6000

670 6000 671 5390 780 5392 900 5396

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val

0 .035 0 .035 900 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 900 700 700 700 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

**
* W.S. Elev (ft) * 5391.51 * Element * Left OB * Channel * Right OB
*
* Vel Head (ft) * 0.47 * Wt. n-Val. * 0.035 *
*
* E.G. Elev (ft) * 5391.98 * Reach Len. (ft) * 200.00 * 200.00 * 200.00
*
* Crit W.S. (ft) * 5391.51 * Flow Area (sq ft) * 171.45 *
*
* E.G. Slope (ft/ft) * 0.020969 * Area (sq ft) * 171.45 *
*
* Q Total (cfs) * 944.00 * Flow (cfs) * 944.00 *
*
* Top Width (ft) * 185.55 * Top Width (ft) * 185.55 *
*
* Vel Total (ft/s) * 5.51 * Avg. Vel. (ft/s) * 5.51 *
*
* Max Chl Dpth (ft) * 1.51 * Hydr. Depth (ft) * 0.92 *
*
* Conv. Total (cfs) * 6519.0 * Conv. (cfs) * 6519.0 *
*
* Length Wtd. (ft) * 200.00 * Wetted Per. (ft) * 202.29 *
*
* Min Ch El (ft) * 5390.00 * Shear (lb/sq ft) * 1.11 *
*
* Alpha * 1.00 * Stream Power (lb/ft s) * 6.11 *
*
* Frctn Loss (ft) * 3.52 * Cum Volume (acre-ft) * 0.59 *
*
* C & E Loss (ft) * 0.02 * Cum SA (acres) *
*

**

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

CROSS SECTION RIVER: S&C_TRIB4
REACH: 40-52 RS: 52

INPUT

Description:

Station Elevation Data num= 20
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

0 5410 60 5409 61 6000 120 6000 121 5409
160 5408 230 5406 320 5406 321 6000 360 6000
361 5406 510 5406 511 6000 560 6000 561 5406
710 5408 730 5408 731 6000 780 6000 900 5410

Manning's n Values num= 3

Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 900 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 900 450 500 550 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

 **
 * W.S. Elev (ft) * 5406.29 * Element * Left OB * Channel * Right OB
 *
 * Vel Head (ft) * 0.08 * Wt. n-Val. * * 0.035 *
 *
 * E.G. Elev (ft) * 5406.37 * Reach Len. (ft) * 450.00 * 500.00 * 550.00
 *
 * Crit W.S. (ft) * 5406.24 * Flow Area (sq ft) * * 74.45 *
 *
 * E.G. Slope (ft/ft) * 0.015528 * Area (sq ft) * * 74.45 *
 *
 * Q Total (cfs) * 166.00 * Flow (cfs) * * 166.00 *
 *
 * Top Width (ft) * 270.98 * Top Width (ft) * * 270.98 *
 *
 * Vel Total (ft/s) * 2.23 * Avg. Vel. (ft/s) * * 2.23 *
 *
 * Max Chl Dpth (ft) * 0.29 * Hydr. Depth (ft) * * 0.27 *
 *
 * Conv. Total (cfs) * 1332.1 * Conv. (cfs) * * 1332.1 *
 *
 * Length Wtd. (ft) * 500.00 * Wetted Per. (ft) * * 272.14 *
 *
 * Min Ch El (ft) * 5406.00 * Shear (lb/sq ft) * * 0.27 *
 *
 * Alpha * 1.00 * Stream Power (lb/ft s) * * 0.59 *
 *
 * Frctn Loss (ft) * 5.12 * Cum Volume (acre-ft) * * 3.37 *
 *
 * C & E Loss (ft) * 0.00 * Cum SA (acres) * * 4.92 *
 *

 **

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

CROSS SECTION RIVER: S&C_TRIB4
 REACH: 40-52 RS: 51

INPUT

Description:
 Station Elevation Data num= 29
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

 0 5406 30 5406 31 6000 70 6000 71 5405
 120 5405 121 6000 150 6000 151 5905 160 5405
 161 6000 180 6000 181 5404 200 5404 240 5402
 370 5400 371 6000 420 6000 421 5400 460 5401
 461 6000 470 6000 471 5401 560 5402 590 5404
 591 6000 670 6000 671 5405 720 5406

