Flood Control District of Maricopa County, Arizona
FLOODPLAIN DELINEATION STUDY
OF

CLINE CREEK TRIBUTARIES

FCD 2005C024, WORK ASSIGNMENT 2

TECHNICAL DATA NOTEBOOK
Volume 1

Submitted by:

JE Fuller / Hydrology and Geomorphology, Inc.
8400 S. Kyrene Road, Suite 201
Tempe, Arizona 85284
(480) 752-2124

on behalf of:

Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, AZ 85009
(602) 506-1501

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29325
BRIAN R.
ISERMAN
Date Signed 4-17-07
ARIZONA U.S.A.

April, 2007

Flood Control District
of Maricopa County

INTEROFFICE MEMORANDUM

Date: April 24, 2007

To: Timothy S. Phillips, P.E., Chief Engineer and General Manager

From: Richard P. Harris, P.E., CFM

Subject: Cline Creek Tributaries Re-delineation, Floodplain Study and Maps

The floodplain study for the Cline Creek Tributaries is ready for use as the best available technical information. The study will be sent to FEMA for review and processing within two weeks from the date of this memo. The background on the study includes the following:

New 2' contour mapping was done for the Adobe Dam-Desert Hills ADMP. During the ADMP study, the team realized that the mapping used in the 1990 study of Cline Creek and Cline Creek Tributaries had issues and therefore the associated delineations needed to be looked at again. The re-delineation of Cline Creek as well as upper skunk creek was done as part of the ADMP. As the ADMP study came to a close, the study team recommended re-delineation of Cline Creek Tributaries based on the new contour mapping. The Cline Creek re-delineation study was conducted through an On-call contract with JE Fuller.

A memo at the end of the TDN appendix B.4 shows the results of the new delineation. Because of this re-delineation, some homes were removed from the floodway as well as the floodplain. An invitation was mailed to all residences affected by the delineation and a public meeting was held on March 15th to show the results. A copy of the letter and the sign in sheet is included in the TDN. Appendix B.6

Please concur and authorize below the use of this new study.

Project Manager Date: 04/24/07	Timothy S. Phillips, P.E. Date: Chief Engineer and General Manager
Flood Delineation Branch Manager Date: 4/27/07	Assistant Project Manager Date:
Hydrology/Hydraulics Branch Manager Date: 5.14.07	Assistant Project Manager Date:
Regulatory Division Manager Date: 5-15-07	Assistant Project Manager Date:
PPM Division Manager Date:	Assistant Project Manager Date:
File Copies: 1. _____ 2. _____	YES ☒ GIS Posted (Pending Floodplain Only) Date: 3/10/07 N/A Active Permits Pending ☐ No County Permits in this area Date: 4/25/07

2801 West Durango Street Phoenix, Arizona 85009 Phone: 602-506-1501 Fax: 602-506-4601

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TABLE OF CONTENTS
TECHNICAL DATA NOTEBOOK

VOLUME 1

SECTION 1: INTRODUCTION 1-1

1.1 Purpose of study 1-1
1.2 Authority for study 1-1
1.3 Location of study reach 1-1
1.4 Methodology 1-4
1.5 Study Results 1-4

SECTION 2: ADWR/FEMA Forms and Local Government/ADWR Abstracts 2-1

2.1 Study Documentation Abstract for FEMA Submittals 2-1
2.2 FEMA Forms 2-2

SECTION 3: SURVEY AND MAPPING INFORMATION 3-1

3.1 Field Survey Information 3-1
3.2 Mapping 3-4

SECTION 4: HYDROLOGY 4-1

4.1 Discharge Rates 4-1
4.2 References 4-1

SECTION 5: HYDRAULIC ANALYSIS 5-1

5.1 Method Description 5-1
5.2 Work Study Maps 5-1
5.3 Parameter Estimation 5-8
5.4 Cross-Section Descriptions 5-9
5.5 Modeling Considerations 5-9
5.6 Floodway Modeling 5-12
5.7 Special Problems Encountered During the Study 5-12
5.8 Calibration 5-12
5.9 Final Results 5-13
5.10 References 5-16

SECTION 6: EROSION AND SEDIMENT TRANSPORT 6-1

SECTION 7: DRAFT FIS REPORT DATA 7-1

7.1 Summary of Discharges 7-1
7.2 Floodway Data 7-2
7.3 Annotated Flood Insurance Rate Maps 7-3
7.4 Flood Profiles 7-4

TABLE OF CONTENTS (Continued)
TECHNICAL DATA NOTEBOOK

VOLUME 1

LIST OF FIGURES

Figure 1.3.1 Location Map 1-2
Figure 1.3.2 Vicinity Map 1-3

LIST OF TABLES

Table 4.0 Summary of Discharge Rates 4-1
Table 5.5.4.1 Optimized Lateral Structure Summary Table 5-10
Table 5.5.4.2 Non-Optimized Lateral Structure Summary Table 5-10
Table 5.9.1 Comparison of Computed Water Surface Elevations (Effective vs New) 5-13
HEC-RAS Summary Output Table 5-15

LIST OF APPENDICES

A REFERENCES
- A.1 Data Collection Summery

B GENERAL DOCUMENTATION & CORRESPONDENCE
- B.1 Special Problems Report
- B.2 Contact (Telephone) Reports
- B.3 Meeting Minutes or Reports
- B.4 General Correspondence
- B.5 Contract Documents
- B.6 Public Notification
- B.7 FEMA Correspondence

C SURVEY FIELD NOTES
- C.1 Survey Field Notes for Hydraulic Calculations

D HYDROLOGIC ANALYSIS SUPPORTING DOCUMENTATION

E HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION
- E.1 Roughness Coefficient Determination
- E.2 Cross Section Plots
- E.3 Supplemental Lateral Structure Output Tables
- E.4 Detailed Output (RAS rep file)

F Erosion/Sediment Transport Analyses Supporting Documentation

TABLE OF CONTENTS (Continued)
TECHNICAL DATA NOTEBOOK

VOLUME 1

DISKETTES

Digital data files on CD are located in the front inside cover with a copy of the "readme" file located after this table of contents.

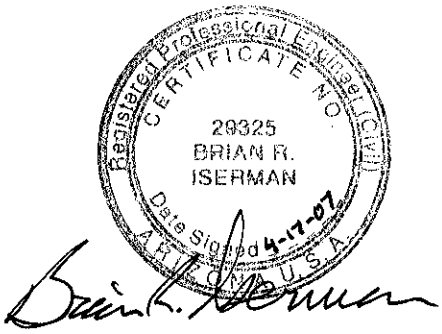
VOLUME 2

EXHIBITS

A. Hydrology Exhibit Maps

B. Hydraulic Exhibit Maps

C. Floodplain Work Study Maps and Annotated FIRM Panels



Floodplain Delineation Study of Cline Creek Tributaries, FCD 2004C025 and 2005C024

Community Name: Maricopa County, Arizona
Date Prepared: April 17, 2007
Study Contractor Name: JE Fuller/Hydrology & Geomorphology, Inc.
8400 S. Kyrene Road, Tempe, AZ 85284
Flooding Source: Cline Creek Tributaries
Disk 1 of 1

The following HECRAS files are included on this disk:

Flow data file:
clinetribs.f01 4/12/2007 12:18 PM
clinetribs.f02 6/30/2006 11:09 AM

Geometry data file:
clinetribs.g01 4/17/2007 5:38 PM

Output data files:
clinetribs.o02 4/17/2007 5:14 PM

Plan data files:
clinetribs.p01 6/30/2006 11:09 AM
clinetribs.p02 4/17/2007 5:38 PM

Project file:
clinetribs.prj 4/17/2007 8:55 PM

Run data files:
clinetribs.r02 4/17/2007 5:14 PM

Report file:
clinetribs.rep 4/17/2007 5:39 PM

The following Effective Study HEC-2 files are included on this disk:

Cc6-fdy.ihw 1/14/2005 10:38 AM
Cc8-fdy.ihw 1/14/2005 10:30 AM
Cx1-fdy.ihw 1/14/2005 10:30 AM
Cx2-fdy.ihw 1/14/2005 10:30 AM
Cx3-fdy.ihw 1/14/2005 10:30 AM
Cx4a-fdy.ihw 1/14/2005 10:30 AM
Cx4b-fdy.ihw 1/14/2005 10:30 AM
Cx5-fdy.ihw 1/14/2005 10:27 AM

SECTION 1: INTRODUCTION

1.1 Purpose of study

This study is a restudy of the effective 100-year floodplain Zone AE of Cline Creek Tributaries. The effective study was performed for the Flood Control District of Maricopa County (FCDMC) by Michael Baker, Jr., Inc. in 1990 under the title *Floodplain Delineation Study of Cline Creek and Tributary Washes, Between Skunk Creek and the Tonto National Forest.* This restudy covers only those water courses that are tributary to Cline Creek. The information presented in this study will be used to update existing Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs). The information will also be used by local and regional planners and floodplain administrators to further promote sound land use practices and floodplain development.

1.2 Authority for study

JE Fuller / Hydrology and Geomorphology, Inc. (JEF) performed this study under contract with the FCDMC. JEF's project manager for this study is Brian R. Iserman, P.E. The contract number is FCD 2005 C024, Work Assignment 2. The FCDMC offices are located at 2801 West Durango Street, Phoenix, AZ 85009 (602) 506-1501. The Project Manager for the FCDMC is Afshin Ahouraiyan.

1.3 Location of study reach

The Cline Creek Tributaries are located in northeastern Maricopa County, Arizona (see Figure 1.3.1 and Figure 1.3.2). This study includes three principal tributaries; including Tributary C6 (1.8 square miles), Tributary C8 (2.6 square miles) and Tributary X5 (0.2 square mile). Tributary C6 has named tributaries that include Tributary X1, Tributary X2, Tributary X3 and Tributaries X4A and X4B.

Figure 1.3.1 Location Map

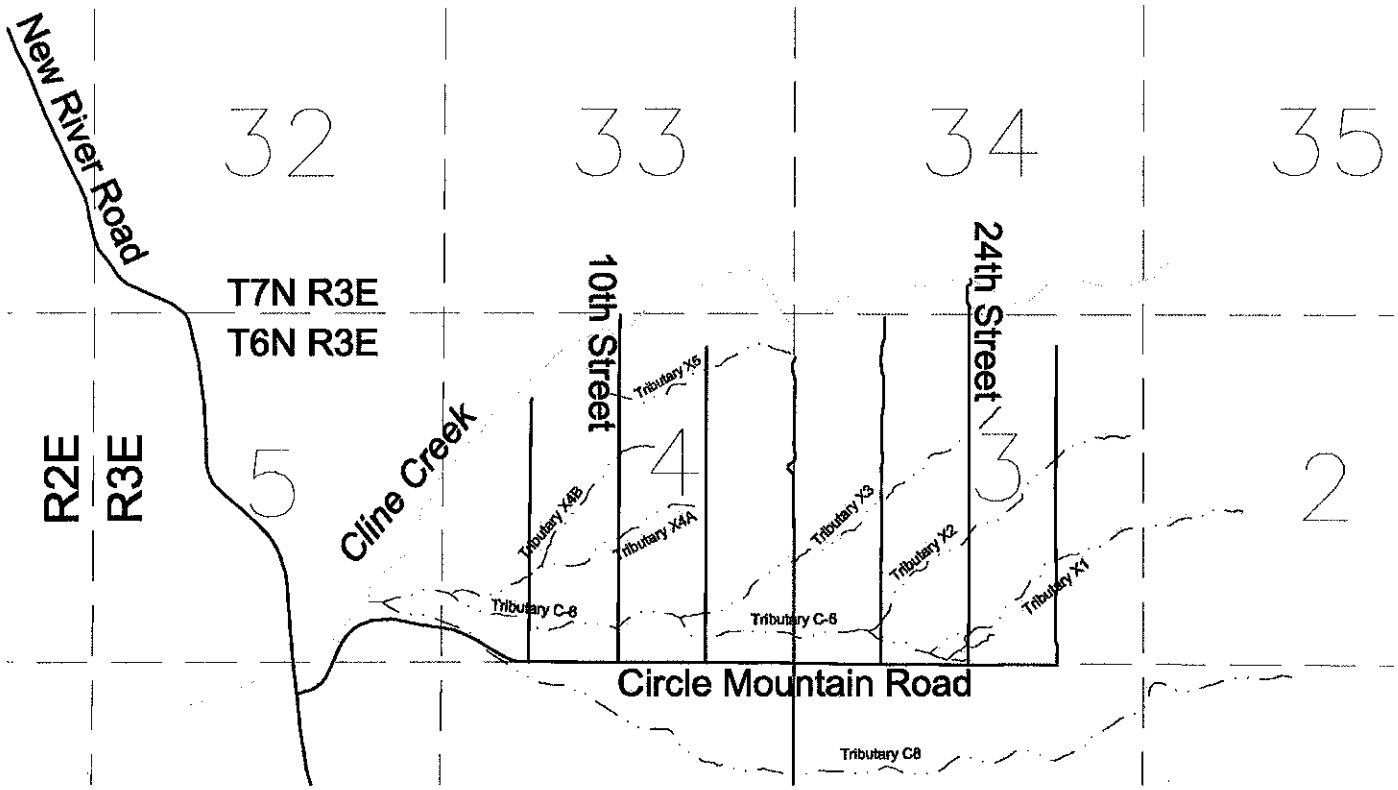
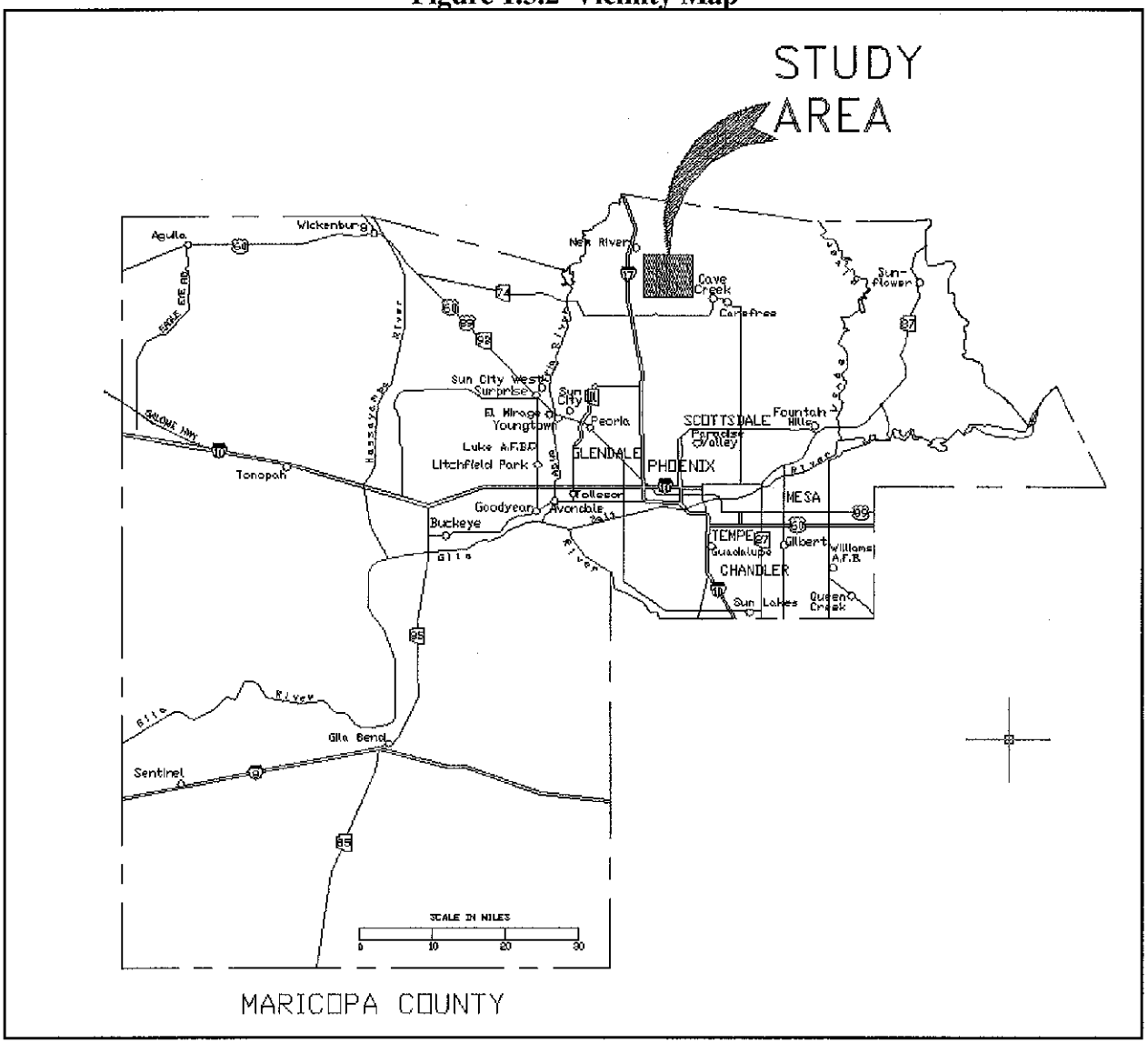


Figure 1.3.2 Vicinity Map



1.4 Methodology

1.4.1 Hydrology

The Cline Creek Tributaries were modeled using the hydrology results reported in the Skunk Creek Watercourse Master Plan, which used the U.S. Army Corp of Engineers computer program HEC-1 to determine the discharge rates along the study reaches.

1.4.2 Hydraulics

The U.S. Army Corp of Engineers computer program, HEC-RAS 3.1.2 (April 2004), was used to perform step-backwater profile calculations to determine detailed 100-year floodplain and floodway limits. Three culverts were modeled using surveyed data that were provided by the FCDMC. Floodplain and floodway limits were drafted using AutoCAD Land Development Desktop 2005. Cross section locations are shown on the work study maps, which are located in Exhibit C, in Volume 2

1.5 Study Results

This study resulted in the new delineation of 9.7 miles of detailed floodplain and floodway along the Cline Creek Tributaries study reaches. The detailed floodplain and floodway delineations for the delineated floodplains are shown in the reduced-scale maps in Section 5 and in large-scale maps contained in Exhibit C, which is located in Volume 2 of this TDN.

SECTION 2: ADWR/FEMA Forms and Local Government/ADWR Abstracts

2.1 Study Documentation Abstract for FEMA Submittals

Study Documentation Abstract For FEMA Submittals	Initial Study	Restudy	CLOMR	LOMR	X Other

Section 2.1: Study Documentation Abstract for FEMA Submittals		
2.1.1	Date Study Accepted	
2.1.2	Study Prime Contractor	JE Fuller / Hydrology and Geomorphology, Inc.
	Contact(s)	Brian R. Iserman, P.E., Jonathan E. Fuller, P.E.
	Address	8400 S. Kyrene Rd., Suite 201 Tempe, AZ 85284
	Phone	(480) 752-2124
	Internal Reference Number	
2.1.2	Study Sub-Contractor	
	Contact(s)	
	Address	
	Phone	
	Internal Reference Number	
2.1.2	Sub Study Sub-Contractor	
	Contact(s)	
	Address	
	Phone	
	Internal Reference Number	
2.1.3	FEMA Technical Review Contractor	Michael Baker, Jr. Corp.
	Contact(s)	Mr. Mounir Boudjemaa
	Address	3600 Eisenhower Ave. Suite 600 Alexandria, VA 22304
	Phone	703-960-8800
	Internal Reference Number	
2.1.4	FEMA Regional Reviewer	Michael Baker, Jr. Corp.
	Phone	(703) 960-8800
2.1.5	State Technical Reviewer	Arizona Department of Water Resources
	Phone	(602) 771-8500
2.1.6	Local Technical Reviewer	Flood Control District of Maricopa County (FCDMC)
	Phone	(602) 506-1501
2.1.7	Reach Description	Cline Creek Tributaries
2.1.8	USGS Quad Sheet(s) with original photo date & latest photo revision date	Daisy Mountain, Arizona 1962, field checked in 1964
2.1.9	Unique Conditions and Problems	
2.1.10	Coordination of Peak Discharges (Agency, Date, Comments)	Skunk Creek Watercourse Master Plan Tetra Tech Inc., August 2001

2.2 FEMA Forms

FEDERAL EMERGENCY MANAGEMENT AGENCY

O.M.B No. 3067-0148
Expires September 30, 2005

OVERVIEW & CONCURRENCE FORM

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM FEMA

This request is for a (check one):

☐ CLOMR: A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☒ LOMR: A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See Parts 60 & 65 of the NFIP Regulations.)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
040037	Maricopa County, Arizona and Unincorporated Areas	AZ	04013C	0390 G	9/30/2005
040037	Maricopa County, Arizona and Unincorporated Areas	AZ	04013C	0395 H	9/30/2005

2. Flooding Source: Cline Creek

3. Project Name/Identifier: Floodplain Delineation Study of Cline Creek Tributaries

4. FEMA zone designations affected: AE, X (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☒ Improved Methodology/Data

☒ Regulatory Floodway Revision ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following types of flooding and structures (check all that apply)

Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)

☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

Structures: ☐ Channelization ☐ Levee/Floodwall ☒ Bridge/Culvert

☐ Dam ☐ Fill ☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☐ Yes Fee amount: $_____

☒ No, Attach Explanation

[illegible]is a general map update prompted by known errors/discrepancies in the effective model. The effective study was performed in 1990.

[illegible]e see the DHS-FEMA Web site at http://www.fema.gov/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Richard Harris	Company: Flood Control District of Maricopa County	
Mailing Address: 2801 W. Durango Road Phoenix, Arizona 85009	Daytime Telephone No.: 602-506-1501	Fax No.: 602-506-4601
	E-Mail Address: rph@mail.maricopa.gov	
Signature of Requester (required): Richard P. Harris		Date: 04/20/07

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Timothy S. Phillips, P.E., Chief Engineer & General Manager		Telephone No.:602-506-1501
[illegible]munity Name: Maricopa County, Arizona	Community Official's Signature (required):	Date: 5/15/07

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Brian R. Iserman	License No.: 29325	Expiration Date: September 30, 2007
Company Name: JE Fuller/Hydrology & Geomorphology, Inc.	Telephone No.: 480-222-5713	Fax No.: 480-839-2193
Signature: Brian R. Iserman		Date: 4/17/07

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Registered Professional Engineer (Civil) CERTIFICATE NO. 29325 BRIAN R. ISERMAN Date Signed 4-17-07 ARIZONA U.S.A.

Brian R. Iserman

Seal (Optional)

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. *You are not required to respond to this* collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Cline Creek Tributaries
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit	See attached annotated FIRMs			
Upstream Limit	See attached annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/mit/tsd/frm_soft.htm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name: Cc6-fdy.ih2	Floodway File Name: Cc6-fdy.ih2
Duplicate Effective Model*	Natural File Name: Cc8-fdy.ih2	Floodway File Name: Cc8-fdy.ih2
Duplicate Effective Model*	Natural File Name: Cx1-fdy.ih2	Floodway File Name: Cx1-fdy.ih2
Duplicate Effective Model*	Natural File Name: Cx2-fdy.ih2	Floodway File Name: Cx2-fdy.ih2
Duplicate Effective Model*	Natural File Name: Cx3-fdy.ih2	Floodway File Name: Cx3-fdy.ih2
Duplicate Effective Model*	Natural File Name: Cx4a-fdy.ih2	Floodway File Name: Cx4a-fdy.ih2
Duplicate Effective Model*	Natural File Name: Cx4b-fdy.ih2	Floodway File Name: Cx4b-fdy.ih2
Duplicate Effective Model*	Natural File Name: Cx5-fdy.ih2	Floodway File Name: Cx5-fdy.ih2
Corrected Effective Model*	Natural File Name:	Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:
Other - (attach description)	Natural File Name:	Floodway File Name:

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:

- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

FEDERAL EMERGENCY MANAGEMENT AGENCY

O.M.B. No. 3067-0148
Expires September 30, 2005

RIVERINE STRUCTURES FORM

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Cline Creek Tributaries
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam ..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport ..... complete Section F (if required)

Description Of Structure

1. **Name of Structure: Arch Culverts on Tributary C8 at Circle Mountain Road**

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Circle Mountain Road over Tributary C8 in Maricopa County, Arizona

Downstream Limit/Cross Section: 0.334

Upstream Limit/Cross Section: 0.379

2. **Name of Structure: Box Culverts on Tributary C6 at 12th Street**

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: 12th Street over Tributary C6 in Maricopa County, Arizona

Downstream Limit/Cross Section: 0.747

Upstream Limit/Cross Section: 0.759

3. **Name of Structure: CMP Culverts on Tributary C8 at 12th Street**

Type (check one) ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: 12th Street over Tributary C8 in Maricopa County, Arizona

Downstream Limit/Cross Section: 0.805

Upstream Limit/Cross Section: 0.811

C. BRIDGE/CULVERT

Flooding Source: Cline Creek Tributaries

Name of Structure: Arch Culverts on Tributary C8 at Circle Mountain Road

1. This revision reflects (check one):

   ☒ New bridge/culvert not modeled in the FIS
   ☐ Modified bridge/culvert previously modeled in the FIS
   ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS Multiple Opening
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

   ☒ Dimensions (height, width, span, radius, length)
   ☐ Shape (culverts only)
   ☒ Material
   ☐ Beveling or Rounding
   ☒ Wing Wall Angle
   ☒ Skew Angle
   ☒ Distances Between Cross Sections
   ☐ Erosion Protection
   ☒ Low Chord Elevations – Upstream and Downstream
   ☒ Top of Road Elevations – Upstream and Downstream
   ☒ Structure Invert Elevations – Upstream and Downstream
   ☒ Stream Invert Elevations – Upstream and Downstream
   ☒ Cross-Section Locations

4. Sediment Transport Considerations

   Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: Cline Creek Tributaries

Name of Structure: Box Culverts on Tributary C6 at 12th Street

1. This revision reflects (check one):

   ☒ New bridge/culvert not modeled in the FIS
   ☐ Modified bridge/culvert previously modeled in the FIS
   ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS Multiple Opening
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

   ☒ Dimensions (height, width, span, radius, length)
   ☒ Shape (culverts only)
   ☒ Material
   ☐ Beveling or Rounding
   ☒ Wing Wall Angle
   ☒ Skew Angle
   ☒ Distances Between Cross Sections
   ☐ Erosion Protection
   ☐ Low Chord Elevations – Upstream and Downstream
   ☒ Top of Road Elevations – Upstream and Downstream
   ☒ Structure Invert Elevations – Upstream and Downstream
   ☒ Stream Invert Elevations – Upstream and Downstream
   ☒ Cross-Section Locations

4. Sediment Transport Considerations

   Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: Cline Creek Tributaries

Name of Structure: CMP Culverts on Tributary C8 at 12th Street

1. This revision reflects (check one):

   ☒ New bridge/culvert not modeled in the FIS
   ☐ Modified bridge/culvert previously modeled in the FIS
   ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS Multiple Opening
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

   ☒ Dimensions (height, width, span, radius, length)
   ☒ Shape (culverts only)
   ☒ Material
   ☐ Beveling or Rounding
   ☐ Wing Wall Angle
   ☒ Skew Angle
   ☒ Distances Between Cross Sections
   ☐ Erosion Protection
   ☐ Low Chord Elevations – Upstream and Downstream
   ☒ Top of Road Elevations – Upstream and Downstream
   ☒ Structure Invert Elevations – Upstream and Downstream
   ☒ Stream Invert Elevations – Upstream and Downstream
   ☒ Cross-Section Locations

4. Sediment Transport Considerations

   Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why sediment transport was not considered.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Cline Creek Tributaries X1
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cx1-fdy.ih2	Floodway File Name: Cx1-fdy.ih2	
Corrected Effective Model*	Natural File Name:	Floodway File Name:	
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj	
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
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PAPERWORK REDUCTION ACT

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Flooding Source: Cline Creek Tributaries X2
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

3. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cx2-fdy.ih2	Floodway File Name: Cx2-fdy.ih2	
Corrected Effective Model*	Natural File Name:	Floodway File Name:	
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj	
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

4. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
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Flooding Source: Cline Creek Tributaries X3
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

5. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cx3-fdy.ih2	Floodway File Name: Cx3-fdy.ih2	
Corrected Effective Model*	Natural File Name:	Floodway File Name:	
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj	
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

6. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK REDUCTION ACT

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Flooding Source: Cline Creek Tributaries X4A
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

7. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cx4a-fdy.ih2	Floodway File Name: Cx4a-fdy.ih2	
Corrected Effective Model*	Natural File Name:	Floodway File Name:	
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj	
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

8. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK REDUCTION ACT

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Flooding Source: Cline Creek Tributaries X4B
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

9. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cx4b-fdy.ih2	Floodway File Name: Cx4b-fdy.ih2	
Corrected Effective Model*	Natural File Name:	Floodway File Name:	
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj	
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

10. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

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Flooding Source: Cline Creek Tributaries X5
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

11. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Water-Surface Elevations (ft.) Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cx5-fdy.ih2	Floodway File Name: Cx5-fdy.ih2	
Corrected Effective Model*	Natural File Name:	Floodway File Name:	
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj	
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) -- for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

12. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

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Flooding Source: Cline Creek Tributaries C6
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

13. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cc6-fdy.ih2	Floodway File Name: Cc6-fdy.ih2	
Corrected Effective Model*	Natural File Name:	Floodway File Name:	
Existing or Pre-Project Conditions Model	Natural File Name: clinetribs.prj	Floodway File Name: clinetribs.prj	
Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

14. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Cline Creek Tributaries C8
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

15. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	See Attached Annotated FIRMs			
Upstream Limit	See Attached Annotated FIRMs			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

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HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted ☒ Diskette Submitted

	Natural Run	Floodway Run	Datum
Duplicate Effective Model*	Natural File Name: Cc8-fdy.ih2	Floodway File Name: Cc8-fdy.ih2	
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Revised or Post-Project Conditions Model	Natural File Name:	Floodway File Name:	
Other - (attach description)	Natural File Name:	Floodway File Name:	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by DHS-FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).
Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

☒ Annotated FIRM and/or FBFM Included ☒ Digital Mapping (GIS/CADD) Data Submitted (Recommended)

D. COMMON REGULATORY REQUIREMENTS*

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:

- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot.

16. Does the request involve the placement or proposed placement of fill? ☐ Yes ☐ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR/CLOMR requests, is the regulatory floodway being revised? ☒ Yes ☐ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR/CLOMR requests, does this request have the potential to impact an endangered species? ☐ Yes ☒ No

If Yes, please submit documentation from the community to show that they have complied with Sections 9 and 10 of the Endangered Species Act (ESA). Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA.

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA.

5. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☒ Yes ☐ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B No. 1660-0016
Expires: August 31, 2007

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Cline Creek Tributaries X1, X2, X3, X4A, X4B, X5, C6, C8
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam ..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport ..... complete Section F (if required)

Description Of Structure

1. **Name of Structure: Arch Culverts on Tributary C8 at Circle Mountain Road**

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Circle Mountain Road over Cline Creek Tributary C8 in Maricopoa County, Arizona

Downstream Limit/Cross Section: 0.334

Upstream Limit/Cross Section: 0.379

2. **Name of Structure: Box Culverts on Cline Creek Tributary C6 at 12th Street**

Type (check one): ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: 12th Street over Tributary C6 at 12th Street

Downstream Limit/Cross Section: 0.747

Upstream Limit/Cross Section: 0.759

3. **Name of Structure: HECMP Culverts on Tributary C8 at 12th Street**

Type (check one) ☐ Channelization ☒ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: 12th Street over Cline Creek Tributary C8 in Maricopa County, Arizona

Downstream Limit/Cross Section: 0.805

Upstream Limit/Cross Section: 0.811

NOTE: For more structures, attach additional pages as needed.

C. BRIDGE/CULVERT

Flooding Source: Cline Creek Tributary C6

Name of Structure: Box Culverts on Tributary C6 at 12 Street

1. This revision reflects (check one):

☒ New bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☒ Shape (culverts only)
☒ Material
☐ Beveling or Rounding
☒ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections
☐ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: Cline Creek Tributary C8

Name of Structure: Arch Culverts on Tributary C8 at Circle Mountain Road

3. This revision reflects (check one):

☒ New bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☒ Shape (culverts only)
☒ Material
☐ Beveling or Rounding
☒ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections
☐ Erosion Protection
☒ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: Cline Creek Tributary C8

Name of Structure: Arch Culverts on Tributary C8 at 12th Street

5. This revision reflects (check one):

☒ New bridge/culvert not modeled in the FIS
☐ Modified bridge/culvert previously modeled in the FIS
☐ New analysis of bridge/culvert previously modeled in the FIS

6. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

☒ Dimensions (height, width, span, radius, length)
☒ Shape (culverts only)
☒ Material
☐ Beveling or Rounding
☐ Wing Wall Angle
☒ Skew Angle
☒ Distances Between Cross Sections
☐ Erosion Protection
☐ Low Chord Elevations – Upstream and Downstream
☒ Top of Road Elevations – Upstream and Downstream
☒ Structure Invert Elevations – Upstream and Downstream
☒ Stream Invert Elevations – Upstream and Downstream
☒ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

SECTION 3: SURVEY AND MAPPING INFORMATION

3.1 Field Survey Information

SURVEY SUMMARY

RBF Consulting and A-TEAM Professional Associates performed horizontal and vertical control surveys as well as airborne GPS positioning for the topographic mapping for this project. Field surveys were carried out between the dates of March 2002 and June 2002. RBF field crews worked under the direct supervision of Dan Mardock, RLS. A-TEAM field crews worked under direct supervision of Stoney Wahl, RLS. The RBF project number for this project is 45-101145.002. Additional field surveys were conducted in May 2005 and June 2006 for the purpose of as-builting structures modeled in the hydraulic analysis. Additional field surveys were also conducted during December, 2006 to verify conditions at two recently-built homes and at an existing home. The structure field surveys and follow-up home surveys were performed under the direct supervision of John Stock, RLS of the FCDMC and were conducted in the same horizontal and vertical datum as the topographic mapping discussed below. Structure field survey notes and data are included in Appendix C along with the attendant as-built drawing.

The fieldwork for the topographic mapping for this project was divided into two geographical sections. RBF Consulting surveyed the area south from the Tonto National Forest to approximately Carefree Highway, and east of I-17 to Cave Creek. A-TEAM surveyed the area from Carefree Highway south to Adobe Dam and west of I-17.

The survey data in this project is presented in the North American Datum of 1983 (NAD 83), 1992 epoch Central Zone of Arizona State Plane Coordinate System. Elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).

This survey included a primary ground control network and "blind panel" quality control points. The primary network consisted of 47 horizontal and vertical points to be used for photogrametric control. The quality control survey consisted of 72 blind panel control points used to independently verify the mapping. This was accomplished with the use of GPS static and Real Time Kinematic techniques. The photogrammetric ground control was minimized with the use of airborne GPS techniques.

Horizontal control

In the area encompassed by this project survey teams recovered 10 GDACS control monuments with coordinates published by the Maricopa County Department of Transportation (MCDOT). These points were observed by MCDOT between 1998 and 2000. This was a part of their Geodetic Densification and Cadastral Survey (GDACS) project. The horizontal positions of these monuments have been accepted by the National Geodetic Survey (NGS) and have been given a horizontal order of B. The published values are related to NAD83 (1992)

Vertical control

The same monuments that were used for horizontal control have a vertical component provided by MCDOT. The elevations were established by determining an ellipsoidal height by GPS observation and referencing this to NAD83. The orthometric height was then determined using a high-resolution geoid model (geoid 99) with precise GPS observation and processing techniques. The NGS publishes these results as Third Order Class II ellipsoidal heights. Since this is not given a vertical order additional vertical control was used to verify vertical tolerance of minimum third order accuracy. Surveyors recovered four NGS and FEMA benchmarks to accomplish this.

Outline of survey procedures

A primary control network was designed which included 10 recovered control monuments and 37 new monuments. A GPS observation schedule was then set up to ensure strong geometric figures and redundant measurements. The resulting data were put through a least squares adjustment to analyze data and produce final positions. Additional measurements were made to the NGS and FEMA published benchmarks to verify vertical control. This information is provided in the edge matching and control comparison chart in appendix "C"

The blind panel quality control network consisted of an additional 72 points. These were intended to cover the project uniformly. It was decided to set these points on or near the section corners within the project for approximate one mile spacing in the quality control grid. Both static and real time kinematic (RTK) GPS methods were used to obtain measurements for this network. The RTK method involves a radio link between the GPS receivers, which allows us to analyze data while in the field.

In order to obtain accurate results from the aerial photography, a mix of static and continuous kinematic GPS methods were used. A static network was established on primary ground control points. These data were processed in conjunction with data collected by a receiver in the plane. The receiver in the plane collected data kinematiclly, allowing the photogramatist to determine it's position at any given time. The receiver also marked the time when a photo was taken. With this information the mapper could determine the location of the photo lens at the time of the photograph.

As an aid to the photogramatist, several control points from previous projects surrounding this one were recovered and observed relative to this survey control. Those points are shown on the edgematch and control comparison chart with accompanying map in appendix "C" Positions measured for this project are compared with positions reported for the same points in the previous mapping projects.

Equipment

Fieldwork was performed using Trimble 4000 series receivers (4000ssi, 4700, 4800). Compact L1/L2 antennas with ground planes were used where external antennas were needed. All antennas used collect L1/L2 and p-code. These antennas are designed to help eliminate multipath and unwanted noise from the observation data. Trimmark II radios were used for RTK work. Trimble Geomatics Office version 1.5 software was used to process field data. Star*Net-Pro Version 6.0.18

software was used to perform a least squares adjustment of the static measurements. This allowed the surveyors to analyze the quality of both the field measurements and the network.

Static procedures

Where the static survey method was used, the surveyor designed procedures to eliminate errors and have confidence in the results. A GPS observation schedule was made to ensure strong geometric figures and redundant measurements. Each point was occupied twice. Each occupation was at least fifteen minutes on short baselines (under 8 kilometers) and thirty minutes on longer baselines. A minimum of three points were occupied simultaneously so that geometric closures could be performed. Fixed height tripods were used whenever possible to eliminate antenna height errors. When fixed height tripods were not used a measurement from the monument to the antenna was made before and after the session. If the next occupation scheduled for that receiver was to be on the same point it would be taken down and set up again before the next session to provide a quality check on the set up. Observation logs were filled out for each session. These included the height of the antenna, the offset from the monument to the aerial panel, the start and end time of the session, the receiver serial number, and the name of the field personnel.

The data from these sessions were then processed using Trimble Geomatics Office version 1.5. This program produced measured baselines between the points. The survyor could then run geometric closures to check the data. The surveyor used Star*Net version 6.0.18 to perform a least squares adjustment on the baselines. This allowed the surveyor to verify the quality of their measurements and produce final positions for project control.

RTK methods

Where RTK survey methods were used, the surveyor chose a field procedure that would minimize human error and account for the possibility of erroneous results the RTK method could produce. A base station receiver was set up on a fixed height tripod on a control point. A radio link was then set up to broadcast its location to a second (rover) receiver. The rover would then gain initialization "on the fly". This means that it has determined its differential position from the base receiver. The rover receivers were set up on fixed height poles with bipods. A 90 second measurement was taken on another control point to verify that the setup is correct and that the RTK results are consistent with the static work. Each point located with RTK was then measured for ninety seconds. The receiver was then forced to physically loose lock with the satellites and then re-initialize at least 40 feet from where it gained initialization the first time. This forces it to use a different set of data to solve for its position. The monument was then measured for another ninety seconds. The results of the two measurements were then compared for quality assurance.

GPS control for photogrammetric work

Three separate flights were performed to cover the project. At least three primary base station points were selected to provide coverage of the project during the flight. For each flight, receivers were set up on these points to collect static data at a one second epoch rate. A receiver was also

installed in the airplane. This receiver collected continuous kinematic data at a one second epoch rate. The difference between static and kinematic survey being that a static observation is collecting data for a precise location at a stationary point and the kinematic observation is producing a new location for each epoch in a moving receiver. The receivers were run for at least fifteen minutes before the plane moved and continued until fifteen minutes after the plane was parked. The data collected while the plane was not in motion allowed us to verify that the receiver in the plane was initialized properly. During the flight an event recorder marked the time each photograph was taken. The data were then processed in the Trimble Geomatics Office v1.5. The static data from the control points were first processed and run through a minimally constrained least squares adjustment. This allowed us to verify the quality of the data and to detect any setup errors that may exist. Then the data were processed between the control stations and the receiver in the plane. The baselines were first processed forward (from the control stations to the plane). Then backwards (from the plane to the control stations). This verified that the software used the correct integer count to solve for the location of the plane. The data were then processed a third time allowing the software to choose which direction produced the best statistical results. The resulting coordinates from each processing session were then compared. Using the time mark taken at each photo the photogramatist could then determine the location of the antenna in the plane when each photo was taken. With this the surveyor provided Cooper Aerial Survey Company (Cooper) with state plane coordinates and orthometric heights in NAD83 NAVD88 for the phase center of the GPS antenna and the exact timing of each photo event.

3.2 Mapping

Topographic mapping at a scale of 1-inch equals 200 feet with a 2-foot contour interval and aerial photography was provided by Cooper of Phoenix, Arizona, under contract with the FCDMC.

SECTION 4: HYDROLOGY

4.1 Discharge Rates

The Cline Creek Tributaries were modeled using the hydrology results reported from the effective study (reference 1). The rainfall-runoff model for the effective study was run using the U.S. Army Corps of Engineers HEC-1 computer program. Table 4 shows the total discharge rates taken from the effective study and corresponding HEC-RAS cross section locations within each tributary.

Table 4. Summary of Discharge Rates

Tributary - Reach	Q_{100} (cfs)	HEC-RAS Upstream Cross Section	HEC-RAS Downstream Cross Section
C6 - Reach 1	1430	1.525	0.990
C6 - Reach 2	1920	0.946	0.274
C6 - Reach 3	2210	0.248	0.134
C8 – Reach 1	2280	2.959	0.112
C8 – Reach 2	4320	0.112	0.097
X1 - Reach 1	708	1.270	0.322
X1 - Reach 2	223	0.309	0.209
X1 - Reach 3	708	0.163	0.015
X1 – Overflow 1	132	0.174	0.173
X1 – Overflow 1	146	0.151	0.018
X1 - Split 1 Upper	485	0.161	0.125
X1 – Split 1 Lower	485	0.104	0.046
X2	390	1.028	0.014
X3	518	1.168	0.013
X4A - Reach 1	254	0.812	0.327
X4A - Reach 2	399	0.287	0.033
X4B	139	0.525	0.054
X5	301	0.975	0.393

4.2 References

1. *Floodplain Delineation Study of Cline Creek and Tributary Washes, Between Skunk Creek and the Tonto National Forest,* Michael Baker, Jr., Inc., 1990.

SECTION 5: HYDRAULIC ANALYSIS

5.1 Method Description

The U.S. Army Corp of Engineers HEC-RAS v. 3.1.3 was used to perform step-backwater profile calculations for approximately 9.7 river miles of Cline Creek Tributaries. Cross section spacing depends on the variability of the channel geometry along the study reach. On average, the cross section spacing is approximately 160 feet. Floodways were developed using encroachment method 4 (equal conveyance encroachment) and converted to encroachment method 1.

Cross section data were collected from the base map using various software tools available in AutoCAD Land Development Desktop 2005. The base map used included that described in Section 5.2 (below).

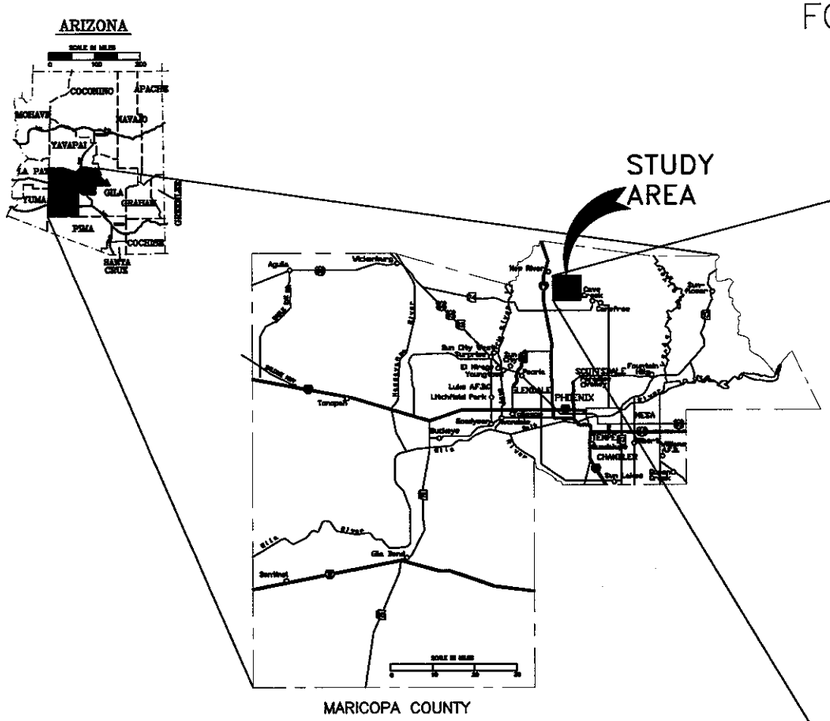
5.2 Work Study Maps

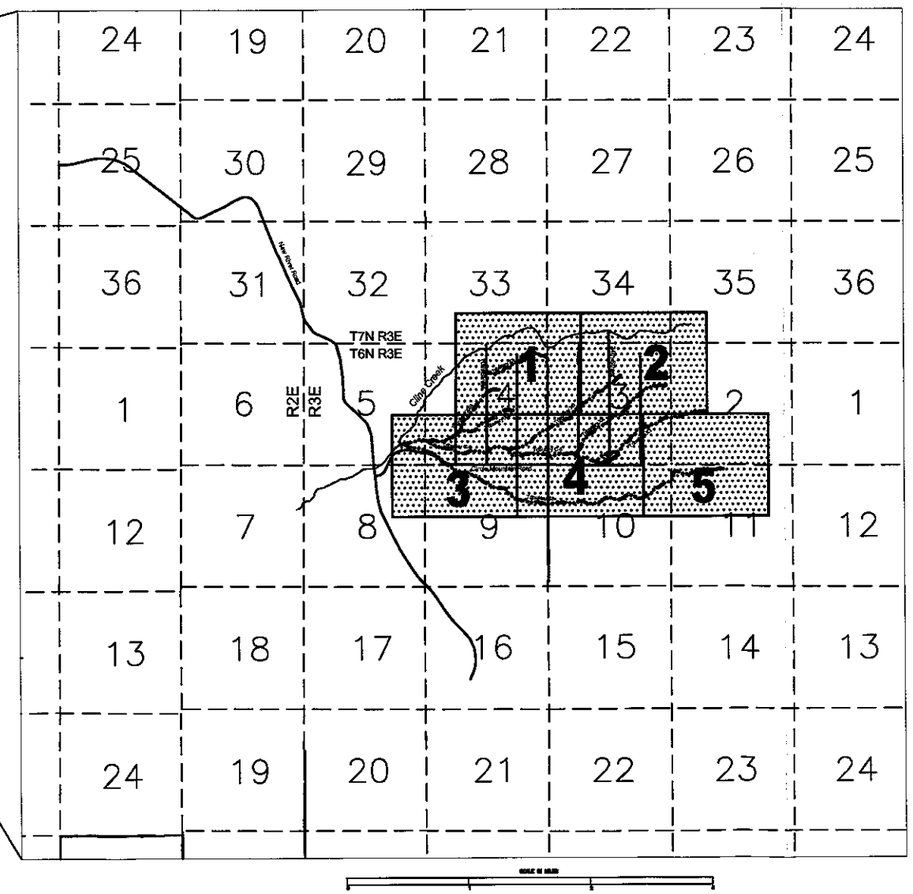
The detailed delineation for Cline Creek Tributaries is presented on 1"= 200', 2' contour interval base mapping that was flown 5/02/2002; aerial photography dated January and February, 2006 is also shown on the work map. The work study maps and index sheet are presented with this Technical Data Notebook (TDN) on 6-24"x36" sheets. Reduced-scale copies of the work maps are included on the following pages. The full-size sheets are contained in Volume 2 of the TDN.

The work maps include cross-section locations, floodplain and floodway boundaries, zone designations, road names, state-plane coordinate grid, section lines, and stream names.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES
FCD 2005C024 WORK ASSIGNMENT 2





NOTES

1. HORIZONTAL PROJECTION IS ARIZONA STATE PLANE, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983.
2. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

STATEMENTS OF PROFESSIONAL REGISTRANT

THE FLOODPLAIN AND FLOODWAY DELINEATIONS PRESENTED ON THE FOLLOWING SHEETS WERE PREPARED UNDER MY DIRECT SUPERVISION USING HYDROLOGY PREPARED UNDER SEPARATE CONTRACT NUMBER FCD 98-23 BY TERRA TECH, INC., AUGUST, 2001.

Registered Professional Engineer (Civil) BRIAN L. ISERMAN Date Signed 4-17-07 ARIZONA U.S.A.

THE GROUND CONTROL SURVEY WAS PREPARED UNDER MY DIRECT SUPERVISION.

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

FLOOD CONTROL DISTRICT of MARICOPA COUNTY

N

INDEX SHEET

April, 2007

LEGEND

- 100-YR FLOODPLAIN BOUNDARY
- 100-YR FLOODWAY
- EFFECTIVE 100-YR FLOODPLAIN BOUNDARY
- EFFECTIVE 100-YR FLOODWAY
- BASE FLOOD ELEVATION
- HYDRAULIC BASE LINE WITH RIVER MILE (1.0)
- SECTION BOUNDARY
- CROSS SECTION (0.205; Q = 301 cfs; FP = 2185.0; FW = 2185.0)
- ZONE DESIGNATION — ZONE AE
- CORPORATE LIMITS — Corporate Limits
- COUNTY BOUNDARY — County Boundary
- ELEVATION REFERENCE MARK — RM5
- STATE PLANE COORDINATES — 1,046,800 N; 648,800 E

NOTES

1. SECTION BOUNDARIES PROVIDED BY FCDMC
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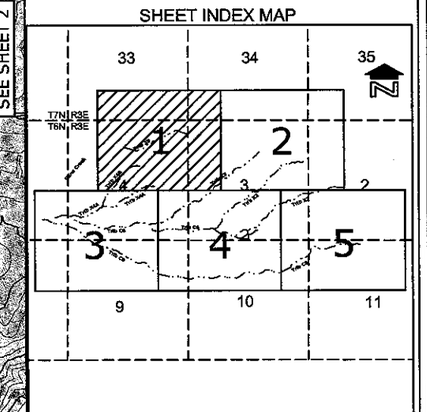
3. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

ELEVATION REFERENCE MARKS

Station Designation	NAD 83 Northing (feet)	NAD 83 Easting (feet)	NAVD 88 Elevation (feet)	Description
RM1099	660234.08	1055313.01	2219.31	GLO BC on 2"Iron pipe at fence 1' above natural ground, sec corner of Sec 33 34 3 & 4, marked "ERM #8"

SHEET INDEX MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

FCD 2005C024
Task Assignment 02
BRIAN R. ISERMAN, 2007

Registered Professional Engineer (Civil) — CERTIFICATE NO. 20925 — ARIZONA U.S.A.

Date Signed 8/14/07

SCALE IN FEET: 0 200' 400'

CONTOUR INTERVAL = 2 FEET

JEF JAMES E. FULLER HYDROLOGY & GEOMORPHOLOGY, INC.
8400 S. KYRENE ROAD, SUITE 201, TEMPE, ARIZONA 85284
PHONE: 480-783-0786
FAX: 480-839-2185

SHEET 1 OF 5

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS FOR 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

TOPOGRAPHIC DATA PROVIDED TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY BY COOPER AERIAL, FLIGHT DATE: 5/02/2002 AERIAL PHOTOGRAPHY FLIGHT DATE: JANUARY/FEBRUARY, 2006

GROUND CONTROL SURVEY DATA PROVIDED BY RBF CONSULTING.

LEGEND

- 100-YR FLOODPLAIN BOUNDARY
- 100-YR FLOODWAY
- EFFECTIVE 100-YR FLOODPLAIN BOUNDARY
- EFFECTIVE 100-YR FLOODWAY
- BASE FLOOD ELEVATION
- HYDRAULIC BASE LINE WITH RIVER MILE (1.0)
- SECTION BOUNDARY
- CROSS SECTION (0.205; Q = 301 cfs; FP = 2185.0; FW = 2165.0)
- ZONE DESIGNATION — ZONE AE
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NOTES

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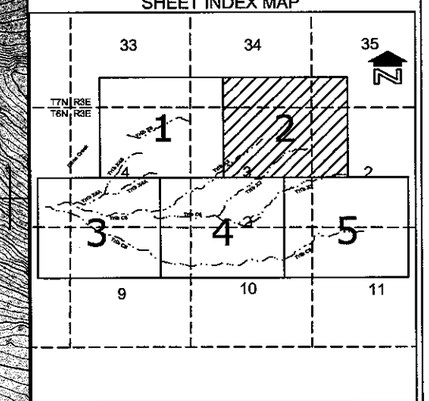
ELEVATION REFERENCE MARKS

Station Designation	NAD 83 Easting (feet)	NAD 83 Northing (feet)	NAVD 88 Elevation (feet)	Description

SHEET INDEX MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

FCD 2005C034
Work Assignment 2

Registered Professional Engineer (Civil) — CERTIFICATE NO. 29325 — BRIAN R. ISERMAN — Date Signed 4/17/07 — ARIZONA U.S.A.

SCALE IN FEET: 0' 200' 400'

CONTOUR INTERVAL = 2 FEET

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.
5450 E. SYRINGA ROAD, SUITE 301
TEMPE, ARIZONA 85283
PHONE: 480-730-2124
FAX: 480-839-2195

SHEET 2 OF 5

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS FOR 1" = 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

TOPOGRAPHIC DATA PROVIDED TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY BY COOPER AERIAL, FLIGHT DATE: 5/02/2002 AERIAL PHOTOGRAPHY FLIGHT DATE: JANUARY/FEBRUARY, 2006

GROUND CONTROL SURVEY DATA PROVIDED BY R&F CONSULTING.

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS FOR 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

TOPOGRAPHIC DATA PROVIDED TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY BY COOPER AERIAL, FLIGHT DATE: 5/02/2002 AERIAL PHOTOGRAPHY FLIGHT DATE: JANUARY/FEBRUARY, 2006

LEGEND

- 100-YR FLOODPLAIN BOUNDARY
- 100-YR FLOODWAY
- EFFECTIVE 100-YR FLOODPLAIN BOUNDARY
- EFFECTIVE 100-YR FLOODWAY
- BASE FLOOD ELEVATION
- HYDRAULIC BASE LINE WITH RIVER MILE (1.0)
- SECTION BOUNDARY
- CROSS SECTION (0.205, Q = 301 cfs, FP = 2185.0, FW = 2185.0)
- ZONE DESIGNATION (ZONE AE)
- CORPORATE LIMITS (Corporate Limits)
- COUNTY BOUNDARY (County Boundary)
- ELEVATION REFERENCE MARK (RM5)
- STATE PLANE COORDINATES (1,046,800 N; 648,800 E)

NOTES

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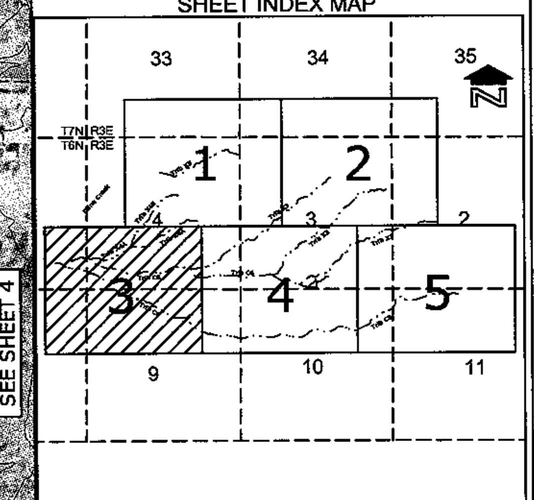
ELEVATION REFERENCE MARKS

Station Designation	NAD 83 Easting (feet)	NAD 83 Northing (feet)	NAVD 88 Elevation (feet)	Description
RM1115	654828.63	1050563.91	2093.02	5/8" rebar set in concrete 27' N of centerline of Circle Mountain Rd. and 3' W of power pole marked "ERM #7", +/- 1/2 mile east of New River Road.
RM105	655614.75	1050167.90	2105.04	Brass Cap flush w/concrete on top of concrete headwall, soush side of Circle Mountain Road, +/- 0.7 mile east of New River Road.

SHEET INDEX MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

FCD 2005C027 Work Assignment 2

Registered Professional Engineer (Civil) Certificate 29325 Brian B. Iserman, Arizona, Date Signed April 2007

SCALE IN FEET: 200' 0' 200' 400'

CONTOUR INTERVAL = 2 FEET

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

8400 S. KYRENE ROAD, SUITE 201, TEMPE, ARIZONA 85284 — PHONE: 480-752-2124 FAX: 480-839-2193

SHEET 3 OF 5

GROUND CONTROL SURVEY DATA PROVIDED BY RBF CONSULTING.

LEGEND

100-YR FLOODPLAIN BOUNDARY	
100-YR FLOODWAY	
EFFECTIVE 100-YR FLOODPLAIN BOUNDARY	
EFFECTIVE 100-YR FLOODWAY	
BASE FLOOD ELEVATION	
HYDRAULIC BASE LINE WITH RIVER MILE	1.0
SECTION BOUNDARY	
CROSS SECTION	0.205 Q = 301 cfs FP = 2185.0 FW = 2185.0
ZONE DESIGNATION	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY BOUNDARY	County Boundary
ELEVATION REFERENCE MARK	RM5
STATE PLANE COORDINATES	1,046,800 N 648,800 E

NOTES

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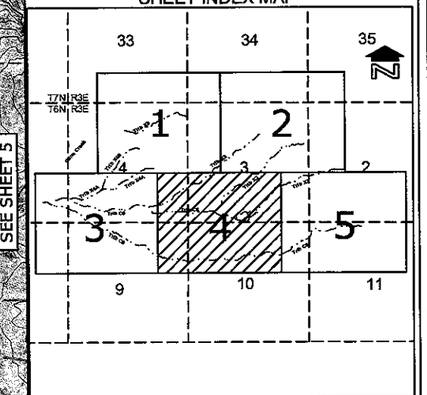
3. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

ELEVATION REFERENCE MARKS

Station Designation	NAD 83 Easting (feet)	NAD 83 Northing (feet)	NAVD 88 Elevation (feet)	Description
RM1100	660232.81	1052087.95	2228.13	5/8" rebar set in concrete 30' E of centerline of 16th St. 6' W of power pole, marked "ERM #9".
RM1101	664219.48	1051504.96	2327.03	5/8" rebr set in concrete approx. 15' E of centerline of 22nd St. 2' S of power pole 8 at the NE corner of private driveway entrance, marked "ERM #10"

SHEET INDEX MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

PCD 2005C024
Work Assignment 2

April, 2007

SCALE IN FEET
0' 200' 400'

JE FULLER
HYDROLOGY & GEOMORPHOLOGY, INC.

SHEET 4 OF 5

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS FOR 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

TOPOGRAPHIC DATA PROVIDED TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY BY COOPER AERIAL, FLIGHT DATE: 5/02/2002 AERIAL PHOTOGRAPHY FLIGHT DATE: JANUARY/FEBRUARY, 2006

GROUND CONTROL SURVEY DATA PROVIDED BY RBF CONSULTING.

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS FOR 1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS.

TOPOGRAPHIC DATA PROVIDED TO THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY BY COOPER AERIAL, FLIGHT DATE: 5/02/2002 AERIAL PHOTOGRAPHY FLIGHT DATE: JANUARY/FEBRUARY, 2006

LEGEND

100-YR FLOODPLAIN BOUNDARY
100-YR FLOODWAY
EFFECTIVE 100-YR FLOODPLAIN BOUNDARY
EFFECTIVE 100-YR FLOODWAY
BASE FLOOD ELEVATION
HYDRAULIC BASE LINE WITH RIVER MILE 1.0
SECTION BOUNDARY
CROSS SECTION 0.205 Q = 301 cfs FP = 2185.0 FW = 2185.0
ZONE DESIGNATION ZONE AE
CORPORATE LIMITS Corporate Limits
COUNTY BOUNDARY County Boundary
ELEVATION REFERENCE MARK RM5
STATE PLANE COORDINATES 1,046,800 N 648,800 E

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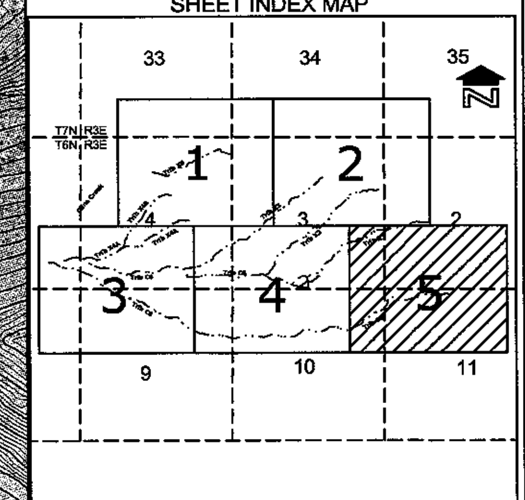
ELEVATION REFERENCE MARKS

Station Designation	NAD 83 Easting (feet)	NAD 83 Northing (feet)	NAVD 88 Elevation (feet)	Description

SHEET INDEX MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CAVE CREEK TRIBUTARIES

FCD 2005C024
Work Assignment 2

April, 2007

Registered Professional Engineer
CERTIFICATE NO. 29325
BRIAN R. ISERMAN
Date Signed
ARIZONA, U.S.A.

SCALE IN FEET
0' 200' 400'
CONTOUR INTERVAL = 2 FEET

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

SHEET 5 OF 5

GROUND CONTROL SURVEY DATA PROVIDED BY RBF CONSULTING.

5.3 Parameter Estimation

HEC-RAS v3.1.2 was used to determine the flow width and depth for each cross section. This model is based on the Manning's equation:

$$Q=A\ {}^{1.49}/_{n}\ R^{2/3}\ S^{1/2}$$

Where:

Q = 100-year discharge in cubic feet per second (cfs)
A = The cross-sectional area of the cross section at the corresponding depth in square feet
n = Manning's roughness coefficient
R = Hydraulic radius in feet
S = Friction slope

5.3.1 Roughness Coefficients

Manning's roughness coefficient (n value) describes the friction attributable to the channel, banks and overbank areas. The n value generally varies with depth of flow, so it is determined assuming a flow depth associated with the 100-year discharge.

Manning's "n" values were determined using the methodology outlined in the USGS report titled, "Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona" by B.W. Thomsen and H.W. Hjalmarson, (April, 1991)[4], herein referred to as the FCDMC method.

Field reconnaissance was undertaken to photograph typical reaches in the study area and to document channel and overbank conditions on January 20th, 2005 with a follow-up reconnaissance to a newly built culvert on May 15, 2006. The findings of this field investigation are summarized in a separate Manning's n value report produced by JEF for this study for the FCDMC (see Appendix A).

Due to the highly variable nature of the channel and overbank conditions in these study reaches, the Manning's "n" values shown in the reconnaissance report represent typical reach average conditions only. The HEC-RAS option for assigning horizontal variation in n values was used extensively to reflect the highly variable nature of single lot development that dominates this study area.

Manning's "n" values were increased by 0.005 above the Manning's values that were determined based on static (non-dynamic) physical conditions reflected in the reconnaissance report (Appendix A). The 0.005 increase in the friction loss coefficient was applied to account for dynamic bedforms which are expected based on field observations of pool/riffle sequences; an indicator that the system flows at or near critical depth during formative flow events.

5.4 Cross Section Description

Cross section data were sampled from the digital terrain model associated with the base map using various software tools available in AutoCAD Land Development Desktop 2005. The base map used is described in Section 5.2 (above). Ground geometry for cross sections immediately upstream and downstream of surveyed structures has been updated based on the survey. The ground geometry for the following cross sections was enhanced in the low-flow areas using survey data from the December, 2006 follow-up survey data provided by the Flood Control District of Maricopa County.

Cross sections are labeled according to river mile increasing in the upstream direction. For this study, cross sections where placed at an average interval of approximately 160 feet. Cross section stationing is from left to right if viewed in the downstream direction. Individual cross section stationing is with respect to the hydraulic baseline being the 10,000 station.

5.5 Modeling Considerations

5.5.1 Hydraulic Jump and drop analysis

No hydraulic jump or drop analyses were conducted in this study.

5.5.2 Bridge or Culverts

Small culverts (24" diameter or less) associated with private drives were not analyzed in this study. There are three significant hydraulic structures located in this study; two located on Tributary C8, and one located on C6. The largest of these structures, a two-cell 25'x5' con-arch, is located at Circle Mountain Road on Tributary C8 (River Station 0.357). The second structure is a 7 cell 7'x4' reinforced concrete box culvert located at 12th Street on Tributary C6 (River Station 0.753). The last structure is two approximately 54"x40" HECMPs located at 12th Street on Tributary C8 (River Station 0.807).

5.5.3 Levees and Dikes

There are no levees or dikes within the project area.

5.5.4 Islands and Flow Splits

In general, small islands resulting from short divided flow reaches were not delineated on the workmaps. Significant islands that were delineated in the previous study and that were also determined to be above the computed water surface elevation in the new study were delineated.

Lateral weir overflows were modeled at 7 locations using the HEC-RAS lateral structure option. The lateral structure option was chosen for these reaches because the flow breakout type is most similar to weir overflows. Two are located on Tributary C8 at River Stations 0.413 and 0.395, four are located on Tributary X1 at River Stations 0.545, 0.420, 0.390, and 0.173 (Split 2 reach), and one is located on Tributary X4A at River Station 0.170. Flows from these breakouts eventually return to the system.

For all these lateral structures, the lateral weir calculation was set to be optimized in HEC-RAS in order to determine the amount of flow that is able to escape from the immediate study reaches via weir overflow. The discharge values reported on the work maps are the optimized values. The HEC-RAS contains both an optimized plan and a non-optimized plan. For purposes of delineating the 100-year floodplain boundary, however, the non-optimized calculation results were used in order to solve for the more conservative i.e., higher, computed water surface elevation i.e., the discharge in the main channel is not reduced by the weir overflow amount. Table 5.5.4.1 shows the optimized discharges that are expected to escape at these lateral weir overflows; these are reported on the work maps. Table 5.5.4.2 shows the non-optimized lateral weir overflows

A uniform weir coefficient of 2.0 was used throughout this study. Published experimentally-derived weir coefficients, in the range of 2.3 to 3.8 are based on studies using weirs made of concrete and steel with widths up to 15 feet. The weirs encountered in this study are much wider than these and contain obstructions such as brush, trees, fences and sheds. For this reason, a slightly lower weir coefficient of 2.0 was chosen in order to more conservatively take into consideration these surficial irregularities and to ensure slightly conservative computed water surface elevations in the Cline Creek Tributaries.

Table 5.5.4.1, Optimized Lateral Structure Summary Table

River	River Station	Q US (cfs)	Q Leaving Total (cfs)	Q Downstream (cfs)	Q Weir (cfs)	Weir Top Width (ft)	Weir Max Depth (ft)	Weir Avg Depth (ft)
X4A	0.170	399.00	0.24	398.76	0.24	19.15	0.07	0.03
X4A	0.130	398.76	18.28	380.51	18.28	126.15	0.31	0.16
X1	0.545	708.00	0.00	708.00	0.00	0.00	0.00	0.00
X1	0.420	708.00	131.87	576.23	131.87	169.29	1.06	0.50
X1	0.390	576.23	14.57	561.53	14.57	61.32	0.46	0.23
X1-Over-flow 1*	0.173	132.0	0.25	0.00	0.25	6.02	0.11	0.07
C8	0.413	2280.00	12.27	2267.84	12.27	87.99	0.44	0.14
C8	0.395	2267.84	5.76	2262.15	5.76	21.24	0.44	0.24

* Note: The optimized computation failed to converge.

Table 5.5.4.2, Non-Optimized Lateral Structure Summary Table

River	River Station	Q US (cfs)	Q Leaving Total (cfs)	Q Downstream (cfs)	Q Weir (cfs)	Weir Top Width (ft)	Weir Max Depth (ft)	Weir Avg Depth (ft)
X4A	0.170	399.00	0.34	399.00	0.34	21.29	0.08	0.04
X4A	0.130	399.00	20.54	399.00	20.54	130.07	0.33	0.17
X1	0.545	708.00	0.00	708.00	0.00	0.00	0.00	0.00
X1	0.420	708.00	173.83	708.00	173.83	181.96	1.14	0.57
X1	0.390	708.00	45.30	708.00	45.30	85.46	0.74	0.39
X1-Over-flow 1	0.173	132.0	1.00	146.0	1.00	10.30	0.18	0.13
C8	0.413	2280.00	13.36	2280.00	13.36	96.37	0.45	0.14
C8	0.395	2280.00	6.23	2280.00	6.23	21.98	0.45	0.25

For the purpose of this study, main stem discharges downstream of lateral overflows were not decreased by the amount of the lateral overflow. This was done in order to conservatively compensate for modeling uncertainties and to account for the fact that all of the lateral overflows eventually return to each system.

A **Split flow** occurs at River Station 0.322 on Tributary X1 and rejoins at River Station 0.163; it is labeled "Split 1". The flow split distribution for split one was determined by balancing the energy grade elevations at cross sections 0.161 of X1 Split 1 and 0.309 of X1 Reach 2.

The river reach named "Tributary X1 – Overflow 1" receives the weir overflow from lateral structures 0.390 and 0.420 of Tributary X1, Reach 1. The upstream tie of Overflow 1 to Tributary X1, Reach 1 is defined by the upstream and downstream weir stations for the supplying weirs.

5.5.5 Ineffective Flow Areas

The effect of ineffective flow areas was simulated by increasing the Manning's n value in those areas of the cross section thought to be ineffective and by utilizing the ineffective flow options available in HEC-RAS 3.2.

5.5.6 Supercritical Flow

Supercritical flow does not occur for significant lengths along any reach in this study, however, flow defaults to critical at many cross sections.

In all reaches, model stability was checked for the sub-critical profile and the methodologies recommended in Arizona State Standard for Supercritical Flow 3-94 were used. Overall, the model passes the state standard tests for subcritical stability, including the rule of thumb of velocity head being 1/3 or less of the depth (average velocity head = 0.18*hydraulic depth for this study). To accomplish this, cross section spacing was kept to an average of 160 feet and Manning's "n" values were increased by 0.005 above the Manning's values that were determined based on static (non-dynamic) physical conditions. The 0.005 increase in the friction loss coefficient was applied to account for dynamic bedforms which are expected based on field observations of pool/riffle sequences; an indicator that the system flows at or near critical depth during formative flow events. The average Froude number for all study reaches is 0.84.

5.5.7 Starting Water Surface Conditions

The starting water surface elevation for Tributary C8 is set equal to the average 100-year computed water surface elevation of Cline Creek at the confluence with Tributary C8; 2082 feet NAVD88. A normal depth starting condition using a slope of 0.040 ft/ft yielded a lower and less conservative 2081.27 feet NAVD88 which is the critical depth default.

The starting water surface elevation for Tributary X5 is based on normal depth with a slope of 0.019 ft/ft; yielding a 100-year computed water surface elevation of 2157.3 feet. The known water surface option, utilizing the average 100-year Cline Creek computed water surface

elevation at the tributary would yield a lower (supercritical equivalent) value of approximately 2156 (critical depth = 2157.2)

All other tributary boundary conditions are determined automatically by the HEC-RAS junction routine.

5.6 Floodway Modeling

Using HEC-RAS per Arizona State Standard 3-94, a method 4 profile (equal conveyance encroachment) was initially run with a one-foot surcharge target to define the floodway. Floodway surcharge targets for individual cross sections were adjusted to eliminate surcharges less than zero for computed water surface elevations and greater than one foot for total energy elevations. Additionally, no encroachment was allowed that would result in the energy grade being increased by one (1.0) foot. Encroachment Method 1 was also used subsequently to refine the method 4 floodways, especially along reaches with a disparity of overbank conditions from one side to the other (i.e., left overbank area broad and shallow, and right overbank area limited by locally resistant features such as cut banks or cliffs). Where the method 4 encroachment yielded reasonable results, no further modifications were made.

No encroachment is recommended at several locations for 2 reasons; 1) these reaches are sufficiently narrow as to make what little encroachments were attainable to be insignificant and impractical with respect to the scaling on the work map and 2) encroachment in certain reaches resulted in only unacceptable negative surcharges. Additionally, to accomplish sound floodplain management goals, the floodway of Tributary X1 in the vicinity of Split 1 was set to equal the floodplain in order to avoid disruption of the flow distribution attributable to encroachments in the vicinity of the split. As such, the following reaches do not have assigned floodway fringes.

- Tributary X1 from River Station 0.459 to 0.561
- Tributary X1 from River Station 1.093 to 1.270
- Tributary X2 from River Station 0.857 to 1.028
- Tributary X5 from River Station 0.688 to 0.745
- Tributary C8 at River Station 0.151
- Tributary C8 from River Station 0.334 to 0.505
- Tributary C8 from River Station 0.583 to 0.691
- Tributary C8 from River Station 0.709 to 0.725
- Tributary C8 from River Station 2.023 to 2.090
- Tributary C8 from River Station 2.526 to 2.595
- Tributary C8 from River Station 2.928 to 2.959

5.7 Special Problems Encountered During the Study

No special problems were encountered during the performance of this study.

5.8 Calibration

No hydraulic calibration was performed during this study.

5.9 Final Results

5.9.1 Hydraulic analysis results

Approximately 9.7 miles of detailed floodplain and floodway analyses have been performed, including 330 cross sections. A summary of the hydraulic analysis results are provided in the following HEC-RAS Summary tables below. Appendix E presents cross section plots along with the detailed geometry input and output data.

The following table (Table 5.9.1) presents a comparison between effective study and new study computed water surface elevations at coincident BFE lines and cross sections.

Table 5.9.1: Comparison of Computed Water Surface Elevations (Effective vs New)

Tributary	River Station (mile)	Type	2006 CWSEL (NAVD 88)	Effective CWSEL (NGVD 29)	(NGVD29+1.74 ft) Effective BFE (NAVD 88)	Change in WSEL (ft)
C8	2.959	Cross-Cross	2391.7	2389.5	2391.2	0.5
C8	2.618	BFE-Cross	2349	2347.5	2349.2	-0.2
C8	2.066	Cross-BFE	2282.8	2280	2281.7	1.1
C8	1.734	Cross-Cross	2247.4	2245.7	2247.4	0.0
C8	0.825	BFE-BFE	2150	2150	2151.7	-1.7
X1	1.270	Cross-Cross	2427.9	2425.1	2426.8	1.1
X1	0.628	Cross-BFE	2310.0	2310	2311.7	-1.7
X1	0.438	Cross-BFE	2283.1	2280	2281.7	1.4
X2	1.028	Cross-Cross	2430.6	2422.3	2424.0	6.6
X2	0.949	Cross-BFE	2405.7	2400	2401.7	4.0
X2	0.655	Cross-BFE	2319.7	2320	2321.7	-2.0
X2	0.569	Cross-BFE	2301.2	2300	2301.7	-0.5
C6	1.525	Cross-Cross	2219.6	2218.4	2220.1	-0.5
C6	0.946	Cross-Cross	2158.9	2158.5	2160.2	-1.3
X3	1.168	Cross-Cross	2319.0	2314.1	2315.8	3.2
X3	1.011	Cross-BFE	2281.5	2280	2281.7	-0.2
X3	0.913	BFE-BFE	2262	2260	2261.7	0.3
X4A	0.812	Cross-Cross	2195.9	2194.1	2195.8	0.1
X4A	0.740	Cross-BFE	2181.6	2180	2181.7	-0.1
X4A	0.305	BFE-BFE	2131	2130	2131.7	-0.7
X4B	0.053	Cross-Cross	2136.2	2135	2136.7	-0.5
X5	1.087	Cross-Cross	2259.6	2258.7	2260.4	-0.8
X5	0.470	BFE-Cross	2166	2165.5	2167.2	-1.2

Changes in the computed water surface elevations (CWSELs) are a reflection of previously identified errors in the effective HEC-2 modeling. Some of these errors were the result of incorrect cross section geometry i.e., geometry that did not match the effective topographic data shown on the effective study work maps. Additionally, the effective topographic mapping is likely the source of much of the differences as it has a 4-foot contour interval. Another possible general factor that may contribute to the elevation differences may be attributable to effective map projection distortions. Following is a more specific explanation for those changes in CWSEL greater than 1'.

C8, 2.066
This is a comparison of an effective BFE line to a revised cross section CWSEL. The effective BFE line actually crosses the new cross section alignment. The large discrepancy may also be the result of an inaccurately placed BFE line.

C8, 0.825
This is a BFE to BFE comparison with the line alignments being very close. It is possible that there is an inaccuracy in the effective BFE placement that has exacerbated the CWSEL difference.

X1, 1.270
This is a cross section to cross section comparison at the upstream limit of the study. There is no additional explanation for the discrepancy.

X1, 0.628
This is a comparison of an effective BFE line to a revised cross section CWSEL. The effective BFE line actually crosses the new cross section alignment. The large discrepancy may also be the result of an inaccurately placed BFE line.

X1, 0.438
This is a comparison of an effective BFE line to a revised cross section CWSEL. The effective BFE line actually crosses the new cross section alignment. The large discrepancy may also be the result of an inaccurately placed BFE line.

X2, 1.028
This is a cross section to cross section comparison. The 6.3 foot difference in the lowest elevations is the likely cause to the large difference here.

X2, 0.949
This is a comparison of an effective BFE line to a revised cross section CWSEL. An inaccurate effective BFE line is suspected as the reason for this large difference.

X2, 0.655
This is a comparison of an effective BFE line to a revised cross section CWSEL. An inaccurate effective BFE line is suspected as part of the reason for this large difference. Another likely factor is that there is an abrupt ground profile slope break at this location that is not accounted for in the effective model by addition of additional cross sections.

C6, 0.946
This is a cross section to cross section comparison. There is no additional explanation for the discrepancy.

X3, 1.168
This is a cross section to cross section comparison. The 3.5 foot difference in the lowest elevations is the likely cause to the large difference here.

X5, 0.470
This is an effective cross section to revised BFE comparison. The new BFE line crosses the effective cross section line. There is no additional explanation for the discrepancy.

HEC-RAS Summary Output Table

River	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Total (ft/s)	Top Width (ft)	Max Chl Dpth (ft)	Froude # XS	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)
X5	Reach 1	0.975	profile 1	301	2259.57	2259.57	5.25	48.45	3.75	0.85	9991.90	10040.35
X5	Reach 1	0.951	profile 1	301	2252.04	2252.04	6.70	33.48	2.68	1.02	9985.08	10018.56
X5	Reach 1	0.927	profile 1	301	2246.17	2246.17	6.62	36.50	2.78	1.05	9989.12	10025.62
X5	Reach 1	0.915	profile 1	301	2244.01	2244.01	6.21	38.52	2.69	0.97	9979.73	10018.25
X5	Reach 1	0.900	profile 1	301	2239.81	2239.81	4.76	52.80	3.43	0.77	9971.11	10023.91
X5	Reach 1	0.883	profile 1	301	2236.92	2236.92	5.23	52.79	1.54	0.88	9973.26	10026.05
X5	Reach 1	0.871	profile 1	301	2234.16	2234.16	6.41	35.40	2.86	0.98	9980.02	10015.42
X5	Reach 1	0.840	profile 1	301	2227.92	2227.92	5.90	44.04	1.91	0.97	9979.29	10023.33
X5	Reach 1	0.823	profile 1	301	2224.51	2224.51	6.69	32.78	3.35	1.01	9986.53	10019.31
X5	Reach 1	0.799	profile 1	301	2220.95	2220.95	5.61	42.41	2.77	0.88	9984.24	10026.66
X5	Reach 1	0.769	profile 1	301	2217.11	2217.11	4.70	77.45	1.80	0.91	9959.68	10037.13
X5	Reach 1	0.745	profile 1	301	2212.56	2212.56	4.69	69.52	2.60	0.86	9949.35	10018.87
X5	Reach 1	0.722	profile 1	301	2210.04	2210.04	5.08	49.96	2.51	0.82	9981.90	10031.86
X5	Reach 1	0.701	profile 1	301	2207.88	2207.88	4.46	84.12	1.90	0.88	9938.11	10022.23
X5	Reach 1	0.688	profile 1	301	2202.78	2202.78	6.51	29.02	3.25	0.91	9987.28	10016.31
X5	Reach 1	0.661	profile 1	301	2198.72	2198.72	5.97	41.19	2.77	0.95	9969.99	10011.18
X5	Reach 1	0.643	profile 1	301	2194.81	2194.81	6.89	27.32	3.03	0.96	9991.37	10018.69
X5	Reach 1	0.622	profile 1	301	2190.21	2190.21	6.63	30.87	3.21	0.96	9988.00	10018.86
X5	Reach 1	0.588	profile 1	301	2185.02	2185.02	5.90	34.60	3.13	0.86	9989.36	10023.96
X5	Reach 1	0.555	profile 1	301	2179.24	2179.24	4.60	63.53	2.83	0.80	9965.80	10029.33
X5	Reach 1	0.519	profile 1	301	2173.34	2173.34	5.95	43.01	1.51	0.97	9976.38	10019.38
X5	Reach 1	0.486	profile 1	301	2168.40	2168.40	5.19	53.97	2.34	0.88	9991.78	10045.76
X5	Reach 1	0.446	profile 1	301	2162.63	2162.63	6.62	30.44	2.64	0.96	9984.59	10015.03
X5	Reach 1	0.409	profile 1	301	2159.48	2159.48	5.43	57.23	1.60	0.97	9980.56	10037.79
X5	Reach 1	0.393	profile 1	301	2157.28	2157.20	5.72	40.03	2.04	0.88	9983.27	10023.30
X4B	Reach 1	0.525	profile 1	139	2189.91	2189.91	2.88	109.64	1.63	0.76	9926.32	10035.96
X4B	Reach 1	0.486	profile 1	139	2183.00	2183.00	4.34	57.08	1.54	1.02	9977.86	10039.72
X4B	Reach 1	0.453	profile 1	139	2177.33	2177.33	4.20	48.70	1.37	0.90	9983.02	10031.71
X4B	Reach 1	0.417	profile 1	139	2173.86	2173.86	4.80	37.56	1.07	0.96	9989.95	10027.51
X4B	Reach 1	0.390	profile 1	139	2171.40	2171.40	2.99	98.29	1.85	0.77	9910.21	10008.50
X4B	Reach 1	0.359	profile 1	139	2168.11	2168.11	3.71	76.80	1.56	0.94	9947.61	10025.57
X4B	Reach 1	0.315	profile 1	139	2164.49	2164.49	2.96	147.58	0.81	0.92	9895.77	10043.35
X4B	Reach 1	0.281	profile 1	139	2160.64	2160.55	2.99	79.44	1.24	0.69	9976.02	10055.46
X4B	Reach 1	0.264	profile 1	139	2159.24	2159.15	3.18	93.81	1.97	0.82	9987.82	10081.63
X4B	Reach 1	0.235	profile 1	139	2155.67	2155.67	3.66	79.10	1.20	0.93	9964.73	10043.82
X4B	Reach 1	0.194	profile 1	139	2150.78	2150.72	3.54	78.72	1.36	0.88	9959.99	10038.71
X4B	Reach 1	0.159	profile 1	139	2147.56	2147.55	3.46	81.42	0.90	0.87	9956.57	10037.99
X4B	Reach 1	0.144	profile 1	139	2146.16	2146.13	2.62	143.59	0.94	0.76	9945.89	10089.48
X4B	Reach 1	0.111	profile 1	139	2142.61	2142.61	2.55	191.38	0.83	0.84	9950.64	10142.03
X4B	Reach 1	0.088	profile 1	139	2140.16	2140.13	2.78	145.16	1.01	0.84	9964.90	10202.83
X4B	Reach 1	0.054	profile 1	139	2136.20	2136.20	2.99	157.55	0.78	0.97	9941.93	10226.32
X4A	Reach 1	0.812	profile 1	254	2195.89	2195.89	5.21	59.09	1.69	1.01	9970.63	10029.71
X4A	Reach 1	0.777	profile 1	254	2188.67	2188.67	5.27	49.50	2.31	0.94	9975.17	10024.66
X4A	Reach 1	0.740	profile 1	254	2181.63	2181.63	3.58	104.42	2.08	0.76	9946.51	10050.92
X4A	Reach 1	0.706	profile 1	254	2174.88	2174.88	5.69	49.22	2.23	1.05	9974.23	10023.44
X4A	Reach 1	0.670	profile 1	254	2170.67	2170.67	4.51	70.46	2.86	0.89	9961.01	10031.47
X4A	Reach 1	0.631	profile 1	254	2166.59	2166.59	4.45	76.68	3.65	0.91	9983.71	10060.38
X4A	Reach 1	0.587	profile 1	254	2160.16	2160.16	6.34	32.37	2.16	1.01	9967.31	10014.81
X4A	Reach 1	0.558	profile 1	254	2157.76	2157.76	4.82	114.52	1.07	0.98	9918.60	10033.11
X4A	Reach 1	0.515	profile 1	254	2153.82	2153.82	3.94	91.87	3.27	0.83	9968.97	10062.39
X4A	Reach 1	0.473	profile 1	254	2149.75	2149.75	3.63	118.39	2.69	0.83	9894.14	10048.06
X4A	Reach 1	0.437	profile 1	254	2146.17	2146.17	3.96	80.29	2.30	0.78	9951.21	10031.50
X4A	Reach 1	0.402	profile 1	254	2141.64	2141.64	4.57	74.73	2.72	0.93	9959.78	10036.35
X4A	Reach 1	0.368	profile 1	254	2137.93	2137.89	3.84	92.06	2.11	0.80	9955.26	10047.32
X4A	Reach 1	0.327	profile 1	254	2133.64	2133.64	3.32	137.66	1.62	0.79	9926.86	10064.52
X4A	Reach 2	0.287	profile 1	399	2128.84	2128.84	5.33	82.62	2.45	0.99	9958.20	10258.83
X4A	Reach 2	0.257	profile 1	399	2125.69	2125.69	3.31	257.25	2.16	0.85	9968.85	10246.37
X4A	Reach 2	0.213	profile 1	399	2120.45	2120.40	3.96	144.98	1.75	0.84	9956.72	10101.69
X4A	Reach 2	0.186	profile 1	399	2117.44	2117.42	3.44	202.84	1.50	0.80	9880.51	10103.58
X4A	Reach 2	0.170		Lat Struct								
X4A	Reach 2	0.153	profile 1	399	2114.56	2114.40	3.14	194.35	1.26	0.69	9938.37	10181.08
X4A	Reach 2	0.130		Lat Struct								
X4A	Reach 2	0.113	profile 1	399	2111.04	2111.04	3.89	180.45	1.34	0.91	9964.61	10145.06
X4A	Reach 2	0.082	profile 1	399	2105.50	2105.50	7.15	36.41	2.83	1.02	9984.10	10020.50
X4A	Reach 2	0.051	profile 1	399	2100.18	2100.18	7.38	35.47	3.30	1.05	9982.66	10018.13
X4A	Reach 2	0.033	profile 1	399	2098.07	2098.07	4.25	97.94	3.61	0.77	9919.43	10019.15

HEC-RAS Summary Output Table

River	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Total (ft/s)	Top Width (ft)	Max Chl Dpth (ft)	Froude # XS	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)
X3	Reach 1	1.168	profile 1	518	2319.02	2319.02	7.44	42.20	3.19	1.02	9986.29	10028.49
X3	Reach 1	1.146	profile 1	518	2313.36	2313.36	7.42	39.61	3.78	0.98	9978.78	10018.39
X3	Reach 1	1.126	profile 1	518	2307.81	2307.81	6.46	52.40	3.83	0.92	9980.76	10033.17
X3	Reach 1	1.097	profile 1	518	2299.68	2299.68	6.48	57.07	2.56	0.96	9972.18	10029.24
X3	Reach 1	1.082	profile 1	518	2296.92	2296.92	7.07	42.78	3.28	0.95	9981.24	10024.02
X3	Reach 1	1.068	profile 1	518	2293.60	2293.60	7.55	38.96	3.72	1.00	9982.87	10021.83
X3	Reach 1	1.044	profile 1	518	2290.33	2290.33	5.11	98.14	2.13	0.88	9938.84	10036.99
X3	Reach 1	1.029	profile 1	518	2286.02	2286.02	5.34	73.51	4.22	0.82	9944.84	10018.35
X3	Reach 1	1.011	profile 1	518	2281.50	2281.50	6.08	59.28	3.44	0.89	9967.91	10027.19
X3	Reach 1	0.991	profile 1	518	2276.84	2276.84	6.20	57.94	2.88	0.91	9979.20	10037.14
X3	Reach 1	0.964	profile 1	518	2271.88	2271.88	7.83	35.43	4.88	1.01	9980.25	10015.68
X3	Reach 1	0.930	profile 1	518	2265.30	2265.30	5.89	65.42	3.49	0.90	9972.34	10037.75
X3	Reach 1	0.896	profile 1	518	2258.89	2258.89	6.48	53.15	3.01	0.93	9972.51	10025.66
X3	Reach 1	0.867	profile 1	518	2253.83	2253.83	6.10	56.36	4.13	0.88	9988.68	10045.04
X3	Reach 1	0.843	profile 1	518	2249.34	2249.34	5.73	63.89	3.66	0.85	9948.51	10012.39
X3	Reach 1	0.819	profile 1	518	2245.04	2245.04	5.55	70.66	4.16	0.85	9987.38	10079.61
X3	Reach 1	0.790	profile 1	518	2240.13	2240.01	4.70	80.15	3.21	0.71	9932.84	10013.00
X3	Reach 1	0.750	profile 1	518	2235.86	2235.86	5.52	78.56	2.52	0.89	9954.84	10033.39
X3	Reach 1	0.718	profile 1	518	2231.07	2231.07	5.45	79.46	2.56	0.88	9938.68	10018.14
X3	Reach 1	0.685	profile 1	518	2226.38	2226.38	5.92	54.55	3.13	0.82	9961.16	10015.71
X3	Reach 1	0.647	profile 1	518	2220.89	2220.89	6.48	51.10	3.27	0.91	9976.44	10027.54
X3	Reach 1	0.626	profile 1	518	2218.72	2218.72	6.07	51.31	3.99	0.83	9985.53	10036.84
X3	Reach 1	0.595	profile 1	518	2215.92		4.47	75.94	3.87	0.64	9973.24	10049.18
X3	Reach 1	0.582	profile 1	518	2214.27	2214.27	8.07	36.05	4.79	1.07	9977.91	10013.96
X3	Reach 1	0.553	profile 1	518	2211.81	2211.81	5.12	88.78	3.86	0.84	9906.84	10008.80
X3	Reach 1	0.521	profile 1	518	2208.71	2208.71	5.58	73.45	2.57	0.88	9952.78	10026.23
X3	Reach 1	0.510	profile 1	518	2206.93	2206.93	6.94	43.75	3.23	0.94	9970.19	10013.94
X3	Reach 1	0.468	profile 1	518	2203.36	2203.06	4.66	85.26	3.75	0.72	9966.97	10052.24
X3	Reach 1	0.440	profile 1	518	2200.52	2200.52	5.85	73.94	2.54	0.94	9983.90	10057.84
X3	Reach 1	0.410	profile 1	518	2196.49	2196.49	4.90	95.67	2.92	0.82	9949.14	10044.81
X3	Reach 1	0.380	profile 1	518	2193.95	2193.95	4.97	108.87	1.81	0.89	9961.01	10069.87
X3	Reach 1	0.373	profile 1	518	2193.03	2193.03	5.93	72.69	2.48	0.95	9973.37	10046.06
X3	Reach 1	0.343	profile 1	518	2189.58	2189.58	5.98	74.27	1.76	0.98	9967.05	10041.31
X3	Reach 1	0.302	profile 1	518	2185.29		6.11	54.34	3.54	0.86	9974.47	10028.81
X3	Reach 1	0.267	profile 1	518	2182.35	2182.35	6.09	55.76	3.35	0.87	9981.01	10036.76
X3	Reach 1	0.238	profile 1	518	2179.85	2179.74	5.29	69.00	2.86	0.78	9970.31	10039.32
X3	Reach 1	0.200	profile 1	518	2176.48	2176.48	5.23	85.19	3.60	0.85	9953.03	10038.22
X3	Reach 1	0.161	profile 1	518	2172.74	2172.74	5.79	65.15	3.39	0.87	9968.27	10033.42
X3	Reach 1	0.122	profile 1	518	2169.56		4.06	91.01	3.73	0.60	9986.96	10077.97
X3	Reach 1	0.099	profile 1	518	2167.35	2167.07	5.67	89.84	2.77	0.99	9979.22	10069.06
X3	Reach 1	0.076	profile 1	518	2165.56	2165.56	5.31	101.79	1.43	0.95	9969.25	10071.04
X3	Reach 1	0.051	profile 1	518	2163.31	2163.31	5.33	89.43	2.43	0.90	9942.53	10031.96
X3	Reach 1	0.013	profile 1	518	2160.54		2.93	125.23	3.97	0.44	9902.57	10027.80
X2	Reach 1	1.028	profile 1	390	2430.56	2430.56	5.22	60.11	2.95	0.83	9961.26	10021.36
X2	Reach 1	1.014	profile 1	390	2424.94	2424.94	6.35	41.10	2.71	0.92	9986.98	10028.08
X2	Reach 1	0.994	profile 1	390	2419.24	2419.24	7.53	30.02	3.77	1.01	9986.14	10016.16
X2	Reach 1	0.973	profile 1	390	2412.99	2412.99	7.29	30.51	3.69	0.97	9985.26	10015.77
X2	Reach 1	0.949	profile 1	390	2405.72	2405.72	6.17	42.32	2.65	0.89	9981.61	10023.93
X2	Reach 1	0.933	profile 1	390	2399.56	2399.56	6.63	35.49	3.27	0.91	9980.75	10016.23
X2	Reach 1	0.915	profile 1	390	2393.05	2393.05	7.00	33.45	3.52	0.96	9982.00	10015.45
X2	Reach 1	0.897	profile 1	390	2386.97	2386.97	6.56	41.99	2.92	0.97	9990.60	10032.59
X2	Reach 1	0.881	profile 1	390	2381.17	2381.17	7.51	27.00	3.56	0.95	9987.59	10014.59
X2	Reach 1	0.857	profile 1	390	2374.11	2374.11	6.35	38.64	3.19	0.89	9990.83	10029.47
X2	Reach 1	0.838	profile 1	390	2368.27	2368.27	5.98	44.99	2.96	0.88	9965.95	10010.94
X2	Reach 1	0.808	profile 1	390	2359.84	2359.84	5.60	51.05	3.98	0.85	9961.76	10012.81
X2	Reach 1	0.784	profile 1	390	2354.61	2354.61	5.38	76.00	1.72	0.97	9955.37	10031.37
X2	Reach 1	0.773	profile 1	390	2349.58	2349.58	5.63	52.88	2.80	0.87	9965.72	10018.60
X2	Reach 1	0.747	profile 1	390	2343.14	2343.14	6.52	39.84	2.86	0.94	9977.75	10017.59
X2	Reach 1	0.724	profile 1	390	2337.18	2337.18	5.17	89.76	2.29	0.99	9946.74	10036.50
X2	Reach 1	0.698	profile 1	390	2331.47	2331.47	4.58	124.00	2.32	0.97	9916.90	10040.90
X2	Reach 1	0.676	profile 1	390	2324.34	2324.34	5.29	60.25	2.65	0.84	9948.84	10009.09
X2	Reach 1	0.657	profile 1	390	2320.49	2320.49	5.00	96.88	1.76	0.98	9940.79	10037.67
X2	Reach 1	0.655	profile 1	390	2319.67	2319.67	5.20	78.65	2.28	0.94	9949.56	10028.21
X2	Reach 1	0.646	profile 1	390	2317.54	2317.54	4.98	63.02	3.61	0.79	9946.83	10009.85
X2	Reach 1	0.623	profile 1	390	2312.40	2312.40	5.14	60.20	3.38	0.81	9988.92	10049.13
X2	Reach 1	0.595	profile 1	390	2306.42	2306.42	5.80	60.86	2.15	0.97	9952.66	10013.51

HEC-RAS Summary Output Table

River	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Total (ft/s)	Top Width (ft)	Max Chl Dpth (ft)	Froude # XS	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)
X2	Reach 1	0.569	profile 1	390	2301.16	2301.16	5.35	68.96	2.57	0.92	9955.68	10024.65
X2	Reach 1	0.550	profile 1	390	2297.46	2297.46	5.25	83.88	1.46	0.98	9953.21	10037.09
X2	Reach 1	0.530	profile 1	390	2293.78	2293.78	4.91	67.78	3.00	0.80	9977.37	10045.15
X2	Reach 1	0.510	profile 1	390	2290.23	2290.23	4.91	87.01	1.45	0.91	9946.65	10033.66
X2	Reach 1	0.504	profile 1	390	2288.35	2288.35	5.67	57.22	3.04	0.91	9969.92	10027.13
X2	Reach 1	0.481	profile 1	390	2284.30	2284.30	6.76	38.19	2.81	0.97	9976.00	10014.19
X2	Reach 1	0.462	profile 1	390	2280.84	2280.84	6.55	37.30	3.14	0.91	9986.99	10024.29
X2	Reach 1	0.423	profile 1	390	2276.06	2276.06	6.24	47.99	1.97	0.96	9969.96	10017.95
X2	Reach 1	0.403	profile 1	390	2272.68	2272.68	4.99	67.45	2.17	0.82	9965.55	10033.00
X2	Reach 1	0.367	profile 1	390	2268.29	2268.29	6.19	50.81	2.27	0.98	9959.33	10010.14
X2	Reach 1	0.326	profile 1	390	2262.07	2262.07	4.98	63.63	2.73	0.79	9948.37	10012.00
X2	Reach 1	0.294	profile 1	390	2257.84	2257.84	5.58	63.20	2.56	0.94	9947.25	10010.44
X2	Reach 1	0.256	profile 1	390	2253.67	2253.67	3.74	126.60	3.42	0.73	9921.89	10048.48
X2	Reach 1	0.211	profile 1	390	2246.80	2246.78	5.88	61.20	2.75	0.99	9969.22	10030.42
X2	Reach 1	0.179	profile 1	390	2242.53	2242.53	5.33	53.95	3.02	0.81	9989.15	10043.10
X2	Reach 1	0.149	profile 1	390	2238.55	2238.55	5.44	55.87	2.77	0.85	9951.08	10006.95
X2	Reach 1	0.118	profile 1	390	2234.45	2234.45	4.75	82.49	3.80	0.84	9942.61	10050.43
X2	Reach 1	0.083	profile 1	390	2229.43	2229.43	5.44	60.97	4.01	0.88	9987.78	10048.74
X2	Reach 1	0.046	profile 1	390	2224.64	2224.49	5.58	47.05	2.42	0.81	9972.27	10019.32
X2	Reach 1	0.014	profile 1	390	2221.37	2221.37	7.30	34.77	3.18	1.04	9982.53	10017.30
X1	Reach 1	1.270	profile 1	708	2427.89	2427.89	8.89	31.25	4.31	0.98	9989.32	10020.57
X1	Reach 1	1.247	profile 1	708	2423.48	2423.48	8.38	40.19	3.15	1.02	9986.65	10026.84
X1	Reach 1	1.223	profile 1	708	2418.23	2418.23	9.25	30.19	4.44	1.02	9988.61	10018.80
X1	Reach 1	1.191	profile 1	708	2411.57	2411.41	8.15	34.87	4.43	0.91	9980.84	10015.72
X1	Reach 1	1.150	profile 1	708	2405.46	2405.46	8.23	41.69	3.29	1.01	9993.40	10035.09
X1	Reach 1	1.118	profile 1	708	2398.51	2398.51	8.84	34.37	3.69	1.02	9993.05	10027.43
X1	Reach 1	1.093	profile 1	708	2393.55	2393.55	8.61	30.73	5.53	0.93	9983.97	10014.70
X1	Reach 1	1.053	profile 1	708	2387.02	2387.02	6.62	62.96	3.20	0.89	9985.55	10048.51
X1	Reach 1	1.047	profile 1	708	2385.44	2385.44	6.38	64.62	5.84	0.86	9994.01	10058.63
X1	Reach 1	1.028	profile 1	708	2381.42	2381.42	7.29	54.50	3.58	0.96	9973.86	10028.37
X1	Reach 1	1.002	profile 1	708	2377.67	2377.67	6.44	71.54	3.39	0.91	9940.52	10012.06
X1	Reach 1	0.979	profile 1	708	2373.32	2373.32	6.37	77.76	3.96	0.94	9947.65	10025.41
X1	Reach 1	0.956	profile 1	708	2369.13	2369.13	5.17	79.19	5.12	0.69	9929.69	10008.87
X1	Reach 1	0.931	profile 1	708	2363.37	2363.37	6.18	57.76	4.20	0.77	9952.31	10010.08
X1	Reach 1	0.894	profile 1	708	2356.26	2356.26	7.53	44.68	4.51	0.92	9978.18	10022.86
X1	Reach 1	0.858	profile 1	708	2349.78	2349.78	6.65	58.94	3.86	0.87	9979.53	10038.47
X1	Reach 1	0.827	profile 1	708	2344.94	2344.94	6.01	63.77	5.07	0.78	9989.61	10053.38
X1	Reach 1	0.796	profile 1	708	2340.11	2340.11	5.34	139.94	4.08	0.97	9901.71	10041.99
X1	Reach 1	0.776	profile 1	708	2336.44	2336.44	6.89	61.56	4.20	0.94	9869.05	10013.97
X1	Reach 1	0.763	profile 1	708	2335.29	2335.29	5.38	101.87	3.40	0.84	9892.45	10017.37
X1	Reach 1	0.759	profile 1	708	2334.37	2334.37	5.38	100.53	4.67	0.83	9905.71	10019.54
X1	Reach 1	0.731	profile 1	708	2328.62	2328.62	4.79	126.83	4.34	0.78	9880.19	10007.02
X1	Reach 1	0.688	profile 1	708	2322.06	2322.06	5.48	149.30	1.60	1.04	9870.91	10020.21
X1	Reach 1	0.684	profile 1	708	2320.90	2320.90	5.62	104.46	4.09	0.90	9882.34	10031.09
X1	Reach 1	0.661	profile 1	708	2316.70	2316.70	4.36	160.74	5.05	0.76	9871.74	10032.48
X1	Reach 1	0.628	profile 1	708	2310.00	2310.00	6.66	59.10	3.48	0.87	9963.51	10022.62
X1	Reach 1	0.587	profile 1	708	2304.59	2304.59	7.70	43.85	3.47	0.94	9971.97	10015.83
X1	Reach 1	0.561	profile 1	708	2300.18	2300.18	8.77	31.38	4.51	0.96	9989.28	10020.66
X1	Reach 1	0.545		Lat Struct								
X1	Reach 1	0.528	profile 1	708	2294.98	2294.98	8.03	41.40	2.81	0.97	9981.23	10022.63
X1	Reach 1	0.522	profile 1	708	2293.72	2293.72	7.23	45.61	4.05	0.87	9986.88	10032.48
X1	Reach 1	0.476	profile 1	708	2287.23	2287.21	7.50	51.08	3.49	0.97	9964.55	10015.63
X1	Reach 1	0.459	profile 1	708	2285.49		6.28	56.53	3.24	0.78	9958.80	10015.33
X1	Reach 1	0.438	profile 1	708	2283.12	2283.12	5.89	94.27	2.95	0.92	9990.37	10084.64
X1	Reach 1	0.420		Lat Struct								
X1	Reach 1	0.403	profile 1	708	2276.75	2276.75	5.80	108.44	2.73	0.96	9967.62	10076.06
X1	Reach 1	0.390		Lat Struct								
X1	Reach 1	0.377	profile 1	708	2272.64	2272.64	4.49	144.17	3.92	0.76	9935.54	10079.70
X1	Reach 1	0.342	profile 1	708	2266.52	2266.52	5.43	92.93	4.03	0.81	9937.64	10030.57
X1	Reach 1	0.322	profile 1	708	2263.48	2263.48	5.19	158.70	2.05	0.99	9893.68	10052.38
X1	Overflow	0.174	profile 1	132	2276.68	2276.61	2.12	150.65	1.61	0.58	9944.60	10095.25
X1	Overflow	0.173		Lat Struct								
X1	Overflow	0.151	profile 1	146	2274.46	2274.46	3.90	79.09	0.60	1.00	9955.79	10034.88
X1	Overflow	0.121	profile 1	146	2267.92	2267.92	3.22	98.43	1.12	0.84	9976.63	10075.06
X1	Overflow	0.092	profile 1	146	2262.77	2262.63	3.02	77.86	1.39	0.67	9979.91	10057.77
X1	Overflow	0.047	profile 1	146	2258.53	2258.48	3.53	73.04	0.87	0.83	9957.10	10030.14