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val

 0 .035 0 .035 720 .035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 0 720 550 500 500 .1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5401.16 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.09 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)     * 5401.25 * Reach Len. (ft)  * 550.00 * 500.00 * 500.00
*
* Crit W.S. (ft)    * 5400.91 * Flow Area (sq ft) *          * 70.89 *
*
* E.G. Slope (ft/ft) * 0.006944 * Area (sq ft)    *          * 70.89 *
*
* Q Total (cfs)      * 166.00 * Flow (cfs)      *          * 166.00 *
*
* Top Width (ft)     * 128.97 * Top Width (ft)  *          * 128.97 *
*
* Vel Total (ft/s)   * 2.34 * Avg. Vel. (ft/s) *          * 2.34 *
*
* Max Chl Dpth (ft)  * 1.16 * Hydr. Depth (ft) *          * 0.55 *
*
* Conv. Total (cfs)  * 1992.1 * Conv. (cfs)     *          * 1992.1 *
*
* Length Wtd. (ft)   * 500.00 * Wetted Per. (ft) *          * 131.62 *
*
* Min Ch El (ft)     * 5400.00 * Shear (lb/sq ft) *          * 0.23 *
*
* Alpha              * 1.00 * Stream Power (lb/ft s) *          * 0.55 *
*
* Frctn Loss (ft)    * 4.63 * Cum Volume (acre-ft) *          * 2.53 *
*
* C & E Loss (ft)    * 0.00 * Cum SA (acres)   *          * 2.63 *
*
*****
**

```

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 RIVER: S&C_TRIB4
REACH: 40-52 RS: 50

INPUT

Description:

Station Elevation Data		num= 17		Sta	Elev	Sta	Elev	Sta	Elev
0	5400	1	6000	40	6000	41	5399	80	5398
170	5397	171	6000	210	6000	211	5397	280	5396
390	5396	410	5396	411	6000	460	6000	461	5397
560	5398	610	5400						

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	610	.035				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	610		550	500	400	.1 .3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)      * 5396.50 * Element          * Left OB * Channel * Right OB
*
* Vel Head (ft)      * 0.12 * Wt. n-Val.      *          * 0.035 *
*
* E.G. Elev (ft)     * 5396.62 * Reach Len. (ft)  * 550.00 * 500.00 * 400.00
*
* Crit W.S. (ft)    * 5396.40 * Flow Area (sq ft) *          * 73.38 *
*
* E.G. Slope (ft/ft) * 0.012251 * Area (sq ft)    *          * 73.38 *
*
* Q Total (cfs)      * 201.00 * Flow (cfs)      *          * 201.00 *
*
*****

```

```

*
* Top Width (ft)          * 164.40 * Top Width (ft)          *          * 164.40 *
*
* Vel Total (ft/s)       * 2.74 * Avg. Vel. (ft/s)       *          * 2.74 *
*
* Max Chl Dpth (ft)     * 0.50 * Hydr. Depth (ft)     *          * 0.45 *
*
* Conv. Total (cfs)      * 1816.0 * Conv. (cfs)          *          * 1816.0 *
*
* Length Wtd. (ft)      * 500.00 * Wetted Per. (ft)     *          * 164.90 *
*
* Min Ch El (ft)        * 5396.00 * Shear (lb/sq ft)     *          * 0.34 *
*
* Alpha                  * 1.00 * Stream Power (lb/ft s) *          * 0.93 *
*
* Frctn Loss (ft)       * 7.47 * Cum Volume (acre-ft) *          * 1.71 *
*
* C & E Loss (ft)       * 0.02 * Cum SA (acres)       *          * 0.94 *
*
*****
**

```

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

CROSS SECTION RIVER: S&C_TRIB4
REACH: 40-52 RS: 40

INPUT

Description:

Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5396	50	5395	51	6000	90	6000	91	5393
130	5392	160	5390	210	5390	270	5389	271	6000
330	6000	331	5388	370	5388	410	5389	460	5390
610	5392	620	5394	640	5394	641	6000	690	6000
691	5396								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	691	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	0	691		300	700	1100	.1
							.3

CROSS SECTION OUTPUT Profile #PF#1

```

*****
**
* W.S. Elev (ft)          * 5388.82 * Element                * Left OB * Channel * Right OB
*
* Vel Head (ft)          * 0.30 * Wt. n-Val.             *          * 0.035 *
*
* E.G. Elev (ft)         * 5389.12 * Reach Len. (ft)        * 200.00 * 200.00 * 200.00
*
* Crit W.S. (ft)         * 5388.82 * Flow Area (sq ft)      *          * 45.66 *
*
* E.G. Slope (ft/ft)     * 0.020010 * Area (sq ft)           *          * 45.66 *
*
* Q Total (cfs)          * 201.00 * Flow (cfs)             *          * 201.00 *
*
* Top Width (ft)         * 71.93 * Top Width (ft)         *          * 71.93 *
*
* Vel Total (ft/s)       * 4.40 * Avg. Vel. (ft/s)       *          * 4.40 *
*
* Max Chl Dpth (ft)     * 0.82 * Hydr. Depth (ft)      *          * 0.63 *
*
* Conv. Total (cfs)      * 1420.9 * Conv. (cfs)           *          * 1420.9 *
*
* Length Wtd. (ft)      * 200.00 * Wetted Per. (ft)      *          * 72.76 *
*
* Min Ch El (ft)        * 5388.00 * Shear (lb/sq ft)     *          * 0.78 *
*