HEC-RAS Summary Output Table

River	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Total (ft/s)	Top Width (ft)	Max Chl Dpth (ft)	Froude # XS	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)
X1	Overflow	0.018	profile 1	146	2254.21	2254.10	4.72	34.53	2.12	0.88	9992.10	10026.63
X1	Split 1 Up	0.161	profile 1	485	2260.80	2260.80	4.49	163.96	1.63	0.97	9958.14	10122.10
X1	Split 1 Up	0.125	profile 1	485	2255.41	2255.41	4.48	163.78	1.54	0.97	9956.31	10161.84
X1	Split 1 Lo	0.104	profile 1	485	2251.03	2251.03	4.50	160.73	2.67	0.97	9941.29	10145.51
X1	Split 1 Lo	0.070	profile 1	485	2246.15	2246.15	7.09	41.75	3.47	0.98	9982.61	10024.36
X1	Split 1 Lo	0.046	profile 1	485	2241.96	2241.96	6.56	45.69	3.32	0.91	9985.68	10031.36
X1	Reach 2	0.309	profile 1	223	2260.68	2260.68	4.56	56.37	2.11	0.86	9953.23	10009.60
X1	Reach 2	0.276	profile 1	223	2255.35	2255.35	6.04	27.99	2.65	0.93	9988.44	10016.43
X1	Reach 2	0.241	profile 1	223	2247.44	2247.23	6.72	20.41	3.83	0.93	9991.73	10076.96
X1	Reach 2	0.209	profile 1	223	2242.93	2242.93	5.15	49.92	2.34	0.97	9988.74	10101.88
X1	Reach 3	0.163	profile 1	708	2237.77		3.58	120.30	3.09	0.49	9974.24	10094.54
X1	Reach 3	0.113	profile 1	708	2235.24	2235.24	5.13	181.26	1.25	0.98	9886.89	10068.15
X1	Reach 3	0.110	profile 1	708	2233.59	2233.59	5.97	75.63	5.14	0.84	9929.26	10016.39
X1	Reach 3	0.082	profile 1	708	2228.47	2228.47	7.05	63.10	3.88	0.98	9975.00	10038.10
X1	Reach 3	0.048	profile 1	708	2224.44	2224.44	6.70	74.17	2.06	0.99	9963.61	10037.78
X1	Reach 3	0.040	profile 1	708	2223.75	2223.75	5.86	92.87	4.10	0.91	9960.64	10053.50
X1	Reach 3	0.015	profile 1	708	2221.48	2221.48	5.51	113.02	4.63	0.91	9873.68	10020.95
C8	Reach 1	2.959	profile 1	2280	2391.66	2391.66	6.99	142.41	6.13	0.81	9959.17	10101.58
C8	Reach 1	2.928	profile 1	2280	2387.20	2387.20	7.95	107.61	7.21	0.86	9910.81	10018.42
C8	Reach 1	2.904	profile 1	2280	2383.97	2383.97	8.26	121.01	5.97	0.96	9933.42	10056.45
C8	Reach 1	2.870	profile 1	2280	2379.72	2379.51	5.63	261.05	4.01	0.80	9932.68	10193.73
C8	Reach 1	2.828	profile 1	2280	2375.21	2375.03	6.17	173.36	3.94	0.74	9890.63	10063.99
C8	Reach 1	2.791	profile 1	2280	2370.47	2370.47	7.44	142.48	5.17	0.89	9926.70	10069.18
C8	Reach 1	2.748	profile 1	2280	2365.06	2365.06	6.74	180.36	4.87	0.87	9968.03	10162.38
C8	Reach 1	2.711	profile 1	2280	2360.17		6.46	157.09	5.84	0.76	9971.76	10128.84
C8	Reach 1	2.675	profile 1	2280	2356.08	2356.08	7.09	174.31	5.97	0.92	9968.29	10148.18
C8	Reach 1	2.640	profile 1	2280	2351.39	2351.39	6.82	185.72	6.42	0.90	9913.89	10099.61
C8	Reach 1	2.595	profile 1	2280	2346.19	2346.19	8.12	97.40	6.72	0.84	9957.93	10055.33
C8	Reach 1	2.563	profile 1	2280	2341.64	2341.64	7.54	132.27	4.35	0.88	9891.82	10024.09
C8	Reach 1	2.526	profile 1	2280	2336.56	2336.56	8.18	95.86	5.74	0.85	9918.38	10014.24
C8	Reach 1	2.498	profile 1	2280	2334.10	2334.10	6.49	159.04	6.75	0.77	9978.23	10137.27
C8	Reach 1	2.453	profile 1	2280	2328.20		6.49	147.67	5.85	0.74	9910.52	10058.20
C8	Reach 1	2.415	profile 1	2280	2324.18	2323.81	7.61	141.49	6.24	0.92	9870.52	10017.39
C8	Reach 1	2.374	profile 1	2280	2319.55	2319.55	7.58	149.91	6.56	0.94	9851.58	10018.96
C8	Reach 1	2.338	profile 1	2280	2316.22		6.07	145.16	5.58	0.66	9894.77	10039.93
C8	Reach 1	2.300	profile 1	2280	2312.52	2312.33	7.02	143.85	3.98	0.82	9886.77	10030.62
C8	Reach 1	2.256	profile 1	2280	2307.53	2307.42	5.94	211.72	5.15	0.78	9904.11	10115.82
C8	Reach 1	2.215	profile 1	2280	2303.00	2303.00	6.21	198.95	5.39	0.81	9880.21	10079.15
C8	Reach 1	2.175	profile 1	2280	2298.62	2298.62	5.94	209.63	5.66	0.77	9923.93	10133.56
C8	Reach 1	2.125	profile 1	2280	2292.08	2292.08	5.28	296.51	5.32	0.77	9776.01	10088.37
C8	Reach 1	2.090	profile 1	2280	2285.92	2285.92	7.96	141.73	5.25	0.99	9767.95	10015.72
C8	Reach 1	2.066	profile 1	2280	2282.81	2282.81	7.27	197.76	4.99	1.02	9797.52	10015.70
C8	Reach 1	2.023	profile 1	2280	2278.74	2278.74	7.31	129.18	5.39	0.83	9898.21	10027.39
C8	Reach 1	1.988	profile 1	2280	2275.46	2275.46	7.99	128.21	3.36	0.94	9933.84	10062.05
C8	Reach 1	1.985	profile 1	2280	2274.69		7.21	119.09	6.68	0.78	9945.67	10064.75
C8	Reach 1	1.966	profile 1	2280	2273.02		6.77	137.44	4.39	0.76	9964.29	10101.73
C8	Reach 1	1.929	profile 1	2280	2268.15	2268.15	8.61	113.53	4.65	0.99	9945.78	10119.70
C8	Reach 1	1.915	profile 1	2280	2267.25	2267.25	4.94	246.54	7.07	0.64	9853.52	10100.05
C8	Reach 1	1.883	profile 1	2280	2263.40	2263.40	5.55	209.00	7.08	0.70	9810.06	10019.06
C8	Reach 1	1.847	profile 1	2280	2259.76	2259.76	7.57	126.50	6.77	0.86	9849.93	10029.05
C8	Reach 1	1.810	profile 1	2280	2256.45	2256.45	5.72	218.82	7.45	0.75	9954.17	10173.00
C8	Reach 1	1.775	profile 1	2280	2252.78	2252.78	6.32	173.18	6.97	0.77	9983.48	10156.66
C8	Reach 1	1.734	profile 1	2280	2247.41	2247.41	8.55	114.45	4.72	0.99	9978.00	10153.56
C8	Reach 1	1.695	profile 1	2280	2243.91	2243.91	5.82	242.10	6.72	0.81	9919.88	10161.98
C8	Reach 1	1.654	profile 1	2280	2238.61	2238.41	6.40	165.29	5.61	0.77	9855.24	10054.76
C8	Reach 1	1.625	profile 1	2280	2234.88	2234.88	9.81	71.47	4.88	0.96	9857.63	10037.82
C8	Reach 1	1.609	profile 1	2280	2232.48	2232.48	10.34	65.80	6.68	0.99	9860.95	10036.43
C8	Reach 1	1.596	profile 1	2280	2231.09	2231.09	9.32	88.83	6.06	0.99	9898.89	10063.45
C8	Reach 1	1.574	profile 1	2280	2228.85	2228.85	8.92	102.36	5.04	1.00	9918.47	10060.06
C8	Reach 1	1.552	profile 1	2280	2227.17	2227.17	6.96	145.08	5.91	0.82	9893.68	10038.76
C8	Reach 1	1.536	profile 1	2280	2225.29	2225.29	9.19	85.32	5.29	0.95	9947.73	10033.05
C8	Reach 1	1.517	profile 1	2280	2224.22	2224.22	5.85	361.77	6.36	0.71	9653.90	10015.67
C8	Reach 1	1.488	profile 1	2280	2220.32	2220.32	5.42	338.03	5.41	0.74	9623.04	10017.80
C8	Reach 1	1.430	profile 1	2280	2214.10	2214.10	4.66	410.42	6.26	0.75	9604.81	10015.23
C8	Reach 1	1.384	profile 1	2280	2209.70	2209.70	4.67	357.62	5.95	0.70	9681.49	10039.12
C8	Reach 1	1.362	profile 1	2280	2206.75	2206.53	4.62	364.61	4.02	0.70	9656.72	10021.33

HEC-RAS Summary Output Table

River	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Total (ft/s)	Top Width (ft)	Max Chl Dpth (ft)	Froude # XS	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)
C8	Reach 1	1.306	profile 1	2280	2200.80	2200.67	5.74	269.53	3.10	0.83	9657.98	10026.31
C8	Reach 1	1.267	profile 1	2280	2196.06	2196.01	5.88	323.10	4.14	0.95	9628.93	10041.46
C8	Reach 1	1.241	profile 1	2280	2193.23	2193.00	5.26	310.16	3.25	0.78	9737.71	10050.59
C8	Reach 1	1.210	profile 1	2280	2189.16	2189.11	6.91	211.29	4.47	0.98	9782.82	10026.22
C8	Reach 1	1.173	profile 1	2280	2184.61	2184.61	7.05	198.72	6.71	0.97	9823.70	10022.41
C8	Reach 1	1.122	profile 1	2280	2178.16	2178.16	8.05	130.70	5.47	0.96	9926.43	10057.13
C8	Reach 1	1.066	profile 1	2280	2173.13	2173.13	6.98	172.64	5.72	0.89	9930.88	10103.51
C8	Reach 1	1.026	profile 1	2280	2169.25	2169.25	5.19	300.97	6.26	0.76	9828.18	10129.15
C8	Reach 1	0.995	profile 1	2280	2165.46	2165.46	5.17	285.48	6.55	0.73	9774.29	10059.77
C8	Reach 1	0.966	profile 1	2280	2163.29	2163.29	5.41	252.52	7.43	0.74	9762.77	10015.29
C8	Reach 1	0.931	profile 1	2280	2159.89	2159.89	5.92	229.13	6.59	0.81	9870.42	10130.92
C8	Reach 1	0.890	profile 1	2280	2155.75	2155.75	5.83	261.67	4.37	0.84	9922.73	10184.40
C8	Reach 1	0.853	profile 1	2280	2151.78	2151.78	7.00	182.19	4.21	0.92	9970.43	10152.62
C8	Reach 1	0.811	profile 1	2280	2148.56	2147.88	3.99	283.55	5.95	0.50	9957.60	10255.35
C8	Reach 1	0.807		Culvert								
C8	Reach 1	0.805	profile 1	2280	2147.29	2147.29	7.14	170.05	5.29	0.92	9963.60	10204.26
C8	Reach 1	0.767	profile 1	2280	2143.73	2143.73	6.40	153.94	6.76	0.74	9920.11	10074.05
C8	Reach 1	0.725	profile 1	2280	2139.21	2139.05	8.73	93.13	5.56	0.92	9946.11	10039.24
C8	Reach 1	0.709	profile 1	2280	2138.61		7.29	93.53	5.91	0.70	9941.69	10037.23
C8	Reach 1	0.691	profile 1	2280	2136.83	2136.83	9.65	74.60	5.41	0.96	9949.68	10024.28
C8	Reach 1	0.662	profile 1	2280	2132.66	2132.66	9.14	87.91	4.33	0.96	9955.14	10043.05
C8	Reach 1	0.632	profile 1	2280	2129.69	2129.69	8.02	88.62	7.31	0.79	9931.78	10020.40
C8	Reach 1	0.613	profile 1	2280	2128.00	2128.00	8.56	80.45	6.84	0.83	9939.79	10020.25
C8	Reach 1	0.583	profile 1	2280	2124.01		6.89	104.33	5.91	0.68	9924.12	10028.45
C8	Reach 1	0.552	profile 1	2280	2122.20		7.25	104.40	6.44	0.74	9963.35	10067.75
C8	Reach 1	0.505	profile 1	2280	2118.80	2118.80	8.73	87.92	4.84	0.89	9944.65	10032.57
C8	Reach 1	0.464	profile 1	2280	2114.32	2114.32	8.58	93.47	6.20	0.90	9967.47	10060.94
C8	Reach 1	0.413		Lat Struct								
C8	Reach 1	0.410	profile 1	2280	2109.80	2109.80	9.84	65.62	6.73	0.92	9977.05	10042.67
C8	Reach 1	0.395		Lat Struct								
C8	Reach 1	0.379	profile 1	2280	2105.41	2102.66	7.14	65.34	7.32	0.57	9965.34	10030.68
C8	Reach 1	0.357		Culvert								
C8	Reach 1	0.334	profile 1	2280	2101.23	2101.23	11.69	58.83	4.75	1.13	9911.36	10023.07
C8	Reach 1	0.287	profile 1	2280	2099.86	2099.86	7.06	133.99	6.16	0.80	9896.29	10030.27
C8	Reach 1	0.247	profile 1	2280	2096.92	2096.92	7.01	166.45	5.39	0.88	9901.63	10068.08
C8	Reach 1	0.199	profile 1	2280	2092.58	2092.58	7.63	121.64	7.10	0.86	9878.37	10056.93
C8	Reach 1	0.151	profile 1	2280	2088.24	2088.24	8.31	86.27	7.15	0.82	9929.32	10015.59
C8	Reach 2	0.112	profile 1	4320	2082.49	2082.49	8.24	238.13	8.68	0.98	9977.48	10404.80
C8	Reach 2	0.097	profile 1	4320	2082.00	2081.18	6.20	291.15	8.55	0.71	9980.56	10352.69
C6	Reach 1	1.525	profile 1	1430	2219.57	2219.57	6.08	140.07	4.50	0.83	9858.04	10025.88
C6	Reach 1	1.484	profile 1	1430	2214.46	2214.46	7.12	104.65	4.86	0.91	9837.04	10013.82
C6	Reach 1	1.461	profile 1	1430	2212.48	2212.48	5.55	221.17	4.74	0.91	9847.94	10069.12
C6	Reach 1	1.437	profile 1	1430	2209.32	2209.32	5.36	138.63	6.18	0.68	9915.40	10054.03
C6	Reach 1	1.395	profile 1	1430	2204.62	2204.55	7.24	98.50	2.49	0.90	9950.41	10048.92
C6	Reach 1	1.389	profile 1	1430	2204.22	2204.22	7.42	102.91	4.47	0.96	9945.15	10048.06
C6	Reach 1	1.349	profile 1	1430	2200.55	2200.55	6.53	124.71	5.38	0.87	9984.85	10109.56
C6	Reach 1	1.306	profile 1	1430	2196.33	2196.33	7.14	106.44	3.69	0.92	9969.13	10075.57
C6	Reach 1	1.292	profile 1	1430	2194.52	2194.52	7.57	90.86	4.83	0.93	9962.55	10053.41
C6	Reach 1	1.252	profile 1	1430	2190.19	2190.13	7.92	73.87	5.10	0.89	9972.56	10046.44
C6	Reach 1	1.202	profile 1	1430	2185.96	2185.96	6.54	111.76	5.57	0.82	9867.94	10054.74
C6	Reach 1	1.170	profile 1	1430	2182.55	2182.55	6.38	152.44	4.13	0.93	9828.39	10035.85
C6	Reach 1	1.126	profile 1	1430	2178.34	2178.34	5.26	237.66	5.54	0.87	9792.47	10030.13
C6	Reach 1	1.094	profile 1	1430	2175.24	2175.24	5.48	172.91	6.84	0.79	9852.17	10033.18
C6	Reach 1	1.058	profile 1	1430	2171.32	2171.32	4.92	203.72	5.12	0.73	9855.19	10058.91
C6	Reach 1	1.052	profile 1	1430	2169.15	2169.15	6.20	161.92	2.81	0.92	9888.33	10050.25
C6	Reach 1	1.022	profile 1	1430	2167.71	2167.71	4.46	274.21	5.09	0.73	9850.16	10124.37
C6	Reach 1	0.990	profile 1	1430	2163.19	2163.19	5.86	207.21	3.98	0.95	9824.08	10031.28
C6	Reach 2	0.946	profile 1	1920	2158.92	2158.92	6.32	175.54	5.66	0.85	9842.81	10018.35
C6	Reach 2	0.909	profile 1	1920	2155.18	2155.12	6.73	143.28	5.33	0.84	9874.17	10020.81
C6	Reach 2	0.871	profile 1	1920	2152.06		8.27	76.06	4.86	0.83	9951.02	10027.08
C6	Reach 2	0.832	profile 1	1920	2149.77		6.86	93.85	5.46	0.70	9928.86	10022.71
C6	Reach 2	0.791	profile 1	1920	2146.84		6.88	142.88	5.66	0.87	9880.87	10023.74
C6	Reach 2	0.759	profile 1	1920	2145.38	2143.38	6.12	61.27	5.12	0.48	9969.37	10030.64
C6	Reach 2	0.753		Culvert								
C6	Reach 2	0.747	profile 1	1920	2143.30		8.94	61.68	3.48	0.84	9968.63	10030.31
C6	Reach 2	0.706	profile 1	1920	2139.77	2139.77	6.66	183.42	6.29	0.94	9802.42	10018.78

HEC-RAS Summary Output Table

River	Reach	River Sta	Profile	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Total (ft/s)	Top Width (ft)	Max Chl Dpth (ft)	Froude # XS	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)
C6	Reach 2	0.669	profile 1	1920	2135.66	2135.66	7.15	149.14	6.21	0.90	9822.32	10026.61
C6	Reach 2	0.631	profile 1	1920	2131.64	2131.64	6.75	193.42	5.95	0.82	9856.04	10049.46
C6	Reach 2	0.608	profile 1	1920	2129.22	2129.22	5.80	201.42	5.23	0.80	9884.29	10085.71
C6	Reach 2	0.584	profile 1	1920	2126.70	2125.94	7.41	113.85	6.66	0.87	9970.21	10084.06
C6	Reach 2	0.544	profile 1	1920	2122.70	2122.51	9.29	83.18	6.23	1.04	9980.82	10063.99
C6	Reach 2	0.506	profile 1	1920	2119.80	2119.80	6.60	162.86	4.82	0.87	9981.72	10144.58
C6	Reach 2	0.466	profile 1	1920	2116.90	2116.90	5.47	220.29	5.56	0.76	9869.95	10090.24
C6	Reach 2	0.426	profile 1	1920	2111.94	2111.94	6.77	141.34	6.10	0.84	9898.44	10039.78
C6	Reach 2	0.390	profile 1	1920	2107.77	2107.77	7.58	106.01	4.30	0.86	9918.70	10024.71
C6	Reach 2	0.349	profile 1	1920	2103.55	2103.55	7.89	111.76	6.39	0.94	9897.53	10051.48
C6	Reach 2	0.311	profile 1	1920	2101.19	2101.19	5.56	198.54	6.09	0.74	9847.49	10046.03
C6	Reach 2	0.274	profile 1	1920	2098.30		5.14	260.79	4.48	0.76	9805.89	10066.68
C6	Reach 3	0.248	profile 1	2210	2095.36	2095.36	5.86	315.31	4.32	0.94	9751.52	10080.76
C6	Reach 3	0.213	profile 1	2210	2092.90	2092.90	5.06	273.61	6.15	0.71	9748.31	10021.92
C6	Reach 3	0.175	profile 1	2210	2089.36	2089.36	6.28	198.18	4.38	0.83	9819.11	10017.28
C6	Reach 3	0.134	profile 1	2210	2085.00	2085.00	6.48	168.41	5.36	0.80	9936.51	10104.92

5.10 References

1. Michael Baker, Jr., Inc., 1990, Flood Control District of Maricopa County-Flood Delineation Study of Cline Creek and Tributary Washes, FCD 89-15, April 1990.

2. Phillips, J. V. and Ingersoll, T.L., 1998, *Verification of Roughness Coefficients for Selected Natural and Constructed Stream Channels in Arizona*: U.S. Geological Survey Professional Paper 1584, 77 p.

3. Thomsen, B.W. and Hjalmarson, H.W., 1991, *Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona.* U.S. Geological Survey: Tucson, Arizona, 126 p.

4. U.S. Army Corps of Engineers, HEC-RAS River Analysis System Users Manual, Version 3.1, November, 2002.

5. U.S. Army Corps of Engineers, HEC-RAS River Analysis System Hydraulic Reference Manual, Version 3.1, November, 2002.

6. U.S. Army Corps of Engineers, HEC-RAS River Analysis System, Version 3.1.2, April, 2004.

SECTION 6: EROSION AND SEDIMENT TRANSPORT

No erosion or sediment transport analyses were conducted as part of this study.

SECTION 7: DRAFT FIS REPORT DATA

7.1 Summary of Discharges

See Chapter 4 and Table 4 for detail regarding the origin of the discharges presented below.

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			
		10-Year	50-year	100-Year	500-Year
Cline Creek – Tributary C6 Below Confluence with Tributary X2				1,430	
Cline Creek – Tributary C6 Below Confluence with Tributary X3				1,920	
Cline Creek – Tributary C6 Below Confluence with Tributary X4A				2,210	
Cline Creek – Tributary C8				2,280	
Cline Creek – Tributary C8 Below Confluence with Tributary C6				4,320	
Cline Creek – Tributary X1				708	
Cline Creek – Tributary X2				390	
Cline Creek – Tributary X3				518	
Cline Creek – Tributary X4B				139	
Cline Creek – Tributary X4A				393	
Cline Creek – Tributary X5				301	

7.2 Floodway Data

HEC-RAS Floodway Summary Output Table

River	Reach	River Sta	Profile	Top Wdth Act (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta WS (ft)
X5	Reach 1	0.975	profile 2	39.93	55.57	5.42	2259.55	2259.57	-0.02
X5	Reach 1	0.951	profile 2	28.71	42.50	7.08	2252.01	2252.04	-0.03
X5	Reach 1	0.927	profile 2	30.82	43.96	6.85	2246.15	2246.17	-0.02
X5	Reach 1	0.915	profile 2	22.58	39.90	7.54	2243.97	2244.01	-0.05
X5	Reach 1	0.900	profile 2	23.76	45.20	6.66	2239.80	2239.81	-0.01
X5	Reach 1	0.883	profile 2	27.51	42.43	7.09	2237.02	2236.92	0.10
X5	Reach 1	0.871	profile 2	35.40	48.52	6.20	2234.20	2234.16	0.04
X5	Reach 1	0.840	profile 2	27.09	42.23	7.13	2227.93	2227.92	0.01
X5	Reach 1	0.823	profile 2	32.78	46.53	6.47	2224.56	2224.51	0.05
X5	Reach 1	0.799	profile 2	29.80	47.63	6.32	2221.00	2220.95	0.05
X5	Reach 1	0.769	profile 2	23.43	40.31	7.47	2217.23	2217.11	0.11
X5	Reach 1	0.745	profile 2	29.17	46.90	6.42	2212.75	2212.56	0.18
X5	Reach 1	0.722	profile 2	25.10	43.78	6.88	2210.00	2210.04	-0.04
X5	Reach 1	0.701	profile 2	26.55	41.85	7.19	2208.02	2207.88	0.14
X5	Reach 1	0.688	profile 2	20.62	41.45	7.26	2202.88	2202.78	0.10
X5	Reach 1	0.661	profile 2	18.00	37.46	8.03	2198.69	2198.72	-0.04
X5	Reach 1	0.643	profile 2	27.32	44.75	6.73	2194.85	2194.81	0.04
X5	Reach 1	0.622	profile 2	30.86	46.88	6.42	2190.26	2190.21	0.05
X5	Reach 1	0.588	profile 2	34.60	53.83	5.59	2185.10	2185.02	0.08
X5	Reach 1	0.555	profile 2	39.48	54.30	5.54	2179.20	2179.24	-0.04
X5	Reach 1	0.519	profile 2	43.00	51.64	5.83	2173.36	2173.34	0.02
X5	Reach 1	0.486	profile 2	37.53	50.47	5.96	2168.49	2168.40	0.09
X5	Reach 1	0.446	profile 2	30.44	46.34	6.50	2162.66	2162.63	0.03
X5	Reach 1	0.409	profile 2	30.33	45.46	6.62	2159.86	2159.48	0.38
X5	Reach 1	0.393	profile 2	27.75	47.60	6.32	2157.60	2157.28	0.32
X4B	Reach 1	0.525	profile 2	34.00	28.16	4.94	2190.03	2189.91	0.12
X4B	Reach 1	0.486	profile 2	32.97	28.21	4.93	2183.02	2183.00	0.02
X4B	Reach 1	0.453	profile 2	26.50	25.61	5.43	2177.38	2177.33	0.05
X4B	Reach 1	0.417	profile 2	24.95	24.93	5.58	2173.94	2173.86	0.09
X4B	Reach 1	0.390	profile 2	28.50	28.32	4.91	2171.78	2171.40	0.38
X4B	Reach 1	0.359	profile 2	22.00	27.79	5.00	2168.40	2168.11	0.29
X4B	Reach 1	0.315	profile 2	37.00	28.19	4.93	2164.67	2164.49	0.18
X4B	Reach 1	0.281	profile 2	30.00	26.74	5.20	2160.72	2160.64	0.08
X4B	Reach 1	0.264	profile 2	52.00	41.68	3.33	2159.33	2159.24	0.09
X4B	Reach 1	0.235	profile 2	32.00	26.64	5.22	2155.79	2155.67	0.12
X4B	Reach 1	0.194	profile 2	73.36	36.71	3.79	2150.75	2150.78	-0.03
X4B	Reach 1	0.159	profile 2	43.00	34.66	4.01	2147.73	2147.56	0.17
X4B	Reach 1	0.144	profile 2	61.00	34.23	4.06	2146.20	2146.16	0.04
X4B	Reach 1	0.111	profile 2	55.00	41.74	3.33	2142.75	2142.61	0.15
X4B	Reach 1	0.088	profile 2	46.00	36.64	3.79	2140.82	2140.16	0.66
X4B	Reach 1	0.054	profile 2	44.00	30.28	4.59	2136.45	2136.20	0.26
X4A	Reach 1	0.812	profile 2	59.08	49.74	5.11	2195.90	2195.89	0.02
X4A	Reach 1	0.777	profile 2	40.00	46.79	5.43	2188.67	2188.67	-0.01
X4A	Reach 1	0.740	profile 2	28.00	40.45	6.28	2181.98	2181.63	0.35
X4A	Reach 1	0.706	profile 2	26.00	37.45	6.78	2175.00	2174.88	0.12
X4A	Reach 1	0.670	profile 2	50.00	51.07	4.97	2170.65	2170.67	-0.02
X4A	Reach 1	0.631	profile 2	23.00	37.29	6.81	2166.55	2166.59	-0.04
X4A	Reach 1	0.587	profile 2	21.70	40.82	6.22	2160.39	2160.16	0.23
X4A	Reach 1	0.558	profile 2	30.00	39.56	6.42	2158.22	2157.76	0.45
X4A	Reach 1	0.515	profile 2	30.00	41.18	6.17	2153.89	2153.82	0.07
X4A	Reach 1	0.473	profile 2	25.90	45.76	5.55	2149.98	2149.75	0.23
X4A	Reach 1	0.437	profile 2	24.00	37.48	6.78	2146.37	2146.17	0.20
X4A	Reach 1	0.402	profile 2	29.60	40.46	6.28	2141.58	2141.64	-0.07
X4A	Reach 1	0.368	profile 2	33.71	52.35	4.85	2138.25	2137.93	0.32
X4A	Reach 1	0.327	profile 2	40.00	46.10	5.51	2133.95	2133.64	0.31
X4A	Reach 2	0.287	profile 2	28.00	57.93	6.89	2129.04	2128.84	0.20
X4A	Reach 2	0.257	profile 2	36.00	60.42	6.60	2125.92	2125.69	0.23
X4A	Reach 2	0.213	profile 2	38.76	59.30	6.73	2120.96	2120.45	0.51
X4A	Reach 2	0.186	profile 2	49.57	74.17	5.38	2117.93	2117.44	0.49
X4A	Reach 2	0.170		Lat Struct					
X4A	Reach 2	0.153	profile 2	70.00	87.49	4.56	2115.31	2114.56	0.74

HEC-RAS Floodway Summary Output Table

River	Reach	River Sta	Profile	Top Wdth Act (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta WS (ft)
X4A	Reach 2	0.130		Lat Struct					
X4A	Reach 2	0.113	profile 2	59.76	69.96	5.70	2111.36	2111.04	0.32
X4A	Reach 2	0.082	profile 2	36.41	55.78	7.15	2105.50	2105.50	0.00
X4A	Reach 2	0.051	profile 2	35.47	54.69	7.30	2100.20	2100.18	0.02
X4A	Reach 2	0.033	profile 2	58.26	79.86	5.00	2098.16	2098.07	0.09
X3	Reach 1	1.168	profile 2	27.00	60.99	8.49	2319.07	2319.02	0.04
X3	Reach 1	1.146	profile 2	23.00	57.94	8.94	2313.35	2313.36	-0.01
X3	Reach 1	1.126	profile 2	32.20	66.98	7.73	2307.90	2307.81	0.09
X3	Reach 1	1.097	profile 2	32.00	65.74	7.88	2300.12	2299.68	0.44
X3	Reach 1	1.082	profile 2	34.78	70.11	7.39	2297.00	2296.92	0.08
X3	Reach 1	1.068	profile 2	32.80	65.45	7.91	2293.57	2293.60	-0.03
X3	Reach 1	1.044	profile 2	37.13	67.68	7.65	2290.90	2290.33	0.57
X3	Reach 1	1.029	profile 2	52.70	85.33	6.07	2286.00	2286.02	-0.02
X3	Reach 1	1.011	profile 2	31.01	66.46	7.79	2281.47	2281.50	-0.03
X3	Reach 1	0.991	profile 2	33.84	68.22	7.59	2276.84	2276.84	0.00
X3	Reach 1	0.964	profile 2	35.43	68.98	7.51	2271.96	2271.88	0.08
X3	Reach 1	0.930	profile 2	32.48	68.29	7.59	2265.27	2265.30	-0.04
X3	Reach 1	0.896	profile 2	27.54	61.33	8.45	2258.89	2258.89	0.00
X3	Reach 1	0.867	profile 2	30.00	66.85	7.75	2253.77	2253.83	-0.07
X3	Reach 1	0.843	profile 2	22.39	59.36	8.73	2249.77	2249.34	0.43
X3	Reach 1	0.819	profile 2	37.53	71.95	7.20	2245.01	2245.04	-0.04
X3	Reach 1	0.790	profile 2	36.00	78.29	6.62	2240.69	2240.13	0.57
X3	Reach 1	0.750	profile 2	32.71	69.59	7.44	2236.28	2235.86	0.42
X3	Reach 1	0.718	profile 2	36.45	71.28	7.27	2231.59	2231.07	0.52
X3	Reach 1	0.685	profile 2	47.00	83.06	6.24	2226.36	2226.38	-0.03
X3	Reach 1	0.647	profile 2	37.00	81.89	6.33	2221.13	2220.89	0.24
X3	Reach 1	0.626	profile 2	25.16	64.71	8.01	2218.72	2218.72	0.01
X3	Reach 1	0.595	profile 2	55.00	101.18	5.12	2215.85	2215.92	-0.07
X3	Reach 1	0.582	profile 2	36.05	67.86	7.63	2214.37	2214.27	0.10
X3	Reach 1	0.553	profile 2	32.74	81.04	6.39	2211.93	2211.81	0.12
X3	Reach 1	0.521	profile 2	39.92	76.01	6.81	2208.78	2208.71	0.07
X3	Reach 1	0.510	profile 2	34.27	71.70	7.22	2207.18	2206.93	0.25
X3	Reach 1	0.468	profile 2	45.91	105.95	4.89	2203.62	2203.36	0.26
X3	Reach 1	0.440	profile 2	36.19	74.17	6.98	2201.06	2200.52	0.54
X3	Reach 1	0.410	profile 2	38.91	74.04	7.00	2196.95	2196.49	0.46
X3	Reach 1	0.380	profile 2	42.56	71.27	7.27	2194.22	2193.95	0.26
X3	Reach 1	0.373	profile 2	37.17	74.28	6.97	2193.13	2193.03	0.10
X3	Reach 1	0.343	profile 2	51.79	78.06	6.64	2189.69	2189.58	0.10
X3	Reach 1	0.302	profile 2	31.03	69.64	7.44	2185.28	2185.29	-0.02
X3	Reach 1	0.267	profile 2	49.00	84.53	6.13	2182.37	2182.35	0.02
X3	Reach 1	0.238	profile 2	44.36	89.10	5.81	2180.02	2179.85	0.17
X3	Reach 1	0.200	profile 2	50.61	81.70	6.34	2176.49	2176.48	0.00
X3	Reach 1	0.161	profile 2	38.85	78.79	6.57	2172.88	2172.74	0.14
X3	Reach 1	0.122	profile 2	41.04	78.06	6.64	2169.59	2169.56	0.02
X3	Reach 1	0.099	profile 2	41.15	84.04	6.16	2167.61	2167.35	0.26
X3	Reach 1	0.076	profile 2	53.42	76.90	6.74	2165.71	2165.56	0.15
X3	Reach 1	0.051	profile 2	61.16	83.36	6.21	2163.37	2163.31	0.06
X3	Reach 1	0.013	profile 2	78.40	150.66	3.44	2160.82	2160.54	0.27
X2	Reach 1	1.028	profile 2	60.11	74.69	5.22	2430.56	2430.56	0.00
X2	Reach 1	1.014	profile 2	41.10	61.42	6.35	2424.94	2424.94	0.00
X2	Reach 1	0.994	profile 2	30.02	51.78	7.53	2419.24	2419.24	0.00
X2	Reach 1	0.973	profile 2	30.51	53.50	7.29	2412.99	2412.99	0.00
X2	Reach 1	0.949	profile 2	42.32	63.21	6.17	2405.72	2405.72	0.00
X2	Reach 1	0.933	profile 2	35.49	58.79	6.63	2399.56	2399.56	0.00
X2	Reach 1	0.915	profile 2	33.45	55.70	7.00	2393.05	2393.05	0.00
X2	Reach 1	0.897	profile 2	41.99	59.48	6.56	2386.97	2386.97	0.00
X2	Reach 1	0.881	profile 2	27.00	51.94	7.51	2381.17	2381.17	0.00
X2	Reach 1	0.857	profile 2	38.64	61.40	6.35	2374.11	2374.11	0.00
X2	Reach 1	0.838	profile 2	32.94	59.56	6.55	2368.56	2368.27	0.29
X2	Reach 1	0.808	profile 2	40.67	64.14	6.08	2359.79	2359.84	-0.04
X2	Reach 1	0.784	profile 2	64.52	69.09	5.64	2354.59	2354.61	-0.02

HEC-RAS Floodway Summary Output Table

River	Reach	River Sta	Profile	Top Wdth Act (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta WS (ft)
X2	Reach 1	0.773	profile 2	45.40	65.90	5.92	2349.55	2349.58	-0.03
X2	Reach 1	0.747	profile 2	39.84	64.31	6.06	2343.25	2343.14	0.11
X2	Reach 1	0.724	profile 2	38.13	56.83	6.86	2337.24	2337.18	0.06
X2	Reach 1	0.698	profile 2	52.00	65.34	5.97	2332.09	2331.47	0.62
X2	Reach 1	0.676	profile 2	34.09	61.94	6.30	2324.79	2324.34	0.45
X2	Reach 1	0.657	profile 2	32.57	53.27	7.32	2320.72	2320.49	0.23
X2	Reach 1	0.655	profile 2	31.59	53.72	7.26	2319.84	2319.67	0.16
X2	Reach 1	0.646	profile 2	35.02	60.91	6.40	2317.59	2317.54	0.05
X2	Reach 1	0.623	profile 2	33.65	57.99	6.73	2312.38	2312.40	-0.02
X2	Reach 1	0.595	profile 2	37.97	56.25	6.93	2306.45	2306.42	0.02
X2	Reach 1	0.569	profile 2	43.00	63.34	6.16	2301.15	2301.16	-0.01
X2	Reach 1	0.550	profile 2	36.11	55.98	6.97	2297.77	2297.46	0.31
X2	Reach 1	0.530	profile 2	37.00	61.91	6.30	2293.76	2293.78	-0.02
X2	Reach 1	0.510	profile 2	44.00	61.01	6.39	2290.41	2290.23	0.18
X2	Reach 1	0.504	profile 2	40.03	60.95	6.40	2288.36	2288.35	0.00
X2	Reach 1	0.481	profile 2	33.19	56.13	6.95	2284.33	2284.30	0.03
X2	Reach 1	0.462	profile 2	37.30	62.13	6.28	2280.91	2280.84	0.07
X2	Reach 1	0.423	profile 2	35.04	56.51	6.90	2276.05	2276.06	-0.01
X2	Reach 1	0.403	profile 2	29.22	57.92	6.73	2272.96	2272.68	0.28
X2	Reach 1	0.367	profile 2	35.93	54.84	7.11	2268.32	2268.29	0.04
X2	Reach 1	0.326	profile 2	43.34	67.75	5.76	2262.34	2262.07	0.28
X2	Reach 1	0.294	profile 2	41.44	64.13	6.08	2257.91	2257.84	0.07
X2	Reach 1	0.256	profile 2	40.00	64.24	6.07	2253.69	2253.67	0.02
X2	Reach 1	0.211	profile 2	40.71	62.94	6.20	2246.90	2246.80	0.10
X2	Reach 1	0.179	profile 2	39.82	64.37	6.06	2242.52	2242.53	-0.01
X2	Reach 1	0.149	profile 2	38.95	62.65	6.22	2238.58	2238.55	0.03
X2	Reach 1	0.118	profile 2	33.00	55.67	7.01	2234.48	2234.45	0.02
X2	Reach 1	0.083	profile 2	50.06	68.83	5.67	2229.41	2229.43	-0.03
X2	Reach 1	0.046	profile 2	37.73	63.94	6.10	2224.66	2224.64	0.02
X2	Reach 1	0.014	profile 2	34.77	54.71	7.13	2221.41	2221.37	0.04
X1	Reach 1	1.270	profile 2	31.25	79.66	8.89	2427.89	2427.89	0.00
X1	Reach 1	1.247	profile 2	40.19	84.47	8.38	2423.48	2423.48	0.00
X1	Reach 1	1.223	profile 2	30.19	76.56	9.25	2418.23	2418.23	0.00
X1	Reach 1	1.191	profile 2	34.87	86.83	8.15	2411.57	2411.57	0.00
X1	Reach 1	1.150	profile 2	41.69	86.05	8.23	2405.46	2405.46	0.00
X1	Reach 1	1.118	profile 2	34.37	80.10	8.84	2398.51	2398.51	0.00
X1	Reach 1	1.093	profile 2	30.73	82.25	8.61	2393.55	2393.55	0.00
X1	Reach 1	1.053	profile 2	34.62	83.28	8.50	2387.13	2387.02	0.11
X1	Reach 1	1.047	profile 2	37.99	87.75	8.07	2385.52	2385.44	0.07
X1	Reach 1	1.028	profile 2	40.00	89.74	7.89	2381.59	2381.42	0.17
X1	Reach 1	1.002	profile 2	37.06	88.15	8.03	2378.00	2377.67	0.33
X1	Reach 1	0.979	profile 2	48.00	92.45	7.66	2373.49	2373.32	0.17
X1	Reach 1	0.956	profile 2	43.82	103.68	6.83	2369.09	2369.13	-0.04
X1	Reach 1	0.931	profile 2	35.08	89.92	7.87	2363.68	2363.37	0.31
X1	Reach 1	0.894	profile 2	44.68	96.27	7.35	2356.31	2356.26	0.05
X1	Reach 1	0.858	profile 2	30.00	80.48	8.80	2349.76	2349.78	-0.01
X1	Reach 1	0.827	profile 2	39.39	94.23	7.51	2345.16	2344.94	0.22
X1	Reach 1	0.796	profile 2	49.26	91.15	7.77	2340.09	2340.11	-0.01
X1	Reach 1	0.776	profile 2	59.59	102.92	6.88	2336.44	2336.44	0.00
X1	Reach 1	0.763	profile 2	68.74	112.52	6.29	2335.25	2335.29	-0.04
X1	Reach 1	0.759	profile 2	87.67	123.38	5.74	2334.35	2334.37	-0.03
X1	Reach 1	0.731	profile 2	110.02	140.70	5.03	2328.65	2328.62	0.03
X1	Reach 1	0.688	profile 2	77.21	106.59	6.64	2322.82	2322.06	0.76
X1	Reach 1	0.684	profile 2	56.67	102.55	6.90	2320.89	2320.90	-0.01
X1	Reach 1	0.661	profile 2	52.81	93.59	7.56	2316.78	2316.70	0.08
X1	Reach 1	0.628	profile 2	38.46	88.63	7.99	2309.99	2310.00	-0.01
X1	Reach 1	0.587	profile 2	37.74	88.02	8.04	2304.57	2304.59	-0.02
X1	Reach 1	0.561	profile 2	31.38	80.72	8.77	2300.18	2300.18	0.00
X1	Reach 1	0.545		Lat Struct					
X1	Reach 1	0.528	profile 2	41.40	88.19	8.03	2294.98	2294.98	0.00
X1	Reach 1	0.522	profile 2	45.61	97.86	7.23	2293.72	2293.72	0.00

HEC-RAS Floodway Summary Output Table

River	Reach	River Sta	Profile	Top Wdth Act (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta WS (ft)
X1	Reach 1	0.476	profile 2	51.08	94.36	7.50	2287.23	2287.23	0.00
X1	Reach 1	0.459	profile 2	56.53	112.67	6.28	2285.49	2285.49	0.00
X1	Reach 1	0.438	profile 2	94.27	120.14	5.89	2283.12	2283.12	0.00
X1	Reach 1	0.420		Lat Struct					
X1	Reach 1	0.403	profile 2	108.44	122.07	5.80	2276.75	2276.75	0.00
X1	Reach 1	0.390		Lat Struct					
X1	Reach 1	0.377	profile 2	144.17	157.72	4.49	2272.64	2272.64	0.00
X1	Reach 1	0.342	profile 2	92.93	130.32	5.43	2266.52	2266.52	0.00
X1	Reach 1	0.322	profile 2	158.70	136.38	5.19	2263.48	2263.48	0.00
X1	Overflow 1	0.174	profile 2	150.65	62.30	2.12	2276.68	2276.68	0.00
X1	Overflow 1	0.173		Lat Struct					
X1	Overflow 1	0.151	profile 2	79.09	37.42	3.90	2274.46	2274.46	0.00
X1	Overflow 1	0.121	profile 2	98.43	45.28	3.22	2267.92	2267.92	0.00
X1	Overflow 1	0.092	profile 2	77.86	48.39	3.02	2262.77	2262.77	0.00
X1	Overflow 1	0.047	profile 2	73.04	41.31	3.53	2258.53	2258.53	0.00
X1	Overflow 1	0.018	profile 2	34.53	30.94	4.72	2254.21	2254.21	0.00
X1	Split 1 Upp	0.161	profile 2	163.96	108.09	4.49	2260.80	2260.80	0.00
X1	Split 1 Upp	0.125	profile 2	163.78	108.23	4.48	2255.41	2255.41	0.00
X1	Split 1 Low	0.104	profile 2	160.73	107.67	4.50	2251.03	2251.03	0.00
X1	Split 1 Low	0.070	profile 2	41.75	68.45	7.09	2246.15	2246.15	0.00
X1	Split 1 Low	0.046	profile 2	45.69	73.91	6.56	2241.96	2241.96	0.00
X1	Reach 2	0.309	profile 2	56.37	48.94	4.56	2260.68	2260.68	0.00
X1	Reach 2	0.276	profile 2	27.99	36.94	6.04	2255.35	2255.35	0.00
X1	Reach 2	0.241	profile 2	17.83	37.49	5.95	2247.70	2247.44	0.26
X1	Reach 2	0.209	profile 2	19.99	31.34	7.12	2243.44	2242.93	0.52
X1	Reach 3	0.163	profile 2	60.66	147.30	4.81	2238.51	2237.77	0.73
X1	Reach 3	0.113	profile 2	75.23	106.22	6.67	2235.70	2235.24	0.46
X1	Reach 3	0.110	profile 2	52.26	99.78	7.10	2233.74	2233.59	0.15
X1	Reach 3	0.082	profile 2	63.10	106.52	6.65	2228.56	2228.47	0.10
X1	Reach 3	0.048	profile 2	42.65	87.44	8.10	2224.65	2224.44	0.21
X1	Reach 3	0.040	profile 2	44.61	91.00	7.78	2223.76	2223.75	0.01
X1	Reach 3	0.015	profile 2	82.30	115.41	6.13	2221.45	2221.48	-0.02
C8	Reach 1	2.959	profile 2	142.41	325.99	6.99	2391.66	2391.66	0.00
C8	Reach 1	2.928	profile 2	107.61	286.73	7.95	2387.20	2387.20	0.00
C8	Reach 1	2.904	profile 2	107.56	269.12	8.47	2383.95	2383.97	-0.03
C8	Reach 1	2.870	profile 2	147.32	344.84	6.61	2380.39	2379.72	0.67
C8	Reach 1	2.828	profile 2	129.37	315.21	7.23	2375.54	2375.21	0.33
C8	Reach 1	2.791	profile 2	106.87	292.75	7.79	2370.87	2370.47	0.40
C8	Reach 1	2.748	profile 2	98.97	287.10	7.94	2365.69	2365.06	0.64
C8	Reach 1	2.711	profile 2	107.02	291.50	7.82	2360.61	2360.17	0.44
C8	Reach 1	2.675	profile 2	99.58	296.75	7.68	2356.81	2356.08	0.73
C8	Reach 1	2.640	profile 2	109.49	289.54	7.87	2351.42	2351.39	0.04
C8	Reach 1	2.595	profile 2	97.40	280.89	8.12	2346.19	2346.19	0.00
C8	Reach 1	2.563	profile 2	132.27	302.53	7.54	2341.64	2341.64	0.00
C8	Reach 1	2.526	profile 2	95.86	278.74	8.18	2336.56	2336.56	0.00
C8	Reach 1	2.498	profile 2	141.70	338.78	6.73	2334.07	2334.10	-0.03
C8	Reach 1	2.453	profile 2	79.82	283.91	8.03	2328.33	2328.20	0.13
C8	Reach 1	2.415	profile 2	80.39	262.79	8.68	2324.18	2324.18	0.00
C8	Reach 1	2.374	profile 2	96.96	279.15	8.17	2319.69	2319.55	0.14
C8	Reach 1	2.338	profile 2	91.03	310.50	7.34	2316.60	2316.22	0.38
C8	Reach 1	2.300	profile 2	93.66	307.44	7.42	2312.97	2312.52	0.45
C8	Reach 1	2.256	profile 2	106.00	306.95	7.43	2308.17	2307.53	0.63
C8	Reach 1	2.215	profile 2	118.13	306.29	7.44	2303.41	2303.00	0.41
C8	Reach 1	2.175	profile 2	146.07	343.56	6.64	2299.04	2298.62	0.42
C8	Reach 1	2.125	profile 2	237.46	390.51	5.84	2292.25	2292.08	0.17
C8	Reach 1	2.090	profile 2	141.73	286.46	7.96	2285.92	2285.92	0.00
C8	Reach 1	2.066	profile 2	197.76	313.76	7.27	2282.81	2282.81	0.00
C8	Reach 1	2.023	profile 2	129.18	311.72	7.31	2278.74	2278.74	0.00
C8	Reach 1	1.988	profile 2	80.00	236.24	9.65	2275.53	2275.46	0.07
C8	Reach 1	1.985	profile 2	80.00	274.19	8.32	2274.79	2274.69	0.11
C8	Reach 1	1.966	profile 2	95.73	290.93	7.84	2273.03	2273.02	0.01

HEC-RAS Floodway Summary Output Table

River	Reach	River Sta	Profile	Top Wdth Act (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta WS (ft)
C8	Reach 1	1.929	profile 2	81.87	252.17	9.04	2268.38	2268.15	0.23
C8	Reach 1	1.915	profile 2	144.00	355.36	6.42	2267.25	2267.25	0.00
C8	Reach 1	1.883	profile 2	178.99	387.15	5.89	2263.36	2263.40	-0.04
C8	Reach 1	1.847	profile 2	120.35	329.73	6.91	2260.06	2259.76	0.30
C8	Reach 1	1.810	profile 2	95.83	275.98	8.26	2256.71	2256.45	0.27
C8	Reach 1	1.775	profile 2	96.52	280.03	8.14	2252.82	2252.78	0.03
C8	Reach 1	1.734	profile 2	70.72	225.24	10.12	2247.91	2247.41	0.50
C8	Reach 1	1.695	profile 2	100.00	276.39	8.25	2243.88	2243.91	-0.04
C8	Reach 1	1.654	profile 2	87.00	266.85	8.54	2238.58	2238.61	-0.03
C8	Reach 1	1.625	profile 2	71.54	233.31	9.77	2234.90	2234.88	0.01
C8	Reach 1	1.609	profile 2	46.97	216.28	10.54	2232.64	2232.48	0.16
C8	Reach 1	1.596	profile 2	47.83	209.69	10.87	2231.41	2231.09	0.32
C8	Reach 1	1.574	profile 2	90.42	234.01	9.74	2229.61	2228.85	0.76
C8	Reach 1	1.552	profile 2	90.00	275.78	8.27	2227.36	2227.17	0.19
C8	Reach 1	1.536	profile 2	85.32	266.98	8.54	2225.52	2225.29	0.22
C8	Reach 1	1.517	profile 2	115.67	310.33	7.35	2224.24	2224.22	0.02
C8	Reach 1	1.488	profile 2	116.41	300.40	7.59	2220.69	2220.32	0.37
C8	Reach 1	1.430	profile 2	180.23	353.11	6.46	2214.81	2214.10	0.70
C8	Reach 1	1.384	profile 2	139.12	316.96	7.19	2210.04	2209.70	0.34
C8	Reach 1	1.362	profile 2	148.33	354.50	6.43	2207.42	2206.75	0.66
C8	Reach 1	1.306	profile 2	146.31	329.04	6.93	2201.46	2200.80	0.66
C8	Reach 1	1.267	profile 2	170.00	334.13	6.82	2196.81	2196.06	0.75
C8	Reach 1	1.241	profile 2	175.00	351.61	6.48	2193.74	2193.23	0.51
C8	Reach 1	1.210	profile 2	147.37	294.28	7.75	2189.31	2189.16	0.15
C8	Reach 1	1.173	profile 2	160.41	304.47	7.49	2184.64	2184.61	0.03
C8	Reach 1	1.122	profile 2	105.00	307.44	7.42	2178.48	2178.16	0.32
C8	Reach 1	1.066	profile 2	80.00	244.73	9.32	2173.13	2173.13	0.00
C8	Reach 1	1.026	profile 2	103.00	276.90	8.23	2169.25	2169.25	0.01
C8	Reach 1	0.995	profile 2	99.77	283.07	8.05	2165.87	2165.46	0.41
C8	Reach 1	0.966	profile 2	85.29	261.54	8.72	2163.60	2163.29	0.31
C8	Reach 1	0.931	profile 2	100.00	288.50	7.90	2160.00	2159.89	0.11
C8	Reach 1	0.890	profile 2	117.00	287.35	7.93	2156.29	2155.75	0.54
C8	Reach 1	0.853	profile 2	89.57	255.78	8.91	2152.26	2151.78	0.49
C8	Reach 1	0.811	profile 2	167.40	536.64	4.25	2149.45	2148.56	0.88
C8	Reach 1	0.807		Culvert					
C8	Reach 1	0.805	profile 2	126.79	269.76	8.45	2147.49	2147.29	0.20
C8	Reach 1	0.767	profile 2	82.00	269.51	8.46	2144.03	2143.73	0.30
C8	Reach 1	0.725	profile 2	93.13	261.06	8.73	2139.21	2139.21	0.00
C8	Reach 1	0.709	profile 2	93.53	312.58	7.29	2138.61	2138.61	0.00
C8	Reach 1	0.691	profile 2	74.60	236.17	9.65	2136.83	2136.83	0.00
C8	Reach 1	0.662	profile 2	87.91	249.54	9.14	2132.66	2132.66	0.00
C8	Reach 1	0.632	profile 2	88.62	284.28	8.02	2129.69	2129.69	0.00
C8	Reach 1	0.613	profile 2	80.45	266.38	8.56	2128.00	2128.00	0.00
C8	Reach 1	0.583	profile 2	108.02	350.66	6.50	2124.19	2124.01	0.19
C8	Reach 1	0.552	profile 2	81.47	286.29	7.96	2122.19	2122.20	-0.01
C8	Reach 1	0.505	profile 2	87.92	261.24	8.73	2118.80	2118.80	0.00
C8	Reach 1	0.464	profile 2	93.47	265.86	8.58	2114.32	2114.32	0.00
C8	Reach 1	0.413		Lat Struct					
C8	Reach 1	0.410	profile 2	65.62	231.62	9.84	2109.80	2109.80	0.00
C8	Reach 1	0.395		Lat Struct					
C8	Reach 1	0.379	profile 2	65.35	319.22	7.14	2105.41	2105.41	0.00
C8	Reach 1	0.357		Culvert					
C8	Reach 1	0.334	profile 2	65.14	209.66	10.87	2101.46	2101.23	0.24
C8	Reach 1	0.287	profile 2	100.27	288.40	7.91	2100.11	2099.86	0.25
C8	Reach 1	0.247	profile 2	104.00	289.28	7.88	2097.41	2096.92	0.49
C8	Reach 1	0.199	profile 2	101.14	291.84	7.81	2092.55	2092.58	-0.02
C8	Reach 1	0.151	profile 2	86.27	274.34	8.31	2088.24	2088.24	0.00
C8	Reach 2	0.112	profile 2	180.81	489.86	8.82	2082.48	2082.49	-0.01
C8	Reach 2	0.097	profile 2	260.30	689.06	6.27	2082.00	2082.00	0.00
C6	Reach 1	1.525	profile 2	126.32	226.97	6.30	2219.59	2219.57	0.03
C6	Reach 1	1.484	profile 2	74.00	229.91	6.22	2215.23	2214.46	0.77

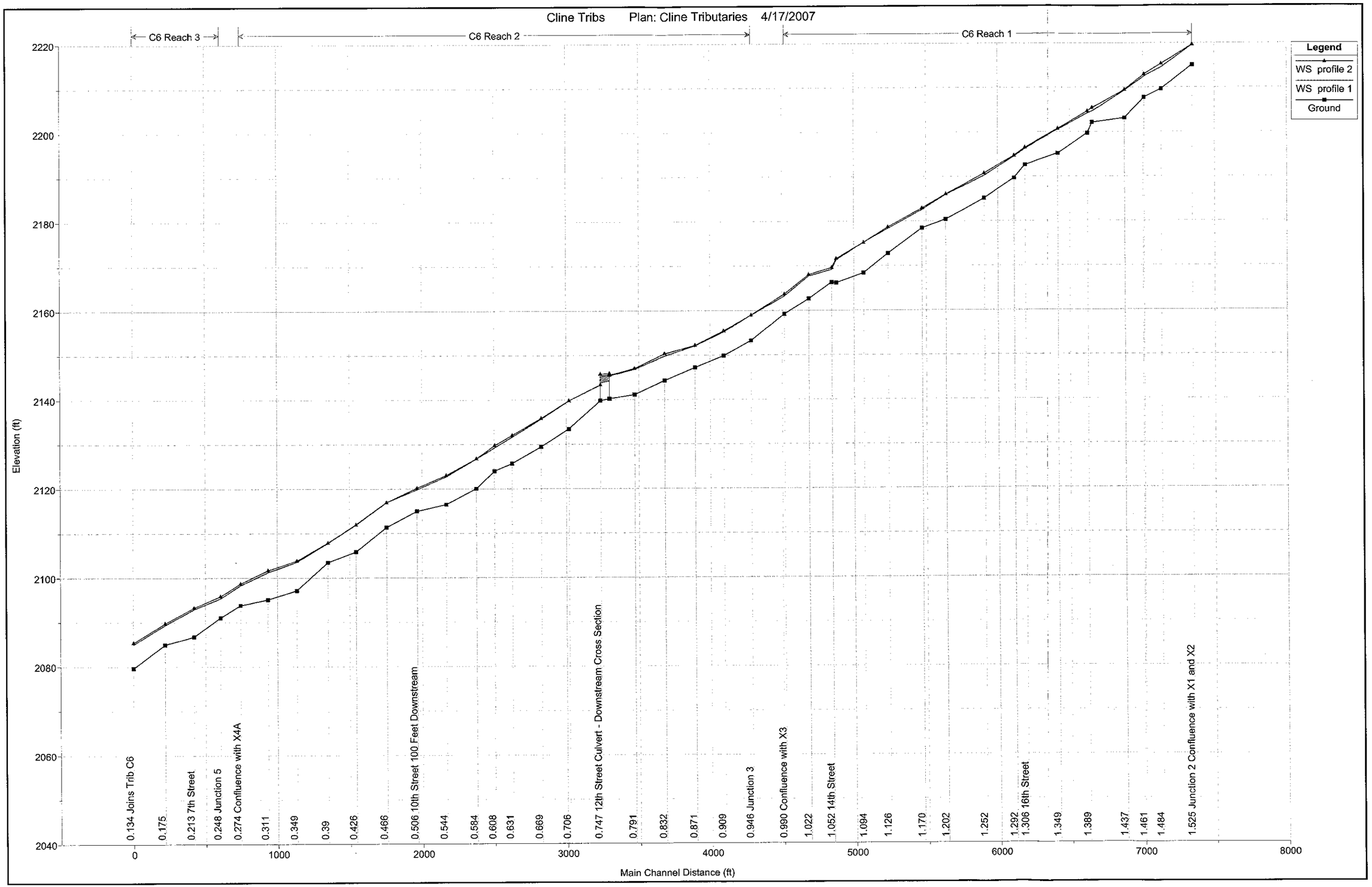
HEC-RAS Floodway Summary Output Table

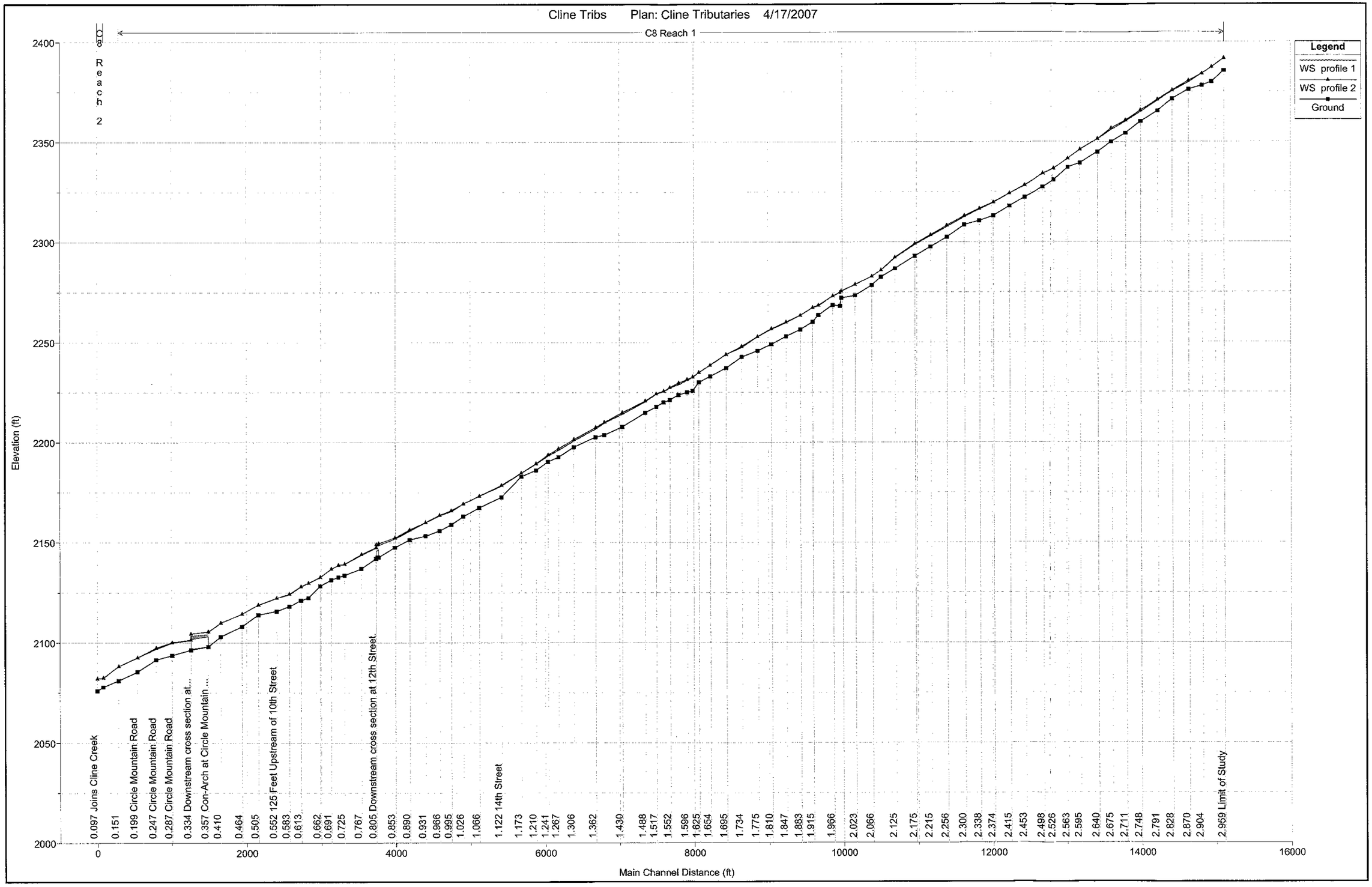
River	Reach	River Sta	Profile	Top Wdth Act (ft)	Area (sq ft)	Vel Total (ft/s)	W.S. Elev (ft)	Base WS (ft)	Prof Delta WS (ft)
C6	Reach 1	1.461	profile 2	61.00	156.19	9.16	2212.93	2212.48	0.44
C6	Reach 1	1.437	profile 2	52.45	175.24	8.16	2209.43	2209.32	0.11
C6	Reach 1	1.395	profile 2	64.10	197.10	7.26	2205.39	2204.62	0.76
C6	Reach 1	1.389	profile 2	57.90	158.89	9.00	2204.63	2204.22	0.41
C6	Reach 1	1.349	profile 2	67.20	174.44	8.20	2200.72	2200.55	0.17
C6	Reach 1	1.306	profile 2	55.00	155.24	9.21	2196.49	2196.33	0.16
C6	Reach 1	1.292	profile 2	55.00	160.39	8.92	2194.66	2194.52	0.15
C6	Reach 1	1.252	profile 2	44.44	167.31	8.55	2190.70	2190.19	0.51
C6	Reach 1	1.202	profile 2	55.22	173.10	8.26	2186.03	2185.96	0.06
C6	Reach 1	1.170	profile 2	71.85	177.99	8.03	2182.85	2182.55	0.30
C6	Reach 1	1.126	profile 2	60.13	192.73	7.42	2178.63	2178.34	0.29
C6	Reach 1	1.094	profile 2	45.41	140.81	10.16	2175.20	2175.24	-0.04
C6	Reach 1	1.058	profile 2	57.00	164.98	8.67	2171.57	2171.32	0.25
C6	Reach 1	1.052	profile 2	57.00	159.24	8.98	2169.56	2169.15	0.41
C6	Reach 1	1.022	profile 2	68.62	180.68	7.91	2167.99	2167.71	0.28
C6	Reach 1	0.990	profile 2	80.00	181.93	7.86	2163.64	2163.19	0.44
C6	Reach 2	0.946	profile 2	110.35	265.97	7.22	2158.93	2158.92	0.00
C6	Reach 2	0.909	profile 2	74.81	226.85	8.46	2155.38	2155.18	0.21
C6	Reach 2	0.871	profile 2	72.08	236.08	8.13	2152.13	2152.06	0.07
C6	Reach 2	0.832	profile 2	65.71	283.60	6.77	2150.28	2149.77	0.51
C6	Reach 2	0.791	profile 2	67.74	209.87	9.15	2147.01	2146.84	0.17
C6	Reach 2	0.759	profile 2	61.27	321.38	5.97	2145.51	2145.38	0.12
C6	Reach 2	0.753		Culvert					
C6	Reach 2	0.747	profile 2	61.68	216.35	8.87	2143.33	2143.30	0.02
C6	Reach 2	0.706	profile 2	83.78	247.82	7.75	2139.77	2139.77	0.00
C6	Reach 2	0.669	profile 2	41.03	171.35	11.20	2135.81	2135.66	0.15
C6	Reach 2	0.631	profile 2	73.19	260.28	7.38	2131.98	2131.64	0.35
C6	Reach 2	0.608	profile 2	58.12	200.50	9.58	2129.71	2129.22	0.49
C6	Reach 2	0.584	profile 2	83.79	237.50	8.08	2126.71	2126.70	0.01
C6	Reach 2	0.544	profile 2	51.18	193.05	9.95	2122.97	2122.70	0.26
C6	Reach 2	0.506	profile 2	68.28	239.36	8.02	2120.13	2119.80	0.32
C6	Reach 2	0.466	profile 2	98.00	246.17	7.80	2116.87	2116.90	-0.03
C6	Reach 2	0.426	profile 2	98.70	253.11	7.59	2111.90	2111.94	-0.04
C6	Reach 2	0.390	profile 2	96.00	245.90	7.81	2107.81	2107.77	0.04
C6	Reach 2	0.349	profile 2	111.23	233.28	8.23	2103.80	2103.55	0.24
C6	Reach 2	0.311	profile 2	125.00	298.67	6.43	2101.63	2101.19	0.44
C6	Reach 2	0.274	profile 2	132.70	270.56	7.10	2098.66	2098.30	0.36
C6	Reach 3	0.248	profile 2	216.03	346.26	6.38	2095.82	2095.36	0.46
C6	Reach 3	0.213	profile 2	166.92	365.47	6.05	2093.24	2092.90	0.33
C6	Reach 3	0.175	profile 2	134.11	304.52	7.26	2089.69	2089.36	0.34
C6	Reach 3	0.134	profile 2	105.35	284.39	7.77	2085.34	2085.00	0.34

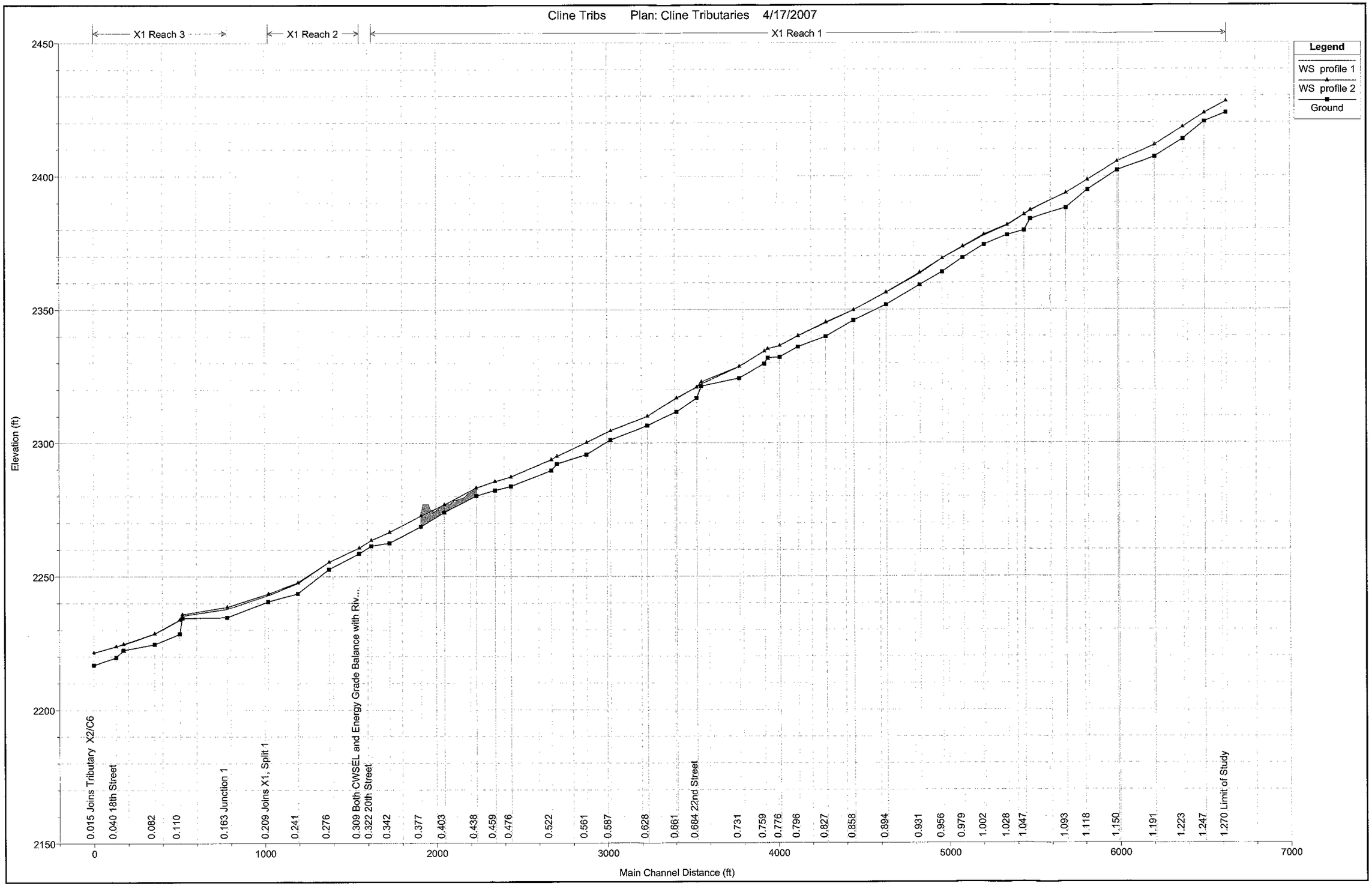
7.3 Annotated Flood Insurance Rate Maps

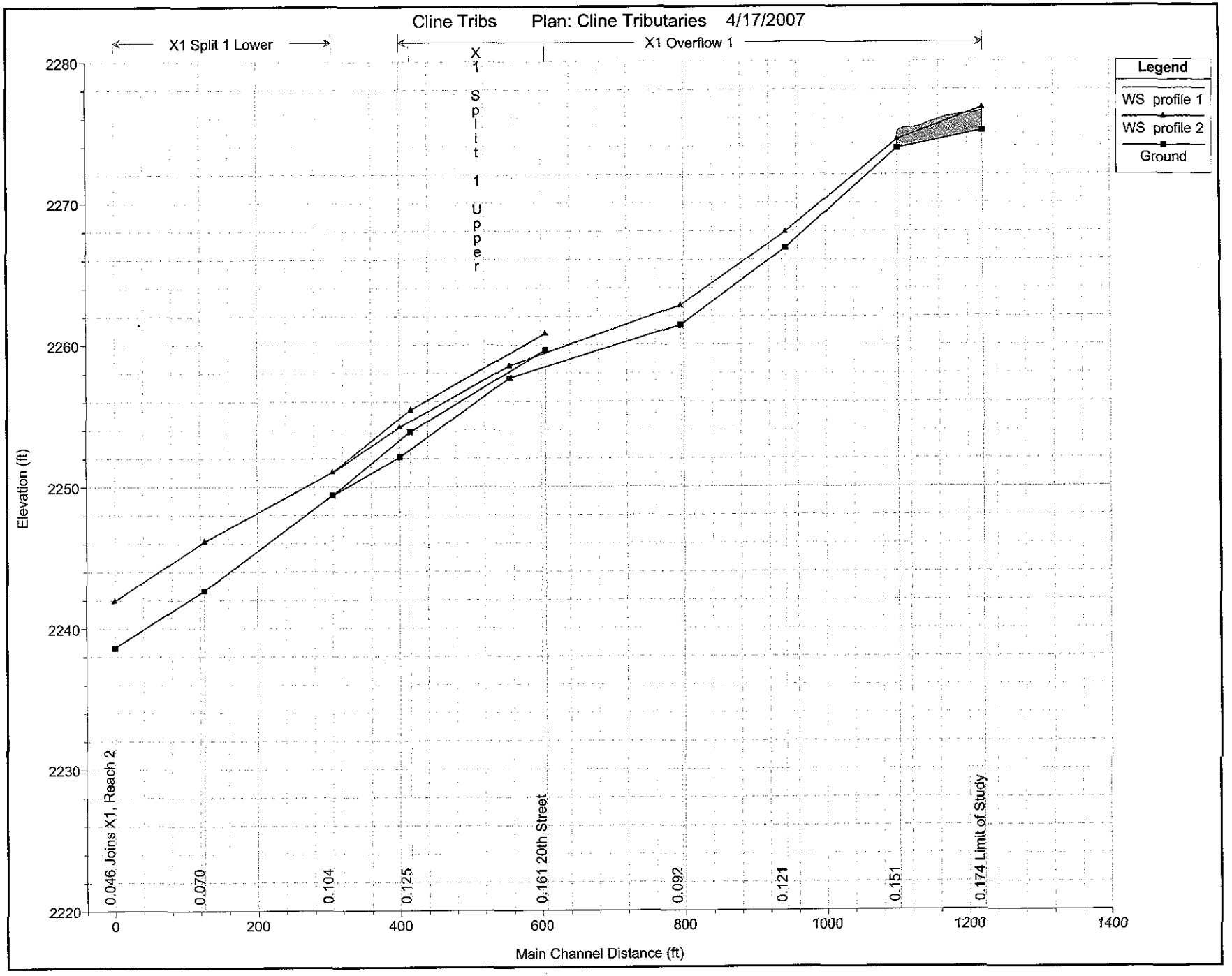
See Exhibit C, Volume 2 of this TDN.

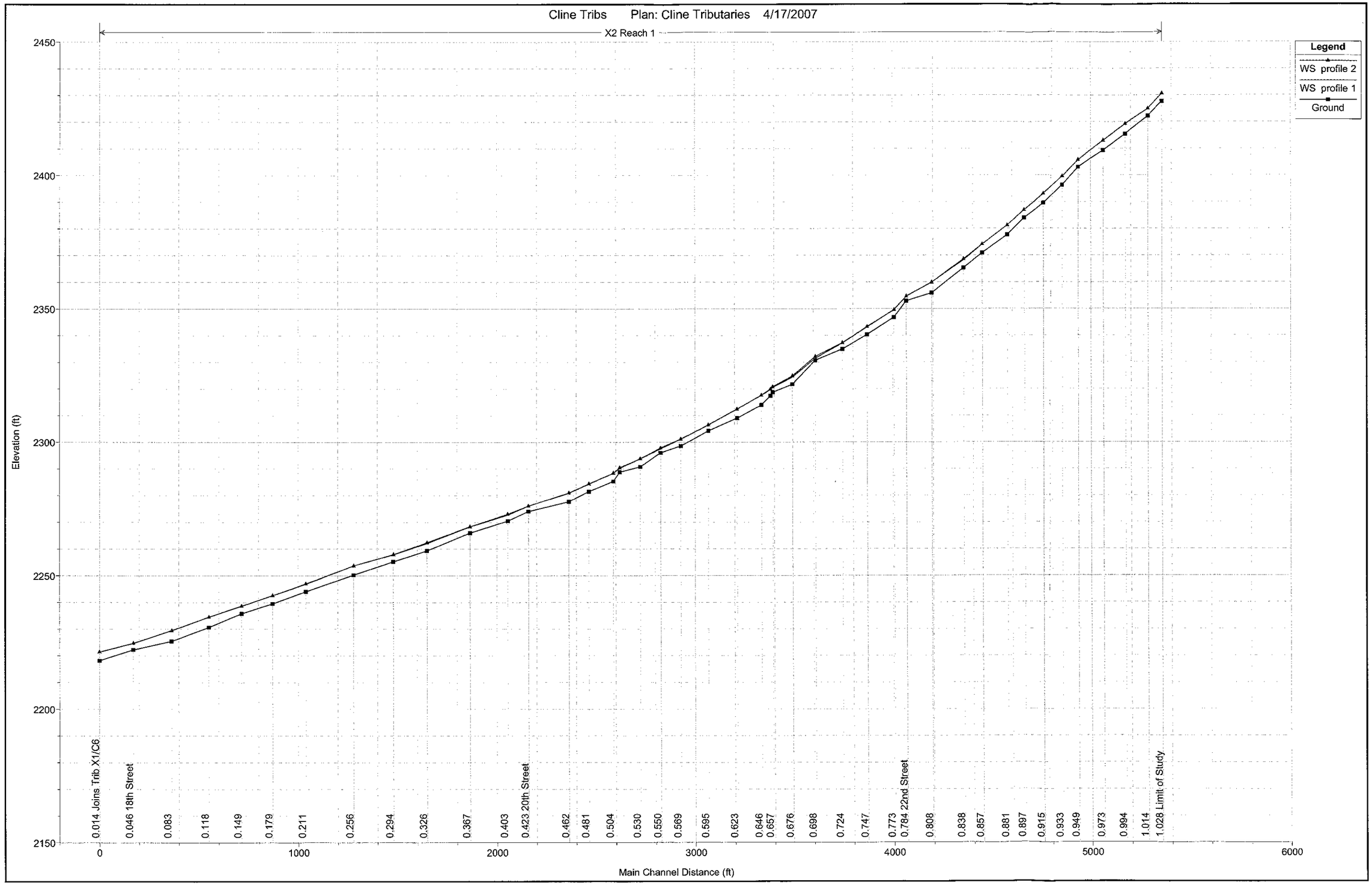
7.4 Flood Profiles

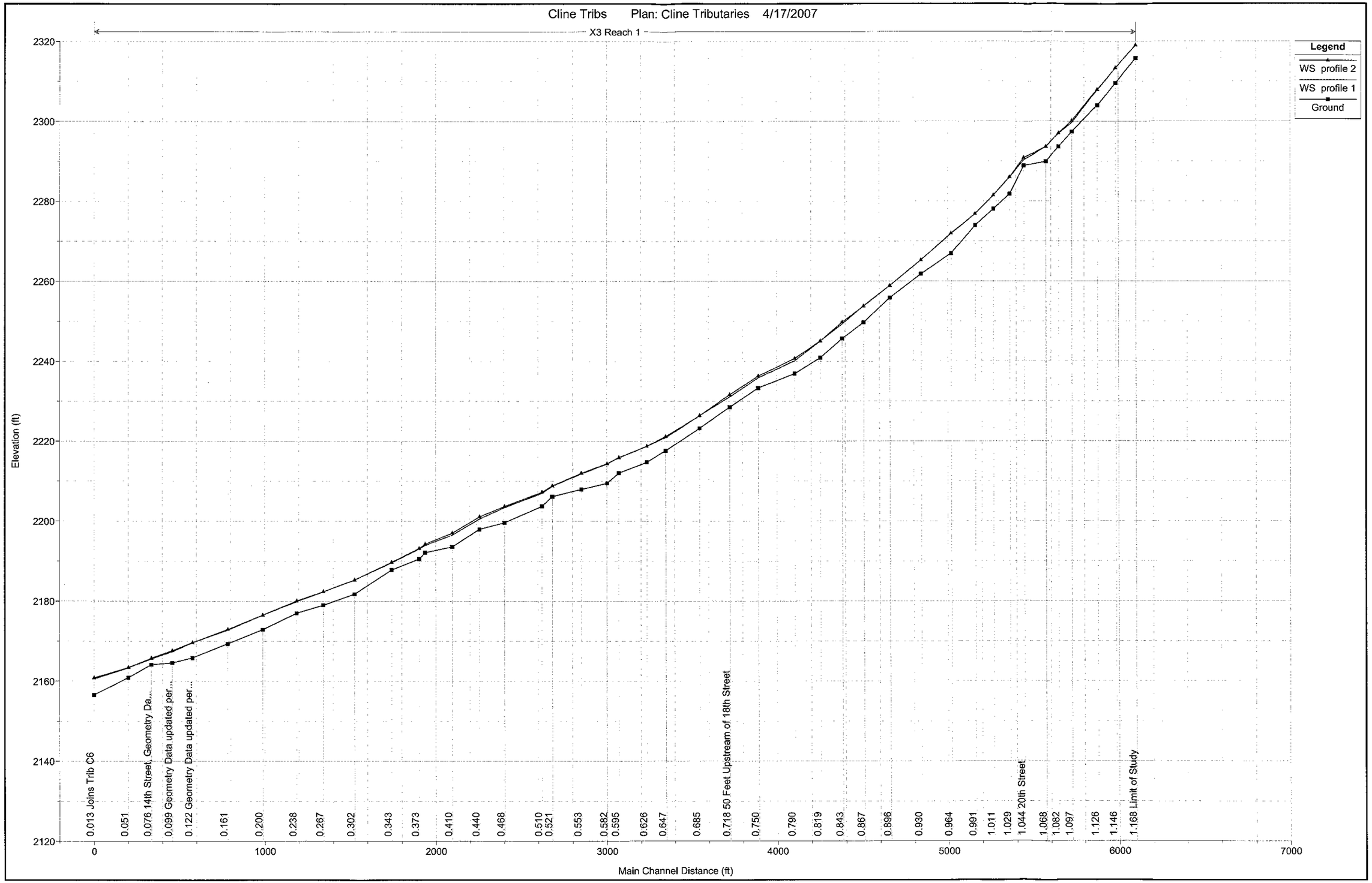

Cline Tribs Plan: Cline Tributaries 4/17/2007
C6 Reach 3
C6 Reach 2
C6 Reach 1
Legend
WS profile 2
WS profile 1
Ground
Elevation (ft)
2220
2200
2180
2160
2140
2120
2100
2080
2060
2040
0
1000
2000
3000
4000
5000
6000
7000
8000
Main Channel Distance (ft)
0.134 Joins Trib C6
0.175
0.213 7th Street
0.248 Junction 5
0.274 Confluence with X4A
0.311
0.349
0.39
0.426
0.466
0.506 10th Street 100 Feet Downstream
0.544
0.584
0.608
0.631
0.669
0.706
0.747 12th Street Culvert - Downstream Cross Section
0.791
0.832
0.871
0.909
0.946 Junction 3
0.990 Confluence with X3
1.022
1.052 14th Street
1.094
1.126
1.170
1.202
1.252
1.292
1.306 16th Street
1.349
1.389
1.437
1.461
1.484
1.525 Junction 2 Confluence with X1 and X2

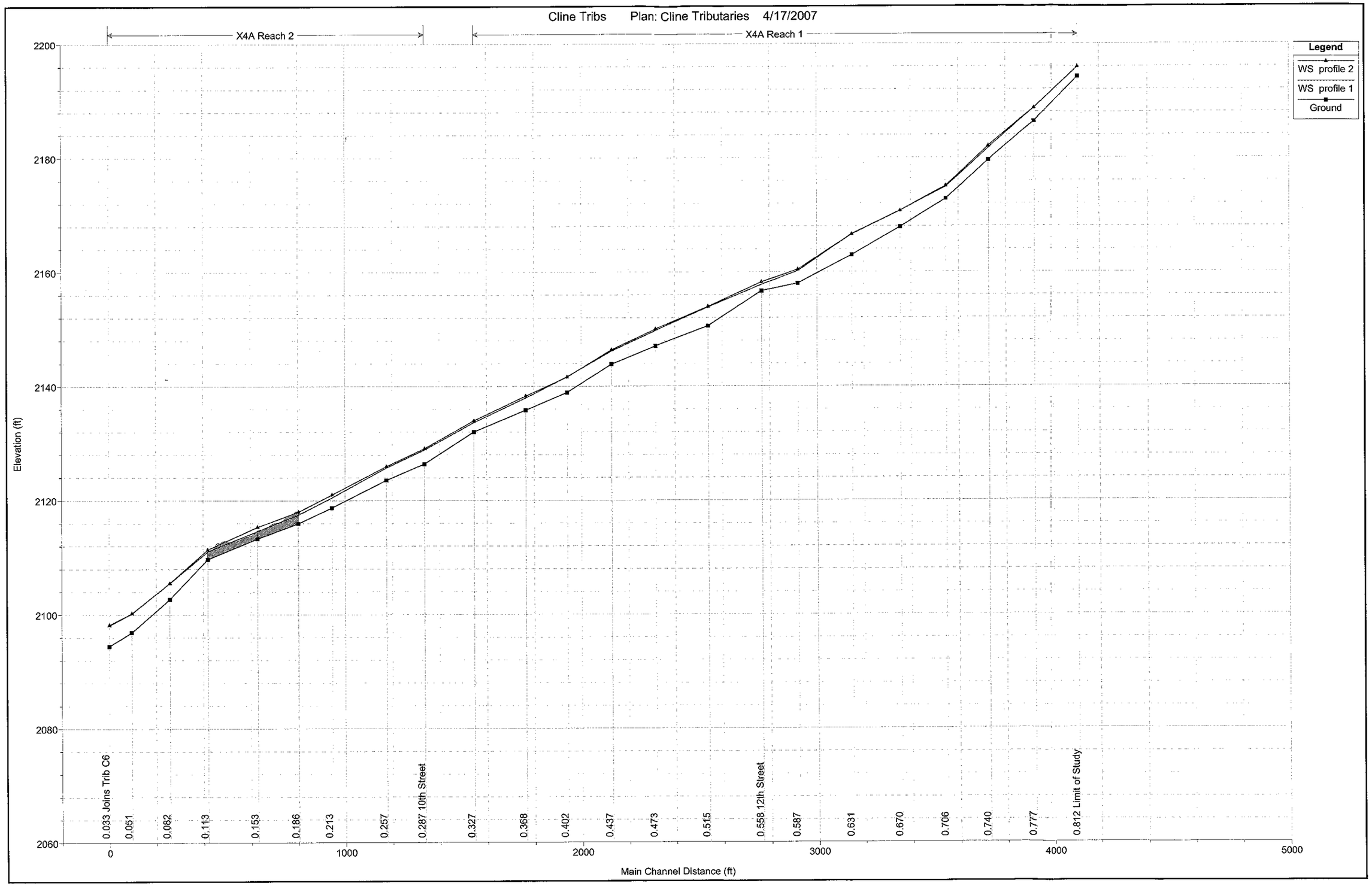

Cline Tribs Plan: Cline Tributaries 4/17/2007
C8 Reach 1
C8 Reach 2
Legend
WS profile 1
WS profile 2
Ground
Elevation (ft)
Main Channel Distance (ft)
2000
2050
2100
2150
2200
2250
2300
2350
2400
0
2000
4000
6000
8000
10000
12000
14000
16000
0.097 Joins Cline Creek
0.151
0.199 Circle Mountain Road
0.247 Circle Mountain Road
0.287 Circle Mountain Road
0.334 Downstream cross section at...
0.357 Con-Arch at Circle Mountain ...
0.410
0.464
0.505
0.552 125 Feet Upstream of 10th Street
0.583
0.613
0.662
0.691
0.725
0.767
0.805 Downstream cross section at 12th Street
0.853
0.890
0.931
0.966
0.995
1.026
1.066
1.122 14th Street
1.173
1.210
1.241
1.267
1.306
1.362
1.430
1.488
1.517
1.552
1.596
1.625
1.654
1.695
1.734
1.775
1.810
1.847
1.883
1.915
1.966
2.023
2.066
2.125
2.175
2.215
2.256
2.300
2.338
2.374
2.415
2.453
2.498
2.526
2.563
2.595
2.640
2.675
2.711
2.748
2.791
2.828
2.870
2.904
2.959 Limit of Study

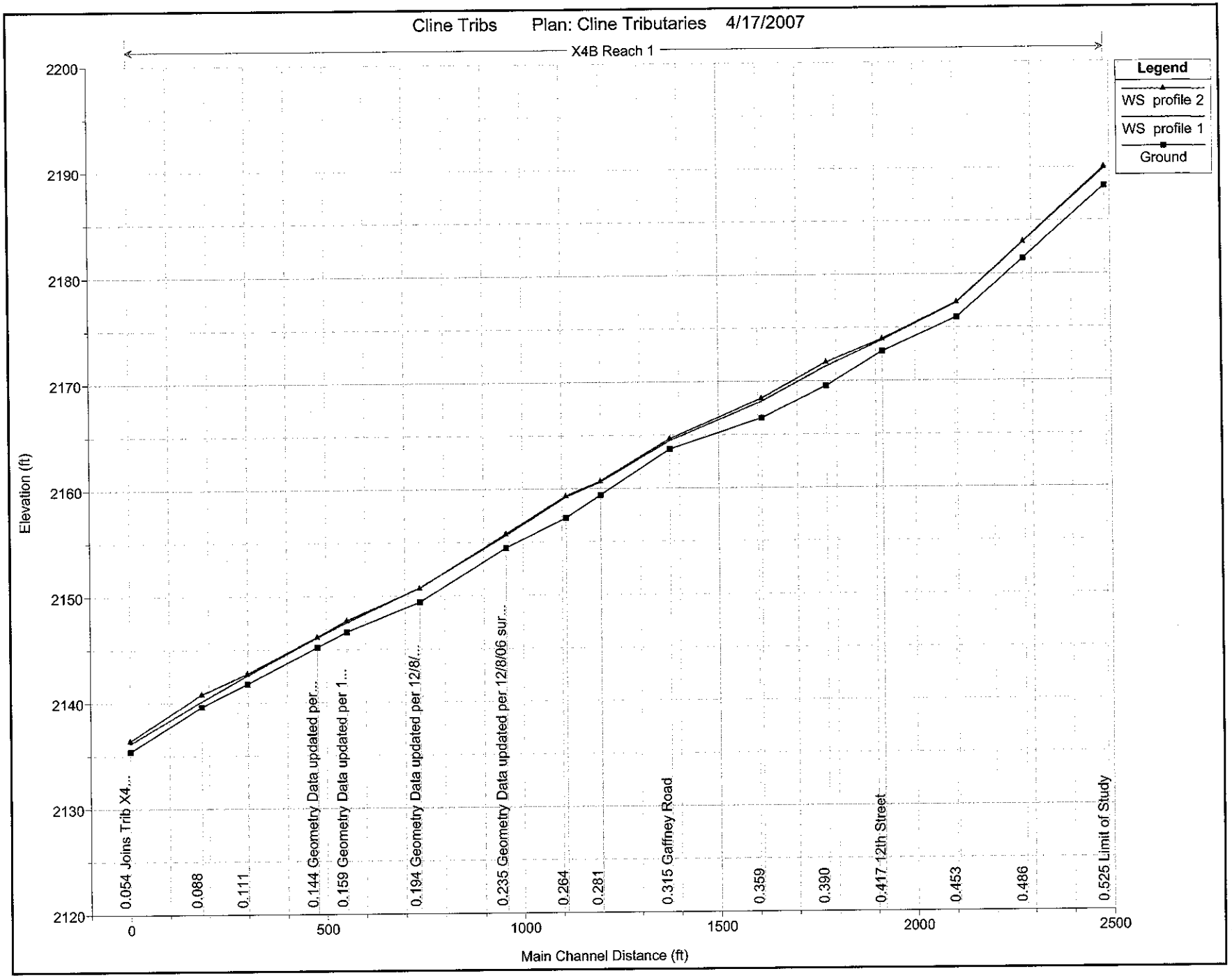

Cline Tribs Plan: Cline Tributaries 4/17/2007
X1 Reach 3
X1 Reach 2
X1 Reach 1
Legend
WS profile 1
WS profile 2
Ground
Elevation (ft)
2450
2400
2350
2300
2250
2200
2150
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)
0.015 Joins Tributary X2/C6
0.040 18th Street
0.082
0.110
0.163 Junction 1
0.209 Joins X1, Split 1
0.241
0.276
0.309 Both CWSEL and Energy Grade Balance with Riv...
0.322 20th Street
0.342
0.377
0.403
0.438
0.459
0.476
0.522
0.561
0.587
0.628
0.661
0.684 22nd Street
0.731
0.759
0.776
0.796
0.827
0.858
0.894
0.931
0.956
0.979
1.002
1.028
1.047
1.093
1.118
1.150
1.191
1.223
1.247
1.270 Limit of Study

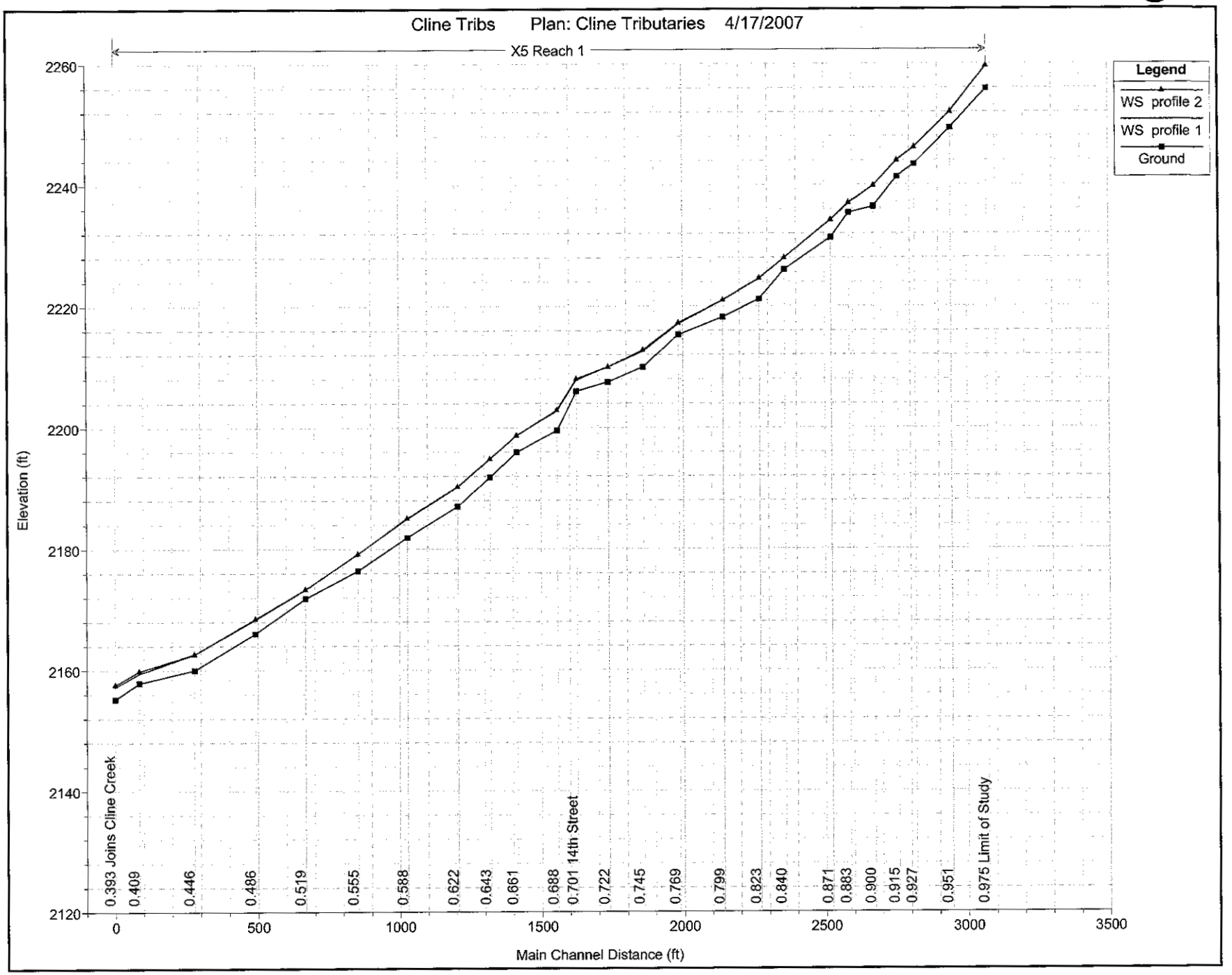

Cline Tribs Plan: Cline Tributaries 4/17/2007
X1 Split 1 Lower
X1 Overflow 1
X1 Split 1 Upper
Legend
WS profile 1
WS profile 2
Ground
Elevation (ft)
2280
2270
2260
2250
2240
2230
2220
0.046 Joins X1, Reach 2
0.070
0.104
0.125
0.161 20th Street
0.092
0.121
0.151
0.174 Limit of Study
0
200
400
600
800
1000
1200
1400
Main Channel Distance (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
X2 Reach 1
Legend
WS profile 2
WS profile 1
Ground
Elevation (ft)
2450
2400
2350
2300
2250
2200
2150
0.014 Joins Trib X1/C6
0.046 18th Street
0.083
0.118
0.149
0.179
0.211
0.256
0.294
0.326
0.367
0.403
0.423 20th Street
0.462
0.481
0.504
0.530
0.550
0.569
0.595
0.623
0.646
0.657
0.676
0.698
0.724
0.747
0.773
0.784 22nd Street
0.808
0.838
0.857
0.881
0.897
0.915
0.933
0.949
0.973
0.994
1.014
1.028 Limit of Study
0
1000
2000
3000
4000
5000
6000
Main Channel Distance (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
X3 Reach 1
Legend
WS profile 2
WS profile 1
Ground
Elevation (ft)
2120
2140
2160
2180
2200
2220
2240
2260
2280
2300
2320
0.013 Joins Trib C6
0.051
0.076 14th Street, Geometry Da...
0.099 Geometry Data updated per...
0.122 Geometry Data updated per...
0.161
0.200
0.238
0.267
0.302
0.343
0.373
0.410
0.440
0.468
0.510
0.521
0.553
0.582
0.595
0.626
0.647
0.685
0.718 50 Feet Upstream of 18th Street
0.750
0.790
0.819
0.843
0.867
0.896
0.930
0.964
0.991
1.011
1.029
1.044 20th Street
1.068
1.082
1.097
1.126
1.146
1.168 Limit of Study
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
X4A Reach 2
X4A Reach 1
Legend
WS profile 2
WS profile 1
Ground
Elevation (ft)
2200
2180
2160
2140
2120
2100
2080
2060
0.033 Joins Trib C6
0.051
0.082
0.113
0.153
0.186
0.213
0.257
0.287 10th Street
0.327
0.368
0.402
0.437
0.473
0.515
0.558 12th Street
0.587
0.631
0.670
0.706
0.740
0.777
0.812 Limit of Study
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
X4B Reach 1
Legend
WS profile 2
WS profile 1
Ground
Elevation (ft)
2200
2190
2180
2170
2160
2150
2140
2130
2120
0
500
1000
1500
2000
2500
Main Channel Distance (ft)
0.054 Joins Trib X4...
0.088
0.111
0.144 Geometry Data updated per...
0.159 Geometry Data updated per 1...
0.194 Geometry Data updated per 12/8/...
0.235 Geometry Data updated per 12/8/06 sur...
0.264
0.281
0.315 Gaffney Road
0.359
0.390
0.417 12th Street
0.453
0.486
0.525 Limit of Study


Cline Tribs Plan: Cline Tributaries 4/17/2007
X5 Reach 1
Legend
WS profile 2
WS profile 1
Ground
Elevation (ft)
2260
2240
2220
2200
2180
2160
2140
2120
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)
0.393 Joins Cline Creek
0.409
0.446
0.486
0.519
0.555
0.588
0.622
0.643
0.661
0.688
0.701 14th Street
0.722
0.745
0.769
0.799
0.823
0.840
0.871
0.883
0.900
0.915
0.927
0.951
0.975 Limit of Study

APPENDIX A: REFERENCES

A.1 Data collection summary

Historical Flooding Information

No historical flooding information was readily available for this project area.

As-Built Plans for Existing Structures:

No as-built plans have been collected for this project. However, a survey of the bridge at New River Road was performed and the data were incorporated into the HEC-RAS model. The survey data and as-built results are included in Appendix C.

FEMA Flood Hazard Boundary Maps, LOMAs, LOMRs:

Cline Creek is located within FEMA community ID 04013C. FIRM panel numbers located within the study area include 0390 F and 0395G.

Other Pertinent Data:

GIS data supplied digitally by the Flood Control District of Maricopa County included:

- Roads and section lines for the project area
- Digital topography by Cooper Aerial of Phoenix, Arizona. Flight Date: May , 2002, Projected by the Maricopa County Flood Control District from NAD 27 to NAD 83
- USGS DEM data in the project area in comma delimited text projected by the Maricopa County Flood Control District from NAD 27 to NAD 83
- USGS DRG data for the project area, projected by the Maricopa County Flood Control District from NAD 27 to NAD 83.

Stream Gauging:

There are no stream gauges located within the project area.

Precipitation Gauging:

No precipitation gage data was used in this study.

Future Drainage Improvements:

There are no significant known future drainage improvements in the project area.

APPENDIX B: GENERAL DOCUMENTATION AND CORRESPONDENCE

TABLE OF CONTENTS
APPENDIX B

B.1 Special Problem Reports
B.2 Contact (telephone) Reports
B.3 Meeting Minutes or Reports
B.4 General Correspondence
B.5 Contract Documents
B.6 Public Notification
B.7 FEMA Correspondence

B.1 Special Problem Reports

B.2 Contact (telephone) Reports

B.3 Meeting Minutes or Reports

B.4 General Correspondence

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: June 24, 2005
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. BRI 7/24/05
RE: Cline Tributaries Floodplain Delineation Study, Response to District Comments
CC: Brooks Dillard, E.I.T.

The purpose of this memo is to respond to comments received from Richard Harris in a letter dated April 1, 2005. The comments are reproduced below with JEF's responses:

Models

> *1. In order to better draw the floodplain boundary between section 1.445 and 1.492 for reach C-8, perhaps you should add another section between them. Currently the boundary just east of 1.445 is not substantiated.*

Cross section 1.472 was added which resulted in a more accurate determination of the extent of the floodplain between sections 1.445 and 1.492.

> *2. An additional section may better define the backwater plot as shown between hydraulic sections 0.648 and 0.685 on reach C8 (sheet 3).*

Cross section 0.668 was added; it was subsequently determined that 100 year floodwaters are contained in the main channels of all 3 sections and the backwater condition is no longer applicable.

> *3. Section 0.015 at the bottom of reach C6 (sheet 3) doesn't appear to cross the entire floodplain. Should it be lengthened to do so?*

Cross section 0.015 was lengthened so that it now crosses the entire floodplain.

> *4. You may want to angle hydraulic section 0.951 of reach C8 in order to avoid the vertical extension at the endpoint shown on the respective plot.*

Cross section 0.953 (previously 0.951) was converted from a 2 point line into a 3 point line and was angled to eliminate the vertical extension and provide a more accurate picture of channel cross section in that location.

Study Sheets

> *1. The background aerial photo should be the most current available. Try using that instead, and show the Preliminary FW boundaries. This will help us determine the need for additional or moved hydraulic sections, in an effort to model homes out of the floodway.*

We should probably discuss this more during a meeting. One trick is that there are homes in the new aerials that aren't reflected in the older topo. For now, we have left the 2002 photo in place. We haven't included the preliminary FW yet; there were enough significant changes in the FP that we thought that it would be best to have you review the floodplain once more before we proceed.

> *2. The downstream bulging of the FP boundary @ the southern end of section 1.610 of reach C8 does not make sense with respect with the downstream section. You should probably omit the section in the model.*

More sections were added to the model in this location so as to substantiate the extent of high flow; this resulted in the elimination of the "bulge" that existed in the initial model.

> *3. There are quite a few hydraulic sections shown on the study sheets with the same ID label. Please replace then with the accurate ID labels.*

All cross sections now possess unique IDs, all of which are displayed on the updated study sheets.

TD (Beginning of One)

> *1. It is not clear where the reaches C6A, C6B, and C6C are located on the study sheets (shown on the cross section plots).*

Reaches and reach names have changed since the initial model, but all current reaches will be adequately identified on the future cross section plots.

> *2. The word "Severe" needs to be spelled correctly in the manning's n calculation sheets.*

All misspellings of the word "Severe" have been corrected in the manning's n calculation sheets.

> *3. As noted in red ink, there appear to be several photos missing. Are they available? If not, please have written in its place "Photo not available".*

Photographs not displayed in the TDN are not available; the TDN now clarifies the absence of a photograph with the phrase "Photo Not Available."

> *4. In the Photo Location Exhibit (I), please choose unique characters for the Map Legend in order to avoid confusion.*

Unique symbols have been chosen for the map legend to eliminate confusion.

5. There are some minor grammatical change suggestions shown in red line in the text. Please review.

All grammatical change suggestions have been noted and corrected in the TDN.

6. Please check the title quoted for the USGS roughness calc. Guideline.

The title was checked and corrected.

7. From the cross section plots, there appear to be a number of sections for which vertical flow extension at the endpoints has occurred. I have folded the corners of those plots where I noticed such a result. However, I also noticed that all the sections have the same overall roughness value that is not the same as the calculated roughness values elsewhere in the report. Therefore, the vertical extension amounts shown are not accurate. Please rectify by using the calculated roughness values and then lengthening the hydraulic sections as needed.

All cross sections that previously showed vertical flow extension at endpoints have been corrected. Also, custom manning's n-values were determined at each section as well so that study area-wide, duplicate values do not exist.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: November 29, 2005
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. BRI 11/29/05
RE: Floodplain Delineation Study of Cline Creek Tributaries, Response to District Comments
CC: Jon Fuller, P.E.

The purpose of this memo is to respond to comments received from the Flood Control District of Maricopa County (District) in a letter dated August 25, 2005. The comments are reproduced below with JEF's responses:

Models

1. *My previous comment #1 from a memo to JEF date July 7, 2005 read:*

   "Model results in the current submittal are in large part based upon channel roughness values that have neither been reviewed nor approved by the District. Per the SOW section 6.4, this supporting data and calculations must be submitted for review and approval before further review of the Hydraulic analysis can take place. Please address."

   JEF replied that an updated N value report was being supplied with the current submittal. However, it remains incomplete because all calculations therein show only three roughness values per site, while the model includes many more values for numerous locations. In addition, the values in the report as of the date of this memo don't match the model input values even if one were to try and look only at major over bank areas in a plotted section. Without more complete substantiation of the values they are using, I can neither approve of the N value report as it stands, nor approve of the subsequent modeling results. Please address.

Due to the highly variable nature of the channel and overbank conditions in these study reaches, the Manning's "n" values shown in the reconnaissance report represent typical reach average conditions only. The HEC-RAS option for assigning horizontal variation in n values was used extensively to reflect the highly variable nature of single lot development that dominates this study area. Rather than apply typical n values to entire reaches, we went to considerable effort to add value and accuracy to the modeling by making subtle horizontal adjustments to the n-values that reflect real conditions. To support with documentation every combination of conditions that were accounted for with this approach would be impractical if not impossible.

Additional discussion was added to the n-value report and to section 5 of the draft TDN to further explain assignment of n values.

2. *Weir coefficient documentation should not be deferred until the TDN is provided: it should be provided now, as it is part of the Hydraulic analysis. The District must have a complete hydraulic analysis documentation given the scenario that we will*

manage development in the study area during the time between District approval of the Hydraulic analysis and the time that we receive the LOMR from FEMA. As you know, this could be a considerable amount of time. Please provide.

Additional documentation of weir coefficient usage has been included in draft TDN section 5.5.4

3. *Model descriptions should still be added to the culverts. Please add.*

Culvert descriptions have been added to the culvert description fields.

4. A warning message opens up when you load in the HEC-RAS files that indicate there are multiple plans that can't be located within the file group. My guess is this is a leftover from modeling runs and is not now relevant. There should only be one plan. Please address.

There were some other draft plans that we forgot to delete. There is only Plan 1 now.

5. *The model results still suggest a need to review the State Standards methodology for Supercritical Flow, document SS3-94, in terms of the final analysis. Per the guidelines from those Standards, the methodology must be applied if a Sub critical run yields Critical Depth for 40% or more section locations. I have attached a spreadsheet that shows this occurs at 6 of the 8 study reaches. I did further checking by running those models in mixed regime and then checked the changes in EG, as the guidelines describe must be done. I have attached my results, and they show that for several encroached locations along the study reaches, there is either a drop (negative value) in the EG of 0.5' or more, or a rise greater than 1.0'. The models should be revised at and around these locations in order to eliminate such results. Please address.*

The floodway has been revised in several reaches (especially Tributaries X4A and X4B) by relaxing the encroachment stations.

In all reaches, model stability was checked for the sub-critical profile and the methodologies recommended in State Standard 3-94 were used. Overall, the model passes the state standard tests for subcritical stability, including the rule of thumb of velocity head being 1/3 or less of the depth (average = 0.18 for this study). To accomplish this, cross section spacing was kept to an average of 161 feet and Manning's "n" values were increased by 0.005 above the Manning's values that were determined based on static (non-dynamic) physical conditions. The 0.005 increase in the friction loss coefficient was applied to account for dynamic bedforms which are expected based on field observations of pool/riffle sequences; an indicator that the system flows at or near critical depth during formative flow events. The average Froude number for all study reaches is 0.84.

A preponderance of critical solutions i.e., 40% or more, does not necessarily indicate model instability. Critical depth is actually what we would expect from these types of steep bed natural water courses.

I am un-familiar with the prescribed test involving running the model in mixed flow regime to look for indicators of a faulty or unstable sub-critical floodway profile based on changes in the energy grade. This test is not described in the state standard as I understand it. Per the state standard, changes in energy grade were observed for the sub-critical profile and were kept to less than 1.0 foot. In no case do the computed water surface elevation surcharge values exceed 1.0 foot or fall below 0.0 foot when rounded to the nearest tenth of a foot.

Perhaps, as an alternative to the prescribed test, the District could point out the particular encroached delineations that are of concern; keeping an eye on the floodplain management goals of the District for these reaches. We would be happy to discuss this in more detail at your convenience and to make adjustments to the floodway profile based on the District's floodplain management goals. However, we believe that we have fulfilled our obligations and the intent of the scope of work to develop an optimized floodway profile for these reaches. Therefore, further floodway adjustments/analyses would necessitate a change of scope.

6. *The starting water surface elevation for C6, relative to the adjacent calculated water surface elevations at the starting section for C8 and the Cline Creek Main stem, should be set higher than it is right now. It should be set closer to 2084'. Please address.*

I disagree with the above statement. The starting water surface elevations chosen for Tributaries C6 and C8 (2083.5 and 2081 respectively) correspond to the average computed water surface elevation of Cline Creek at points on Cline Creek that are closest to the center of these two tributaries. This would, in effect, be the average computed water surface elevation across the tributary areas of Tributary C6 and Tributary C8. The reference to the computed water surface at C8 (2083.4) as justification for increasing the starting condition at Tributary C6 is problematic. The computed water surface elevation for C8 at the confluence is being influenced by Tributary C8 and not, as evidenced by the model results, by any backwater effect from Cline Creek. Tributary C6, on the other hand, is highly sensitive to the computed water surface elevation of Cline Creek instead of the slope of its own channel.

The starting water surface conditions have been left as they are for these two tributaries.

7. *In the main model Description, please expand on the name of the consultant and date of the effective study hydrology. Also, the FCD contract number should be checked and completed. Please address.*

Hydrology is from the effective study titled Flood Delineation Study of Cline Creek and Tributary Washes, FCD 89-15 performed by Michael Baker Jr. Inc, April, 1990. This information has been added to the main model description field.

Report:

1. *Please modify the description in section 5.6 to address the application of the State Standard for Supercritical Regime, and what was done within the model, accordingly.*

Additional documentation has been added to Sections 5.5 and 5.6.

2. *Until the work has been ordered to finalize the analysis in a TDN, it would be useful to have both a temporary Table of Contents and a Temporary References section. Please add them.*

This has been added.

3. *Within section 5.6, please discuss the criteria used to not encroach in some areas for the profile 2 run, including where those areas are.*

This has been added.

4. *Please add tabbed dividers to the final draft of the analysis (before the TDN).*

This has been done.

5. *It would clarify the purpose of the lateral structures if you would add a brief explanation for each location within section 5.5.4, ahead of the lateral weir table.*

The purpose and explanation for all the lateral structures is identical. I have added this explanation in section 5.5.4.

6. *Please add a table number and title to the lateral structures table. Also, please add the next section downstream of each structure to the table, to show the effect on discharge due to lateral outflow.*

I have added a second non-optimized table as well as the requested table numbers, titles and additional column.

7. *Per the modeled results, the water surface elevations at the top of Split 1 are not balanced as described at section 0.161 of X1 Split 1 and section 0.309 of X1 Reach 2 – there is a 0.1' elevation difference. Please address.*

After reconsidering this split analysis, I decided to re-analyze the balance with respect to energy grade. I have re-worded the documentation in section 5.5.4 to reflect this.

Study Sheets

1. *Either a cover sheet should be added to the study sheets to define the reach names per sheet number, or the individual sheet index maps should have the reach names/numbers labeled on them. The cover sheet is preferred, and this should be done before starting on the TDN. Please address.*

The reach names have been added to the individual sheet indexes.

2. *The reach labels on the study sheets should be enlarged and moved away from the Hydraulic baselines so that they are more legible. Please address.*

The labels have been moved and made as large as will fit in the available spaces.

3. *'Limit of Study" labels should be added to the upstream ends of all reaches, and at intermediate limits as well. Please address.*

"Limit of Study" labels have been added.

4. *For District utility ahead of the LOMR from FEMA, the ERM's should be defined on the study sheets. Please address.*

The ERM markers and descriptions have been added.

5. *A comparison of old Floodway and Floodplain boundaries with the new boundaries should be done to identify areas where homes may be newly placed within them, in order to determine where we may recommend further analysis and formulate the level of expenditure needed to complete the upcoming TDN. Please address.*

JEF would be happy to perform this service, however, this item was not specified in the scope of work for this project and is not normally performed as part of the other scoped tasks. A change of scope would be necessary for us to perform this task.

Other

1. *Just a heads up – once the District approves the delineations, we will need to obtain the shape files to add to our database as preliminary data, before the LOMR is received.*

JEF will provide shape files of the draft floodplain/floodway delineations once the District has approved the delineations.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: February 7, 2006
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. BRI 3/7/06
RE: Floodplain Delineation Study of Cline Creek Tributaries, Response to District Comments
CC: Jon Fuller, P.E.

The purpose of this memo is to respond to comments received from the Flood Control District of Maricopa County (District) dated November 29, 2005. The comments are reproduced below with JEF's responses:

Models

5. *The model results still suggest a need to review the State Standards methodology for Supercritical Flow, document SS3-94, in terms of the final analysis. Per the guidelines from those Standards, the methodology must be applied if a Sub critical run yields Critical Depth for 40% or more section locations. I have attached a spreadsheet that shows this occurs at 6 of the 8 study reaches. I did further checking by running those models in mixed regime and then checked the changes in EG, as the guidelines describe must be done. I have attached my results, and they show that for several encroached locations along the study reaches, there is either a drop (negative value) in the EG of 0.5' or more, or a rise greater than 1.0'. The models should be revised at and around these locations in order to eliminate such results. Please address.*

The floodway has been revised in several reaches (especially Tributaries X4A and X4B) by relaxing the encroachment stations.

In all reaches, model stability was checked for the sub-critical profile and the methodologies recommended in State Standard 3-94 were used. Overall, the model passes the state standard tests for subcritical stability, including the rule of thumb of velocity head being 1/3 or less of the depth (average = 0.18 for this study). To accomplish this, cross section spacing was kept to an average of 161 feet and Manning's "n" values were increased by 0.005 above the Manning's values that were determined based on static (non-dynamic) physical conditions. The 0.005 increase in the friction loss coefficient was applied to account for dynamic bedforms which are expected based on field observations of pool/riffle sequences; an indicator that the system flows at or near critical depth during formative flow events. The average Froude number for all study reaches is 0.84.

A preponderance of critical solutions i.e., 40% or more, does not necessarily indicate model instability. Critical depth is actually what we would expect from these types of steep bed natural water courses.

I am un-familiar with the prescribed test involving running the model in mixed flow regime to look for indicators of a faulty or unstable sub-critical floodway profile based on

changes in the energy grade. This test is not described in the state standard as I understand it. Per the state standard, changes in energy grade were observed for the sub-critical profile and were kept to less than 1.0 foot. In no case do the computed water surface elevation surcharge values exceed 1.0 foot or fall below 0.0 foot when rounded to the nearest tenth of a foot.

Perhaps, as an alternative to the prescribed test, the District could point out the particular encroached delineations that are of concern; keeping an eye on the floodplain management goals of the District for these reaches. We would be happy to discuss this in more detail at your convenience and to make adjustments to the floodway profile based on the District's floodplain management goals. However, we believe that we have fulfilled our obligations and the intent of the scope of work to develop an optimized floodway profile for these reaches. Therefore, further floodway adjustments/analyses would necessitate a change of scope.

RPH response: The idea that modeling critical depth approximates natural conditions for the particular study area may be valid – however, it remains a matter of professional opinion until the State Standard is modified and accepted. Within SS3-94, on pages 2, 3, and 5, there are guidelines for special analysis, one of which is method 6, encroachment modeling. Therein is also a statement that the level of accuracy of the calculation for critical depth can be subject to rapid changes in reach geometry and the results are then assumed. The logic behind a method 6 encroachment run is to ensure that the FW boundary plots are wide enough to accommodate the energy dissipation at the transition of a steep, supercritical reach, to a mild, subcritical reach (hydraulic jump zone). Without running a mixed regime run, identifying the locations of such transitions is guesswork

Since there are such few locations where I found this condition to exist, I suggest that you set FP = FW (both CWSEL's and boundary plots) for segments below the following locations:

A. Sections 0.153 and 0.113 for Tribs X4A
B. Sections 0.377, 0.403 and 0.528 for Trib X1
C. Section 0.481 of Trib X4B

I have highlighted the sections on the study sheets for your reference.

A. **Tributary X4A (0.153 and 0.113)** - This could be done, however, it will result in a very wide floodway that would change the status of an existing home from a non-floodplain to a floodway residence. The residence was previously out of the floodplain. I looked at the analysis again, and see no way that the residence is out of the floodplain. I recommend that the analysis remain unchanged.
B. **Tributary X1 (0.377, 0.403 and 0.528)** – As in Tributary X4A, this adjustment would result in a floodway that seems too wide downstream of 0.403; including overbank areas that are very shallow and do not display surficial evidence of frequent flooding. Instead, I decreased the floodway encroachments in this reach

as much as I could and still maintain continuity with the upstream and downstream floodway delineations. I reworked the floodway upstream of 0.403 by decreasing the encroachment so that it would transition into the no-rise (FW=FP) in the reach below 0.528.

C. **Tributary X4B (0.481)** – Making the floodway equal to the floodplain for the section downstream of 0.481 only would result in an unnatural bulge in the floodway. Instead, I decreased the encroachment by 10 feet at both station 0.481 and 0.520. This provides continuity with the rest of the study reach downstream and maintains a floodway that is similar to the effective floodway in this reach.

7. *In the main model Description, please expand on the name of the consultant and date of the effective study hydrology. Also, the FCD contract number should be checked and completed. Please address.*

Hydrology is from the effective study titled Flood Delineation Study of Cline Creek and Tributary Washes, FCD 89-15 performed by Michael Baker Jr. Inc, April, 1990. This information has been added to the main model description field.

RPH Response: Within the model text section 5.6, you say that method 6 was run. Please update the model description, accordingly. Also, the FCD contract number is incomplete, there.

Actually, we used method 4 (per the Scope of Work) but did not allow any energy grade surcharge greater than one foot. I have added text into Section 5.6 to explain this. I have updated the model description to include the discussion of energy grade surcharge limits and added "2004" into the FCD contract number.

Report

5. *It would clarify the purpose of the lateral structures if you would add a brief explanation for each location within section 5.5.4, ahead of the lateral weir table.*

The purpose and explanation for all the lateral structures is identical. I have added this explanation in section 5.5.4.

RPH Response: Thanks for adding the explanation. However, it seems incomplete without a description about how the chosen approach is proposed for management purposes by the District. The text should include mention of concurrence from the District. Also, as it is currently depicted – won't FEMA have some questions about why there aren't additional delineations for the avulsing flows? We will need to discuss why those aren't being done now, and when/if they will be done, etc. It may be best to delineate the additional areas ahead of sending the TDN to FEMA.

I think that the District would have to respond to the first question in the above paragraph. I do not know how the district manages areas downstream of known breakouts that aren't studied.

Regarding "concurrence" from the district. Concurrence is implied when the District signs the FEMA forms and mails the TDN to FEMA.

Regarding the question about FEMA having concern over the breakout flows not being delineated : It is anyone's guess what FEMA will have to say about any study, but they haven't had a concern over minor breakout flows in the past. I think as long as you include the label "Limit of Study" then there should be no problem.

And regarding the final sentence: We would be happy to delineate all the breakouts, however, this would be beyond the scope of work for this study. Perhaps the District would like to add this as a task in the next phase of this project.

Either way, within the text, it would be good to add that the avulsed flows return to the main channels not far downstream from their respective breakouts. If we do not provide additional delineations at those locations for the TDN submittal, then we will need a limit of study note at each of the breakout areas.

"Limit of Study" labels have been added to the work maps for the 6 breakouts that are greater than zero when rounded. I have also added the requested language to TDN section 5.5.

As far as the write-up for the Lateral Weir Overflows, I am a bit confused about what the tables show and what the text says regarding the Optimization providing the "maximum amount of flow that is able to flow out of the study areas", since the quantities in the column "Q Leaving Total" in table 5.5.4.2 are greater than those in table 5.5.4.1. Please elaborate your explanation. I suggest changing the wording in the above sentence to "maximum amount of flow... out of the selected study reaches".

I have revised this section of the TDN to make it clearer.

In the draft TDN that was returned to me from the District, I found a few notations by the reviewer that weren't explained formally in the District comment review letter. These are reproduced and addressed below:

Page 5-7 – *"Appendix E.1 not found"*. **This has been changed to Attachment A.**
Page 5-8 – *A notation was found to add "to"*. **This has been done.**
Page 5-8 – *"No Delta Q due to lateral structures – why?"* **A Discussion has been added to TDN section 5.5 (See page 5-9 after Table 5.5.4.2).**
Page 5-8 – *"then why does table 5.5.4.2 show more"* **The word "maximum" has been omitted.**
Page 5-8 – *There is a notation to correct the table reference.* **This has been done.**

Page 5-9 - *"For the sake of argument, how can Q leave, & discharge doesn't change downstream?"*. **A Discussion has been added to TDN section 5.5 (See page 5-9 after Table 5.5.4.2).**
Page 5-9 - *"Brian is wanting us to promote mixing results of optimized & non-optimized He should state why.* **This is explained in TDN section 5.5**

Study Sheets

4. *For District utility ahead of the LOMR from FEMA, the ERM's should be defined on the study sheets. Please address.*

The ERM markers and descriptions have been added.

RPH response: To prevent confusion between the Notes on the study sheet that say "all elevations are based on North American Vertical Datum of 1929", and the '88 datum listed for the ERMs, please add elevation conversion factor(s). Or, otherwise rectify.

Actually, everything is NAVD 88, the "29" has been corrected.

5. *A comparison of old Floodway and Floodplain boundaries with the new boundaries should be done to identify areas where homes may be newly placed within them, in order to determine where we may recommend further analysis and formulate the level of expenditure needed to complete the upcoming TDN. Please address.*

JEF would be happy to perform this service, however, this item was not specified in the scope of work for this project and is not normally performed as part of the other scoped tasks. A change of scope would be necessary for us to perform this task.

RPH response: I will continue with this request since the issue was such an important one during the thrust of the Adobe Dam/DH study, and falls into an area somewhat heavy on the PR side for the District. Having any subsequent modeling refinements to prevent modeling homes in the "New" Floodway may promote acceptance by otherwise affected land owners during the public review period. Please coordinate with Afshin and copy me on related correspondence.

I have added this into the scope of work for you to review. See Task 6.1.3 in the attached draft of the Scope of Work.

New Other

1. *Per the convention you have chosen and the results shown in table 5.5.4.1, the discharge for lateral structure 0.395 of reach C8 should be closer to 4 cfs (sheet 3). Please rectify.*

It should be 4 cfs. This has been corrected.

2. *Per the model output for sections 0.377 0.342 of reach X1, there should be boundary plots of FP = FW on sheet 4. Please revise, accordingly.*

The model output and the work map are in agreement. There is a separate floodplain and floodway. However, there is a short reach between these two cross section on the right bank where the FP=FW due to the presence of a cut bank.

3. *Please add colored paper or other type dividers between the individual REP printouts. Also, in the future TDN, all the REP prints would be better found within one volume, not two. Please address.*

There is only one REP printout because all the reaches were assembled into one model. In the course of assembling the final TDN (under separate contract) we should discuss further how you would like to have the REP file organized since we have not been asked to do this for previous projects for the District. This will likely require some rather labor-intensive editing; perhaps it should be specified in the scope of work.

Accompanying this response memo is a revised partial TDN with work maps.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: May 16, 2006
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. BRI 5/16/06
RE: **FDS of Cline Creek Tributaries Survey Instructions, 12th Street at Tributary C6**
CC: Jon Fuller, P.E.

The purpose of this memo is to provide specifications for an as-built survey to be conducted at the new culvert crossing of 12th Street at Cline Creek Tributary C6. I have attached a 24"x36" map containing a 2006 photo base, profile alignments, annotations, survey point locations and ground photos taken 5/16/06.

General Specifications:

- Provide x, y, z and descriptions for all ground points taken.
- Provide x, y, z data in State Plain 83 (NAD83) horizontal projection and NAVD88 vertical datum.
- Profiles to include points at all grade breaks or at 25 foot intervals at a minimum.
- Provide survey data electronically in AutoCAD dwg or dxf format.
- Provide a survey report sealed by an Arizona Registered Surveyor including field notes and a description of the survey methodologies employed and equipment used.

Specific Specifications:

- Profile 2 and 4 shown on the attached map should be aligned along the top of the concrete culvert floor approximately 6" to a foot away from the culvert face.
- Profile 2 and 4 should include points at the center lines of each culvert cell wall.
- Note the typical culvert cell wall thickness.
- Provide the low chord elevation at approximately the center of each culvert cell.
- Profile 3 should be along the road crown.
- Profiles 1 and 5 should be located approximately 30 feet off the culvert inlet/outlet faces.
- See the attached map for all other requested x, y, z point locations (shown as red dots).

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: November 29, 2005
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E.
RE: Floodplain Delineation Study of Cline Creek Tributaries, Response to District Comments
CC: Jon Fuller, P.E.

The purpose of this memo is to respond to comments received from the Flood Control District of Maricopa County (District) in a letter dated August 25, 2005. The comments are reproduced below with JEF's responses:

Models

1. *My previous comment #1 from a memo to JEF date July 7, 2005 read:*

   "Model results in the current submittal are in large part based upon channel roughness values that have neither been reviewed nor approved by the District. Per the SOW section 6.4, this supporting data and calculations must be submitted for review and approval before further review of the Hydraulic analysis can take place. Please address."

   JEF replied that an updated N value report was being supplied with the current submittal. However, it remains incomplete because all calculations therein show only three roughness values per site, while the model includes many more values for numerous locations. In addition, the values in the report as of the date of this memo don't match the model input values even if one were to try and look only at major over bank areas in a plotted section. Without more complete substantiation of the values they are using, I can neither approve of the N value report as it stands, nor approve of the subsequent modeling results. Please address.

Due to the highly variable nature of the channel and over bank conditions in these study reaches, the Manning's "n" values shown in the reconnaissance report represent typical reach average conditions only. The HEC-RAS option for assigning horizontal variation in n values was used extensively to reflect the highly variable nature of single lot development that dominates this study area. Rather than apply typical n values to entire reaches, we went to considerable effort to add value and accuracy to the modeling by making subtle horizontal adjustments to the n-values that reflect real conditions. To support with documentation every combination of conditions that were accounted for with this approach would be impractical if not impossible.

Additional discussion was added to the n-value report and to section 5 of the draft TDN to further explain assignment of n values.

RPH Response: OK

2. *Weir coefficient documentation should not be deferred until the TDN is provided: it should be provided now, as it is part of the Hydraulic analysis. The District must have a complete hydraulic analysis documentation given the scenario that we will manage development in the study area during the time between District approval of the Hydraulic analysis and the time that we receive the LOMR from FEMA. As you know, this could be a considerable amount of time. Please provide.*

RPH Response: OK

Additional documentation of weir coefficient usage has been included in draft TDN section 5.5.4

3. *Model descriptions should still be added to the culverts. Please add.*

Culvert descriptions have been added to the culvert description fields.

4. A warning message opens up when you load in the HEC-RAS files that indicate there are multiple plans that can't be located within the file group. My guess is this is a leftover from modeling runs and is not now relevant. There should only be one plan. Please address.

There were some other draft plans that we forgot to delete. There is only Plan 1 now.

5. *The model results still suggest a need to review the State Standards methodology for Supercritical Flow, document SS3-94, in terms of the final analysis. Per the guidelines from those Standards, the methodology must be applied if a Sub critical run yields Critical Depth for 40% or more section locations. I have attached a spreadsheet that shows this occurs at 6 of the 8 study reaches. I did further checking by running those models in mixed regime and then checked the changes in EG, as the guidelines describe must be done. I have attached my results, and they show that for several encroached locations along the study reaches, there is either a drop (negative value) in the EG of 0.5' or more, or a rise greater than 1.0'. The models should be revised at and around these locations in order to eliminate such results. Please address.*

The floodway has been revised in several reaches (especially Tributaries X4A and X4B) by relaxing the encroachment stations.

In all reaches, model stability was checked for the sub-critical profile and the methodologies recommended in State Standard 3-94 were used. Overall, the model passes the state standard tests for subcritical stability, including the rule of thumb of velocity head being 1/3 or less of the depth (average = 0.18 for this study). To accomplish this, cross section spacing was kept to an average of 161 feet and Manning's "n" values were increased by 0.005 above the Manning's values that were determined based on static (non-dynamic) physical conditions. The 0.005 increase in the friction loss coefficient was applied to account for dynamic bedforms which are expected based on

field observations of pool/riffle sequences; an indicator that the system flows at or near critical depth during formative flow events. The average Froude number for all study reaches is 0.84.

A preponderance of critical solutions i.e., 40% or more, does not necessarily indicate model instability. Critical depth is actually what we would expect from these types of steep bed natural water courses.

I am un-familiar with the prescribed test involving running the model in mixed flow regime to look for indicators of a faulty or unstable sub-critical floodway profile based on changes in the energy grade. This test is not described in the state standard as I understand it. Per the state standard, changes in energy grade were observed for the sub-critical profile and were kept to less than 1.0 foot. In no case do the computed water surface elevation surcharge values exceed 1.0 foot or fall below 0.0 foot when rounded to the nearest tenth of a foot.

Perhaps, as an alternative to the prescribed test, the District could point out the particular encroached delineations that are of concern; keeping an eye on the floodplain management goals of the District for these reaches. We would be happy to discuss this in more detail at your convenience and to make adjustments to the floodway profile based on the District's floodplain management goals. However, we believe that we have fulfilled our obligations and the intent of the scope of work to develop an optimized floodway profile for these reaches. Therefore, further floodway adjustments/analyses would necessitate a change of scope.

RPH response: The idea that modeling critical depth approximates natural conditions for the particular study area may be valid – however, it remains a matter of professional opinion until the State Standard is modified and accepted. Within SS3-94, on pages 2, 3, and 5, there are guidelines for special analysis, one of which is method 6, encroachment modeling. Therein is also a statement that the level of accuracy of the calculation for critical depth can be subject to rapid changes in reach geometry and the results are then assumed. The logic behind a method 6 encroachment run is to ensure that the FW boundary plots are wide enough to accommodate the energy dissipation at the transition of a steep, supercritical reach, to a mild, subcritical reach (hydraulic jump zone). Without running a mixed regime run, identifying the locations of such transitions is guesswork

Since there are such few locations where I found this condition to exist, I suggest that you set FP = FW (both CWSEL's and boundary plots) for segments below the following locations:

A. Sections 0.153 and 0.113 for Tribs X4A
B. Sections 0.377, 0.403 and 0.528 for Trib X1
C. Section 0.481 of Trib X4B

I have highlighted the sections on the study sheets for your reference.

6. *The starting water surface elevation for C6, relative to the adjacent calculated water surface elevations at the starting section for C8 and the Cline Creek Main stem, should be set higher than it is right now. It should be set closer to 2084'. Please address.*

I disagree with the above statement. The starting water surface elevations chosen for Tributaries C6 and C8 (2083.5 and 2081 respectively) correspond to the average computed water surface elevation of Cline Creek at points on Cline Creek that are closest to the center of these two tributaries. This would, in effect, be the average computed water surface elevation across the tributary areas of Tributary C6 and Tributary C8. The reference to the computed water surface at C8 (2083.4) as justification for increasing the starting condition at Tributary C6 is problematic. The computed water surface elevation for C8 at the confluence is being influenced by Tributary C8 and not, as evidenced by the model results, by any backwater effect from Cline Creek. Tributary C6, on the other hand, is highly sensitive to the computed water surface elevation of Cline Creek instead of the slope of its own channel.

The starting water surface conditions have been left as they are for these two tributaries.

RPH response: OK

7. *In the main model Description, please expand on the name of the consultant and date of the effective study hydrology. Also, the FCD contract number should be checked and completed. Please address.*

Hydrology is from the effective study titled Flood Delineation Study of Cline Creek and Tributary Washes, FCD 89-15 performed by Michael Baker Jr. Inc, April, 1990. This information has been added to the main model description field.

RPH Response: Within the model text section 5.6, you say that method 6 was run. Please update the model description, accordingly. Also, the FCD contract number is incomplete there.

Report:

1. *Please modify the description in section 5.6 to address the application of the State Standard for Supercritical Regime, and what was done within the model, accordingly.*

Additional documentation has been added to Sections 5.5 and 5.6.

RPH Response: OK

2. *Until the work has been ordered to finalize the analysis in a TDN, it would be useful to have both a temporary Table of Contents and a Temporary References section. Please add them.*

This has been added.

RPH Response: OK

3. *Within section 5.6, please discuss the criteria used to not encroach in some areas for the profile 2 run, including where those areas are.*

This has been added.

RPH Response: OK

4. *Please add tabbed dividers to the final draft of the analysis (before the TDN).*

This has been done.

RPH Response: OK

5. *It would clarify the purpose of the lateral structures if you would add a brief explanation for each location within section 5.5.4, ahead of the lateral weir table.*

The purpose and explanation for all the lateral structures is identical. I have added this explanation in section 5.5.4.

RPH Response: Thanks for adding the explanation. However, it seems incomplete without a description about how the chosen approach is proposed for management purposes by the District. The text should include mention of concurrence from the District. Also, as it is currently depicted – won't FEMA have some questions about why there aren't additional delineations for the avulsing flows? We will need to discuss why those aren't being done now, and when/if they will be done, etc. It may be best to delineate the additional areas ahead of sending the TDN to FEMA.

Either way, within the text, it would be good to add that the avulsed flows return to the main channels not far downstream from their respective breakouts. If we do not provide additional delineations at those locations for the TDN submittal, then we will need a limit of study note at each of the breakout areas.

As far as the write-up for the Lateral Weir Overflows, I am a bit confused about what the tables show and what the text says regarding the Optimization providing the "maximum amount of flow that is able to flow out of the study areas", since the quantities in the column "Q Leaving Total" in table 5.5.4.2 are greater than those in table 5.5.4.1. Please elaborate your explanation. I suggest changing the wording in the above sentence to "maximum amount of flow… out of the *selected* study *reaches*".

6. *Please add a table number and title to the lateral structures table. Also, please add the next section downstream of each structure to the table, to show the effect on discharge due to lateral outflow.*

I have added a second non-optimized table as well as the requested table numbers, titles and additional column.

RPH Response: OK

7. *Per the modeled results, the water surface elevations at the top of Split 1 are not balanced as described at section 0.161 of X1 Split 1 and section 0.309 of X1 Reach 2 – there is a 0.1' elevation difference. Please address.*

After reconsidering this split analysis, I decided to re-analyze the balance with respect to energy grade. I have re-worded the documentation in section 5.5.4 to reflect this.

RPH Response: OK

Study Sheets

1. *Either a cover sheet should be added to the study sheets to define the reach names per sheet number, or the individual sheet index maps should have the reach names/numbers labeled on them. The cover sheet is preferred, and this should be done before starting on the TDN. Please address.*

The reach names have been added to the individual sheet indexes.

RPH Response: For the TDN, a cover sheet will be needed because the letters are so small for the reach names in the sheet Index maps, that not everyone can read them without magnification.

2. *The reach labels on the study sheets should be enlarged and moved away from the Hydraulic baselines so that they are more legible. Please address.*

The labels have been moved and made as large as will fit in the available spaces.

RPH Response: OK

3. *'Limit of Study" labels should be added to the upstream ends of all reaches, and at intermediate limits as well. Please address.*

"Limit of Study" labels have been added.

RPH Response: OK

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: March 5, 2006
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. Bri 4/5/06
RE: **Floodplain Delineation Study of Cline Creek Tributaries, Response to District Comments**
CC: Jon Fuller, P.E.

The purpose of this memo is to respond to comments received from the Flood Control District of Maricopa County (District) dated March 20, 2006. The comments are reproduced below (in italics) with JEF's responses:

Report

1. *Within the TDN text Section 5.3.1, second paragraph, the N-value calculation methodology is described by the appropriate reference. However, the titles on the calculation sheets themselves are: "...BY FCDMC METHOD'. To better define the appendix, please add to the paragraph of the text: "(herein referred to as the FCDMC method)".*

2. *Within the TDN text Section 5.5.4, fifth paragraph, last line, it seems that the sentence is a remnant of text from another of the "Adobe" TDN's. Please remove it or explain.*

3. *Per the values listed in Table 5.5.4.1, the 132 + 15 = 149 cfs breakout on reach X1 will raise a red flag by FEMA. Before that point in time, however, I believe that a field trip to the breakout area would be a good idea. This would help us determine what sort of additional mapping would be a good idea and/or necessary (and when it should be done) for the area. Please respond.*

4. *Figure 1, "Photo/Structure Locations" show a reach labeled "Trib 4C", while the related FIRM panel does not show any such reach. Please address.*

The above items 1,2 and 4 are new comments and can easily be addressed during the final TDN drafting as there are quite a few things left to do to complete the final anyway. At this point, it would not be efficient to continue regenerating this draft of section 5 for these minor changes. Additionally, JEF has added considerable detail to this draft that was requested by FCDMC but not scoped.

Regarding Item 3, I have added language into the scope of work to address this.

Study Sheets

1. *The aerial photo used for the study map is already over a year old. By the time the TDN gets sent it will probably be two years old. I think it best to update the photo to the most current available and so the SOW for the TDN should include*

allowance to show the most current aerial photo possible in the TDN to be sent to FEMA. Please address.

2. *I still maintain that a comparison of old Floodway and Floodplain boundaries with the new boundaries should be done to identify areas where homes may be newly placed within them, in order to determine where we may recommend further analysis and formulate the* ***level of expenditure needed to complete the upcoming TDN****. Please address.*

I have updated the language to the scope of work to include the above 2 items. If the FCDMC wishes to authorize additional analyses to alter the status of structures, this can easily be accomplished by authorizing a new task assignment within the as-needed contract.

Other

1. *Just a heads up – once the District approves the delineations, we will need to obtain the shape files to add to our database as preliminary data, before the LOMR is received. This was tentatively agreed upon during the Adobe "Lessons Learned" meeting.*

The shape file has been emailed.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: June 30, 2006
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. BRI 6/3/06
RE: **Floodplain Delineation Study of Cline Creek Tributaries, Response to District Comments**
CC: Jon Fuller, P.E.

The purpose of this memo is to respond to comments received from the Flood Control District of Maricopa County (District) dated March 20, 2006 that were not addressed under the previous contract. The comments are reproduced below (in italics) with JEF's responses:

Report

1. *Within the TDN text Section 5.3.1, second paragraph, the N-value calculation methodology is described by the appropriate reference. However, the titles on the calculation sheets themselves are: "...BY FCDMC METHOD'. To better define the appendix, please add to the paragraph of the text: "(herein referred to as the FCDMC method)".*

This addition was made.

2. *Within the TDN text Section 5.5.4, fifth paragraph, last line, it seems that the sentence is a remnant of text from another of the "Adobe" TDN's. Please remove it or explain.*

This sentence still applies, however it was not updated to reference the current study. The sentence has been revised.

3. *Per the values listed in Table 5.5.4.1, the 132 + 15 = 149 cfs breakout on reach X1 will raise a red flag by FEMA. Before that point in time, however, I believe that a field trip to the breakout area would be a good idea. This would help us determine what sort of additional mapping would be a good idea and/or necessary (and when it should be done) for the area. Please respond.*

A new reach (Overflow 1) has been added to the model to delineate the breakout. The breakout analysis is described in section 5.5.4 of the TDN.

4. *Figure 1, "Photo/Structure Locations" show a reach labeled "Trib 4C", while the related FIRM panel does not show any such reach. Please address.*

This label has been changed to Trib X4A to match the effective delineation.

Study Sheets

1. *The aerial photo used for the study map is already over a year old. By the time the TDN gets sent it will probably be two years old. I think it best to update the photo to the most current available and so the SOW for the TDN should include allowance to show the most current aerial photo possible in the TDN to be sent to FEMA. Please address.*

The latest aerial has been added to the workmaps. The flight dates for the area are January/February 2006. All references to the aerial within the TDN have been updated.

2. *I still maintain that a comparison of old Floodway and Floodplain boundaries with the new boundaries should be done to identify areas where homes may be newly placed within them, in order to determine where we may recommend further analysis and formulate the* ***level of expenditure needed to complete the upcoming TDN****. Please address.*

A separate analysis/comparison has been completed and will be ready for submittal to your office as a technical memo by July 7, 2006. This technical memo and attendant work map will identify changes of status of homes within the FP/FW.

In the latest draft TDN that was returned to me from the District, I found a few notations by the reviewer that weren't explained formally in the District comment review letter. These are reproduced and addressed below:

Page 5-9 – the word, "these" was crossed out. This word has been deleted.
Page 5-10 – "Clarify – do you mean average velocity head = 0.18 x depth?". This sentence was clarified.
Page 19 of Attachment A: Field Reconnaissance Report – "Is this page correctly located?". Yes. Refer to the table of contents. This section relates to the general floodplain characteristics.
Page 19 of Attachment A: Field Reconnaissance Report – Changed typo to ocotillo.

Summary

A draft copy of the TDN is included with this memo for your review. This TDN and attendant mapping include additional analysis and delineation related to the new 12th Street culverts and the added overflow reach that is part of Tributary X1.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: October 12, 2006
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. Bri 10/12/06
RE: **Floodplain Delineation Study of Cline Creek Tributaries, Response to District Comments**
CC: Jon Fuller, P.E.

The purpose of this memo is to respond to comments received from the Flood Control District of Maricopa County (District) dated July 18, 2006. The comments are reproduced below (in italics) with JEF's responses:

Modeling

> *1. The HEC-RAS model General Description mentions the use of encroachment method 5, while this was not done as indicated within the model. Please update the Description to include consultant address, discharge source, topo mapping date, river mile stationing in reference to discharge changes, etc. For example:*
>
> *"Discharge: 71 cfs @ R.S. 1.10178, 134 cfs @ River Mile 0.5548, 295 cfs @ 0.2246, and 323 cfs @ 0.0069*
> *Dip roadway crossings at R.S. 0.8111, 0.5494, 0.2757, and 0.2095*
> *Final Model Run: April 2003. Stationing based upon River Mile distance from Hydraulic Baseline confluence with the New River Thalweg."*
>
> *Also, please list both contract numbers and rectify the encroachment method used (the model input data doesn't show that method 5 is used, as stated in the description).*

These changes/additions have been made.

> *2. As discussed, the application of the full 708 cfs at the split BELOW the side-overflow into reach Tributary X1 Overflow 1 is a conservative measure in terms of a hydrologic application towards better floodplain management and to address uncertainty ("pure" accounting would show the 708 cfs reduced by the overflow amount). Please include a discussion to this end within section 5 of the TDN.*

The discussion in TDN section 5.5.4, third paragraph, 4th sentence has been clarified. This is a general discussion to state that this is the case for all weir overflows.

Report

> 1. *In the Table of Contents (TOC), the page number where section 5.10 References should be checked. Please address.*

The page number has been corrected

2. *The Section 1 pages are not numbered like other sections (i.e., 2.1, 2.2, etc.). Please rectify.*

This has been corrected.

3. *Based upon the TOC, table 1.1 could not be found in section 1 (leftover from another study?). Please check and revise accordingly.*

This has been corrected.

4. *Tables 5.5.4.1 and 5.5.4.2 are both found on the same page in section 5. Please update the TOC accordingly.*

This has been corrected.

5. *Sub-Appendix E.7, Zone AO analysis, could not be found in the report. Please update the TOC accordingly.*

This has been corrected.

6. *All digital files must be included in the next TDN submittal. Please address.*

The data disk has been added to Appendix F

7. *Within section 2.1 Study Documentation Abstract for FEMA submittals, please update the contact name for FEMA Technical Review. The new contact is Mr. Mounir Boudjemaa. The address should be the same. Also, the new phone number for ADWR is (602) 771 8500. Please update the Abstract accordingly.*

These changes have been made. I have also replaced the outdated FEMA forms with the latest forms that came out this summer.

8. *On the FEMA forms section C. Review Fees, a box is checked to waive the fees. However, since this is a restudy, there will most likely be a fee (which of course we will pay). Please check the appropriate box.*

I don't think the District will owe review fees since this is a general periodic restudy prompted by the discovery of errors/discrepancies in the effective study which was performed in 1990.

9. *Within section 3.1 Field Survey Information, please mention that John Stock's field survey notes can be found in Appendix C.*

This has been added to the end of the first paragraph in Section 3.1.

10. *Within text section 5.5.2 Bridge or Culverts, please mention that minor culverts were not included in the modeling (the contour lines at some locations were private drives exist show the drives elevated – I expect there are 24" or smaller culverts there). Please address.*

This has been added to the first sentence of section 5.5.2.

11. *Within the last paragraph of section 5.5.4, there is mention of "Tributary X2 – Overflow 1", which should be changed to "Tributary X1 – Overflow 1" to match the model and study sheets. Please rectify.*

This has been corrected.

12. *Within section 5.6 Floodway Modeling, please add a brief discussion to explain why encroachment methods 1 and 4 were both used for the same reach runs along with the zero rise Floodway.*

Additions/modifications have been made to the first 2 paragraphs of section 5.6 to add clarity.

13. *Within section 5.9 Final Results, there is a statement that 10.5 miles were delineated, while within section 1.2 it says there were 10.2. Please rectify.*

I re-calculated the total mileage. The correct mileage is 9.7 miles. I have made this correction in the two occurrences of the mileage reporting (Sections 1.5 and 5.9).

14. *Below Table 5.9.1, please add a discussion to explain why some of the water surface elevation changes are greater than 1'.*

Additional general discussion was added along with specific discussion for each instance of the new CWSEL being one foot or more different than the effective CWSELs.

15. *Contract Documents and Public Notification information should be added to Appendix B for completeness and to meet FEMA criteria. Please address.*

The contract documents have been added. Public Notification per scope items 1.5 and 1.6 are the responsibility of the District. I have not received copies of the legal advertising (Task 1.5) or the individual property owner notices (Task 1.6).

16. *Appendix C Survey was removed and given to John Stock, the District's chief surveyor, for updating. The current survey notes in that section did not include the survey of culverts at 12th Street and Circle Mountain Rd., Tributary C6, and also did not agree with the survey point numbers on the aerial photo imagery. John said he would make sure that JE Fuller gets the updated materials by COB Monday July 17th.*

I received the revised survey data from John Stock on July 17th, 2006 and included it into Appendix C. I am currently waiting on the survey letter report from FCDMC. The first one sent did not include the date of the 12th Street survey.

17. *A "place-holder" sheet is needed for Appendix F that says "Erosion/Sediment Transport Analysis not part of this Study". Similarly, another place holder is needed for Exhibit A, Hydrology Work Maps, since there wasn't any hydrologic analysis done for this study.*

These place holders with statements have been added.

18. *It is not clear to me why there is an Exhibit B Hydraulic Work Maps separate from the FEMA study maps. Please explain or remove it from Volume II and update the TOC accordingly.*

The state standard "Requirements for Flood Study Technical Documentation" SSA1-97 is not clear on this distinction. Table 1 of the standard (page 3) calls for this distinction; however, there is no explanation of it. In an attempt to comply strictly with the SSA1-97 format, we have included the place holder.

19. *Tabbed dividers for sub-appendices are nice, but at a minimum, colored divider sheets are needed. Please address.*

Colored dividers have been added.

Study Sheets

1. *Please indicate locations and call out all culverts and their types/sizes on the study sheets.*

These labels have been added to the study sheets.

2. *I expect that RBF did the ground control survey for this project like they did for other "Adobe" projects. If so, then Dan Mardock of their staff will need to sign and seal the cover page underneath the certification note. Please address.*

Afshin took care of this in the other cases.

3. *The final TDN study sheets will need to be sealed and signed by JE Fuller staff. Based upon recent District experience with Baker (NSP), the half-size sheets must be sealed/signed also.*

The half-size sheets accompanying the final TDNs have been sealed and signed.

Accompanying this memo are two copies of the final TDN for this study.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: October 23, 2006
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E. Bri 10/23/06
RE: **Floodplain Delineation Study of Cline Creek Tributaries, Response to District Comments**
CC: Jon Fuller, P.E.

The purpose of this memo is to respond to comments received from the Flood Control District of Maricopa County (District) dated October 18, 2006. The comments are reproduced below (in italics) with JEF's responses:

Modeling

1. In the model General Description, please add the discharge of 4490 to the list, for the bottom of reach C8.

This has been added.

2. In the culvert Description for the 3.3' x 4.5' HECMP's, please change the location to 12th street (it currently reads 10th street).

This has been corrected.

Report

1. *The Section 1 pages are still not numbered like other section pages (i.e., 2.1, 2.2, etc.). Please rectify.*

This has been corrected.

2. *A separate River Hydrology and Hydraulics form will be needed for each study source – this includes each separate tributary. Please provide.*

These have been added for the 8 tributaries.

3. *There seems to be an extra set of Overview and Concurrence forms in section 2: the set with your name as the requestor. Is this intentional? Please explain/rectify. Also, within the Riverine Structures form, you may want to label the HECMP's as such for clarity.*

These items have been corrected.

4. *Please add the 4490 cfs discharge rate for the bottom of reach C8 to table 4. In like manner, please update the table in section 7.1, Summary of Discharges.*

This has been added.

5. *Since the value of 9.7 miles of delineation has been determined, please update the text in section 5.1 accordingly.*

This has been corrected.

6. *To help ensure FEMA does not comment on the negative surcharges listed in the floodway table in section 7.1, I recommend that an additional column be added to the table titled "Recommended Rise", and the negative surcharge values currently shown (I saw none less than 0.07') be listed as "0.00'" in value.*

The column has been added.

Study Sheets

1. *All study sheets should have the word "Preliminary" on them until FEMA grants a LOMR for the study. Please add.*

This comment is being disregarded per our email discussion.

2. *I expect that RBF did the ground control survey for this project like they did for other "Adobe" projects. If so, then Dan Mardock of their staff will need to sign and seal the cover page underneath the certification note. As you have said, Afshin will need to handle this.*

3. *A new label will be needed on sheet 3 for reach C6 where the floodplain flows pass entirely under 12th street. The note should read something like "The 1% annual chance flood contained in culvert". Please add.*

The label has been added.

4. *The section RS 0.161 of Tributary X1 – Overflow 1 shown on sheet 4 was not found in the model. Please rectify.*

RS 0.161 is in X1 Reach Split 1-Upper. What Richard is seeing here is a leader that extends across the Tributary X1-Overflow 1 reach, not a cross section. There just isn't enough room in this area to mark it any other way.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: April 16, 2007
TO: Afshin Ahouraiyan/FCDMC – Project Manager
FROM: Brian R. Iserman, P.E.
RE: Floodplain Delineation Study of Cline Creek Tributaries, Floodplain/ Floodway Residence Status
CC: Jon Fuller, P.E.

Registered Professional Engineer (Civil) CERTIFICATE NO. 29325 BRIAN R. ISERMAN Date Signed 4-16-07 ARIZONA U.S.A.

The purpose of this memo is to report those homes in the study area that have been impacted by this study. The attached tables presents a complete breakdown of the status change of all homes impacted by this study, including a comparison of effective and new base flood elevations (BFEs). The attached map shows the residence locations.

No Status Change

12 residences did not have a floodplain/floodway status change. However, these homes do have revised BFEs as a result of the study.

202-20-076-J	202-20-684
202-20-076-P	202-20-630-B
202-20-027-L	202-20-630-A
202-20-027-P	202-20-289-A
202-20-027-N	202-20-011-U
202-20-021-H	202-20-596

Status from Zone AE Floodplain to Zone X or Zone D

9 residences that were located in the effective floodplain are now removed from the floodplain.

202-20-626
202-21-006-M (East House)
202-20-490
202-20-632
202-20-618-A
202-20-617-B
202-20-617-C
202-20-559
202-20-685

Status from Zone AE Floodway to Zone AE Floodplain

3 residences that were located in the effective floodway are now located in the revised floodplain.

202-21-006-M (West House)
202-20-040-K (West House)
202-20-040-K (East House)

Flood Control District of Maricopa County, Arizona
FLOODPLAIN DELINEATION STUDY
OF

CLINE CREEK TRIBUTARIES

FCD 2005C024, WORK ASSIGNMENT 2

TECHNICAL DATA NOTEBOOK
Volume 1

Submitted by:

JE Fuller / Hydrology and Geomorphology, Inc.
8400 S. Kyrene Road, Suite 201
Tempe, Arizona 85284
(480) 752-2124

on behalf of:

Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, AZ 85009
(602) 506-1501

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29325
BRIAN R.
ISERMAN
Date Signed 4-17-07
ARIZONA, U.S.A.

April, 2007

Status from Zone AE Floodway to Zone X or D

2 residences that were located in the effective floodway are removed from the floodplain in the revised study.

202-20-068-C
202-20-456-A

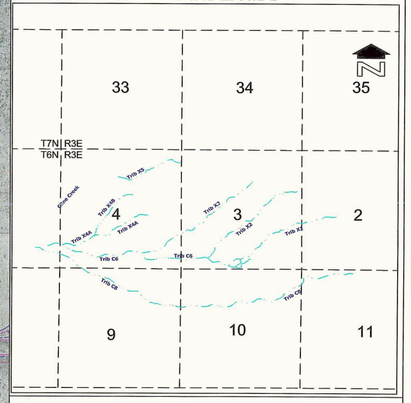
LEGEND

Floodplain/Floodway Residences Location — 202-20-394

100-Year Floodplain/Floodway (revised)

100-Year Floodplain/Floodway (effective)

SHEET INDEX MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF

CLINE CREEK TRIBUTARIES

RESIDENCE FLOODPLAIN/FLOODWAY STATUS

FCD 2005C024

Work Assignment 2

April, 2007

SCALE IN FEET

500' 0' 500' 1000'

SHEET 1 OF 1

AERIAL PHOTOGRAPHY FLIGHT DATE: JANUARY/FEBRUARY, 2006

B.5 Contract Documents

FLOOD CONTROL DISTRICT of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
Fax (602) 506-4601

NOTICE TO PROCEED

TO: Jonathan Fuller, PE
JE Fuller/Hydrology & Geomorphology, Inc.
8400 S. Kyrene Road, Suite 201
Tempe, AZ 85284

January 26, 2005

SUBJECT:	PCN	014.29.01	Low Org	6926
	FCD Contract No.	2004C025		
	Assignment No.	8		

Floodplain Delineation Study of Cline Creek Tributaries

Your not-to-exceed cost estimate of $87,092.26 for Assignment No. 8 has been received and accepted for this project with a completion date of 8/18/2006. You are hereby authorized to proceed with the work for the referenced project as originally described in the Scope of Work. Please specify the contract title, contract number, assignment number, and the dates of the completed service on all related correspondence, including the invoice. Send the invoices and certificates of performance to the attention of Finance Department, Flood Control District of Maricopa County. The certificate of performance must be dated on or after the final invoice date and must accompany the final invoices.

Consultant will delineate Zone AE floodplains for Tributaries to Cline Creek. This includes delineation of the floodplains using HEC-RAS 3.1.2 computer model, using current District standards. The scope of work for this task is attached. The deadline for finalizing the tasks will be 285 days from December 9th, 2004.

This task does not include TDN documentation, digital data delivery, nor FEMA deliverables. All these deliverables will be provided under separate contract.

If at any time during the project assignment a material change in the scope of services to be provided occurs, causing an increase in the original cost estimate shown here, you must provide the District with a written explanation of the additional work along with an estimate of additional costs. No additional work shall commence prior to written authorization by the District. No claims for additional work shall be accepted that have not received prior District approval.

SIGNED:

Afshin Ahouraiyan
Project Manager

Timothy S. Phillips, P.E.
Acting Chief Engineer and General Manager

11/23/2005

EXHIBIT A

SCOPE OF WORK

CONTRACT FCD 2004C025

Floodplain Delineation Study of Cline Creek Tributaries

EXHIBIT A

SCOPE OF WORK

CONTRACT FCD 2004CO25

Floodplain Delineation Study of Cline Creek Tributaries

GENERAL

This study will delineate Zone AE floodplains for Tributaries to Cline Creek. Cline Creek is located in north-central Maricopa County, see Figure 1.

The Flood Control District of Maricopa County (DISTRICT) already has recent 2-foot topographic mapping for this area. This study will include the delineation of the 100-year floodplains and floodways, which total approximately ten (10.3) linear miles. This study will not include TDN documentation, digital data delivery nor FEMA deliverables; these will be provided under separate contract.

The CONSULTANT will develop the floodplain delineations using HEC-RAS 3.1.2 computer model. The CONSULTANT must use sound engineering judgment in the development of the hydraulic models. The CONSULTANT must analyze the results of the models carefully and make refinements to the input parameters in order to obtain the most realistic results.

All work must meet the requirements of the DISTRICT's Consultant Guidelines, Third Edition - December 1, 2003 - Revision 1. All work must also meet Arizona Department of Water Resources (ADWR) and Federal Emergency Management Agency (FEMA) requirements for floodplain delineations. Prior to the finalization of this contract, the DISTRICT must review and accept the results of this study, and all items called for in this Scope of Work must be delivered to the DISTRICT.

All work must be completed within four hundred and eighty (480) days from the Notice to Proceed (NTP) which includes at least thirty (30) days for DISTRICT reviews.

TASK 1 - COORDINATION

1.1 Within fourteen (14) days of the NTP the CONSULTANT will submit a project schedule to the DISTRICT's Project Manager showing coordination meetings and completion dates for each task identified in the Scope of Work (SOW). The CONSULTANT will update this project schedule when appropriate.

1.2 The CONSULTANT will participate in regular coordination meetings (at least on a monthly basis) with the DISTRICT's Project Manager and in milestone coordination meetings in the development of the hydrologic and hydraulic analyses. The CONSULTANT is responsible for the minutes of any meetings. Coordination and milestone meetings should be combined whenever possible.

1.3 The CONSULTANT will submit an estimate of the monthly billing within fourteen (14) days of the NTP. Thereafter, this estimate will be updated and submitted to the DISTRICT's Project Manager at least ten (10) days before the end of each quarter.

1.4 The CONSULTANT will submit monthly progress reports at least five (5) days before submittal of monthly invoices. The report shall be brief and should be no longer than two (2) typed pages. At a minimum, the monthly report shall contain the following:

a. A description of the work accomplished by task during the reporting month.
b. Percent (%) completed for the month and percent (%) cumulative completed for each task.
c. A brief description of the work to be accomplished in the following month.
d. A description of any problems encountered.

1.5 The DISTRICT will be responsible for placing the legal advertising at the beginning of the study. The advertisement will be run in a widely circulated newspaper twice, with approximately one (1) week between runs. The advertisement will be run twice in a local newspaper that serves the area being studied.

1.6 The DISTRICT will notify property-owners in the vicinity of the existing floodplain of the study using a mailer.

1.7 The DISTRICT will mail fliers to affected property owners announcing the results of the study.

TASK 2 - DATA COLLECTION

2.1 The CONSULTANT will collect and review pertinent data from the DISTRICT and other outside sources. Data to be collected will include previous flood hazard reports and hydrology for the study area, existing topographic mapping, historical flooding information, as-built plans for existing structures, relevant storm drain infrastructure information, drainage design reports for the adjacent freeways, FEMA Flood Hazard Boundary Maps, FEMA Letters of Map Amendment/Revision, and other pertinent information.

2.2 The CONSULTANT will consult with officials from the DISTRICT, the cities, and the county, in order to identify local flooding problems and obtain information on current and planned public works projects, channel modifications, storm-drainage systems, development, and corporate limits.

2.3 A data collection summary will be submitted to the DISTRICT for information purposes. A preliminary draft is due within ninety (90) days of the NTP. The final will be included in Appendix A of the Technical Data Notebook **under separate contract.**

TASK 3 - TOPOGRAPHIC MAPPING

Topographic mapping with 2-foot contour intervals for the study area, will be provided by the DISTRICT. Both types of topographic mapping are in the Arizona Coordinate System Central Zone, 1983 North American Datum (NAD), horizontally; and the North American Vertical Datum 1988 (NAVD 88), vertically.

TASK 4 - FIELD SURVEY

4.1 Field surveys of bridges, culverts, catch basins, storm drains, other hydraulic structures, and significant stormwater storage basins that impact the floodplain delineation are to be provided by the DISTRICT when as-built plans are not available or when changes significant to the modeling, such as sedimentation, have occurred since the date of the as-built plan. It may be necessary to field survey some structures since the as-built plans may not be on the same datum as the study. The survey information shall be reduced and compiled into an 11"x 17" (maximum size) drawing for inclusion in the final TDN report by the CONSULTANT under separate contract.

4.2 Copies of the final survey field books and office calculations will be included in the Technical Data Notebooks **under separate contract.**

TASK 5 - HYDROLOGY

5.1 The hydrology from the previous study for this area (Floodplain Delineation Study for Cline Creek and Tributary Washes, Michael Baker, Jr. Inc., 1990) will be used for this study.

TASK 6 - FLOODPLAIN DELINEATION

6.1 Floodplain delineations must be obtained using the U.S. Army Corps of Engineers latest release of HEC-RAS (version 3.1.2) and methodology acceptable to FEMA. The CONSULTANT will prepare the study using the guidelines established in FEMA's Guidelines and Specifications for Flood Mapping Partners, April 2003, and FIA Document 12, Appeals, Revisions, and Amendments to Flood Insurance Maps, December 1993. The delineation work shall meet requirements for floodplain delineations as prescribed by FEMA and the ADWR, including SSA 9-02, State Standard for Hydraulic Modeling. The modeling and attendant delineation will tie to the recently completed Floodplain Delineation Study of Cline Creek, FCD 2002C001.

6.2 The floodplain delineation maps shall have a scale of 1 inch = 200 feet. The hydraulic modeling and delineation work maps shall be in the North American Vertical Datum of 1988 (NAVD 88).

6.3 If ponding-area floodplains occur in the study area the CONSULTANT shall provide the DISTRICT with the water surface elevations for these floodplain Zone AH ponding areas. If appropriate, the CONSULTANT will delineate conveyance areas, as floodplain Zone AE, between these ponding areas.

6.4 The CONSULTANT must obtain DISTRICT approval at each of the following steps:

a. Field reconnaissance report and estimation of Manning's "n" values.
b. Floodplain (natural) delineation.
c. Floodway (encroached) delineation.

d. Draft Hydraulics Report (Section 5 of the TDN). Note: Section 5 of the TDN will be finalized **under separate contract.**

6.5 The location and alignment of cross sections and channel centerline will be submitted for the DISTRICT's review and approval before digitizing the cross section data. Cross section stationing will be from left to right looking downstream with the thalweg as station 10,000. Cross sections will be spaced approximately every five hundred (250) feet, unless geographic or structural constraints dictate otherwise, and will extend the full width of the area inundated by 100-year floodwaters. Identification of cross sections will be in river miles, increasing upstream. The stationing will tie into the specified river mile of the existing FEMA studies. The cross section may need to be reoriented or altered after running the HEC-RAS model to ensure that they are perpendicular to flow per FEMA criteria. Cross sections developed by the HEC-RAS interpolation feature are not to be used.

6.6 The HEC-RAS output included with the draft hydraulics report will include summary tables, full output report and cross-section plots with water surfaces.

6.7 Bridges and culverts must be modeled according to HEC-RAS modeling requirements for the selected routine. Where multiple bridges occur, each bridge will be modeled separately.

6.8 Flood zones must be determined according to FEMA criteria and clearly labeled on the final drawings.

6.9 The Floodway Delineation shall be accomplished by using Encroachment Method 4 (Equal Conveyance) of HEC-RAS, and then refined by using Method 1 (Manual) of HEC-RAS.

6.10 The project description boxes of the HEC-RAS models should include the following:

a. Project Name and FCD Contract Number
b. Consultant(s) and Modeler's Name(s)
c. File Name
d. Vertical Datum of the model

6.11 Section 5 only of the Technical Data Notebook will be prepared for documentation of Task 6, according to ADWR State Standards Attachment 1-97 (SSA 1-97). The report will be organized as specified by the DISTRICT standards, following SSA 1-97 format.

6.12 The CONSULTANT shall fill out all the forms required by FEMA for the submittal of a Floodplain Delineation Study **under separate contract.**

TASK 7 – DIGITAL DATA

Digital data shall be delivered **under separate contract** in a CADD standard binary DXF format from either AutoCAD or MicroStation outlined in the DISTRICT's "CADD Data Delivery Specifications Rev 1.0 January 2000" and will be prepared in conformance with the above standards. The following themes are generally used for the data developed for Floodplain Delineation Studies. However, for this study there may not be data for every theme identified here, or the CONSULTANT might develop data for themes not listed here. Therefore, only those themes for which there is data need to be completed. If the CONSULTANT has data that does not fit one of the themes listed here, the DISTRICT's Project Manager shall be contacted to determine the

appropriate theme for that data. In addition, items (k) and (l) below shall also be submitted in the NGVD 29 vertical datum.

a. NDXPRJ (FCD Project Map Index)
b. PRJ (Project Boundaries)
c. CARTO (Cartographic Features) (separate submittals for Mapping and Flood Delineation)
d. DQ (Data Quality)
e. PRJ (Project Identification)
f. FPSRFFCD (Floodplain FCD Water Surface Elevation)
g. FPXFCD (Floodplain FCD Cross Section)
h. FPZNFCD (Floodplain FCD Zone)
i. FPBLN (Floodplain Baseline Route System)
j. PRJDAT (project identification)

TASK 8 - DELIVERABLES

8.1 Prior to FEMA Submittal: The CONSULTANT will deliver the following items to the DISTRICT.

8.1.1 Draft Hydraulics Report (TDN Section 5), including draft work maps.

8.2 FEMA Submittal: The CONSULTANT will submit the following items to the DISTRICT for review by FEMA and any other appropriate governmental agency **under separate contract**. All of the following products are considered deliverables for the FEMA submittal:

8.2.1 Two (2) complete sets of blackline paper topographic base maps with the floodplain delineations shown. All drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.2.2 Two (2) complete copies of the Technical Data Notebook, including completed FEMA forms, annotated Flood Insurance Rate Maps showing the proposed delineation and HEC-RAS input/output files on diskettes. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-90 (SSA 1-90). The notebook will be organized as specified by the DISTRICT, following SSA 1-90 format.

8.3 Final Submittal: The following products are considered deliverables for the final submittal to the DISTRICT after FEMA approval is issued. **These items will be delivered under separate contract.**

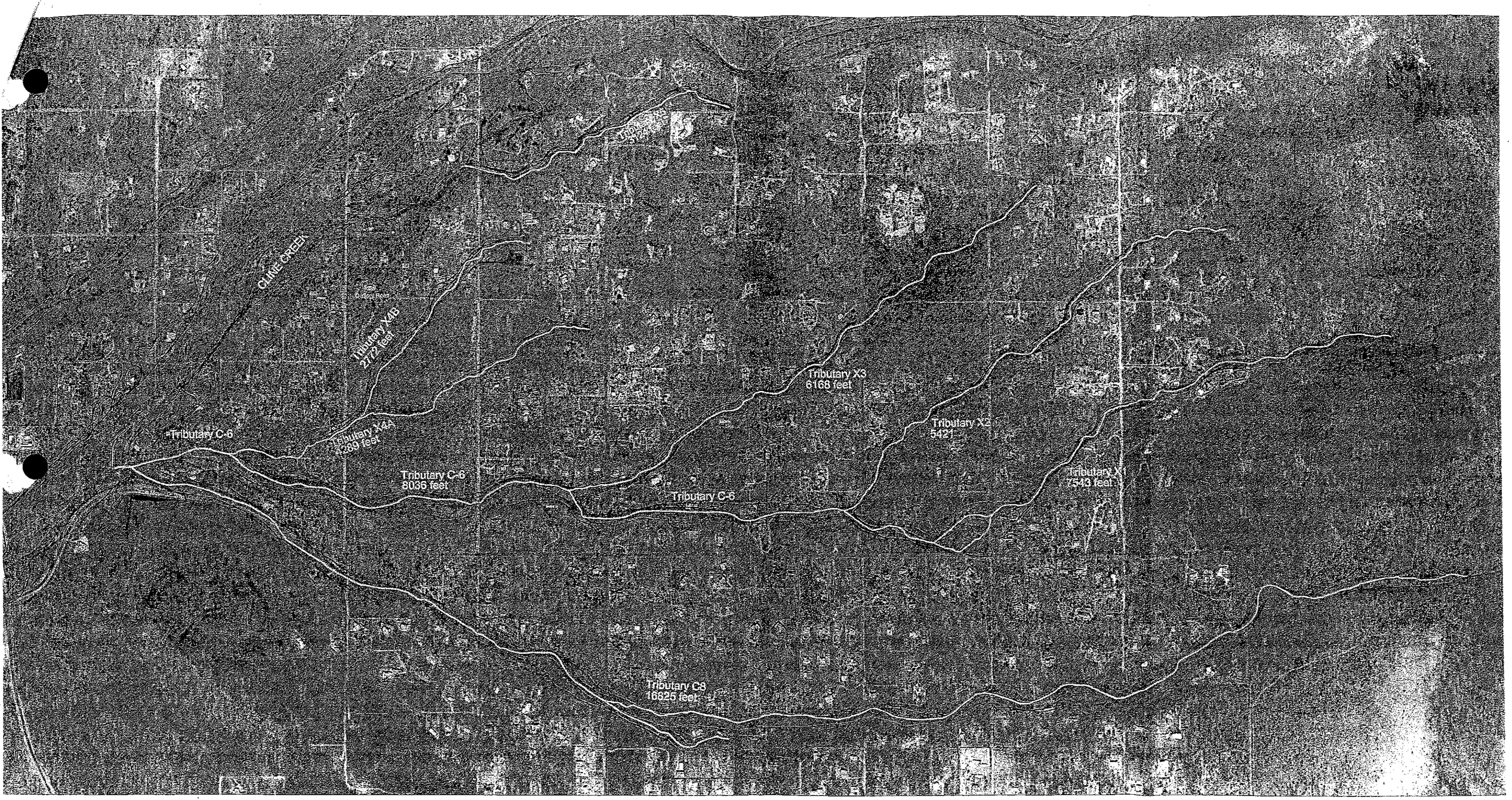
8.3.1 One (1) complete set of Mylars and two (2) complete sets of sealed blackline paper topographic maps with the floodplain/floodway delineations shown. All drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.3.2 All remaining hydrologic and floodplain/floodway delineation data in conformance with the DISTRICT's HIS Specifications.

8.3.3 Two (2) complete copies of the Technical Data Notebook including HEC-RAS input/output files on diskettes. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-97 (SSA 1-97). The notebook will be organized as specified by the DISTRICT, following SSA 1-97 format. This submittal of the Technical Data Notebook shall include any correspondence and/or meeting minutes with the reviewing

agencies and shall reflect any revisions required by those reviewing agencies. Revisions may include, but are not limited to, addressing FEMA's comments, modifications to the delineation maps, the HEC-1 model, the HEC-RAS model, and/or the Final Report.

ATTACHMENT 1 -- STUDY REACHES



ATTACHMENT 1: STUDY REACHES
FLOODPLAIN DELINEATION STUDY OF
CLINE CREEK TRIBUTARIES

JE FULLER
HYDROLOGY & GEOMORPHOLOGY, INC.
8400 S. KYRENE ROAD, SUITE 201
TEMPE, ARIZONA 85284
PHONE: 480-752-2124
FAX: 480-839-2193

FLOOD CONTROL DISTRICT of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
Fax (602) 506-4601

NOTICE TO PROCEED

TO: Jonathan Fuller, PE
JE Fuller/Hydrology & Geomorphology, Inc.
8400 S. Kyrene Road, Suite 201
Tempe, AZ 85284

May 15, 2006

SUBJECT:	PCN	520.01.20	Low Org	6961
	FCD Contract No.	2005C024		
	Assignment No.	2		

Finalize the TDN for Cline Creek Tributaries

Your not-to-exceed cost estimate of $34,019.49 for Assignment No. 2 has been received and accepted for this project with a completion date of 9/7/2007. You are hereby authorized to proceed with the work for the referenced project as originally described in the Scope of Work. Please specify the contract title, contract number, assignment number, and the dates of the completed service on all related correspondence, including the invoice. Send the invoices and certificates of performance to the attention of Finance Department, Flood Control District of Maricopa County. The certificate of performance must be dated on or after the final invoice date and must accompany the final invoices.

This assignment will take the draft Zone AE floodplain for Tributaries to Cline Creek developed under FCD 2004C025, assignment 8 and finalize and assemble the work into a Technical Data Notebook for submittal to FEMA. This assignment also includes re-analysis of one tributary based on newly built culvert by MCDOT as well as addressing all of the future FEMA comments. The detailed scope is attached.

If at any time during the project assignment a material change in the scope of services to be provided occurs, causing an increase in the original cost estimate shown here, you must provide the District with a written explanation of the additional work along with an estimate of additional costs. No additional work shall commence prior to written authorization by the District. No claims for additional work shall be accepted that have not received prior District approval.

SIGNED:

Afshin Ahouraiyan
Project Manager

Timothy S. Phillips, P.E.
Chief Engineer and General Manager

5/15/2006

EXHIBIT A

SCOPE OF WORK

CONTRACT FCD 2005C024
Assignment 2

Floodplain Delineation Study of Cline Creek Tributaries

EXHIBIT A

SCOPE OF WORK

CONTRACT FCD 2005C024
Assignment 2

Floodplain Delineation Study of Cline Creek Tributaries

GENERAL

This study will take the draft Zone AE floodplains for Tributaries to Cline Creek developed under FCD 2004C025, Task 8 and finalize and assemble the work into a Technical Data Notebook for submittal to FEMA. Cline Creek is located in north-central Maricopa County, see Figure 1.

Using existing 2-foot contour interval mapping provided by the Flood Control District of Maricopa County, this study will include the recently-completed delineation of the 100-year floodplains and floodways, which total approximately ten (10.3) linear miles.

The CONSULTANT will use the recently completed HEC-RAS modeling that was developed under separate contract plus additional modeling as scoped herein.

All work must meet the requirements of the DISTRICT's Consultant Guidelines, Third Edition - December 1, 2003 - Revision 1. All work must also meet Arizona Department of Water Resources (ADWR) and Federal Emergency Management Agency (FEMA) requirements for floodplain delineations. Prior to the finalization of this assignment, both the DISTRICT and FEMA must review and accept the results of this study, and all items called for in this Scope of Work must be delivered to the DISTRICT.

All work must be completed within four hundred and eighty (480) days from the Notice to Proceed (NTP) which includes at least sixty (60) days for DISTRICT reviews.

TASK 1 - COORDINATION

1.1 Within seven (7) days of the NTP the CONSULTANT will submit a project schedule to the DISTRICT's Project Manager showing coordination meetings and completion dates for each task identified in the Scope of Work (SOW). The CONSULTANT will update this project schedule when appropriate.

1.2 The CONSULTANT will participate in regular coordination meetings (at least on a monthly basis) with the DISTRICT's Project Manager and in milestone coordination meetings in the development of the hydrologic and hydraulic analyses. The CONSULTANT is responsible for the minutes of any meetings. Coordination and milestone meetings should be combined whenever possible.

1.3 The CONSULTANT will submit an estimate of the monthly billing within seven (7) days of the NTP. Thereafter, this estimate will be updated and submitted to the DISTRICT's Project Manager at least ten (10) days before the end of each quarter.

1.4 The CONSULTANT will submit monthly progress reports at least five (5) days before submittal of monthly invoices. The report shall be brief and should be no longer than two (2) typed pages. At a minimum, the monthly report shall contain the following:

a. A description of the work accomplished by task during the reporting month.
b. Percent (%) completed for the month and percent (%) cumulative completed for each task.
c. A brief description of the work to be accomplished in the following month.
d. A description of any problems encountered.

1.5 The DISTRICT will be responsible for placing the legal advertising at the beginning of the study. The advertisement will be run in a widely circulated newspaper twice, with approximately one (1) week between runs. The advertisement will be run twice in a local newspaper that serves the area being studied.

1.6 The DISTRICT will notify property-owners in the vicinity of the existing floodplain of the study using a mailer.

1.7 The DISTRICT will mail fliers to affected property owners announcing the results of the study.

1.8 The CONSULTANT shall participate in a project performance evaluation at the end of the project. The evaluation will include 1 meeting.

TASK 2 - DATA COLLECTION

2.1 A data collection summary report will be submitted to the DISTRICT for information purposes. A preliminary draft is due within fifteen (15) days of the NTP. The final will be included in Appendix A of the Technical Data Notebook.

TASK 3 - TOPOGRAPHIC MAPPING

Topographic mapping with 2-foot contour intervals for the study area, has been provided by the DISTRICT. The DISTRICT shall provide to the consultant the most recent available aerial photography.

TASK 4 - FIELD SURVEY

4.1 Field surveys of bridges, culverts, catch basins, storm drains, other hydraulic structures, and significant stormwater storage basins that impact the floodplain delineation were provided by the DISTRICT. The survey information shall be reduced and compiled into an 11"x 17" (maximum size) drawing for inclusion in the final TDN report by the CONSULTANT. CONSULTANT shall provide oversight/coordination of a new as-built survey for the new culverts located on Tributary C6 and 12th Street. Within seven (7) days of the NTP, the CONSULTANT shall provide information on the new culverts to the DISTRICT for the required survey data. Consultant shall develop an as-built plan sheet from the survey data for inclusion into the TDN. The DISTRICT shall provide the as-built survey data in a dxf or dwg format file.

4.2 Copies of the final survey field books and office calculations will be supplied by the DISTRICT surveyor and included in the Technical Data Notebooks by the CONSULTANT.

TASK 5 - HYDROLOGY

5.1 The hydrology from the previous study for this area (Floodplain Delineation Study for Cline Creek and Tributary Washes, Michael Baker, Jr. Inc., 1990) will be used for this study.

TASK 6 - FLOODPLAIN DELINEATION

6.1 The floodplain delineation for this project was completed by the CONSULTANT under separate contract. Floodplain delineations were obtained using the U.S. Army Corps of Engineers latest release of HEC-RAS (version 3.1.2) and methodology acceptable to FEMA under separate contract. The CONSULTANT prepared the study using the guidelines established in FEMA's Guidelines and Specifications for Flood Mapping Partners, April 2003, and FIA Document 12, Appeals, Revisions, and Amendments to Flood Insurance Maps, December 1993. The completed delineation work meets the requirements for floodplain delineations as prescribed by FEMA and the ADWR, including SSA 9-02, State Standard for Hydraulic Modeling. The modeling and attendant delineation ties to the recently completed Floodplain Delineation Study of Cline Creek, FCD 2002C001.

Additional modeling of breakout flow shall be developed for approximately 1,200 feet of Tributary X1 near river station 0.403. This work will include re-balancing Split 1 and re-delineating the floodplain of the reaches on both sides of the split flow island.

6.2 The floodplain delineation maps shall have a scale of 1 inch = 200 feet. The hydraulic modeling and delineation work maps shall be in the North American Vertical Datum of 1988 (NAVD 88). The maps will be revised to reflect the additional delineation work. This work shall include inserting the BFE line work, river mile ticks and attendant cartographic labeling and line work.

6.3 If ponding-area floodplains occur in the study area the CONSULTANT shall provide the DISTRICT with the water surface elevations for these floodplain Zone AH ponding areas. If appropriate, the CONSULTANT will delineate conveyance areas, as floodplain Zone AE, between these ponding areas.

6.4 The CONSULTANT has obtained DISTRICT approval at each of the following steps:

a. Field reconnaissance report and estimation of Manning's "n" values.
b. Floodplain (natural) delineation.
c. Floodway (encroached) delineation.
d. Draft Hydraulics Report (Section 5 of the TDN).

6.5 The location and alignment of cross sections and channel centerline were submitted for the DISTRICT's review and approved before the cross section data were digitized. Cross section stationing is from left to right looking downstream with the thalweg as station 10,000. Cross sections were spaced an average of every 161 feet, unless geographic or structural constraints dictated otherwise, and extended the full width of the area inundated by 100-year floodwaters. Identification of cross sections is in river miles, increasing upstream. The stationing ties into the specified river mile of the existing FEMA studies. The cross section are perpendicular to flow per FEMA criteria. Cross sections developed by the HEC-RAS interpolation feature were not used.

The CONSULTANT shall provide additional cross sections to the District for the additional Tributary X1 Study Reach.

6.6 The HEC-RAS output included with the draft hydraulics report included summary tables, a full output report and cross-section plots with water surfaces.

Draft results of the new and revised Tributary X1 study reaches shall be submitted to the district for review.

6.7 Bridges and culverts were modeled according to HEC-RAS modeling requirements for the selected routine. Where multiple bridges occur, each bridge was modeled separately. New modeling will be performed on the recently built culvert on Tributary C6 and 12th Street. The modeling will be based on new as-built survey data provided by the DISTRICT.

6.8 Flood zones were determined according to FEMA criteria and clearly labeled on the draft drawings. Flood Zones associated with the new Tributary X1 reach will be labeled on the draft drawings.

6.9 The Floodway Delineation was accomplished by using Encroachment Method 5 (Equal Conveyance Reduction with a one foot energy grade surcharge) of HEC-RAS, and then refined by using Method 1 (Manual) of HEC-RAS.

Floodway encroachments will be applied to the additional Tributary X1 reach.

6.10 The project description boxes of the HEC-RAS models include the following:

a. Project Name and FCD Contract Number
b. Consultant(s) and Modeler's Name(s)
c. File Name
d. Vertical Datum of the model

6.11 Section 5 of the Technical Data Notebook was prepared for documentation of Task 6, according to ADWR State Standards Attachment 1-97 (SSA 1-97). The report was organized as specified by the DISTRICT standards, following SSA 1-97 format. Modifications will be made to Section 5 based on the additional Tributary X1 analyses. All other sections shall be completed by the CONSULTANT.

6.12 The CONSULTANT shall fill out all the forms required by FEMA for the submittal of a Floodplain Delineation Study.

6.13 The CONSULTANT shall perform a home status change analysis to determine any change in floodplain/floodway status for existing habitable structures. The results shall be summarized in a technical memorandum that includes a map showing the locations of structures that have been impacted by the revised floodplain/floodway line work.

TASK 7 – DIGITAL DATA

Digital data shall be delivered in a CADD standard binary DXF format from either AutoCAD or MicroStation outlined in the DISTRICT's "CADD Data Delivery Specifications Rev 1.0 January 2000" and will be prepared in conformance with the above standards. The following themes are generally used for the data developed for Floodplain Delineation Studies. However, for this study there may not be data for every theme identified here, or the CONSULTANT might develop data for themes not listed here. Therefore, only those themes for which there are data need to be completed. If the CONSULTANT has data that does not fit one of the themes listed here, the DISTRICT's Project Manager shall be contacted to determine the appropriate theme for that data.

a. NDXPRJ (FCD Project Map Index)
b. PRJ (Project Boundaries)
c. CARTO (Cartographic Features) (separate submittals for Mapping and Flood Delineation)
d. DQ (Data Quality)
e. PRJ (Project Identification)
f. FPSRFFCD (Floodplain FCD Water Surface Elevation)
g. FPXFCD (Floodplain FCD Cross Section)
h. FPZNFCD (Floodplain FCD Zone)
i. FPBLN (Floodplain Baseline Route System)
j. PRJDAT (project identification)

This task shall include a preliminary submittal to be included with the Task 8.1 deliverable, and a final deliverable as part of Task 8.3. The DISTRICT shall review the preliminary submittal and respond with comments, and the CONULTANT shall address those comments prior to producing the Task 8.2 deliverable items.

TASK 8 - DELIVERABLES

8.1 Prior to FEMA Submittal: The CONSULTANT will deliver the following items to the DISTRICT.

8.1.1 Draft TDN including draft work maps according to ADWR State Standards Attachment 1-97 (SSA 1-97). The report shall be organized as specified by the DISTRICT standards, following SSA 1-97 format.

8.1.2 Preliminary Digital Data Delivery

8.2 FEMA Submittal: The CONSULTANT will submit the following items to the DISTRICT for review by FEMA and any other appropriate governmental agency. All of the following products are considered deliverables for the FEMA submittal:

8.2.1 Two (2) complete sets of blackline paper topographic base maps with the floodplain delineations shown. All drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.2.2 Two (2) complete copies of the Technical Data Notebook, including completed FEMA forms, annotated Flood Insurance Rate Maps showing the proposed delineation and HEC-RAS input/output files on diskettes. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-90 (SSA 1-90). The notebook will be organized as specified by the DISTRICT, following SSA 1-90 format.

8.3 Final Submittal: The following products are considered deliverables for the final submittal to the DISTRICT after FEMA approval is issued.

8.3.1 One (1) complete set of Mylars and two (2) complete sets of sealed blackline paper topographic maps with the floodplain/floodway delineations shown. All drawings will be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.

8.3.2 All remaining hydrologic and floodplain/floodway delineation data in conformance with the DISTRICT's HIS Specifications.

8.3.3 Two (2) complete copies of the Technical Data Notebook including HEC-RAS input/output files on diskettes. The Technical Data Notebook will be prepared in accordance with ADWR State Standards Attachment 1-97 (SSA 1-97). The notebook will be organized as specified by the DISTRICT, following SSA 1-97 format. This submittal of the Technical Data Notebook shall include any correspondence and/or meeting minutes with the reviewing agencies and shall reflect any revisions required by those reviewing agencies. Revisions may include, but are not limited to, addressing FEMA's comments, modifications to the delineation maps, the HEC-RAS model, and/or the Final Report.

ATTACHMENT 1 -- STUDY REACHES

B.6 Public Notification

March 1, 2007

Click here and type the Addressse's Name
Click here and type the Addressee's Title
Click here and type the Company Name
Click here and type the Street Address
Click here and type the City, State ZIP Code

Dear Resident:

The Flood Control District of Maricopa County (District) has completed the Adobe Dam/Desert Hills Area Drainage Master Plan (ADMP) in your area. A recommendation from the ADMP was the re-delineation of the Cline Creek Tributaries based on better mapping and better data.

The District is conducting an open house for all property owners located in the Cline Creek Tributary washes to inform them of the findings of this study. The meeting will be held from 6:00 to 8:00 p.m. Thursday, March 15, 2007 at the New River Church of Jesus Christ of Latter Day Saints. Representatives from the Flood Control District and the engineering consulting firm will be available to discuss the results and answer questions.

The completed study and delineation exhibit maps will be used to regulate future development so as to reduce or prevent possible flood damage to property and structures. The study results will be submitted to the Federal Emergency Management Agency (FEMA) for use in revising Flood Insurance Rate Maps for the area. Buildings located within a 100-year floodplain are required by FEMA to have flood insurance coverage if they are financed by federally insured loans.

If you have any questions, please feel free to contact me at 602-506-1501.

Sincerely,

A. Ahouraiyan

Afshin Ahouraiyan
Project Manager

Cline Creek Tributary Flood Delineation Study

March 15, 2007 – New River Church of Jesus Christ of Latter-day Saints **SIGN IN SHEET**

Name	Address	Phone	E-mail
Richard Kathy Watkins	45416 N. 12th St.	623 465-0029	zonasun1@MSN
TROUSDALE BENNET + DIANE	45440 N. 14TH ST.	623 341-3457	btrousdale@cox.NET
STEPHEN FOWLER	227 E MANO DR	623 465 0458	STEPHEN@EGUTTATA.COM
Courtney Sullivan	44306 N. 21st	623 465 9547	CMS@courtneysullivan.com
Brenda Taylor-Sager	44715 N. 114th St	623 465 9206	brendaTaylorsager@yahoo.com
Ann Hutchinson	201 W. Circle Mt Road	623-742-6514	behomes@msn.com
Paul McAllister	" "	"	"
Jim Maksym	43627 N. 14th St.	623-434-1937	jim.maksym@arroyosecoag.com
Joe Hess	530 E. Circle Mtn.	623 465-7085	
Dave Jordan	44404 N. 7th St.	623-465-1536	

2801 West Durango Street, Phoenix, Arizona 85009
(602) 506-1501

Ann sent email thru Web re: FP infraction

Cline Creek Tributary Flood Delineation Study

March 15, 2007 – New River Church of Jesus Christ of Latter-day Saints **SIGN IN SHEET**

Name	Address	Phone	E-mail Want to know if still located in CC floodway/plain.
JOE HESS	530 E. Circle Mtn Rd	623 465 7085	Parcel # 20221006N
DAVE JORDAN	44404 N 7TH St.	623 465 1136	

Cline Creek Tributary Flood Delineation Study

March 15, 2007 – New River Church of Jesus Christ of Latter-day Saints **SIGN IN SHEET**

Name	Address	Phone	E-mail
Fred W. Terry	515 E Carefree Hwy 85085	623 465 7225	None
Robert Lindstrom	44825 N. 12th St.	623-465-5912	rdlind72@msn.com
Tom & Char Dawson	43912 N 12 ST. N.R	623 465 1358	— * Contact on Monday
Tom & Judi Comstock	44621 N. 10th Way	623-465-1545	Corpmin@AOL.Com
Bill Sherick	46625 N. New River Rd	623-465-7132	None
Rich Olsen	807 E Wild Field Drive	623 465 7561	rich@knowledgehouse.info
Chris Hazawan	44806 N 11th Place	623-826-4872	
Tom Whiting		623-889-1702	tom@n7tlw.us
Sharon Goodroad	2119 E. Cactary Rd.	623-742-0150	scgoodroad@msn.com
Barbara Eastwood	43643 N. 18th St.	623-465-7286	Sbeastwood@AOL.com

B.7 FEMA Correspondence

Flood Control District
of Maricopa County

Board of Directors
Fulton Brock, District 1
Don Stapley, District 2
Andrew Kunasek, District 3
Max Wilson, District 4
Mary Rose Wilcox, District 5

www.fcd.maricopa.gov
2801 West Durango Street
Phoenix, Arizona 85009
Phone: 602-506-1501
Fax: 602-506-4601
TT: 602-505-5897

May 17, 2007

Mr. Mounir Boudjemaa, Regional Manager
Baker Civil
3601 Eisenhower Avenue
Alexandria, Virginia 22304-6425

Community: Maricopa County, Arizona

Community Nos.: 040037

Flooding Sources: Cline Creek Tributaries C6, C8, X5, X1, X2, X3, X4A, and X4B

FIRM Panels Affected: 390G, 395H

Dear Mr. Boudjemaa:

I have enclosed a floodplain re-delineation study for Cline Creek Tributaries. This study was done to more accurately define and map potential flood-hazard areas in advance of anticipated future development. The supporting Technical Data Notebook includes a copy of the work maps. Please review and process a Letter of Map Revision for the studied portions of these washes.

If you have any questions, please contact me at (602) 506-4528.

Sincerely,

Richard P. Harris, P.E., CFM
Project Manager
Regulatory Division

Enclosure

Copies to:

Mr. Ray Lenaburg
Floodplain Mapping Coordinator
FEMA Region IX
1111 Broadway
Suite 1200
Oakland, CA 94607-4052

Mr. Michael Godesky, Project Manager
Hazards Study Branch, Mitigation Directorate
Federal Emergency Management Agency
500 C STREET SW
WASHINGTON DC 20472-0001

Mr. Brian Cosson
NFIP Coordinator
Arizona Department of Water Resources
500 north 3rd Street
Phoenix, AZ 85004

Mr. Brian Iserman, P.E.
JE Fuller Hydrology and Geomorphology, Inc.
8400 South Kyrene Road
Suite 201
Tempe, AZ 85284

APPENDIX C: SURVEY FIELD NOTES

Flood Control District
of Maricopa County

Board of Directors
Fulton Brock, District 1
Don Stapley, District 2
Andrew Kunasek, District 3
Max Wilson, District 4
Mary Rose Wilcox, District 5

www.fcd.maricopa.gov
2801 West Durango Street
Phoenix, Arizona 85009
Phone: 602-506-1501
Fax: 602-506-4601
TT: 602-505-5897

Project Survey Report: Cline Creek Tributaries

April 26, 2007 Brian R. Iserman, P.E.
JE Fuller Hydrology & Geomorphology, Inc.
8400 S. Kyrene Road Suite 201
Tempe, AZ 85284

Project narrative:
At the request of JE Fuller, consultant, and Afshin Ahouraiyan, FCD, the survey branch of the District performed field observations as requested on December 4, 2006. The base documents were the request letter and two photo maps indicating the position of the observations.

The project control was the Maricopa County Geodetic Densification and Cadastral Survey GPS B order point NR15.
Observations were performed with a Trimble 5800 real time kinematic GPS instrument. And were taken on the Horizontal Datum of 1983-92 State Plane Coordinate System, Arizona Central Zone.
The Vertical Datum is The North American Vertical Datum of 1988.
Observations were reported to .01international feet.
There were several residences and drainages surveyed in the field at the requested sites At a stated accuracy of plus or minus .10 feet. Additional highest and lowest adjacent grade and lowest floor observations were taken with a Sokkia 3rd order engineering level and telescoping level rod.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
25087
JOHN R.
STOCK
Date Signed 5/1/2007
ARIZONA U.S.A.

John R. Stock, RLS, CFM
Mapping and Survey Manager
Flood Control District of Maricopa County

Cline Creek Tributaries
Follow Up Survey Results
Survey Performed by FCDMC on 12/8/06

Pt. #	N	E	Elev.	Desc.
100	1050908.54	659085.28	2172.328	x-sec
104	1050888.57	659088.817	2171.576	ng
105	1050871.758	659094.604	2170.349	ng
106	1050852.392	659099.275	2169.54	ng
107	1050837.982	659103.783	2169.157	ng
108	1050820.426	659106.494	2168.414	ng
109	1050811.572	659113.9	2167.392	tb
110	1050808.399	659115.265	2166.833	toe/fl
111	1050800.55	659118.633	2167.877	tb
112	1050783.131	659123.2	2168.167	tb
113	1050778.204	659124.018	2165.831	toe
114	1050774.494	659124.905	2166.221	toe
115	1050761.541	659129.058	2169.864	ng
116	1050730.402	659137.079	2177.057	x-sec-end
117	1050682.308	659026.357	2173.846	x-sec-end
118	1050699.804	659018.356	2172.959	gb
119	1050716.159	659015.252	2168.369	gb
120	1050729.713	659007.784	2167.364	ng
121	1050740.104	659005.333	2166.147	tb
122	1050746.198	659002.936	2164.83	toe
123	1050751.184	659003.054	2164.579	toe
124	1050753.843	659002.56	2165.509	tb
125	1050772.714	658997.236	2165.753	ng
126	1050784.957	658995.163	2167.086	gb
127	1050804.031	658988.823	2166.956	ng
128	1050822.474	658982.832	2167.526	conc.
129	1050825.272	658981.98	2167.904	conc.
130	1050815.323	658861.641	2166.099	ng
131	1050791.816	658869.387	2165.301	ng
132	1050767.464	658874.014	2164.375	pave
133	1050727.068	658883.96	2164.253	pave
134	1050703.043	658891.37	2165.059	gb
135	1050696.556	658896.567	2166.81	gb
136	1050690.25	658900.776	2167.61	gb
137	1050687.058	658902.259	2168.609	gb
138	1050676.464	658906.961	2168.146	ng
139	1050730.828	658908.311	2164.367	tb
140	1050729.742	658908.285	2162.936	toe
141	1050725.495	658910.214	2162.701	toe
142	1050723.848	658910.79	2164.34	tb
143	1050788.696	659073.385	2166.635	toe
144	1050794.688	659072.644	2168.546	tb
145	1050821.733	658966.181	2167.244	ng
146	1052215.69	656535.28	2146.983	x-sec
147	1052319.86	656751.15	2152.031	x-sec
149	1051963.514	656798.384	2147.22	ng
150	1051973.632	656790.422	2147.167	eop
151	1051999.004	656764.524	2146.603	eop
152	1052023.327	656741.318	2145.908	ng
153	1052048.219	656715.458	2145.435	ng

Description Code
x-sec = Cross section
ng = Natural ground
tb = Top of bank
toe = Toe of bank
fl = Flow line
gb = Grade break
conc. = Concrete
pave = Pavement
eop Edge of pavement

Cline Creek Tributaries
Follow Up Survey Results
Survey Performed by FCDMC on 12/8/06

Pt. #	N	E	Elev.	Desc.	Description Code
154	1052052.216	656710.696	2145.221	fl	
155	1052053.822	656708.993	2145.717	gb	
156	1052081.79	656678.714	2145.81	ng	
157	1052110.487	656647.132	2145.994	ng	
158	1052125.839	656630.856	2147.121	conc	
159	1052150.253	656603.196	2148.846	conc	
160	1052160.521	656591.088	2146.96	ng	
161	1052175.319	656567.984	2146.476	ng	
162	1052152.446	656683.296	2148.375	ng	
163	1052144.943	656694	2147.479	ng	
164	1052133.644	656709.462	2147.115	ng	
165	1052123.976	656724.563	2146.663	fl	
166	1052111.898	656741.761	2147.176	ng	
167	1052099.776	656756.721	2147.05	toe	
168	1052091.742	656769.395	2149.559	tb	
169	1052106.714	656773.056	2149.845	tb	
170	1052106.341	656807.065	2150.308	tb	
171	1052106.506	656828.764	2150.067	tb	
172	1052119.657	656828.788	2148.96	toe	
173	1052120.736	656801.368	2148.492	toe	
174	1052120.378	656776.606	2147.921	toe	
175	1052116.652	656762.478	2147.467	toe	
176	1052090.183	656755.433	2147.014	toe	
177	1052050.706	656754.625	2146.874	toe	
178	1052047.453	656769.478	2149.776	tb	
179	1052077.216	656769.456	2149.842	tb	
180	1052124.338	656675.671	2146.618	ng	
181	1052138.289	656647.729	2148.047	ng	
182	1052563.15	656868.86	2157.96	x-sec	
184	1052165.49	656925.61	2151.7	x-sec	
185	1052179.719	656910.157	2151.197	ng	
186	1052196.118	656887.207	2150.739	ng	
187	1052209.007	656872.824	2150.191	ng	
188	1052220.054	656857.949	2149.424	fl	
189	1052231.915	656847.273	2150.559	ng	
190	1052251.379	656827.853	2150.826	ng	
191	1052270.214	656808.516	2150.802	ng	
192	1052289.865	656787.293	2150.888	ng	
193	1052306.691	656767.039	2151.552	ng	
194	1052544.628	656882.058	2157.437	ng	
195	1052522.23	656899.072	2156.543	ng	
196	1052505.389	656911.197	2156.283	ng	
197	1052481.415	656929.413	2156.924	ng	
198	1052459.513	656949.306	2157.236	ng	
199	1052443.274	656963.785	2156.17	ng	
200	1052423.192	656977.413	2155.8	ng	
201	1052405.507	656990.147	2155.313	ng	
202	1052387.512	657001.569	2154.921	ng	
203	1052383.528	657005.684	2155.021	tb	
204	1052383.07	657005.815	2154.505	toe	

Cline Creek Tributaries
Follow Up Survey Results
Survey Performed by FCDMC on 12/8/06

Pt. #	N	E	Elev.	Desc.	Description Code
205	1052380.19	657007.087	2154.465	toe	
206	1052378.897	657007.133	2155.094	tb	
207	1052369.04	657017.113	2155.005	ng	
208	1052351.171	657028.166	2155.766	ng	
209	1052337.425	657042.987	2156.626	ng	
210	1052575.745	656976.289	2159.549	ng	
211	1052559.704	656993.32	2159.468	ng	
212	1052550.711	657009.087	2159.338	ng	
213	1052541.618	657026.098	2159.18	ng	
214	1052534.009	657044.688	2159.027	ng	
215	1052523.365	657058.822	2158.485	tb	
216	1052522.278	657059.629	2157.273	toe	
217	1052521.352	657060.2	2157.382	toe	
218	1052520.781	657060.598	2158.598	tb	
219	1052516.124	657079.609	2158.296	ng	
220	1052495.622	657106.637	2159.427	ng	
221	1052485.845	657126.315	2159.795	ng	

Board of Directors
Fulton Brock, District 1
Don Stapley, District 2
Andrew Kunasek, District 3
Max Wilson, District 4
Mary Rose Wilcox, District 5

Flood Control District
of Maricopa County

www.fcd.maricopa.gov
2801 West Durango Street
Phoenix, Arizona 85009
Phone: 602-506-1501
Fax: 602-506-4601
TT: 602-505-5897

Project Survey Report: Circle Mountain Road and Cline Creek

September 27, 2006
Brian R. Iserman, P.E.
JE Fuller Hydrology & Geomorphology, Inc.
8400 S. Kyrene Road Suite 201
Tempe, AZ 85284

Project narrative:
At the request of JE Fuller, consultant, and Afshin Ahouraiyan, FCD, the survey branch of the District performed field observations as requested on May of 2005 and after further new construction new observations were added to the dataset in July of 2006 . The base documents were the request letter and two photo maps indicating the position of the observations.

The project control was the Maricopa County Geodetic Densification and Cadastral Survey GPS B order point NR15.
All observations were performed with a Trimble 5800 real time kinematic GPS instrument.
Observations were taken on the Horizontal Datum of 1983-92 State Plane Coordinate System, Arizona Central Zone.
The Vertical Datum is The North American Vertical Datum of 1988.
Observations were reported to .01international feet.
The stated accuracy is plus or minus .10 feet.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
25087
JOHN R.
STOCK
Date Signed 9/27/06
ARIZONA U.S.A.

John R. Stock, RLS, CFM
Mapping and Survey Manager
Flood Control District of Maricopa County

12th St. & Circle Mtn. Rd.

Point #	N	E	Elev.	Code
100	1050507.3	657589.19	2140.176	bw
101	1050506.7	657591.43	2142.969	tw
102	1050506.8	657579.79	2145.012	tw
103	1050506.8	657579.79	2145.026	tw
104	1050506.8	657579.78	2145.013	tw
105	1050506	657579.19	2145.523	top headwall
106	1050569.4	657579.23	2145.661	top headwall
107	1050569.5	657579.96	2145.148	tw
108	1050579.8	657594.61	2142.952	tw
109	1050579.3	657594.87	2141.007	bw
110	1050568.7	657579.91	2140.297	bttm headwall
111	1050560.4	657579.97	2140.233	cellwall
112	1050551.4	657580.02	2140.335	cellwall
113	1050542.5	657580.05	2140.26	cellwall
114	1050533.6	657579.98	2140.271	cellwall
115	1050524.7	657580.03	2140.253	cellwall
116	1050515.7	657580.02	2140.226	cellwall
117	1050507.4	657580.13	2140.178	bttm headwall
118	1050475.9	657526.23	2145.193	top headwall
119	1050475.8	657525.61	2144.699	tw
120	1050465.8	657511.23	2142.447	tw
121	1050466	657510.78	2140.956	bw
122	1050467.4	657512.59	2139.842	bw
123	1050476.5	657525.5	2139.859	bttm headwall
124	1050485	657525.28	2139.838	cellwall
125	1050494.2	657525.49	2139.831	cellwall
126	1050503.1	657525.26	2139.772	cellwall
127	1050512	657525.36	2139.814	cellwall
128	1050520.9	657525.25	2139.781	cellwall
129	1050529.9	657525.32	2139.781	cellwall
130	1050538.2	657525.39	2139.848	bttm headwall
131	1050538.6	657514.87	2139.888	bw
132	1050539	657514.53	2142.608	tw
133	1050538.8	657525.78	2144.674	tw
134	1050539.4	657526.43	2145.145	top headwall
135	1050506.9	657526.34	2145.153	top headwall midpoint
136	1050536.4	657579.31	2145.622	top headwall midpoint
137	1050439.6	657543.75	2145.011	EOP
138	1050440.5	657568.06	2145.439	EOP
139	1050526.2	657568.86	2146.121	EOP
140	1050525.5	657543.65	2145.872	EOP
141	1050609.6	657544.65	2147.948	EOP
142	1050610.9	657568.78	2148.399	EOP
143	1050594.4	657601.7	2145.201	Top
144	1050575.2	657602.28	2140.725	Toe
145	1050544.2	657603.51	2140.136	FL
146	1050519.9	657602.05	2140.3	Toe
147	1050513.1	657603.85	2141.526	GRB
148	1050503.7	657604.08	2143.124	Top
149	1050529.8	657662.96	2143.693	NG

Code

bw= bottom of wall
tw= top of wall
eop= edge of pavement
top= top of bank
toe= toe of bank
fl= flow line
grb= grade break
ng= natural ground

Typical cell wall thickness= 8 tenths

Typical cell height= 4 Foot

12th St. & Circle Mtn. Rd.

Point #	N	E	Elev.	Code
150	1050567.5	657667.81	2143.088	NG
151	1050588.4	657669.85	2142.085	Top
152	1050590.5	657666.11	2140.868	Toe
153	1050591.2	657664.93	2140.957	Toe
154	1050597.4	657659.06	2142.506	Top
155	1050603.1	657655.59	2142.679	Top
156	1050605.3	657654.62	2141.04	Toe
157	1050618.3	657650.68	2142.68	Top
158	1050627.9	657639.59	2145.424	GRB
159	1050653.6	657627.24	2148.406	GRB
160	1050550.4	657500.18	2141.799	Top
161	1050536.2	657501.35	2139.75	Toe
162	1050500.6	657502.18	2139.081	NG
163	1050467.9	657506.38	2139.367	Toe
164	1050458.8	657502.69	2141.509	Top
165	1050455.1	657435.73	2140.876	NG
166	1050467.5	657438.02	2140.839	Top
167	1050470.8	657437.79	2139.48	Toe
168	1050497.1	657438.08	2139.15	FL
169	1050521.7	657438.5	2139.977	NG
170	1050539.4	657439.27	2137.006	FL
171	1050551.9	657446.73	2139.711	Top
172	1050578.5	657448.61	2141.947	NG

Ground Survey Data for
Arch Culverts on Tributary C8 at Circle Mountain Road

Point Number	Northing (NAD83)	Easting (NAD83)	Elevation (NAVD88)	Description
284	1050061.71	655872.39	2111.10	TP
285	1050087.23	655821.16	2110.12	TP
286	1050115.05	655770.67	2109.20	TP
287	1050143.60	655720.21	2108.17	TP
288	1050172.65	655669.67	2107.17	TP
289	1050201.82	655619.00	2106.18	TP
290	1050230.92	655568.08	2105.23	TP
291	1050259.63	655517.84	2104.30	TP
292	1050287.72	655468.86	2103.51	TP
293	1050315.30	655420.73	2102.61	TP
294	1050342.80	655372.41	2101.69	TP
295	1050369.79	655323.35	2100.80	TP
296	1050396.14	655273.47	2099.78	TP
297	1050421.05	655222.44	2098.96	TP
298	1050444.36	655170.09	2097.91	TP
299	1050466.68	655115.75	2097.00	TP
300	1050487.74	655059.17	2095.97	TP
301	1050507.35	655000.83	2094.99	TP
302	1050525.39	654942.52	2094.31	TP
303	1050354.09	655480.69	2103.59	T.O.HDWL<PT
304	1050353.40	655427.71	2103.44	T.O.HDWL<PTC-6.60FL
305	1050279.40	655303.05	2105.89	NGGB
306	1050296.46	655331.93	2103.67	NGGB
307	1050305.30	655346.85	2102.23	NGGB
308	1050310.76	655355.66	2101.11	NGGB
309	1050317.66	655367.43	2101.02	NGGB
310	1050323.80	655377.90	2101.53	TPEP
311	1050331.98	655391.63	2102.15	TP
312	1050340.40	655405.57	2102.67	TPEP
313	1050351.23	655423.89	2102.17	NGGB
314	1050354.39	655427.70	2096.76	T.O.C FL
315	1050354.66	655441.73	2096.60	FL
316	1050354.86	655452.80	2096.48	NGGBFL
317	1050354.84	655468.62	2096.93	NGGBFL5X20BOX
318	1050355.12	655478.74	2097.13	NGGBFL
319	1050355.18	655487.59	2103.58	NGGB
320	1050355.30	655503.72	2105.82	NGGB
321	1050355.74	655514.51	2106.42	NGGB
322	1050355.88	655537.69	2109.55	NGGB
323	1050363.82	655550.10	2111.18	NGGB
324	1050383.00	655576.84	2113.31	NGGB
325	1050410.49	655614.53	2114.21	NGGB
326	1050166.93	655564.43	2104.89	T.O.HDWL<END ARCH
327	1050168.07	655615.75	2104.97	T.O.HDWL<PT
328	1050107.97	655424.63	2120.07	NGGB
329	1050128.90	655456.32	2113.81	NGGB
330	1050144.28	655479.55	2110.18	NGGB
331	1050164.81	655512.50	2108.55	NGGB
332	1050165.24	655527.52	2106.77	NGGB
333	1050165.49	655547.35	2105.65	NGGB

Data Provided by the Flood Control District of Maricopa County 5/10/05

Ground Survey Data for
Arch Culverts on Tributary C8 at Circle Mountain Road

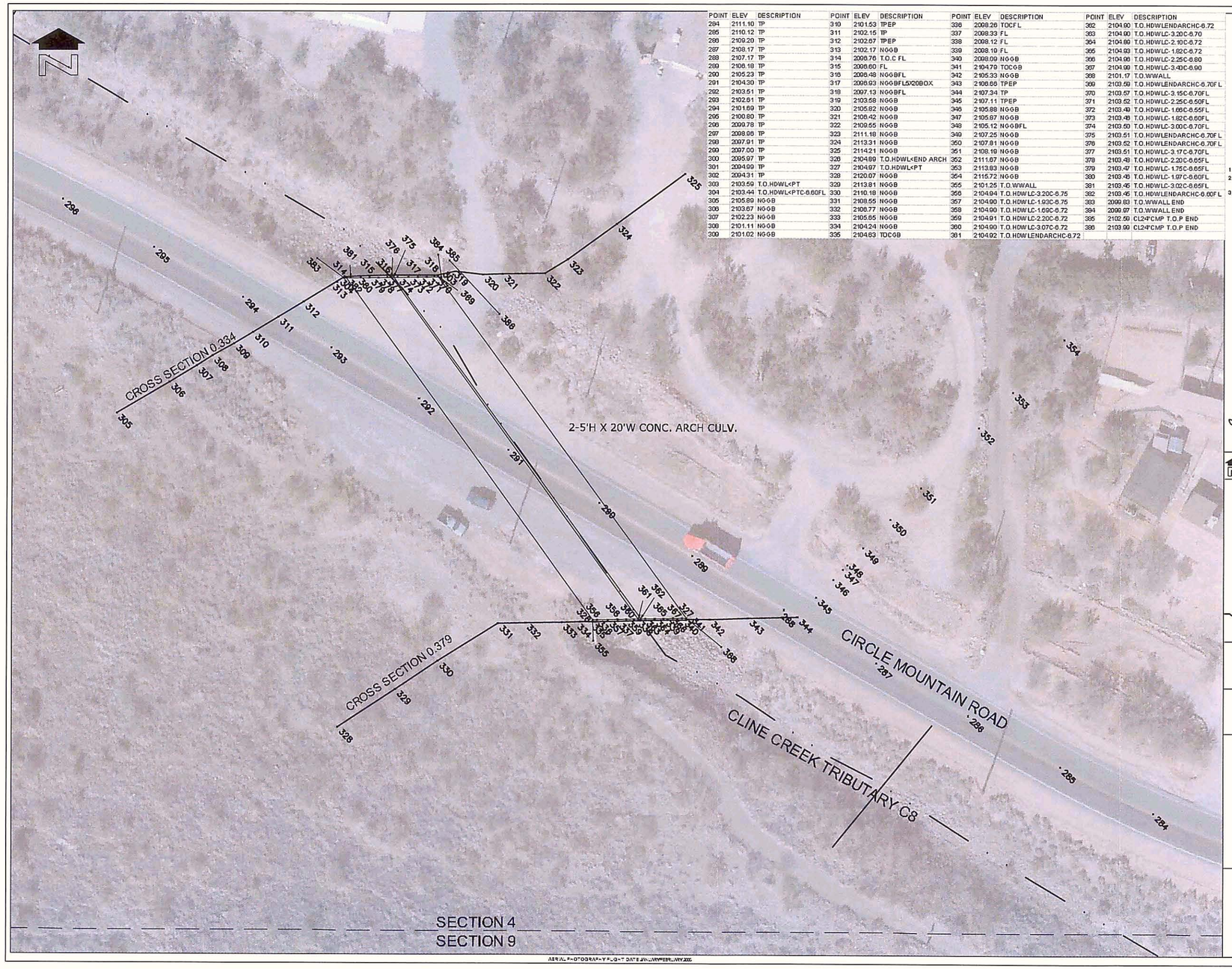
Point Number	Northing (NAD83)	Easting (NAD83)	Elevation (NAVD88)	Description
334	1050165.76	655557.35	2104.24	NGGB
335	1050165.82	655564.45	2104.63	TOCGB
336	1050165.81	655565.86	2098.26	TOCFL
337	1050166.16	655578.17	2098.33	FL
338	1050166.51	655590.33	2098.12	FL
339	1050166.90	655605.50	2098.19	FL
340	1050166.96	655615.33	2098.09	NGGB
341	1050167.20	655616.97	2104.79	TOCGB
342	1050167.38	655628.47	2105.33	NGGB
343	1050167.96	655649.87	2106.66	TPEP
344	1050168.68	655677.02	2107.34	TP
345	1050179.28	655687.29	2107.11	TPEP
346	1050189.17	655696.59	2105.88	NGGB
347	1050194.65	655701.89	2105.87	NGGB
348	1050197.23	655704.14	2105.12	NGGBFL
349	1050206.39	655712.96	2107.25	NGGB
350	1050221.96	655728.02	2107.81	NGGB
351	1050239.41	655744.57	2108.19	NGGB
352	1050272.37	655776.05	2111.67	NGGB
353	1050291.90	655794.80	2113.83	NGGB
354	1050320.79	655822.96	2115.72	NGGB
355	1050155.35	655564.69	2101.25	T.O.WWALL
356	1050166.92	655566.73	2104.94	T.O.HDWLC-3.20C-6.75
357	1050167.04	655572.84	2104.90	T.O.HDWLC-1.93C-6.75
358	1050167.17	655577.84	2104.90	T.O.HDWLC-1.69C-6.72
359	1050167.27	655582.99	2104.91	T.O.HDWLC-2.20C-6.72
360	1050167.39	655587.16	2104.90	T.O.HDWLC-3.07C-6.72
361	1050167.44	655589.55	2104.92	T.O.HDWLENDARCHC-6.72
362	1050167.47	655590.67	2104.90	T.O.HDWLENDARCHC-6.72
363	1050167.53	655593.09	2104.90	T.O.HDWLC-3.20C-6.70
364	1050167.59	655598.40	2104.89	T.O.HDWLC-2.10C-6.72
365	1050167.68	655603.38	2104.93	T.O.HDWLC-1.82C-6.72
366	1050167.81	655608.35	2104.96	T.O.HDWLC-2.25C-6.80
367	1050167.96	655613.47	2104.99	T.O.HDWLC-3.40C-6.90
368	1050152.51	655635.21	2101.17	T.O.WWALL
369	1050354.19	655479.24	2103.59	T.O.HDWLENDARCHC-6.70FL
370	1050354.14	655476.90	2103.57	T.O.HDWLC-3.15C-6.70FL
371	1050354.11	655472.85	2103.52	T.O.HDWLC-2.25C-6.50FL
372	1050354.04	655467.87	2103.49	T.O.HDWLC-1.66C-6.55FL
373	1050353.99	655462.88	2103.46	T.O.HDWLC-1.82C-6.60FL
374	1050353.89	655457.06	2103.50	T.O.HDWLC-3.00C-6.70FL
375	1050353.86	655454.66	2103.51	T.O.HDWLENDARCHC-6.70FL
376	1050353.85	655453.64	2103.52	T.O.HDWLENDARCHC-6.70FL
377	1050353.83	655451.24	2103.51	T.O.HDWLC-3.17C-6.70FL
378	1050353.73	655446.60	2103.48	T.O.HDWLC-2.20C-6.65FL
379	1050353.65	655441.64	2103.47	T.O.HDWLC-1.75C-6.65FL
380	1050353.59	655436.63	2103.46	T.O.HDWLC-1.97C-6.60FL
381	1050353.51	655431.35	2103.45	T.O.HDWLC-3.02C-6.65FL
382	1050353.50	655428.95	2103.45	T.O.HDWLENDARCHC-6.60FL
383	1050363.92	655412.86	2099.83	T.O.WWALL END

Data Provided by the Flood Control District of Maricopa County 5/10/05

Ground Survey Data for
Arch Culverts on Tributary C8 at Circle Mountain Road

Point Number	Northing (NAD83)	Easting (NAD83)	Elevation (NAVD88)	Description
384	1050366.12	655479.00	2099.97	T.O.WWALL END
385	1050362.87	655485.45	2102.59	CL24"CMP T.O.P END
386	1050333.97	655512.80	2103.99	CL24"CMP T.O.P END

Data Provided by the Flood Control District of Maricopa County 5/10/05



POINT	ELEV	DESCRIPTION	POINT	ELEV	DESCRIPTION	POINT	ELEV	DESCRIPTION	POINT	ELEV	DESCRIPTION
284	2111.10	TP	310	2101.53	TPEP	336	2098.26	TOCFL	362	2104.90	T.O.HDWLENDARCHC-6.72
285	2110.12	TP	311	2102.15	TP	337	2098.33	FL	363	2104.90	T.O.HDWLC-3.20C-6.70
286	2109.20	TP	312	2102.67	TPEP	338	2098.12	FL	364	2104.89	T.O.HDWLC-2.10C-6.72
287	2108.17	TP	313	2102.17	NGGB	339	2098.19	FL	365	2104.93	T.O.HDWLC-1.82C-6.72
288	2107.17	TP	314	2099.76	T.O.C FL	340	2098.09	NGGB	366	2104.90	T.O.HDWLC-2.25C-6.80
289	2106.18	TP	315	2099.60	FL	341	2104.79	TOCGB	367	2104.90	T.O.HDWLC-3.40C-6.90
290	2105.23	TP	316	2099.48	NGGBFL	342	2105.33	NGGB	368	2101.17	T.O.WWALL
291	2104.30	TP	317	2099.93	NGGBFL&20BOX	343	2106.66	TPEP	369	2103.59	T.O.HDWLENDARCHC-6.70FL
292	2103.51	TP	318	2097.13	NGGBFL	344	2107.34	TP	370	2103.57	T.O.HDWLC-3.15C-6.70FL
293	2102.61	TP	319	2103.58	NGGB	345	2107.11	TPEP	371	2103.52	T.O.HDWLC-2.25C-6.50FL
294	2101.59	TP	320	2105.82	NGGB	346	2105.88	NGGB	372	2103.49	T.O.HDWLC-1.66C-6.55FL
295	2100.80	TP	321	2106.42	NGGB	347	2105.87	NGGB	373	2103.48	T.O.HDWLC-1.82C-6.60FL
296	2099.78	TP	322	2109.55	NGGB	348	2105.12	NGGBFL	374	2103.50	T.O.HDWLC-3.00C-6.70FL
297	2099.86	TP	323	2111.16	NGGB	349	2107.25	NGGB	375	2103.51	T.O.HDWLENDARCHC-6.70FL
298	2097.91	TP	324	2113.31	NGGB	350	2107.81	NGGB	376	2103.52	T.O.HDWLENDARCHC-6.70FL
299	2097.00	TP	325	2114.21	NGGB	351	2108.19	NGGB	377	2103.51	T.O.HDWLC-3.17C-6.70FL
300	2095.97	TP	326	2104.89	T.O.HDWL<END ARCH	352	2111.67	NGGB	378	2103.48	T.O.HDWLC-2.20C-6.65FL
301	2094.99	TP	327	2104.97	T.O.HDWL<PT	353	2113.83	NGGB	379	2103.47	T.O.HDWLC-1.75C-6.65FL
302	2094.31	TP	328	2120.07	NGGB	354	2115.72	NGGB	380	2103.48	T.O.HDWLC-1.07C-6.60FL
303	2103.59	T.O.HDWL<PT	329	2113.81	NGGB	355	2101.25	T.O.WWALL	381	2103.45	T.O.HDWLC-3.02C-6.65FL
304	2103.44	T.O.HDWL<PTC-6.60FL	330	2110.18	NGGB	356	2104.94	T.O.HDWLC-3.20C-6.75	382	2103.45	T.O.HDWLENDARCHC-6.60FL
305	2105.89	NGGB	331	2108.55	NGGB	357	2104.90	T.O.HDWLC-1.93C-6.75	383	2099.83	T.O.WWALL END
306	2103.67	NGGB	332	2106.77	NGGB	358	2104.90	T.O.HDWLC-1.69C-6.72	384	2099.97	T.O.WWALL END
307	2102.23	NGGB	333	2105.55	NGGB	359	2104.91	T.O.HDWLC-2.20C-6.72	385	2102.50	CL24"CMP T.O.P END
308	2101.11	NGGB	334	2104.24	NGGB	360	2104.90	T.O.HDWLC-3.07C-6.72	386	2103.99	CL24"CMP T.O.P END
309	2101.02	NGGB	335	2104.63	TOCGB	361	2104.92	T.O.HDWLENDARCHC-6.72			

LEGEND

CULVERT WALL ALIGNMENTS

NOTES

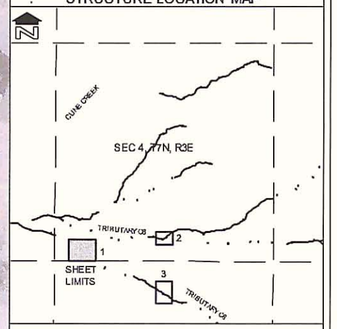
1. SECTION BOUNDARIES PROVIDED BY FCDMC
2. HORIZONTAL PROJECTION IS ARIZONA STATE PLANE, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983.
3. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

THIS AS BUILT DRAWING WAS PREPARED UNDER MY DIRECT SUPERVISION FOR THE PURPOSE OF HYDRAULIC MODELING. SURVEY DATA WERE PROVIDED BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. THE SURVEY TOOK PLACE DURING MAY 2006.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29325
BRIAN R.
ISERMAN
Date Signed 10-11-06
ARIZONA, U.S.A.