```

```

* Alpha * 1.00 * Stream Power (lb/ft s) * 3.45 *
*
* Frctn Loss (ft) * 3.20 * Cum Volume (acre-ft) * 0.30 *
*
* C & E Loss (ft) * 0.04 * Cum SA (acres) * *
*
*****
**

```

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

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:S&C_TRIB1

```

*****
* Reach * River Sta. * n1 * n2 * n3 *
*****
*1-4 * 4 * .035* .035* .035*
*1-4 * 3 * .035* .035* .035*
*1-4 * 2 * .035* .035* .035*
*1-4 * 1 * .035* .035* .035*
*****

```

River:S&C_TRIB5

```

*****
* Reach * River Sta. * n1 * n2 * n3 *
*****
*9-23 * 23 * .035* .035* .035*
*9-23 * 22 * .035* .035* .035*
*9-23 * 21 * .035* .035* .035*
*9-23 * 20 * .035* .035* .035*
*9-23 * 19 * .035* .035* .035*
*9-23 * 18 * .035* .035* .035*
*9-23 * 17 * .035* .035* .035*
*9-23 * 16 * .035* .035* .035*
*9-23 * 15 * .035* .035* .035*
*9-23 * 14 * .035* .035* .035*
*9-23 * 13 * .035* .035* .035*
*9-23 * 12 * .035* .035* .035*
*9-23 * 11 * .035* .035* .035*
*9-23 * 9 * .035* .035* .035*
*****

```

River:S&C_TRIB2

```

*****
* Reach * River Sta. * n1 * n2 * n3 *
*****
*5-38 * 38 * .035* .035* .035*
*5-38 * 37 * .035* .035* .035*
*5-38 * 36 * .035* .035* .035*
*5-38 * 35 * .035* .035* .035*
*5-38 * 34 * .035* .035* .035*
*5-38 * 33 * .035* .035* .035*
*5-38 * 32 * .035* .035* .035*
*5-38 * 31 * .035* .035* .035*

```

```

*5-38      *    30      *    .035*    .035*    .035*
*5-38      *     6      *    .035*    .035*    .035*
*5-38      *     5      *    .035*    .035*    .035*
*****

```

River: S&C_TRIB3

```

*****
* Reach      * River Sta. * n1      * n2      * n3      *
*****
*39-45      *    45      *   .035*   .035*   .035*
*39-45      *    44      *   .035*   .035*   .035*
*39-45      *    43      *   .035*   .035*   .035*
*39-45      *    42      *   .035*   .035*   .035*
*39-45      *    41      *   .035*   .035*   .035*
*39-45      *    39      *   .035*   .035*   .035*
*****

```

River: S&C_TRIB4

```

*****
* Reach      * River Sta. * n1      * n2      * n3      *
*****
*40-52      *    52      *   .035*   .035*   .035*
*40-52      *    51      *   .035*   .035*   .035*
*40-52      *    50      *   .035*   .035*   .035*
*40-52      *    40      *   .035*   .035*   .035*
*****

```

SUMMARY OF REACH LENGTHS

River: S&C_TRIB1

```

*****
* Reach      * River Sta. * Left    * Channel * Right   *
*****
*1-4        *     4      *  950*   750*   650*
*1-4        *     3      *  200*   400*   700*
*1-4        *     2      * 1200*   850*   600*
*1-4        *     1      *  100*   100*   100*
*****

```

River: S&C_TRIB5

```

*****
* Reach      * River Sta. * Left    * Channel * Right   *
*****
*9-23       *    23      *  700*   600*   500*
*9-23       *    22      *  800*   450*   50*
*9-23       *    21      *  350*   300*   250*
*9-23       *    20      *  650*   700*   900*
*9-23       *    19      *  400*   500*   650*
*9-23       *    18      *  400*   500*   650*
*9-23       *    17      *  500*   500*   500*
*9-23       *    16      *  500*   400*   300*
*9-23       *    15      *  300*   650*   900*
*9-23       *    14      *  650*   600*   600*
*9-23       *    13      *  700*   550*   500*
*9-23       *    12      *  650*   500*   350*
*9-23       *    11      *  700*   750*   800*
*9-23       *     9      * 1650*   800*   200*
*****

```

River: S&C_TRIB2

```

*****
* Reach      * River Sta. * Left    * Channel * Right   *
*****
*5-38       *    38      *  500*   550*   550*
*5-38       *    37      *  800*   700*   650*
*5-38       *    36      *  650*   650*   650*
*5-38       *    35      *  550*   550*   550*
*5-38       *    34      *  750*   550*   400*
*5-38       *    33      *  500*   500*   500*
*5-38       *    32      *  300*   300*   400*
*5-38       *    31      * 1500*   750*   300*
*5-38       *    30      * 1400*  1300*  1000*
*5-38       *     6      *  550*   550*   550*