Brian R. Iserman

STRUCTURE LOCATION MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

FCD 2005C024 Work Assignment 2

October, 2006

SCALE IN FEET

50' 0' 50' 100'

JE FULLER
ENGINEERING & CONSTRUCTION INC.

SHEET 1 OF 3

Ground Survey Data for
Box Culverts on Tributary C6 at 12th Street

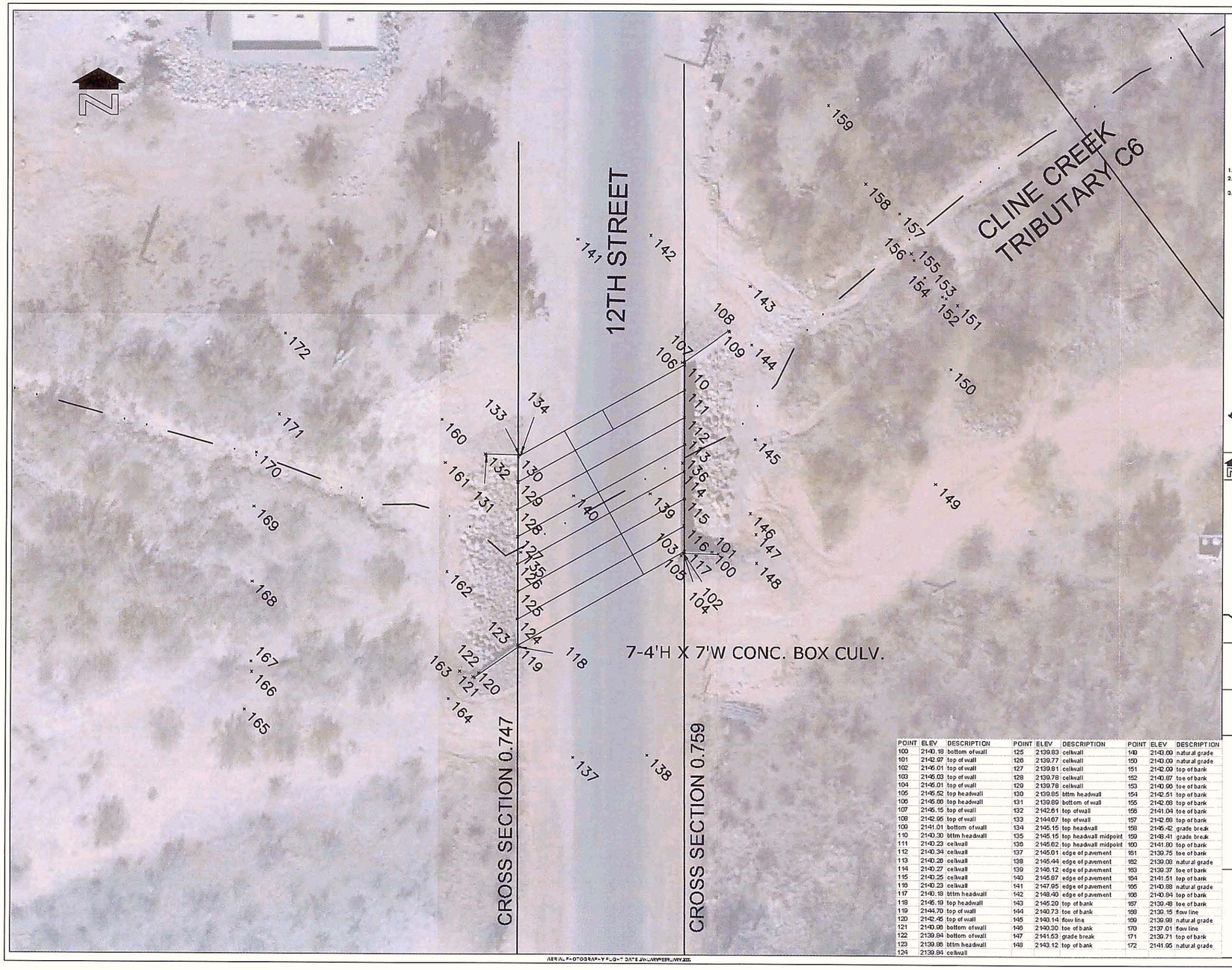
Point Number	Northing (NAD83)	Easting (NAD83)	Elevation (NAVD88)	Description
100	1050507.33	657589.19	2140.18	bw
101	1050506.69	657591.43	2142.97	tw
102	1050506.77	657579.79	2145.01	tw
103	1050506.77	657579.79	2145.03	tw
104	1050506.78	657579.78	2145.01	tw
105	1050506.04	657579.19	2145.52	top headwall
106	1050569.39	657579.23	2145.66	top headwall
107	1050569.53	657579.96	2145.15	tw
108	1050579.78	657594.61	2142.95	tw
109	1050579.29	657594.87	2141.01	bw
110	1050568.65	657579.91	2140.30	bttm headwall
111	1050560.38	657579.97	2140.23	cellwall
112	1050551.37	657580.02	2140.34	cellwall
113	1050542.47	657580.05	2140.26	cellwall
114	1050533.58	657579.98	2140.27	cellwall
115	1050524.66	657580.03	2140.25	cellwall
116	1050515.74	657580.02	2140.23	cellwall
117	1050507.38	657580.13	2140.18	bttm headwall
118	1050475.86	657526.23	2145.19	top headwall
119	1050475.83	657525.61	2144.70	tw
120	1050465.82	657511.23	2142.45	tw
121	1050465.97	657510.78	2140.96	bw
122	1050467.40	657512.59	2139.84	bw
123	1050476.49	657525.50	2139.86	bttm headwall
124	1050484.99	657525.28	2139.84	cellwall
125	1050494.15	657525.49	2139.83	cellwall
126	1050503.10	657525.26	2139.77	cellwall
127	1050511.97	657525.36	2139.81	cellwall
128	1050520.90	657525.25	2139.78	cellwall
129	1050529.95	657525.32	2139.78	cellwall
130	1050538.17	657525.39	2139.85	bttm headwall
131	1050538.56	657514.87	2139.89	bw
132	1050539.05	657514.53	2142.61	tw
133	1050538.79	657525.78	2144.67	tw
134	1050539.39	657526.43	2145.15	top headwall
135	1050506.92	657526.34	2145.15	top headwall midpoint
136	1050536.38	657579.31	2145.62	top headwall midpoint
137	1050439.64	657543.75	2145.01	EOP
138	1050440.49	657568.06	2145.44	EOP
139	1050526.24	657568.86	2146.12	EOP
140	1050525.49	657543.65	2145.87	EOP
141	1050609.59	657544.65	2147.95	EOP
142	1050610.87	657568.78	2148.40	EOP
143	1050594.36	657601.70	2145.20	Top
144	1050575.20	657602.28	2140.73	Toe
145	1050544.23	657603.51	2140.14	FL
146	1050519.93	657602.05	2140.30	Toe
147	1050513.06	657603.85	2141.53	GRB
148	1050503.66	657604.08	2143.12	Top
149	1050529.78	657662.96	2143.69	NG

Data Provided by the Flood Control District of Maricopa County June, 2006

Ground Survey Data for
Box Culverts on Tributary C6 at 12th Street

Point Number	Northing (NAD83)	Easting (NAD83)	Elevation (NAVD88)	Description
150	1050567.55	657667.81	2143.09	NG
151	1050588.45	657669.85	2142.09	Top
152	1050590.54	657666.11	2140.87	Toe
153	1050591.23	657664.93	2140.96	Toe
154	1050597.41	657659.06	2142.51	Top
155	1050603.12	657655.59	2142.68	Top
156	1050605.28	657654.62	2141.04	Toe
157	1050618.33	657650.68	2142.68	Top
158	1050627.95	657639.59	2145.42	GRB
159	1050653.55	657627.24	2148.41	GRB
160	1050550.38	657500.18	2141.80	Top
161	1050536.23	657501.35	2139.75	Toe
162	1050500.58	657502.18	2139.08	NG
163	1050467.86	657506.38	2139.37	Toe
164	1050458.85	657502.69	2141.51	Top
165	1050455.07	657435.73	2140.88	NG
166	1050467.47	657438.02	2140.84	Top
167	1050470.83	657437.79	2139.48	Toe
168	1050497.06	657438.08	2139.15	FL
169	1050521.69	657438.50	2139.98	NG
170	1050539.37	657439.27	2137.01	FL
171	1050551.95	657446.73	2139.71	Top
172	1050578.48	657448.61	2141.95	NG

Data Provided by the Flood Control District of Maricopa County June, 2006



POINT	ELEV	DESCRIPTION	POINT	ELEV	DESCRIPTION	POINT	ELEV	DESCRIPTION
100	2140.18	bottom of wall	125	2139.83	cellwall	149	2143.09	natural grade
101	2142.97	top of wall	126	2139.77	cellwall	150	2143.09	natural grade
102	2145.01	top of wall	127	2139.81	cellwall	151	2142.00	top of bank
103	2145.03	top of wall	128	2139.78	cellwall	152	2140.87	toe of bank
104	2145.01	top of wall	129	2139.78	cellwall	153	2140.98	toe of bank
105	2145.52	top headwall	130	2139.85	bttm headwall	154	2142.51	top of bank
106	2145.00	top headwall	131	2139.89	bottom of wall	155	2142.68	top of bank
107	2145.15	top of wall	132	2142.61	top of wall	156	2141.04	toe of bank
108	2142.95	top of wall	133	2144.67	top of wall	157	2142.68	top of bank
109	2141.01	bottom of wall	134	2145.15	top headwall	158	2145.42	grade break
110	2140.30	bttm headwall	135	2145.15	top headwall midpoint	159	2148.41	grade break
111	2140.23	cellwall	136	2145.62	top headwall midpoint	160	2141.80	top of bank
112	2140.34	cellwall	137	2145.01	edge of pavement	161	2139.75	toe of bank
113	2140.26	cellwall	138	2145.44	edge of pavement	162	2139.08	natural grade
114	2140.27	cellwall	139	2146.12	edge of pavement	163	2139.37	toe of bank
115	2140.25	cellwall	140	2145.87	edge of pavement	164	2141.51	top of bank
116	2140.23	cellwall	141	2147.95	edge of pavement	165	2140.88	natural grade
117	2140.18	bttm headwall	142	2148.40	edge of pavement	166	2140.84	top of bank
118	2146.19	top headwall	143	2145.20	top of bank	167	2139.48	toe of bank
119	2144.70	top of wall	144	2140.73	toe of bank	168	2139.15	flow line
120	2142.46	top of wall	145	2140.14	flow line	169	2139.68	natural grade
121	2140.98	bottom of wall	146	2140.30	toe of bank	170	2137.01	flow line
122	2139.84	bottom of wall	147	2141.53	grade break	171	2139.71	top of bank
123	2139.86	bttm headwall	148	2143.12	top of bank	172	2141.96	natural grade
124	2139.84	cellwall						

AERIAL PHOTOGRAPHY FLIGHT DATE: JANUARY/FEBRUARY 2005

LEGEND

CULVERT WALL ALIGNMENTS

NOTES

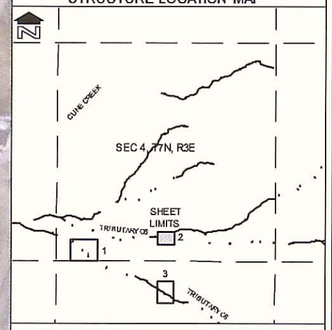
1. SECTION BOUNDARIES PROVIDED BY TEDMC
2. HORIZONTAL PROJECTION IS ARIZONA STATE PLANE, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983.
3. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

THIS AS BUILT DRAWING WAS PREPARED UNDER MY DIRECT SUPERVISION FOR THE PURPOSE OF HYDRAULIC MODELING. SURVEY DATA WERE PROVIDED BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. THE SURVEY TOOK PLACE DURING STUDY 2006.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29325
BRIAN R.
ISERMAN
Date Signed 10-11-06
ARIZONA U.S.A.

Brian R. Iserman

STRUCTURE LOCATION MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

FCD 2005C024 Work Assignment 2

October, 2006

SCALE IN FEET
30' 0' 30' 60'

JE FULLER
HILGARTNER & KIMLEY-HORN, INC.

SHEET 2 OF 3

Ground Survey Data for
CMP Culverts on Tributary C8 at 12th Street

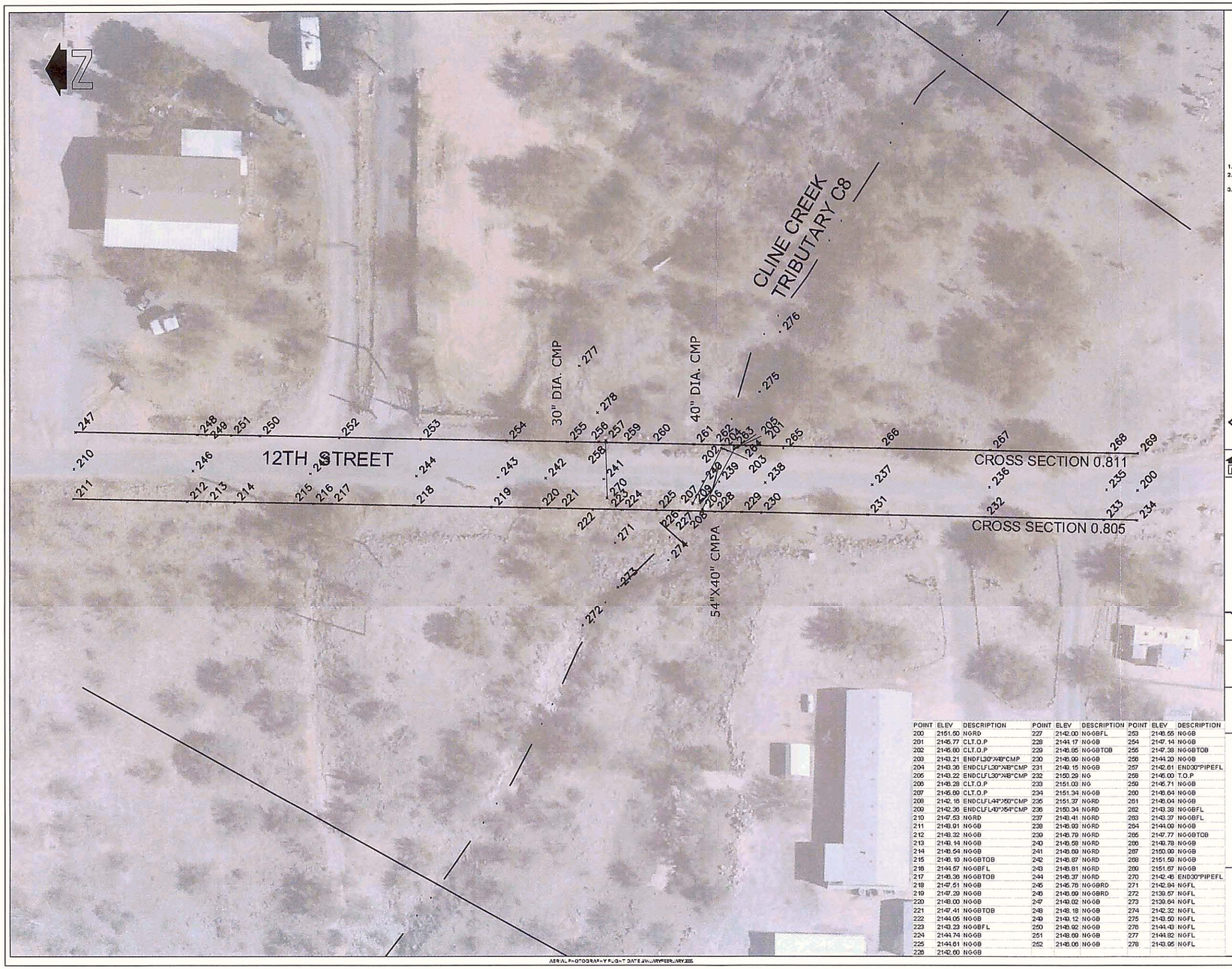
Point Number	Northing (NAD83)	Easting (NAD83)	Elevation (NAVD88)	Description
200	1049000.16	657549.87	2151.50	NGRD
201	1049177.06	657567.72	2145.77	CLT.O.P
202	1049182.56	657568.27	2145.80	CLT.O.P
203	1049181.62	657567.93	2143.21	ENDFL30"X48"CMP
204	1049182.30	657568.36	2143.36	ENDCLFL30"X48"CMP
205	1049176.90	657567.84	2143.22	ENDCLFL30"X48"CMP
206	1049190.94	657541.50	2146.28	CLT.O.P
207	1049195.18	657544.41	2145.69	CLT.O.P
208	1049191.16	657541.39	2142.16	ENDCLFL44"X50"CMP
209	1049195.41	657543.92	2142.36	ENDCLFL40"X54"CMP
210	1049466.02	657559.33	2147.53	NGRD
211	1049466.23	657546.32	2148.91	NGGB
212	1049416.40	657545.19	2148.32	NGGB
213	1049407.66	657545.06	2149.14	NGGB
214	1049395.76	657544.78	2146.54	NGGB
215	1049370.37	657544.46	2146.10	NGGBTOB
216	1049361.35	657544.12	2144.57	NGGBFL
217	1049353.33	657544.14	2146.36	NGGBTOB
218	1049317.37	657543.48	2147.51	NGGB
219	1049283.32	657542.57	2147.29	NGGB
220	1049262.25	657542.13	2148.00	NGGB
221	1049253.76	657541.93	2147.41	NGGBTOB
222	1049239.01	657541.60	2144.05	NGGB
223	1049232.10	657541.67	2143.23	NGGBFL
224	1049226.01	657541.39	2144.74	NGGB
225	1049211.20	657541.22	2144.61	NGGB
226	1049201.25	657540.92	2142.60	NGGB
227	1049196.32	657540.83	2142.00	NGGBFL
228	1049185.52	657540.54	2144.17	NGGB
229	1049173.66	657540.46	2146.85	NGGBTOB
230	1049165.15	657540.19	2146.99	NGGB
231	1049118.36	657539.31	2149.15	NGGB
232	1049067.51	657538.33	2150.29	NG
233	1049015.17	657537.11	2151.03	NG
234	1049000.45	657536.81	2151.34	NGGB
235	1049013.91	657550.17	2151.37	NGRD
236	1049065.20	657551.27	2150.34	NGRD
237	1049116.37	657552.29	2148.41	NGRD
238	1049163.33	657553.22	2146.93	NGRD
239	1049183.42	657553.62	2146.79	NGRD
240	1049190.86	657553.74	2146.58	NGRD
241	1049234.06	657554.72	2146.69	NGRD
242	1049259.60	657555.07	2146.87	NGRD
243	1049280.44	657555.58	2146.81	NGRD
244	1049316.25	657556.30	2146.37	NGRD
245	1049362.57	657557.20	2145.76	NGGBRD
246	1049414.00	657558.40	2146.69	NGGBRD
247	1049465.36	657575.43	2149.02	NGGB
248	1049412.10	657574.13	2148.18	NGGB
249	1049408.18	657574.13	2149.12	NGGB

Data Provided by the Flood Control District of Maricopa County 5/10/05

Ground Survey Data for
CMP Culverts on Tributary C8 at 12th Street

Point Number	Northing (NAD83)	Easting (NAD83)	Elevation (NAVD88)	Description
250	1049384.53	657573.68	2146.92	NGGB
251	1049397.20	657573.90	2148.69	NGGB
252	1049350.00	657572.87	2146.06	NGGB
253	1049314.41	657572.33	2146.55	NGGB
254	1049276.75	657571.51	2147.14	NGGB
255	1049250.25	657570.96	2147.38	NGGBTOB
256	1049236.36	657570.93	2144.20	NGGB
257	1049233.29	657571.57	2142.61	END30"PIPEFL
258	1049233.06	657570.64	2145.00	T.O.P
259	1049226.59	657570.57	2145.71	NGGB
260	1049213.67	657570.19	2146.64	NGGB
261	1049194.77	657569.81	2146.04	NGGB
262	1049181.95	657569.58	2143.38	NGGBFL
263	1049176.96	657568.89	2143.37	NGGBFL
264	1049171.70	657569.18	2144.09	NGGB
265	1049155.47	657568.13	2147.77	NGGBTOB
266	1049113.33	657568.36	2149.78	NGGB
267	1049064.79	657567.27	2150.99	NGGB
268	1049013.53	657566.07	2151.59	NGGB
269	1048999.95	657565.90	2151.67	NGGB
270	1049232.67	657546.54	2142.46	END30"PIPEFL
271	1049229.21	657526.99	2142.84	NGFL
272	1049243.43	657491.04	2139.57	NGFL
273	1049228.08	657507.61	2139.64	NGFL
274	1049205.93	657519.51	2142.32	NGFL
275	1049165.76	657592.77	2143.50	NGFL
276	1049156.80	657618.80	2144.43	NGFL
277	1049244.99	657604.12	2144.82	NGFL
278	1049236.90	657583.74	2143.95	NGFL

Data Provided by the Flood Control District of Maricopa County 5/10/05



POINT	ELEV	DESCRIPTION	POINT	ELEV	DESCRIPTION	POINT	ELEV	DESCRIPTION
200	2151.50	NGRD	227	2142.00	NGGBFL	253	2149.55	NGGB
201	2145.77	CLT.O.P	228	2144.17	NGGB	254	2147.14	NGGB
202	2146.60	CLT.O.P	229	2149.85	NGGBTOB	255	2147.38	NGGBTOB
203	2143.21	ENDFL30"X48"CMP	230	2149.99	NGGB	256	2144.20	NGGB
204	2143.38	ENDCLFL30"X48"CMP	231	2149.15	NGGB	257	2142.61	END30"PIPEFL
205	2143.22	ENDCLFL30"X48"CMP	232	2150.29	NG	258	2145.00	T.O.P
206	2149.29	CLT.O.P	233	2151.03	NG	259	2146.71	NGGB
207	2146.69	CLT.O.P	234	2151.34	NGGB	260	2149.64	NGGB
208	2142.16	ENDCLFL44"X60"CMP	235	2151.37	NGRD	261	2149.04	NGGB
209	2142.35	ENDCLFL40"X54"CMP	236	2150.34	NGRD	262	2143.38	NGGBFL
210	2147.53	NGRD	237	2149.41	NGRD	263	2143.37	NGGBFL
211	2149.01	NGGB	238	2149.93	NGRD	264	2144.00	NGGB
212	2149.32	NGGB	239	2149.79	NGRD	265	2147.77	NGGBTOB
213	2149.14	NGGB	240	2149.58	NGRD	266	2149.78	NGGB
214	2149.54	NGGB	241	2149.69	NGRD	267	2150.99	NGGB
215	2149.10	NGGBTOB	242	2149.87	NGRD	268	2151.59	NGGB
216	2144.67	NGGBFL	243	2149.81	NGRD	269	2151.67	NGGB
217	2149.39	NGGBTOB	244	2149.37	NGRD	270	2142.49	END30"PIPEFL
218	2147.51	NGGB	245	2146.78	NGGBRD	271	2142.84	NGFL
219	2147.29	NGGB	246	2149.69	NGGBRD	272	2139.57	NGFL
220	2149.00	NGGB	247	2149.02	NGGB	273	2139.64	NGFL
221	2147.41	NGGBTOB	248	2149.18	NGGB	274	2142.32	NGFL
222	2144.05	NGGB	249	2149.12	NGGB	275	2143.50	NGFL
223	2143.23	NGGBFL	250	2149.92	NGGB	276	2144.43	NGFL
224	2144.74	NGGB	251	2149.69	NGGB	277	2144.82	NGFL
225	2144.61	NGGB	252	2149.06	NGGB	278	2143.95	NGFL
226	2142.60	NGGB						

AERIAL PHOTOGRAPHY FLIGHT DATE JAN.-FEBRUARY 2005

LEGEND

CULVERT WALL ALIGNMENTS

NOTES

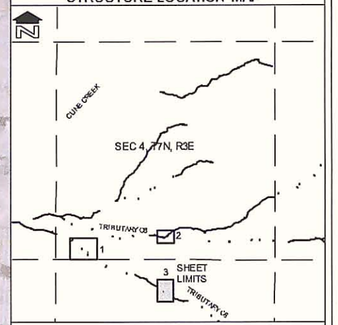
1. SECTION BOUNDARIES PROVIDED BY FCDMC
2. HORIZONTAL PROJECTION IS ARIZONA STATE PLANE, CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983.
3. ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988.

THIS AS BUILT DRAWING WAS PREPARED UNDER MY DIRECT SUPERVISION FOR THE PURPOSE OF HYDRAULIC MODELING. SURVEY DATA WERE PROVIDED BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. THE SURVEY TOOK PLACE DURING MAY, 2005.

Registered Professional Engineer (Civil) CERTIFICATE NO. 29325 BRIAN R. ISERMAN Date Signed 10-11-06 ARIZONA U.S.A.

Brian R. Iserman

STRUCTURE LOCATION MAP



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

FCD 2005C024 Work Assignment 2

October, 2006

SCALE IN FEET

40' 0' 40' 80'

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

SHEET 3 OF 3

APPENDIX D: HYDROLOGIC ANALYSES SUPPORTING DOCUMENTATION

No Additional hydrologic analyses were required for this study.

APPENDIX E: HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION

TABLE OF CONTENTS
APPENDIX E

E.1: Roughness Coefficient Determination
E.2: Cross Section Plots
E.3: Supplemental Lateral Structure Output Tables
E.4: Detailed Ouput (RAS rep file)

E.1 Roughness Coefficient Estimation

PREFACE

The following report describes the evaluation of Manning's roughness coefficients for this floodplain delineation study.

FLOODPLAIN DELINEATION STUDY
of
CLINE CREEK TRIBUTARIES

FCD 2004C025

WORK ASSIGNMENT #8, FIELD RECONNAISSANCE REPORT

JE Fuller Hydrology & Geomorphology, Inc.
8400 S Kyrene Road Suite 201
Tempe, Arizona 85284
480-752-2124

November, 2005
Revised June, 2006

TABLE OF CONTENTS
WORK ASSIGNMENT #8, FIELD RECONNAISSANCE REPORT

Page

SECTION 1: INTRODUCTION **1**

SECTION 2: MANNING'S "N" VALUES **1**

Location 1, Cline Creek Tributary C8 3
Location 2, Cline Creek Tributary X1 5
Location 3, Cline Creek Tributary X2 7
Location 4, Cline Creek Tributary X3 9
Location 5, Cline Creek Tributary X4A 11
Location 6, Cline Creek Tributary X4B 13
Location 7, Cline Creek Tributary X5 15
Location 8, Cline Creek Tributary C6 17

SECTION 3: SIGNIFICANT HYDRAULIC STRUCTURES **19**

SECTION 4: GENERAL FLOODPLAIN CONDITIONS **20**

FLOODPLAIN DELINEATION STUDY
of
CLINE CREEK TRIBUTARIES

FCD 2004C025

WORK ASSIGNMENT #8, FIELD RECONNAISSANCE REPORT

1. Introduction

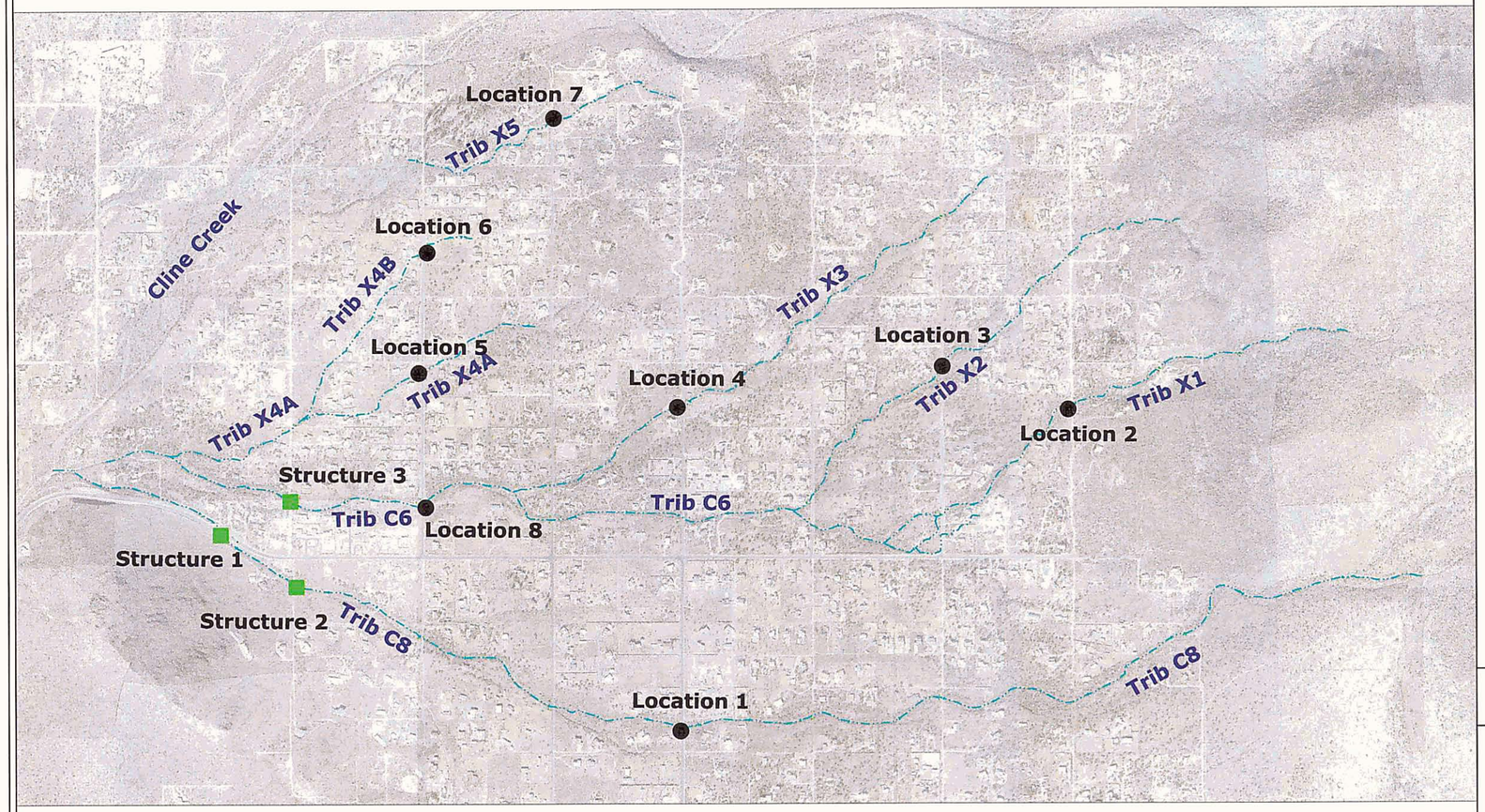
JE Fuller/Hydrology & Geomorphology, Inc., (JEF), performed field reconnaissance along the Cline Creek Tributaries on January 20th, 2005. The reconnaissance was performed to document channel and overbank conditions for the purpose of determining Manning's Roughness Coefficient for typical reaches throughout the study area.

2. Manning's "n" Values

Manning's "n" values were determined using the methodology outlined in the USGS report titled, "Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona" by B.W. Thomsen and H.W. Hjalmarson, (April, 1991). Reach designations were assigned based on distinctions in general channel morphology, vegetation, and channel and overbank soil characteristics.

On the following pages, photographs showing typical reach conditions are preceded by the worksheet used to determine the reach-average Manning's "n" values for the reach depicted in the photographs. Figure 1 shows the field reconnaissance site locations as well as the study reaches.

Due to the highly variable nature of the channel and overbank conditions in these study reaches, the Manning's "n" values shown in the reconnaissance report represent typical reach average conditions only. The HEC-RAS option for assigning horizontal variation in n values is recommended due to the highly variable nature of the single lot development that dominates this study area.



LEGEND

PHOTOGRAPHY LOCATION

SIGNIFICANT STRUCTURE

NOTES

1. PHOTOGRAPHY WAS TAKEN IN THE FOLLOWING ORDER AT EACH LOCATION: UPSTREAM, DOWNSTREAM, LEFT BANK, RIGHT BANK

N

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATION STUDY OF CLINE CREEK TRIBUTARIES

FIGURE 1: PHOTO/STRUCTURE LOCATIONS

FCD 2004C025, WORK ASSIGNMENT #8

August, 2005

SCALE IN FEET

550' 0' 550' 1100'

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

8055 E. STRYKER ROAD, SUITE 201
TEMPE, ARIZONA 85284

PHONE: 480-752-6126
FAX: 480-436-2160

SHEET 1 OF 1

AERIAL PHOTOGRAPH FLIGHT DATE: JANUARY/FEBRUARY 2005

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary C8
Location: 1

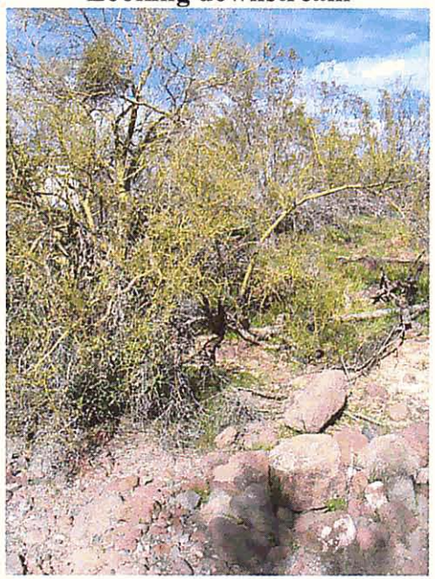
Channel Conditions			Manning's n Adjustment	Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035			
	Gravel		0.028-0.035			
	Cobble		0.030-0.050	0.030	0.035	0.030
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.010		0.010
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010		0.01	
	Medium		0.010-0.025	0.020		0.020
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.061	0.050	0.061
			Use	**0.060**	**0.050**	**0.060**

Cline Creek Tributary C8, 1-20-2005, Location 1

Looking upstream

Looking downstream

Looking downstream at left bank



Looking downstream at right bank

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary X1
Location: 2

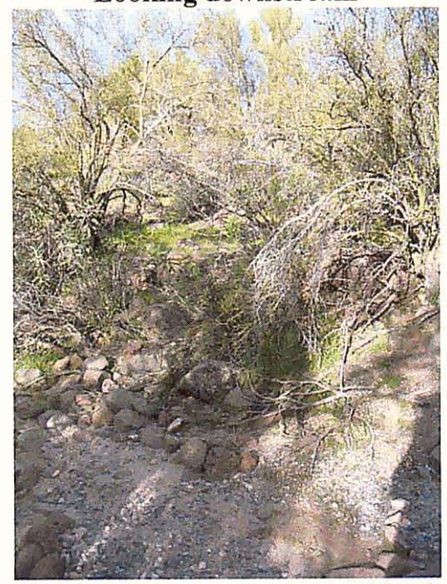
Channel Conditions		Manning's n Adjustment		Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035			
	Gravel		0.028-0.035			
	Cobble		0.030-0.050	0.030	0.030	0.030
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.015		0.015
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010			
	Medium		0.010-0.025	0.02	0.02	0.02
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.066	0.055	0.066
			Use	**0.065**	**0.055**	**0.065**

Cline Creek Tributary X1, 1-20-2005, Location 2

Looking upstream

Looking downstream

Looking downstream at left bank



Looking downstream at right bank

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary X2
Location: 3

Channel Conditions			Manning's n Adjustment	Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035			
	Gravel		0.028-0.035			
	Cobble		0.030-0.050	0.030	0.035	0.030
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.010		0.010
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010		0.01	
	Medium		0.010-0.025	0.02		0.02
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.061	0.050	0.061
			Use	**0.060**	**0.050**	**0.060**

Cline Creek Tributary X2, 1-20-2005, Location 3

Looking upstream

Looking downstream

Looking downstream at left bank

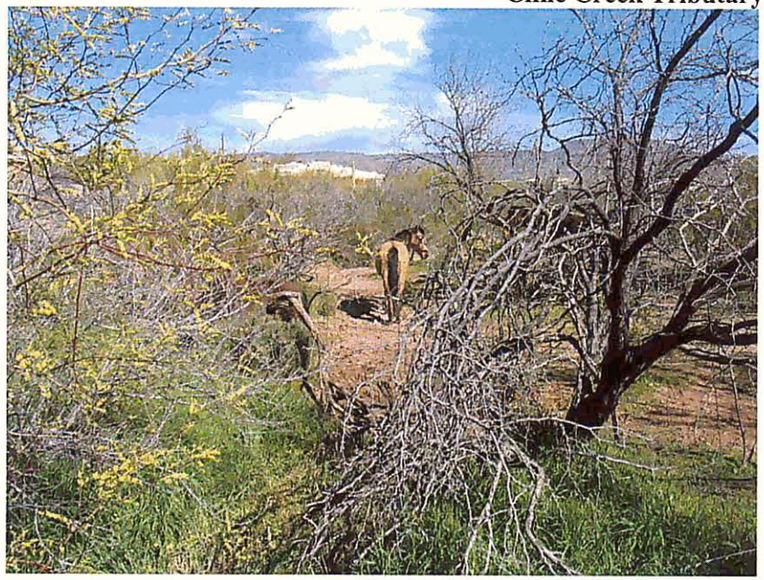
Photo Not Available

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary X3
Location: 4

Channel Conditions			Manning's n Adjustment	Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035			
	Gravel		0.028-0.035			
	Cobble		0.030-0.050	0.030	0.035	0.030
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.010		0.010
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010		0.01	
	Medium		0.010-0.025	0.02		0.02
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.061	0.050	0.061
			Use	**0.060**	**0.050**	**0.060**

Cline Creek Tributary X3, 1-20-2005, Location 4



Looking upstream

Looking downstream

Looking downstream at left bank

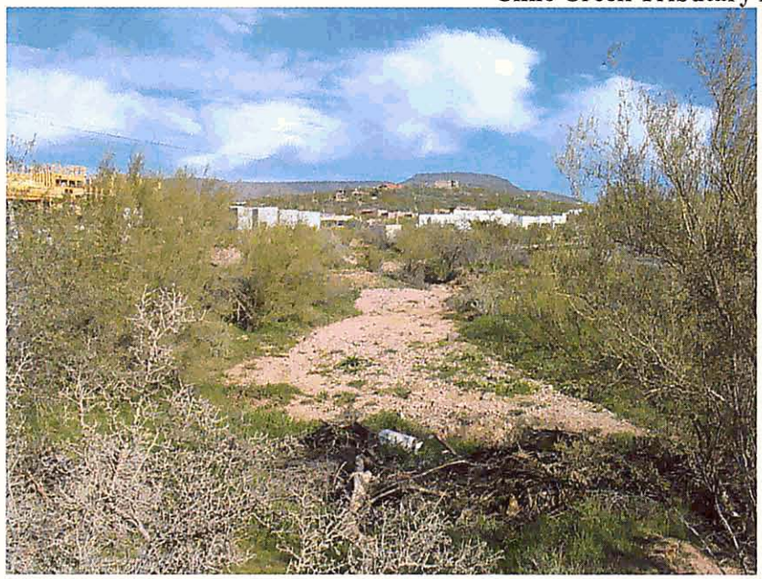
Looking downstream at right bank

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary X4A
Location: 5

Channel Conditions			Manning's n Adjustment	Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035			
	Gravel		0.028-0.035	0.028		0.028
	Cobble		0.030-0.050		0.03	
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.005		0.005
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010		0.01	
	Medium		0.010-0.025	0.02		0.02
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.054	0.045	0.054
			Use	**0.055**	**0.045**	**0.055**

Cline Creek Tributary X4A, 1-20-2005, Location 5



Looking upstream

Looking downstream

Photo Not Available

Photo Not Available

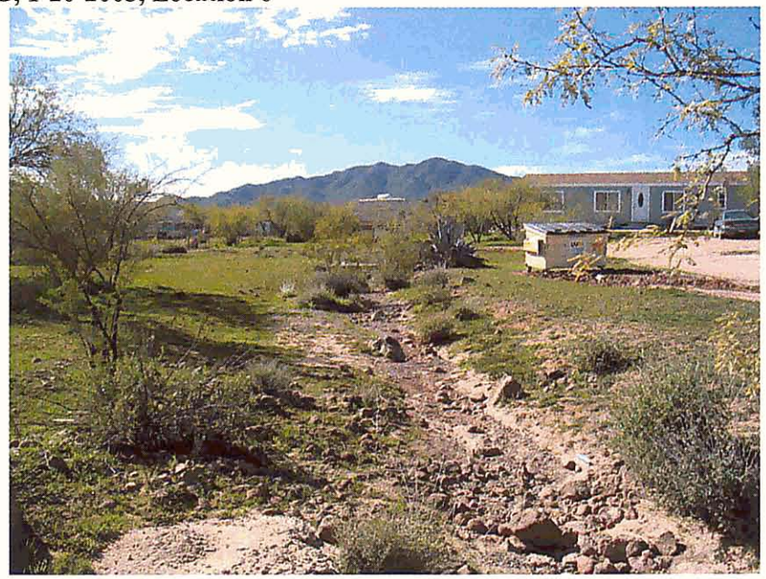
DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary X4B
Location: 6

Channel Conditions			Manning's n Adjustment	Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035	0.026		0.026
	Gravel		0.028-0.035			
	Cobble		0.030-0.050		0.030	
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.010		0.010
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010		0.01	
	Medium		0.010-0.025	0.015		0.015
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.052	0.040	0.052
			Use	**0.050**	**0.040**	**0.050**

Cline Creek Tributary X4B, 1-20-2005, Location 6

Looking upstream



Looking downstream

Photo Not Available

Photo Not Available

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary X5
Location: 7

Channel Conditions			Manning's n Adjustment	Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035	0.026		0.026
	Gravel		0.028-0.035			
	Cobble		0.030-0.050		0.035	
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.010		0.010
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010		0.01	
	Medium		0.010-0.025	0.02		0.02
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.057	0.050	0.057
			Use	**0.055**	**0.045**	**0.055**

Cline Creek Tributary X5, 1-20-2005, Location 7

Looking upstream

Looking downstream

Photo Not Available

Photo Not Available

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

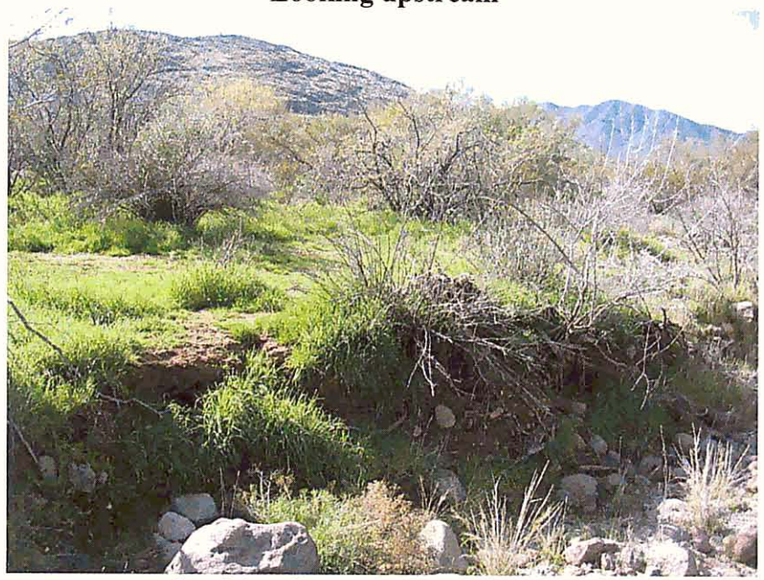
Project: Floodplain Delineation Study of Cline Creek Tributaries
Wash Name: Cline Creek Tributary C6
Location: 8

Channel Conditions			Manning's n Adjustment	Left Overbank	Main Channel	Right Overbank
Channel Bed Material	Concrete	n0	0.012-0.018			
	Rock Cut		0.025			
	Firm Soil		0.025-0.032			
	Fine Sand		0.023-0.036			
	Coarse Sand		0.026-0.035	0.026		0.026
	Gravel		0.028-0.035			
	Cobble		0.030-0.050		0.035	
	Boulder		0.040-0.070			
Degree of Irregularity	Smooth	n1	0.000			
	Minor		0.001-0.005	0.001	0.001	0.001
	Moderate		0.006-0.010			
	Severe		0.011-0.020			
Effects of Obstructions	Negligible	n2	0.000-0.004		0.004	
	Minor		0.005-0.015	0.010		0.010
	Appreciable		0.020-0.030			
	Severe		0.040-0.060			
Vegetation	Small	n3	0.002-0.010		0.01	
	Medium		0.010-0.025	0.02		0.02
	Large		0.025-0.050			
	Very Large		0.050-0.100			
Variations in the Channel Cross Section	Gradual	n4	0.000	0	0	0
	Alternating (occasionally)		0.001-0.005			
	Alternating (frequently)		0.010-0.015			
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
n=(n0+n1+n2+n3+n4)m				0.057	0.050	0.057
			Use	**0.055**	**0.050**	**0.055**

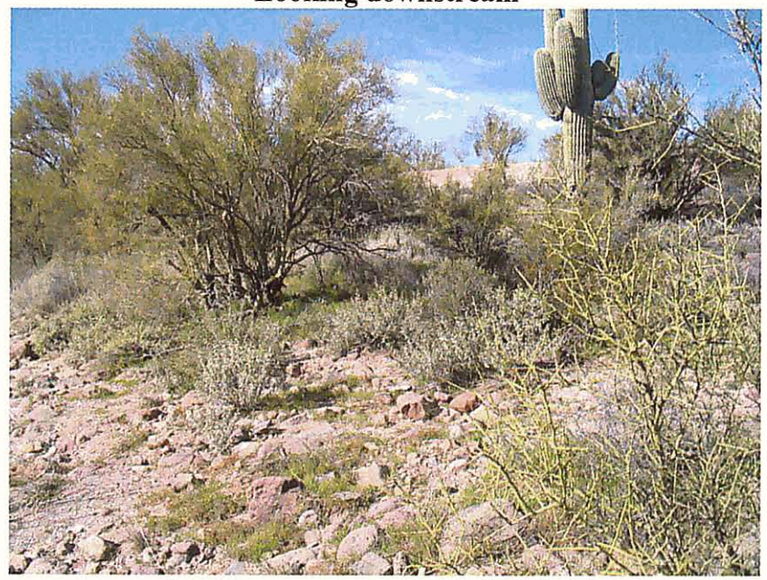
Cline Creek Tributary C6, 1-20-2005, Location 8

Looking upstream

Looking downstream



Looking downstream at left bank



Looking downstream at right bank

3. Significant Hydraulic Structures

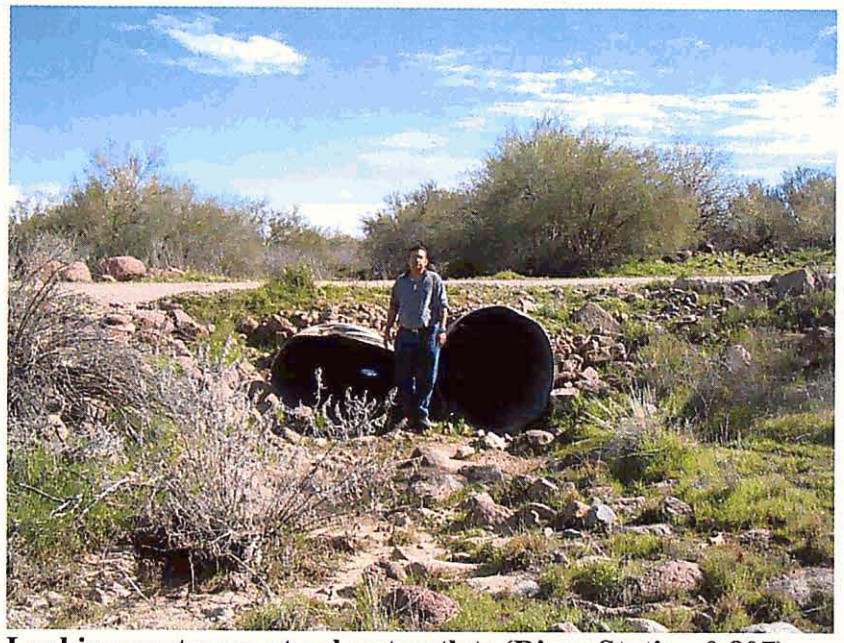
There are three locations in the study area where significant hydraulic structures exist (See attached reference map). The largest of these structures occurs in the lower reach of Cline Creek Tributary C8 where it crosses Circle Mountain Road (see below).

Looking downstream at culvert inlets (River Station 0.357)

The second significant structure is located on the lower reach of Tributary C6 where it crosses 12th Street - and is shown in the image below.

Looking upstream at culvert outlets (River Station 1.052)

The third significant structure is located approximately .5 miles upstream of Structure 1 - where Cline Creek Tributary C8 crosses 12th Street - and is shown in the image below.



Looking upstream at culvert outlets (River Station 0.807).

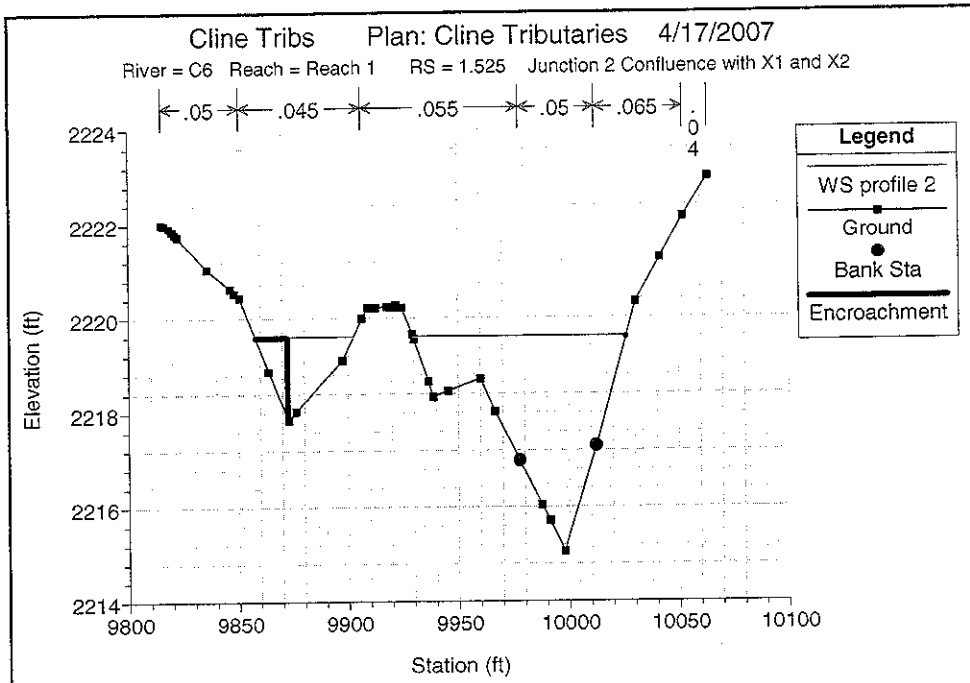
4. General Floodplain Conditions

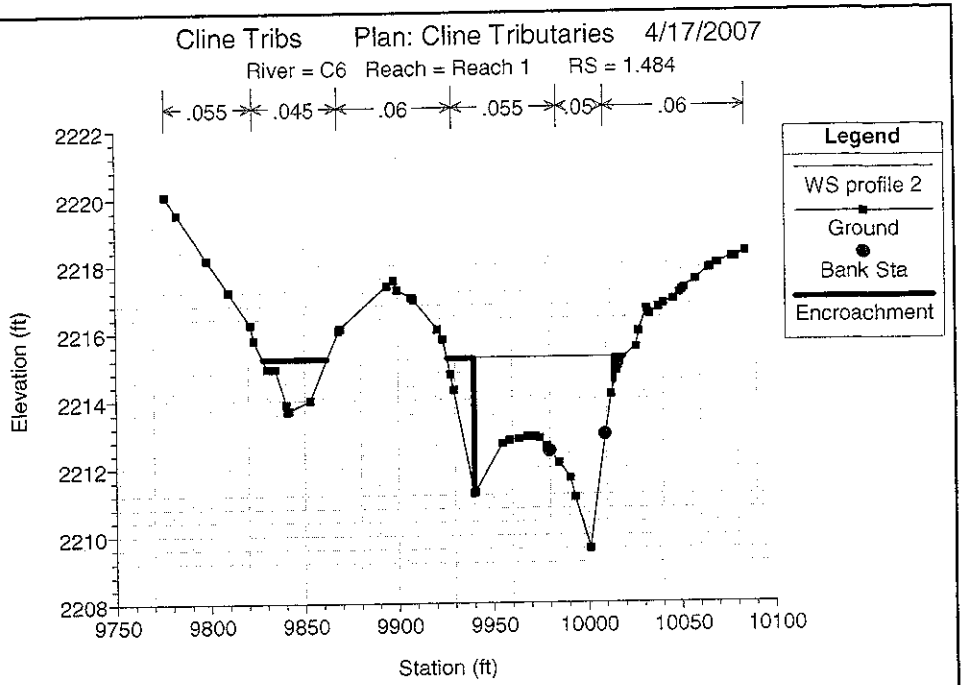
This study area generally consists of gravelly to cobbly channel bottoms in the main channels to small cobbles and coarse sands in the overbank areas. Main channels are moderately well-defined.

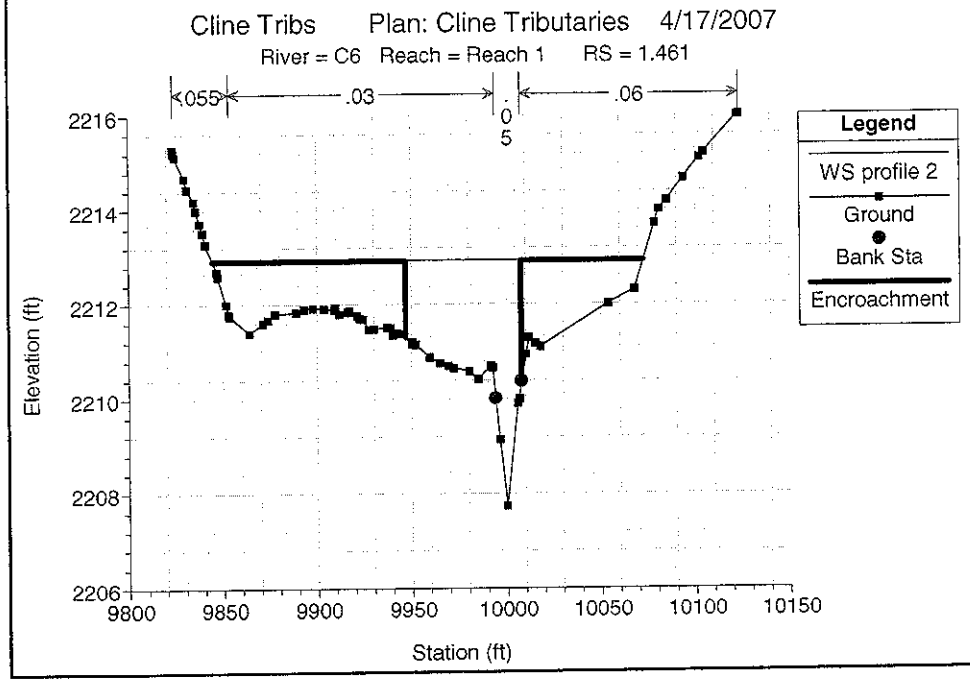
In general, the study area is covered by the Upper Sonoran plant community. Vegetation throughout the study reaches includes trees such as mesquite, little leaf palo verde, creosote and ocotillo, and cacti including saguaro, barrel, staghorn, and teddy bear cholla, and various shrubs such as desert broom, jojoba, mormon tea, brittle bush and hackberry.

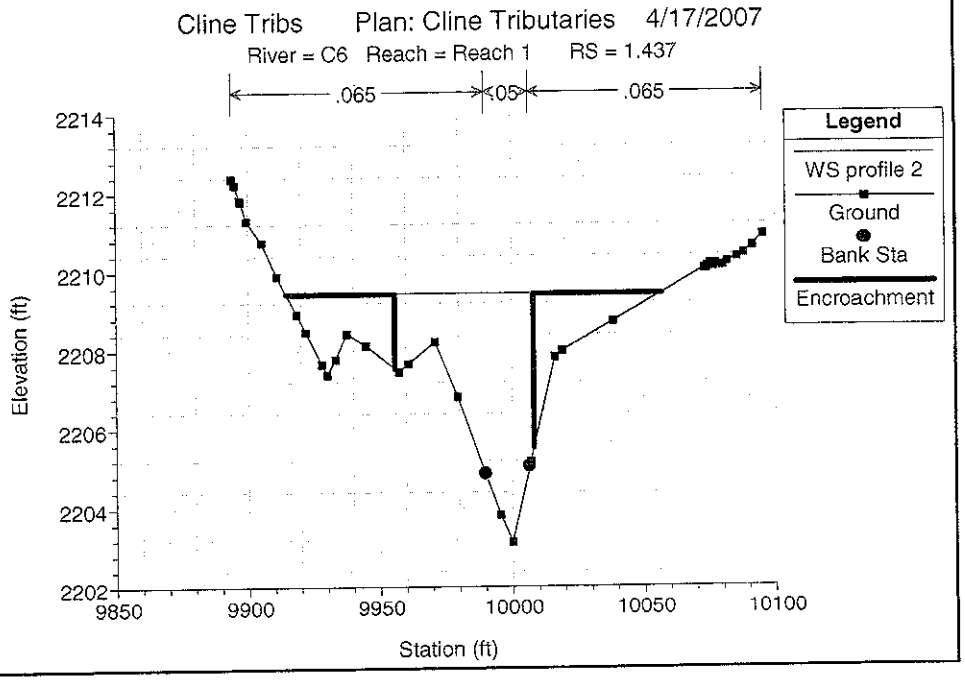
The area is occupied by single family homes usually on 1 to 5 acre lots and attendant fences and horse structures. The degree of development from one lot to another is highly variable.

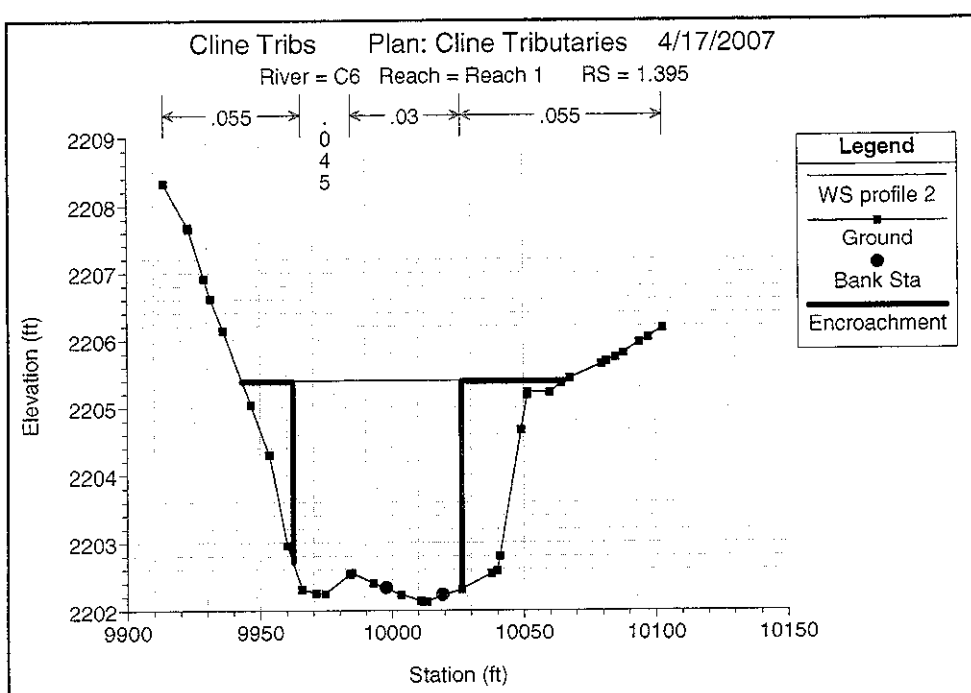
E.2 Cross Section Plots

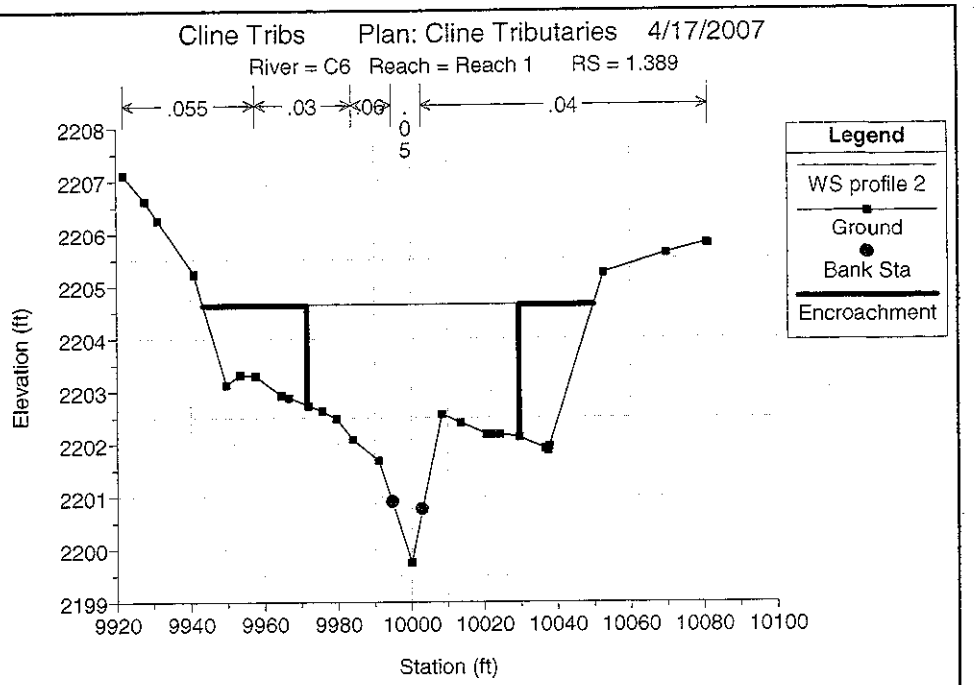

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.525 Junction 2 Confluence with X1 and X2
.05
.045
.055
.05
.065
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

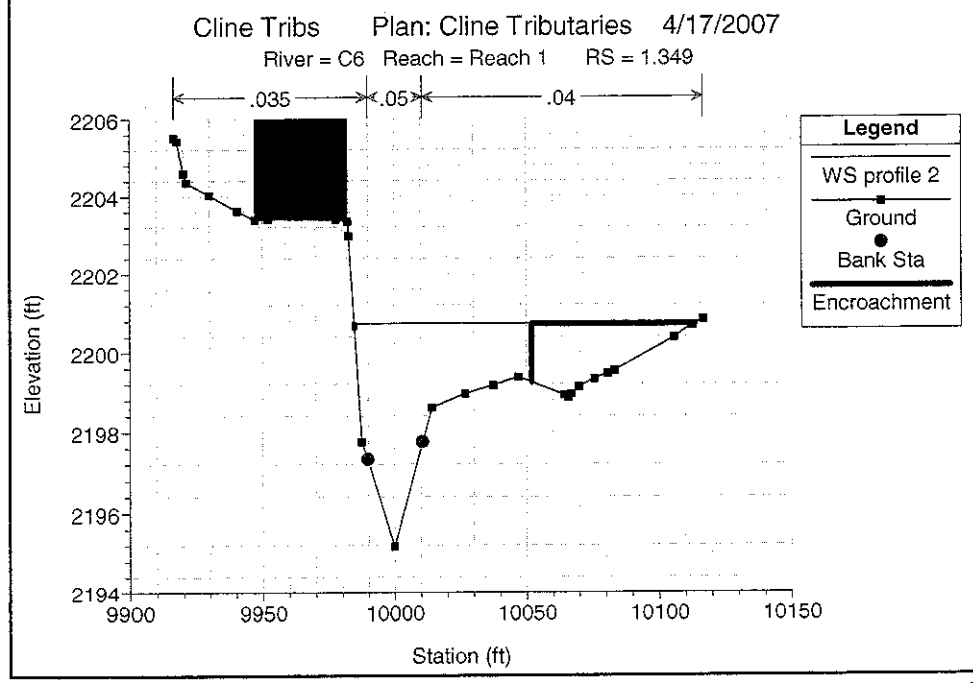

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.484
.055
.045
.06
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

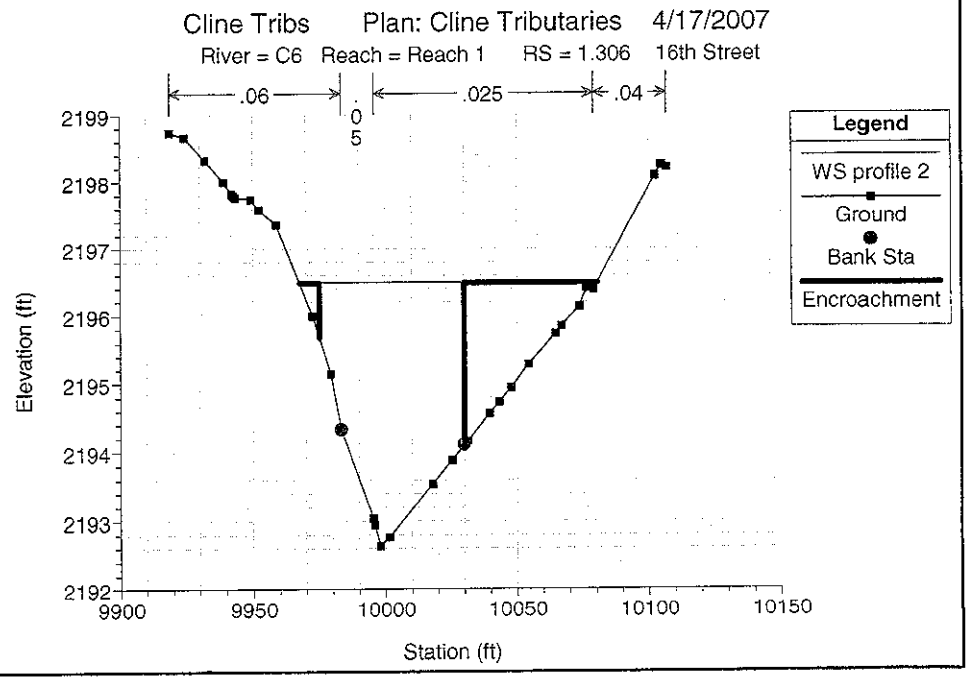

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.461
.055
.03
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

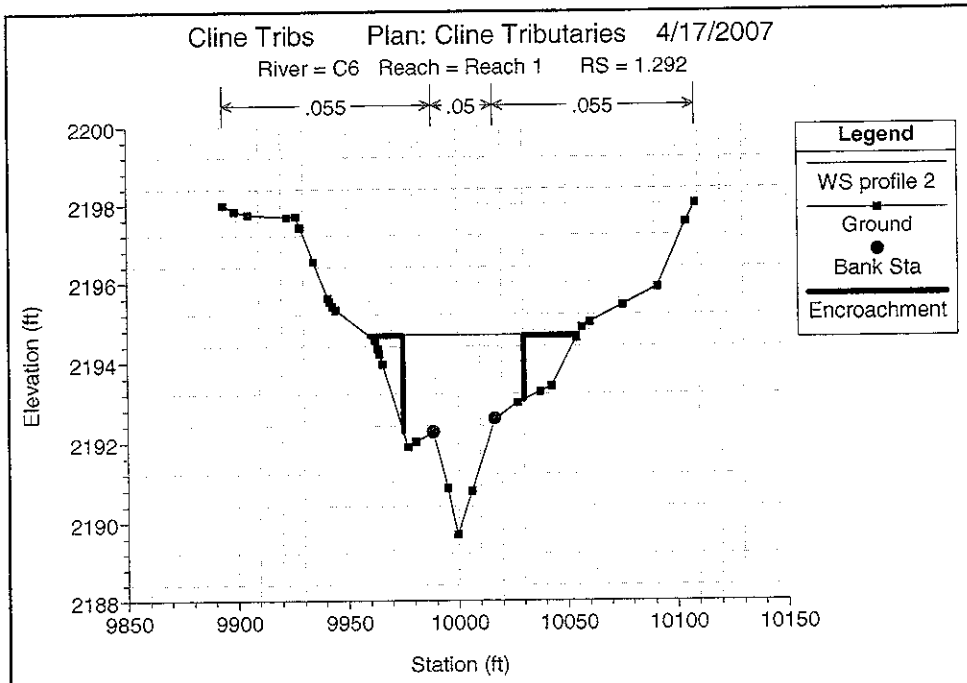

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.437
.065
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

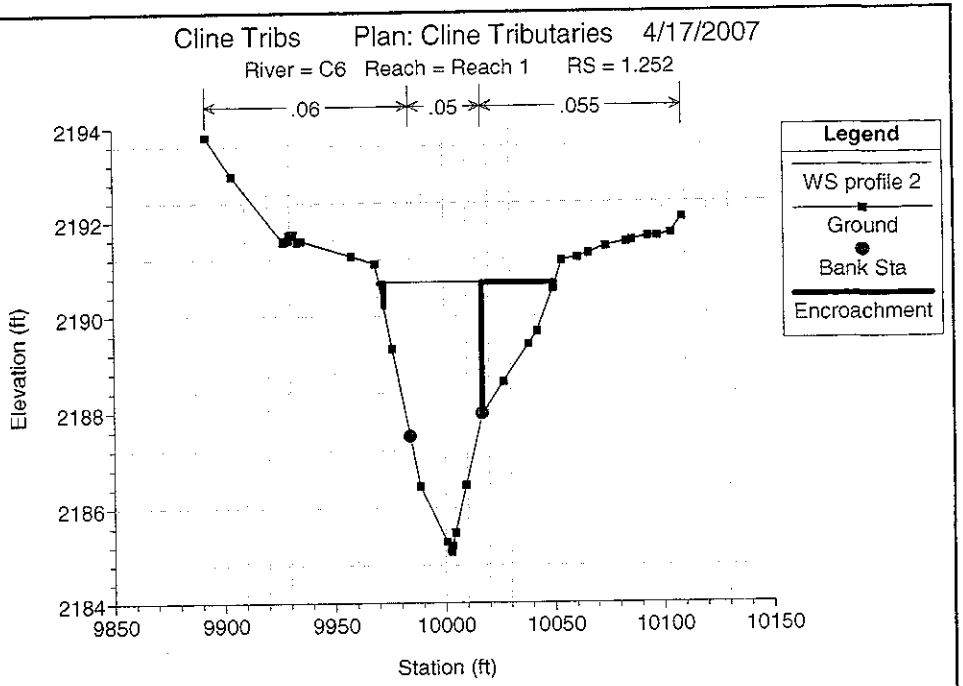

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.395
.055
.045
.03
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

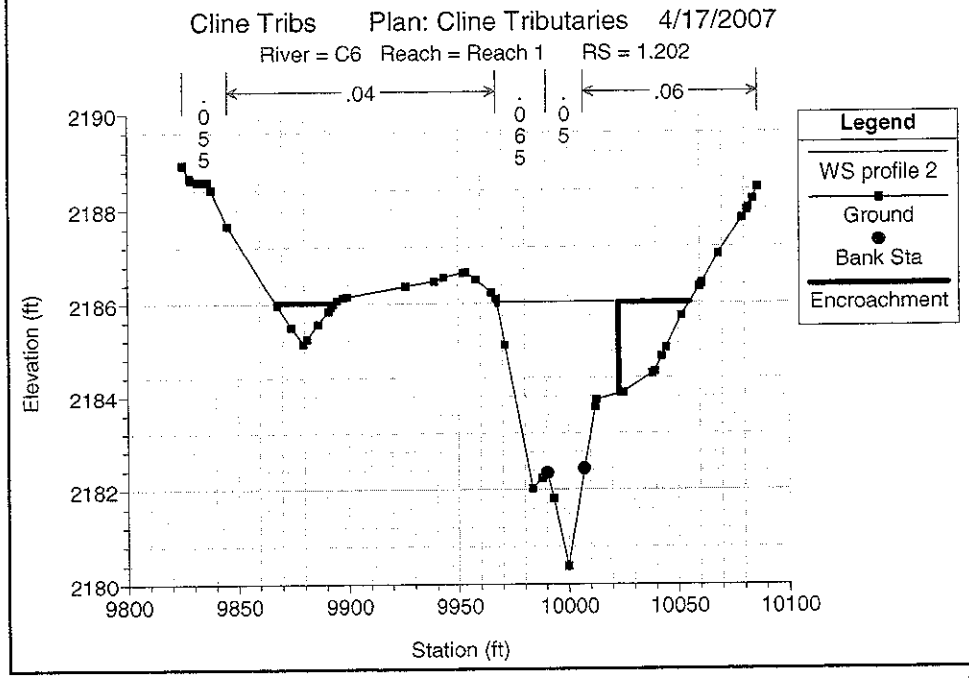

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.389
.055
.03
.06
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

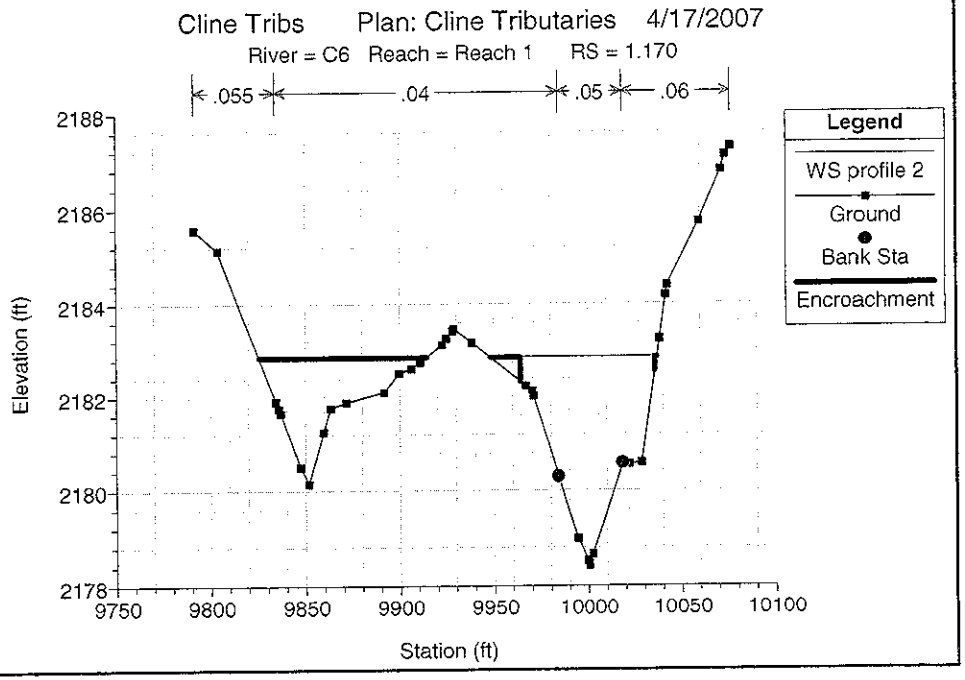

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.349
.035
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

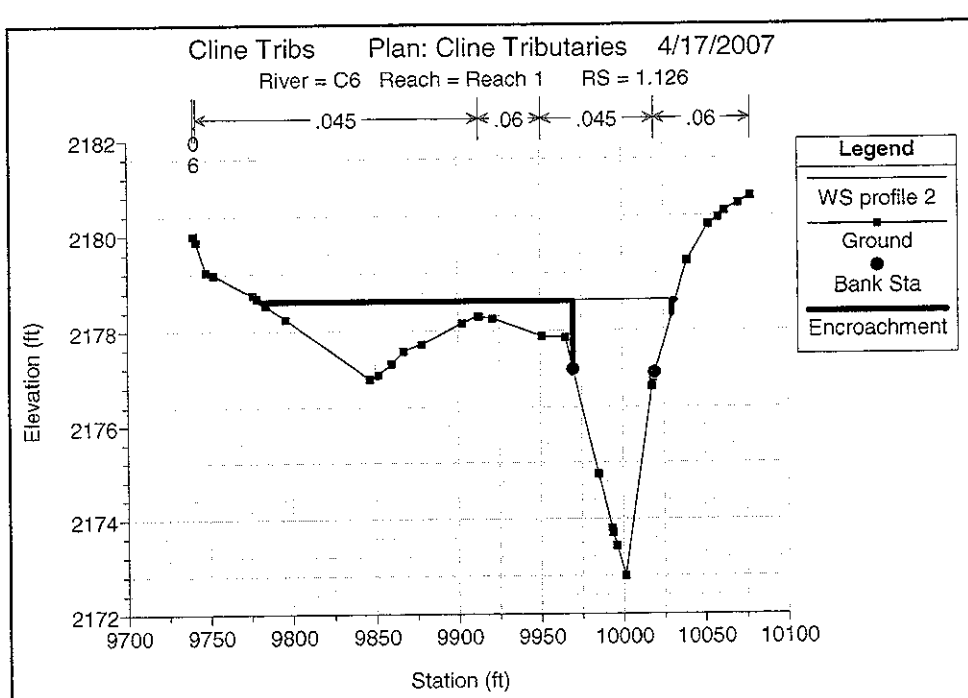

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.306 16th Street
.06
.05
.025
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

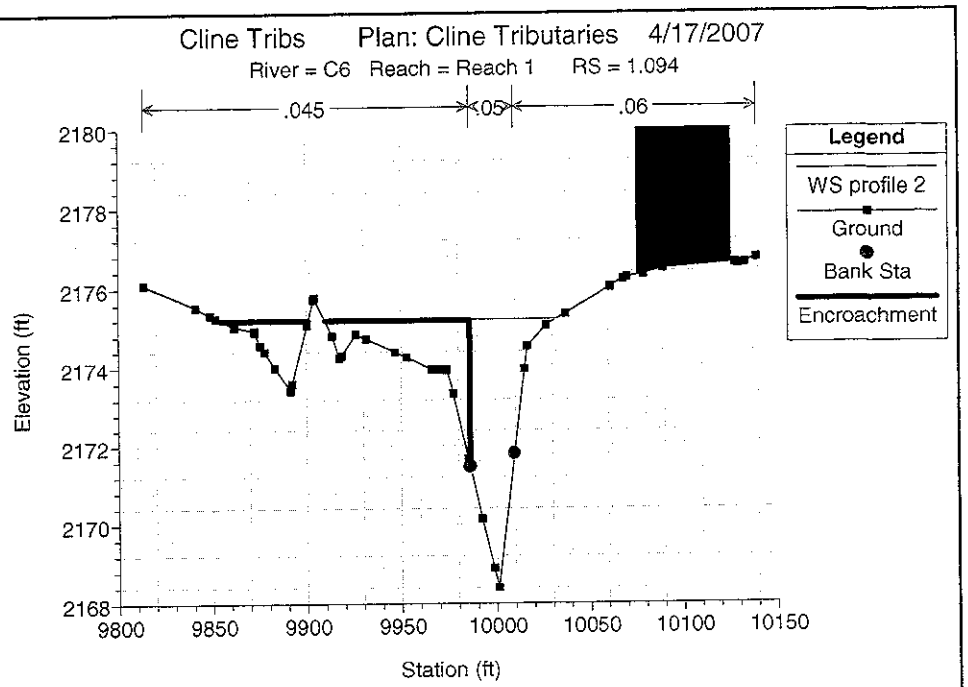

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.292
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

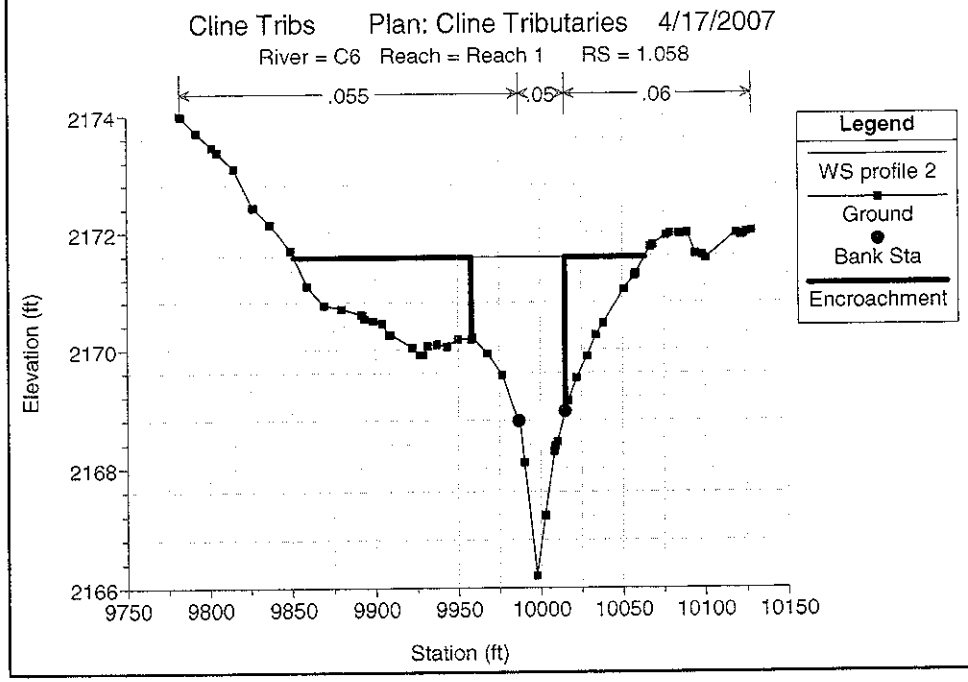

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.252
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

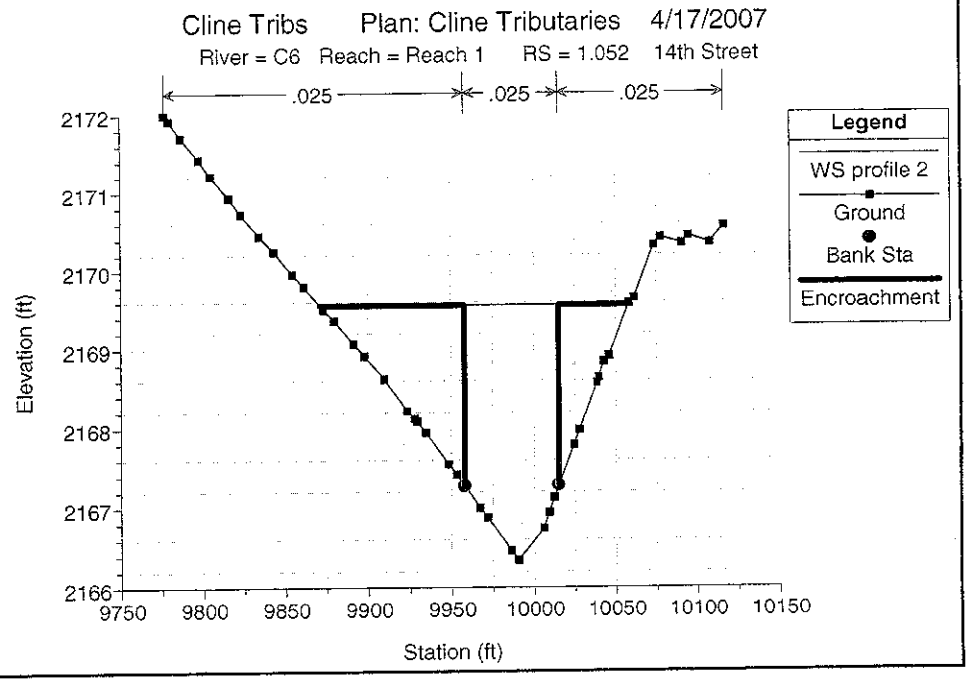

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.202
.055
.04
.065
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

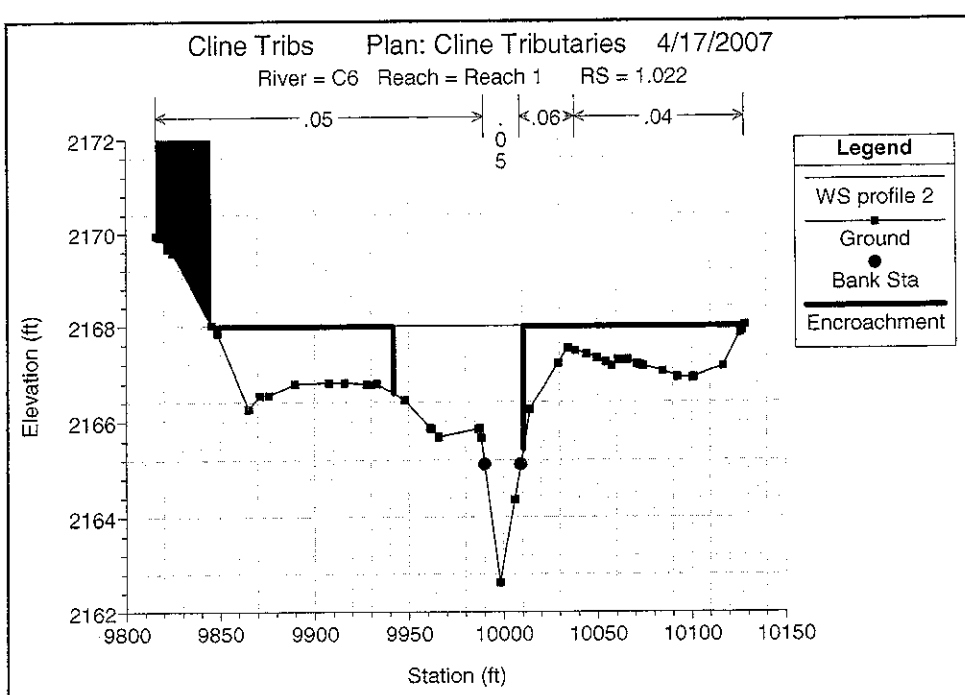

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.170
.055
.04
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

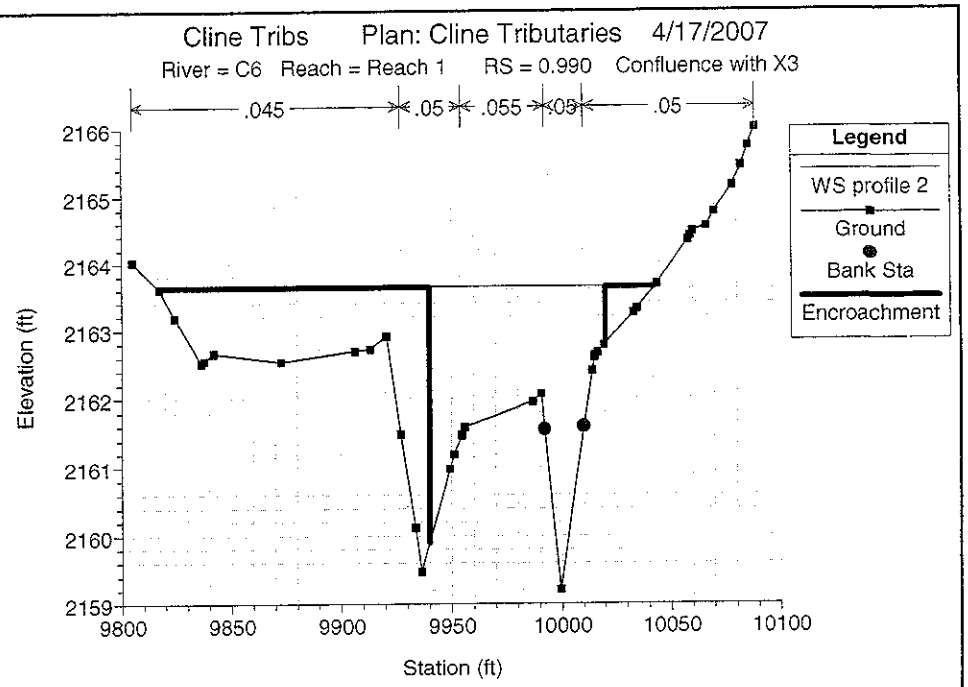

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.126
.045
.06
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

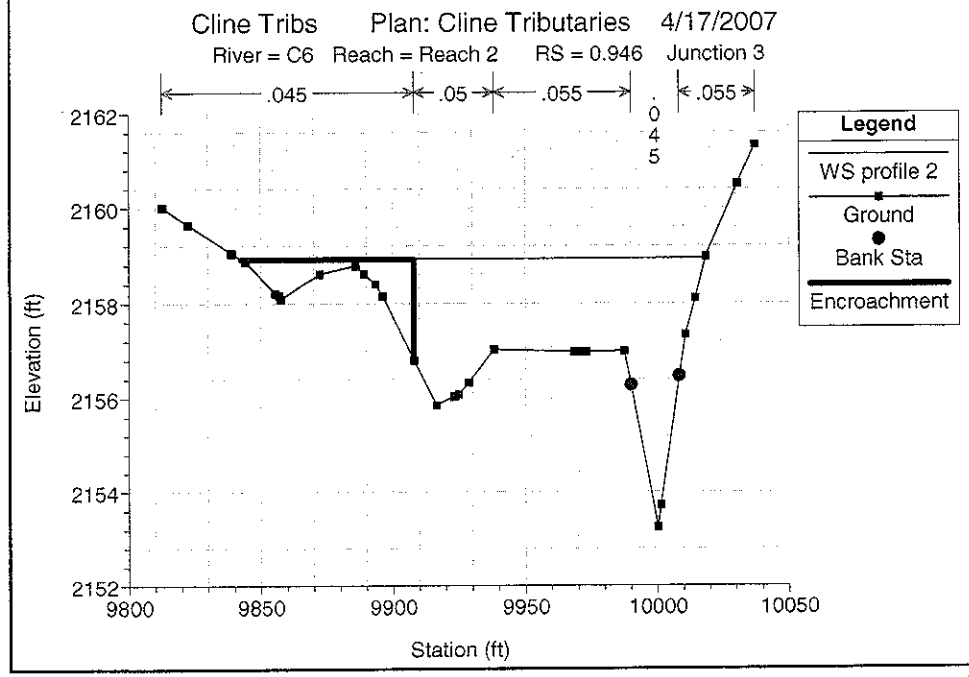

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.094
.045
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

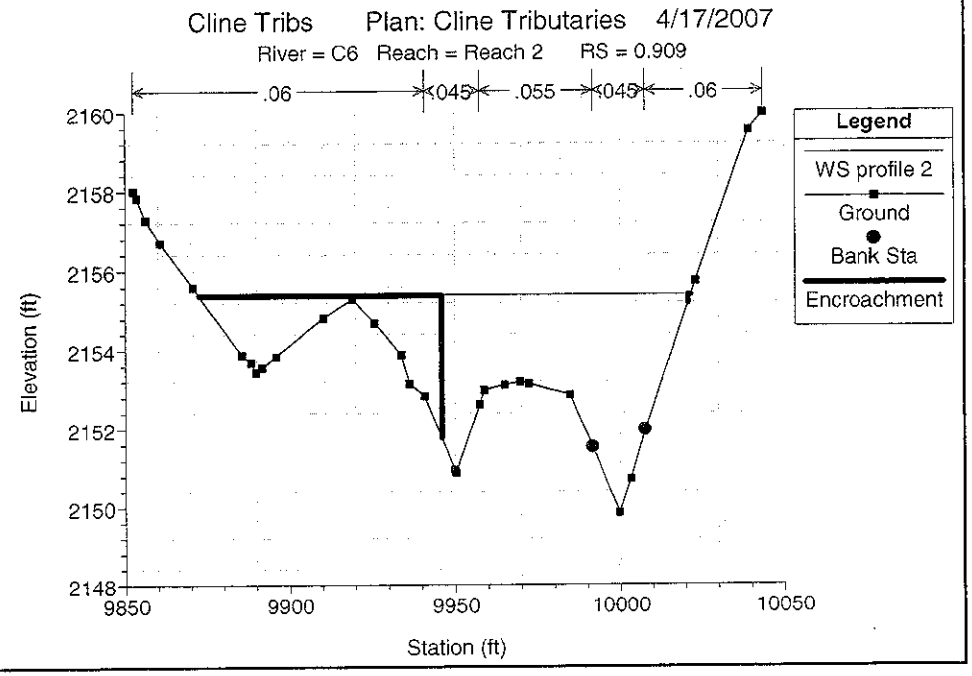

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.058
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

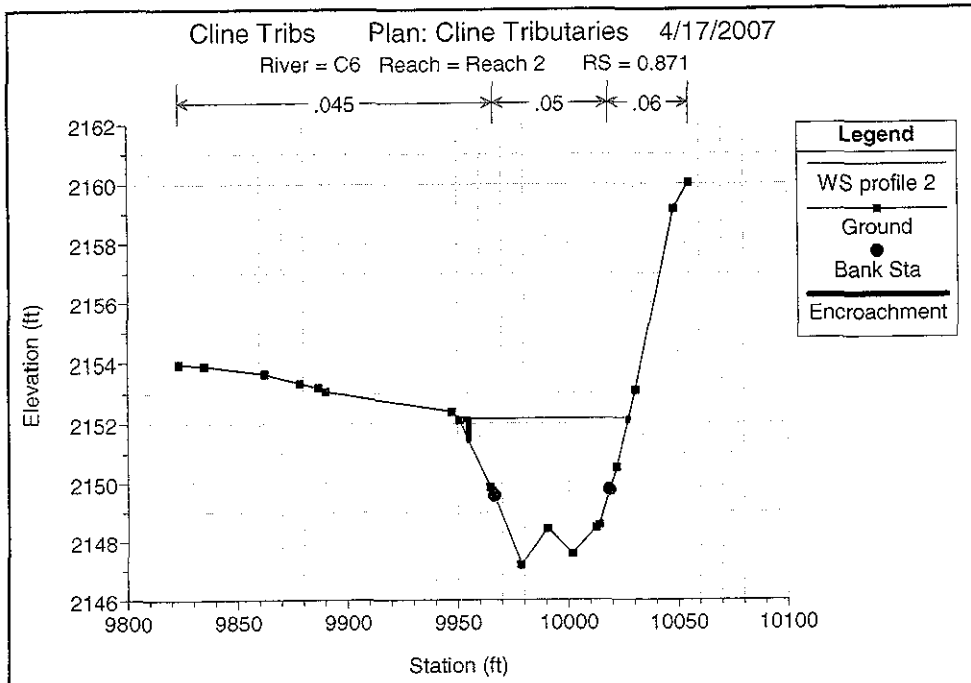

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.052 14th Street
.025
.025
.025
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

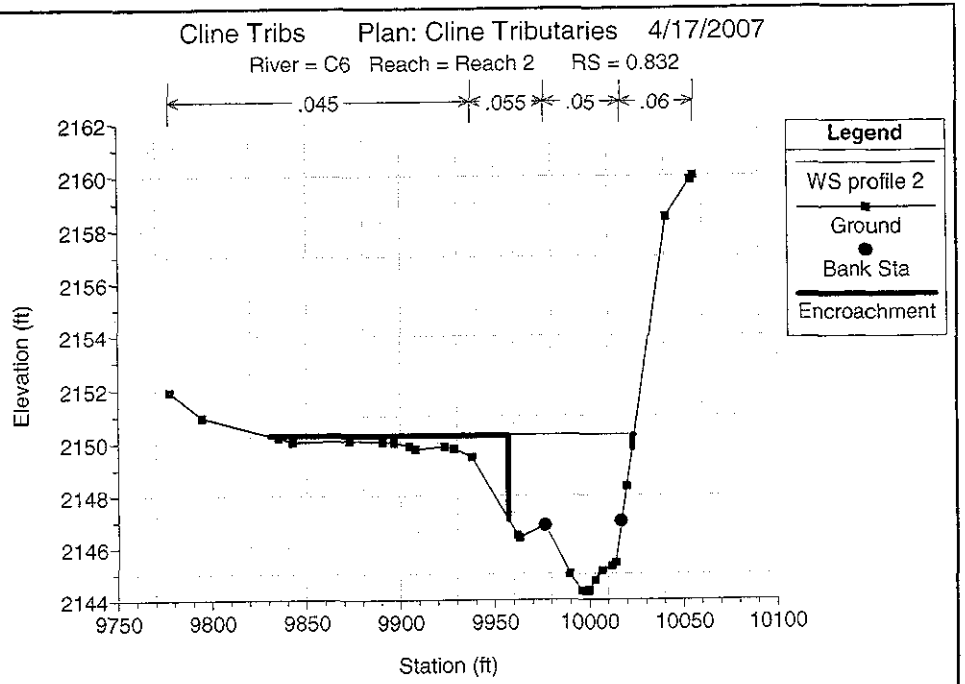

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 1.022
.05
.05
.06
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

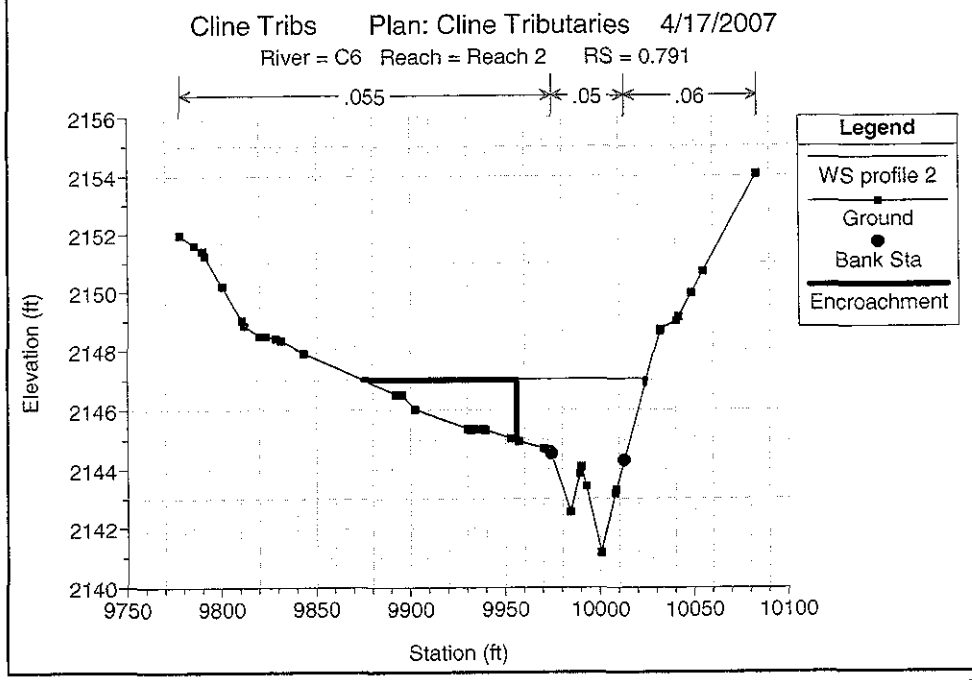

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 1 RS = 0.990 Confluence with X3
.045
.05
.055
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

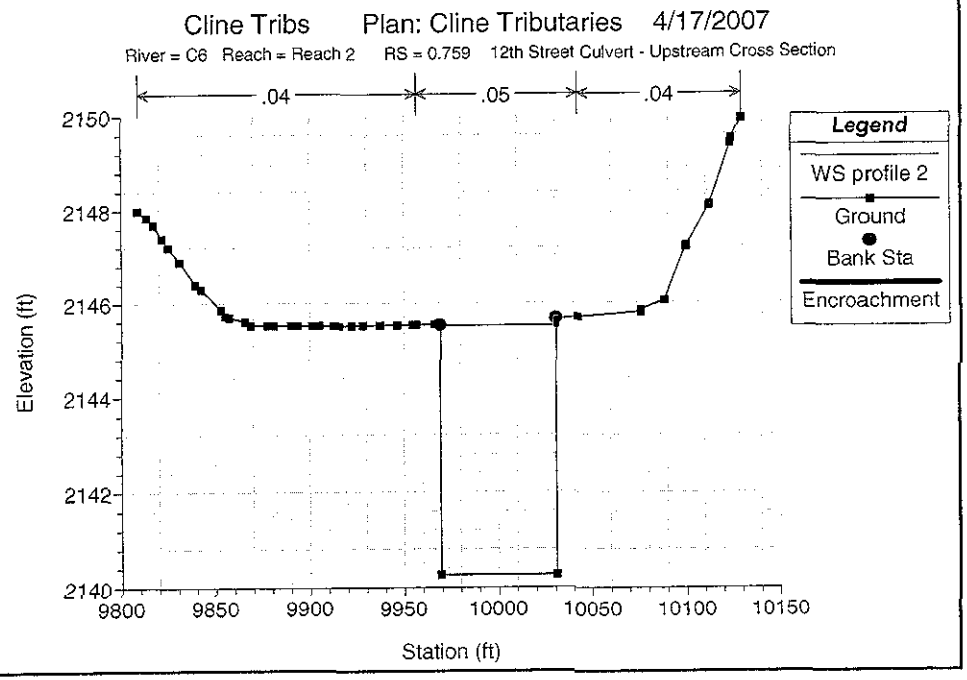

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.946 Junction 3
.045
.05
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

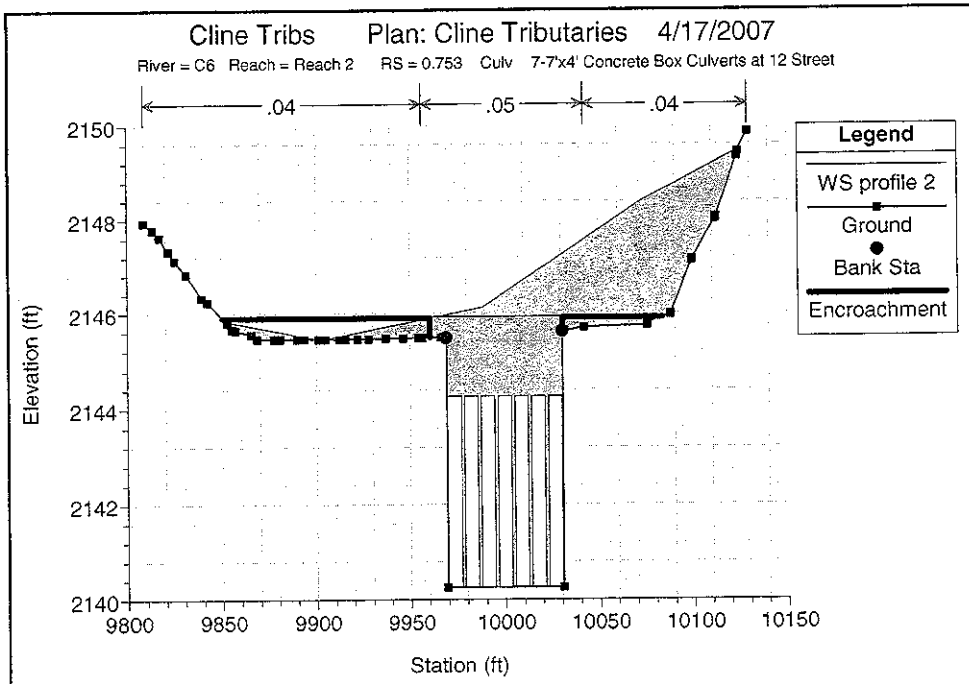

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.909
.06
.045
.055
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

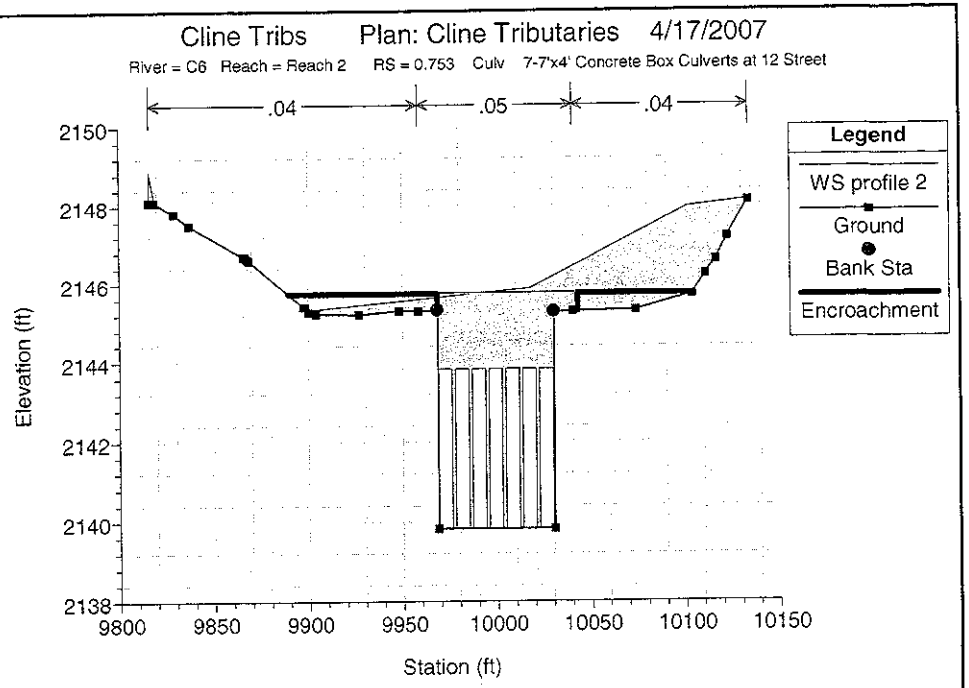

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.871
.045
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

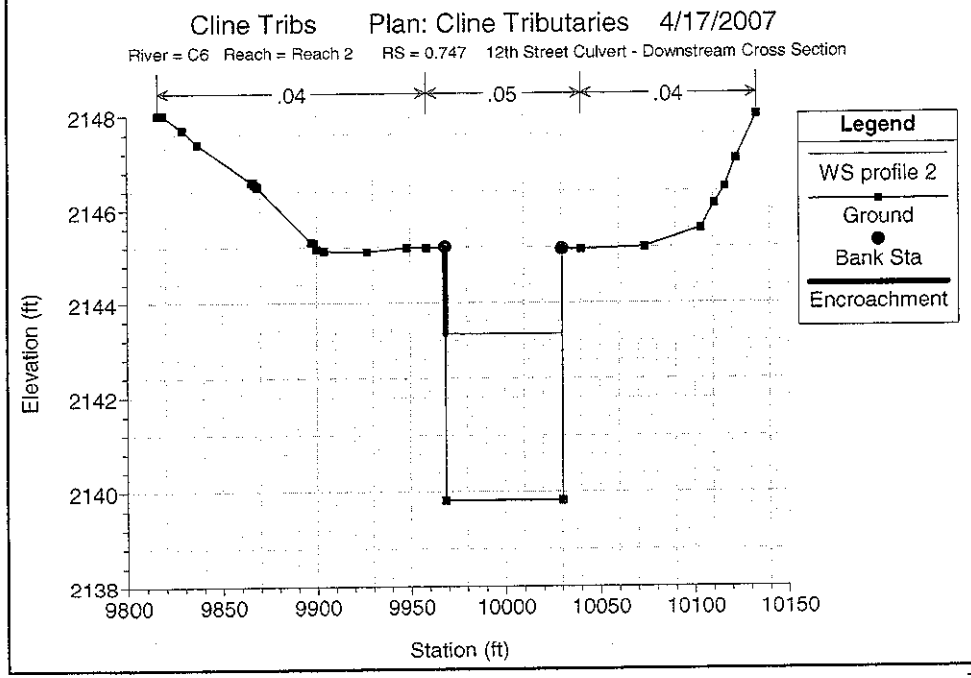

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.832
.045
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

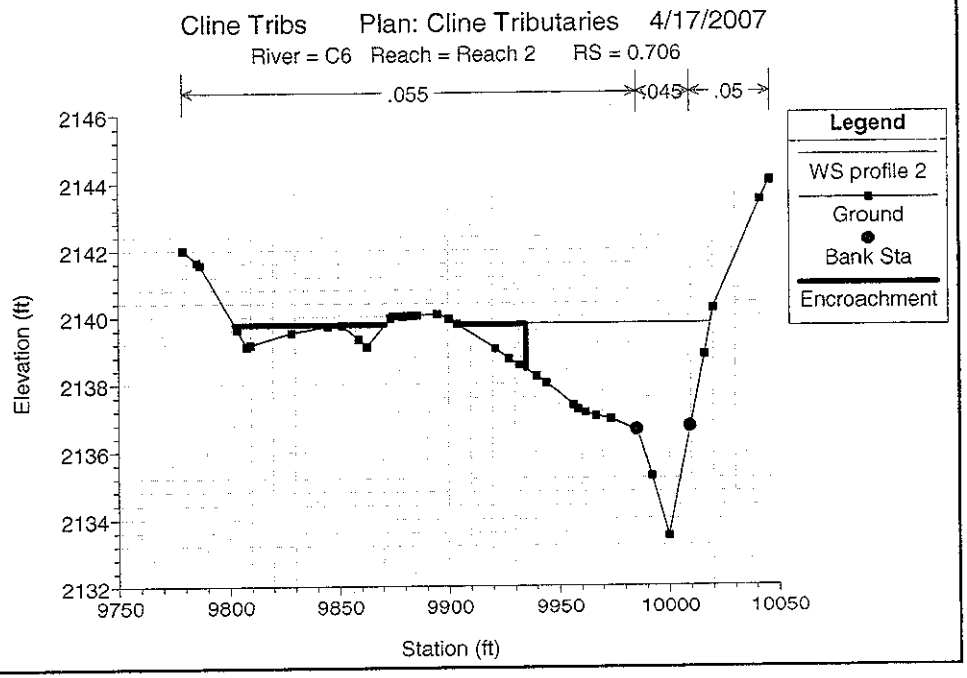

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.791
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

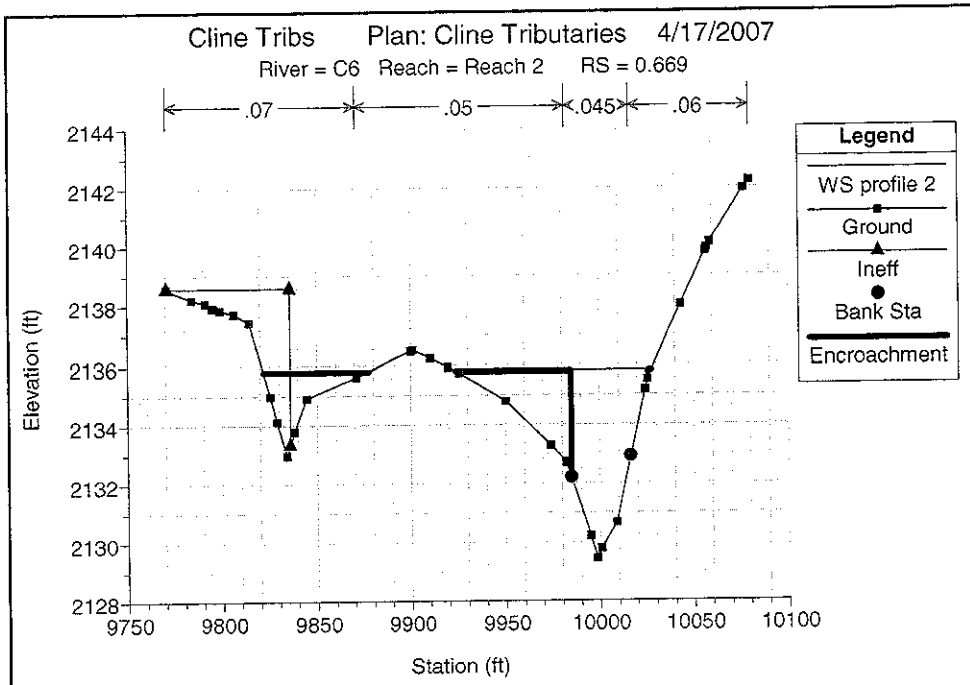

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.759 12th Street Culvert - Upstream Cross Section
.04
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

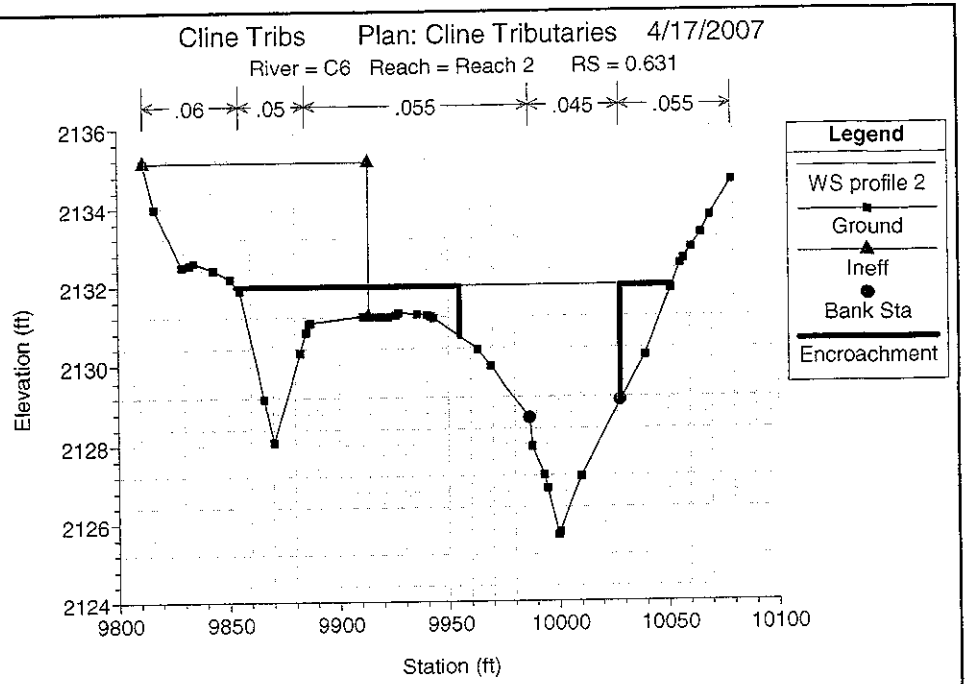

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.753 Culv 7-7'x4' Concrete Box Culverts at 12 Street
.04
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

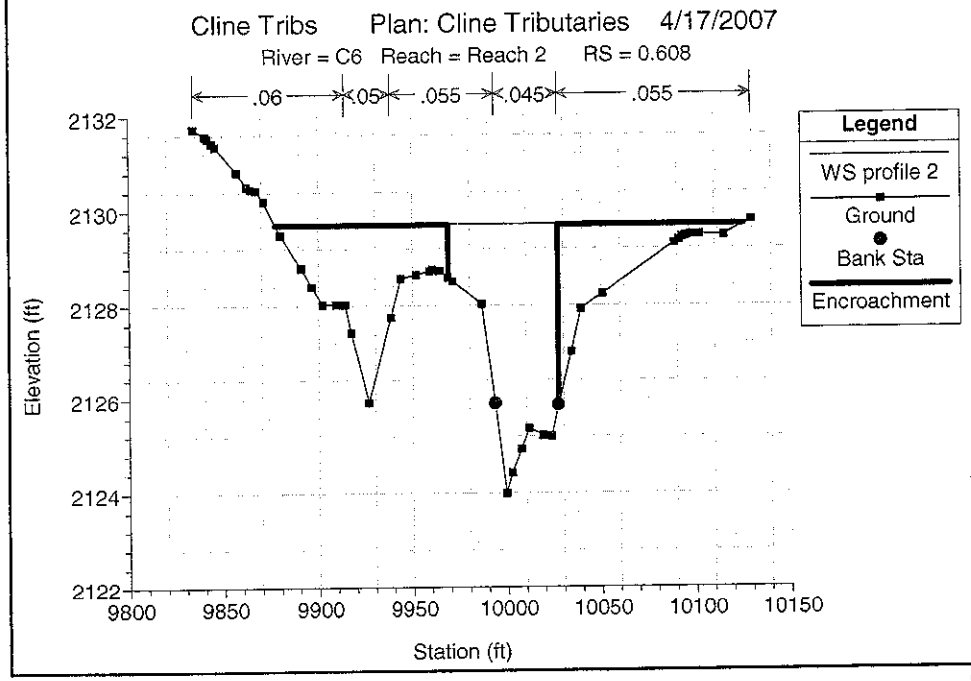

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.753 Culv 7-7'x4' Concrete Box Culverts at 12 Street
.04
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

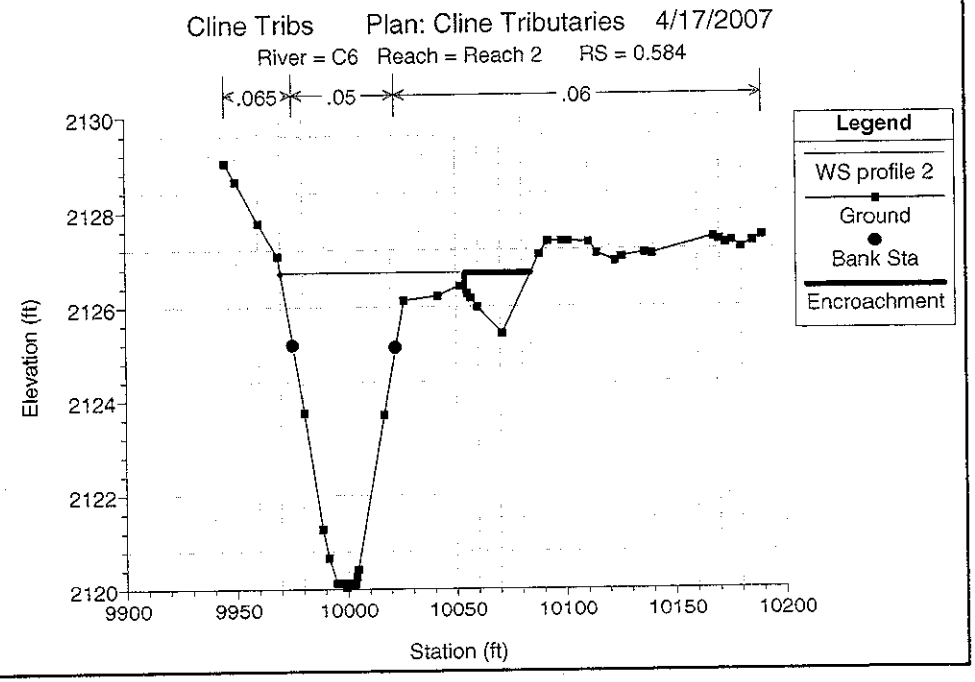

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.747 12th Street Culvert - Downstream Cross Section
.04
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

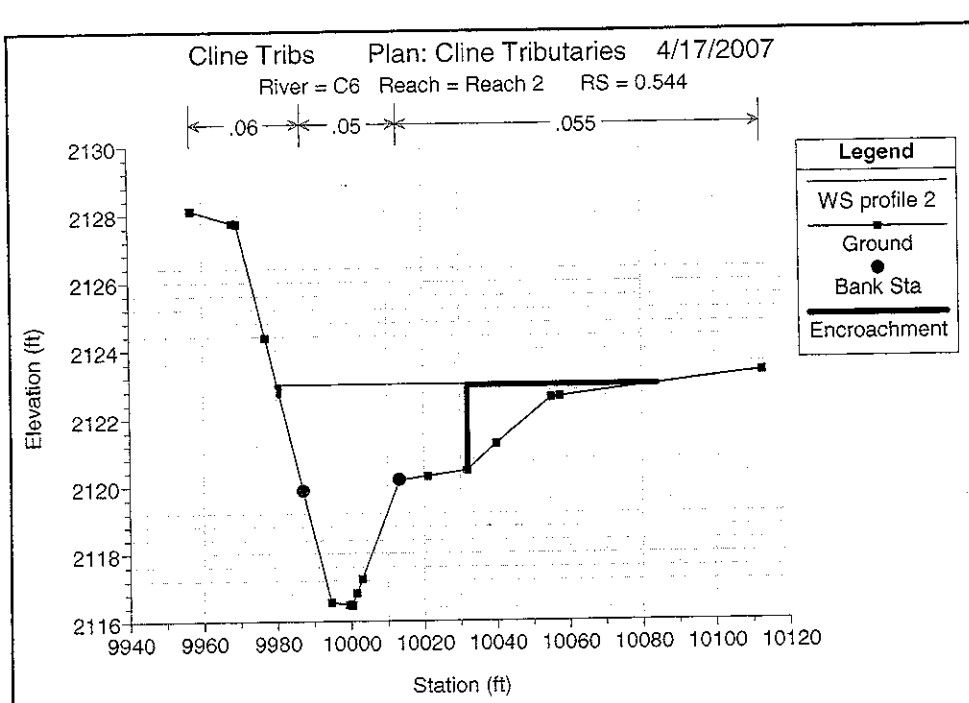

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.706
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

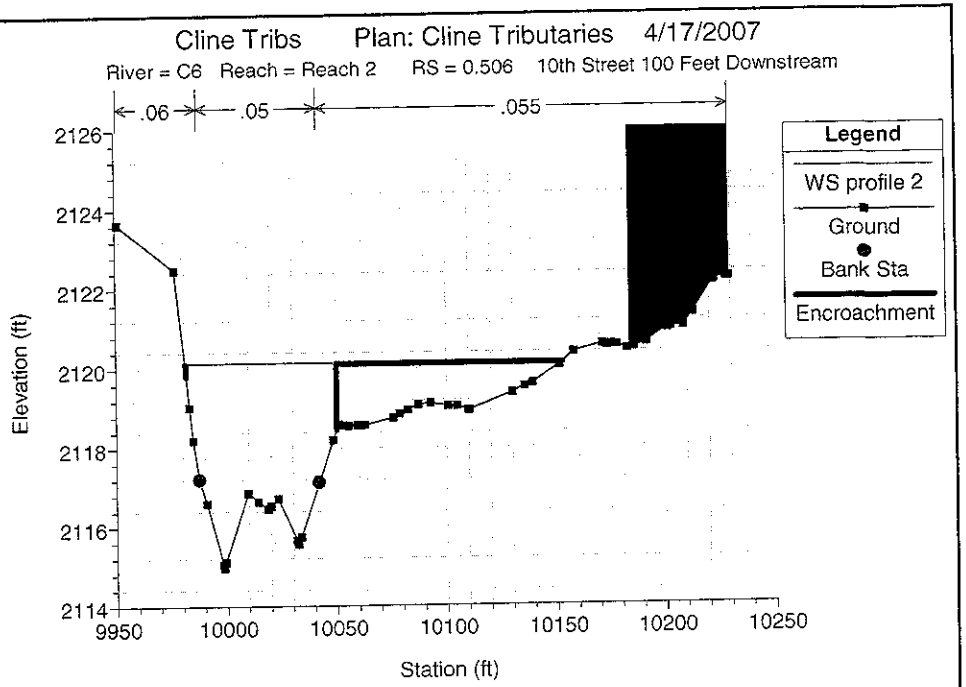

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.669
.07
.05
.045
.06
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

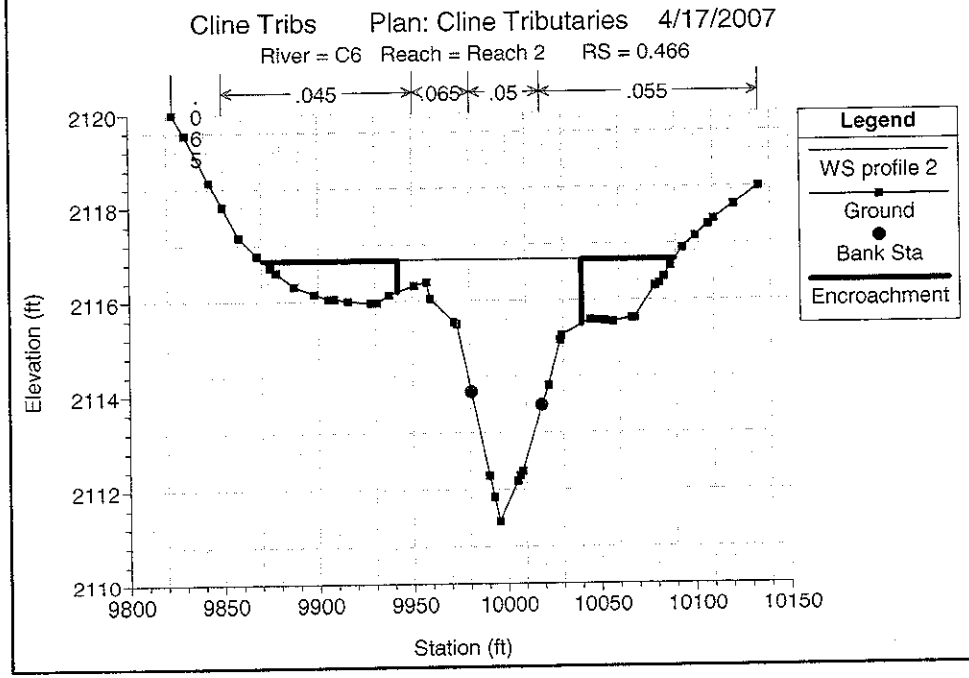

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.631
.06
.05
.055
.045
.055
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

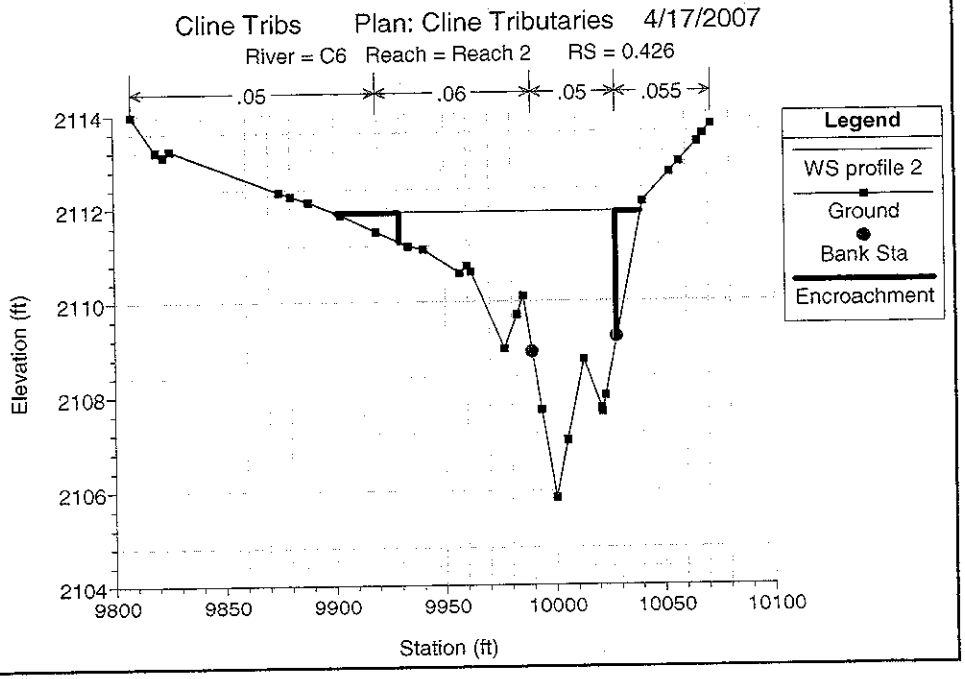

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.608
.06
.05
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

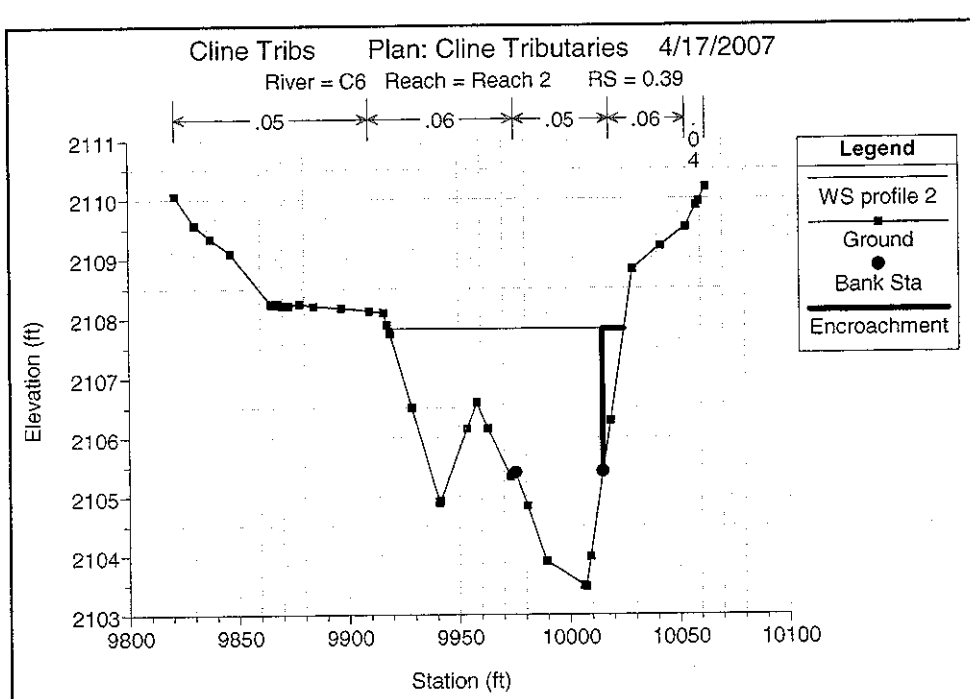

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.584
.065
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

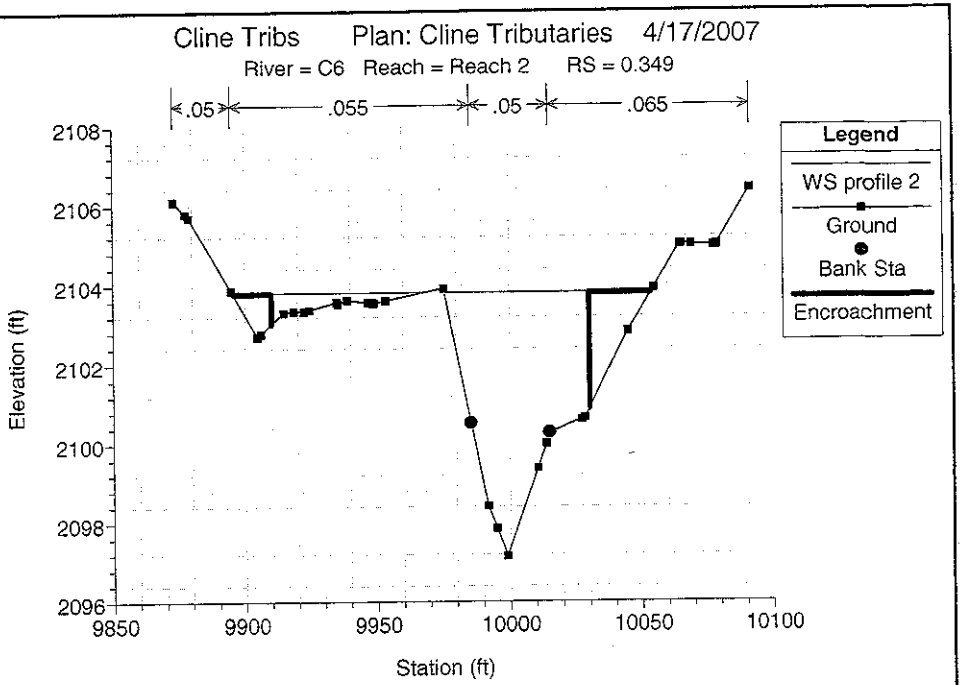

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.544
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

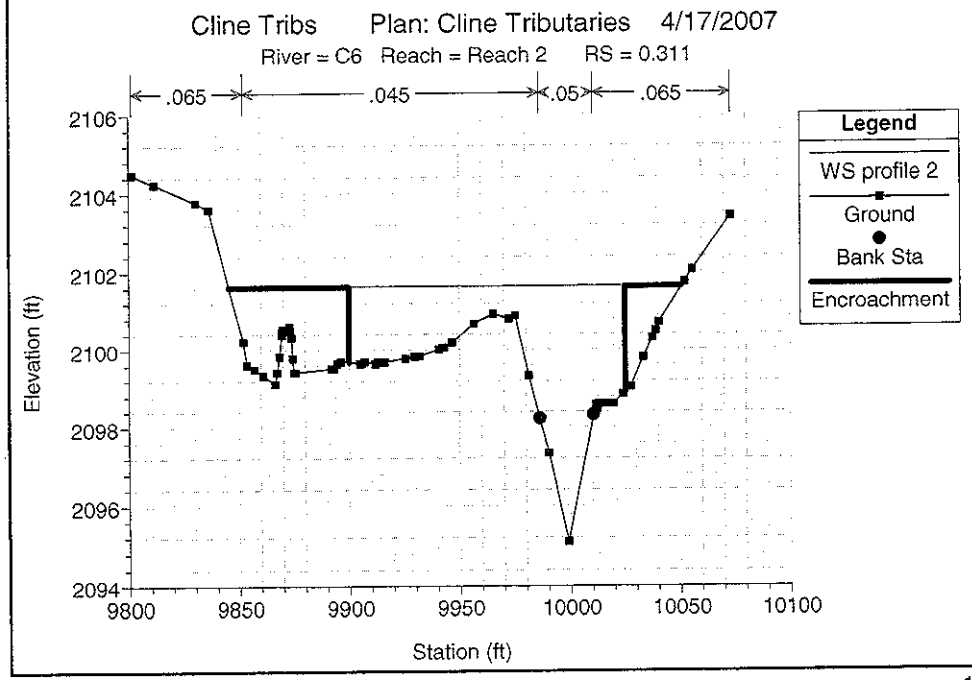

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.506 10th Street 100 Feet Downstream
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

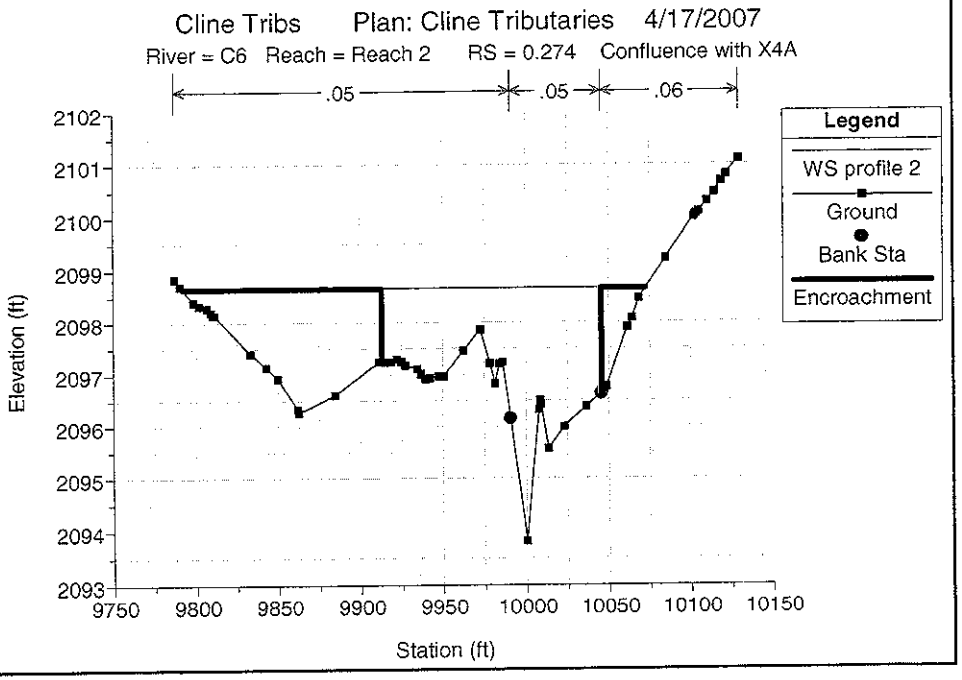

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.466
.045
.065
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

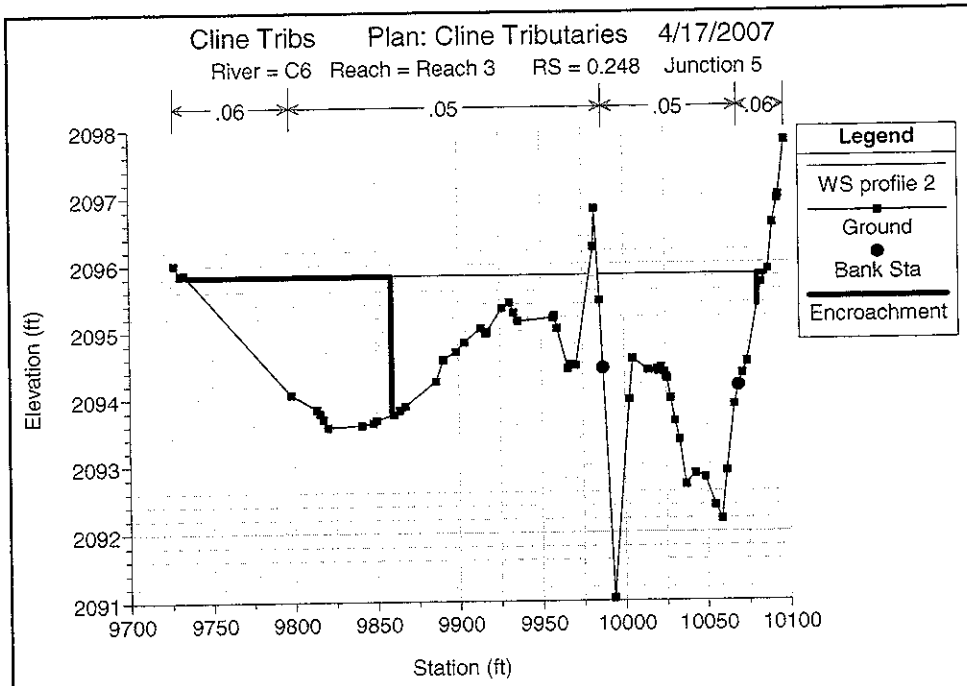

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.426
.05
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

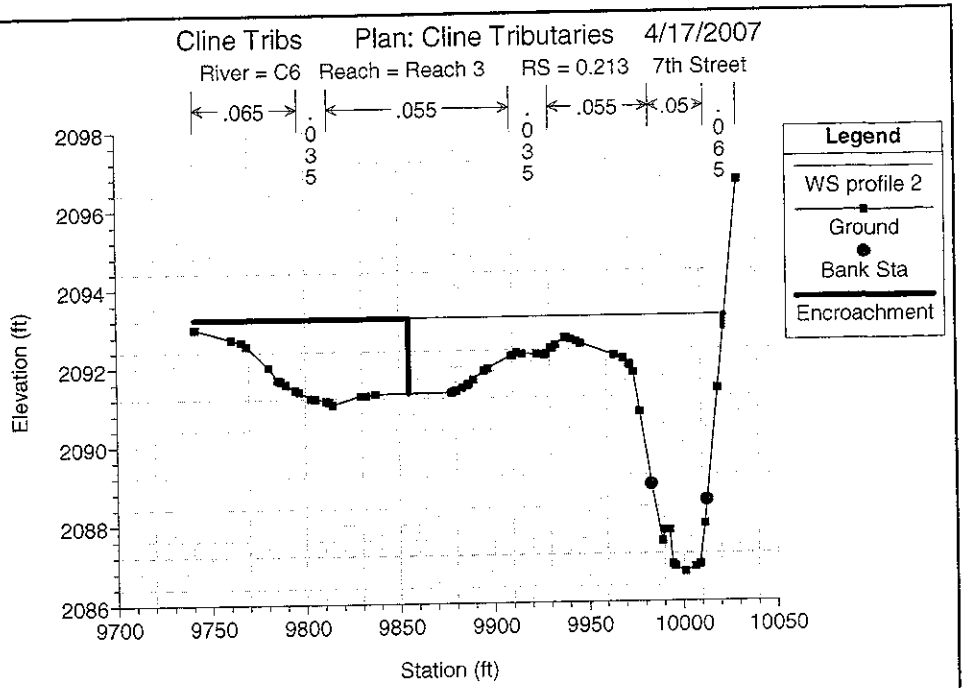

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.39
.05
.06
.05
.06
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

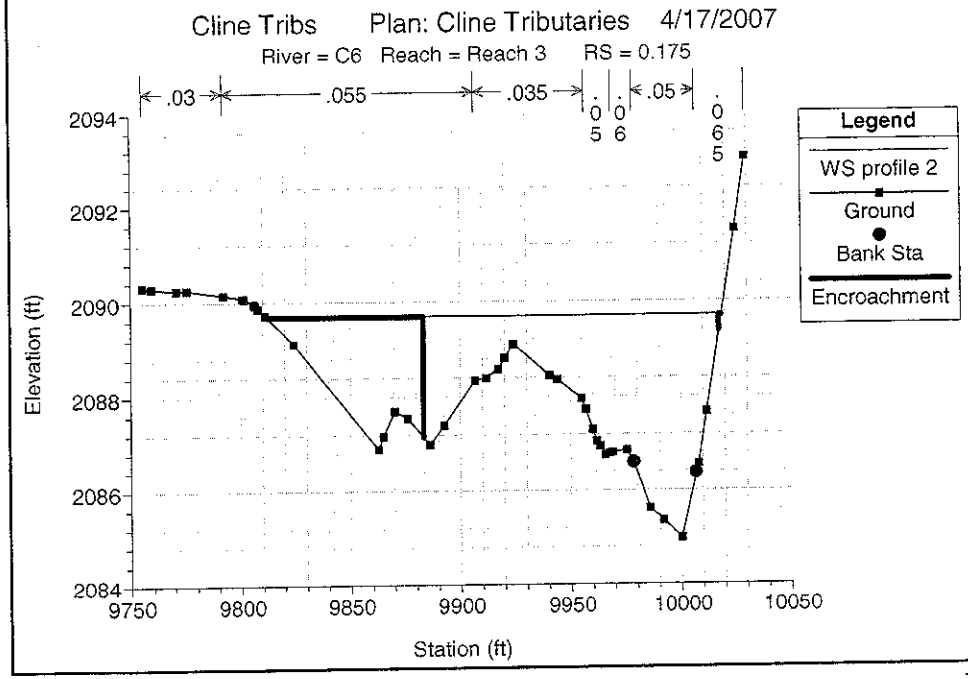

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.349
.05
.055
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

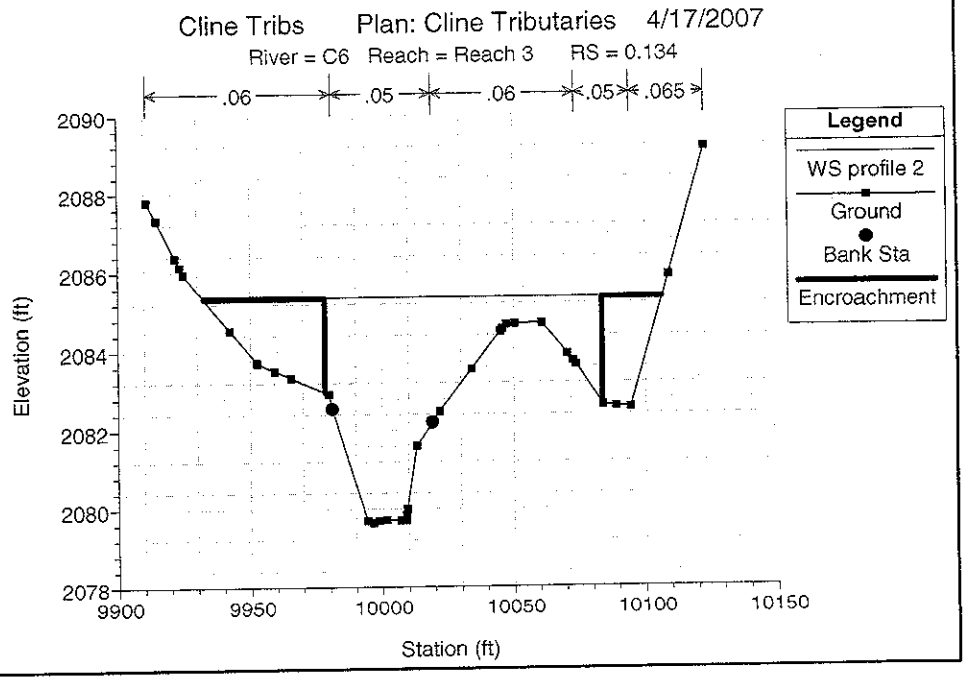

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.311
.065
.045
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

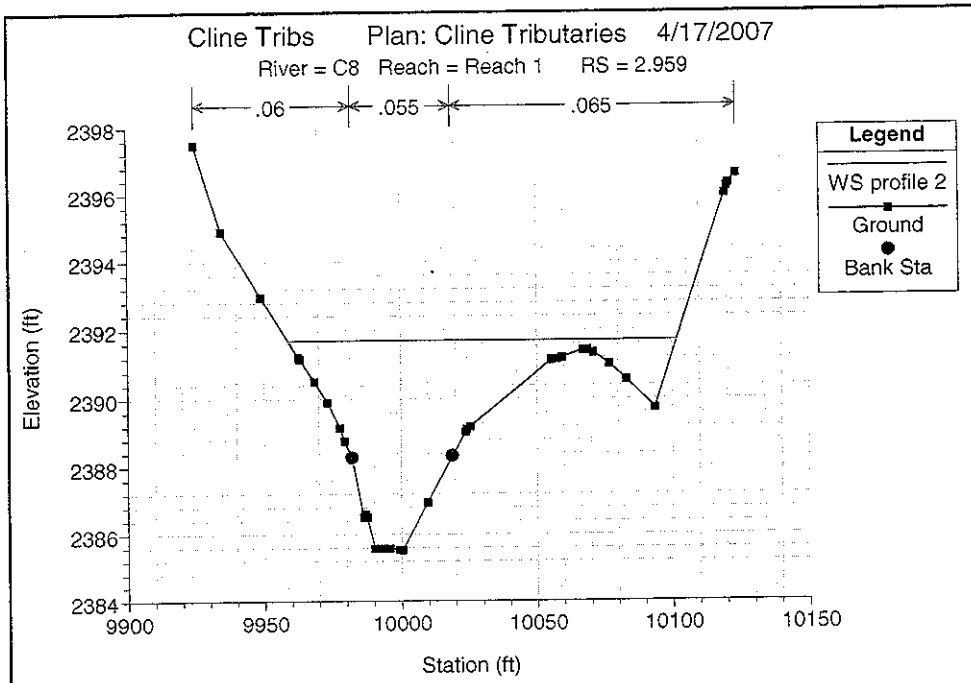

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 2 RS = 0.274 Confluence with X4A
.05
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

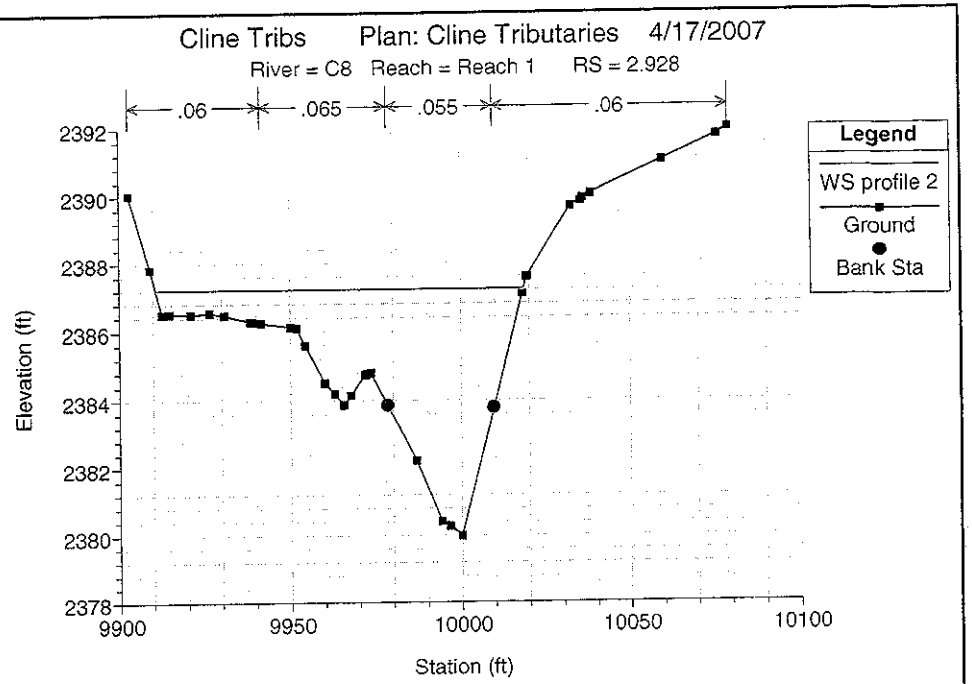

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 3 RS = 0.248 Junction 5
.06
.05
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

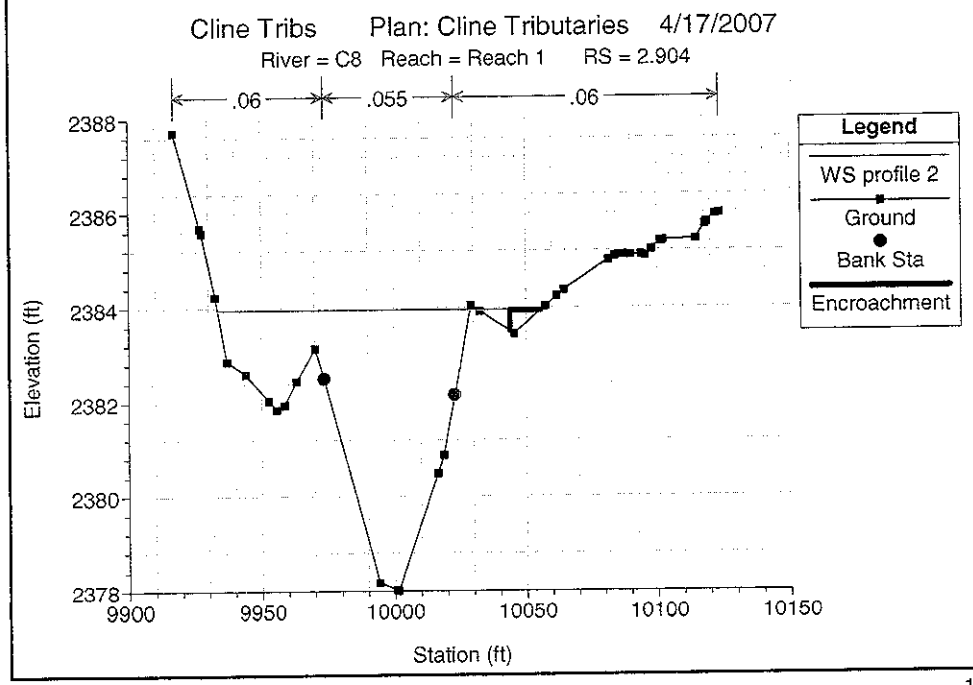

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 3 RS = 0.213 7th Street
.065
.035
.055
.035
.055
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

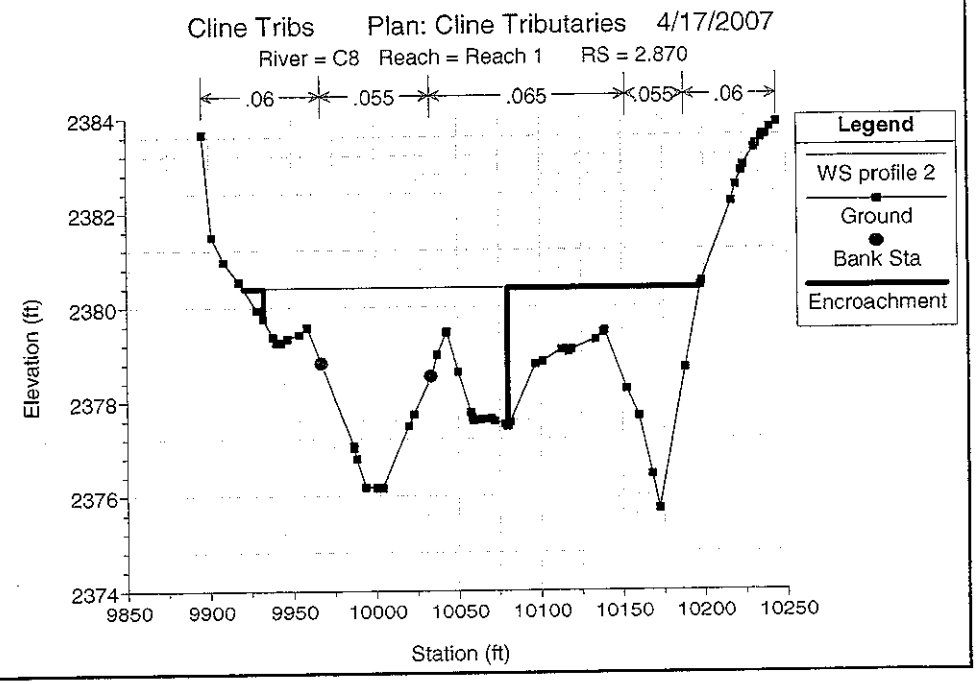

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 3 RS = 0.175
.03
.055
.035
.05
.05
.06
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

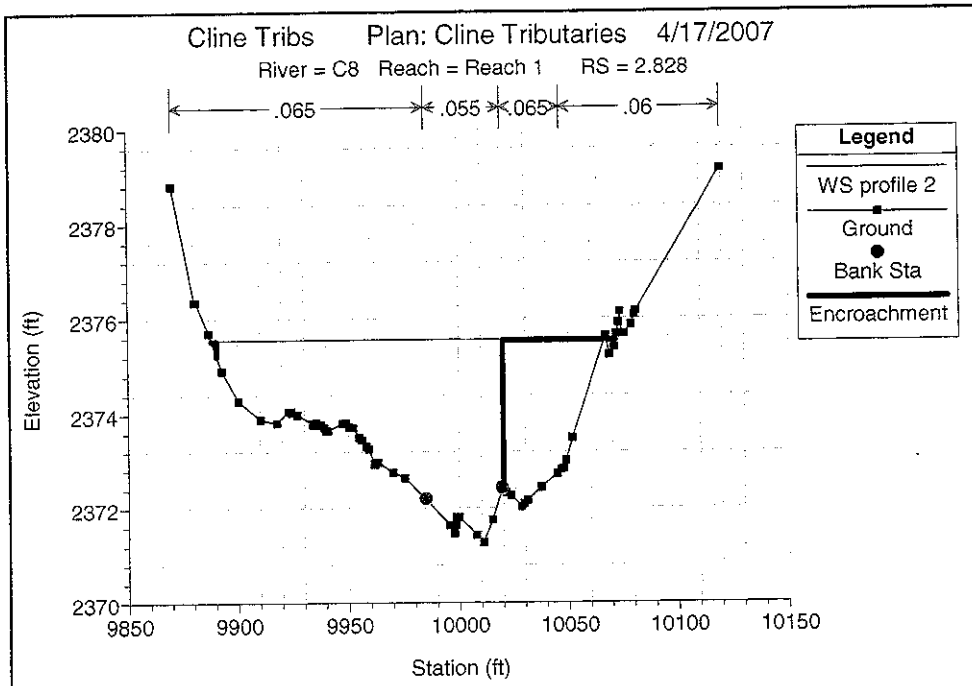

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C6 Reach = Reach 3 RS = 0.134
.06
.05
.06
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

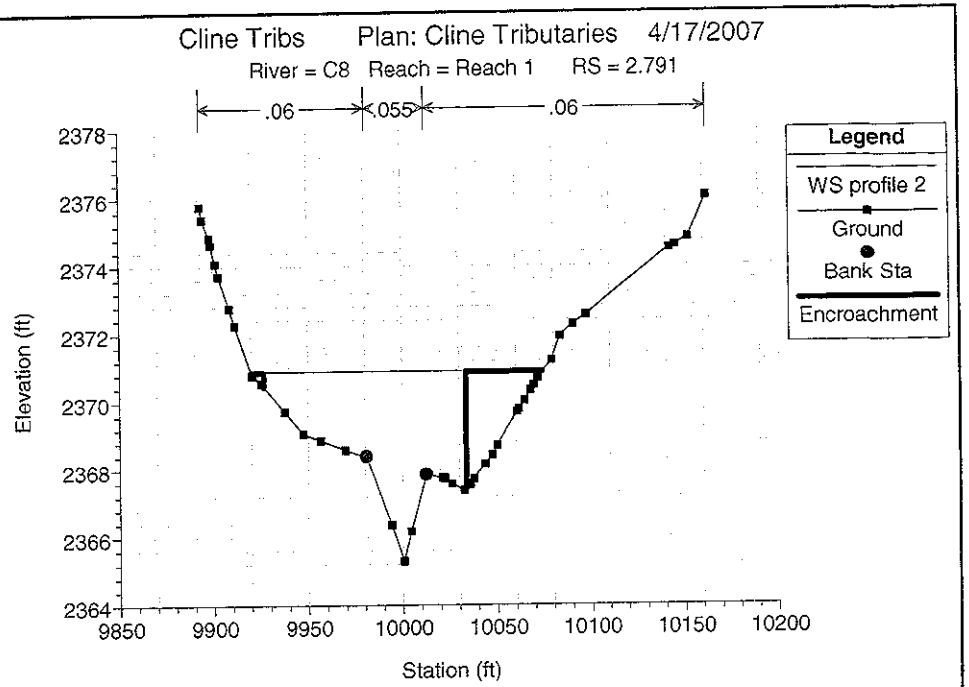

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.959
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

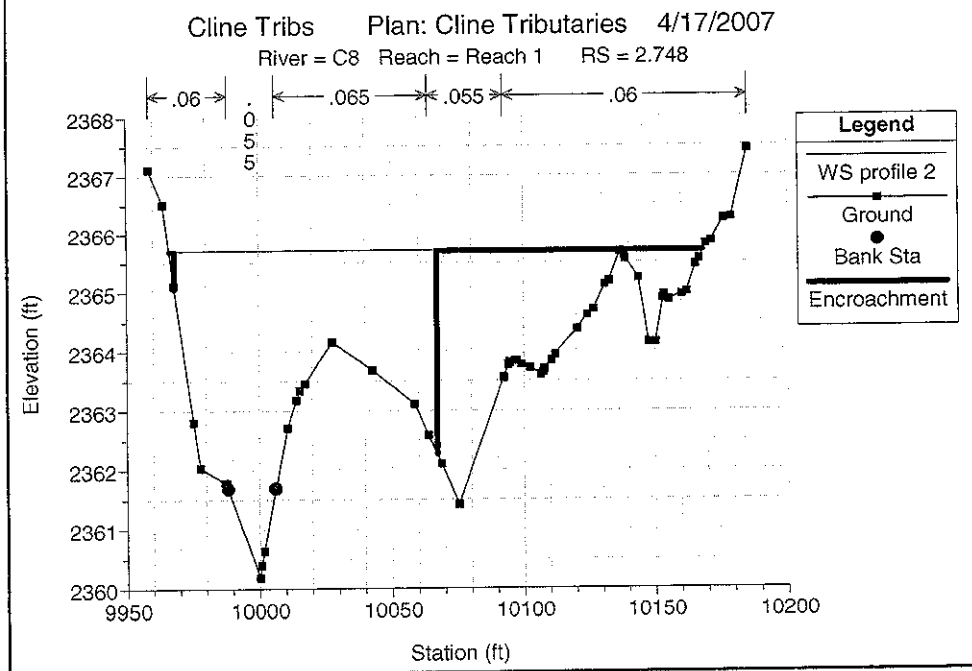

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.928
.06
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

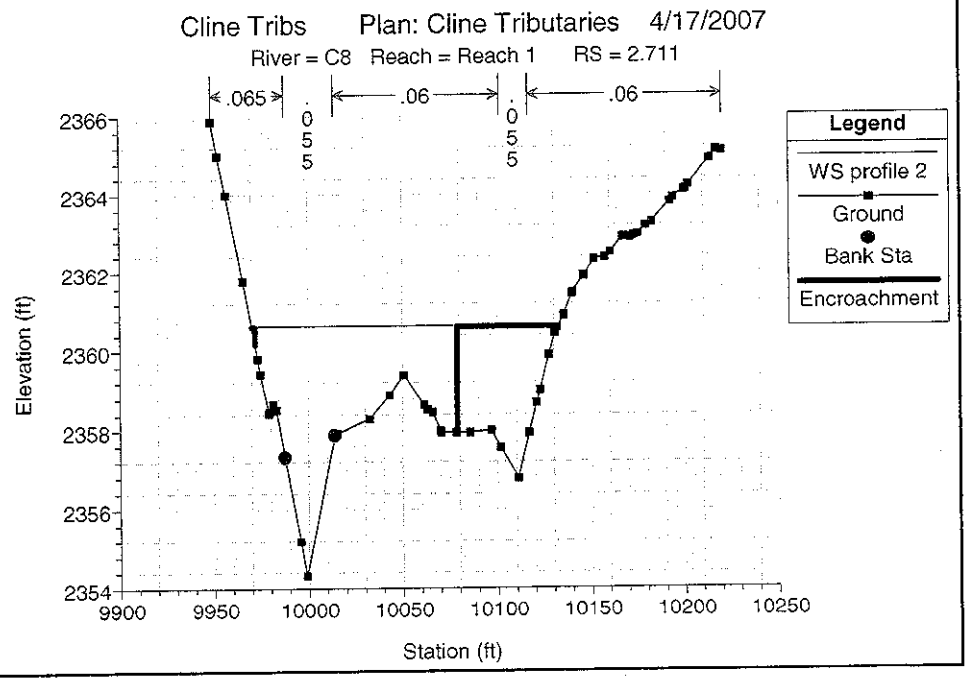

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.904
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

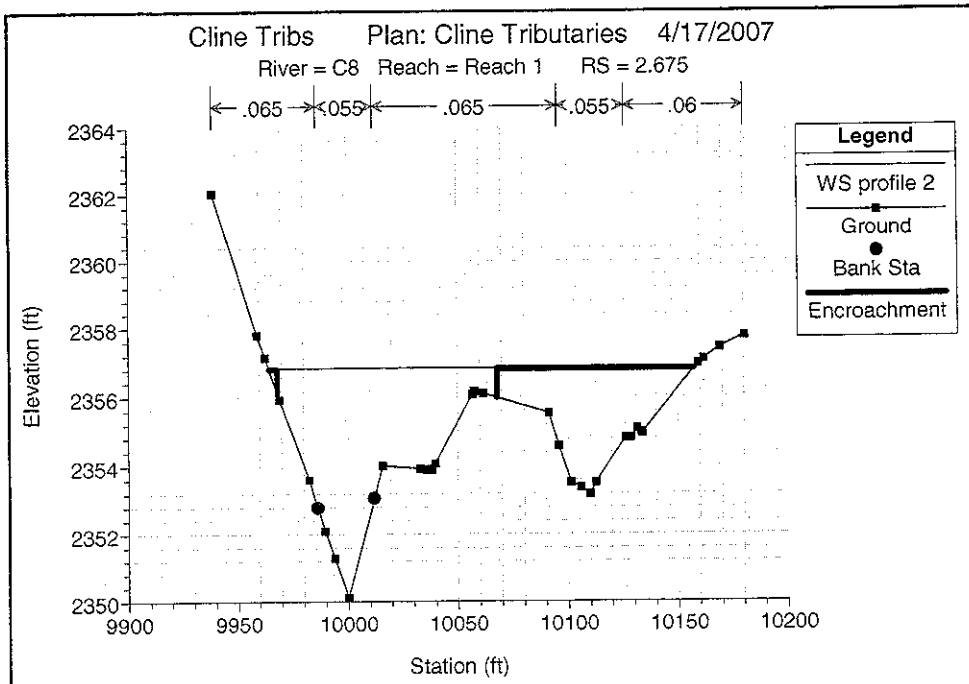

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.870
.06
.055
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

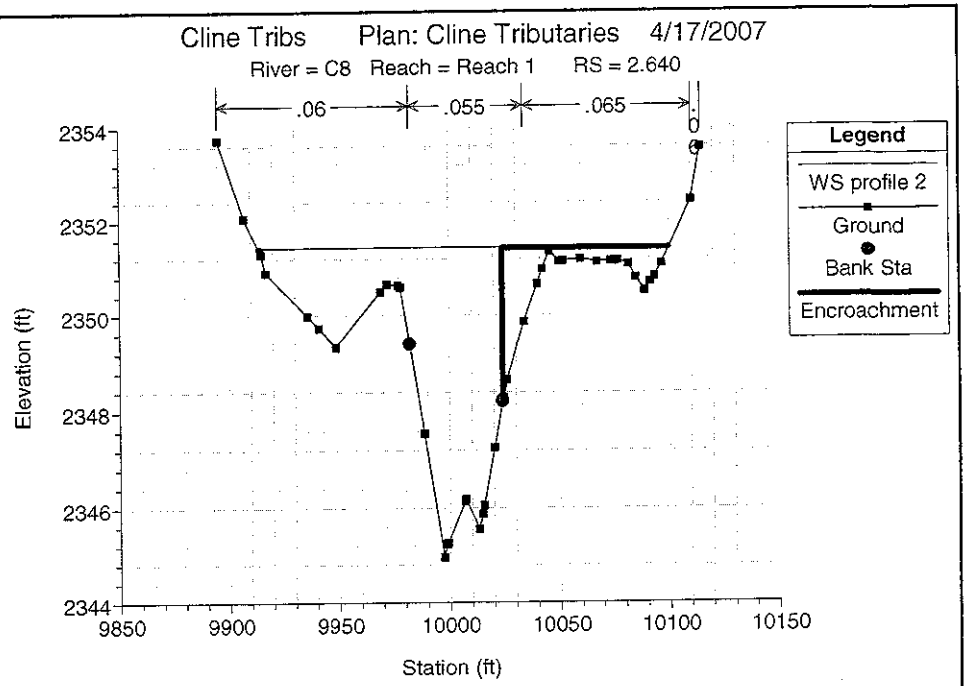

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.828
.065
.055
.065
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

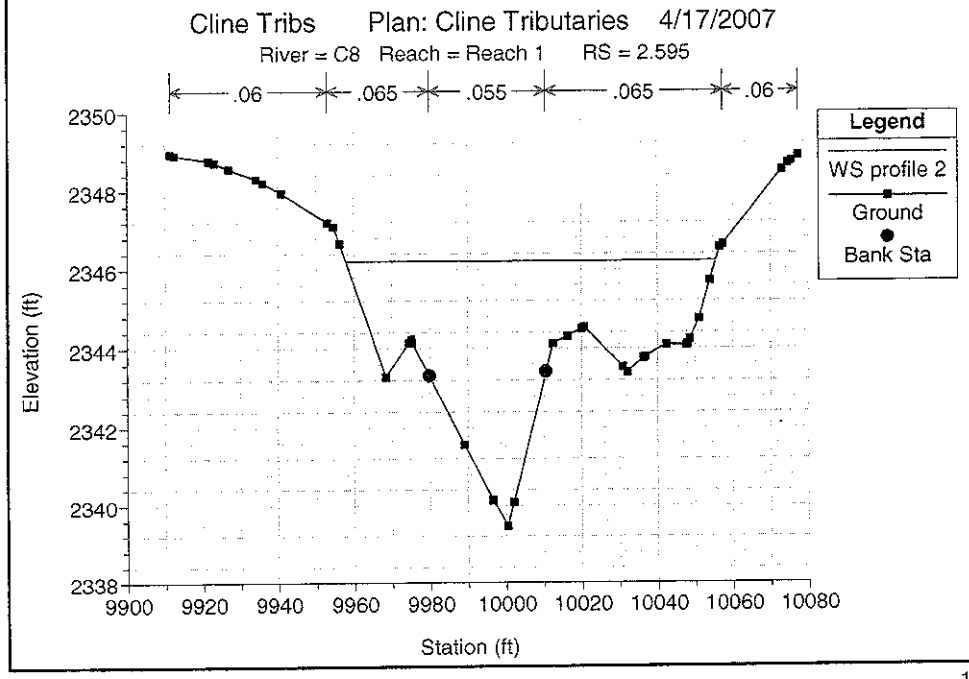

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.791
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

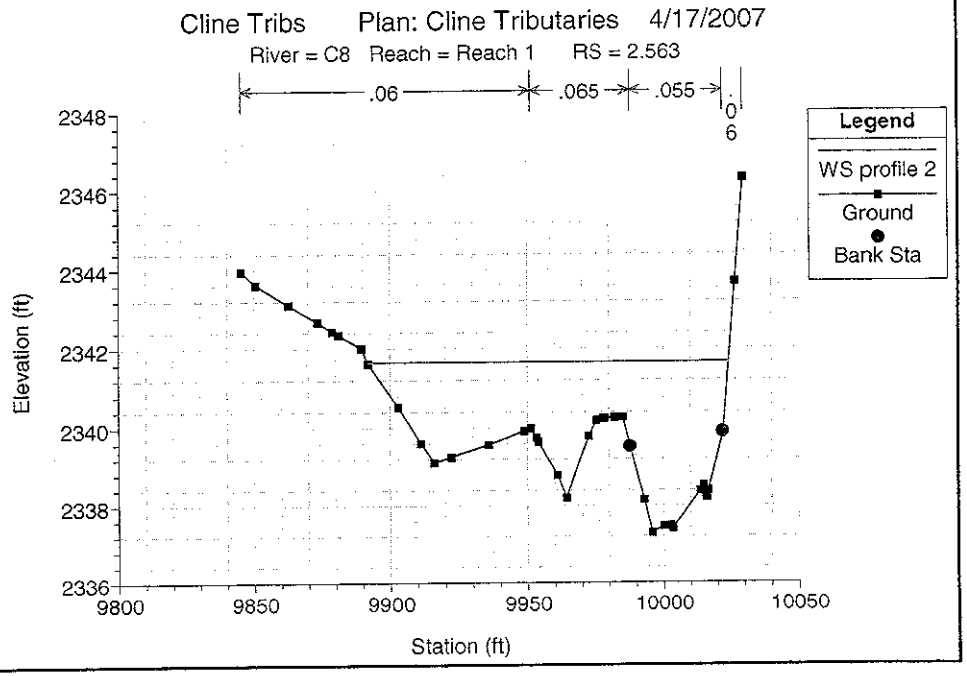

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.748
.06
.055
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

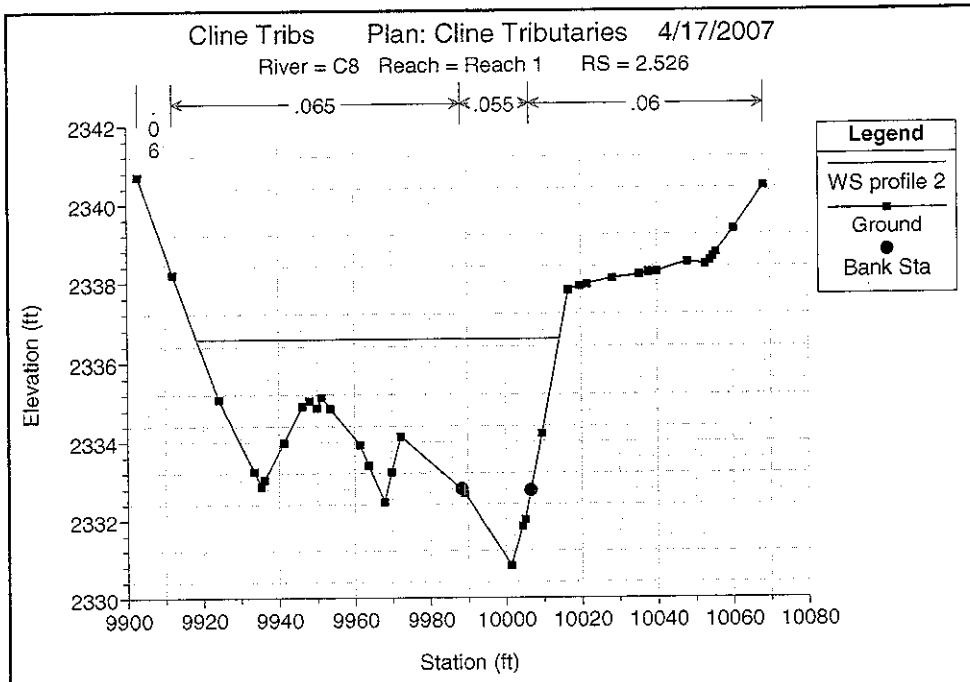

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.711
.065
.055
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

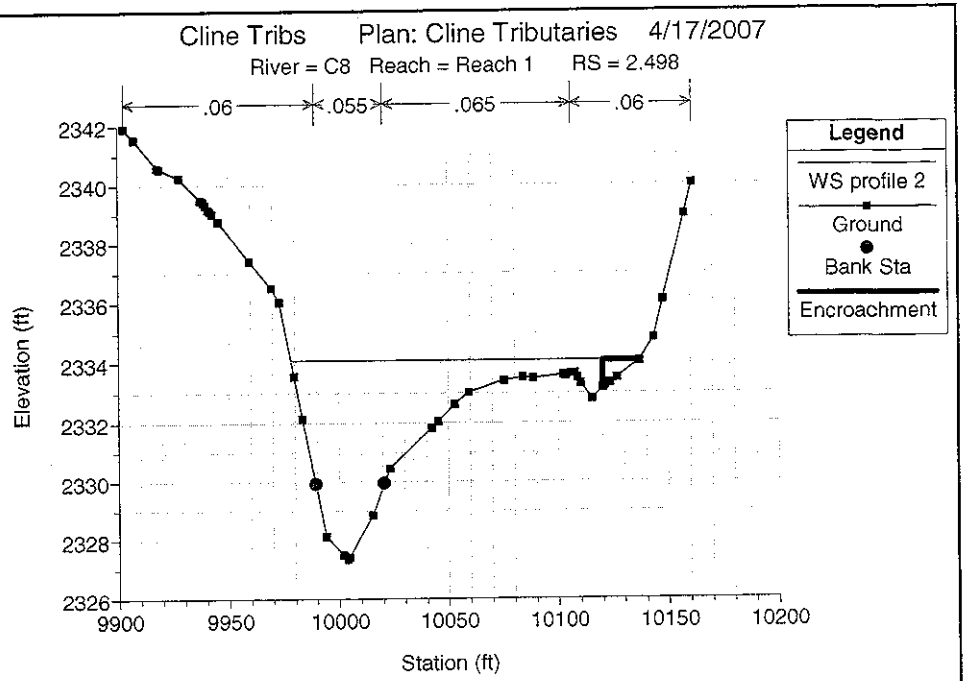

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.675
.065
.055
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

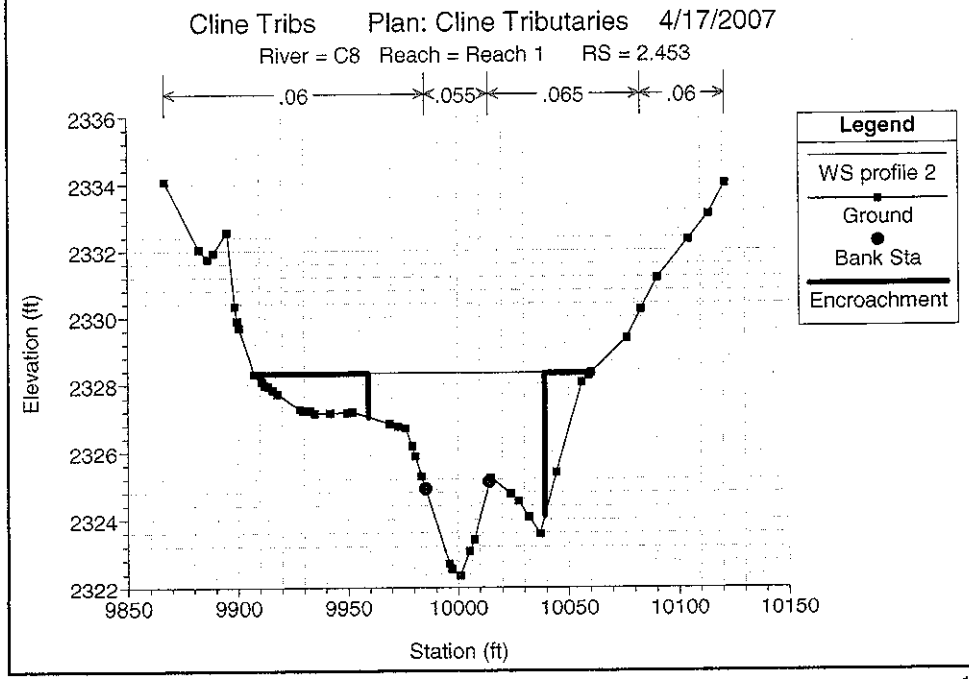

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.640
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

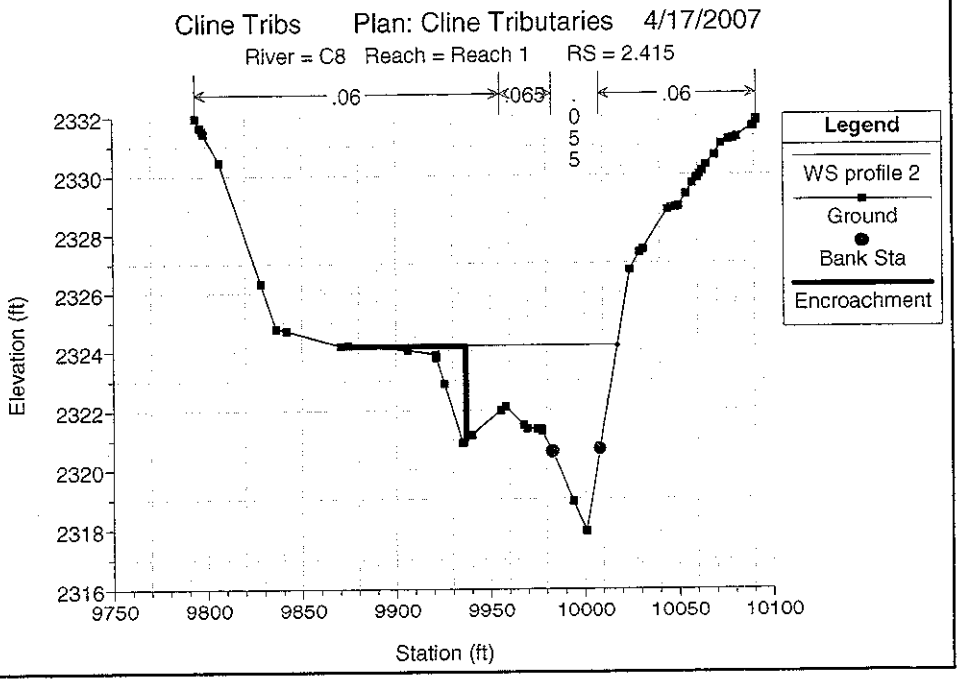

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.595
.06
.065
.055
.065
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

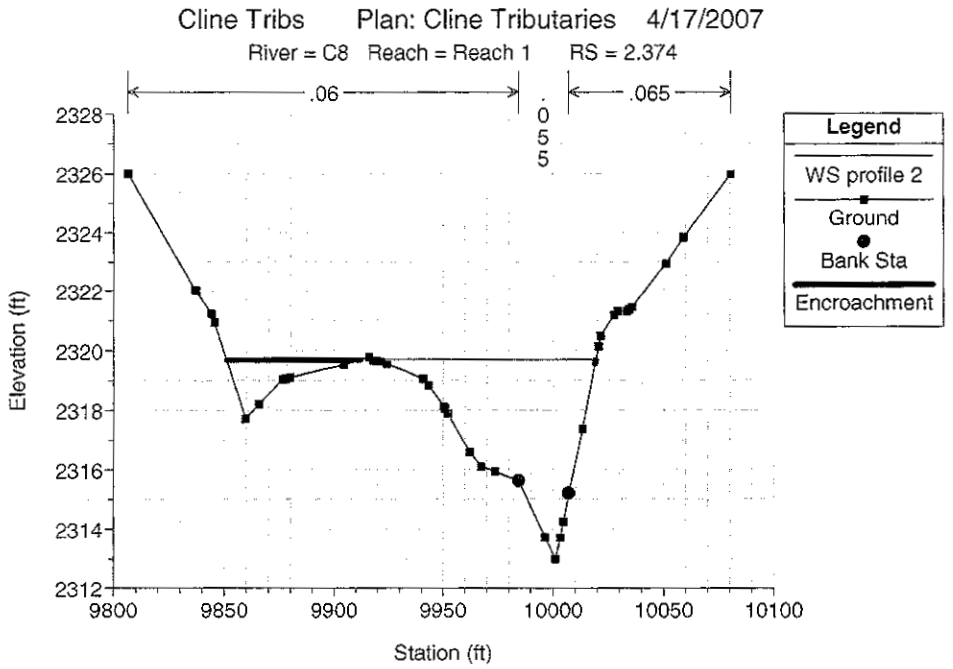

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.563
.06
.065
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

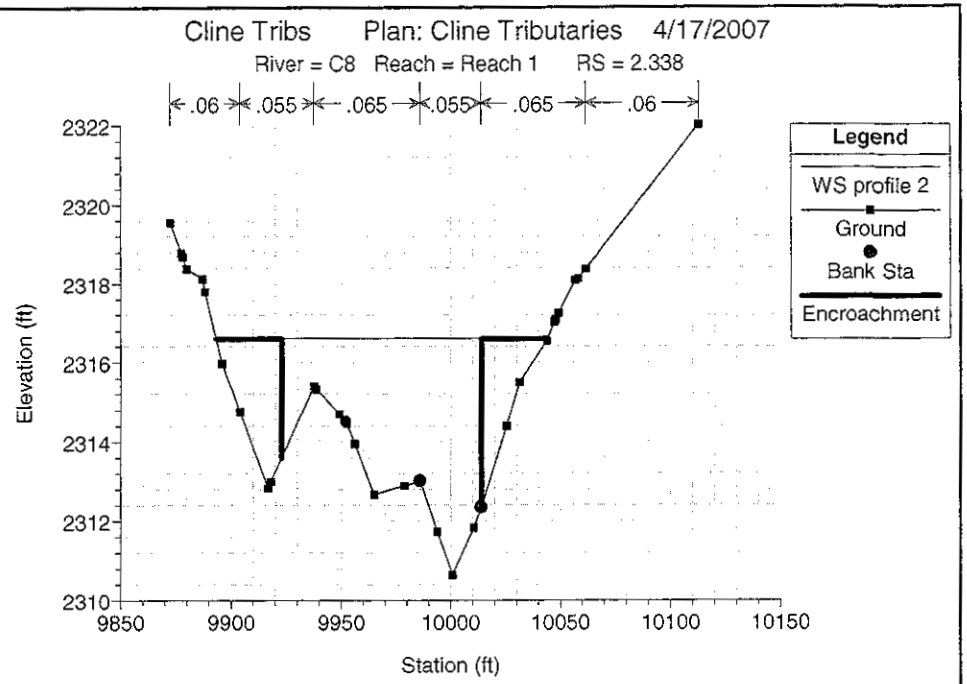

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.526
.065
.055
.06
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

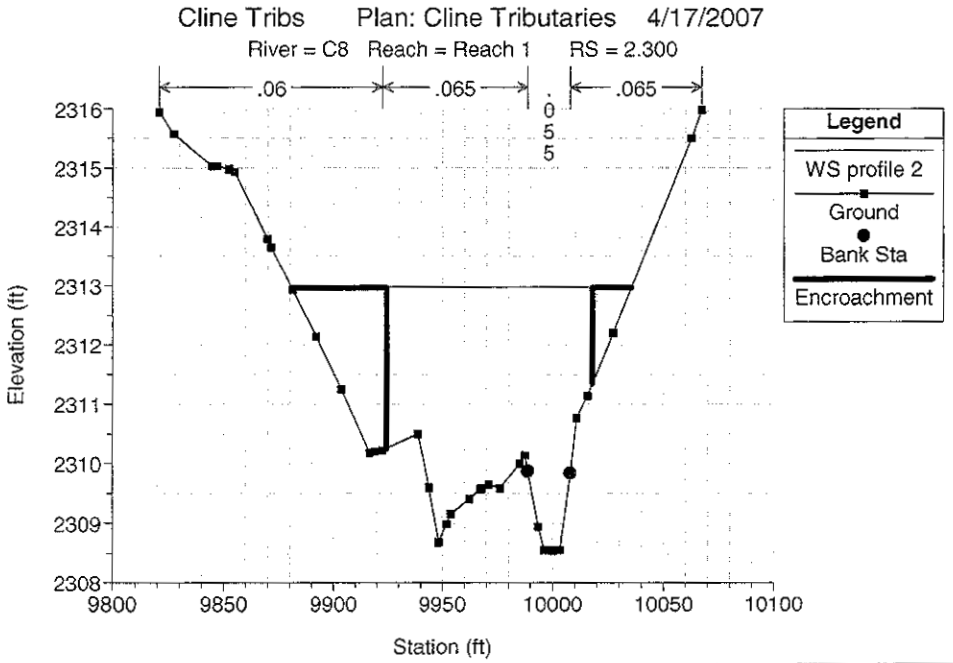

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.498
.06
.055
.065
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

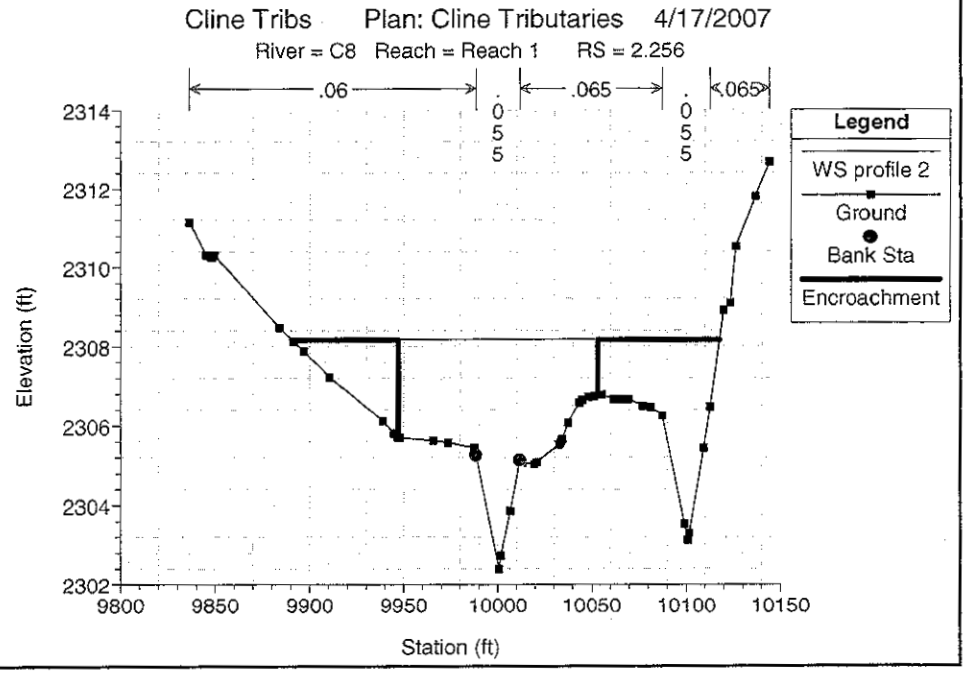

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.453
.06
.055
.065
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

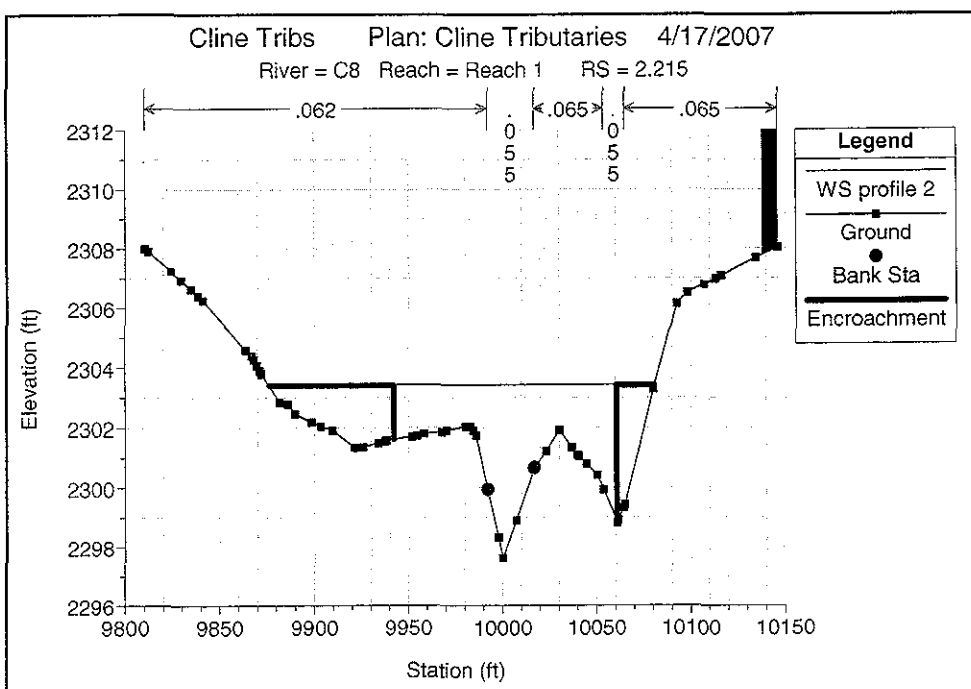

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.415
.06
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

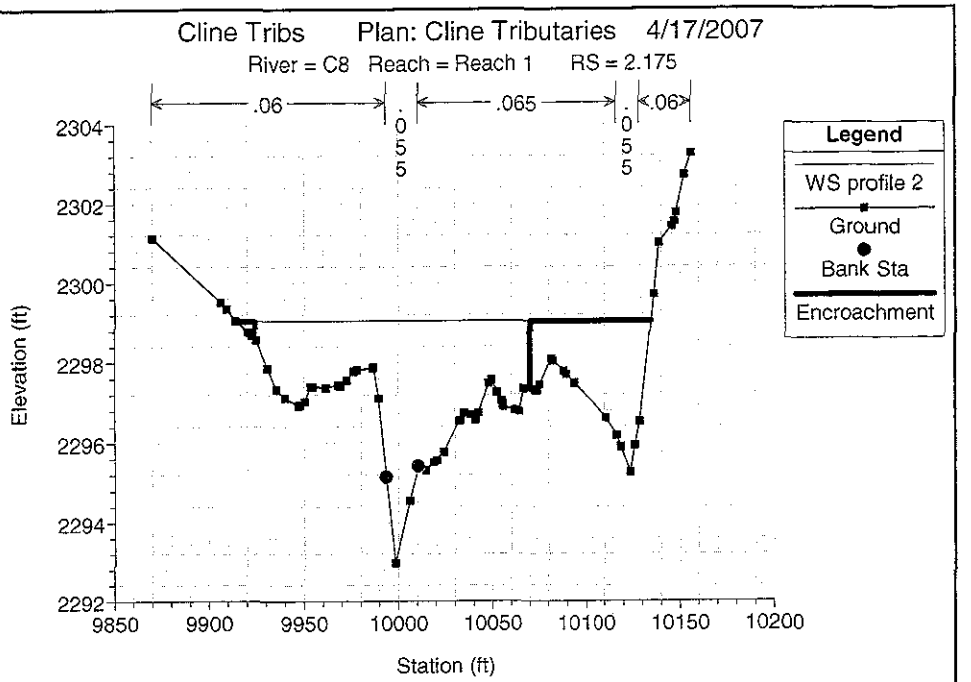

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.374
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

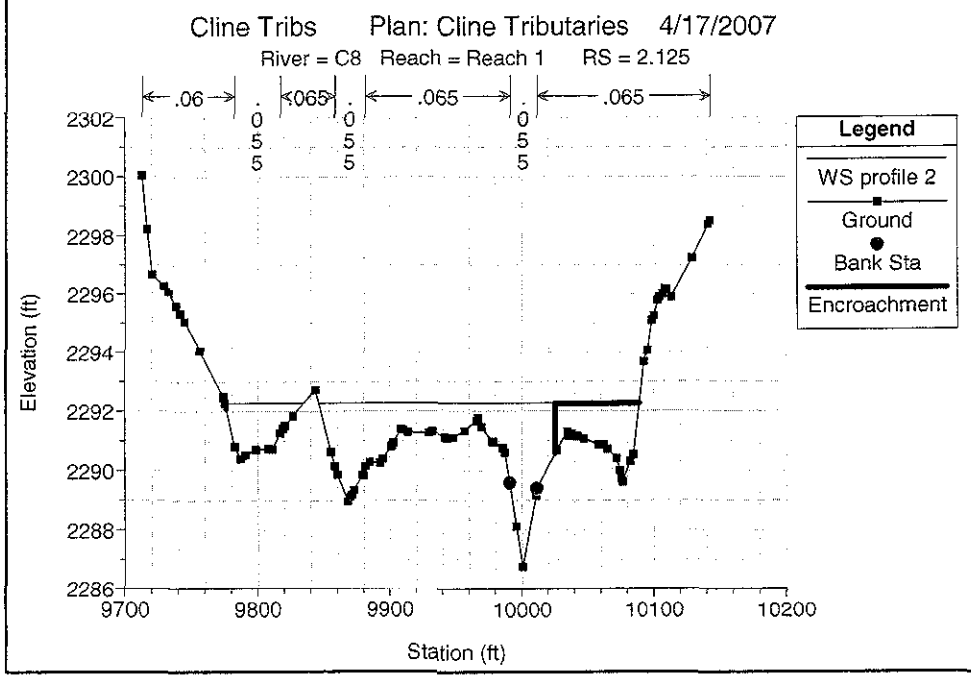

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.338
.06
.055
.065
.055
.065
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

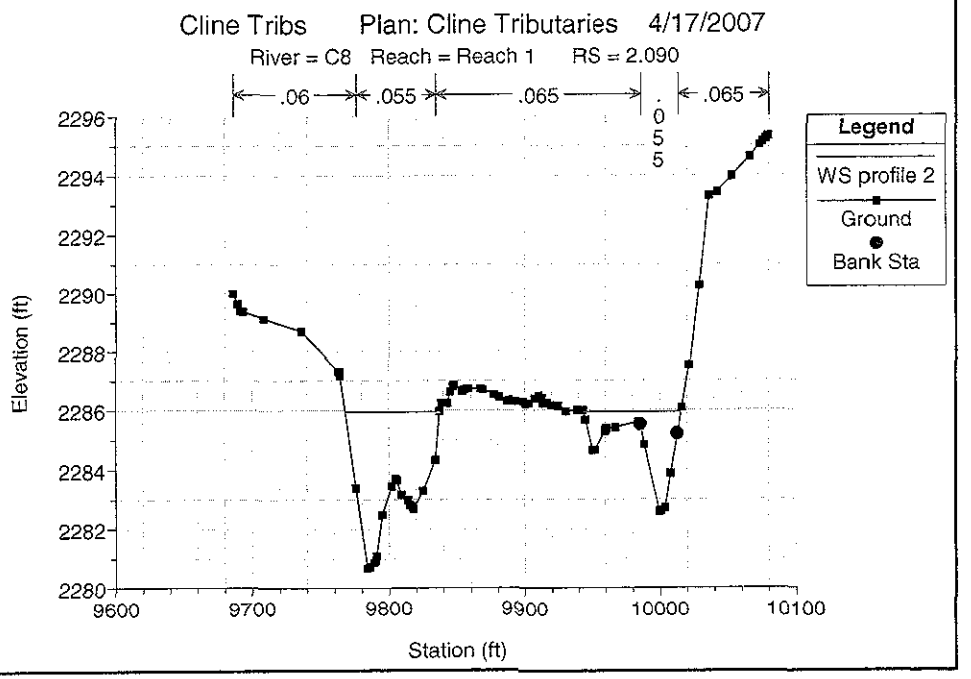

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.300
.06
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

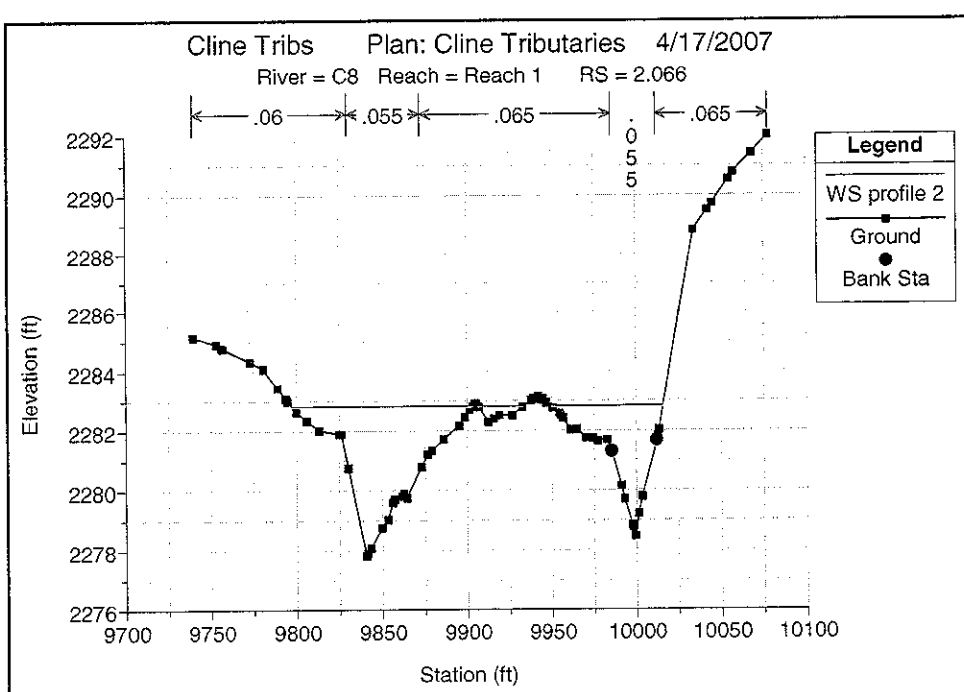

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.256
.06
.055
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

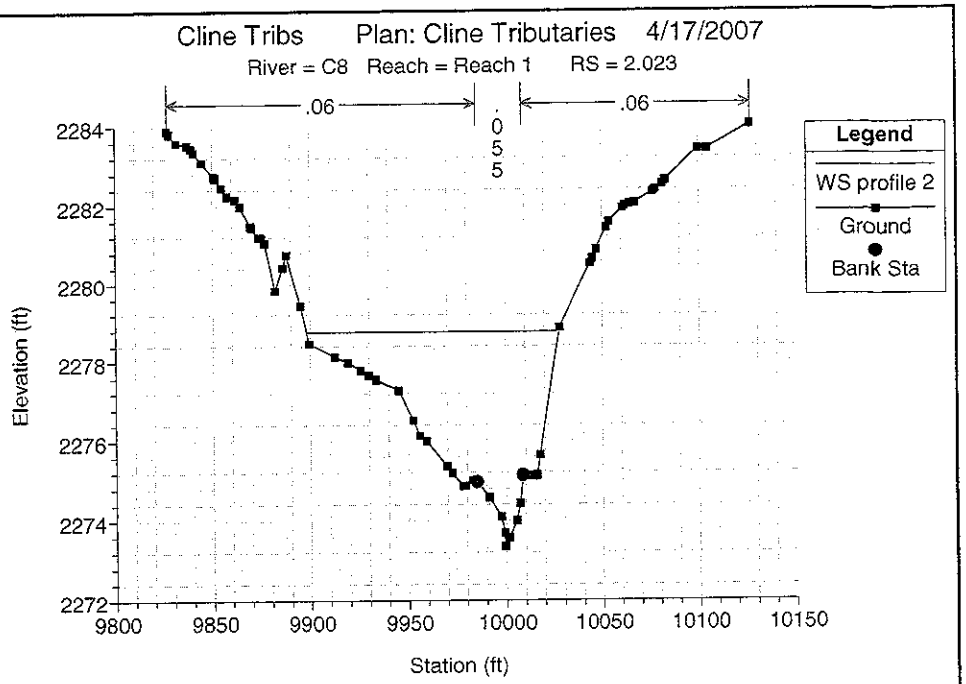

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.215
.062
.065
.065
.055
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

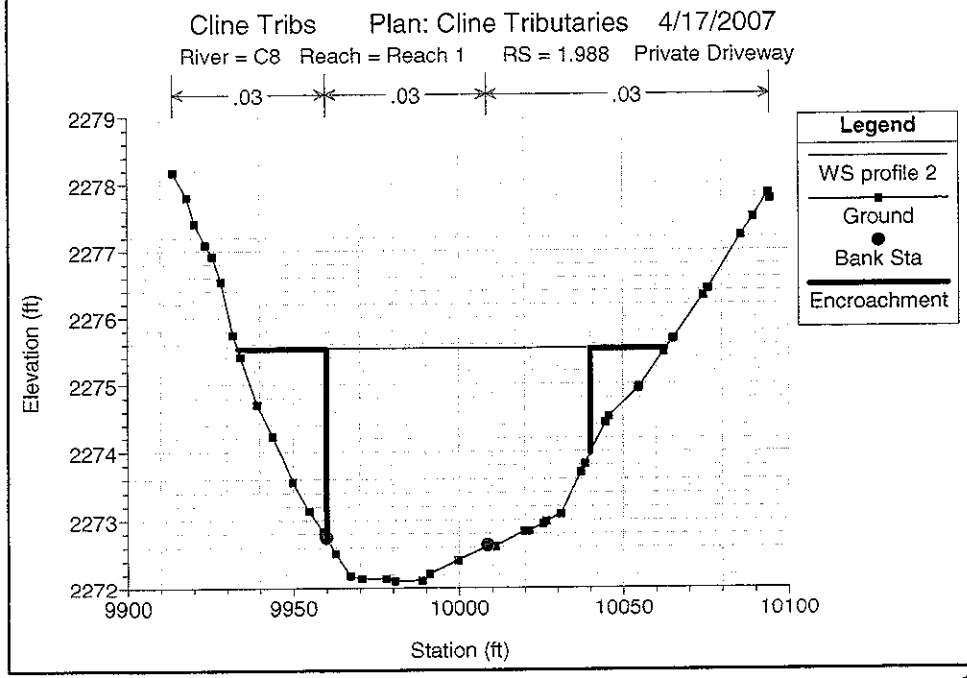

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.175
.06
.065
.06
.055
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

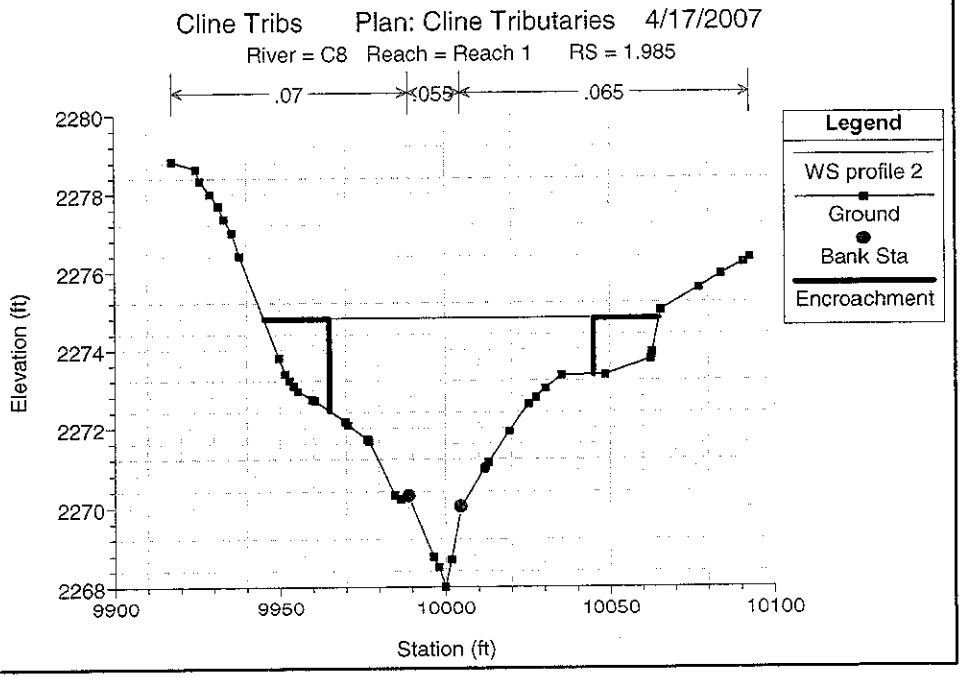

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.125
.06
.065
.065
.065
.055
.055
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

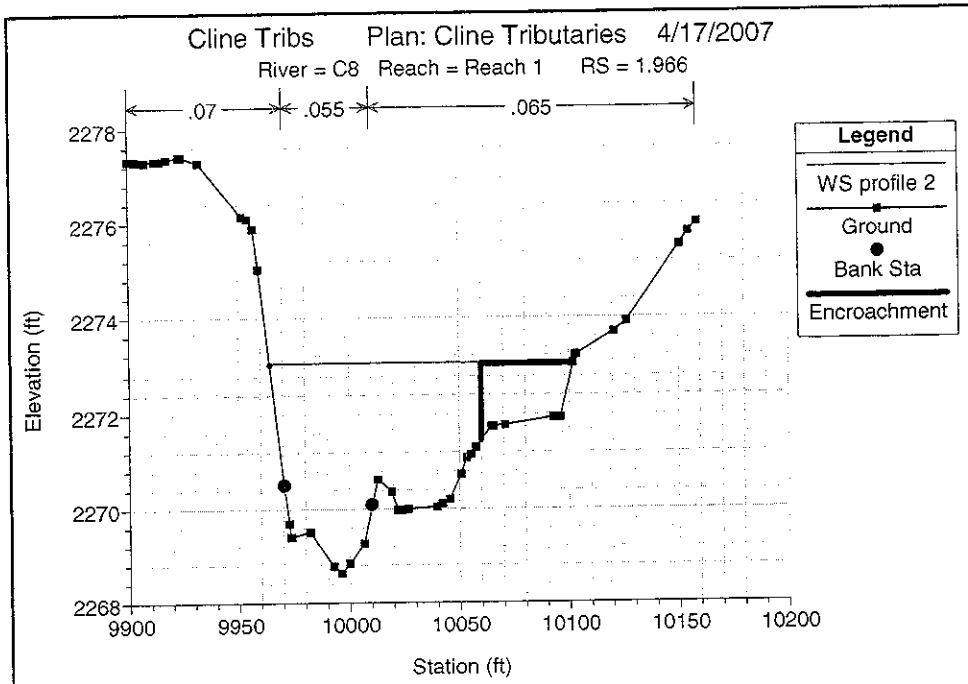

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.090
.06
.055
.065
.065
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

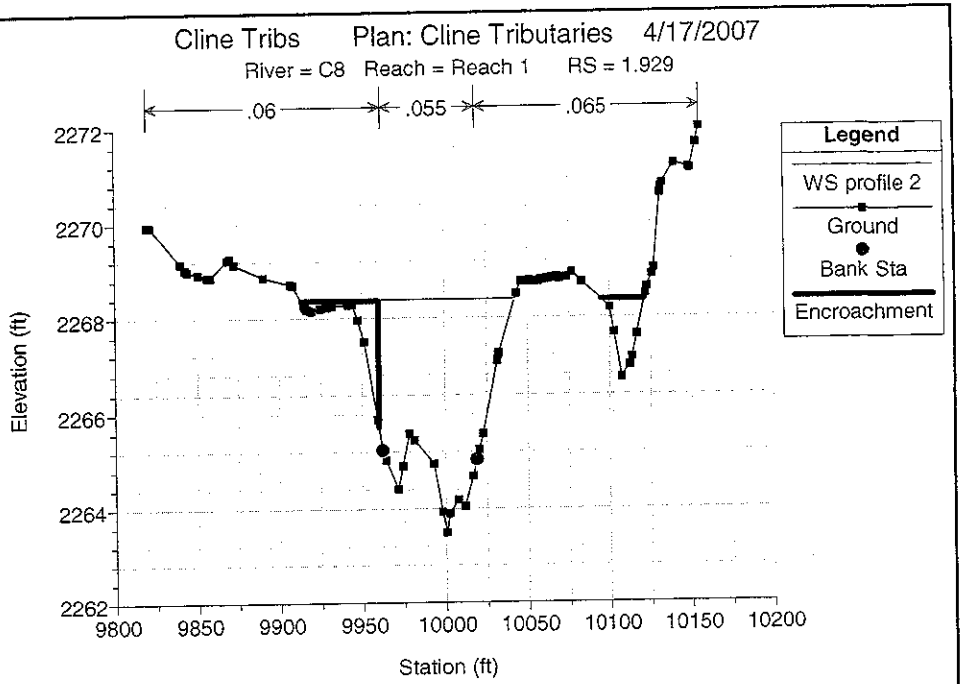

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.066
.06
.055
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

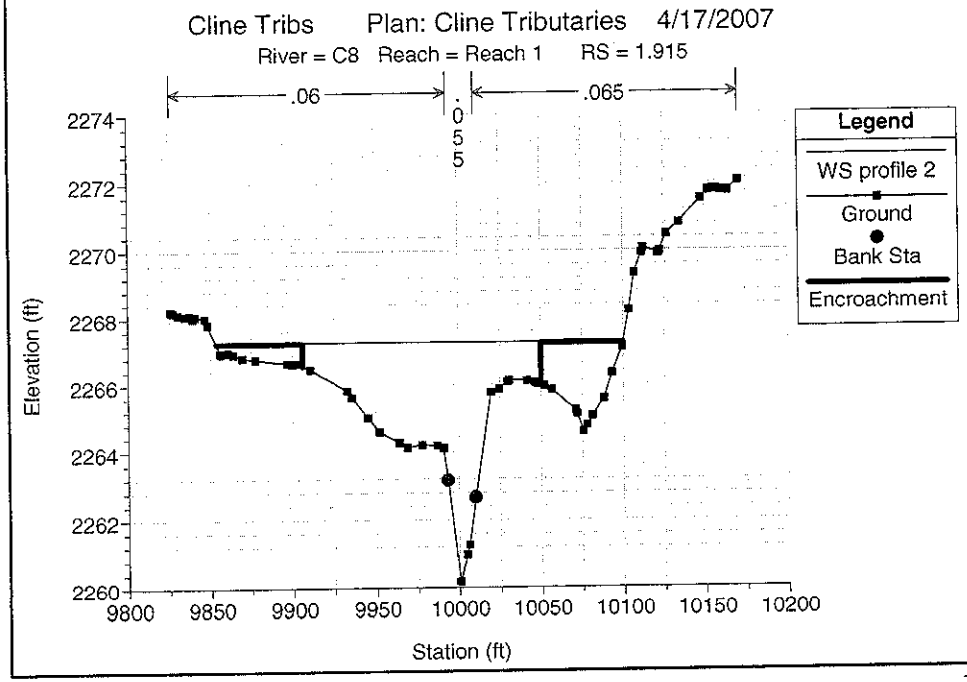

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 2.023
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

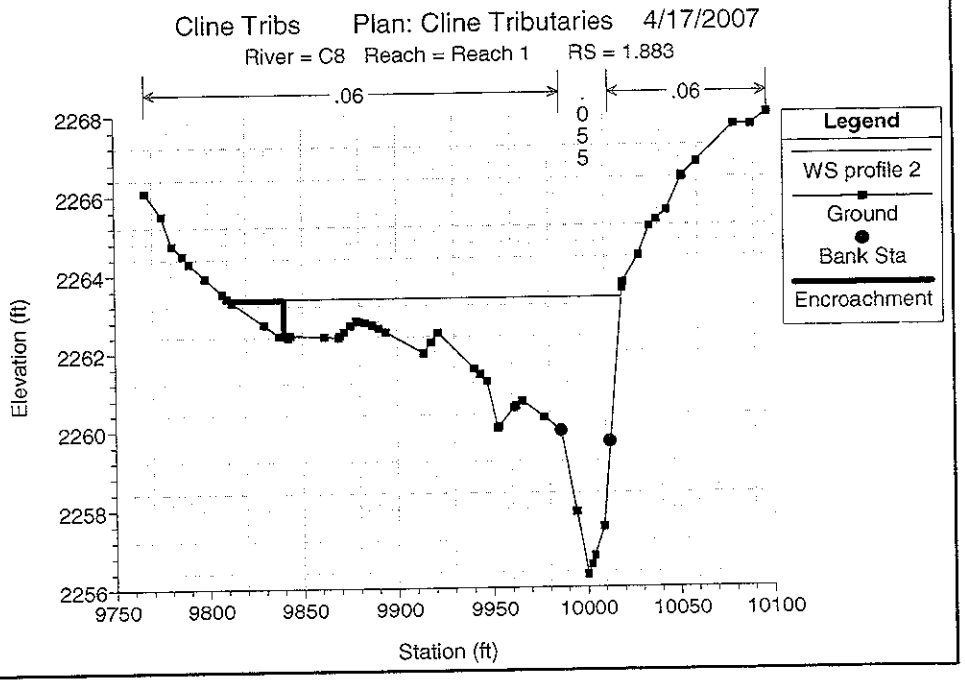

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.988 Private Driveway
.03
.03
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