```

*5-38 * 5 * 250* 400* 600*

River: S&C_TRIB3

 * Reach * River Sta. * Left * Channel * Right *

 *39-45 * 45 * 300* 300* 450*
 *39-45 * 44 * 550* 400* 200*
 *39-45 * 43 * 650* 600* 600*
 *39-45 * 42 * 200* 450* 800*
 *39-45 * 41 * 300* 300* 300*
 *39-45 * 39 * 700* 700* 700*

River: S&C_TRIB4

 * Reach * River Sta. * Left * Channel * Right *

 *40-52 * 52 * 450* 500* 550*
 *40-52 * 51 * 550* 500* 500*
 *40-52 * 50 * 550* 500* 400*
 *40-52 * 40 * 300* 700* 1100*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: S&C_TRIB1

 * Reach * River Sta. * Contr. * Expan. *

 *1-4 * 4 * .1* .3*
 *1-4 * 3 * .1* .3*
 *1-4 * 2 * .1* .3*
 *1-4 * 1 * .1* .3*

River: S&C_TRIB5

 * Reach * River Sta. * Contr. * Expan. *

 *9-23 * 23 * .1* .3*
 *9-23 * 22 * .1* .3*
 *9-23 * 21 * .1* .3*
 *9-23 * 20 * .1* .3*
 *9-23 * 19 * .1* .3*
 *9-23 * 18 * .1* .3*
 *9-23 * 17 * .1* .3*
 *9-23 * 16 * .1* .3*
 *9-23 * 15 * .1* .3*
 *9-23 * 14 * .1* .3*
 *9-23 * 13 * .1* .3*
 *9-23 * 12 * .1* .3*
 *9-23 * 11 * .1* .3*
 *9-23 * 9 * .1* .3*

River: S&C_TRIB2

 * Reach * River Sta. * Contr. * Expan. *

 *5-38 * 38 * .1* .3*
 *5-38 * 37 * .1* .3*
 *5-38 * 36 * .1* .3*
 *5-38 * 35 * .1* .3*
 *5-38 * 34 * .1* .3*
 *5-38 * 33 * .1* .3*
 *5-38 * 32 * .1* .3*
 *5-38 * 31 * .1* .3*
 *5-38 * 30 * .1* .3*
 *5-38 * 6 * .1* .3*
 *5-38 * 5 * .1* .3*

River: S&C_TRIB3

```

*****
* Reach * River Sta. * Contr. * Expan. *
*****
*39-45 * 45 * .1* .3*
*39-45 * 44 * .1* .3*
*39-45 * 43 * .1* .3*
*39-45 * 42 * .1* .3*
*39-45 * 41 * .1* .3*
*39-45 * 39 * .1* .3*
*****

```

River: S&C_TRIB4

```

*****
* Reach * River Sta. * Contr. * Expan. *
*****
*40-52 * 52 * .1* .3*
*40-52 * 51 * .1* .3*
*40-52 * 50 * .1* .3*
*40-52 * 40 * .1* .3*
*****

```

Profile Output Table - Standard Table 1

```

*****
* River * Reach * River Sta * Q Total *Min Ch El *W.S. Elev *Crit W.S.
*E.G. Elev *E.G. Slope * Vel Chnl *Flow Area *Top Width *Froude # Chl *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* (ft) * (ft/ft) * (ft/s) * (sq ft) * (ft) * * (ft) * (ft) * (ft) *
*****
* S&C TRIB1 * 1-4 * 4 * 2680.00 * 5311.00 * 5312.14 * 5312.05 *
5312.37 * 0.014057 * 3.82 * 700.70 * 1048.56 * 0.82 *
* S&C TRIB1 * 1-4 * 3 * 2680.00 * 5306.00 * 5309.25 *
5309.32 * 0.001854 * 2.16 * 1240.57 * 952.14 * 0.33 *
* S&C TRIB1 * 1-4 * 2 * 2846.00 * 5306.00 * 5308.59 *
5308.67 * 0.001443 * 2.34 * 1216.94 * 687.83 * 0.31 *
* S&C TRIB1 * 1-4 * 1 * 3097.00 * 5304.00 * 5305.00 * 5305.00 *
5305.45 * 0.019277 * 5.36 * 577.81 * 664.36 * 1.01 *
* S&C TRIB2 * 5-38 * 38 * 1152.00 * 5378.00 * 5380.66 * 5380.57 *
5381.37 * 0.015413 * 6.73 * 171.20 * 105.02 * 0.93 *
* S&C TRIB2 * 5-38 * 37 * 1475.00 * 5370.00 * 5371.50 * 5371.50 *
5372.16 * 0.017952 * 6.56 * 224.95 * 170.23 * 1.01 *
* S&C TRIB2 * 5-38 * 36 * 2157.00 * 5358.00 * 5361.76 *
5362.93 * 0.010530 * 8.69 * 248.33 * 87.56 * 0.91 *
* S&C TRIB2 * 5-38 * 35 * 2157.00 * 5352.00 * 5357.73 *
5358.23 * 0.004883 * 5.68 * 379.52 * 142.36 * 0.61 *
* S&C TRIB2 * 5-38 * 34 * 2157.00 * 5348.00 * 5352.57 * 5352.57 *
5354.04 * 0.012720 * 9.74 * 221.55 * 75.70 * 1.00 *
* S&C TRIB2 * 5-38 * 33 * 1833.00 * 5342.00 * 5344.94 * 5344.94 *
5345.91 * 0.015353 * 7.89 * 232.40 * 122.57 * 1.01 *
* S&C TRIB2 * 5-38 * 32 * 1833.00 * 5334.00 * 5336.31 * 5336.31 *
5337.06 * 0.016690 * 6.96 * 263.50 * 181.87 * 1.02 *
* S&C TRIB2 * 5-38 * 31 * 1833.00 * 5326.00 * 5327.48 * 5327.48 *
5327.92 * 0.019330 * 5.35 * 342.64 * 394.11 * 1.01 *
* S&C TRIB2 * 5-38 * 30 * 1895.00 * 5318.00 * 5319.79 *
5319.87 * 0.002235 * 2.24 * 846.26 * 715.51 * 0.36 *
* S&C TRIB2 * 5-38 * 6 * 1963.00 * 5313.00 * 5314.44 *
5314.59 * 0.009092 * 3.11 * 632.19 * 935.71 * 0.67 *
* S&C TRIB2 * 5-38 * 5 * 2126.00 * 5311.00 * 5313.03 * 5312.29 *
5313.08 * 0.001330 * 1.77 * 1199.40 * 962.10 * 0.28 *
* S&C TRIB5 * 9-23 * 23 * 142.00 * 5409.00 * 5410.26 * 5409.83 *
5410.29 * 0.003402 * 1.41 * 100.54 * 230.40 * 0.38 *
* S&C TRIB5 * 9-23 * 22 * 142.00 * 5406.00 * 5406.55 *
5406.67 * 0.013007 * 2.79 * 50.90 * 115.82 * 0.74 *
* S&C TRIB5 * 9-23 * 21 * 142.00 * 5404.00 * 5404.61 * 5404.30 *
5404.63 * 0.002270 * 1.23 * 115.04 * 238.86 * 0.31 *
* S&C TRIB5 * 9-23 * 20 * 245.00 * 5401.00 * 5402.09 * 5402.09 *
5402.23 * 0.035154 * 2.92 * 83.79 * 373.01 * 1.09 *
* S&C TRIB5 * 9-23 * 19 * 245.00 * 5396.00 * 5396.59 *
5396.61 * 0.001637 * 1.12 * 217.89 * 406.73 * 0.27 *
* S&C TRIB5 * 9-23 * 18 * 245.00 * 5394.00 * 5394.27 * 5394.27 *
5394.40 * 0.027964 * 2.93 * 83.70 * 313.97 * 1.00 *
* S&C TRIB5 * 9-23 * 17 * 245.00 * 5390.00 * 5391.06 *
*****

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5391.07	*	0.000395	*	0.79	*	311.58	*	344.88	*	0.15	*			
* S&C TRIB5	*	* 9-23		* 16				* 245.00	*	* 5390.00	*	* 5390.40	*	* 5390.31
5390.49	*	0.011965	*	2.42	*	101.05	*	267.86	*	0.70	*			
* S&C TRIB5	*	* 9-23		* 15				* 299.00	*	* 5383.00	*	* 5384.17	*	* 5384.13
5384.36	*	0.018612	*	3.51	*	85.18	*	180.15	*	0.90	*			
* S&C TRIB5	*	* 9-23		* 14				* 239.00	*	* 5370.00	*	* 5371.76	*	* 5371.70
5372.55	*	0.016801	*	7.16	*	33.38	*	19.01	*	0.95	*			
* S&C TRIB5	*	* 9-23		* 13				* 239.00	*	* 5359.50	*	* 5360.35	*	* 5360.35
5360.59	*	0.023174	*	3.92	*	60.99	*	127.29	*	1.00	*			
* S&C TRIB5	*	* 9-23		* 12				* 412.00	*	* 5345.00	*	* 5347.18	*	* 5346.92
5347.46	*	0.009636	*	4.26	*	96.80	*	90.35	*	0.72	*			
* S&C TRIB5	*	* 9-23		* 11				* 412.00	*	* 5339.00	*	* 5340.26	*	* 5340.26
5340.70	*	0.020602	*	5.31	*	77.66	*	91.55	*	1.02	*			
* S&C TRIB5	*	* 9-23		* 9				* 576.00	*	* 5314.00	*	* 5315.62	*	* 5315.62
5315.95	*	0.022518	*	4.57	*	126.06	*	201.86	*	1.02	*			