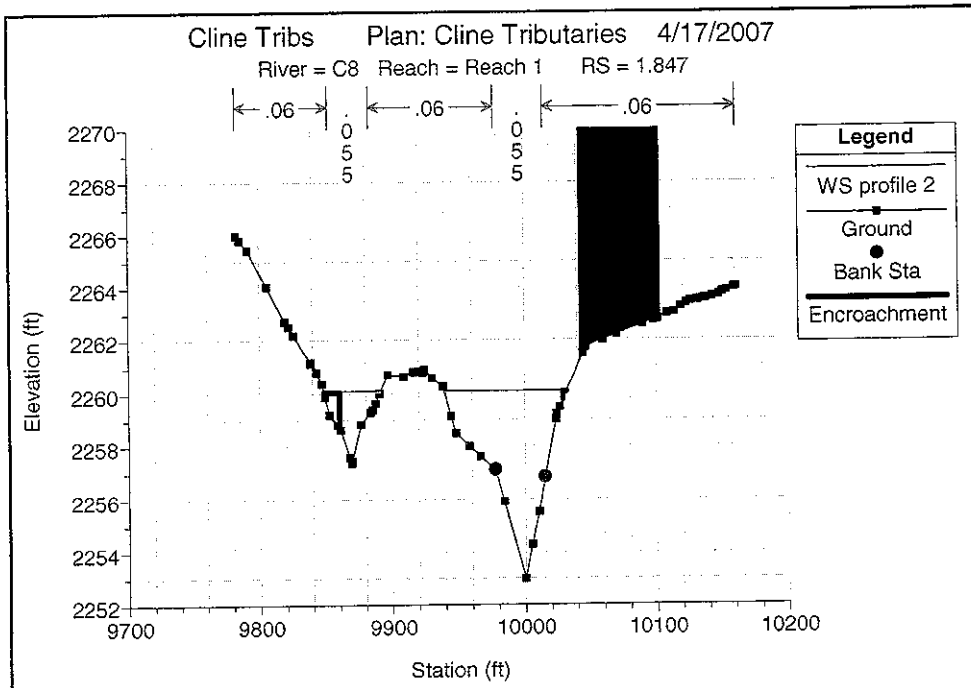

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.985
.07
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

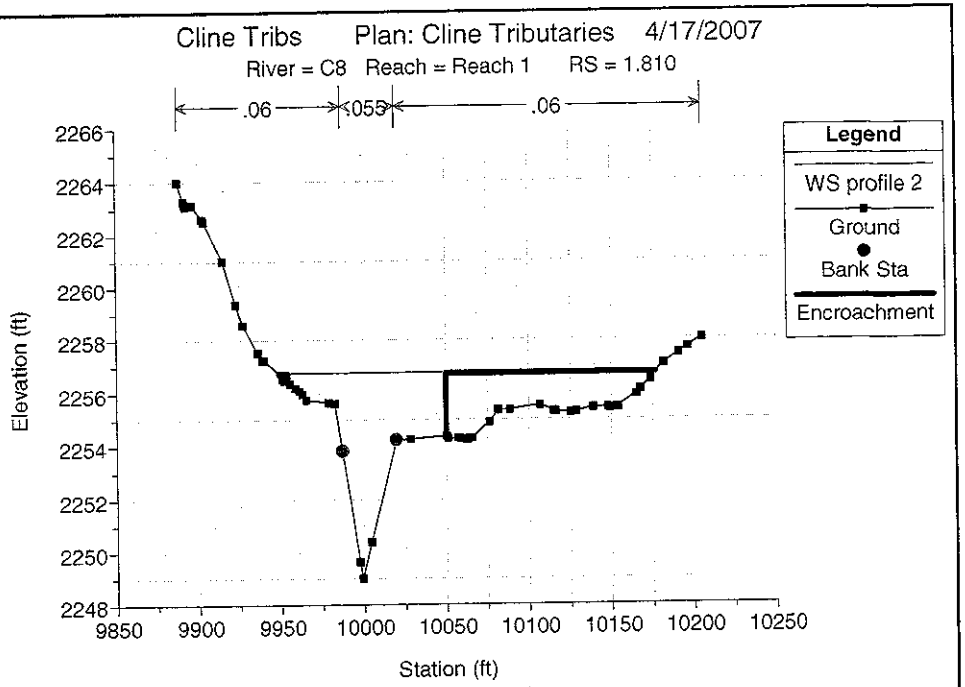

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.966
.07
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

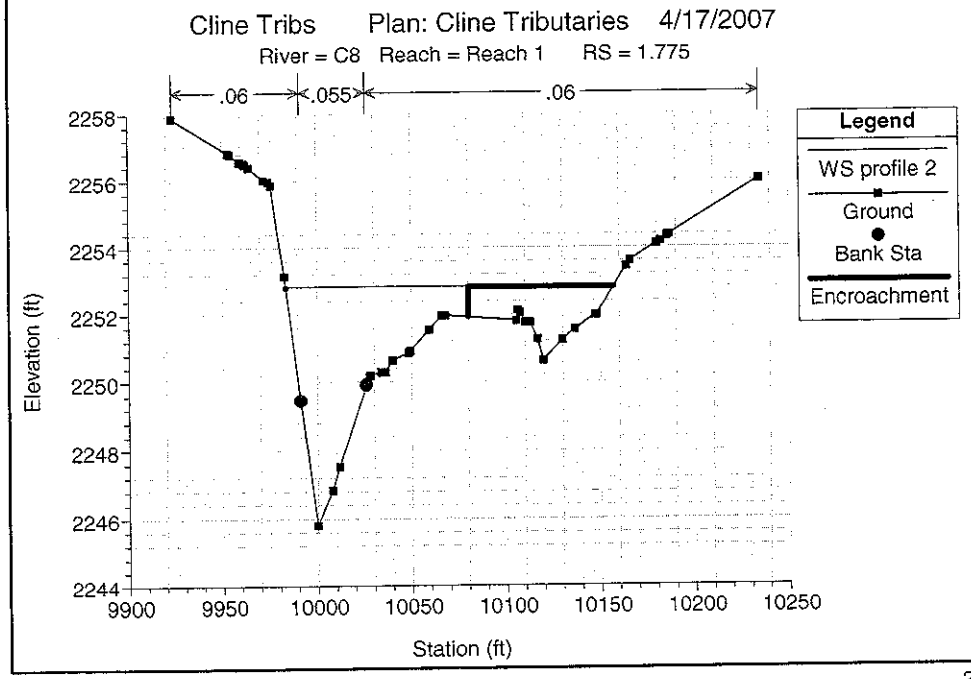

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.929
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

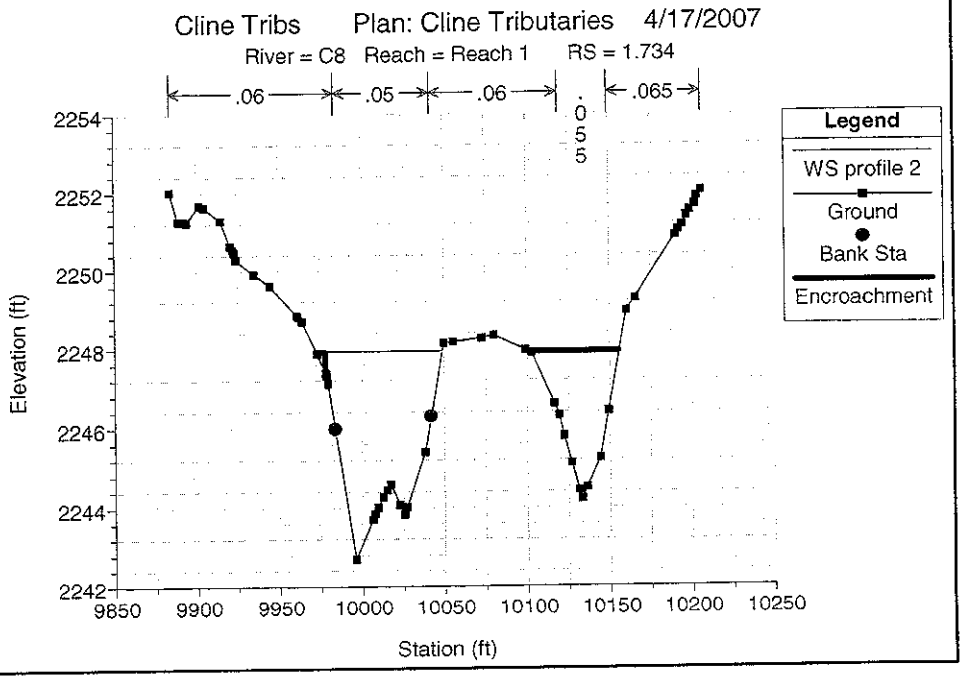

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.915
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

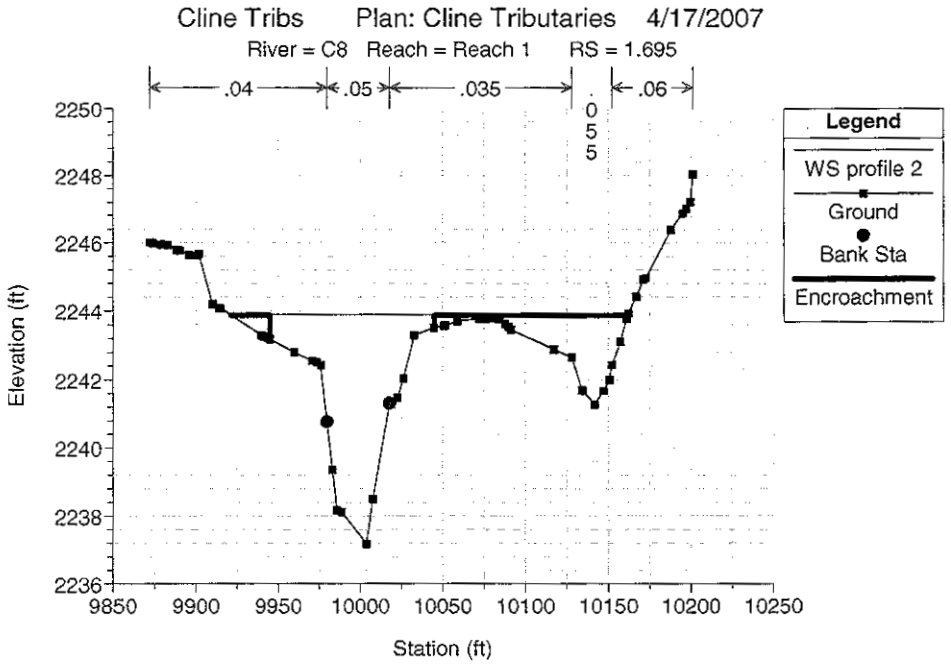

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.883
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

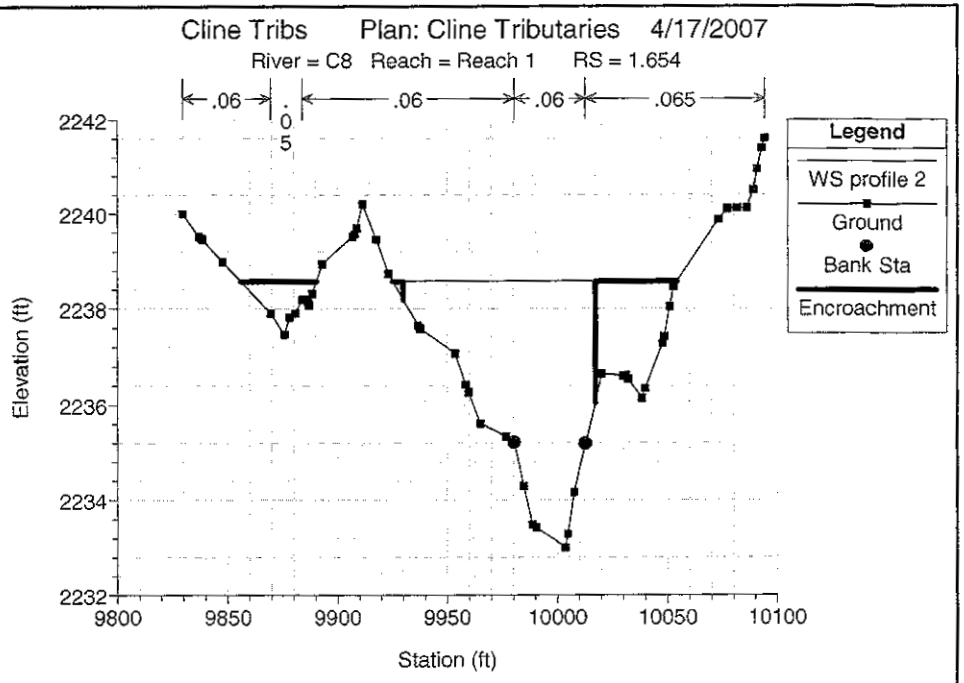

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.847
.06
.055
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

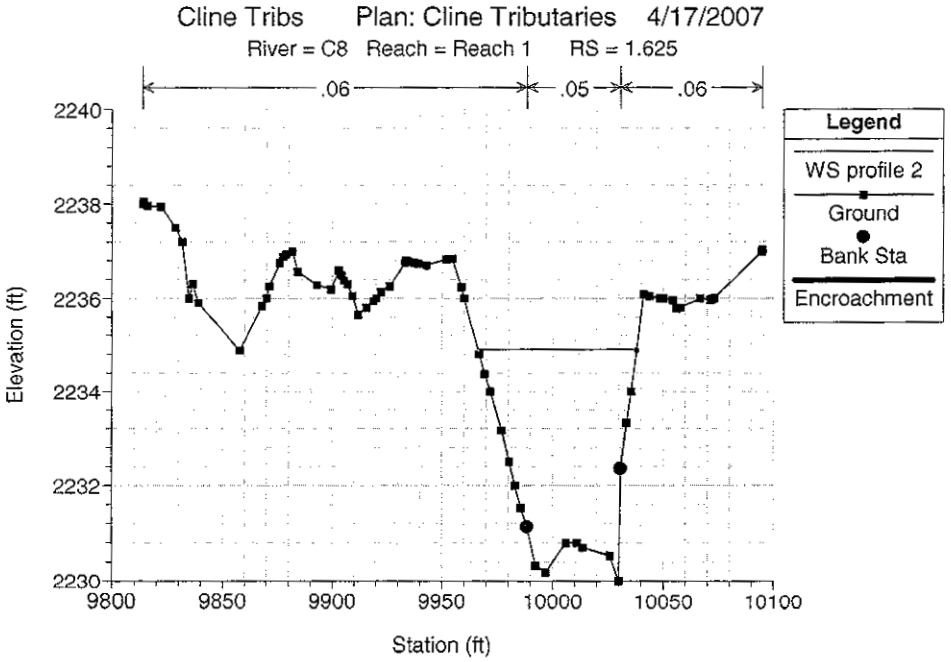

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.810
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

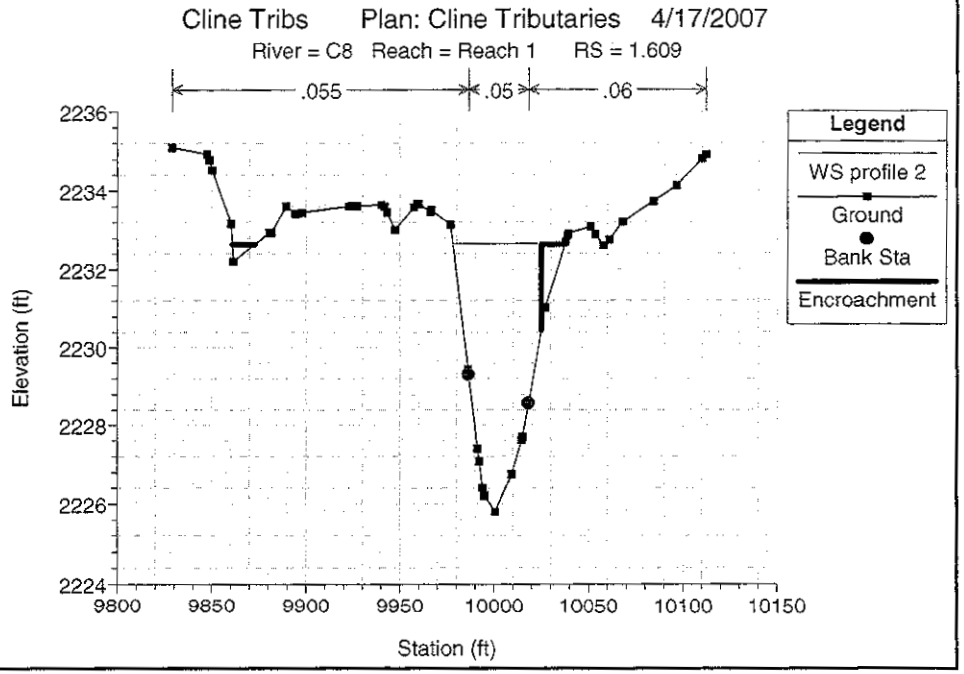

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.775
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

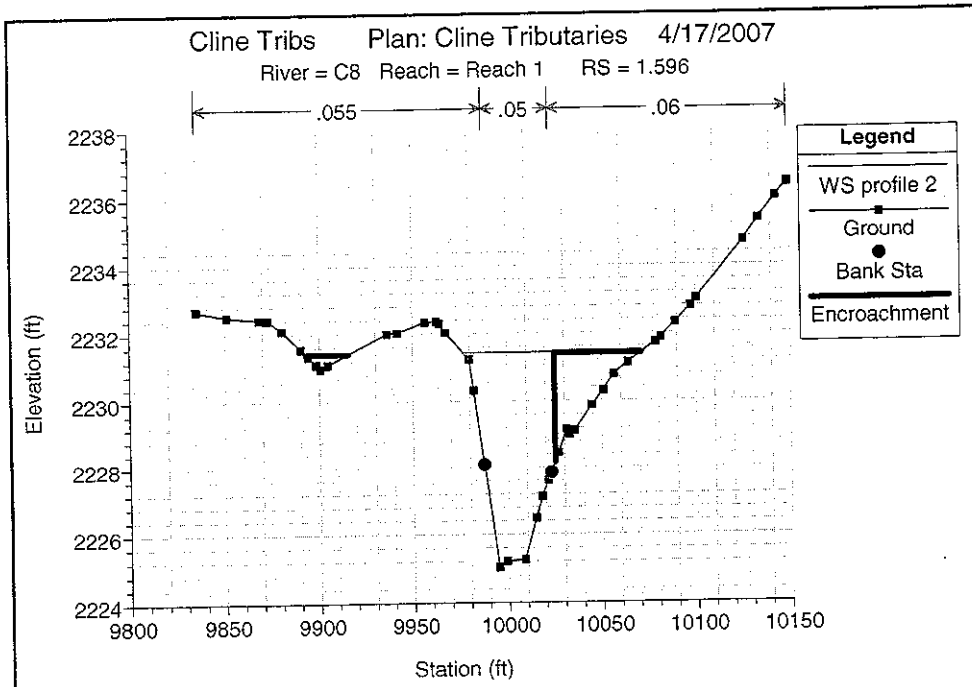

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.734
.06
.05
.06
.065
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

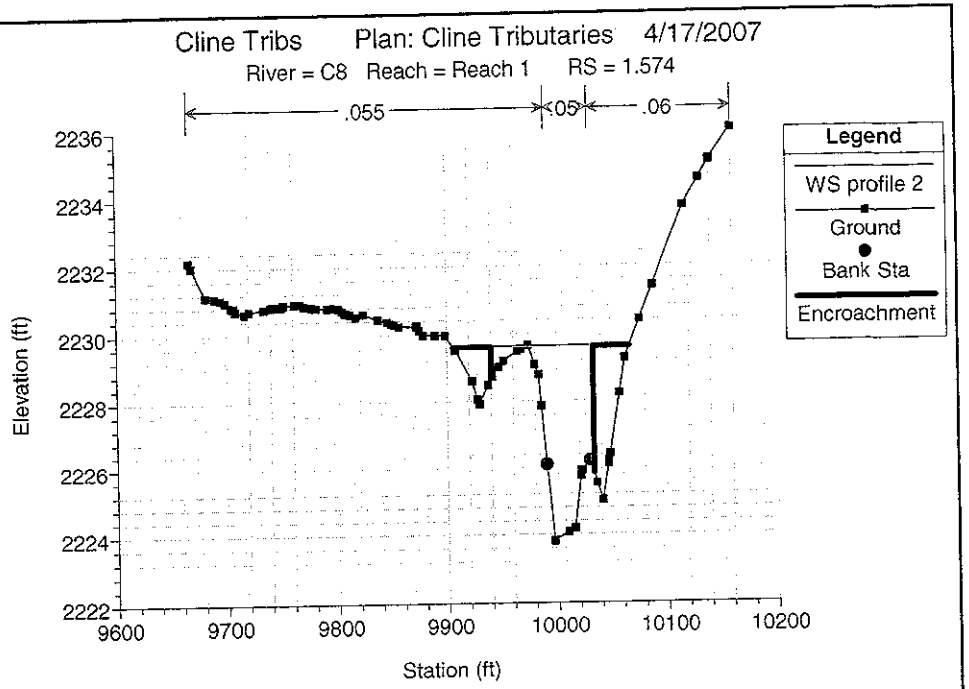

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.695
.04
.05
.035
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

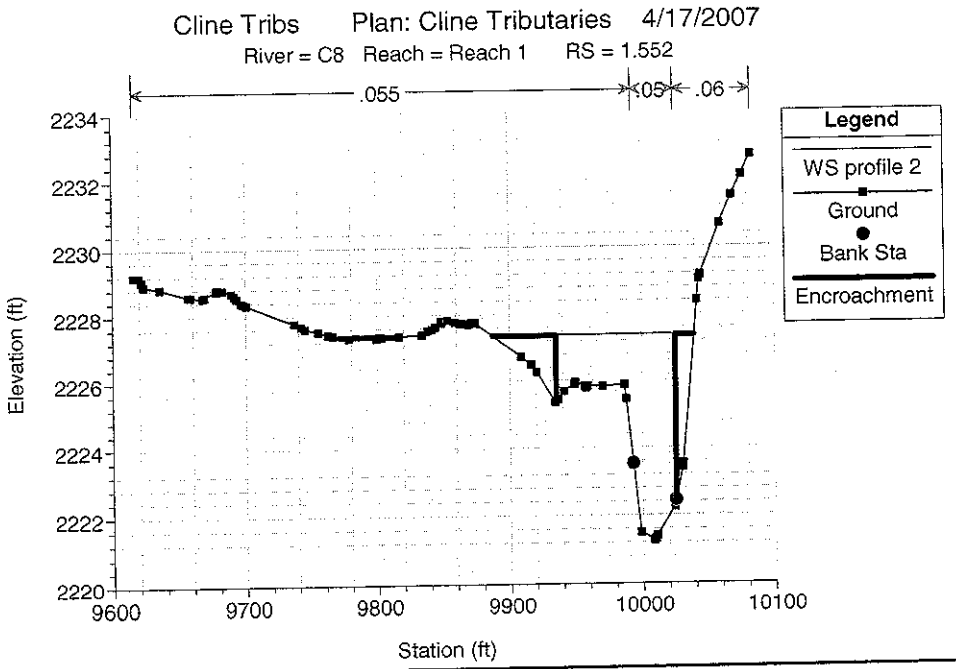

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.654
.06
.05
.06
.06
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

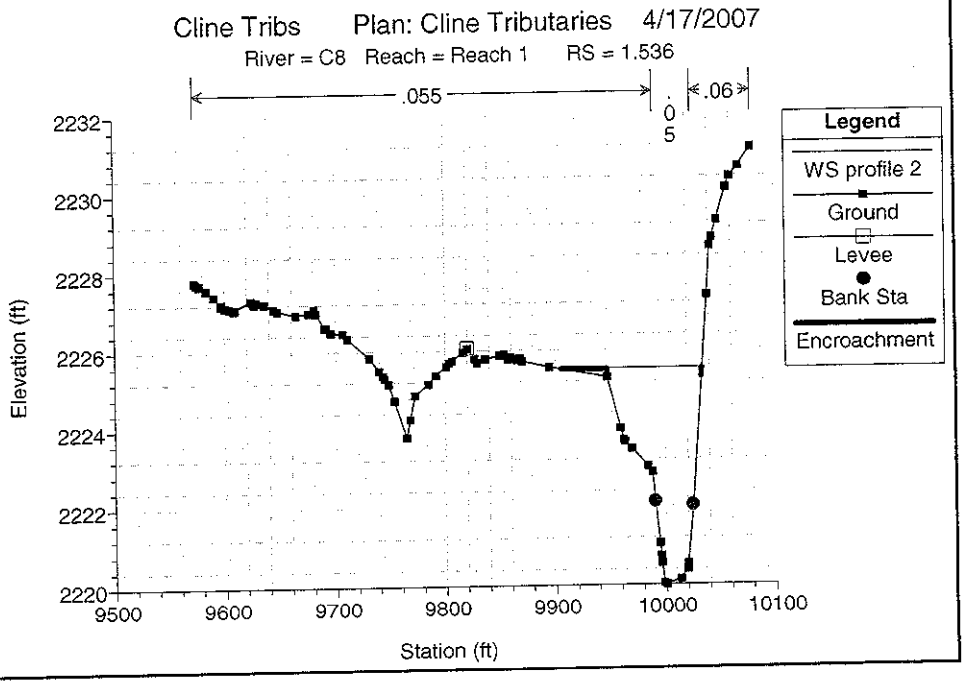

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.625
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

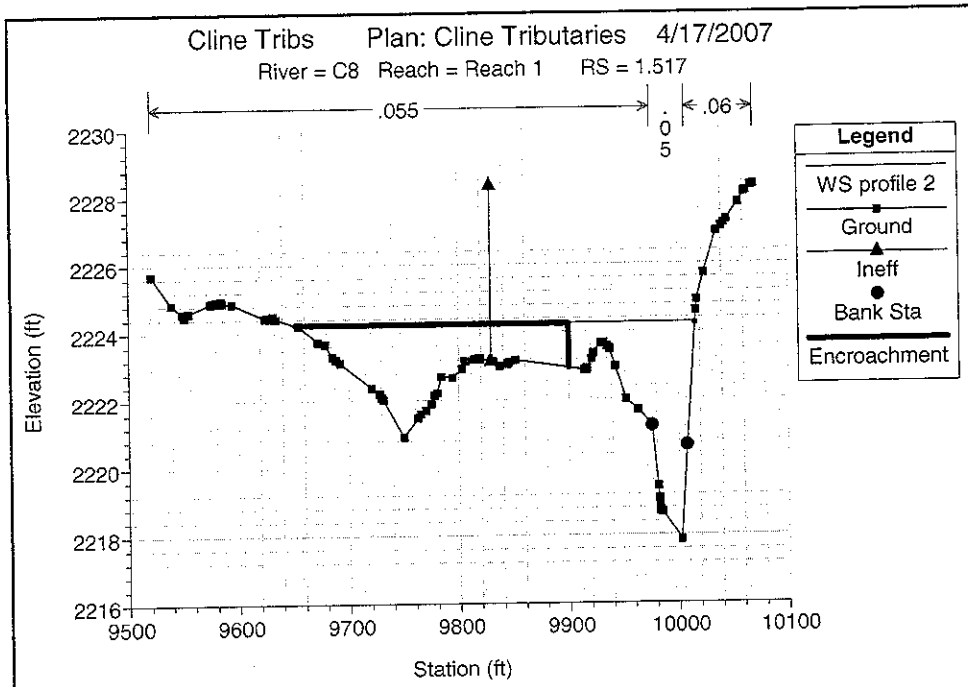

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.609
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

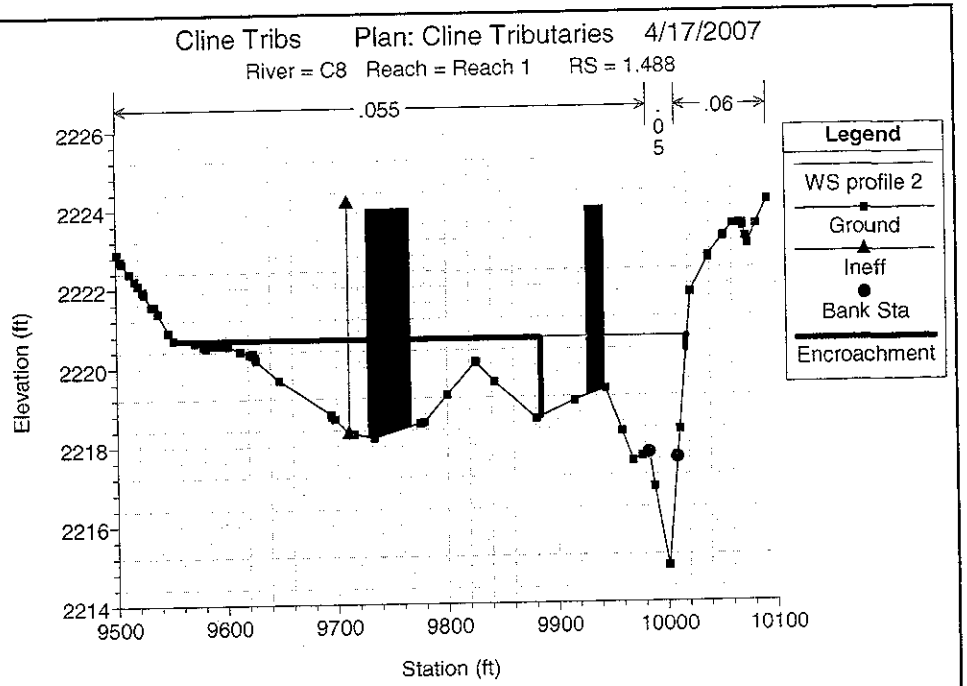

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.596
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

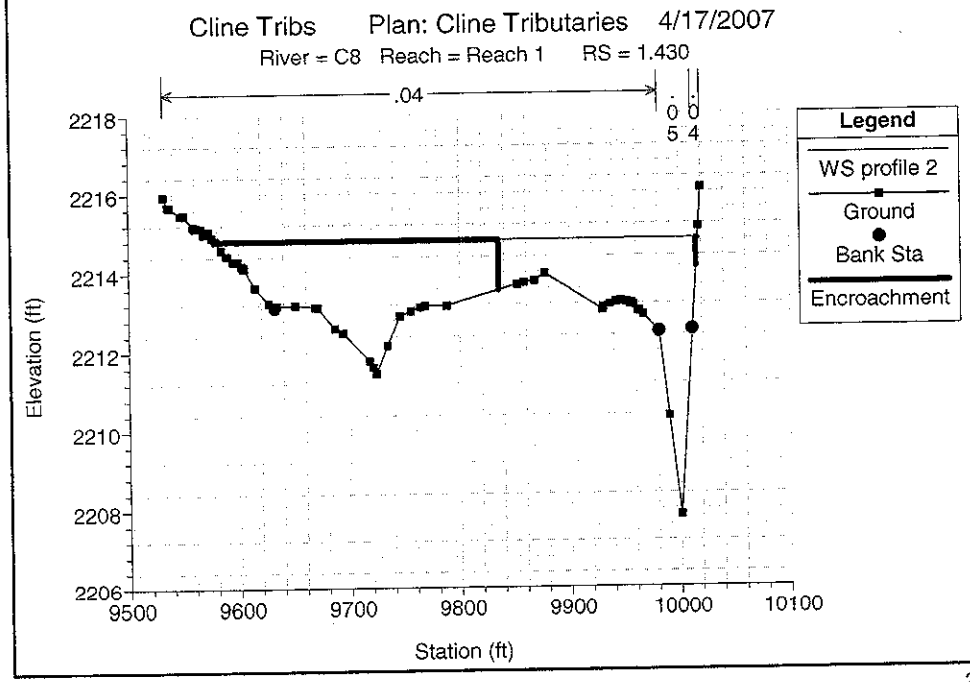

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.574
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

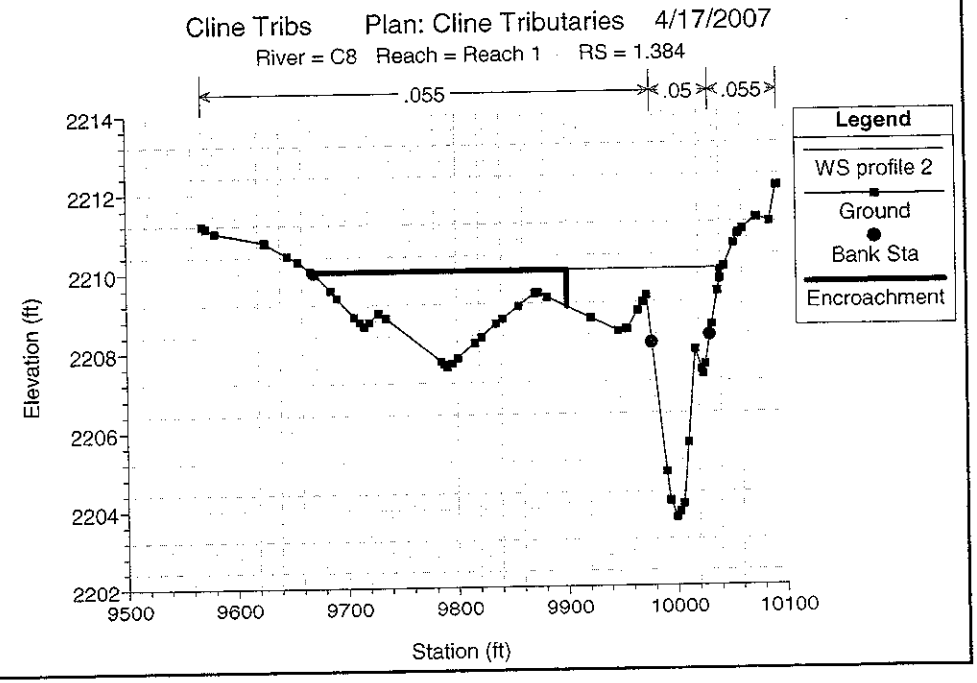

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.552
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

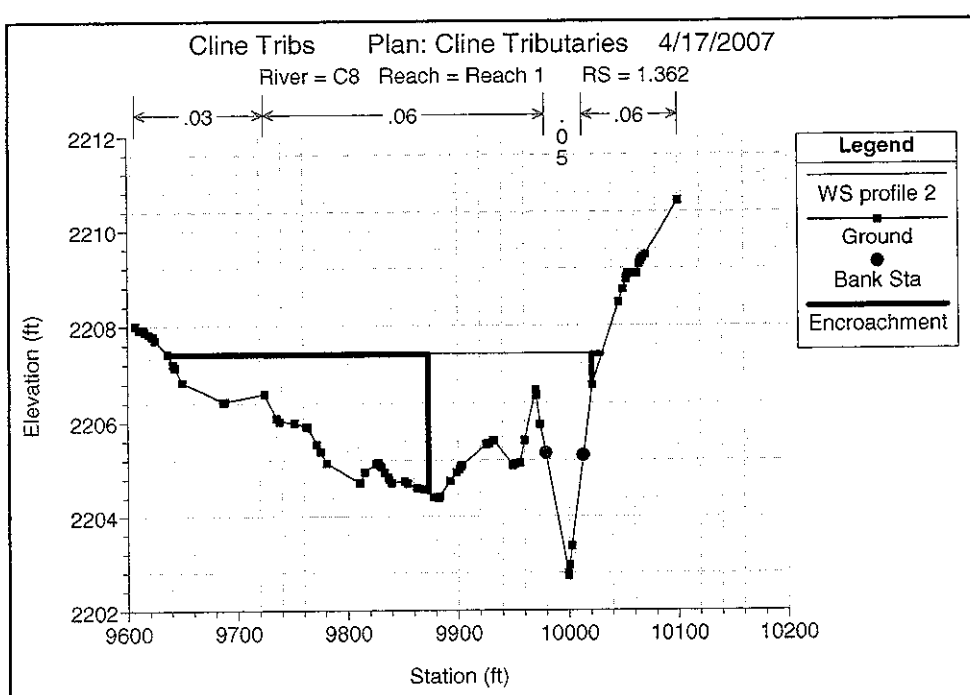

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.536
.055
.05
.06
Legend
WS profile 2
Ground
Levee
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

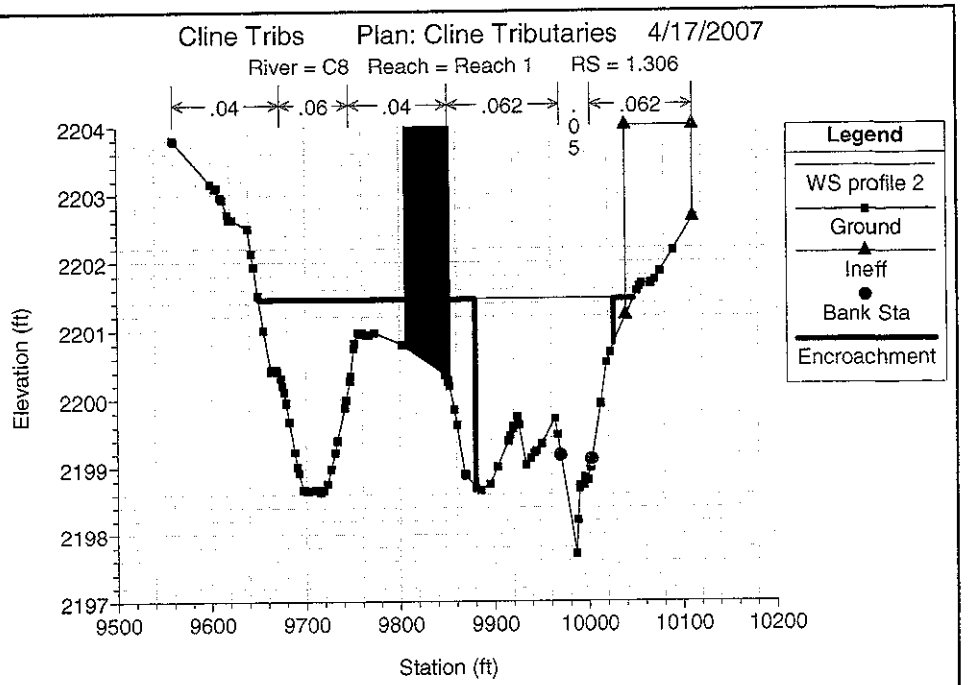

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.517
.055
.05
.06
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

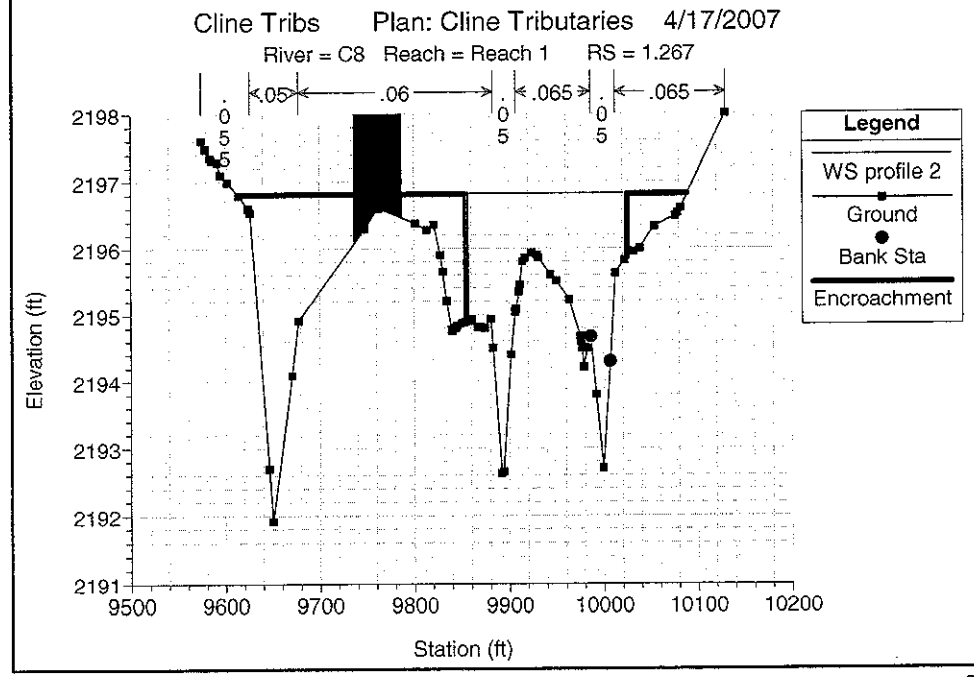

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.488
.055
.05
.06
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

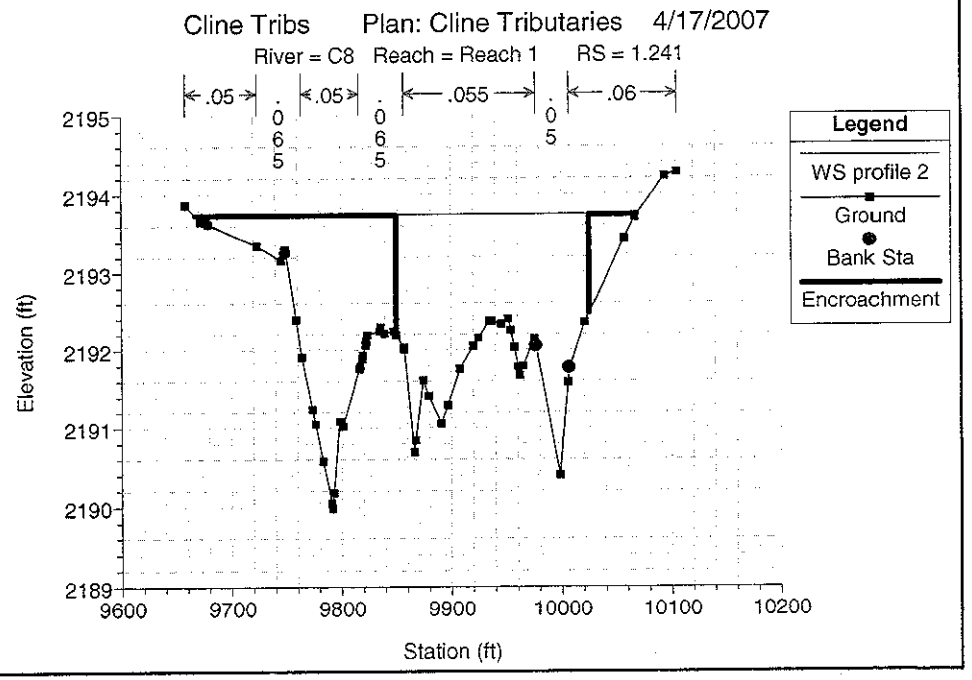

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.430
.04
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

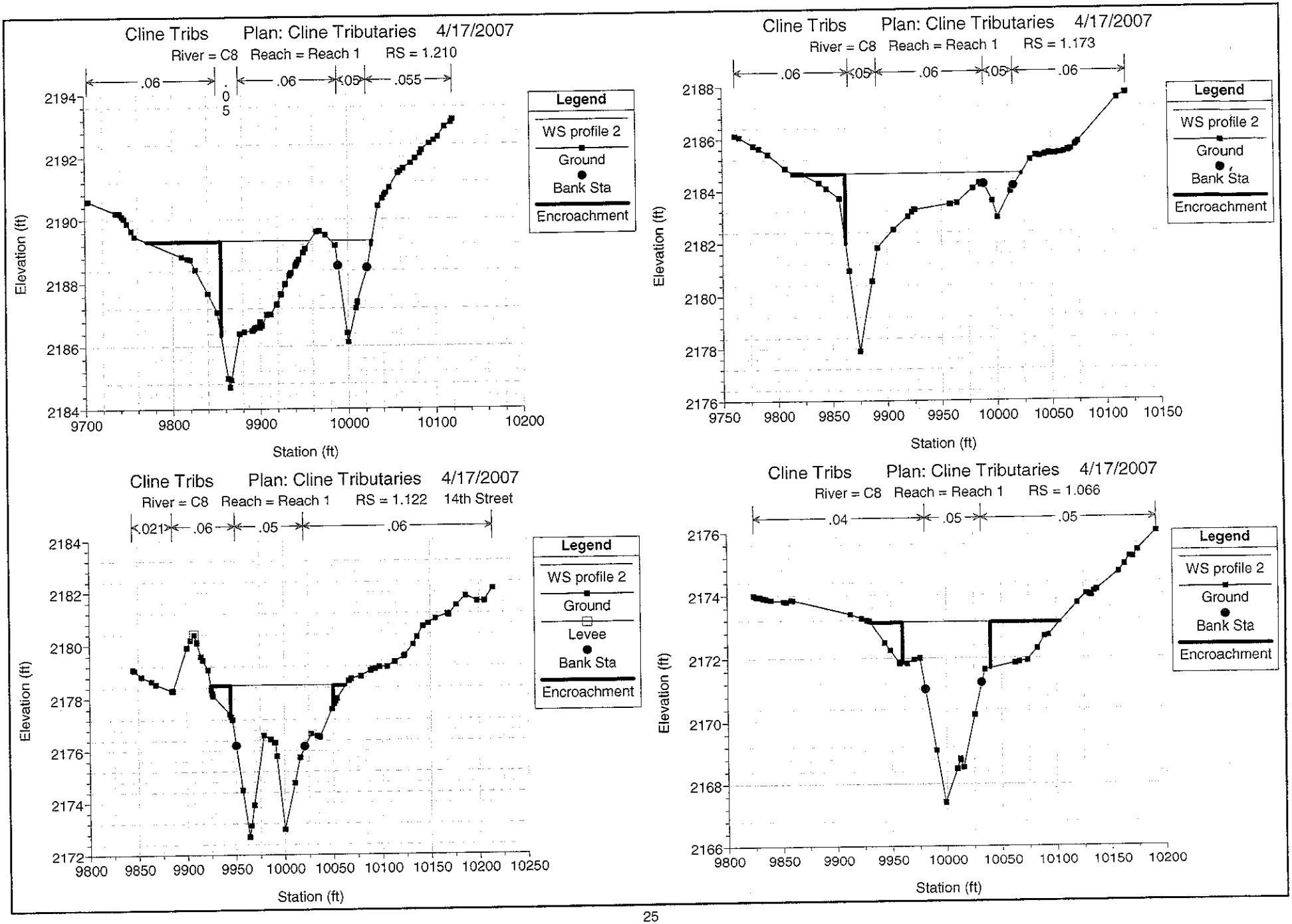

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.384
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

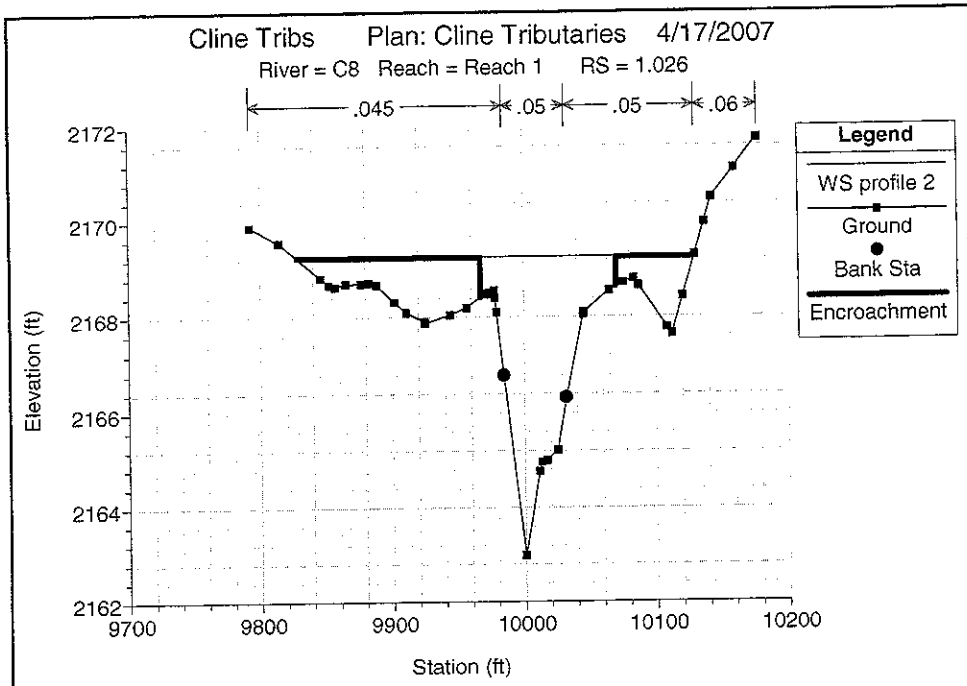

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.362
.03
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

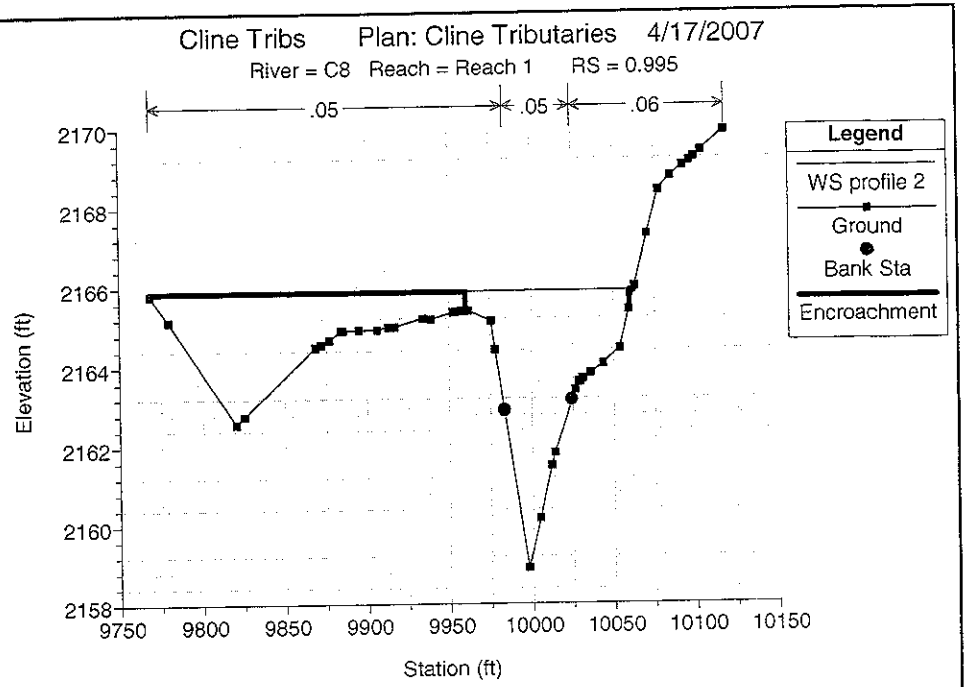

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.306
.04
.06
.04
.062
.05
.062
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

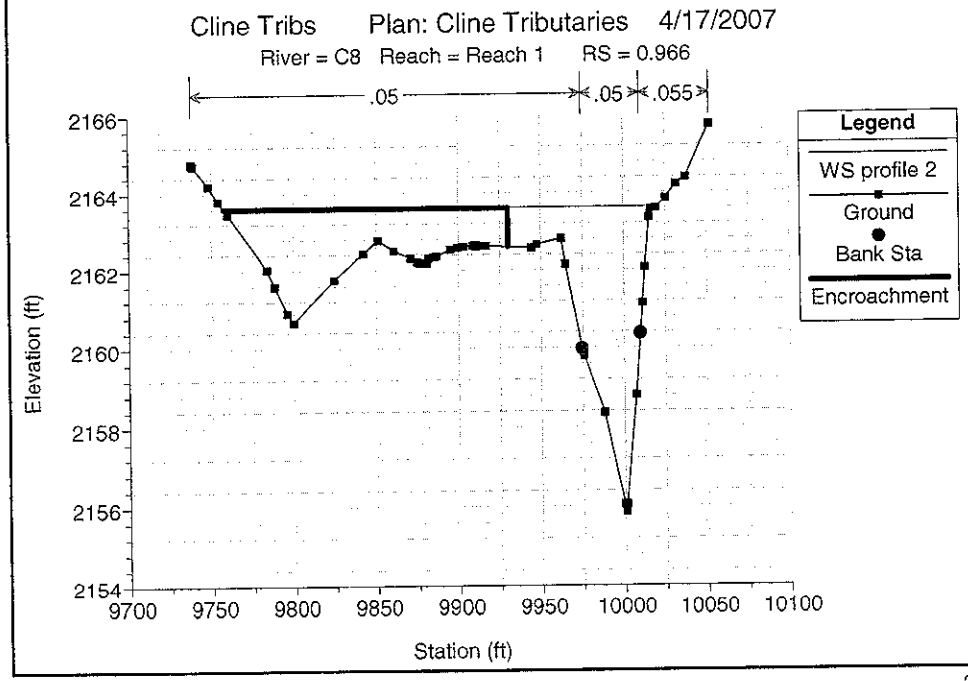

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.267
.05
.06
.065
.065
.05
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

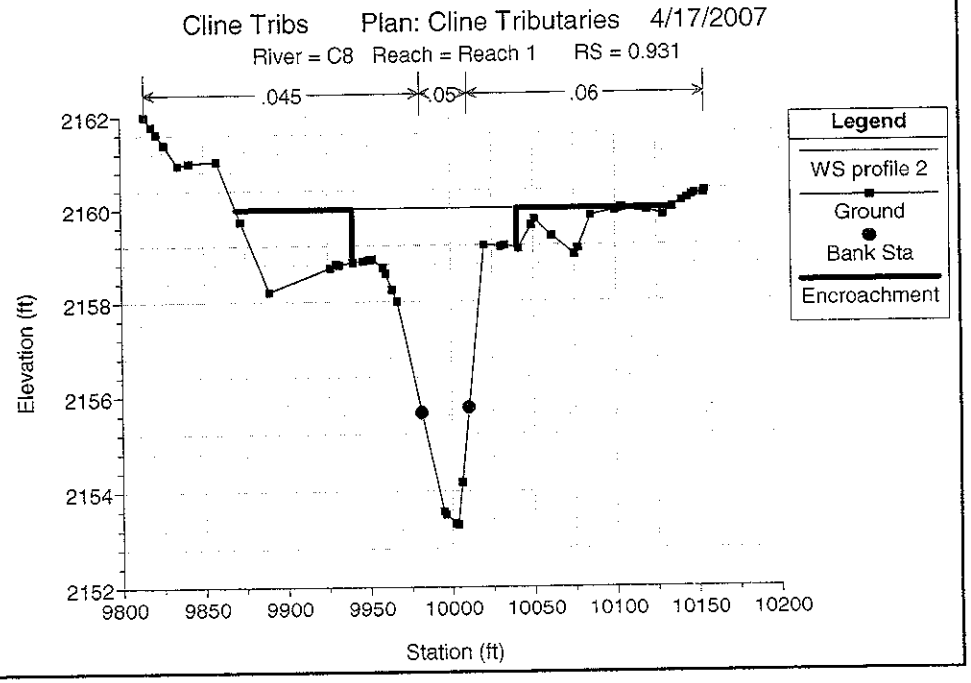

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.241
.05
.05
.055
.06
.065
.065
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

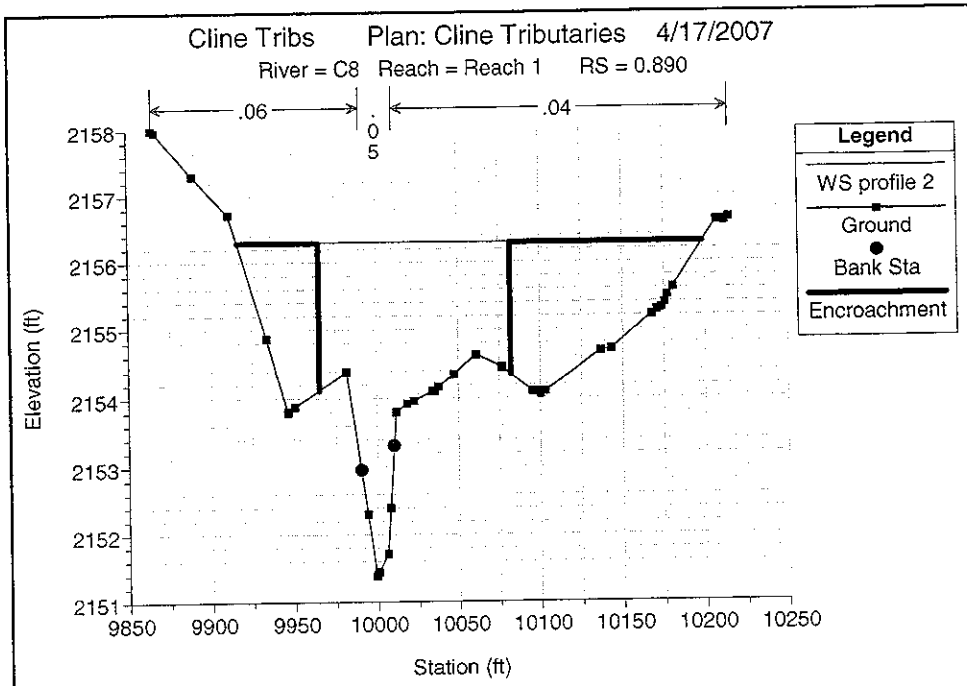

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.210
.06
.05
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.173
.06
.05
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.122 14th Street
.021
.06
.05
.06
Legend
WS profile 2
Ground
Levee
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.066
.04
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

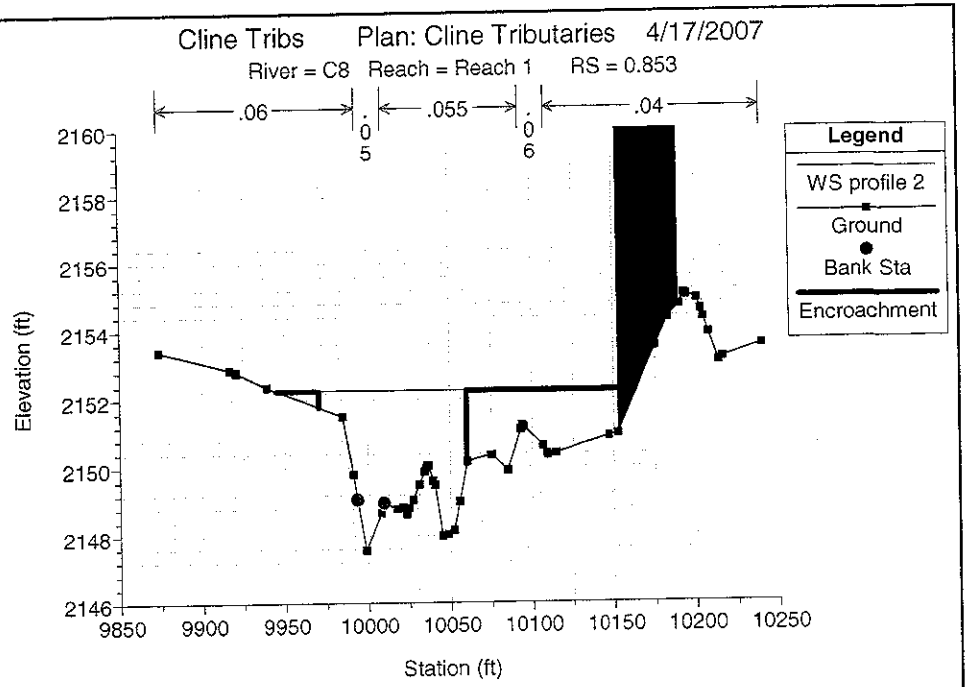

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 1.026
.045
.05
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

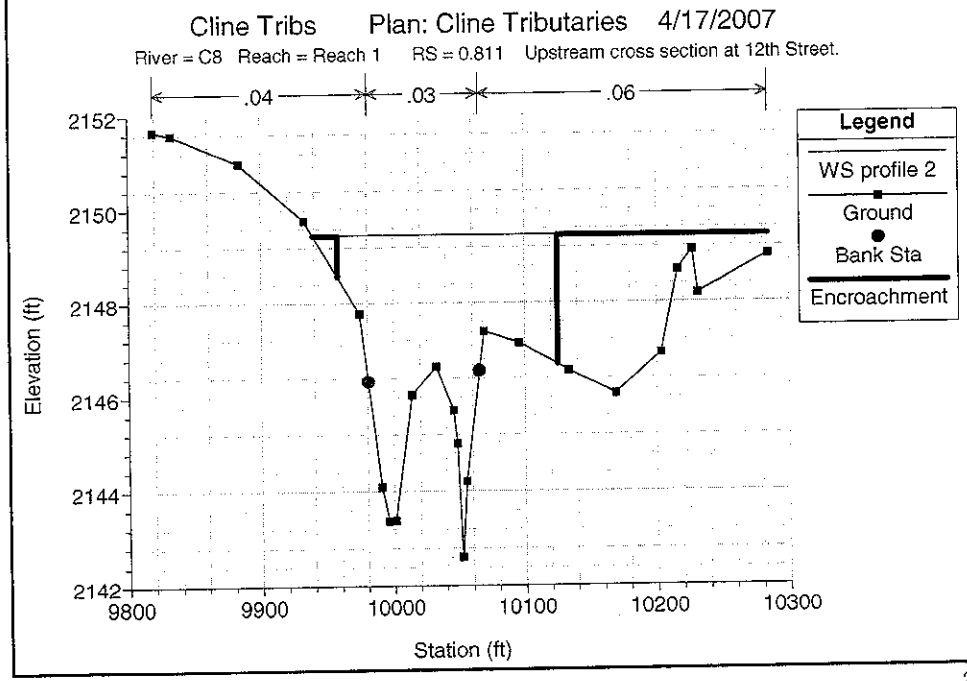

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.995
.05
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

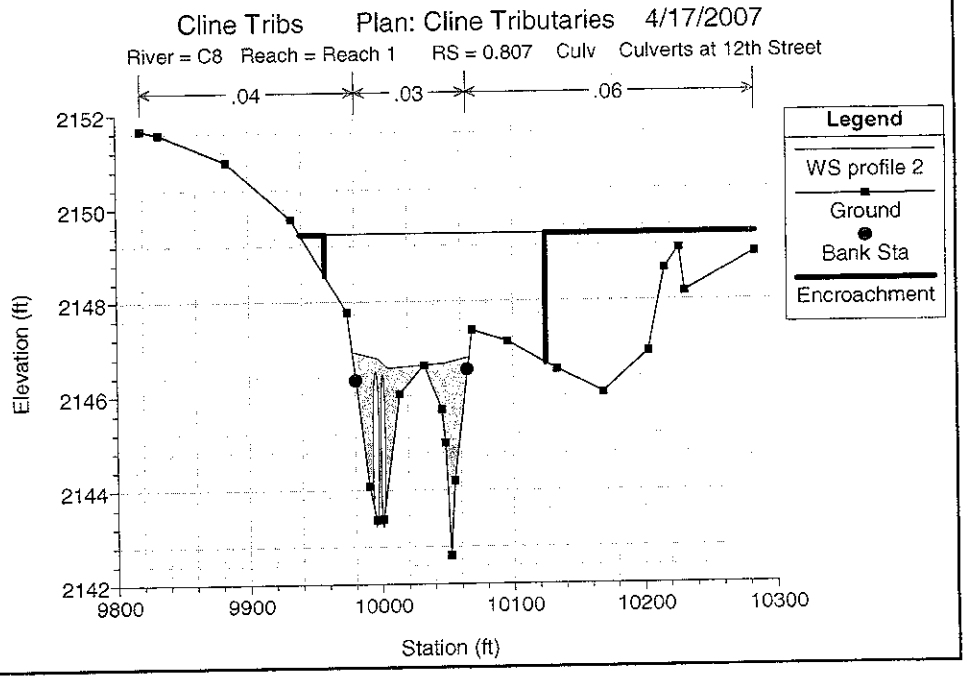

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.966
.05
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

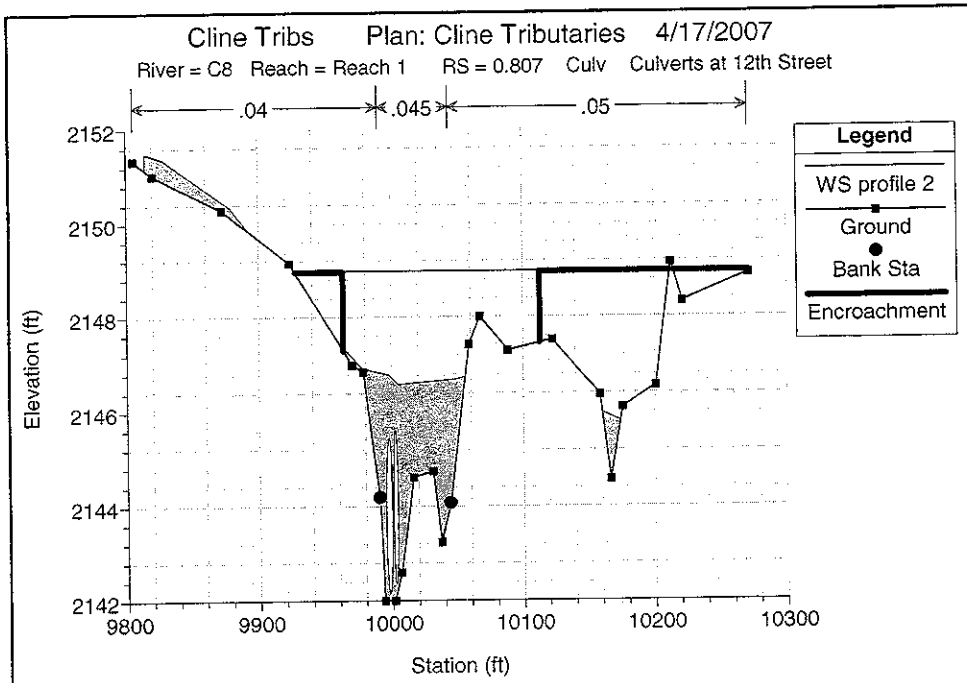

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.931
.045
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

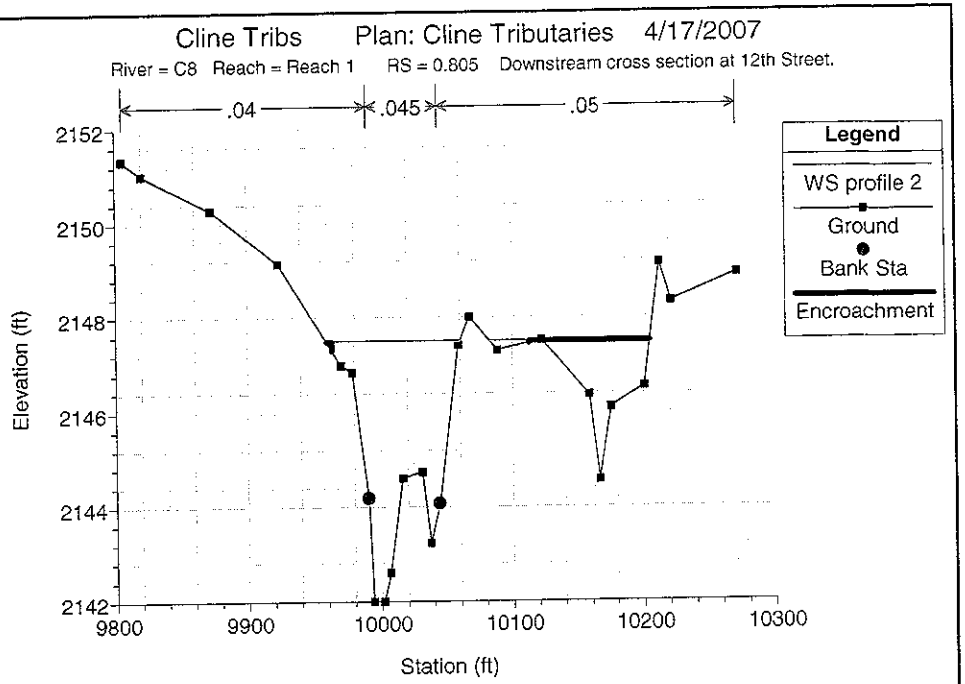

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.890
.06
.05
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

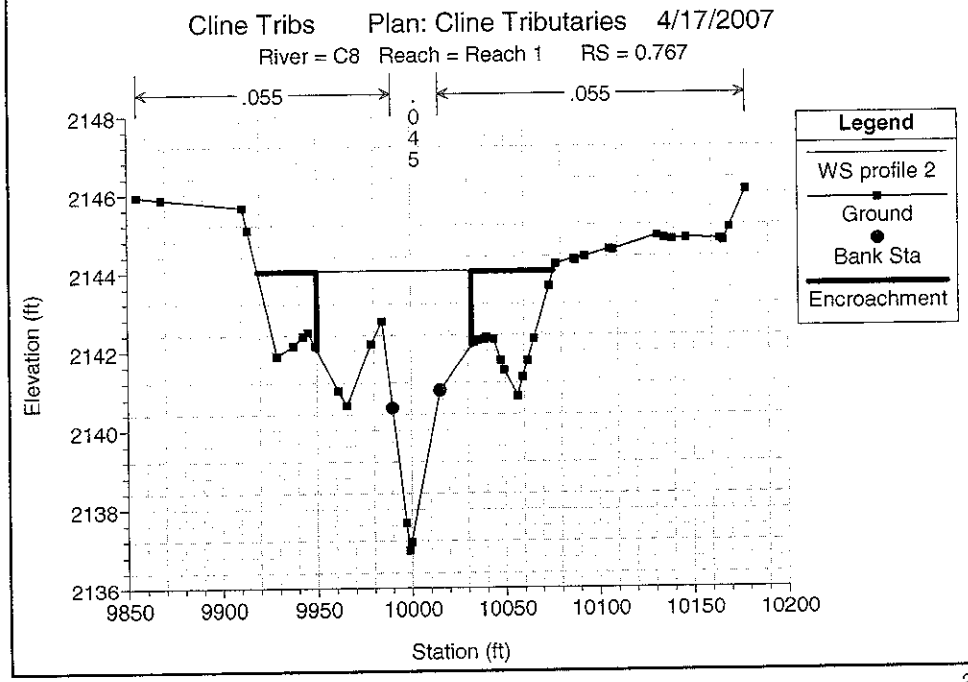

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.853
.06
.05
.055
.06
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

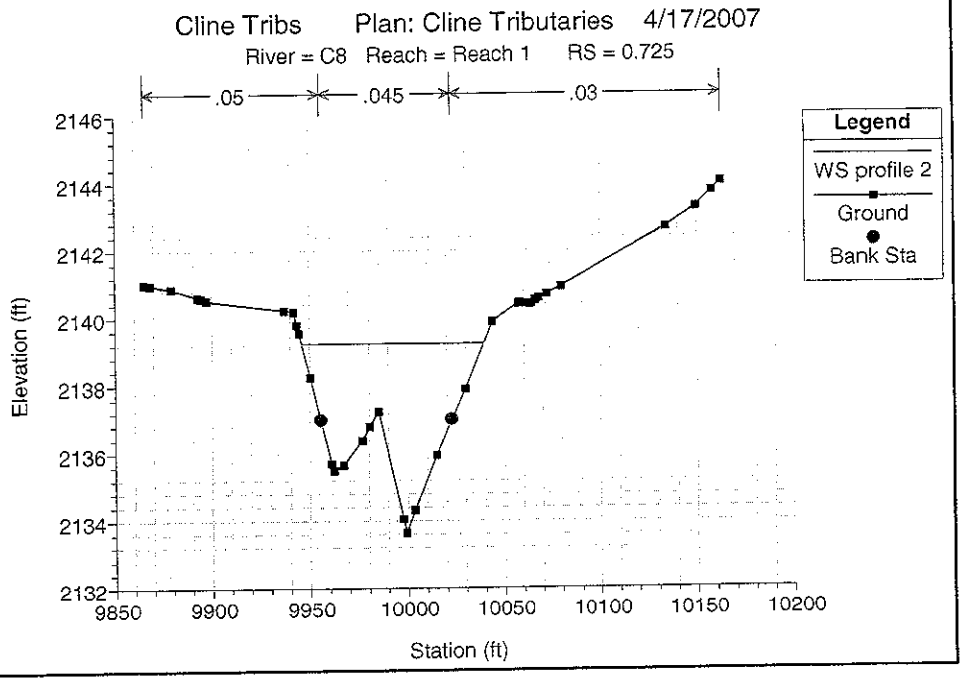

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.811 Upstream cross section at 12th Street.
.04
.03
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

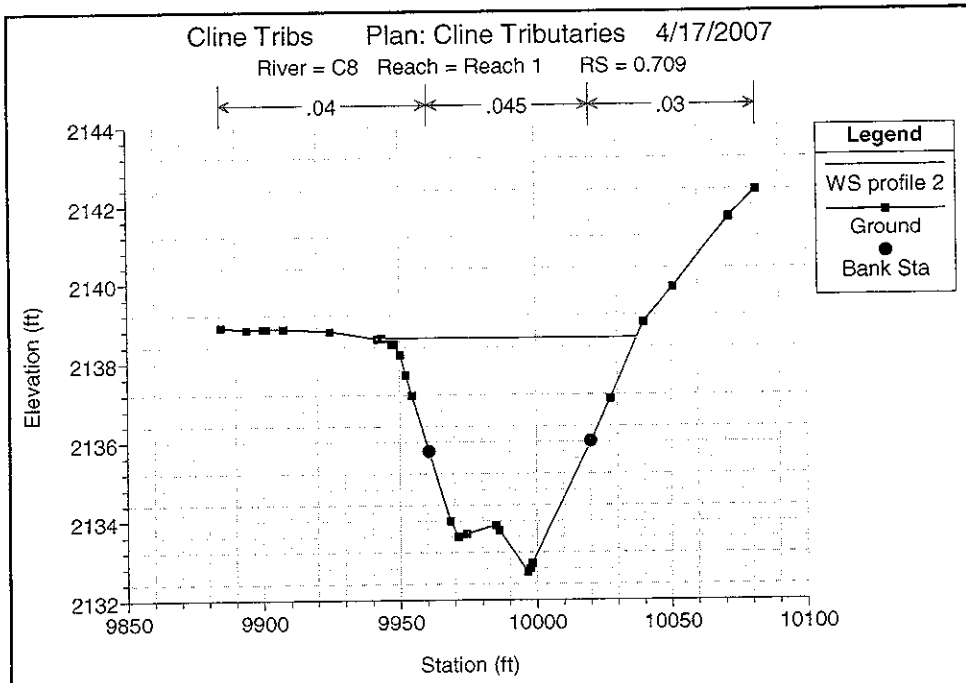

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.807 Culv Culverts at 12th Street
.04
.03
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

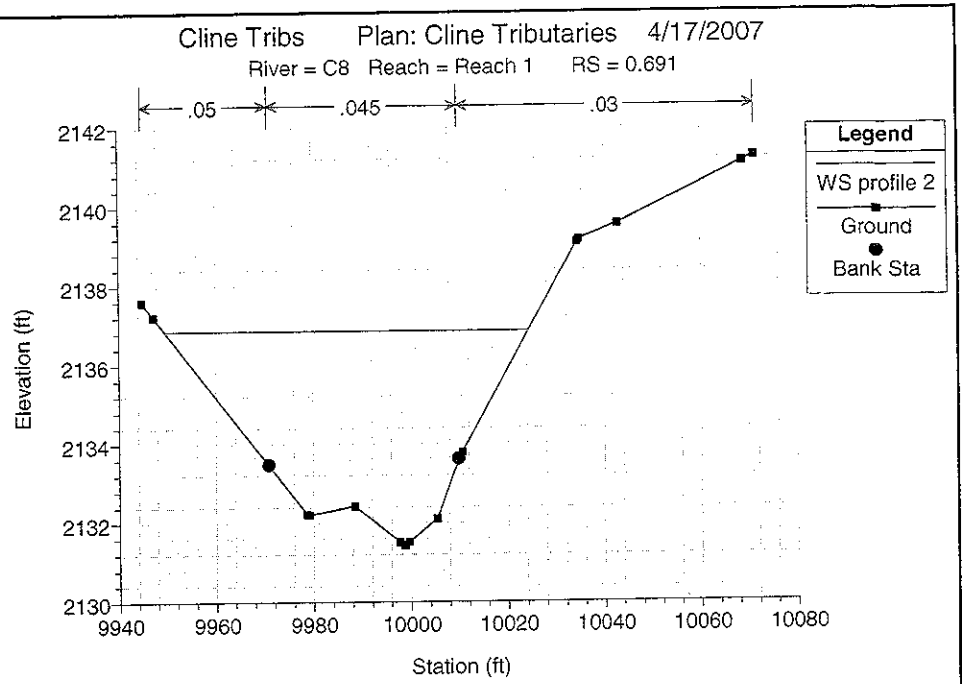

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.807 Culv Culverts at 12th Street
.04
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

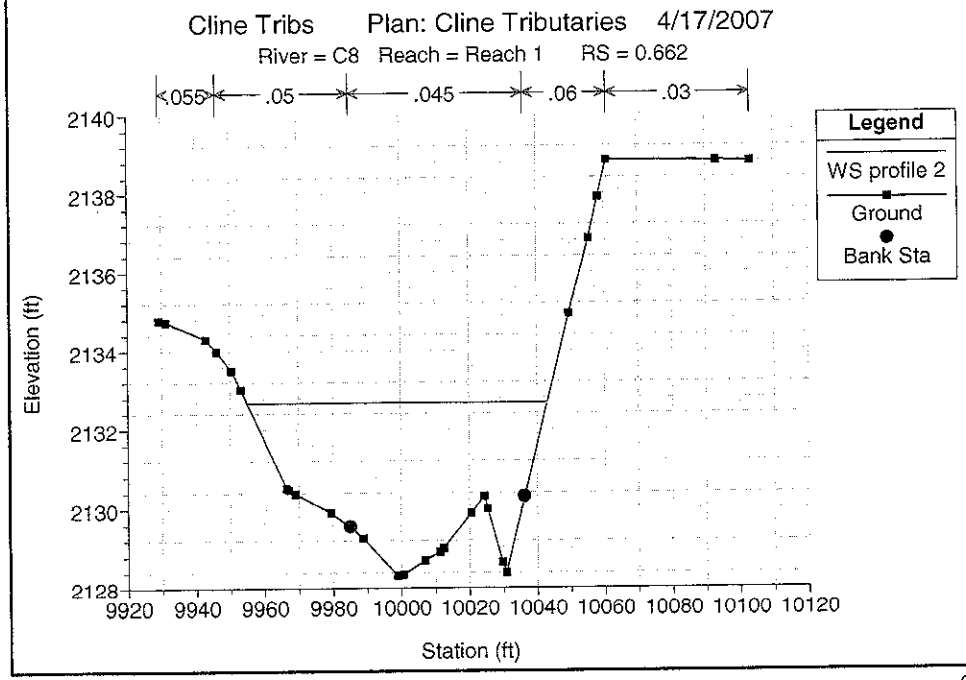

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.805 Downstream cross section at 12th Street.
.04
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

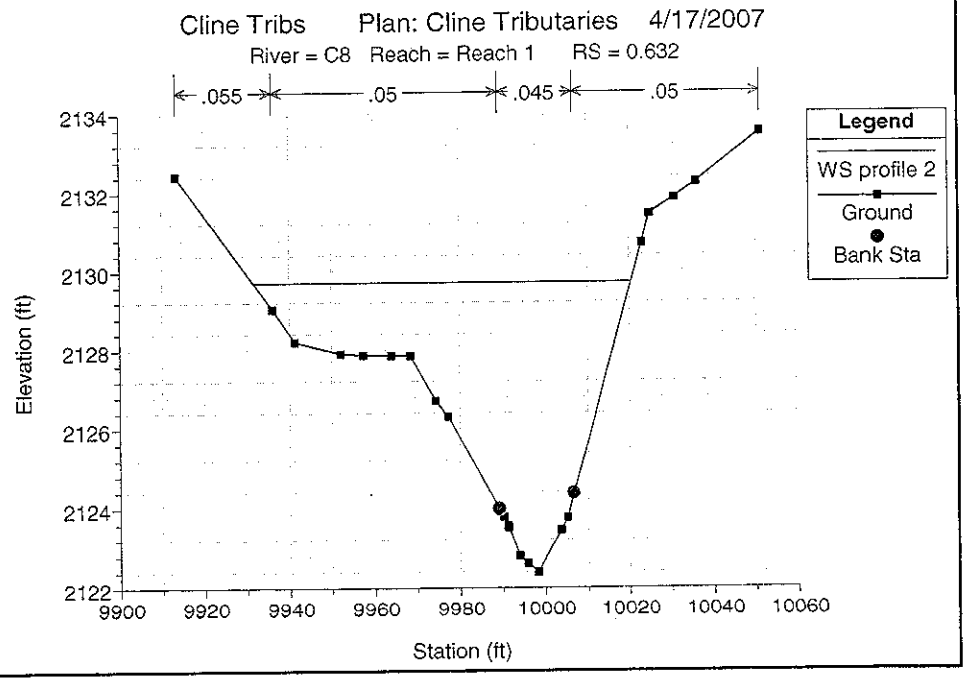

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.767
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

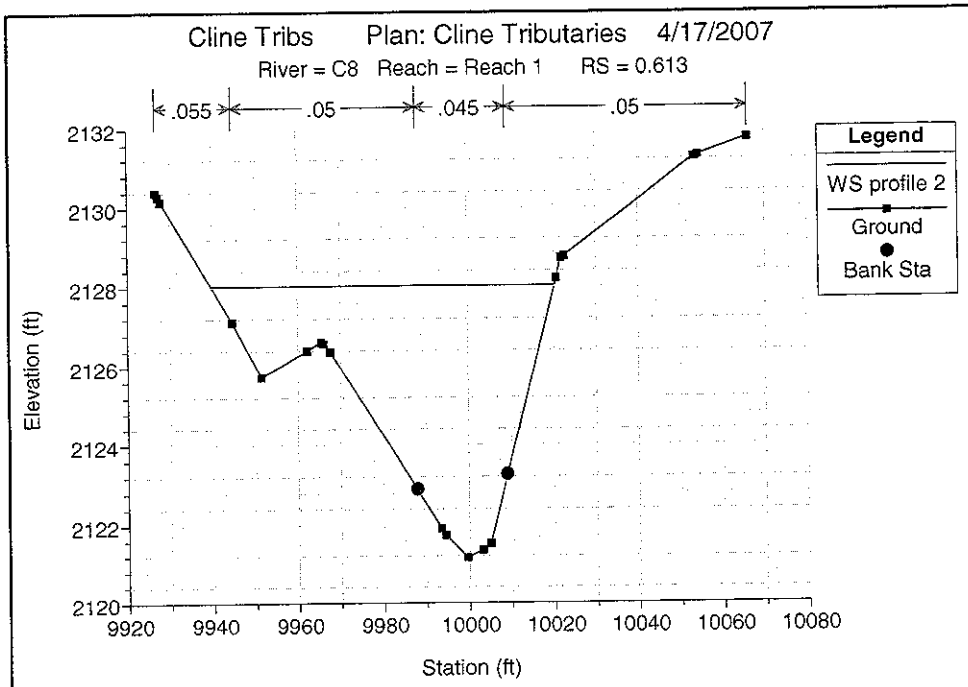

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.725
.05
.045
.03
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

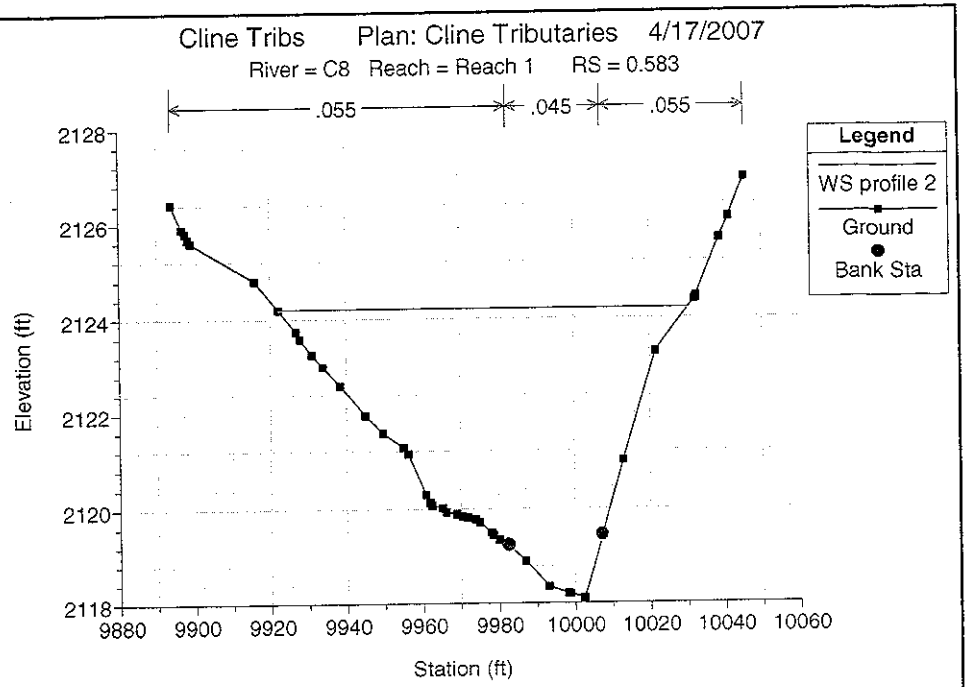

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.709
.04
.045
.03
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

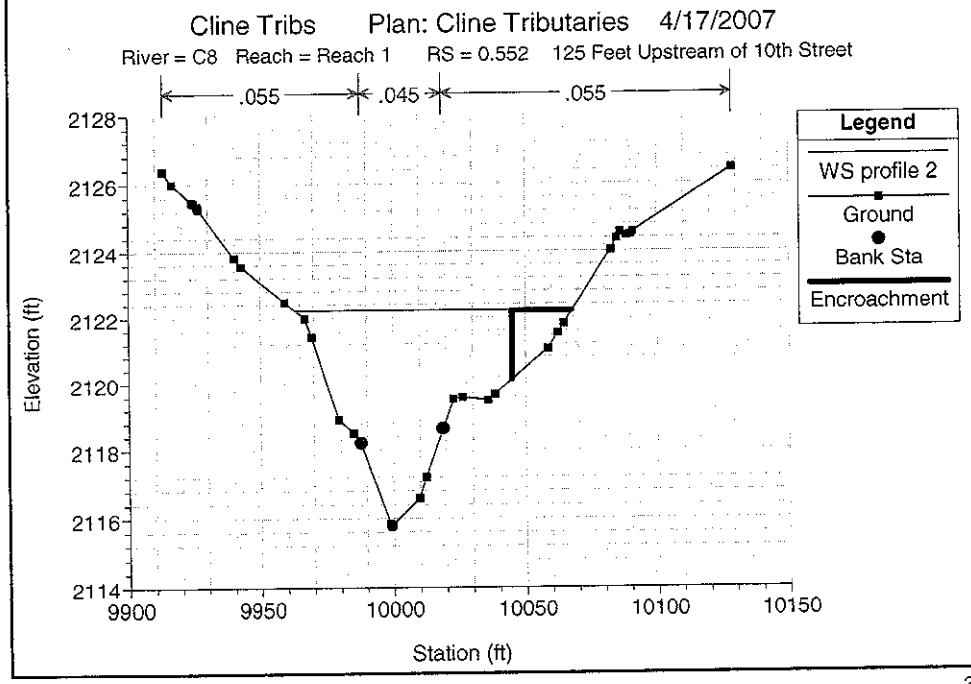

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.691
.05
.045
.03
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

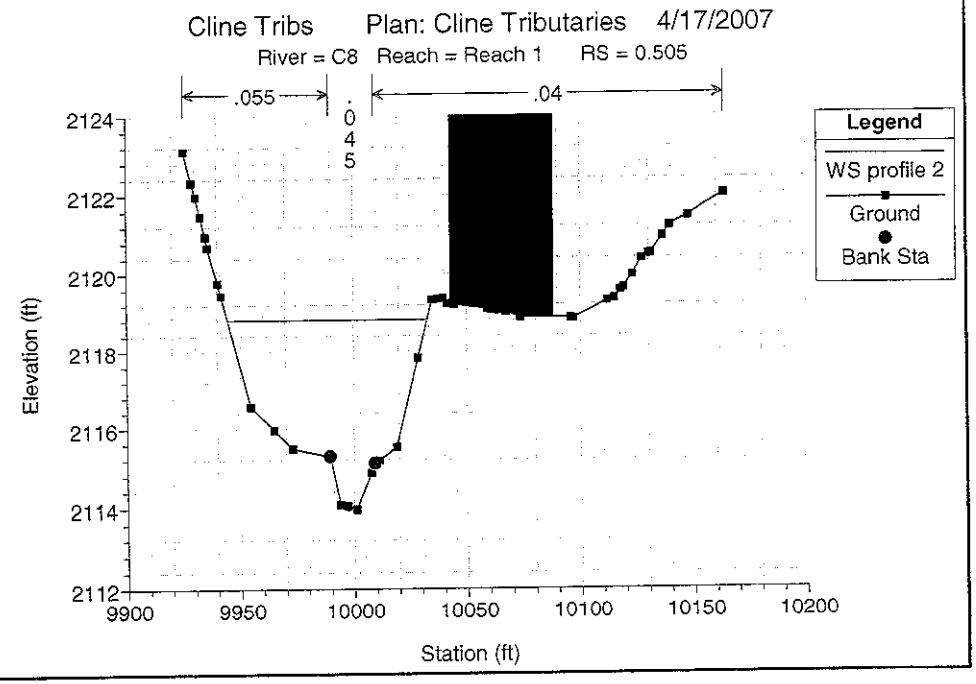

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.662
.055
.05
.045
.06
.03
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

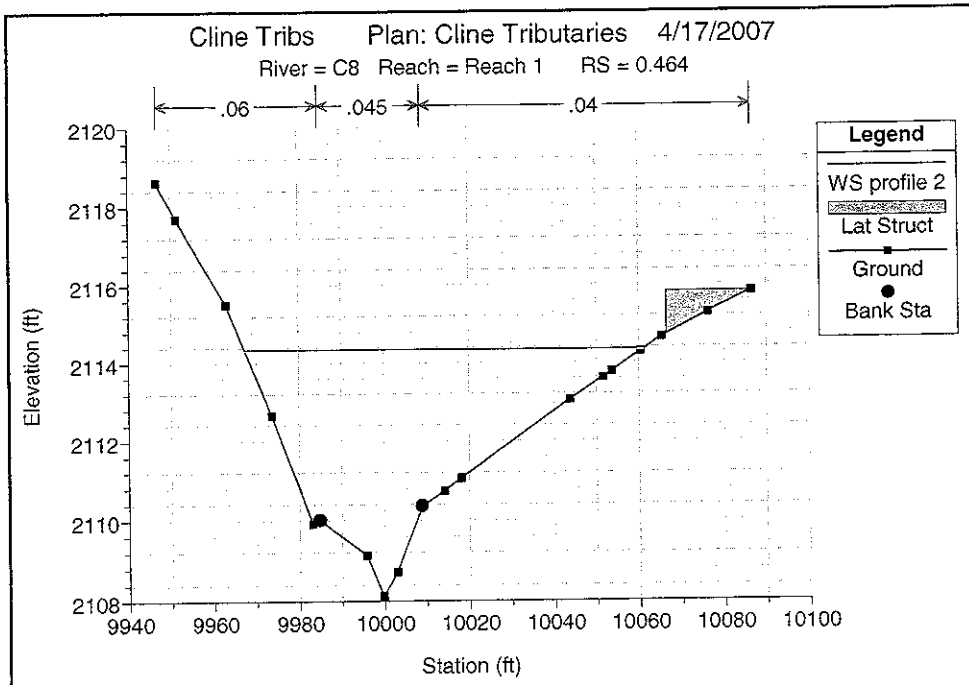

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.632
.055
.05
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

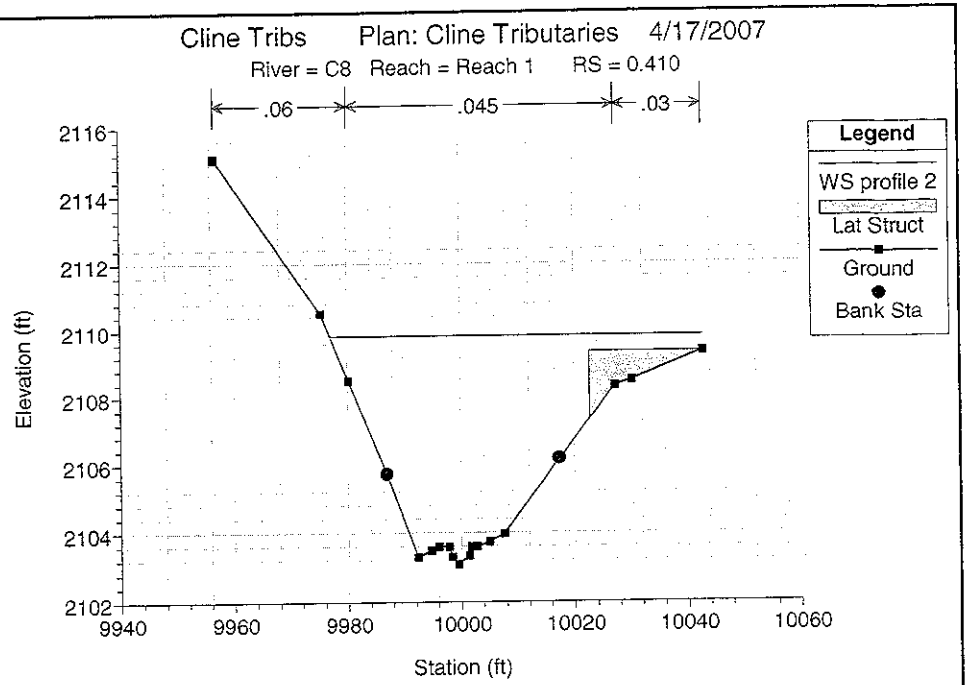

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.613
.055
.05
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

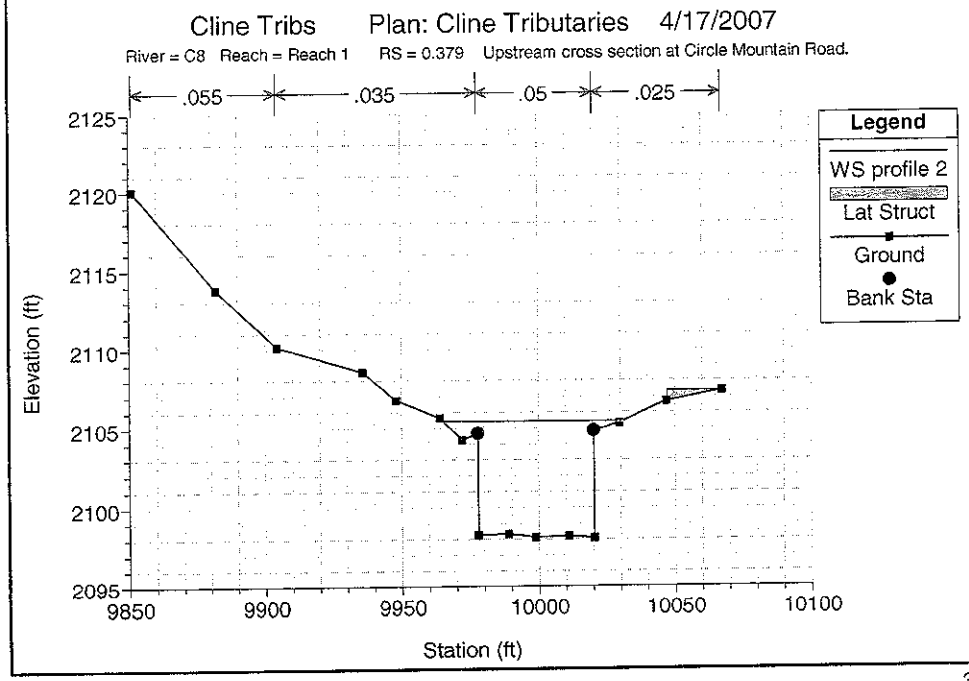

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.583
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

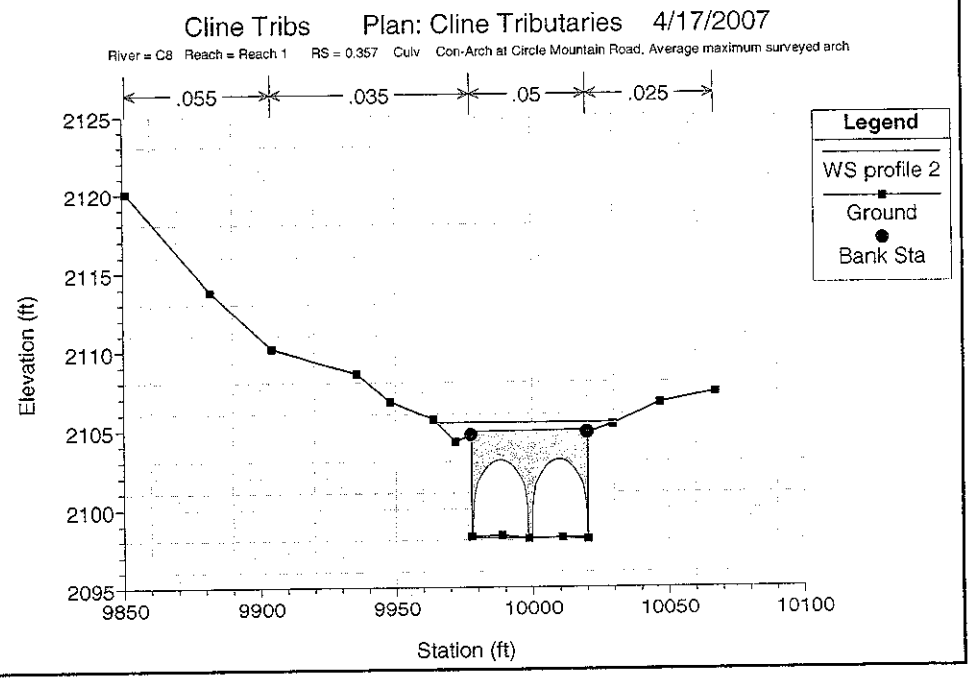

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.552 125 Feet Upstream of 10th Street
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

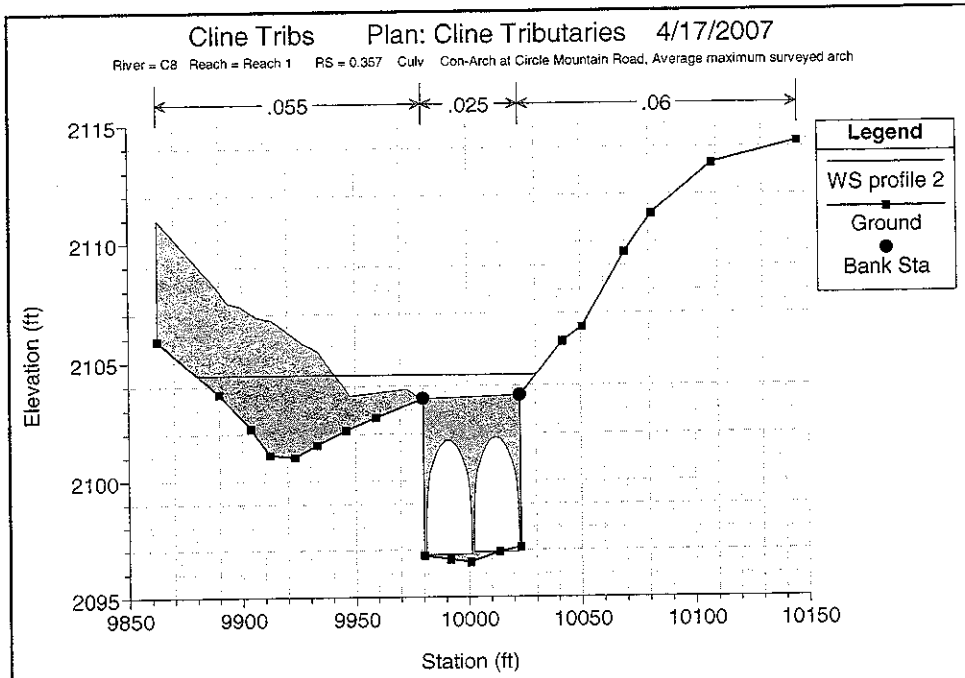

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.505
.055
.045
.04
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

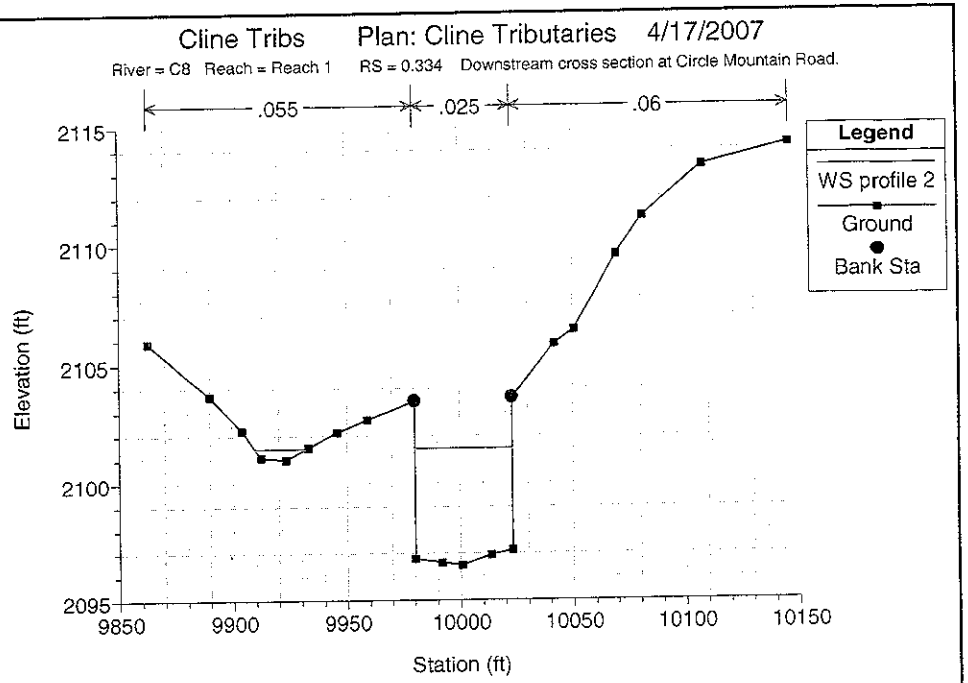

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.464
.06
.045
.04
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)

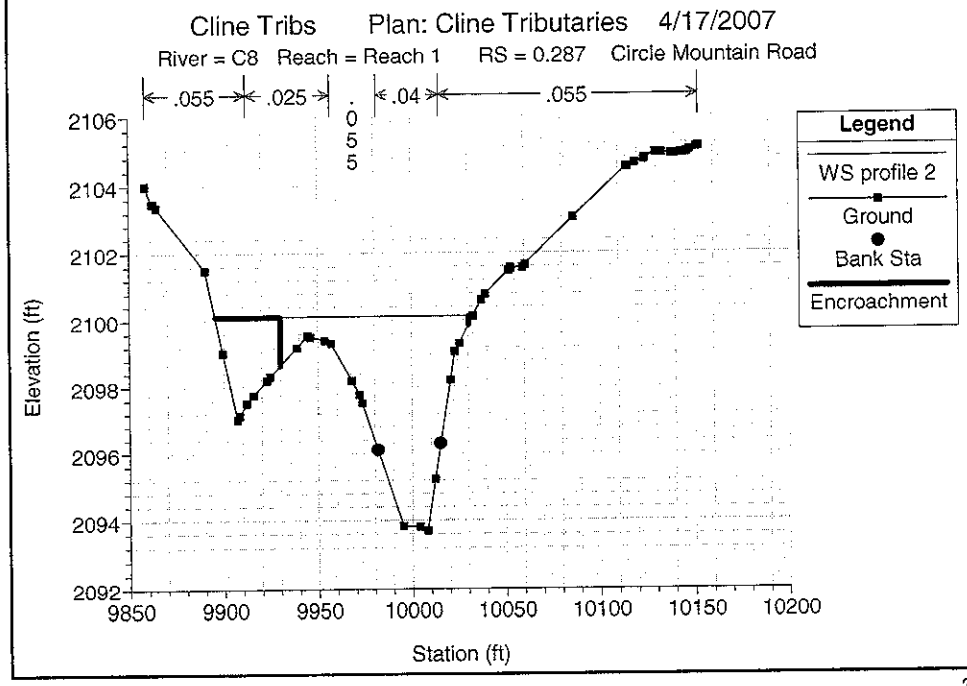

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.410
.06
.045
.03
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)

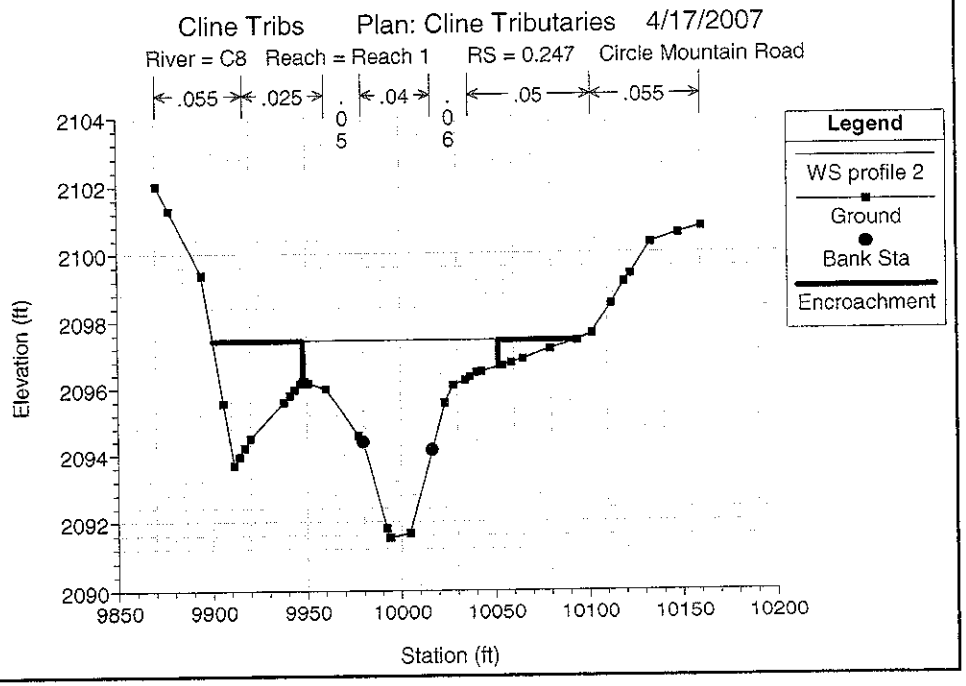

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.379 Upstream cross section at Circle Mountain Road.
.055
.035
.05
.025
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)

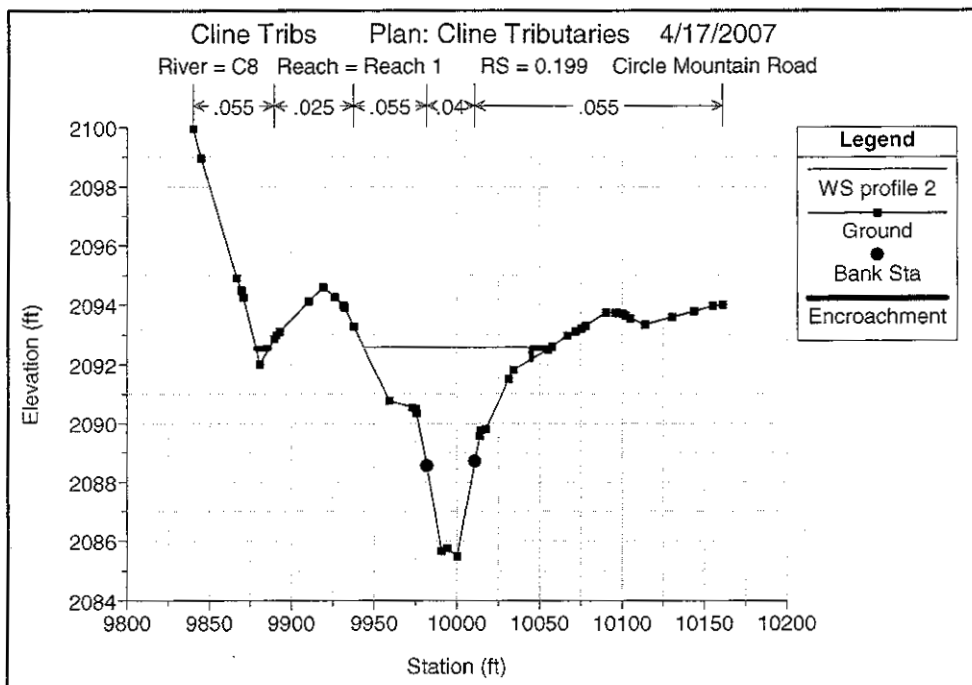

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.357 Culv Con-Arch at Circle Mountain Road, Average maximum surveyed arch
.055
.035
.05
.025
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

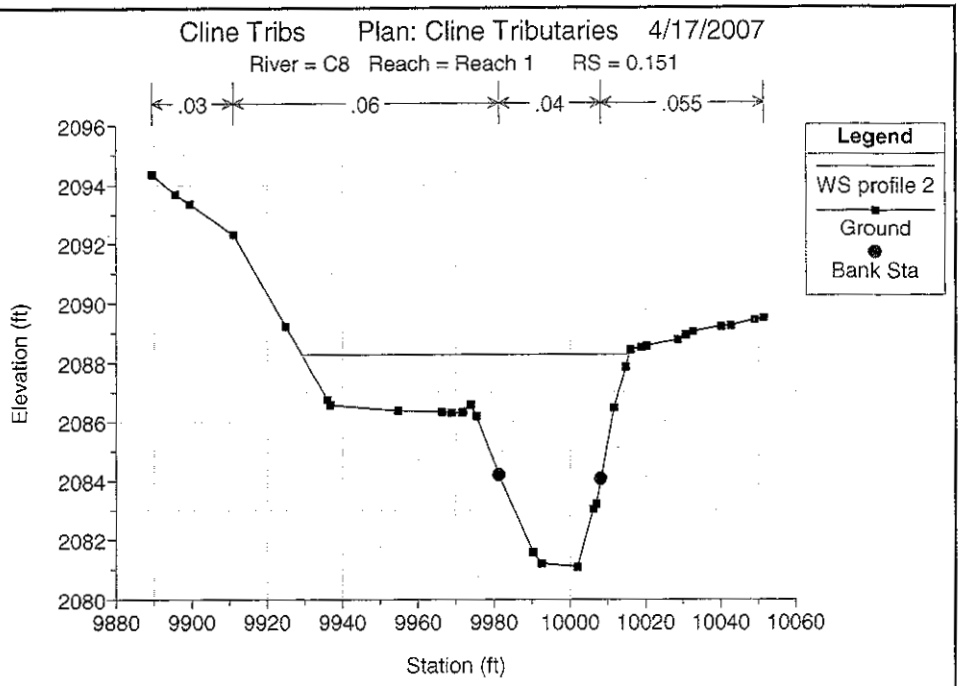

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.357 Culv Con-Arch at Circle Mountain Road, Average maximum surveyed arch
.055
.025
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

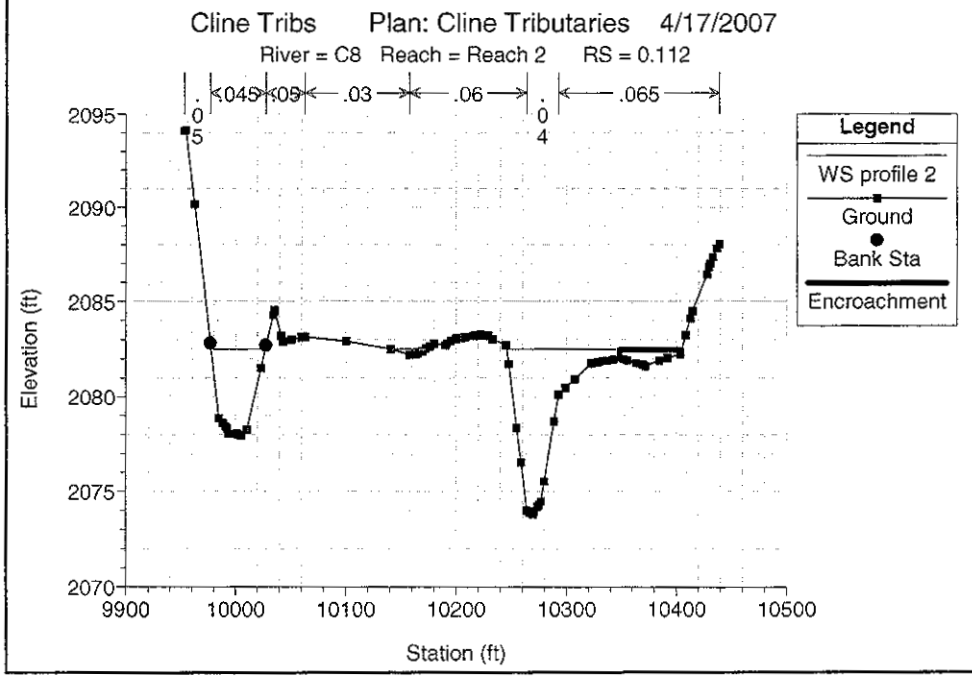

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.334 Downstream cross section at Circle Mountain Road.
.055
.025
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

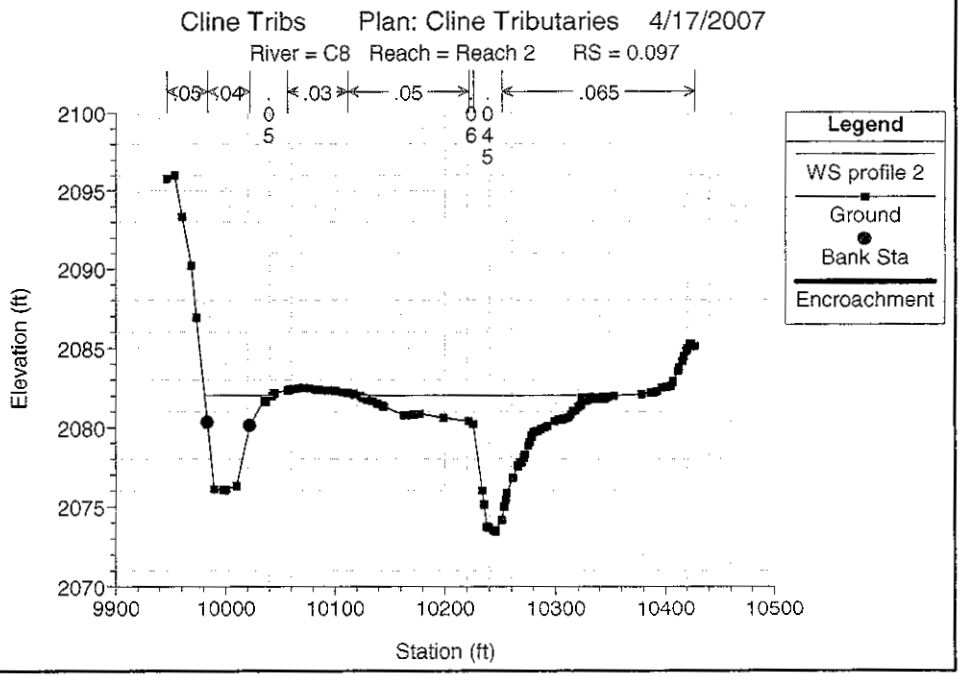

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.287 Circle Mountain Road
.055
.025
.055
.04
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

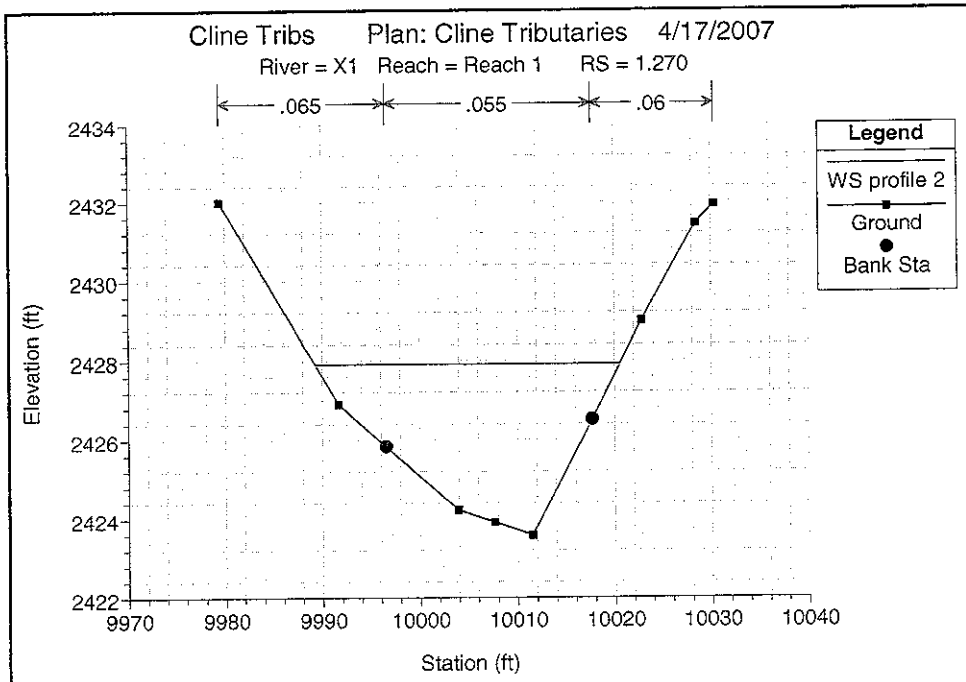

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.247 Circle Mountain Road
.055
.025
.05
.04
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

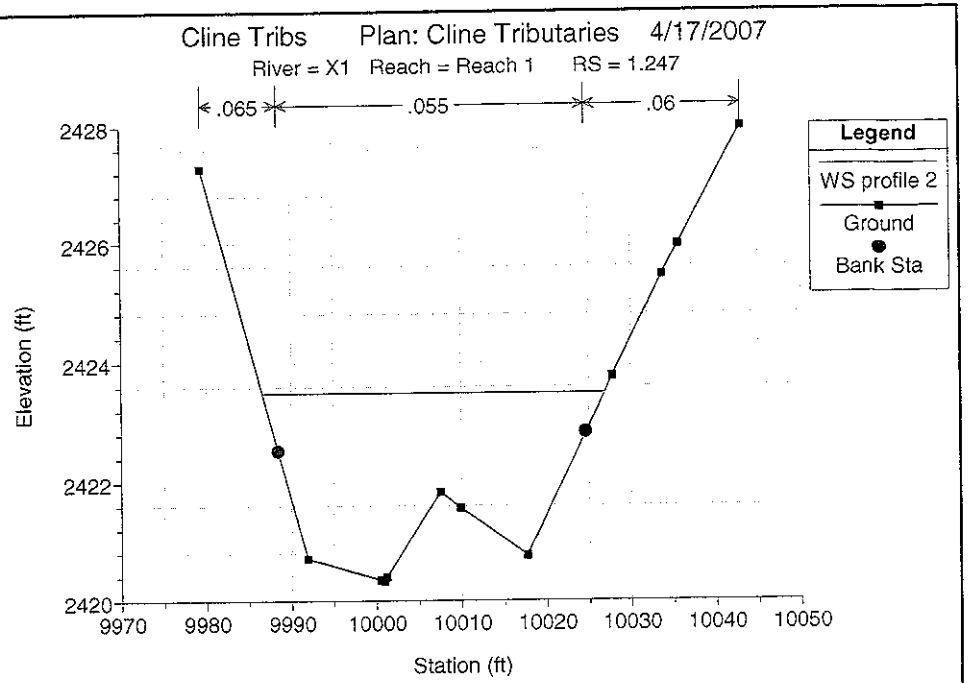

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.199 Circle Mountain Road
.055 .025 .055 .04 .055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

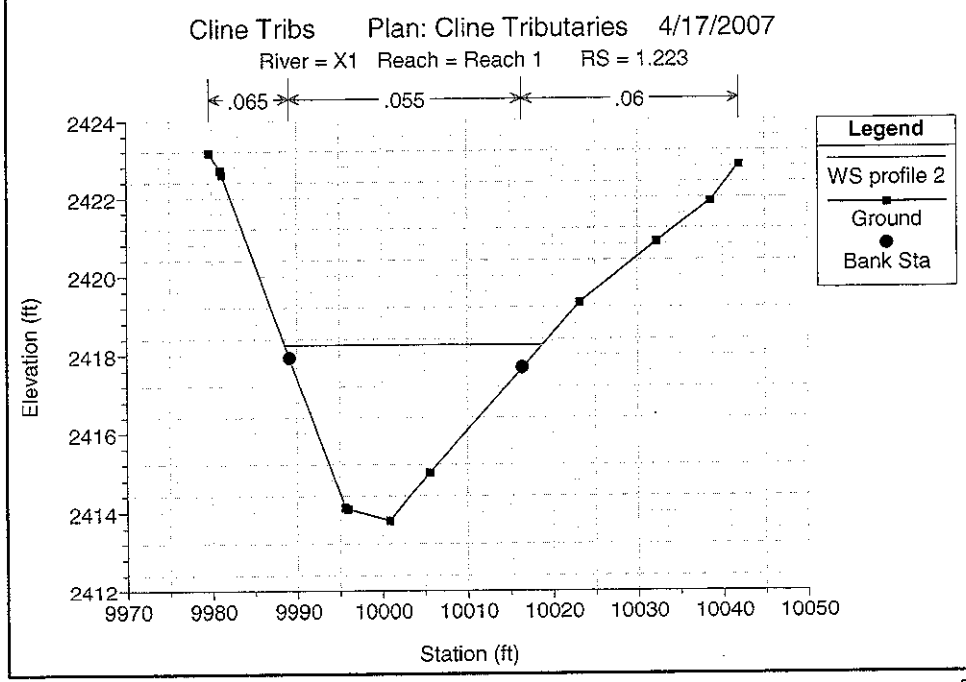

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 1 RS = 0.151
.03 .06 .04 .055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

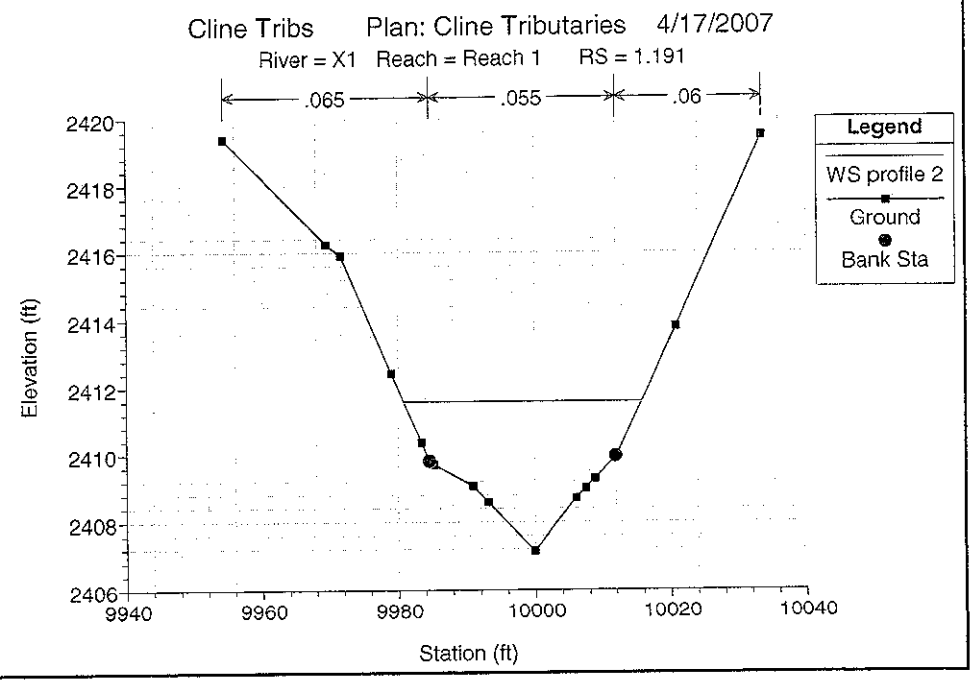

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 2 RS = 0.112
.05 .045 .05 .03 .06 .04 .065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

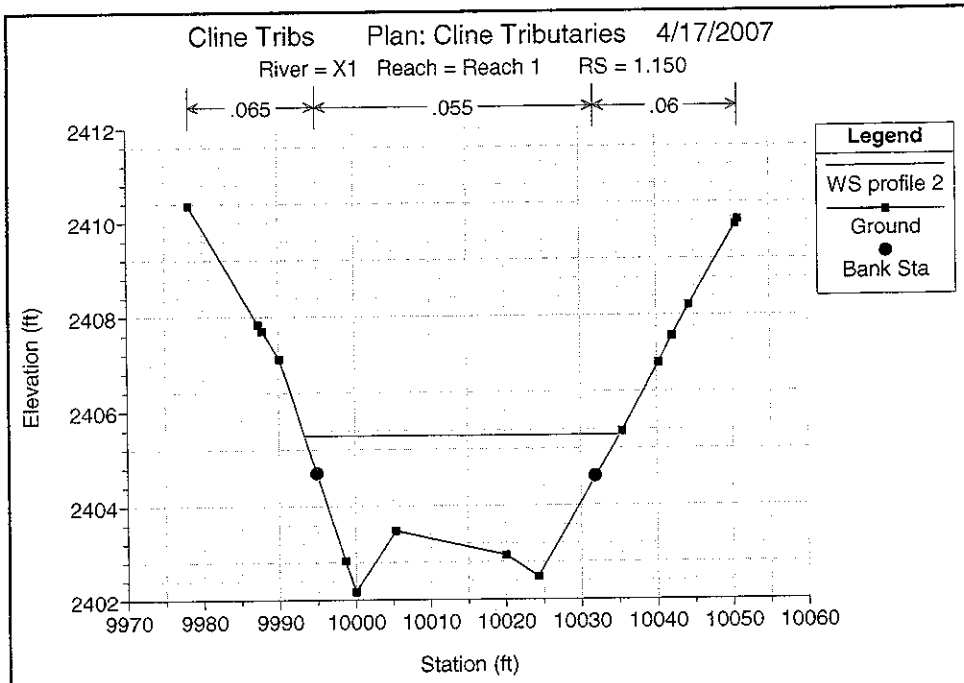

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = C8 Reach = Reach 2 RS = 0.097
.05 .04 .05 .03 .05 .06 .045 .065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

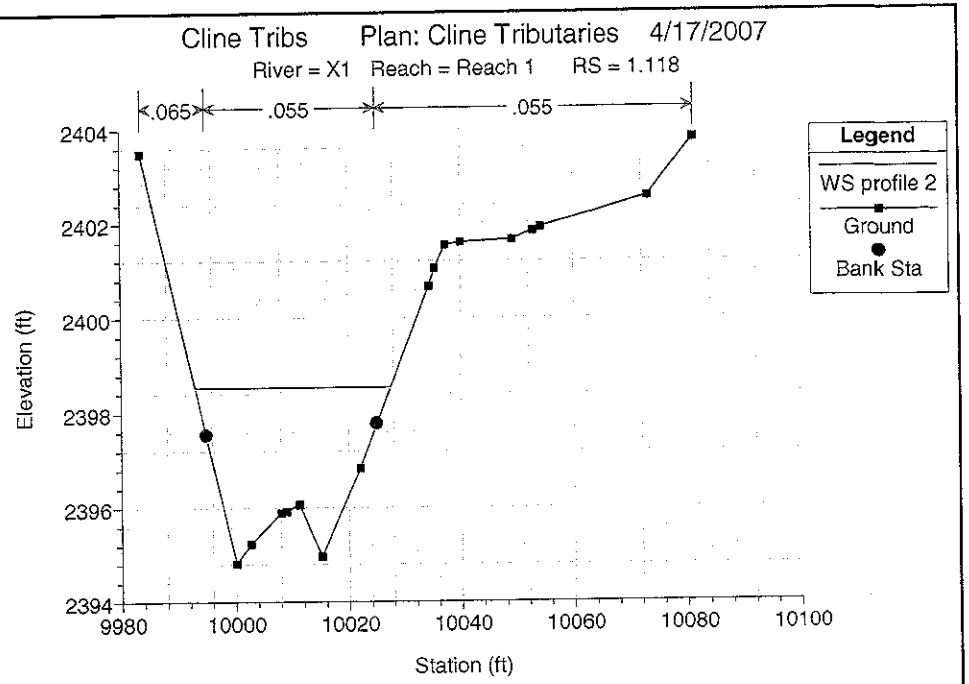

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.270
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

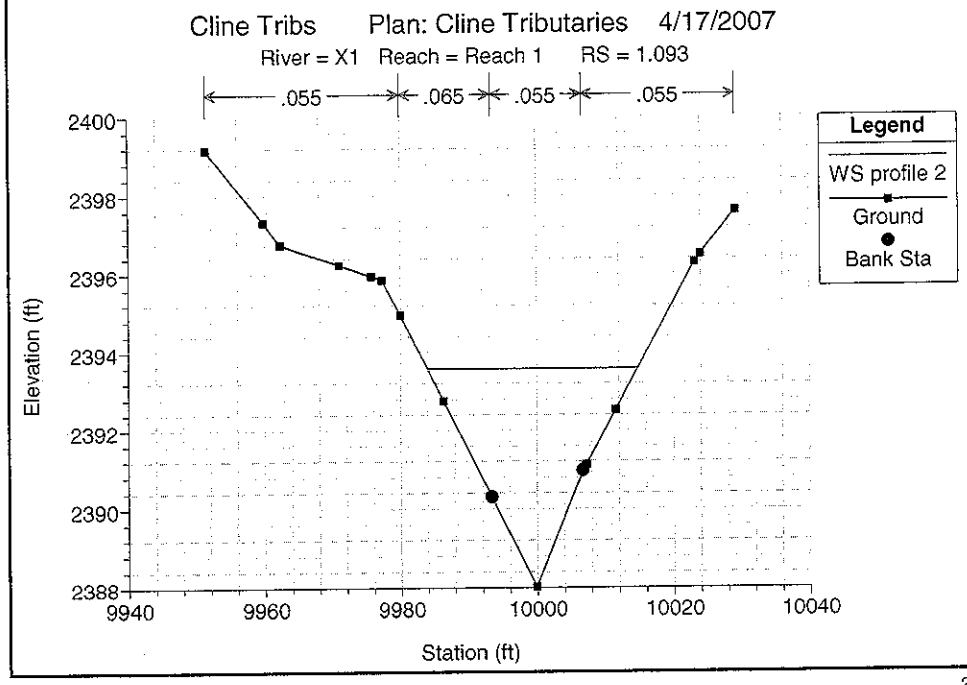

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.247
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

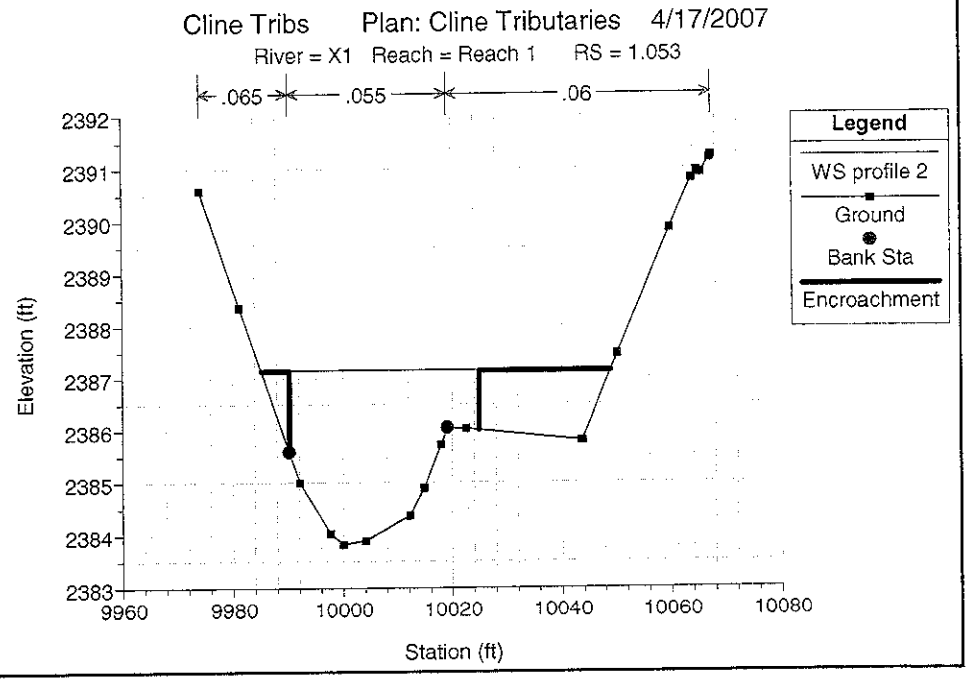

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.223
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

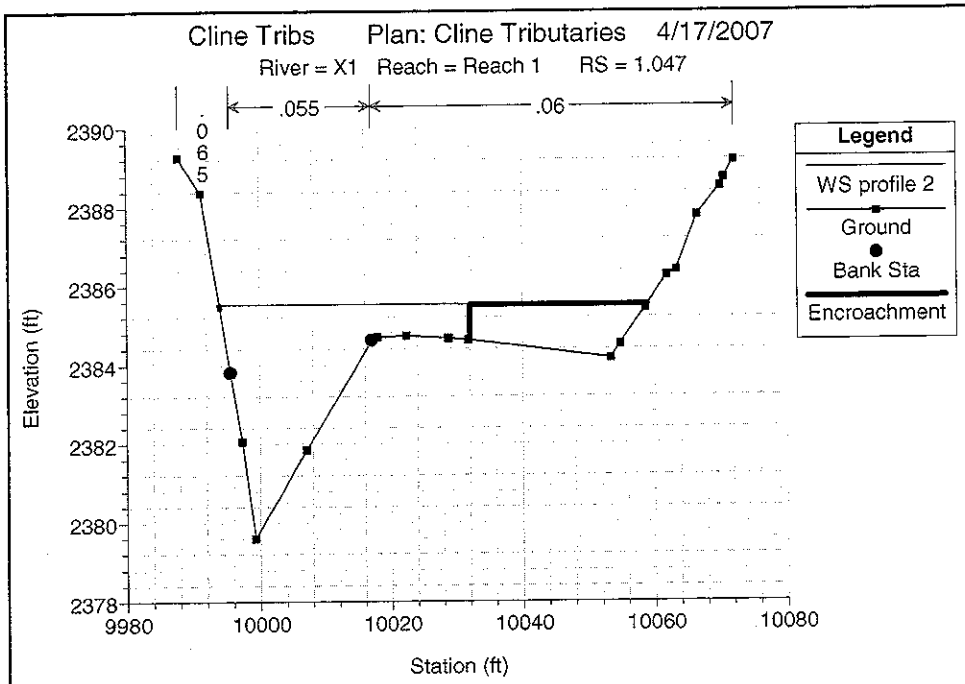

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.191
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

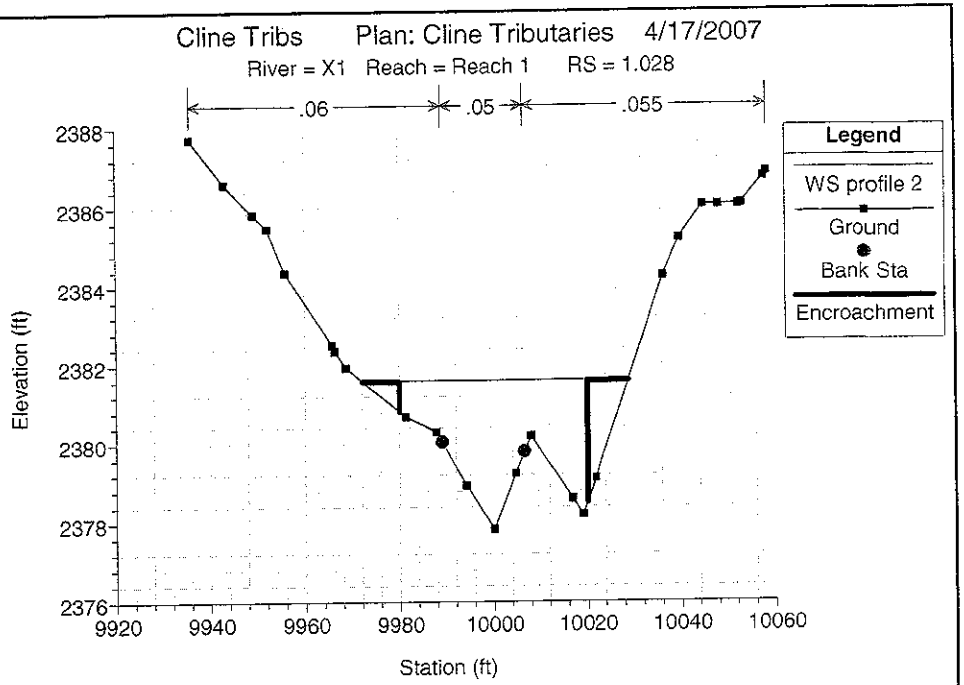

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.150
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

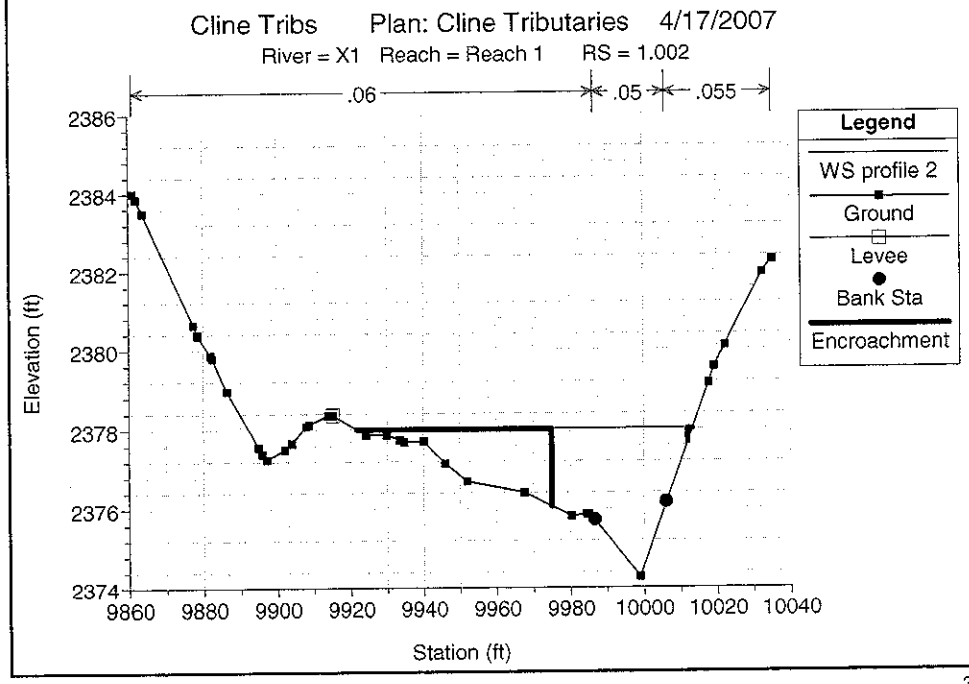

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.118
.065
.055
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

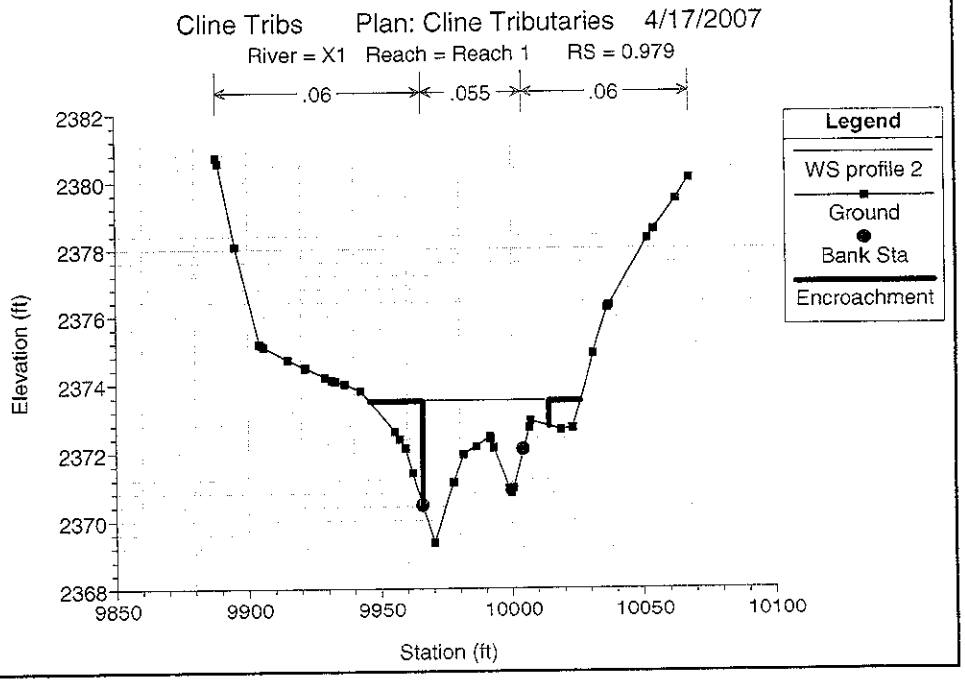

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.093
.055
.065
.055
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

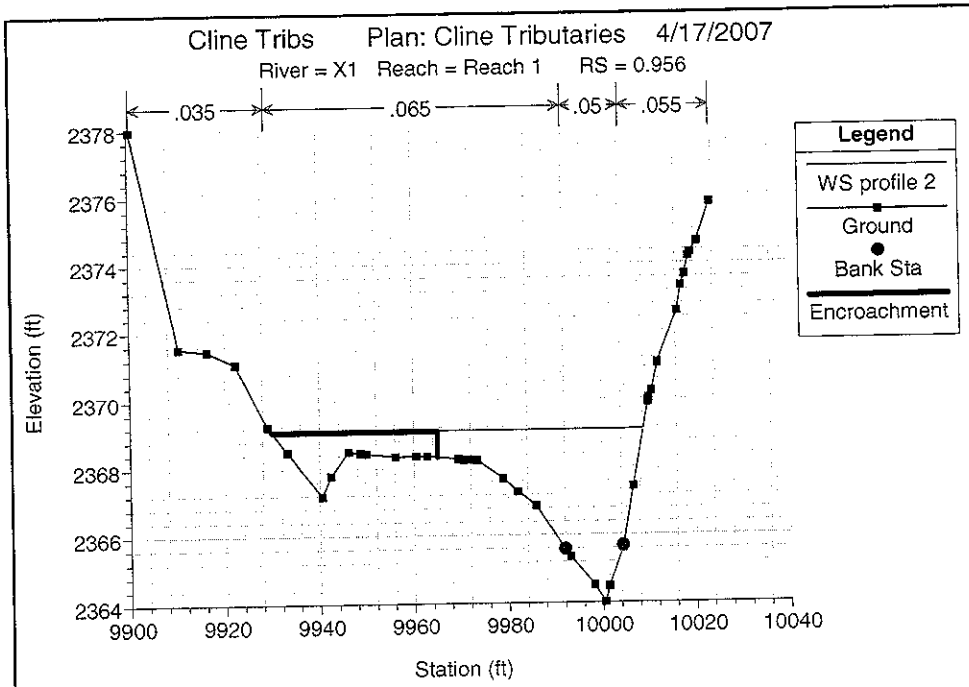

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.053
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

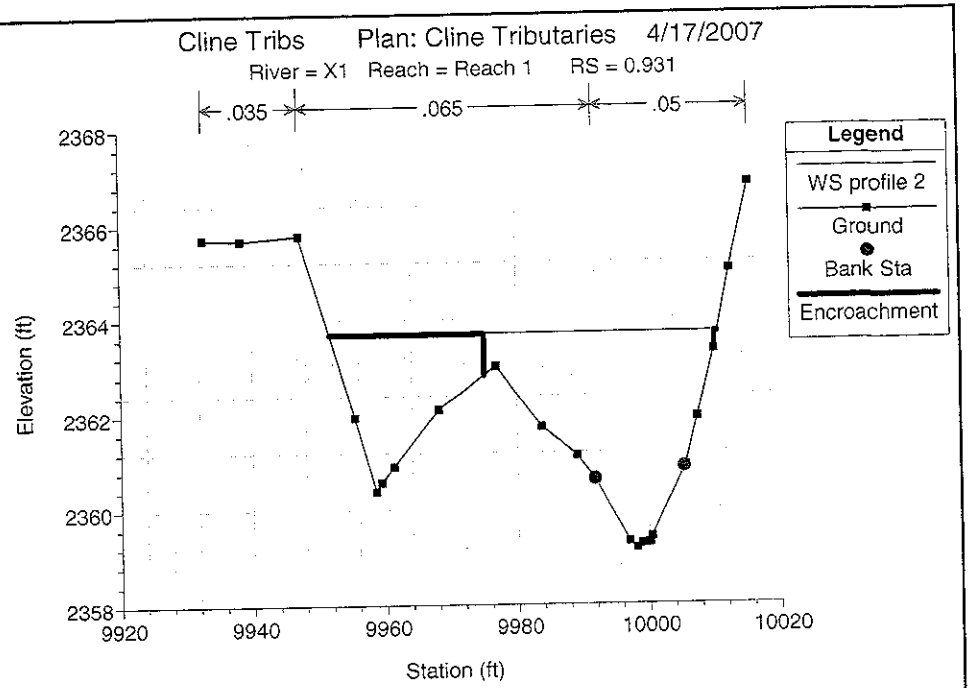

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.047
.065
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

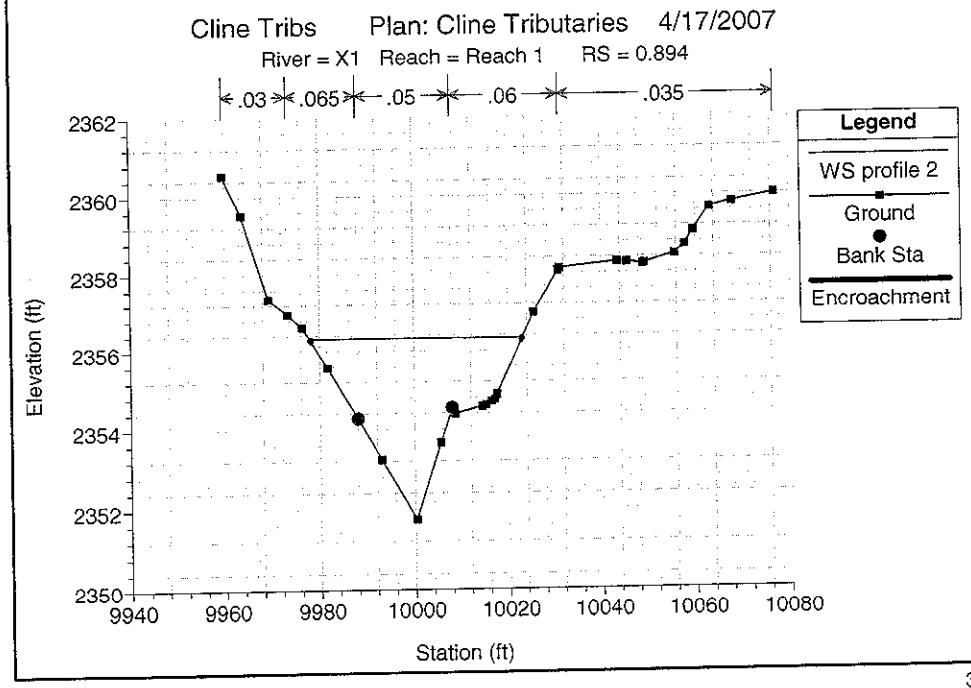

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.028
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

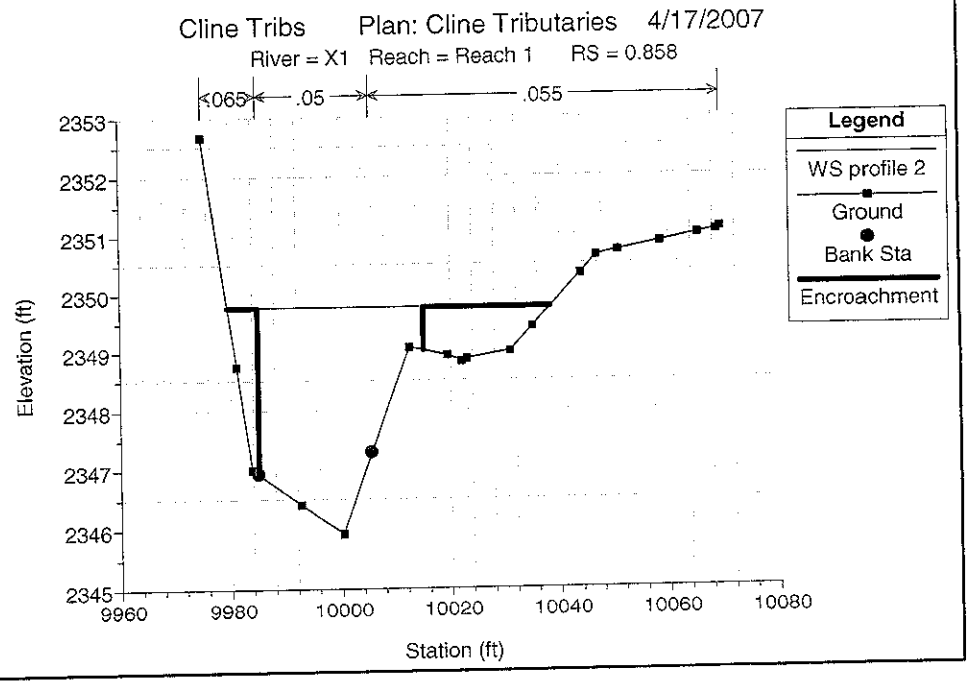

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 1.002
.06
.05
.055
Legend
WS profile 2
Ground
Levee
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

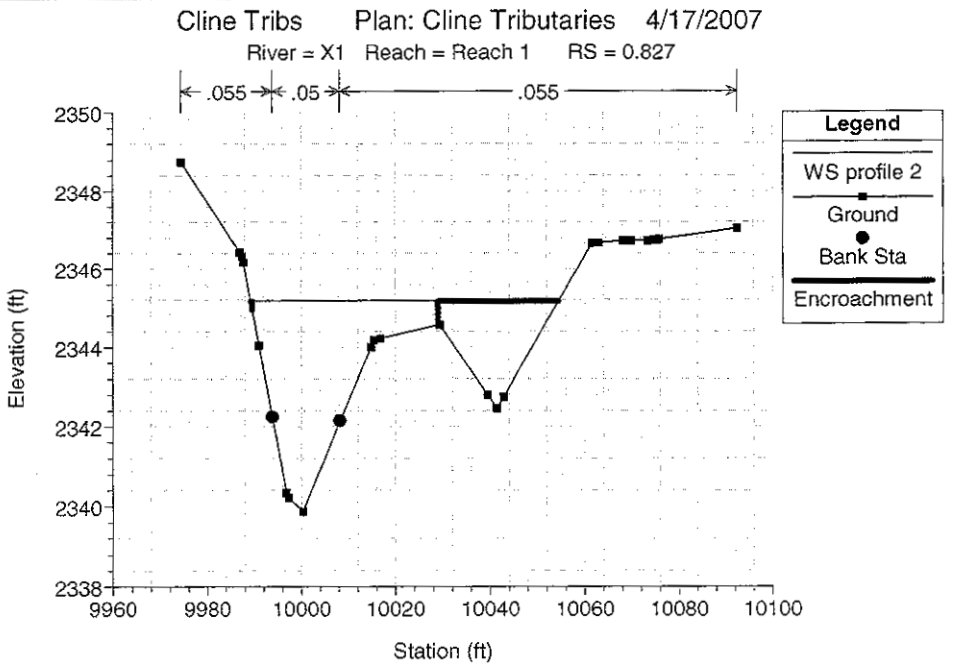

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.979
.06
.055
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

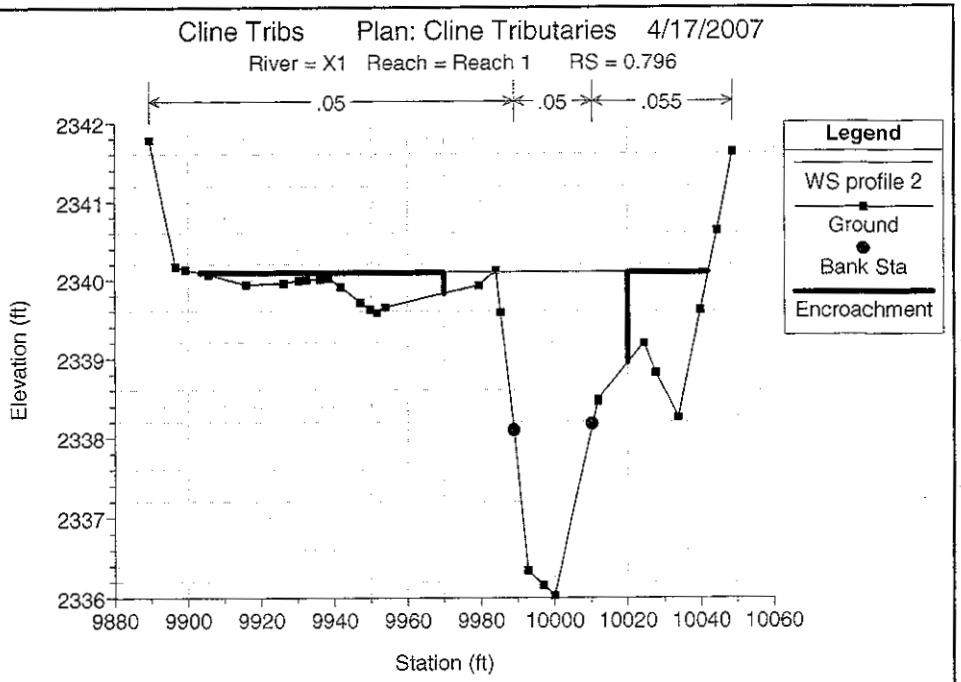

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.956
.035
.065
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

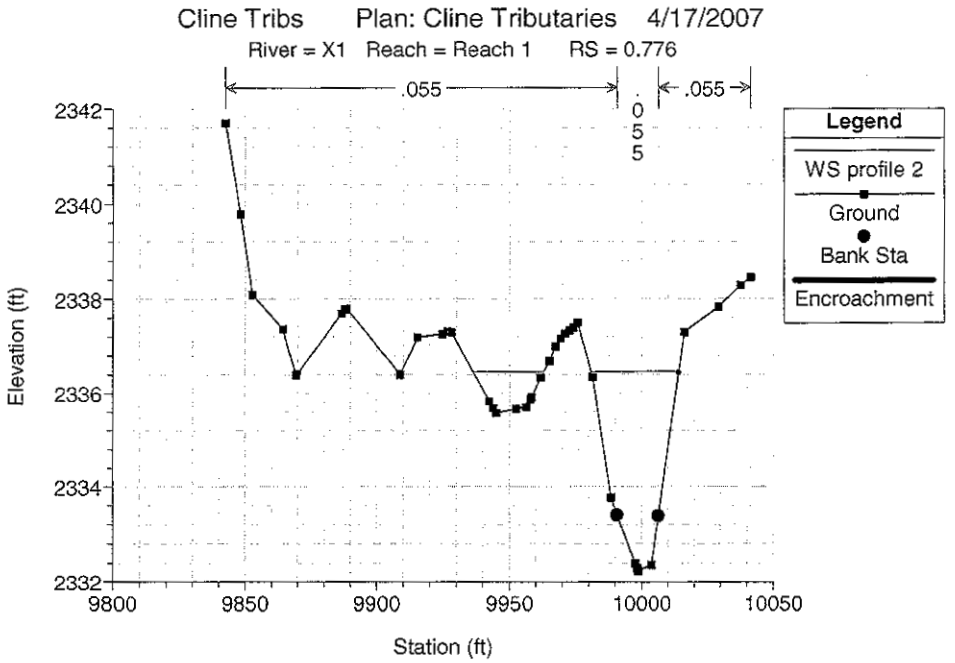

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.931
.035
.065
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

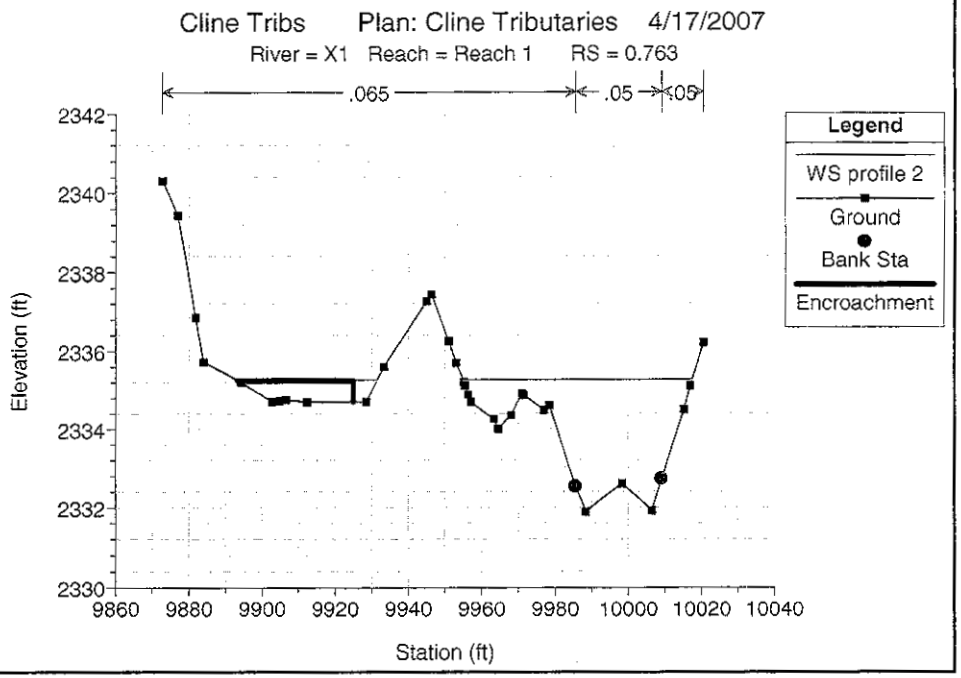

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.894
.03
.065
.05
.06
.035
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

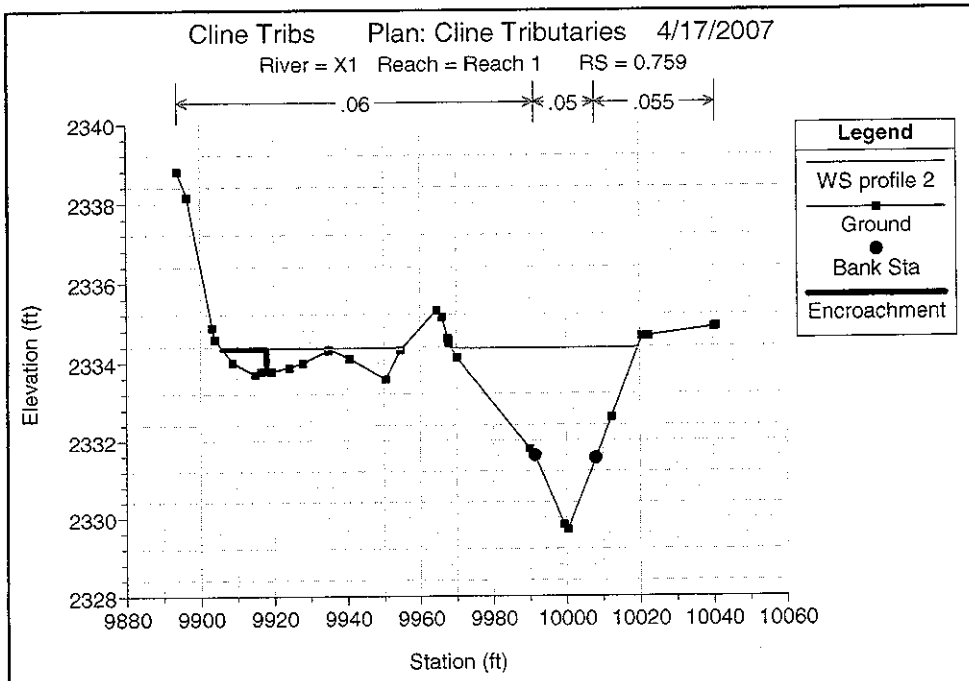

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.858
.065
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

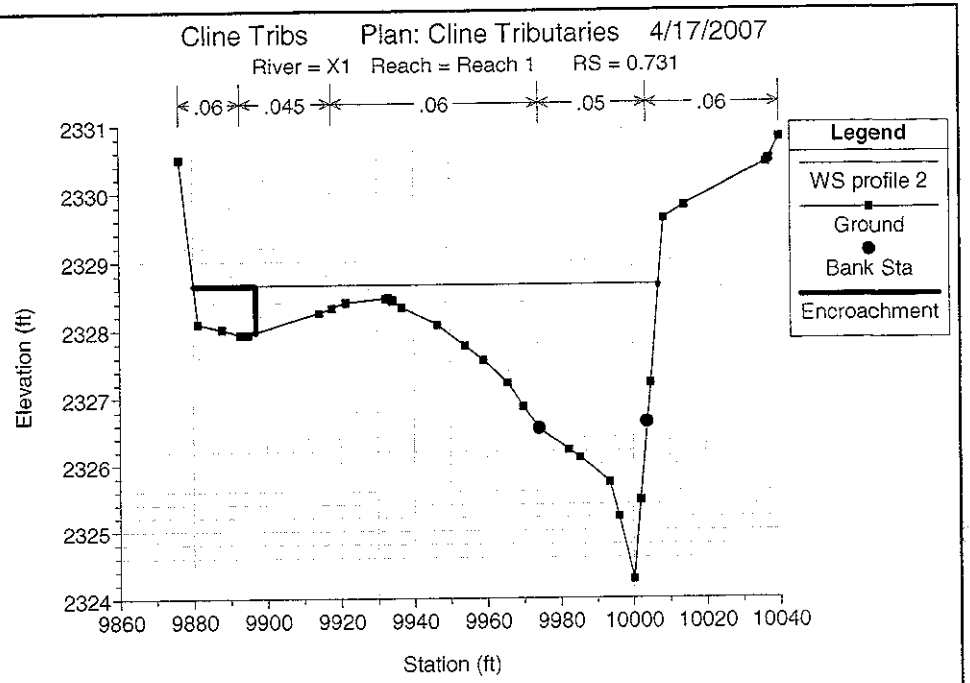

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.827
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

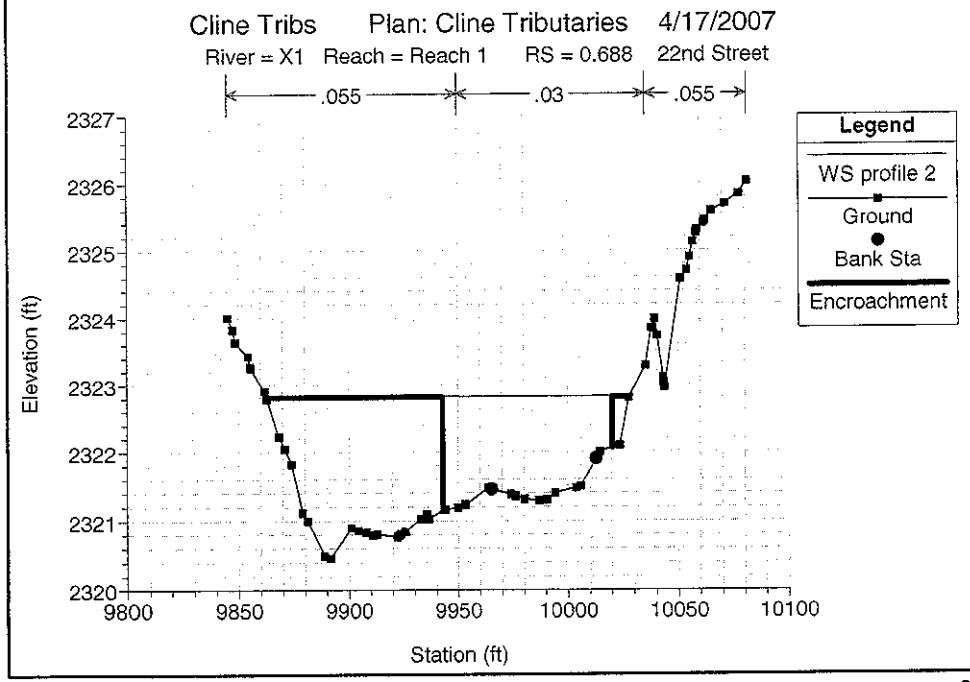

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.796
.05
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

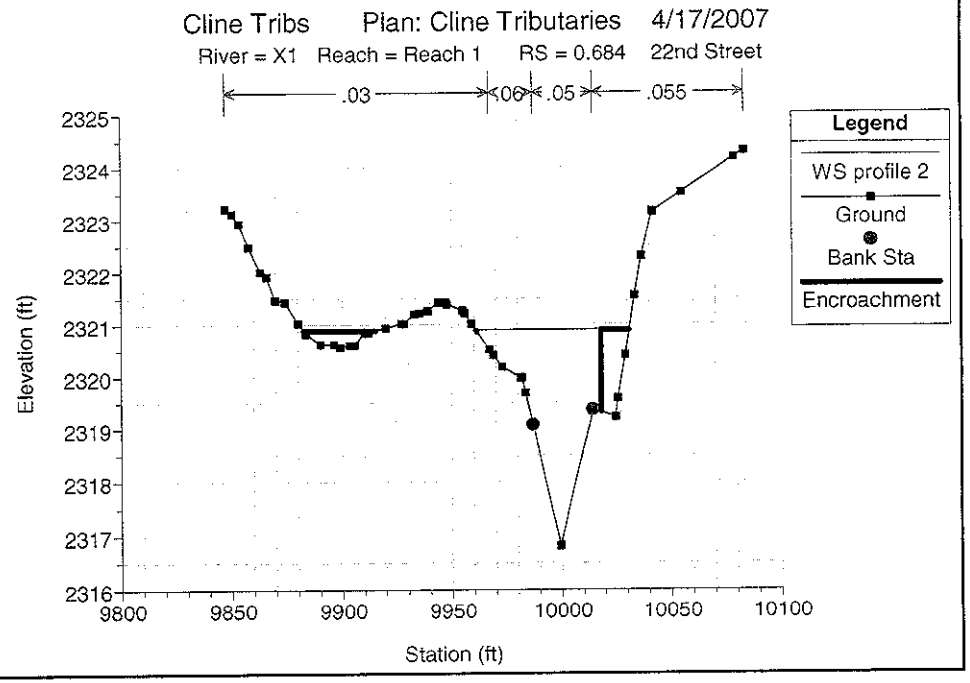

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.776
.055
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

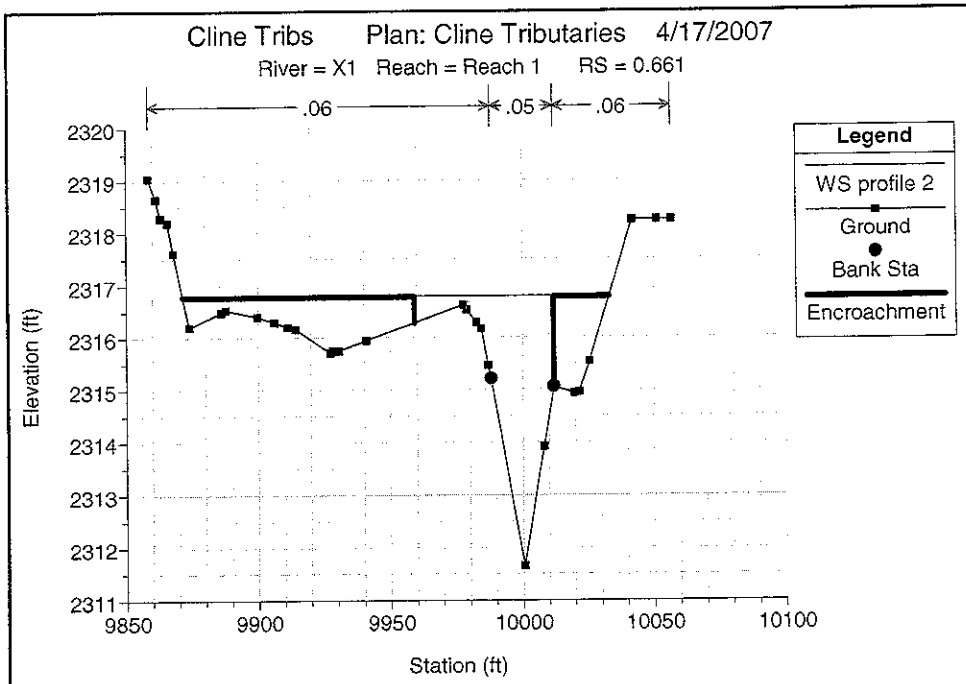

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.763
.065
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

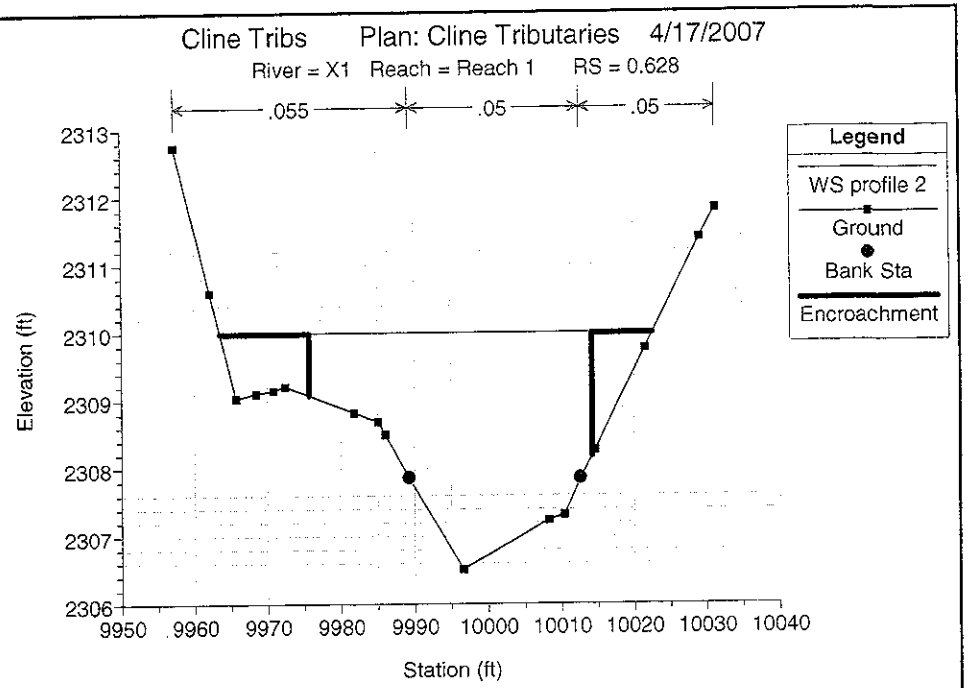

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.759
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

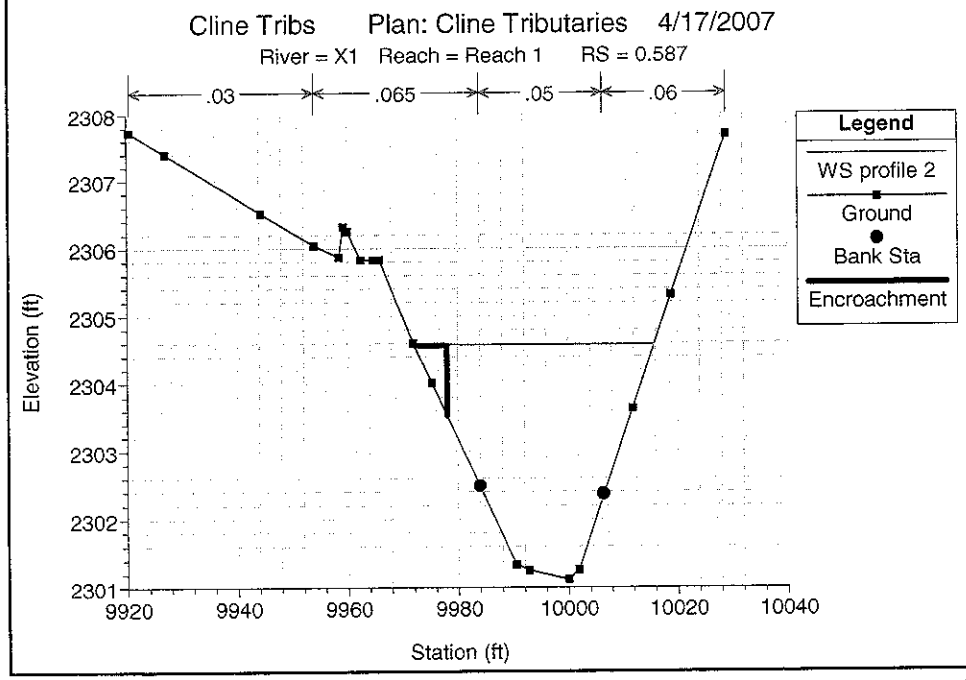

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.731
.06
.045
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

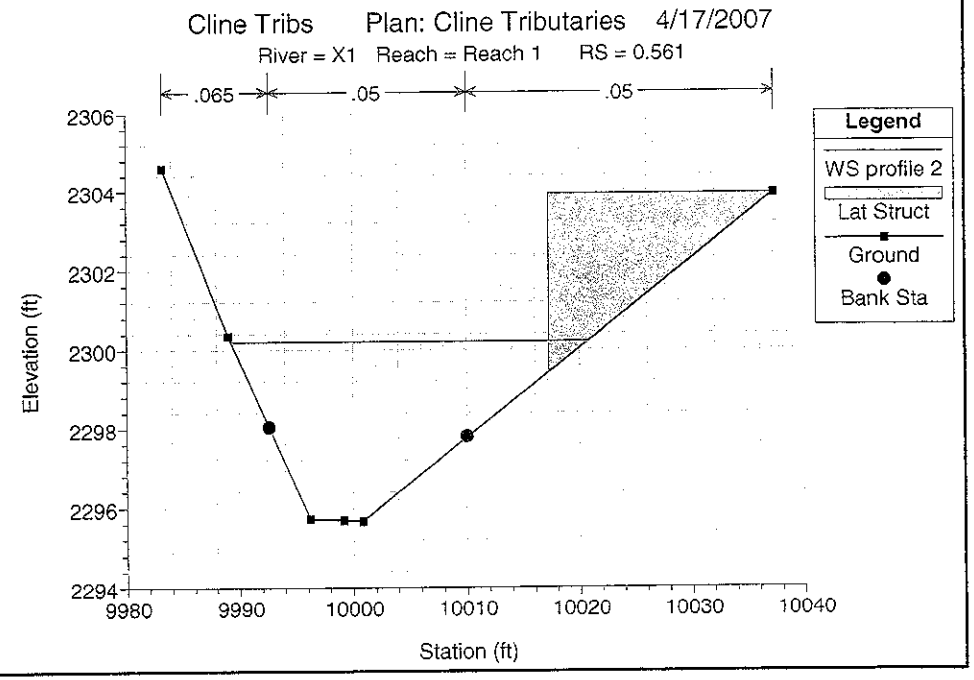

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.688 22nd Street
.055
.03
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

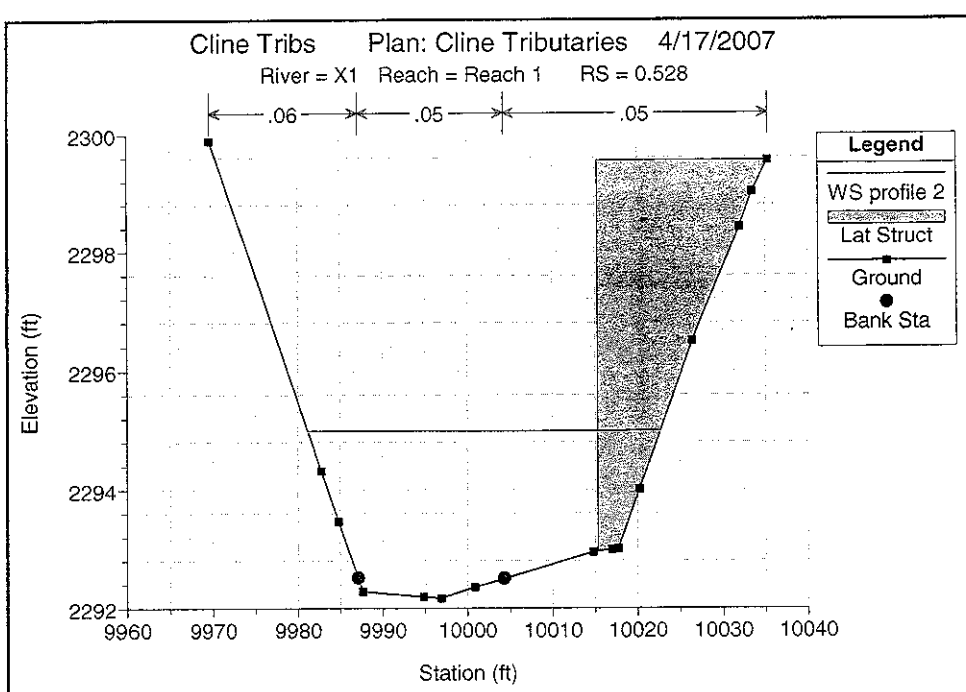

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.684 22nd Street
.03
.06
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

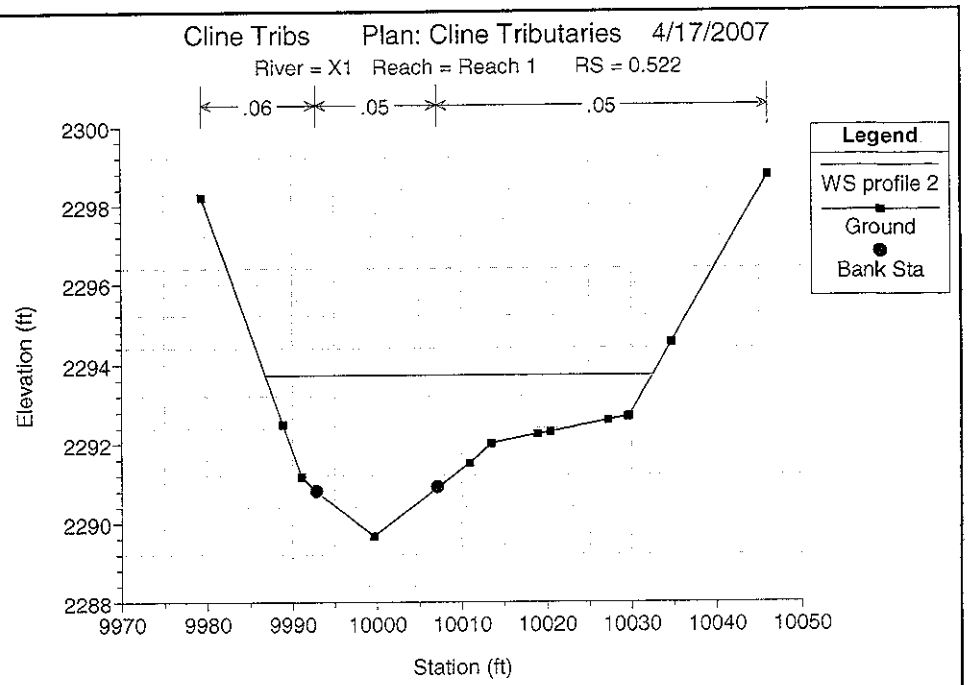

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.661
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

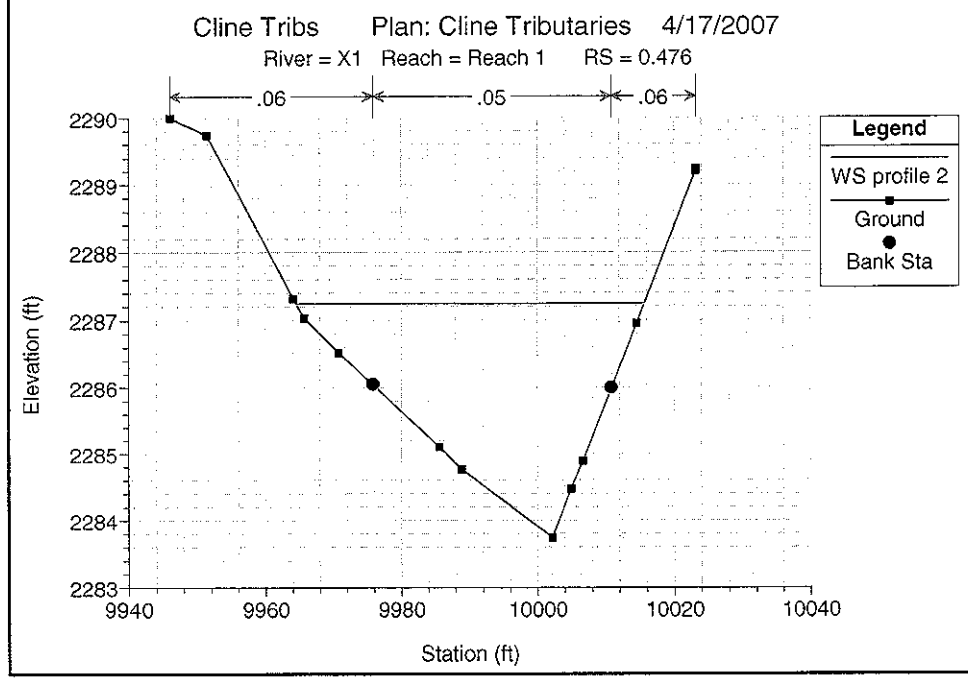

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.628
.055
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

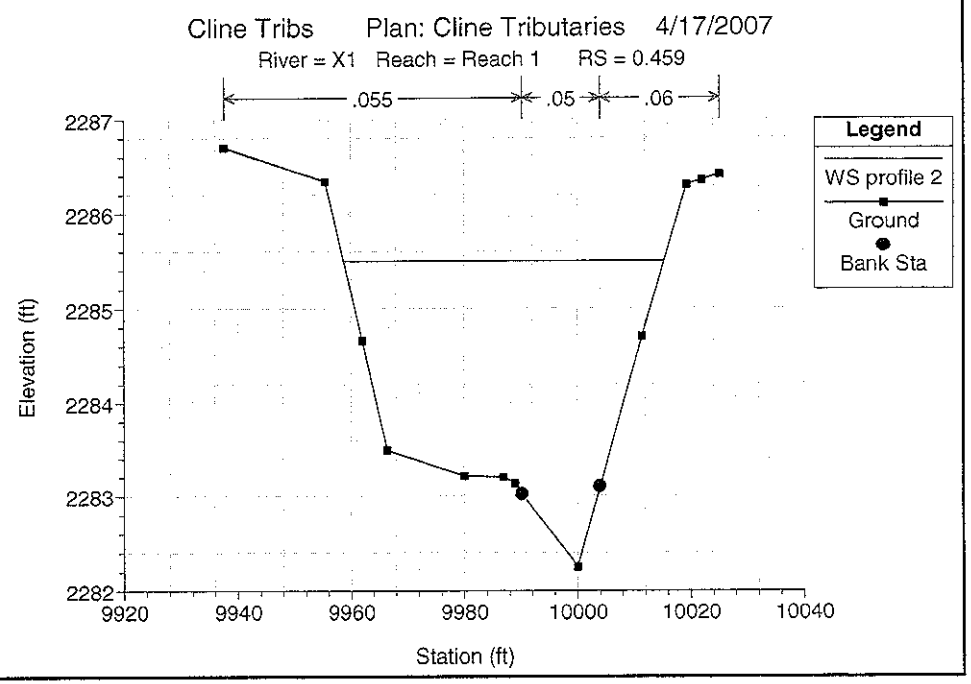

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.587
.03
.065
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

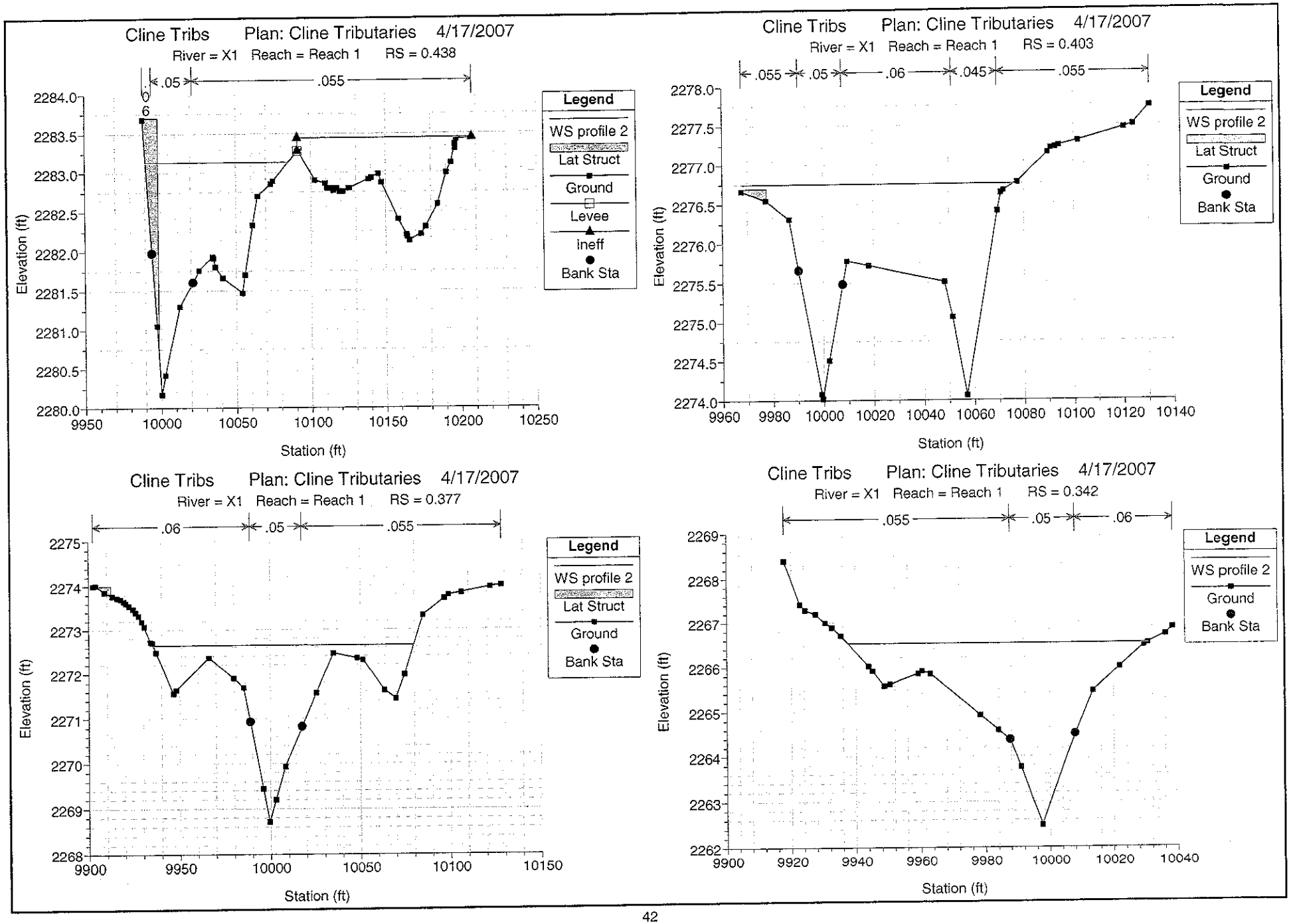

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.561
.065
.05
.05
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)

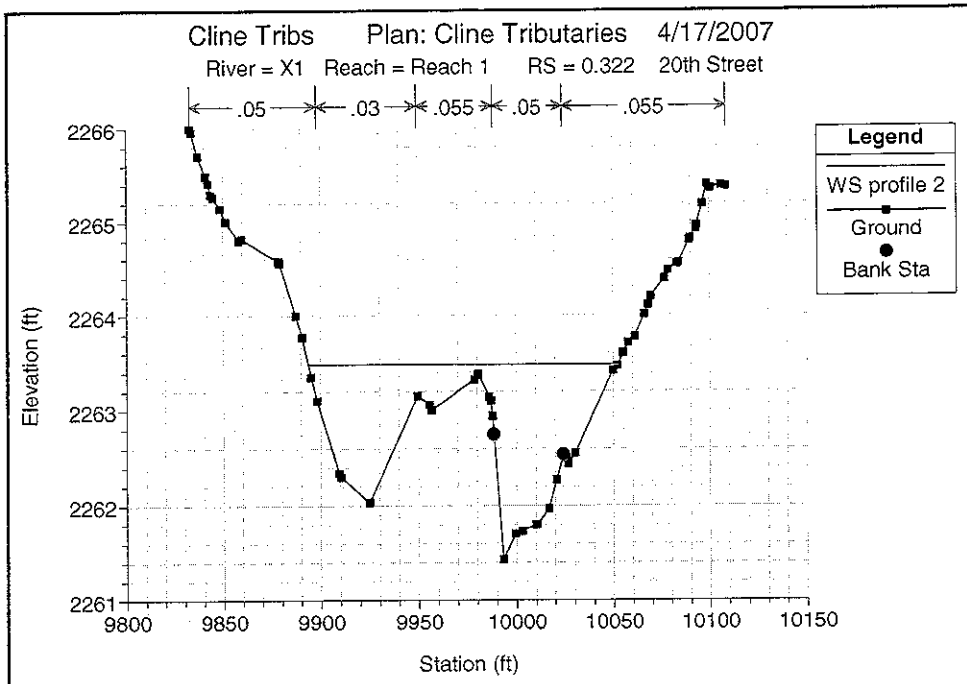

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.528
.06
.05
.05
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)

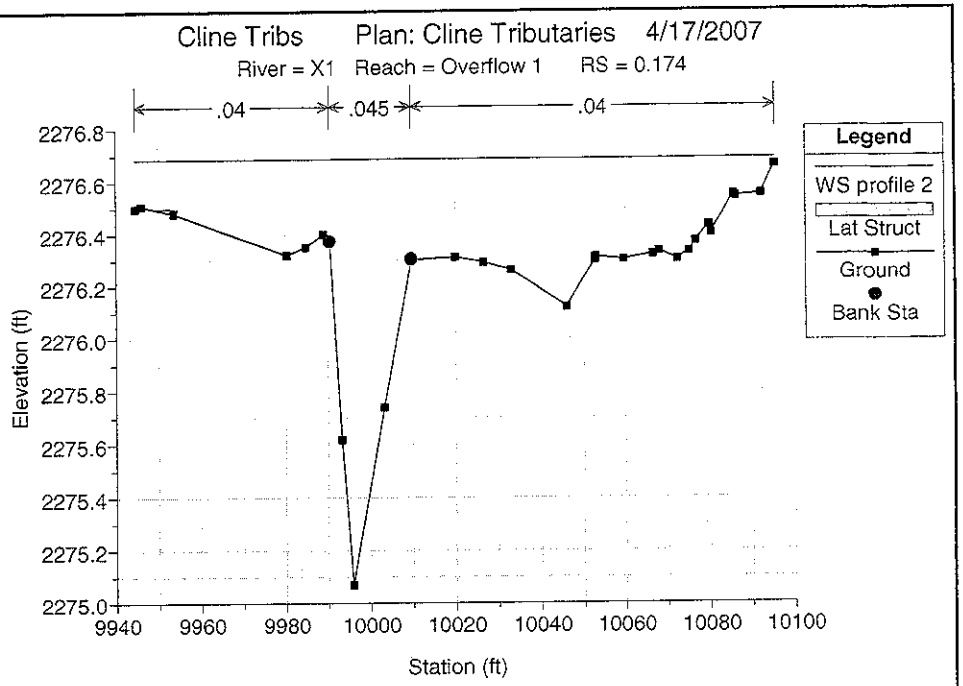

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.522
.06
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

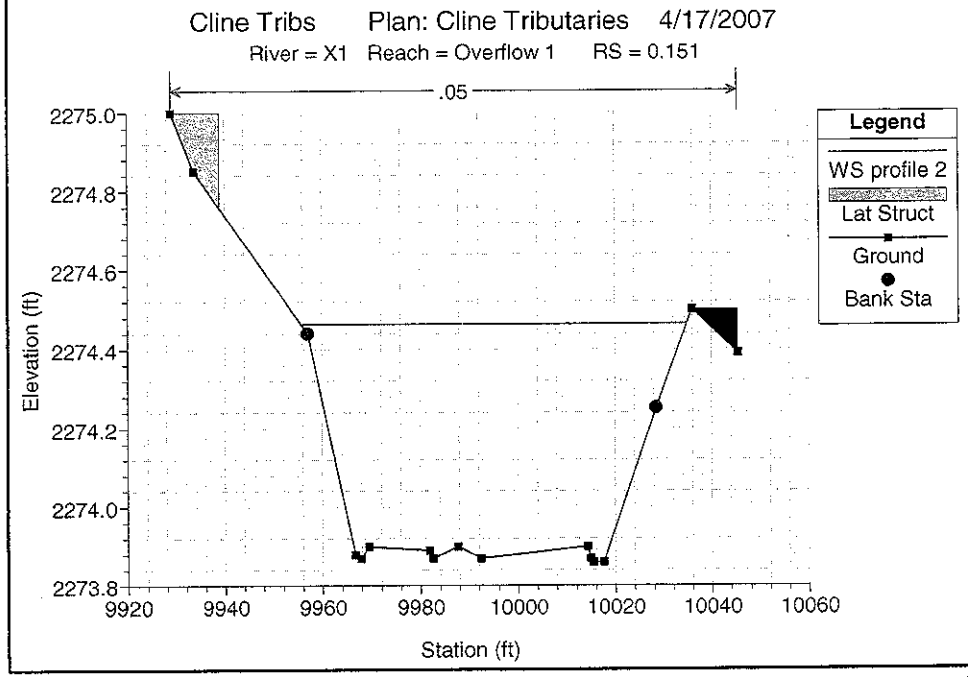

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.476
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

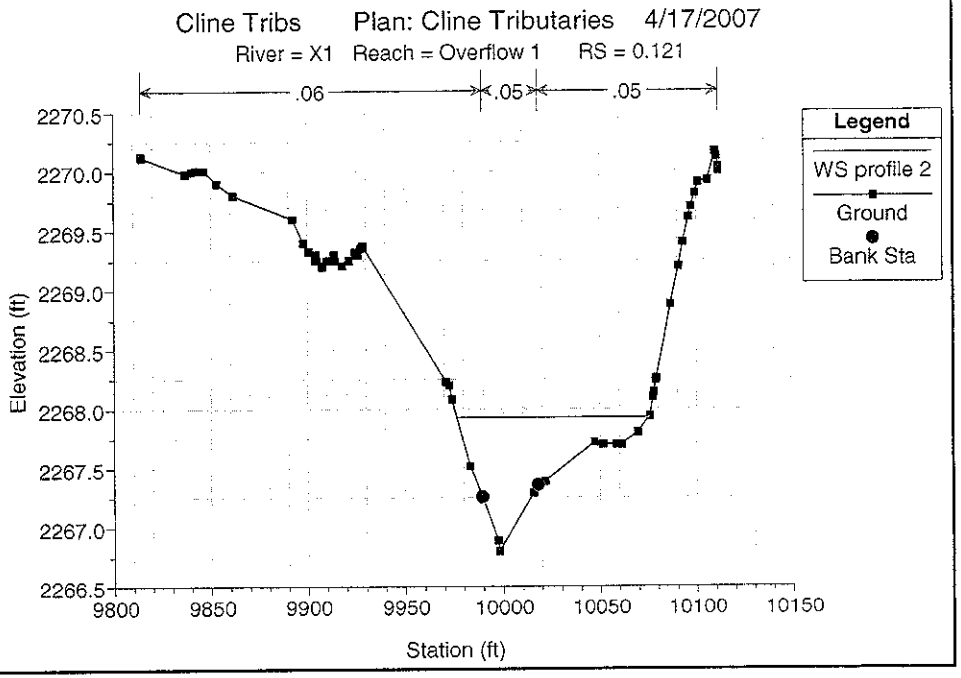

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.459
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

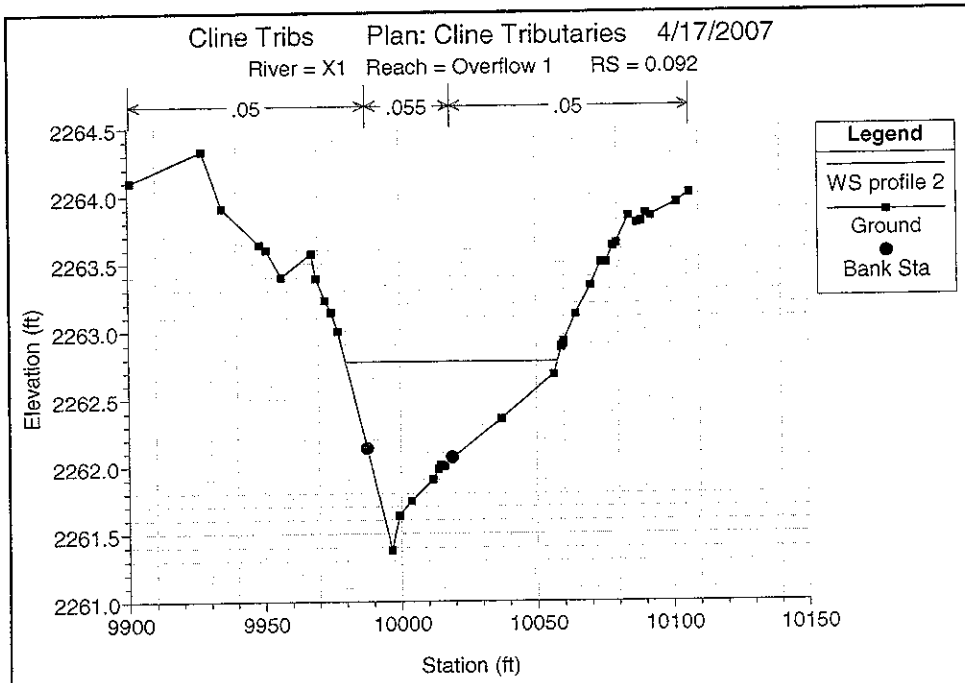

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.438
.05
.055
Elevation (ft)
Station (ft)
Legend
WS profile 2
Lat Struct
Ground
Levee
Ineff
Bank Sta
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.403
.055
.05
.06
.045
.055
Elevation (ft)
Station (ft)
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.377
.06
.05
.055
Elevation (ft)
Station (ft)
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.342
.055
.05
.06
Elevation (ft)
Station (ft)
Legend
WS profile 2
Ground
Bank Sta

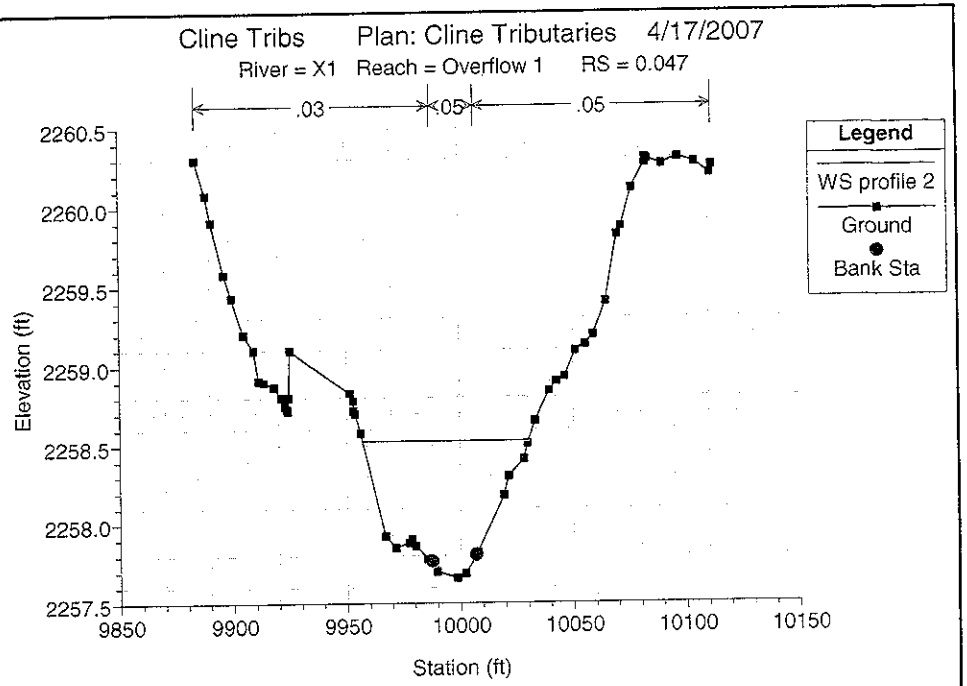

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 1 RS = 0.322 20th Street
.05
.03
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

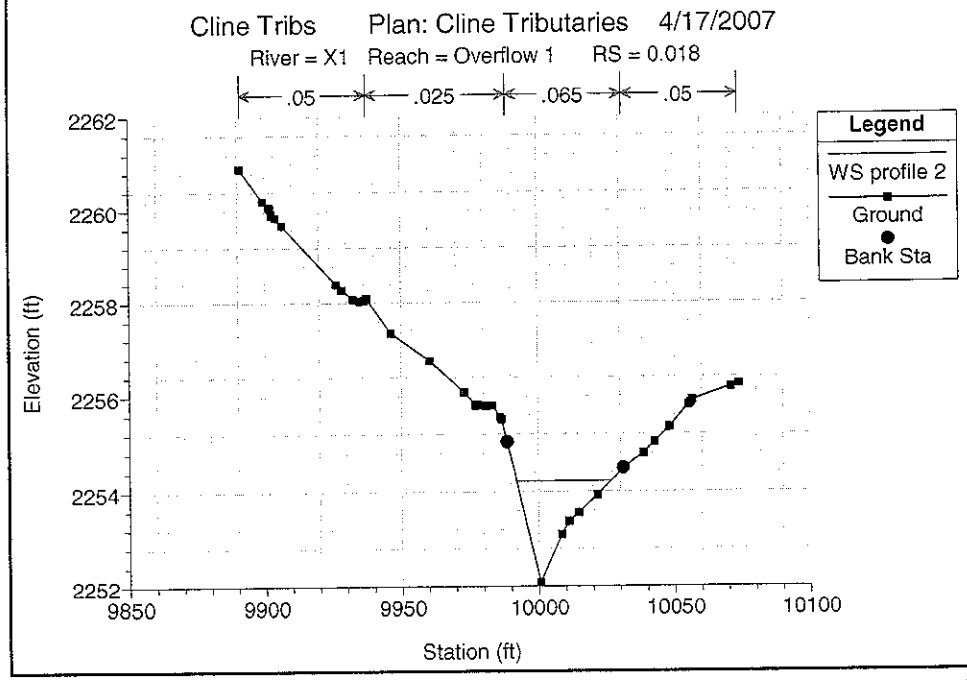

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Overflow 1 RS = 0.174
.04
.045
.04
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)

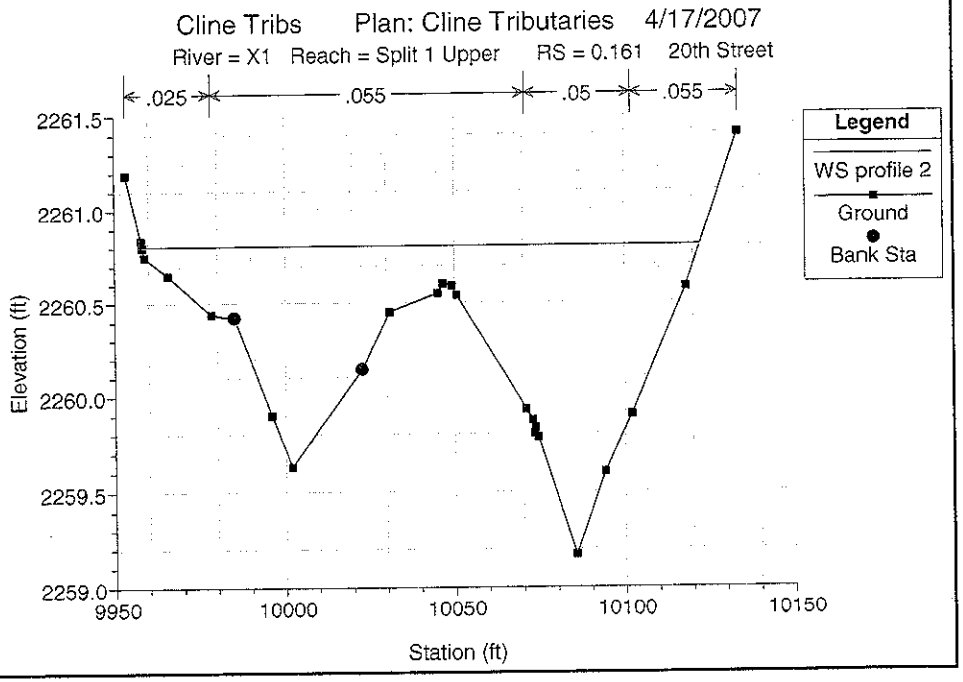

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Overflow 1 RS = 0.151
.05
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)

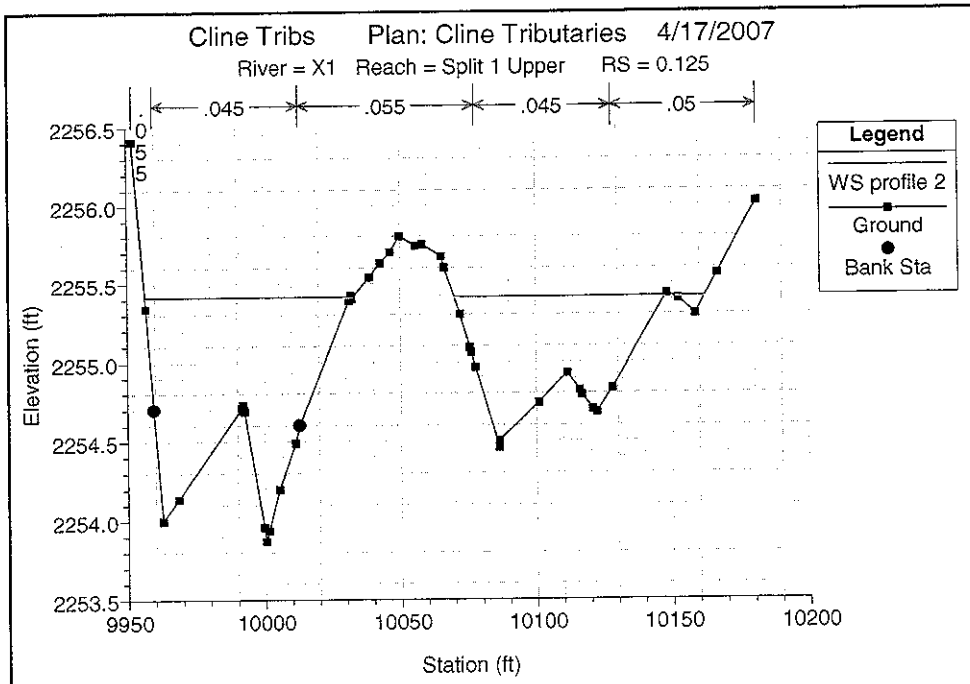

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Overflow 1 RS = 0.121
.06
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

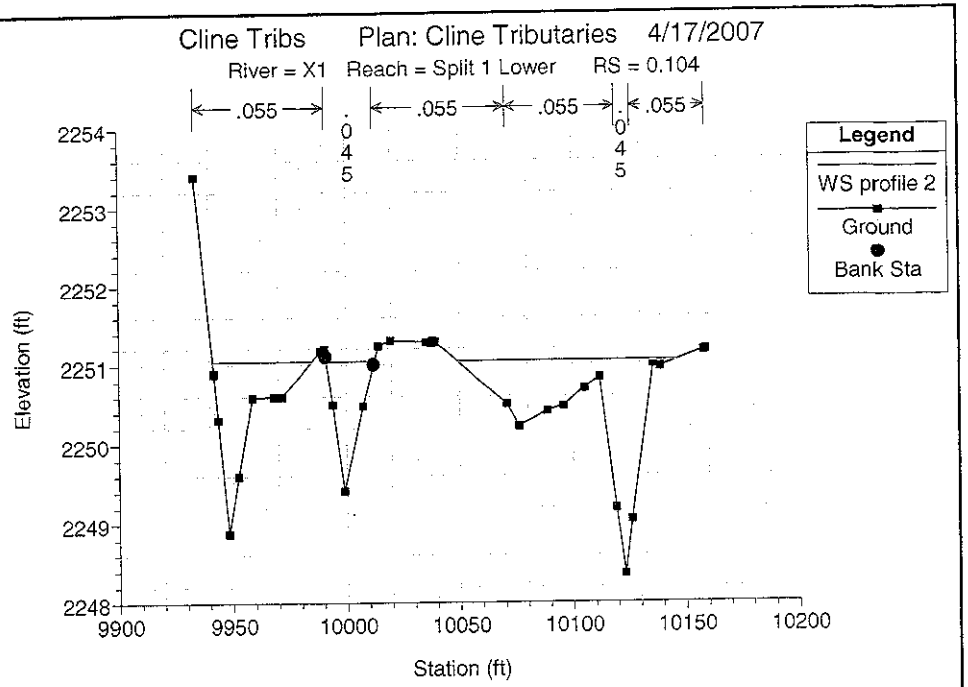

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Overflow 1 RS = 0.092
.05
.055
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

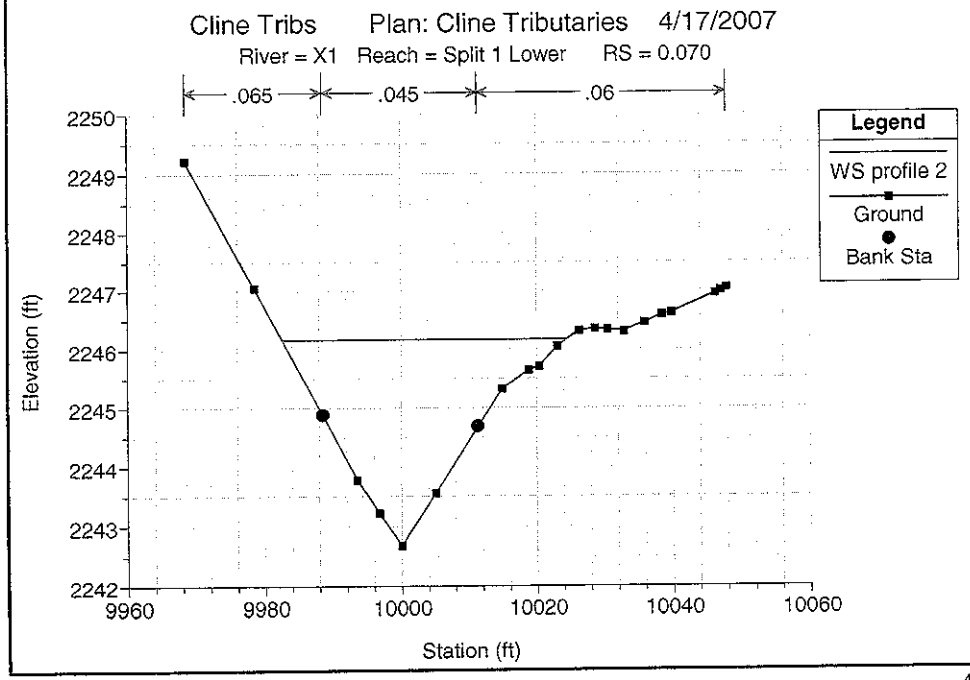

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Overflow 1 RS = 0.047
.03
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

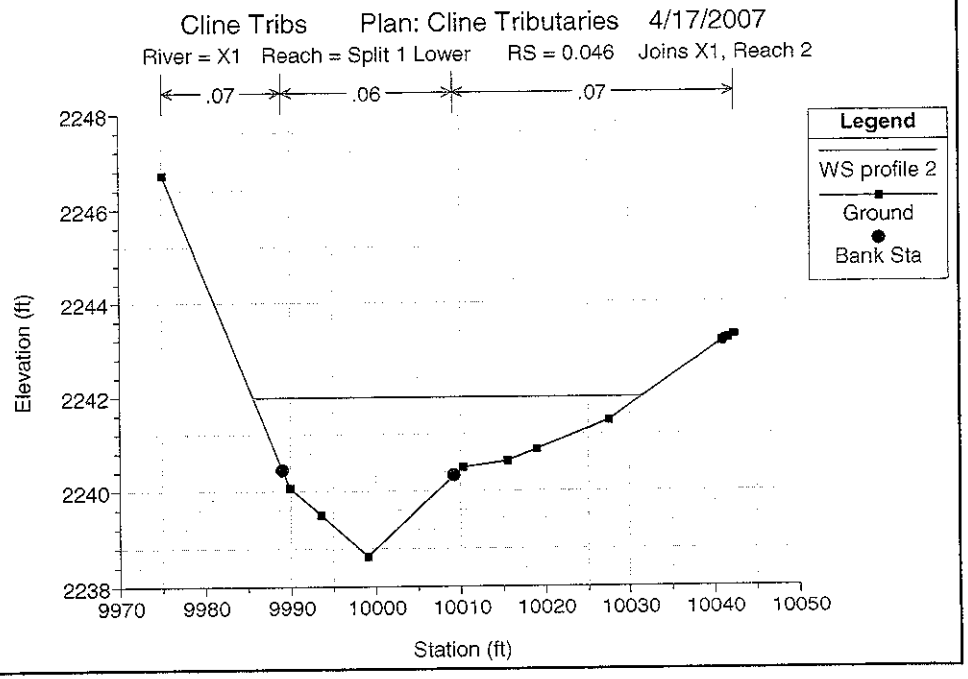

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Overflow 1 RS = 0.018
.05
.025
.065
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

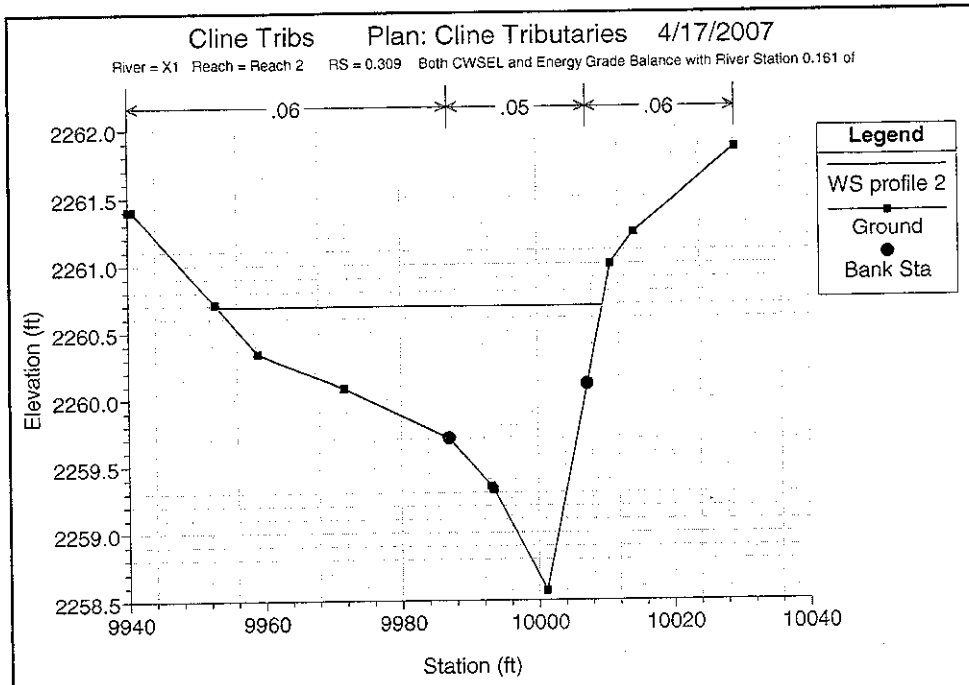

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Split 1 Upper RS = 0.161 20th Street
.025
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