* S&C TRIB4	*	* 40-52		* 52				* 166.00	*	* 5406.00	*	* 5406.29	*	* 5406.24
5406.37	*	0.015528	*	2.23	*	74.45	*	270.98	*	0.75	*			
* S&C TRIB4	*	* 40-52		* 51				* 166.00	*	* 5400.00	*	* 5401.16	*	* 5400.91
5401.25	*	0.006944	*	2.34	*	70.89	*	128.97	*	0.56	*			
* S&C TRIB4	*	* 40-52		* 50				* 201.00	*	* 5396.00	*	* 5396.50	*	* 5396.40
5396.62	*	0.012251	*	2.74	*	73.38	*	164.40	*	0.72	*			
* S&C TRIB4	*	* 40-52		* 40				* 201.00	*	* 5388.00	*	* 5388.82	*	* 5388.82
5389.12	*	0.020010	*	4.40	*	45.66	*	71.93	*	0.97	*			
* S&C TRIB3	*	* 39-45		* 45				* 744.00	*	* 5408.00	*	* 5408.87	*	* 5408.87
5409.27	*	0.019589	*	5.10	*	145.78	*	171.83	*	0.98	*			
* S&C TRIB3	*	* 39-45		* 44				* 744.00	*	* 5404.00	*	* 5405.74	*	*
5405.91	*	0.004690	*	3.29	*	225.99	*	168.89	*	0.50	*			
* S&C TRIB3	*	* 39-45		* 43				* 744.00	*	* 5400.00	*	* 5402.07	*	* 5402.07
5402.52	*	0.019362	*	5.38	*	138.26	*	154.59	*	1.00	*			
* S&C TRIB3	*	* 39-45		* 42				* 944.00	*	* 5396.00	*	* 5396.96	*	*
5397.07	*	0.004675	*	2.73	*	346.08	*	374.13	*	0.50	*			
* S&C TRIB3	*	* 39-45		* 41				* 944.00	*	* 5391.00	*	* 5394.59	*	* 5393.35
5394.82	*	0.005303	*	3.84	*	245.93	*	133.39	*	0.50	*			
* S&C TRIB3	*	* 39-45		* 39				* 944.00	*	* 5390.00	*	* 5391.51	*	* 5391.51
5391.98	*	0.020969	*	5.51	*	171.45	*	185.55	*	1.01	*			

Profile Output Table - Standard Table 2

* River	* Reach	* River Sta	* E.G. Elev	* W.S. Elev	* Vel Head	* Frctn Loss	* C							
& E Loss	Q Left	Q Channel	Q Right	Top Width	(ft)	(ft)	(ft)	(ft)						
(ft)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)							

* S&C TRIB1	* 1-4	* 4	* 5312.37	* 5312.14	* 0.23	* 3.00	*							
0.05	* 2680.00	*	* 1048.56	*	*	*	*							
* S&C TRIB1	* 1-4	* 3	* 5309.32	* 5309.25	* 0.07	* 0.65	*							
0.00	* 2680.00	*	* 952.14	*	*	*	*							
* S&C TRIB1	* 1-4	* 2	* 5308.67	* 5308.59	* 0.08	* 3.19	*							
0.04	* 2846.00	*	* 687.83	*	*	*	*							
* S&C TRIB1	* 1-4	* 1	* 5305.45	* 5305.00	* 0.45	*	*							
*	* 3097.00	*	* 664.36	*	*	*	*							
* S&C TRIB2	* 5-38	* 38	* 5381.37	* 5380.66	* 0.70	* 9.19	*							
0.01	* 1152.00	*	* 105.02	*	*	*	*							
* S&C TRIB2	* 5-38	* 37	* 5372.16	* 5371.50	* 0.67	* 9.00	*							
0.05	* 1475.00	*	* 170.23	*	*	*	*							
* S&C TRIB2	* 5-38	* 36	* 5362.93	* 5361.76	* 1.17	* 4.50	*							
0.20	* 2157.00	*	* 87.56	*	*	*	*							
* S&C TRIB2	* 5-38	* 35	* 5358.23	* 5357.73	* 0.50	* 4.09	*							
0.10	* 2157.00	*	* 142.36	*	*	*	*							
* S&C TRIB2	* 5-38	* 34	* 5354.04	* 5352.57	* 1.47	* 7.61	*							
0.15	* 2157.00	*	* 75.70	*	*	*	*							
* S&C TRIB2	* 5-38	* 33	* 5345.91	* 5344.94	* 0.97	* 8.00	*							
0.06	* 1833.00	*	* 122.57	*	*	*	*							
* S&C TRIB2	* 5-38	* 32	* 5337.06	* 5336.31	* 0.75	* 5.38	*							
0.09	* 1833.00	*	* 181.87	*	*	*	*							
* S&C TRIB2	* 5-38	* 31	* 5327.92	* 5327.48	* 0.44	* 3.67	*							
0.11	* 1833.00	*	* 394.11	*	*	*	*							
* S&C TRIB2	* 5-38	* 30	* 5319.87	* 5319.79	* 0.08	* 5.27	*							
0.01	* 1895.00	*	* 715.51	*	*	*	*							
* S&C TRIB2	* 5-38	* 6	* 5314.59	* 5314.44	* 0.15	* 1.48	*							
0.03	* 1963.00	*	* 935.71	*	*	*	*							

* S&C TRIB2	* 5-38	* 5	* 5313.08	* 5313.03	* 0.05	* 0.70
0.02 *	* 2126.00	* *	* 962.10	* *	* *	* *
* S&C TRIB5	* 9-23	* 23	* 5410.29	* 5410.26	* 0.03	* 3.61
0.01 *	* 142.00	* *	* 230.40	* *	* *	* *
* S&C TRIB5	* 9-23	* 22	* 5406.67	* 5406.55	* 0.12	* 2.01
0.03 *	* 142.00	* *	* 115.82	* *	* *	* *
* S&C TRIB5	* 9-23	* 21	* 5404.63	* 5404.61	* 0.02	* 2.40
0.01 *	* 142.00	* *	* 238.86	* *	* *	* *
* S&C TRIB5	* 9-23	* 20	* 5402.23	* 5402.09	* 0.13	* 3.10
0.03 *	* 245.00	* *	* 373.01	* *	* *	* *
* S&C TRIB5	* 9-23	* 19	* 5396.61	* 5396.59	* 0.02	* 2.19
0.01 *	* 245.00	* *	* 406.73	* *	* *	* *
* S&C TRIB5	* 9-23	* 18	* 5394.40	* 5394.27	* 0.13	* 0.63
0.04 *	* 245.00	* *	* 313.97	* *	* *	* *
* S&C TRIB5	* 9-23	* 17	* 5391.07	* 5391.06	* 0.01	* 0.57
0.01 *	* 245.00	* *	* 344.88	* *	* *	* *
* S&C TRIB5	* 9-23	* 16	* 5390.49	* 5390.40	* 0.09	* 6.12
0.01 *	* 245.00	* *	* 267.86	* *	* *	* *
* S&C TRIB5	* 9-23	* 15	* 5384.36	* 5384.17	* 0.19	* 11.76
0.06 *	* 299.00	* *	* 180.15	* *	* *	* *
* S&C TRIB5	* 9-23	* 14	* 5372.55	* 5371.76	* 0.80	* 11.80
0.17 *	* 239.00	* *	* 19.01	* *	* *	* *
* S&C TRIB5	* 9-23	* 13	* 5360.59	* 5360.35	* 0.24	* 7.01
0.00 *	* 239.00	* *	* 127.29	* *	* *	* *
* S&C TRIB5	* 9-23	* 12	* 5347.46	* 5347.18	* 0.28	* 6.75
0.02 *	* 412.00	* *	* 90.35	* *	* *	* *
* S&C TRIB5	* 9-23	* 11	* 5340.70	* 5340.26	* 0.44	* 16.27
0.03 *	* 412.00	* *	* 91.55	* *	* *	* *
* S&C TRIB5	* 9-23	* 9	* 5315.95	* 5315.62	* 0.32	* 3.03
0.03 *	* 576.00	* *	* 201.86	* *	* *	* *
* S&C TRIB4	* 40-52	* 52	* 5406.37	* 5406.29	* 0.08	* 5.12
0.00 *	* 166.00	* *	* 270.98	* *	* *	* *
* S&C TRIB4	* 40-52	* 51	* 5401.25	* 5401.16	* 0.09	* 4.63
0.00 *	* 166.00	* *	* 128.97	* *	* *	* *
* S&C TRIB4	* 40-52	* 50	* 5396.62	* 5396.50	* 0.12	* 7.47
0.02 *	* 201.00	* *	* 164.40	* *	* *	* *
* S&C TRIB4	* 40-52	* 40	* 5389.12	* 5388.82	* 0.30	* 3.20
0.04 *	* 201.00	* *	* 71.93	* *	* *	* *
* S&C TRIB3	* 39-45	* 45	* 5409.27	* 5408.87	* 0.40	* 2.54
0.07 *	* 744.00	* *	* 171.83	* *	* *	* *
* S&C TRIB3	* 39-45	* 44	* 5405.91	* 5405.74	* 0.17	* 3.36
0.03 *	* 744.00	* *	* 168.89	* *	* *	* *
* S&C TRIB3	* 39-45	* 43	* 5402.52	* 5402.07	* 0.45	* 4.66
0.10 *	* 744.00	* *	* 154.59	* *	* *	* *
* S&C TRIB3	* 39-45	* 42	* 5397.07	* 5396.96	* 0.12	* 2.24
0.01 *	* 944.00	* *	* 374.13	* *	* *	* *
* S&C TRIB3	* 39-45	* 41	* 5394.82	* 5394.59	* 0.23	* 2.81
0.02 *	* 944.00	* *	* 133.39	* *	* *	* *
* S&C TRIB3	* 39-45	* 39	* 5391.98	* 5391.51	* 0.47	* 3.52
0.02 *	* 944.00	* *	* 185.55	* *	* *	* *

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : south¢

River: S&C TRIB3 Reach: 39-45 RS: 45 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C_TRIB3 Reach: 39-45 RS: 44 Profile: 1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance)
is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and
previous cross section. This may indicate
the need for additional cross sections.

River: S&C_TRIB3 Reach: 39-45 RS: 43 Profile: 1
Warning - The energy equation could not be balanced within the specified number of
iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The 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.

River: S&C_TRIB3 Reach: 39-45 RS: 42 Profile: 1
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.

River: S&C_TRIB3 Reach: 39-45 RS: 41 Profile: 1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance)
is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and
previous cross section. This may indicate
the need for additional cross sections.

River: S&C_TRIB3 Reach: 39-45 RS: 39 Profile: 1
Warning - The energy equation could not be balanced within the specified number of
iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - Divided flow computed for this cross-section.
Warning - The 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.

River: S&C_TRIB4 Reach: 40-52 RS: 52 Profile: 1
Warning - Divided flow computed for this cross-section.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance)
is less than 0.7 or greater than 1.4.
This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and
previous cross section. This may indicate
the need for additional cross sections.

River: S&C_TRIB4 Reach: 40-52 RS: 51 Profile: 1
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.

River: S&C_TRIB4 Reach: 40-52 RS: 50 Profile: 1
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.

River: S&C_TRIB4 Reach: 40-52 RS: 40 Profile: 1
Warning - The energy equation could not be balanced within the specified number of
iterations. The program used critical
depth for the water surface and continued on with the calculations.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance)
is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

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.

River: S&C TRIB5 Reach: 9-23 RS: 23 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: S&C TRIB5 Reach: 9-23 RS: 22 Profile: 1

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.

River: S&C TRIB5 Reach: 9-23 RS: 21 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

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.

River: S&C TRIB5 Reach: 9-23 RS: 20 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C TRIB5 Reach: 9-23 RS: 19 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: S&C TRIB5 Reach: 9-23 RS: 18 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C_TRIB5 Reach: 9-23 RS: 17 Profile: 1

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.

River: S&C_TRIB5 Reach: 9-23 RS: 16 Profile: 1

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.

River: S&C_TRIB5 Reach: 9-23 RS: 15 Profile: 1

Warning - Divided flow computed for this cross-section.

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

sections.

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

the need for additional cross sections.

River: S&C_TRIB5 Reach: 9-23 RS: 14 Profile: 1

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

sections.

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

the need for additional cross sections.

River: S&C_TRIB5 Reach: 9-23 RS: 13 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C_TRIB5 Reach: 9-23 RS: 12 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: S&C_TRIB5 Reach: 9-23 RS: 11 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical

depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C_TRIB5 Reach: 9-23 RS: 9 Profile: 1

Warning - The energy equation could not be balanced within the specified number of

iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C TRIB2 Reach: 5-38 RS: 38 Profile: 1

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.

River: S&C TRIB2 Reach: 5-38 RS: 37 Profile: 1

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 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.

River: S&C TRIB2 Reach: 5-38 RS: 36 Profile: 1

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.

River: S&C TRIB2 Reach: 5-38 RS: 35 Profile: 1

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.

River: S&C TRIB2 Reach: 5-38 RS: 34 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

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

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

Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: S&C TRIB2 Reach: 5-38 RS: 33 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C_TRIB2 Reach: 5-38 RS: 32 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C_TRIB2 Reach: 5-38 RS: 31 Profile: 1

Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning - Divided flow computed for this cross-section.

Warning - The 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.

River: S&C_TRIB2 Reach: 5-38 RS: 30 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: S&C_TRIB2 Reach: 5-38 RS: 6 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: S&C_TRIB2 Reach: 5-38 RS: 5 Profile: 1

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.

River: S&C_TRIB1 Reach: 1-4 RS: 4 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: S&C_TRIB1 Reach: 1-4 RS: 3 Profile: 1

Warning - Divided flow computed for this cross-section.

River: S&C TRIB1 Reach: 1-4 RS: 2 Profile: 1

Warning - Divided flow computed for this cross-section.

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: S&C TRIB1 Reach: 1-4 RS: 1 Profile: 1

Warning - Divided flow computed for this cross-section.