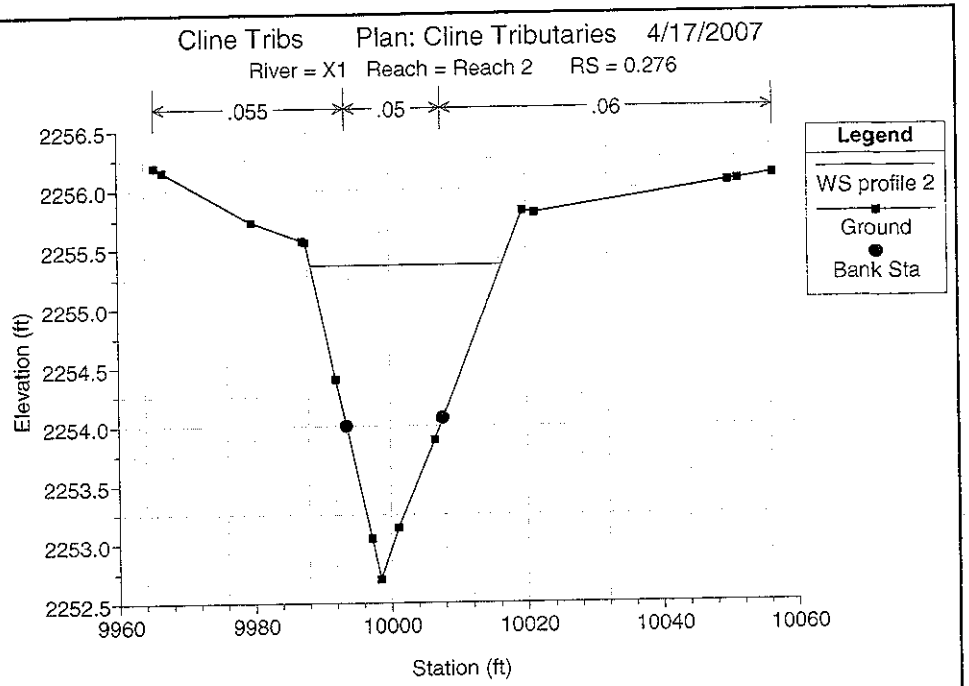

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Split 1 Upper RS = 0.125
.045
.055
.045
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

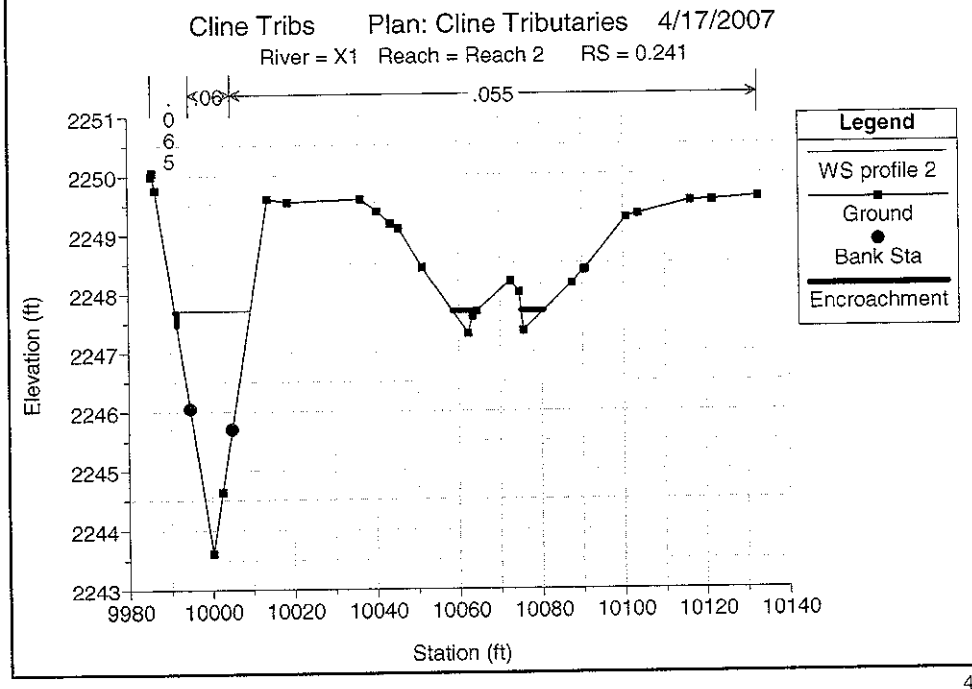

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Split 1 Lower RS = 0.104
.055
.055
.055
.055
.045
.045
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

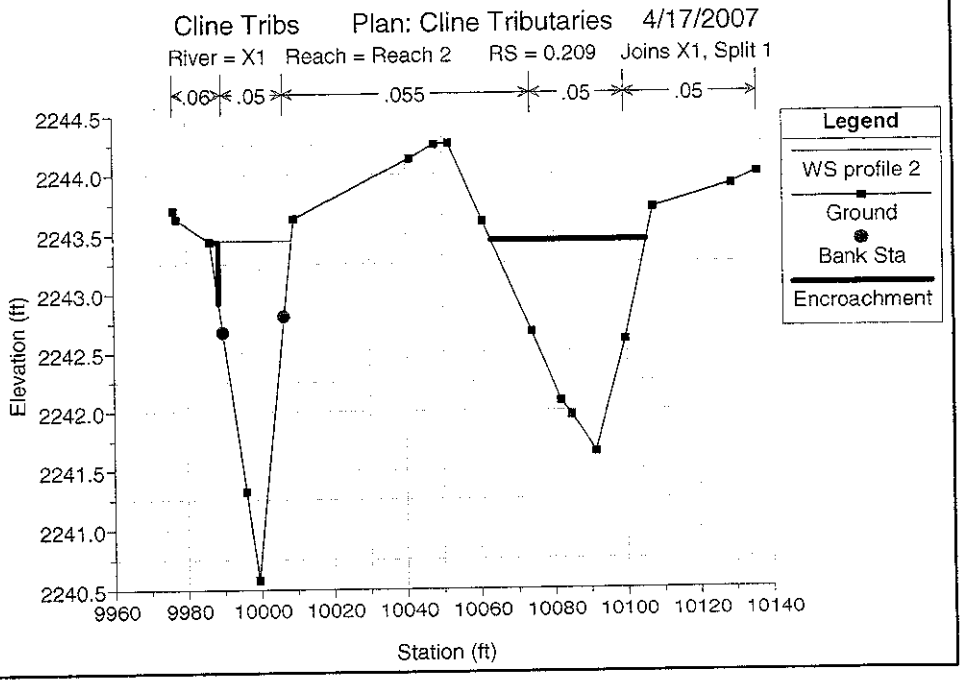

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Split 1 Lower RS = 0.070
.065
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

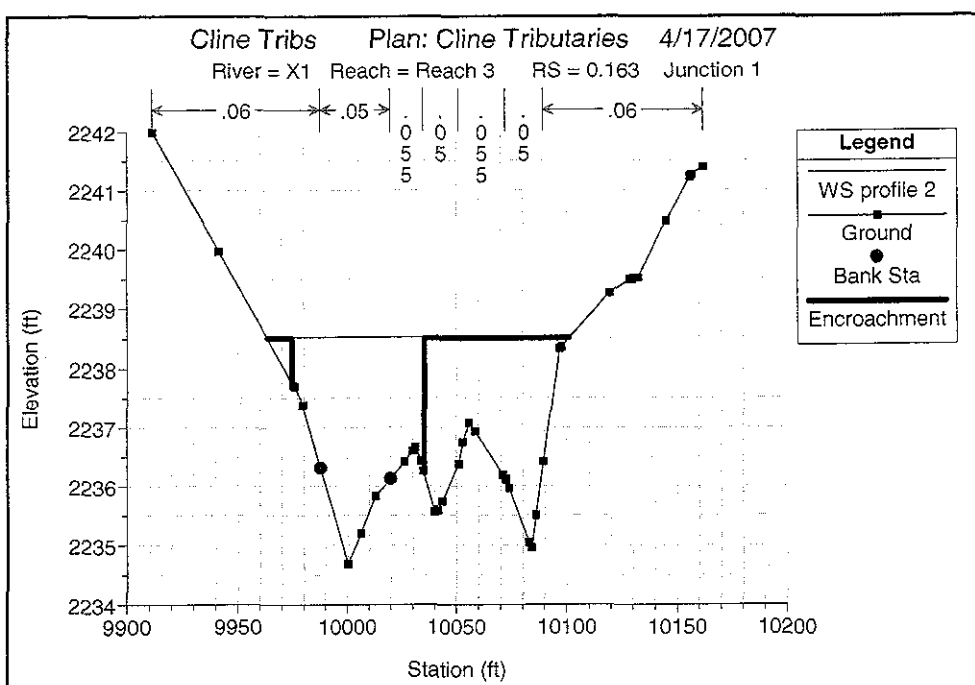

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Split 1 Lower RS = 0.046 Joins X1, Reach 2
.07
.06
.07
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

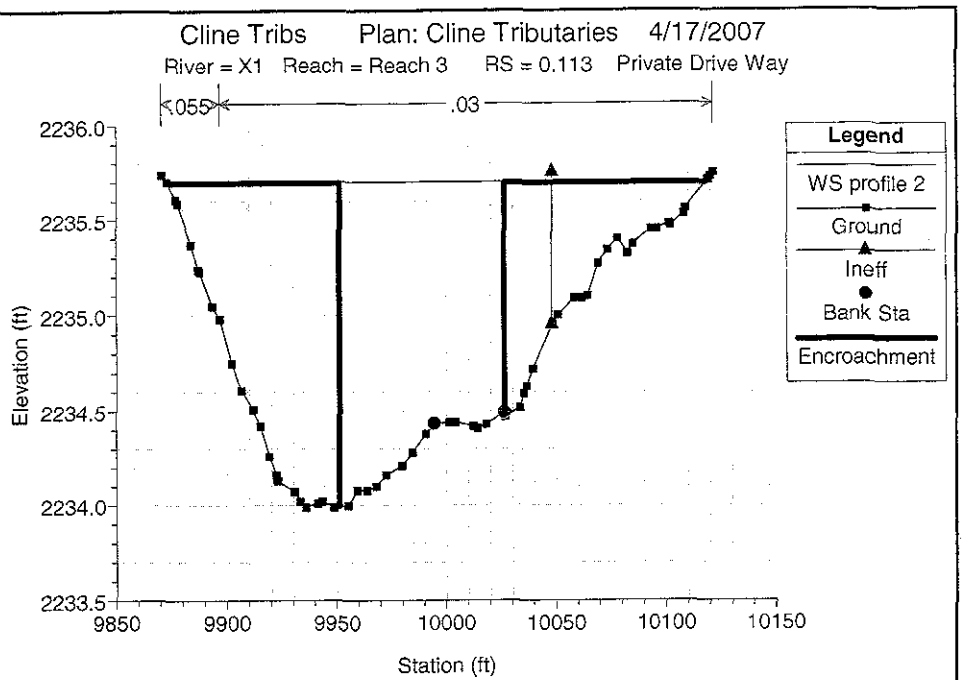

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 2 RS = 0.309 Both CWSEL and Energy Grade Balance with River Station 0.161 of
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

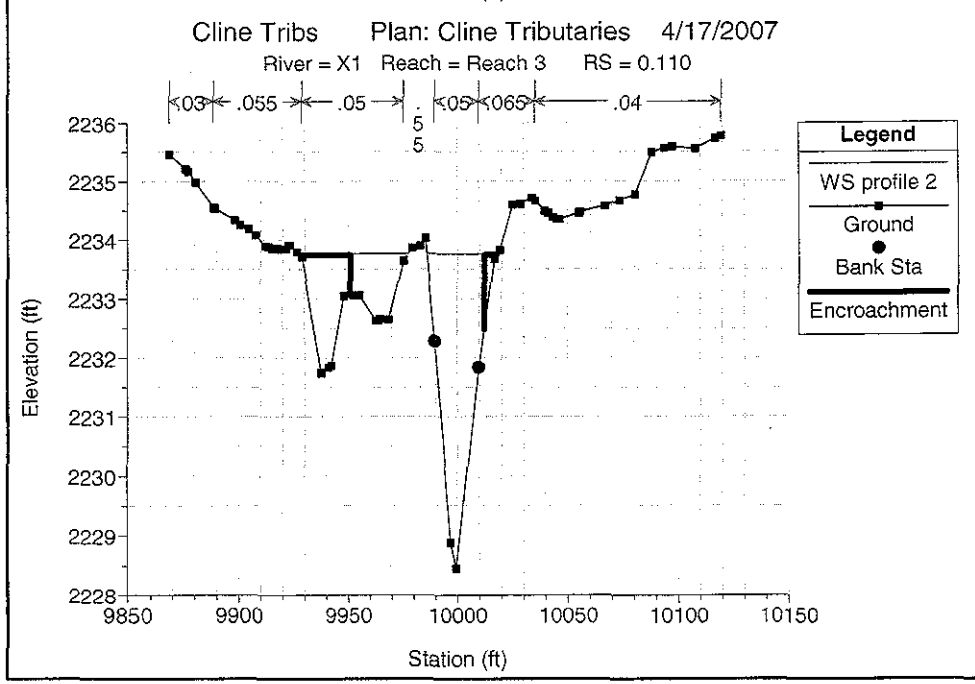

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 2 RS = 0.276
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

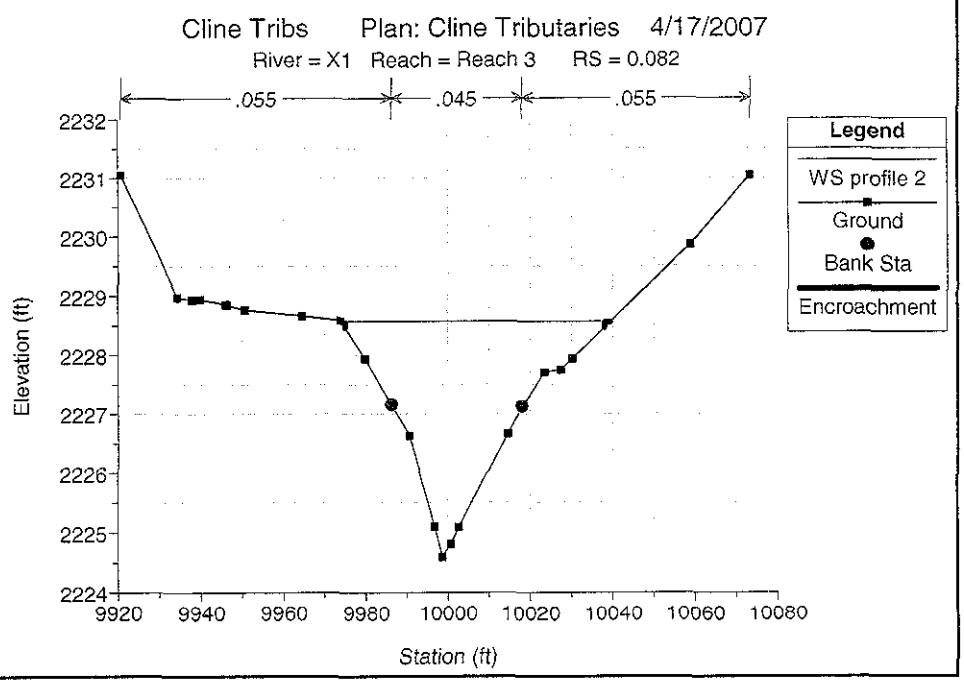

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 2 RS = 0.241
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

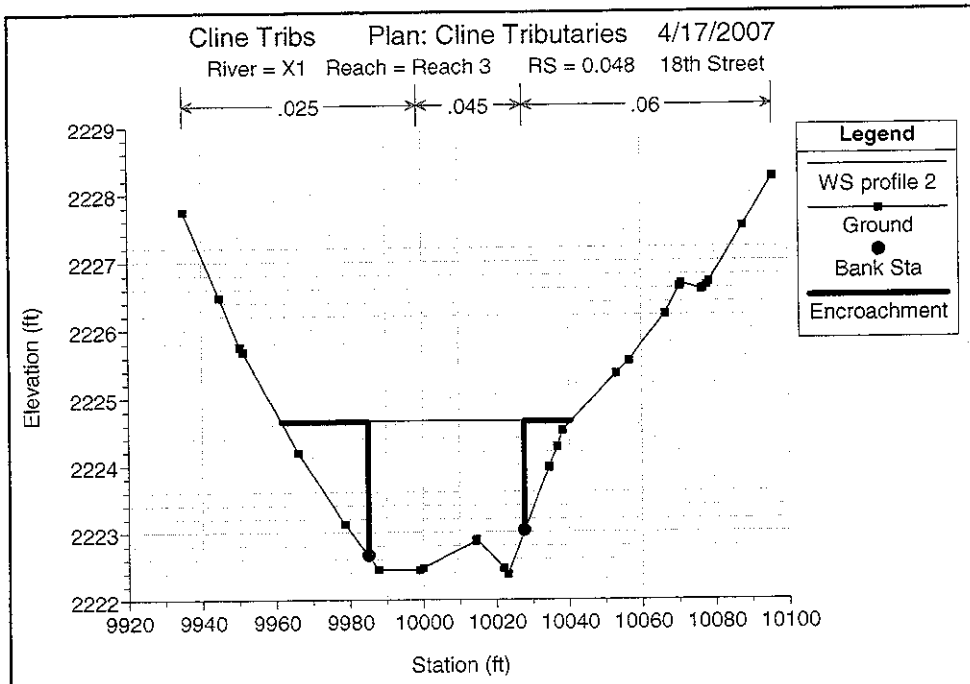

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 2 RS = 0.209 Joins X1, Split 1
.06
.05
.055
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

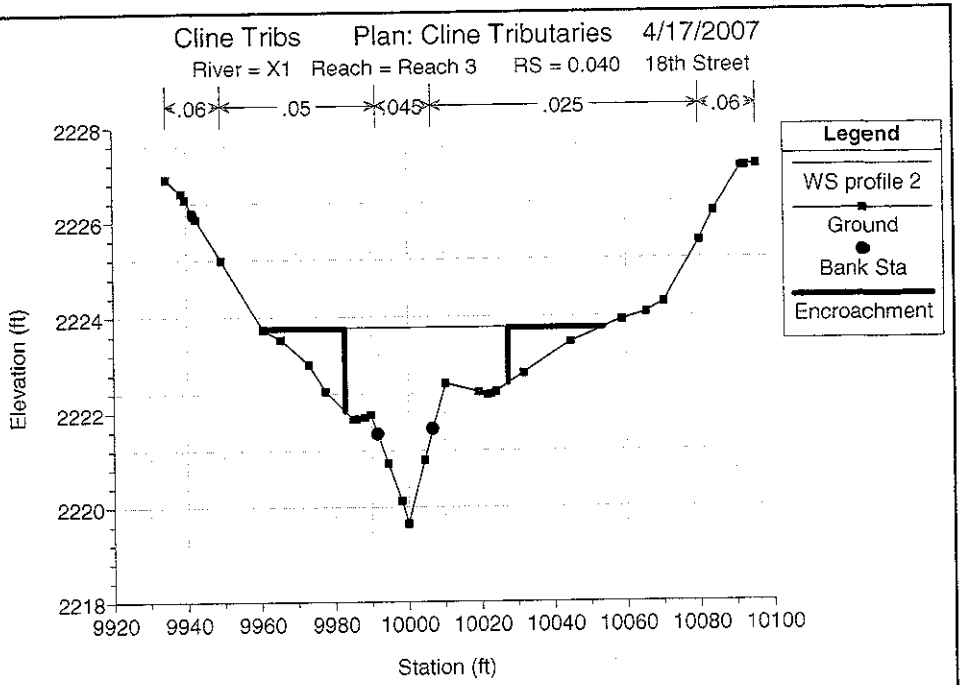

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 3 RS = 0.163 Junction 1
.06
.05
.055
.05
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

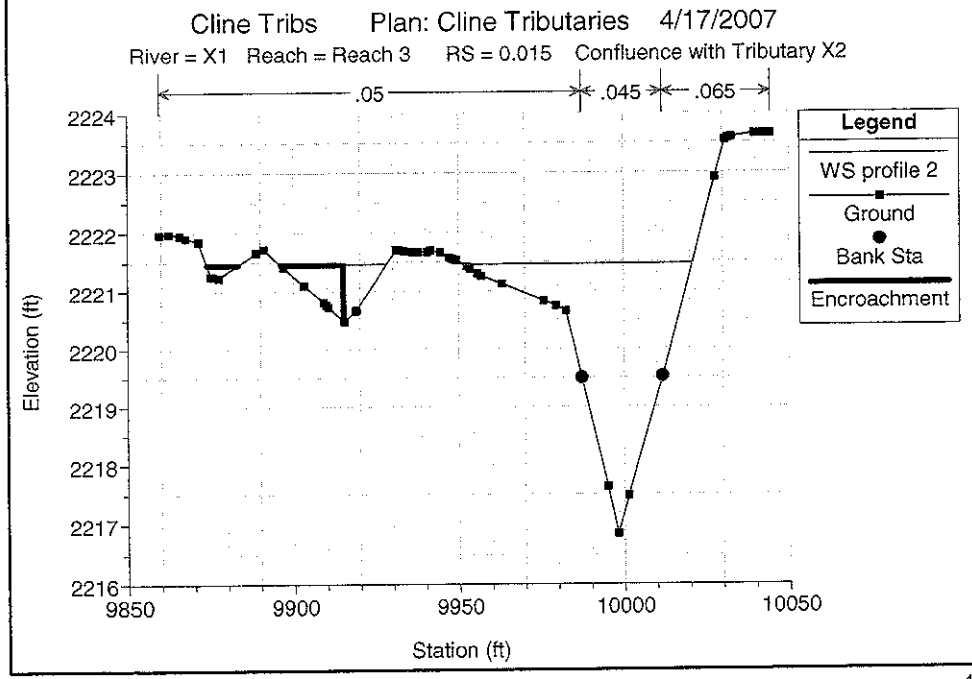

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 3 RS = 0.113 Private Drive Way
.055
.03
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

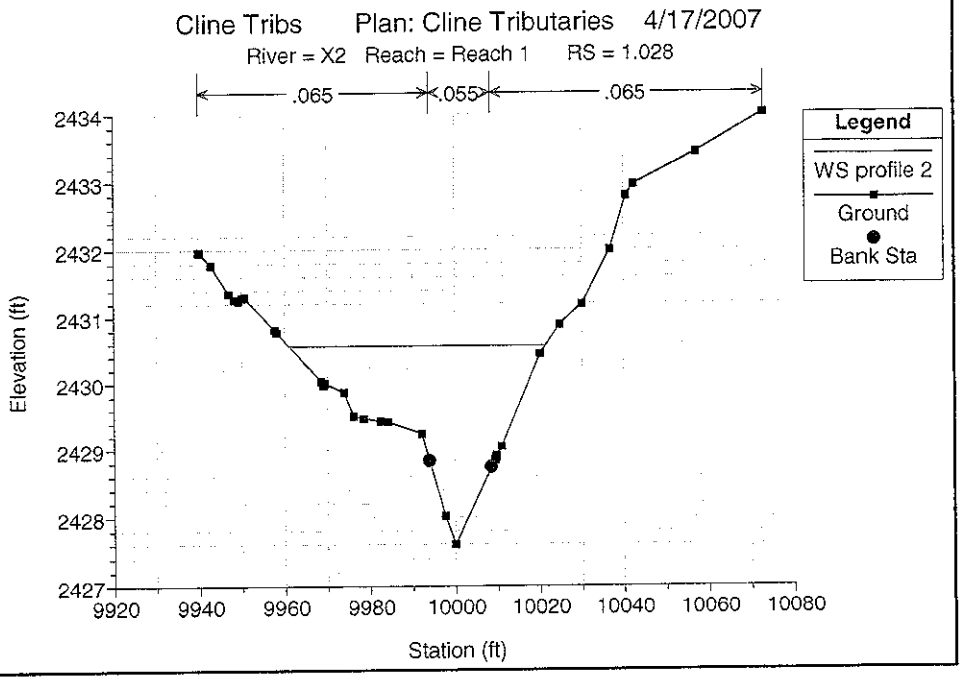

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 3 RS = 0.110
.03
.055
.05
.055
.05
.065
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

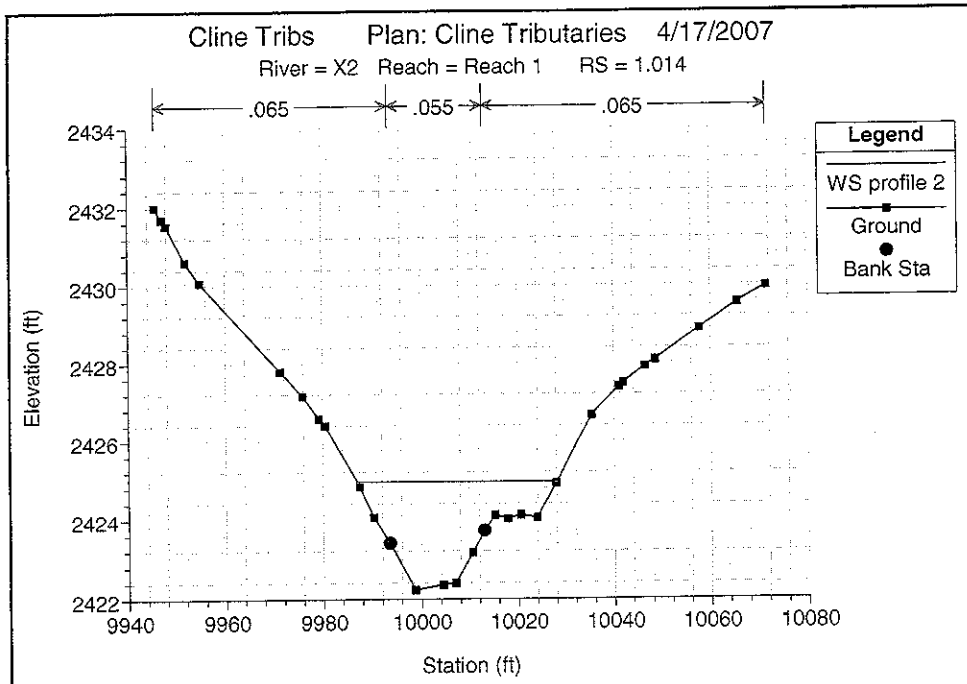

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 3 RS = 0.082
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

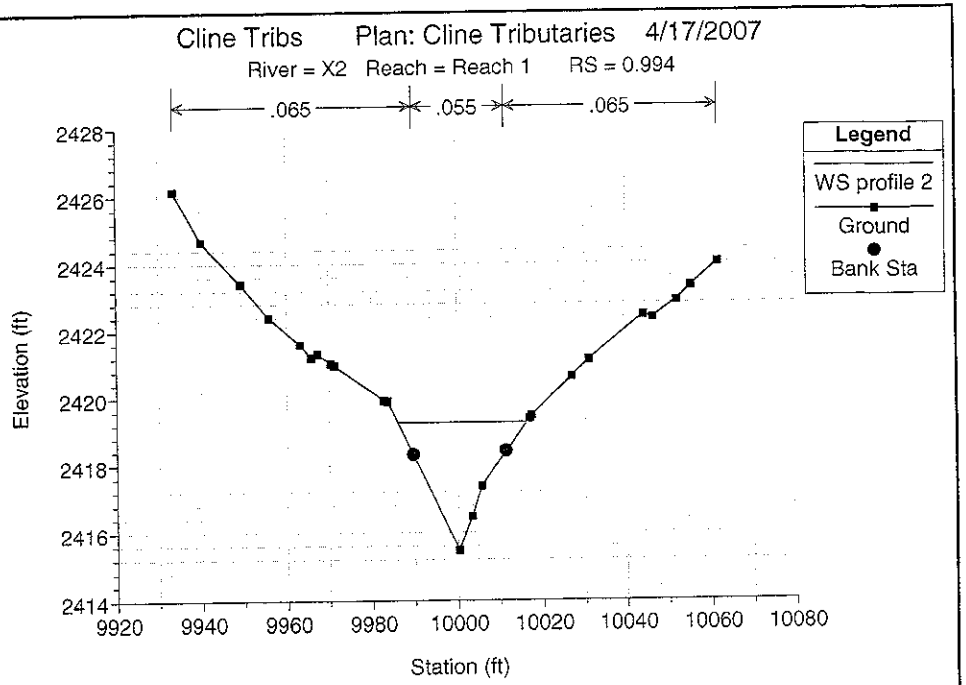

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 3 RS = 0.048 18th Street
.025
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

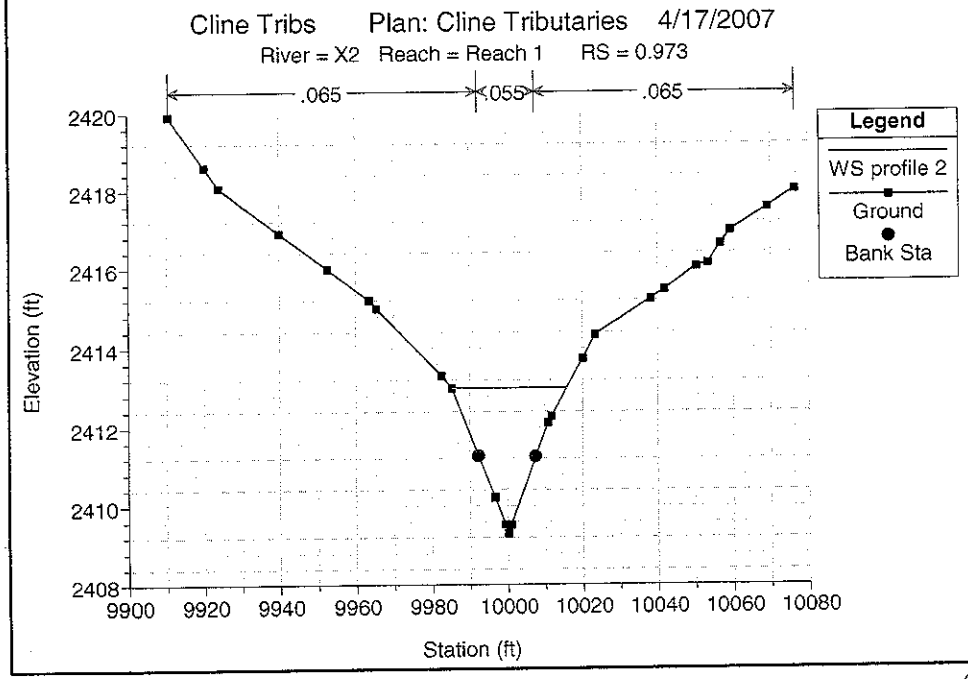

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 3 RS = 0.040 18th Street
.06
.05
.045
.025
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

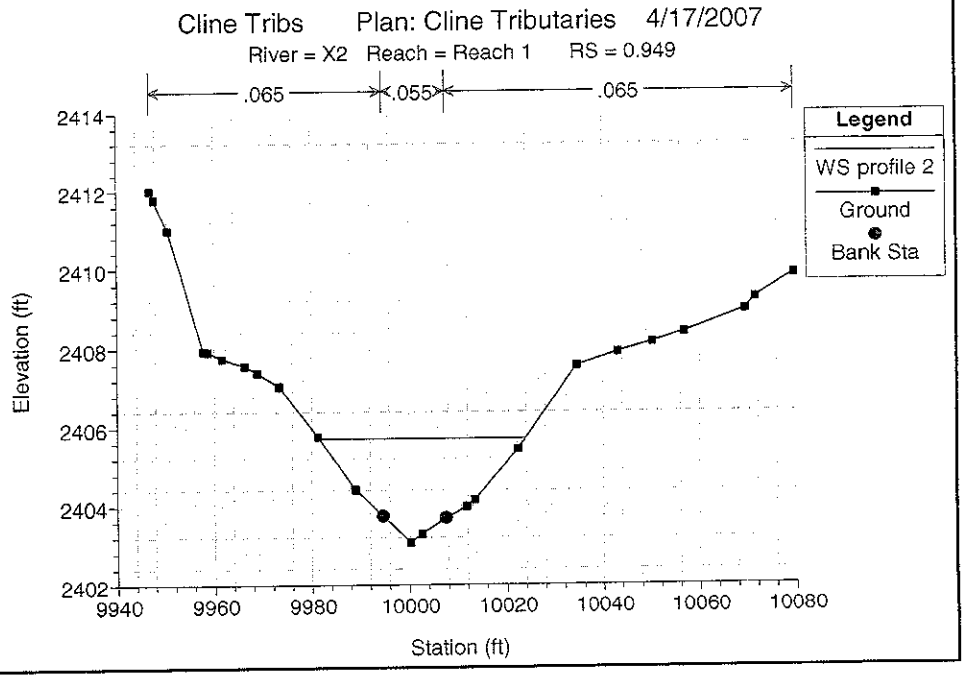

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X1 Reach = Reach 3 RS = 0.015 Confluence with Tributary X2
.05
.045
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

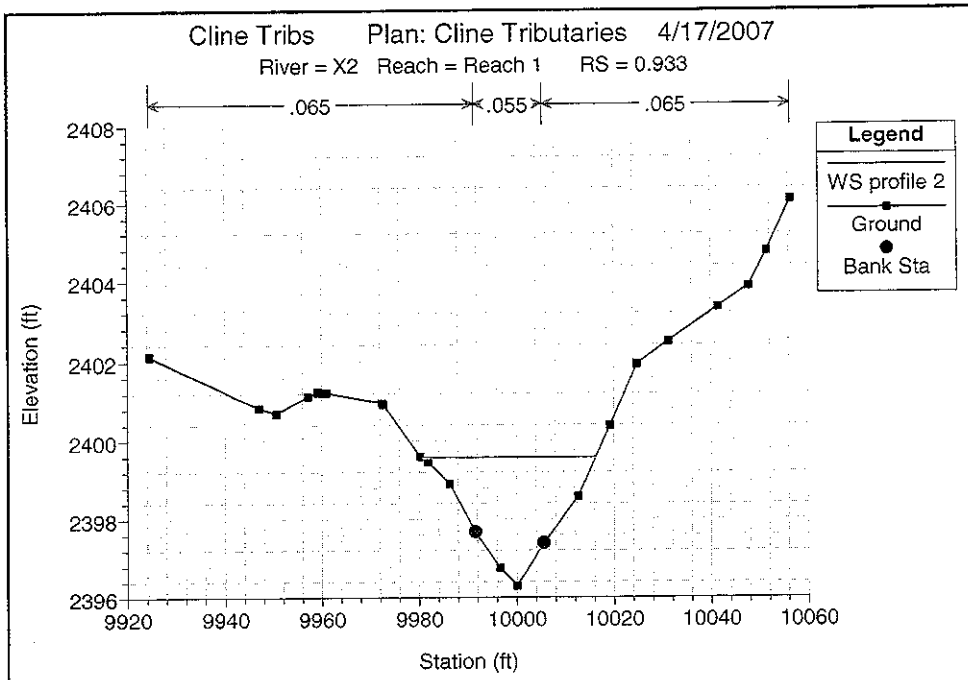

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 1.028
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

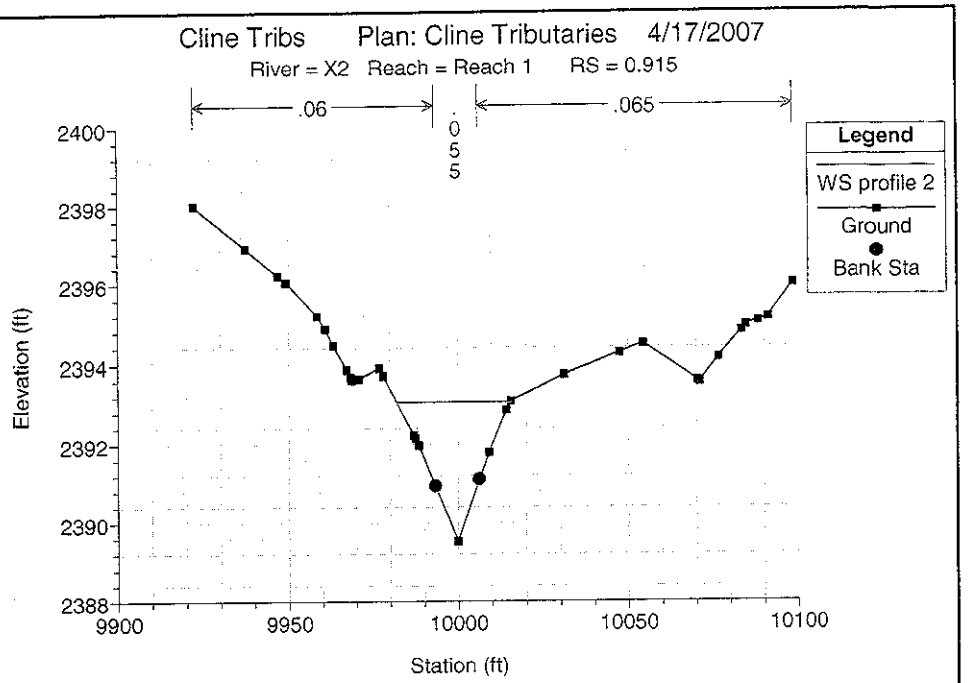

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 1.014
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

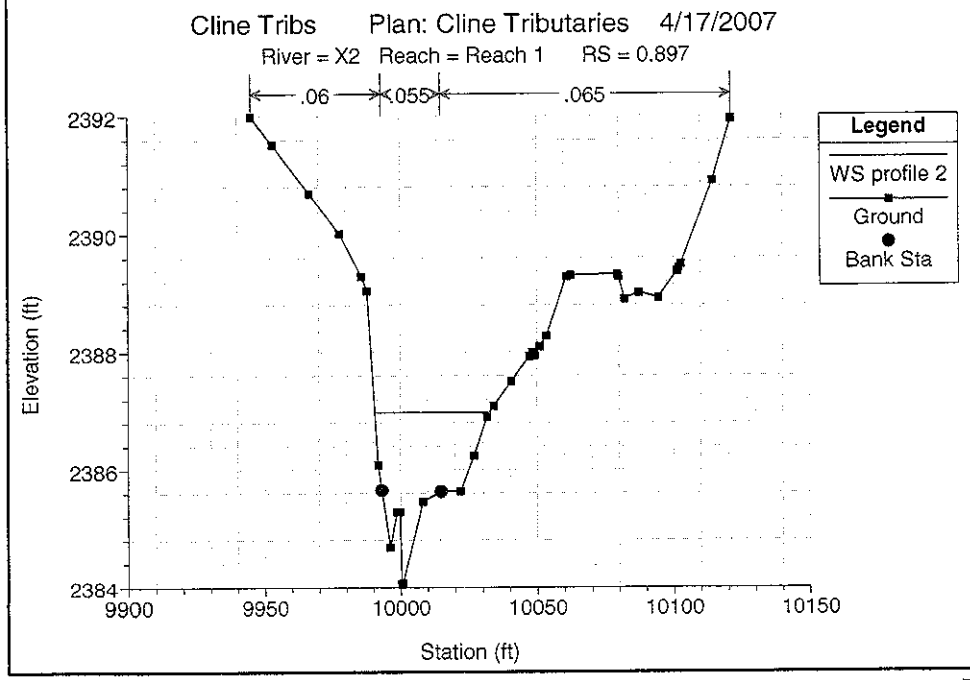

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.994
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

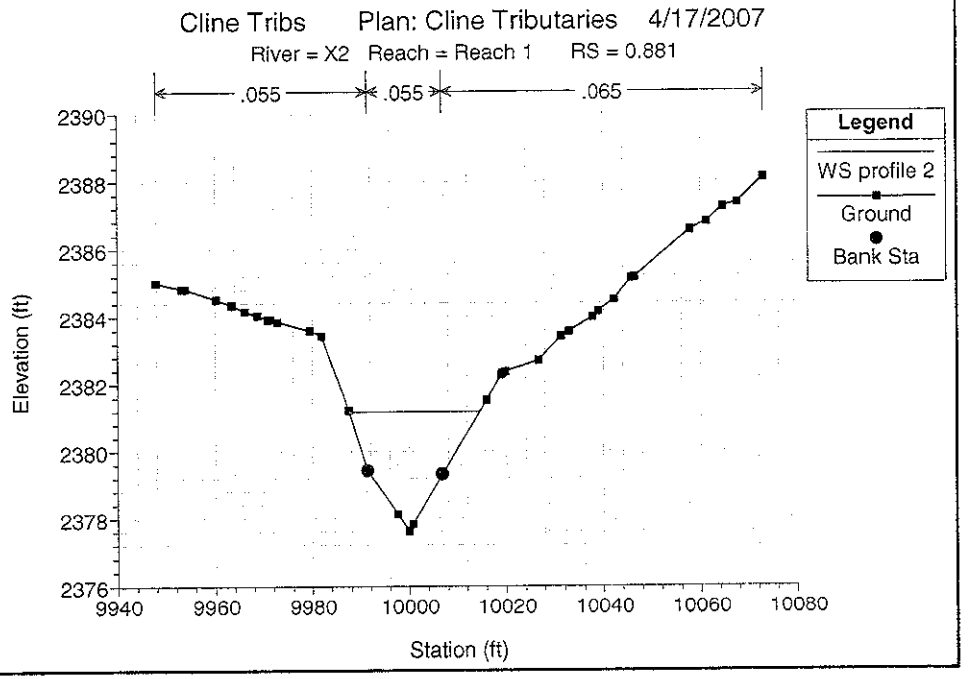

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.973
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

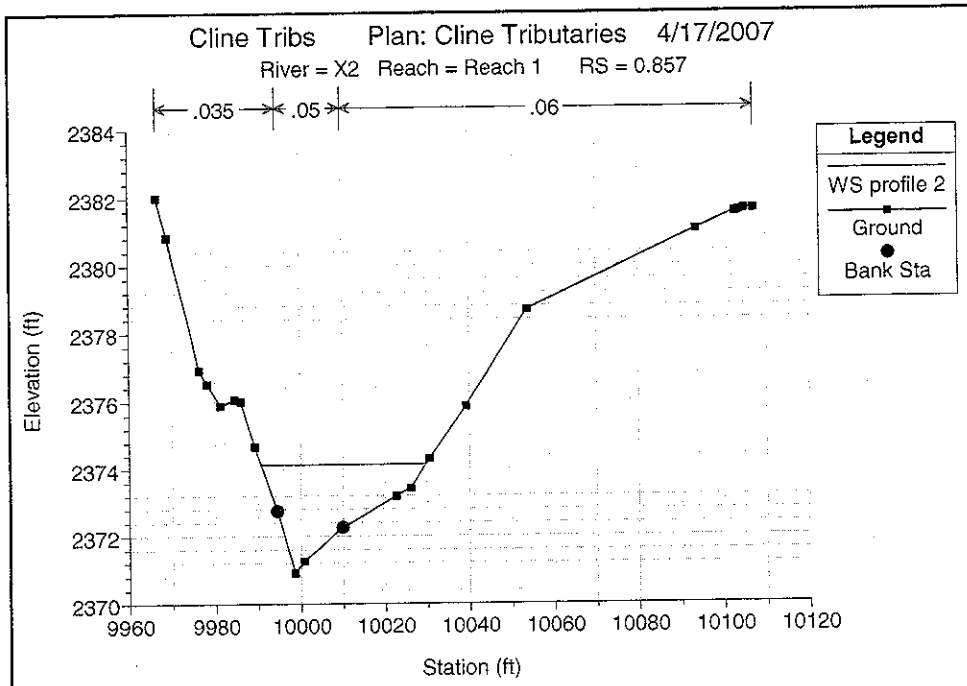

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.949
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

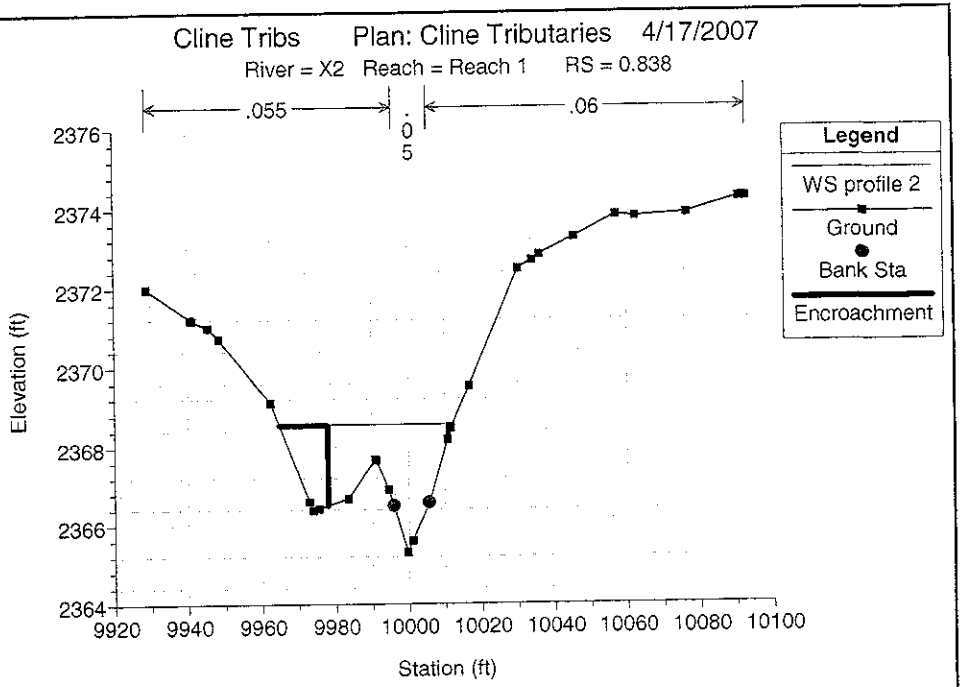

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.933
.065
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

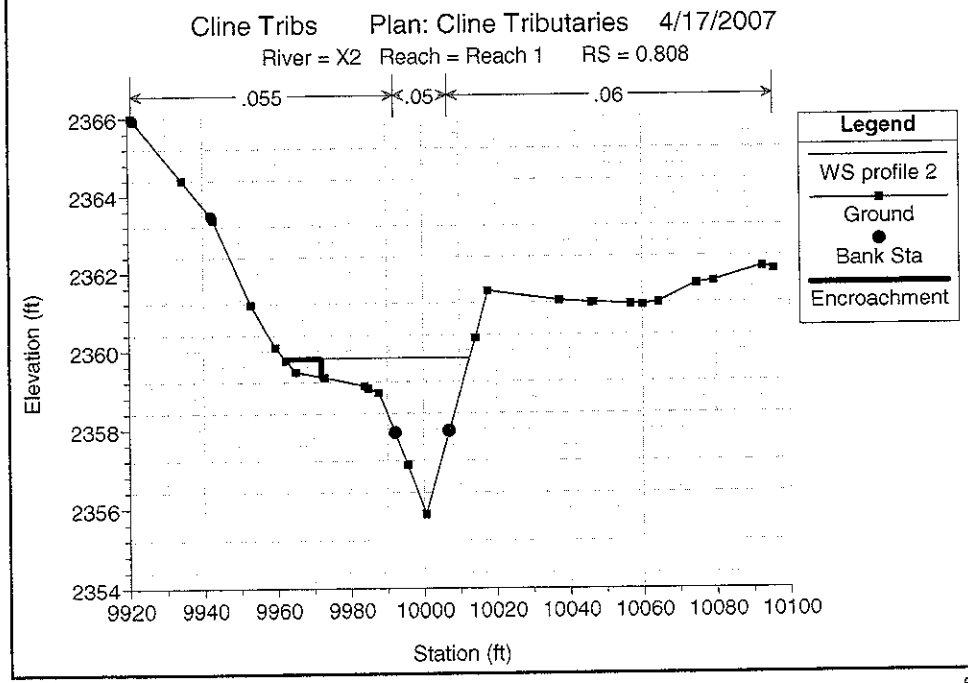

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.915
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

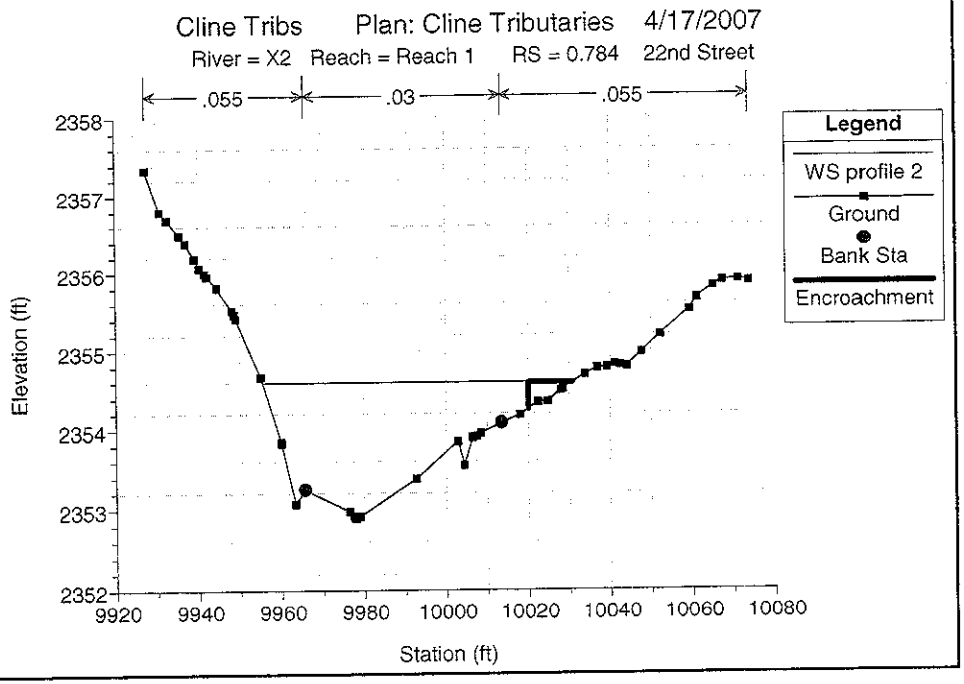

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.897
.06
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

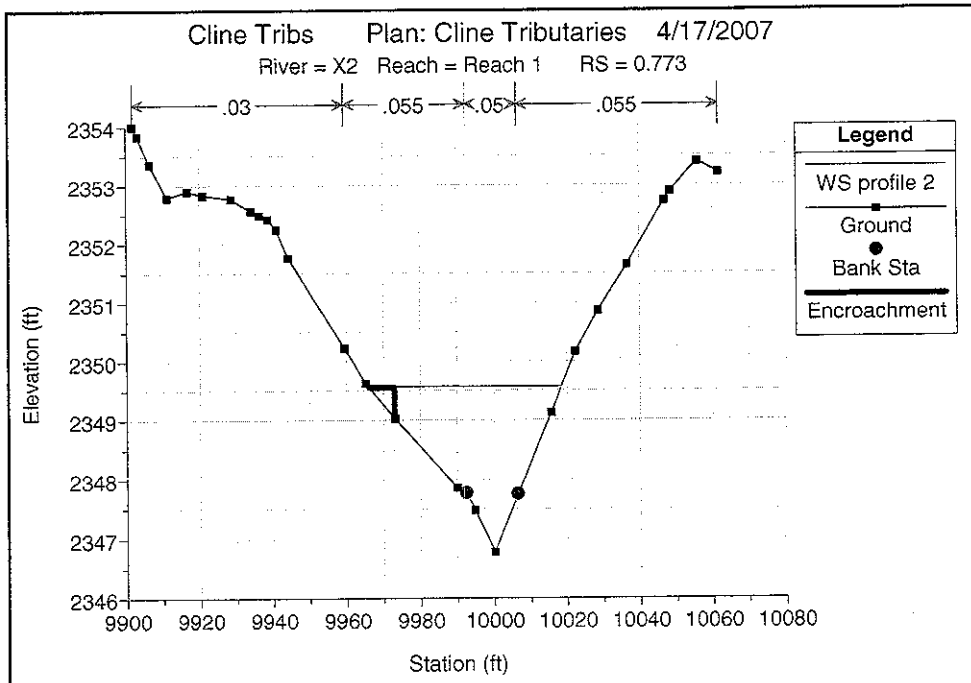

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.881
.055
.055
.065
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

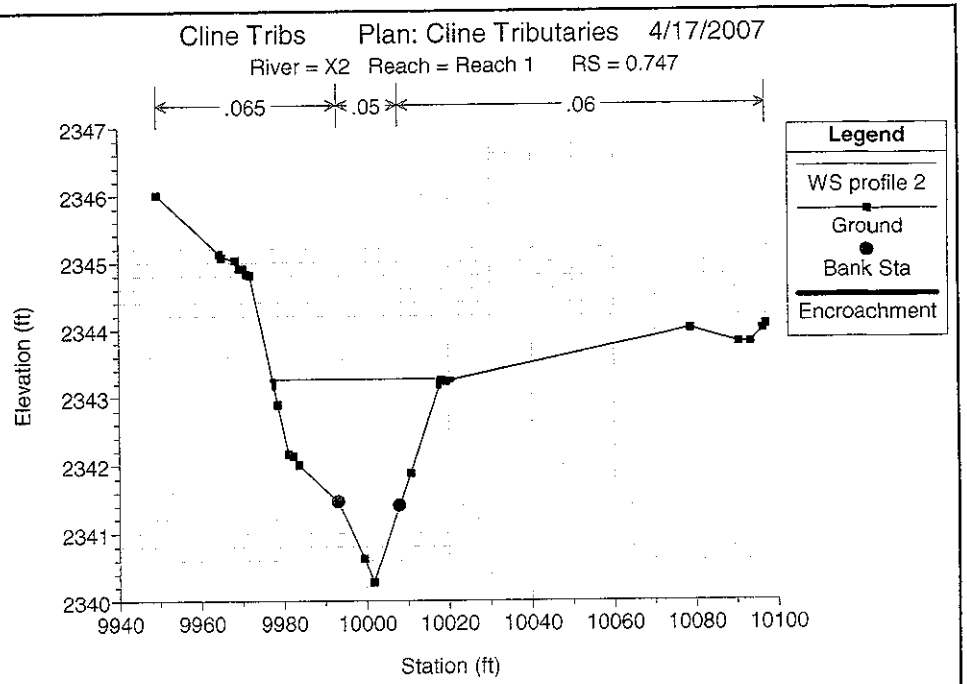

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.857
.035
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

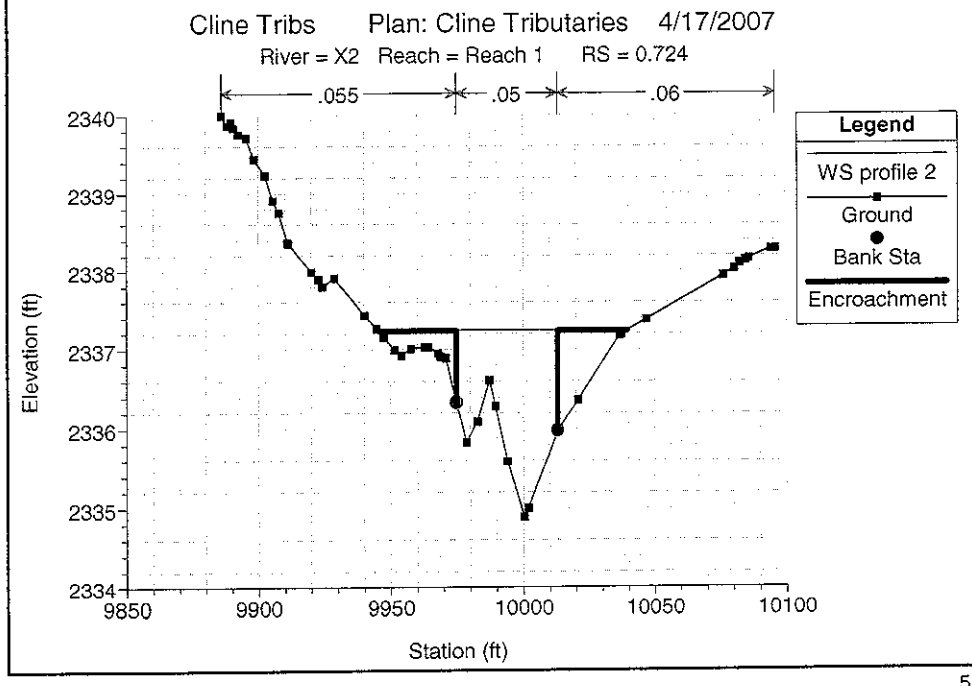

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.838
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

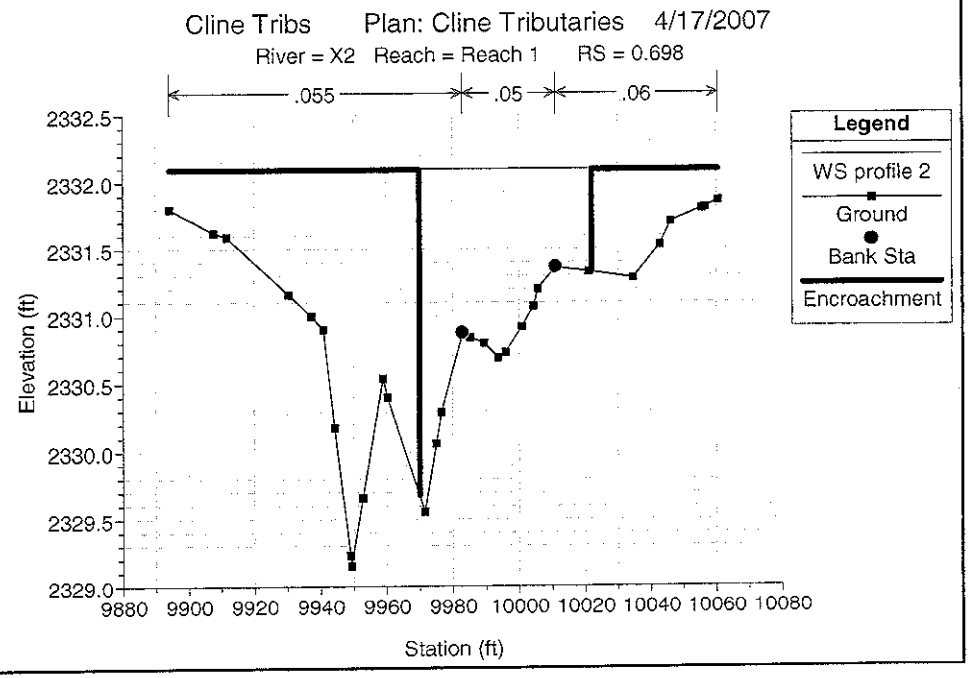

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.808
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

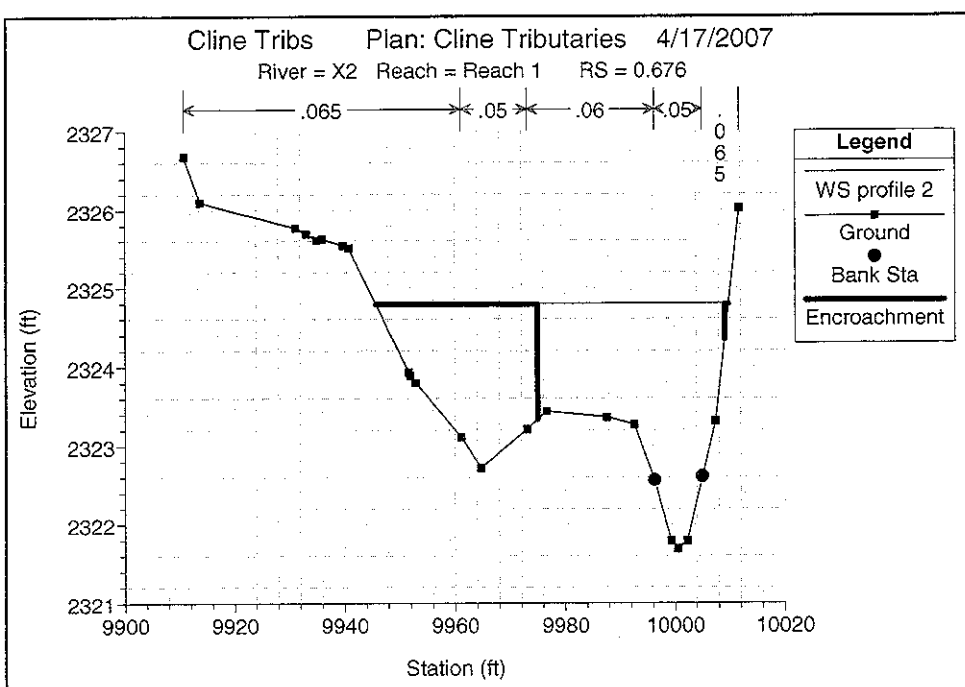

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.784 22nd Street
.055
.03
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

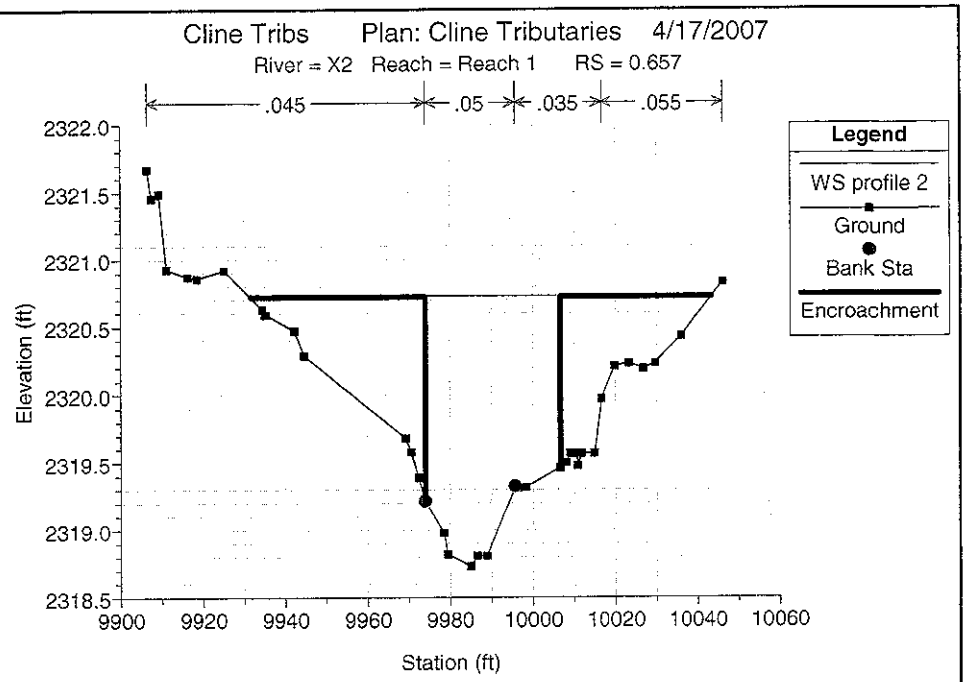

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.773
.03
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

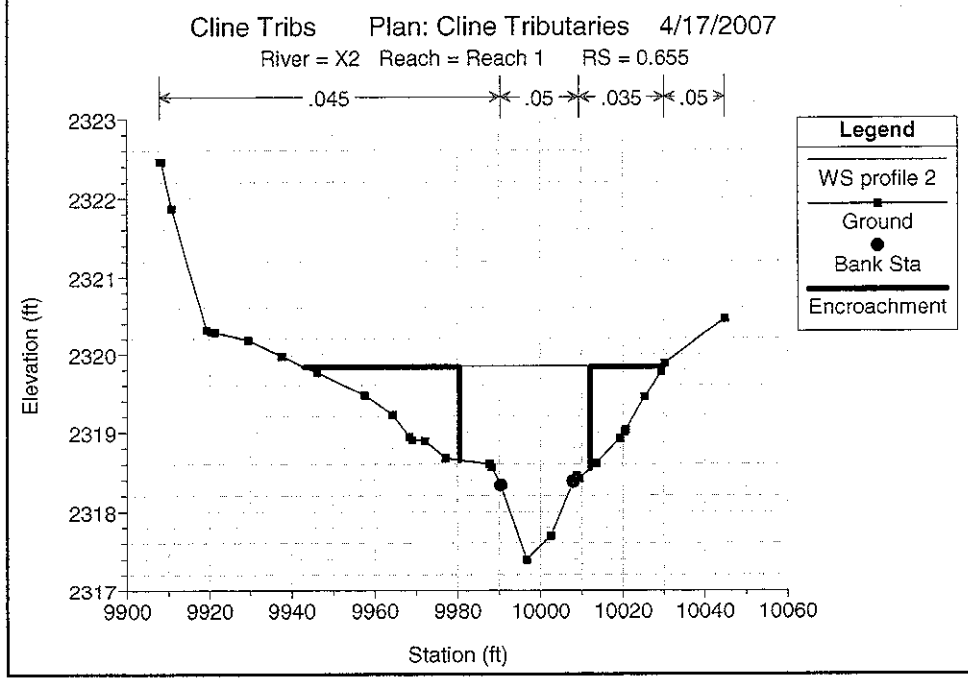

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.747
.065
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

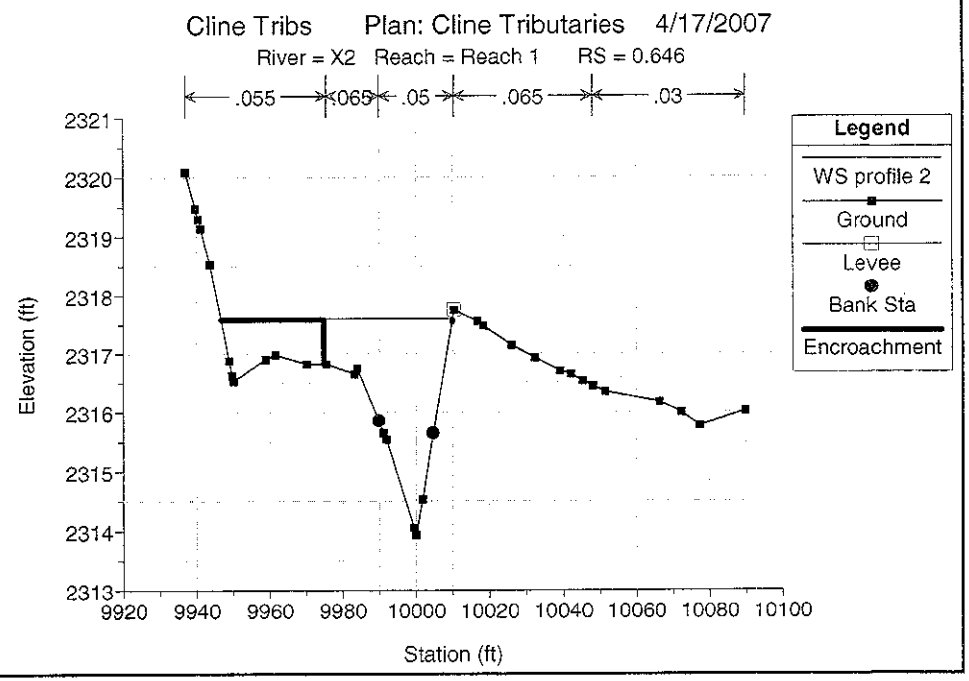

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.724
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

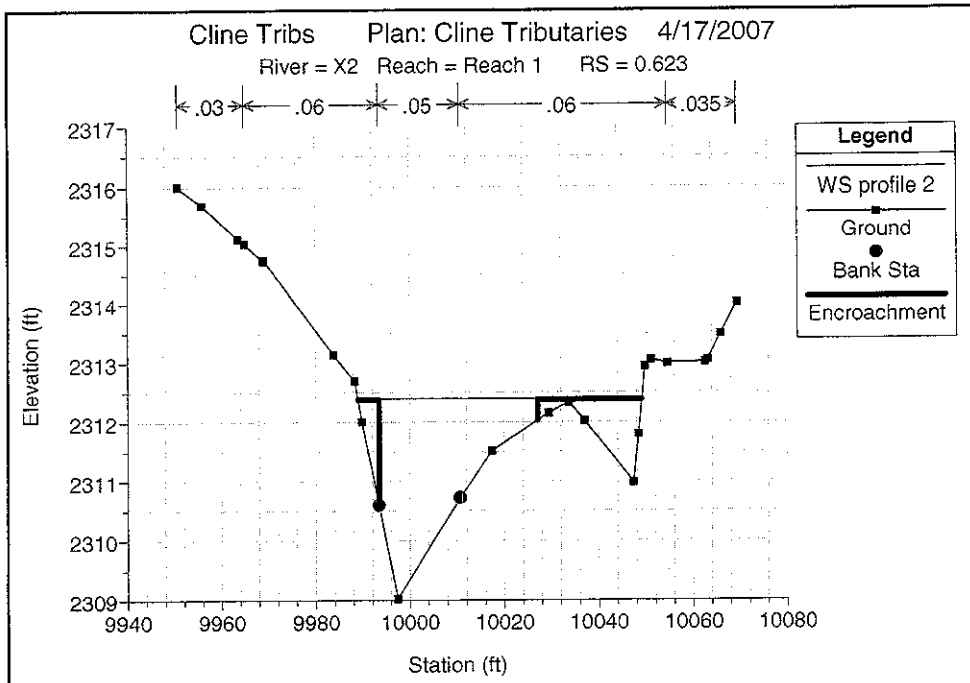

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.698
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

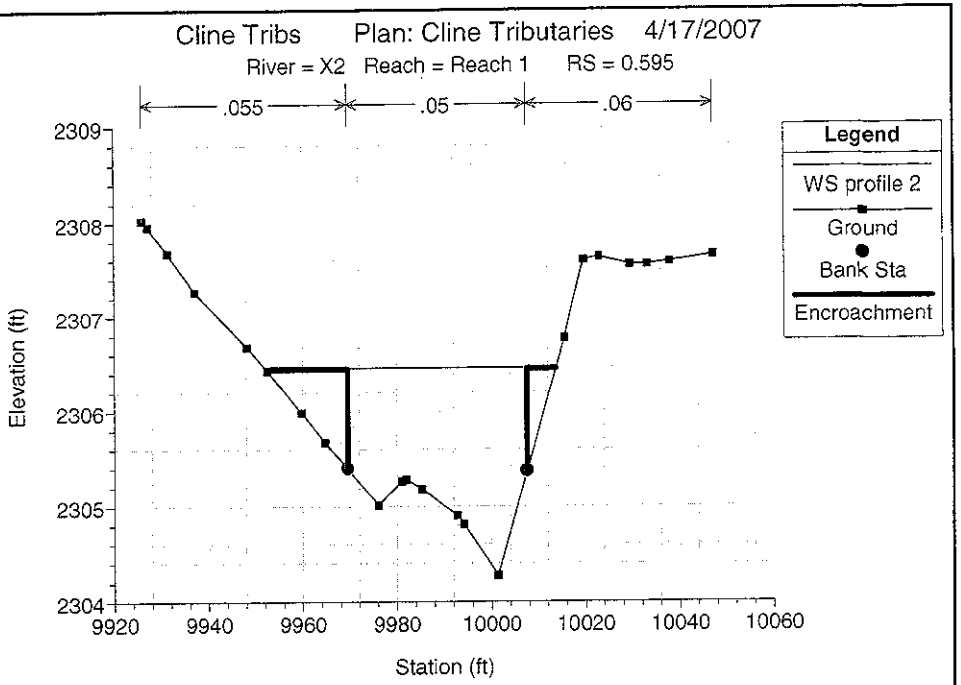

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.676
.065
.05
.06
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

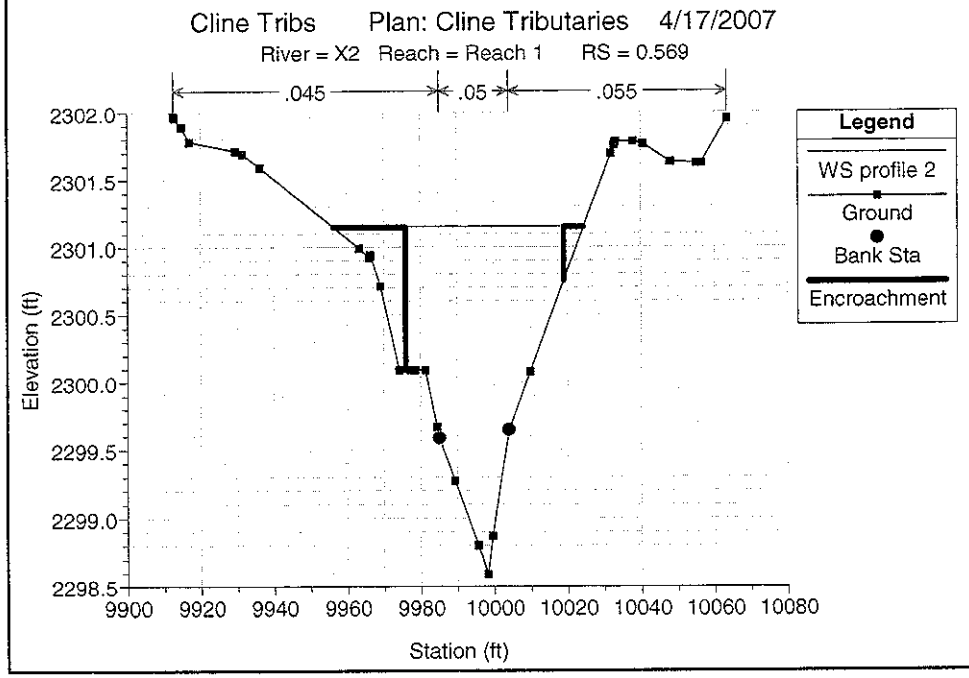

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.657
.045
.05
.035
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

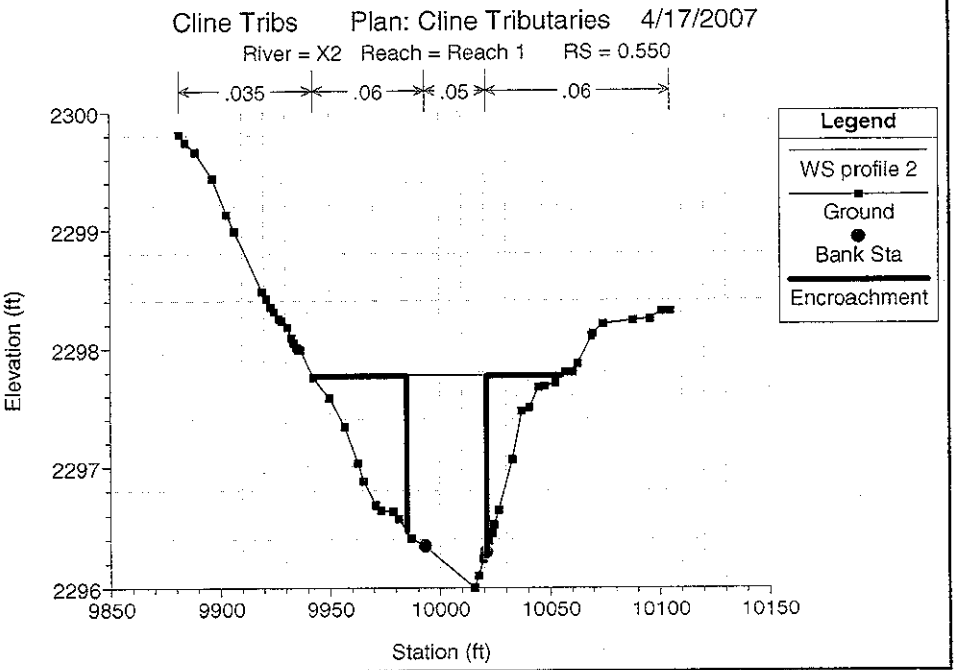

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.655
.045
.05
.035
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

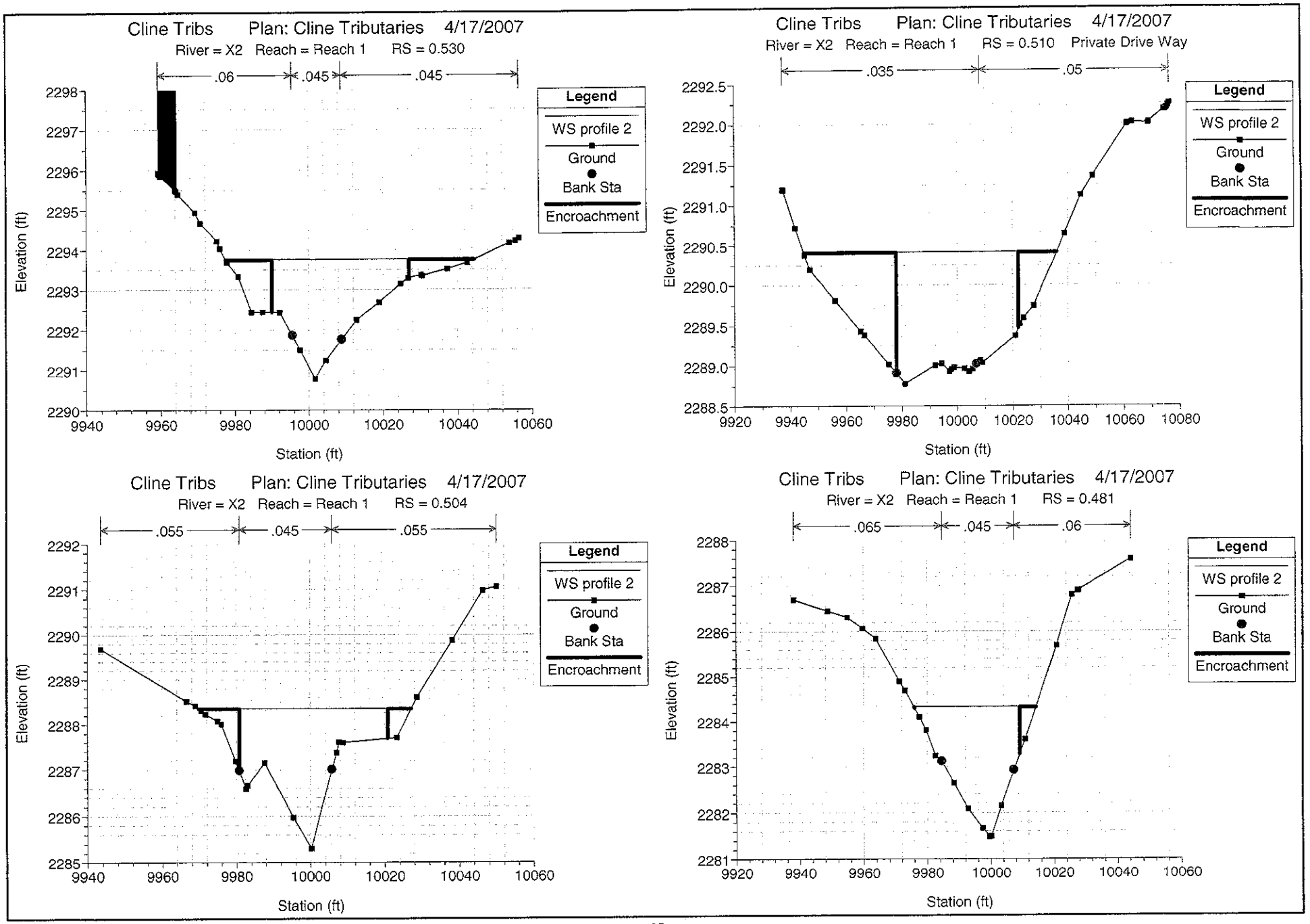

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.646
.055
.065
.05
.065
.03
Legend
WS profile 2
Ground
Levee
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

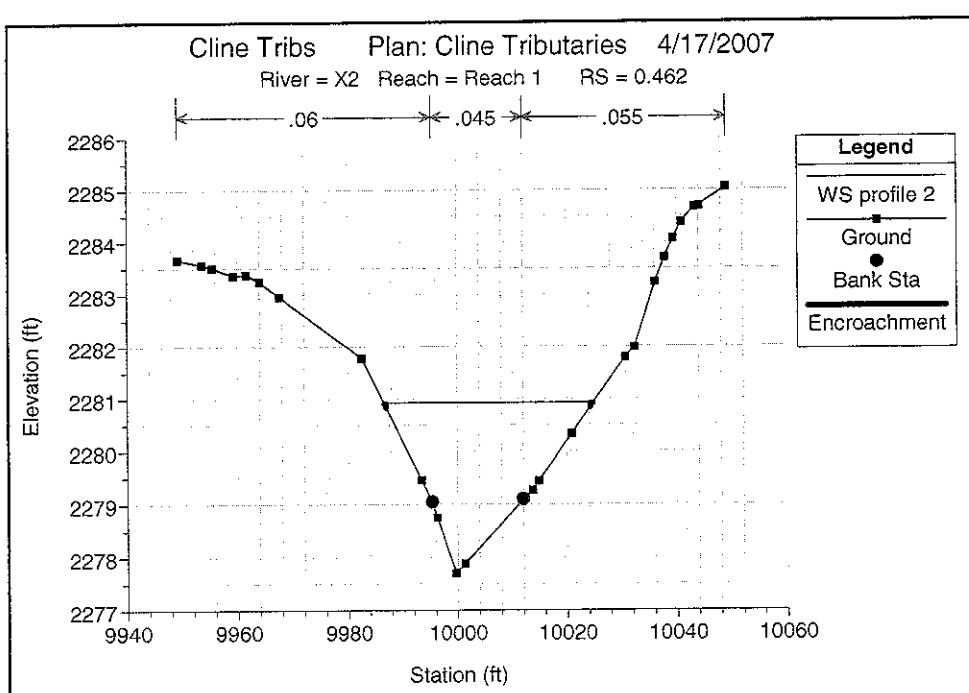

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.623
.03
.06
.05
.06
.035
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

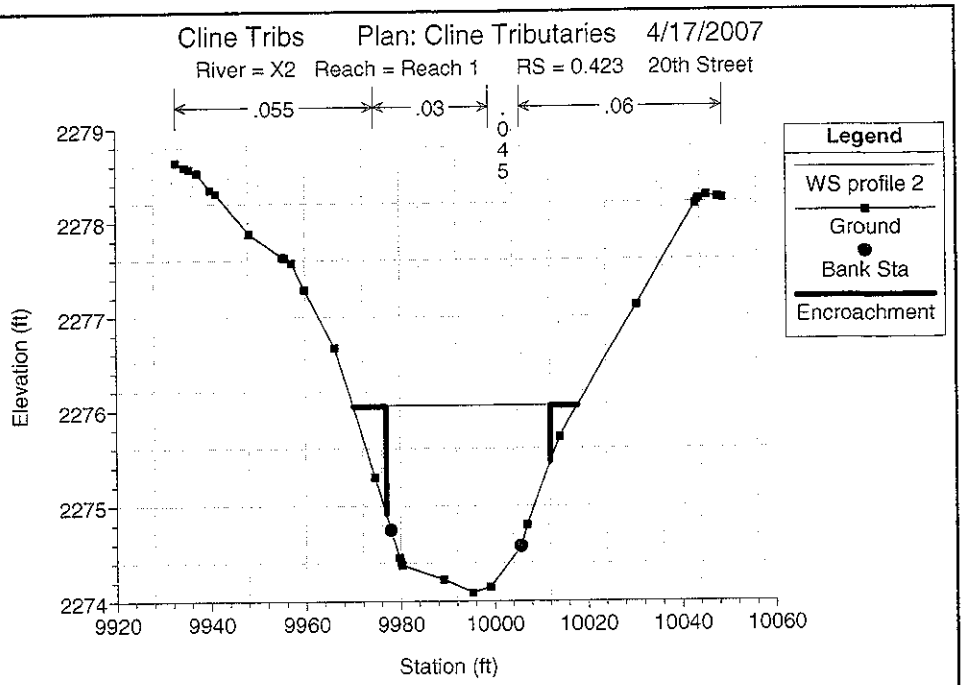

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.595
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

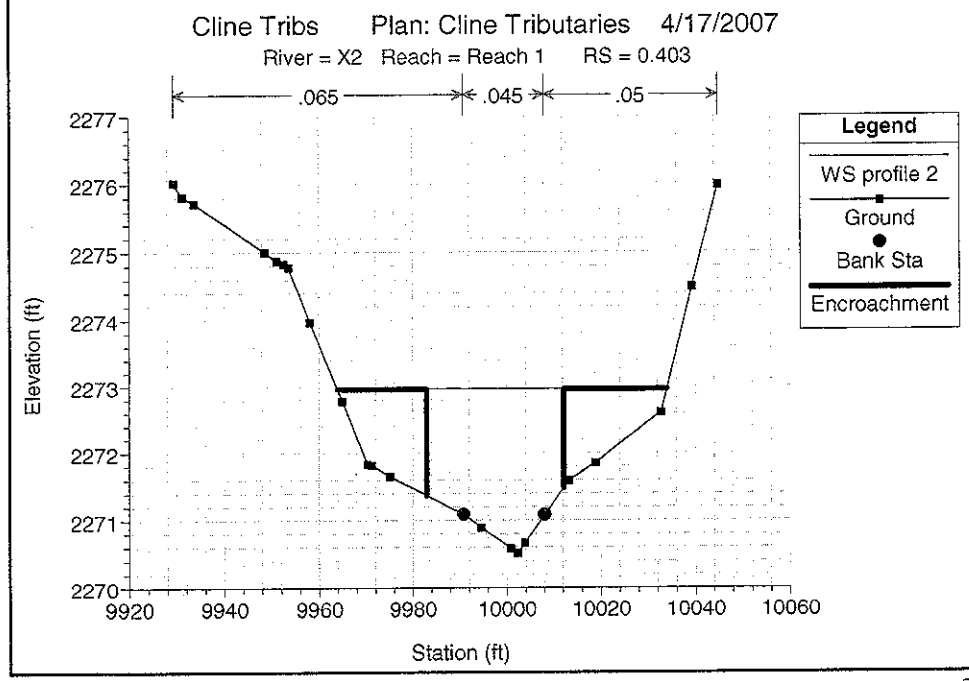

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.569
.045
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

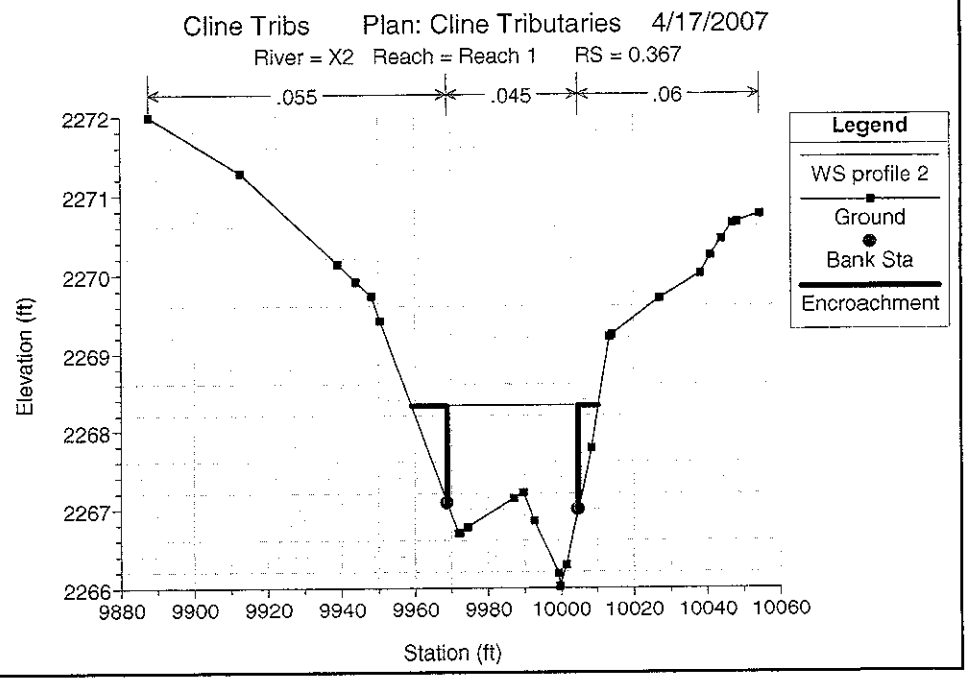

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.550
.035
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

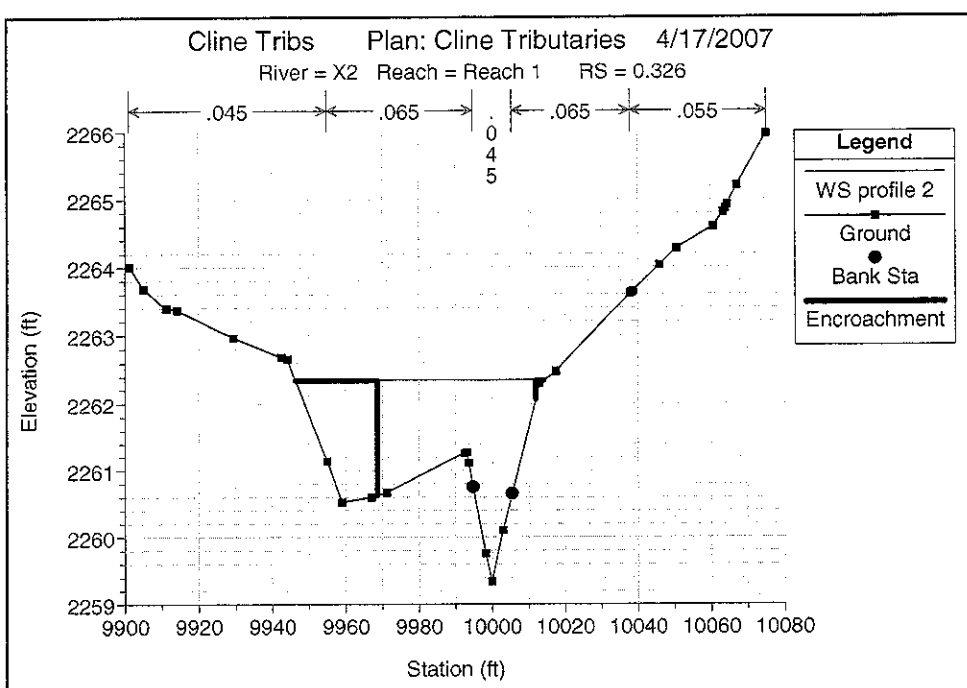

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.530
.06
.045
.045
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.510 Private Drive Way
.035
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.504
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.481
.065
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

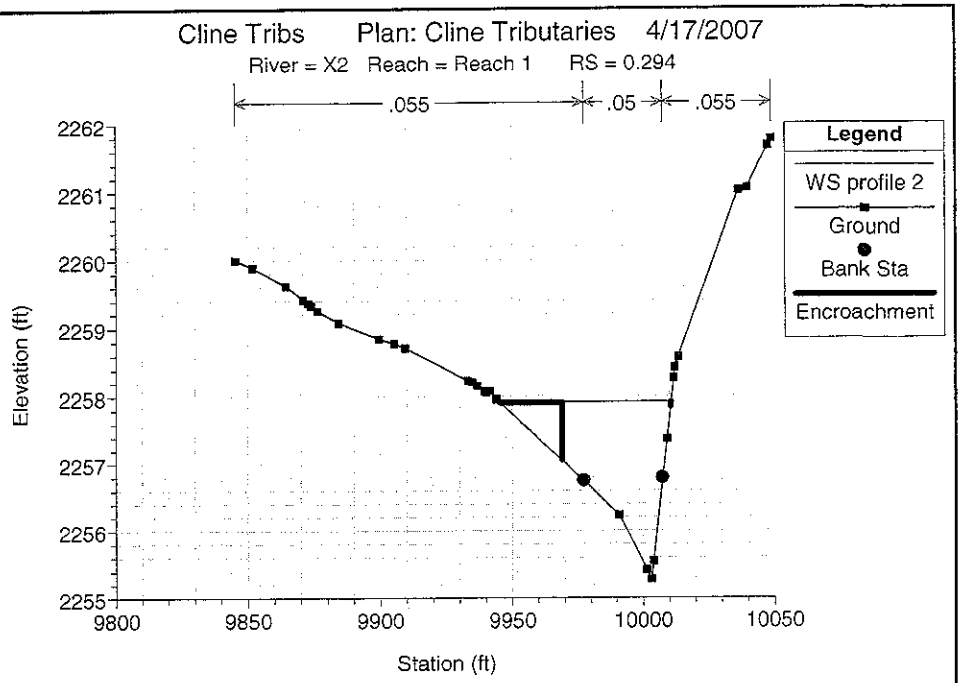

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.462
.06
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

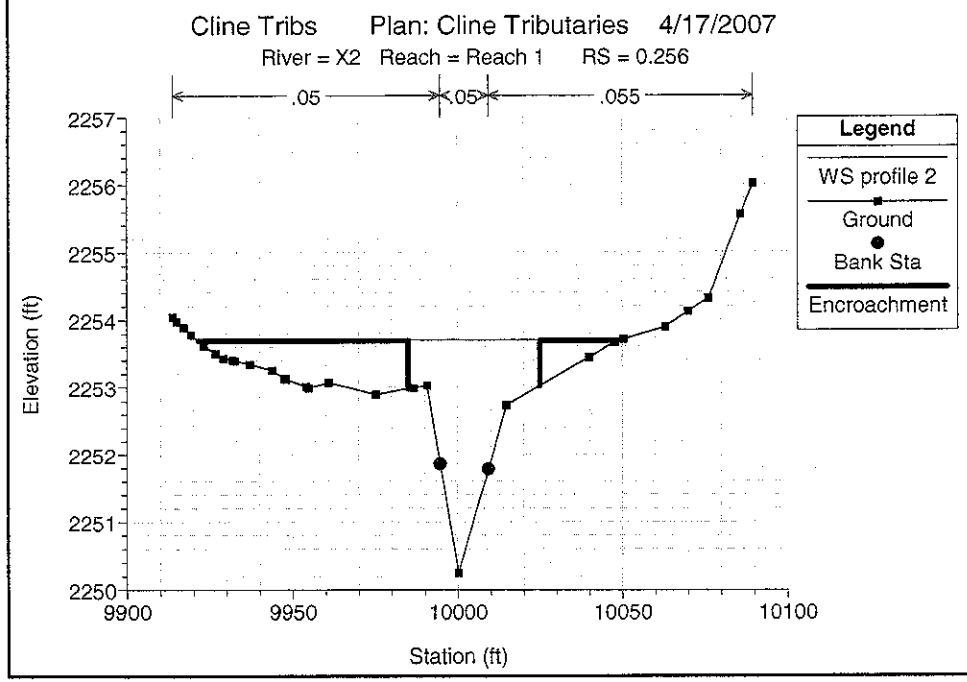

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.423 20th Street
.055
.03
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

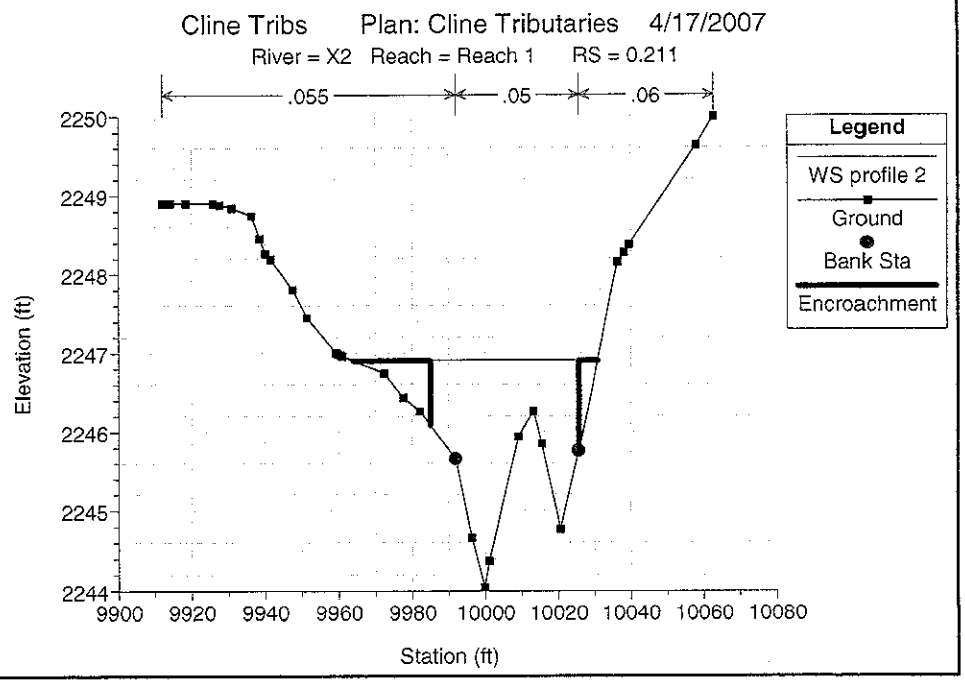

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.403
.065
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

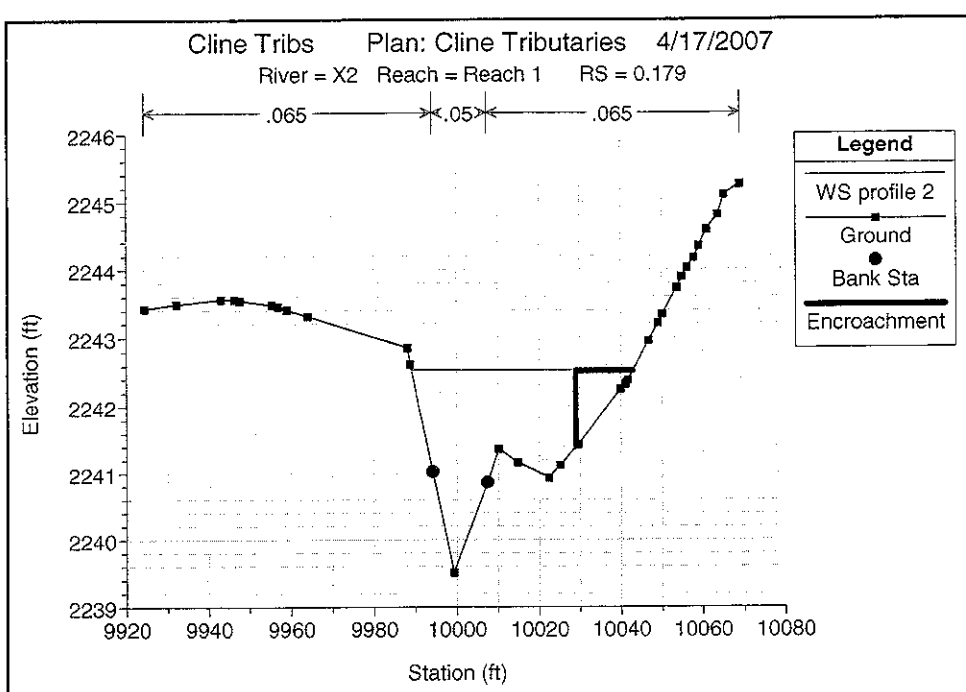

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.367
.055
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

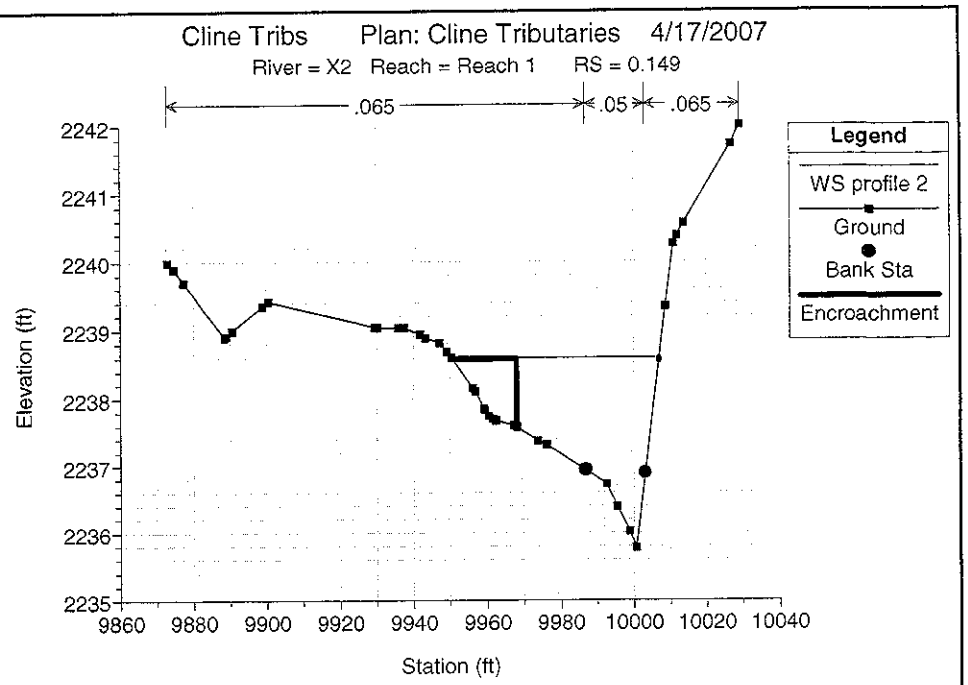

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.326
.045
.065
.045
.065
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

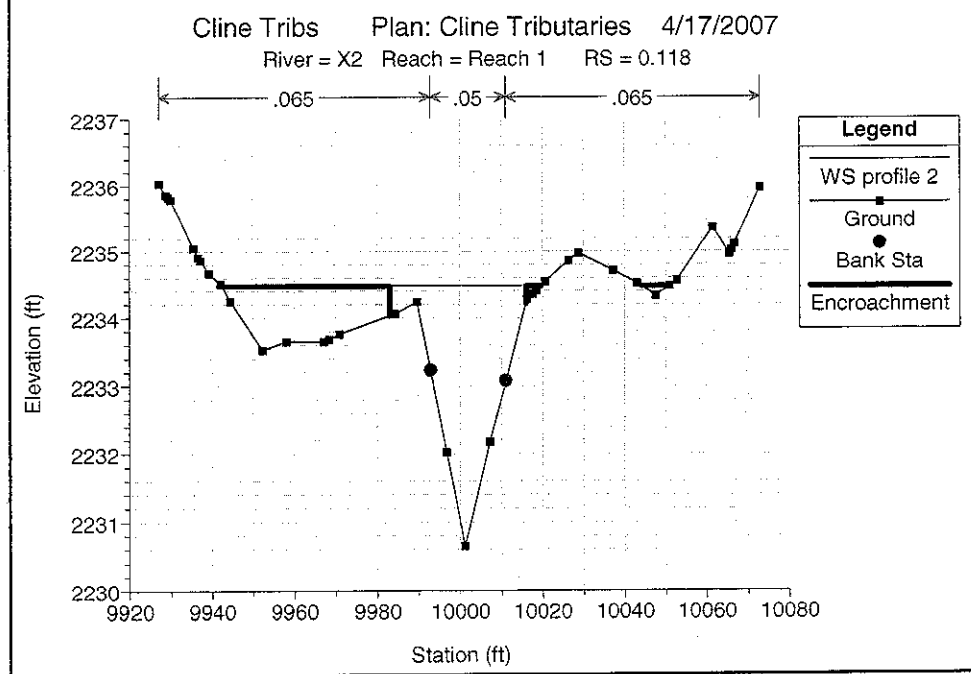

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.294
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

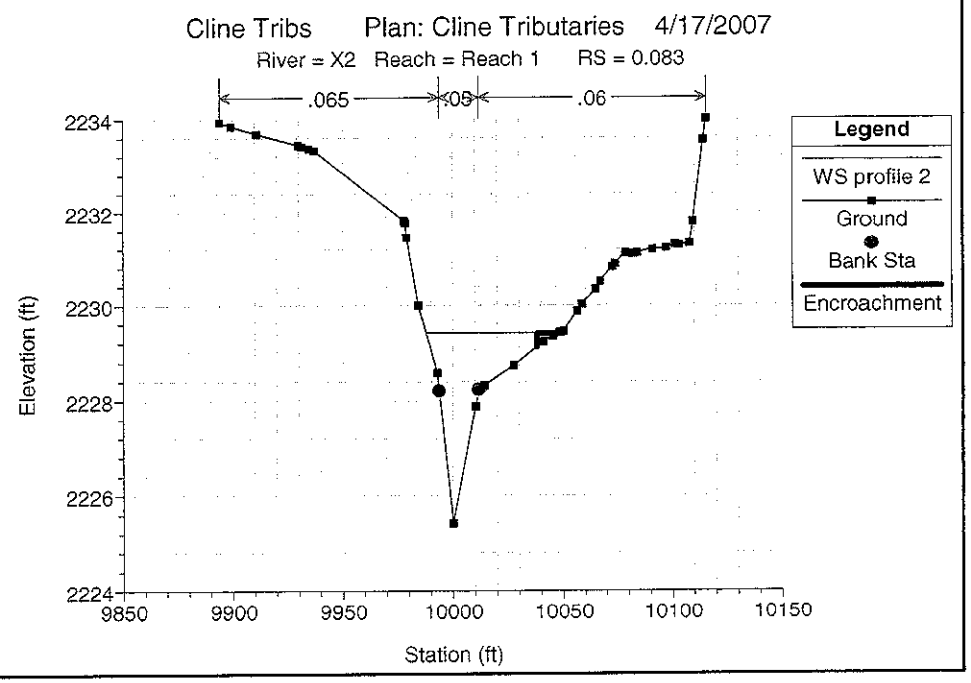

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.256
.05
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

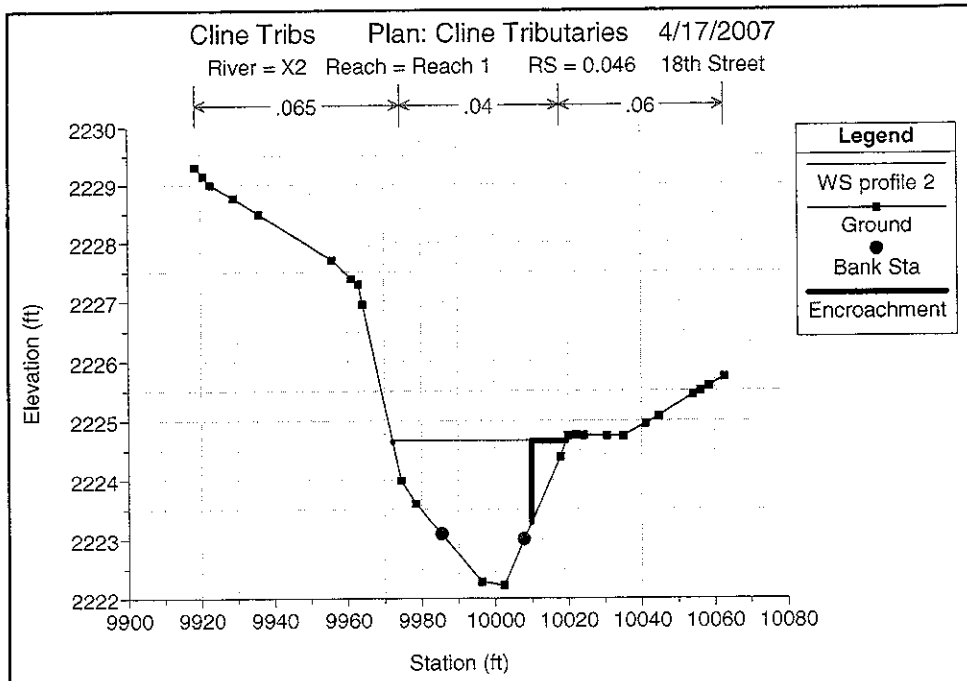

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.211
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

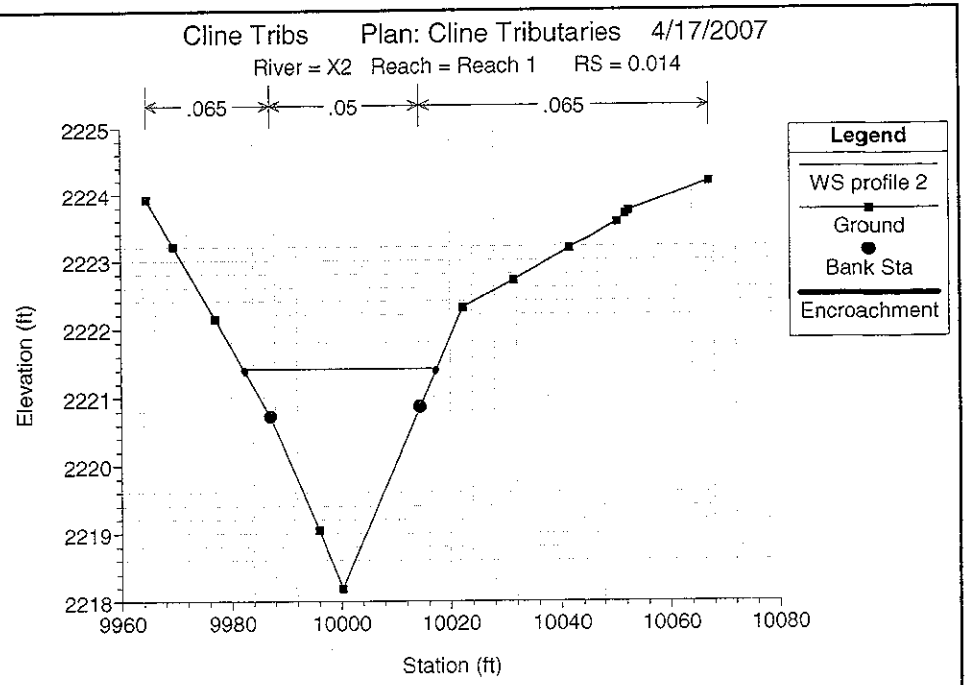

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.179
.065
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

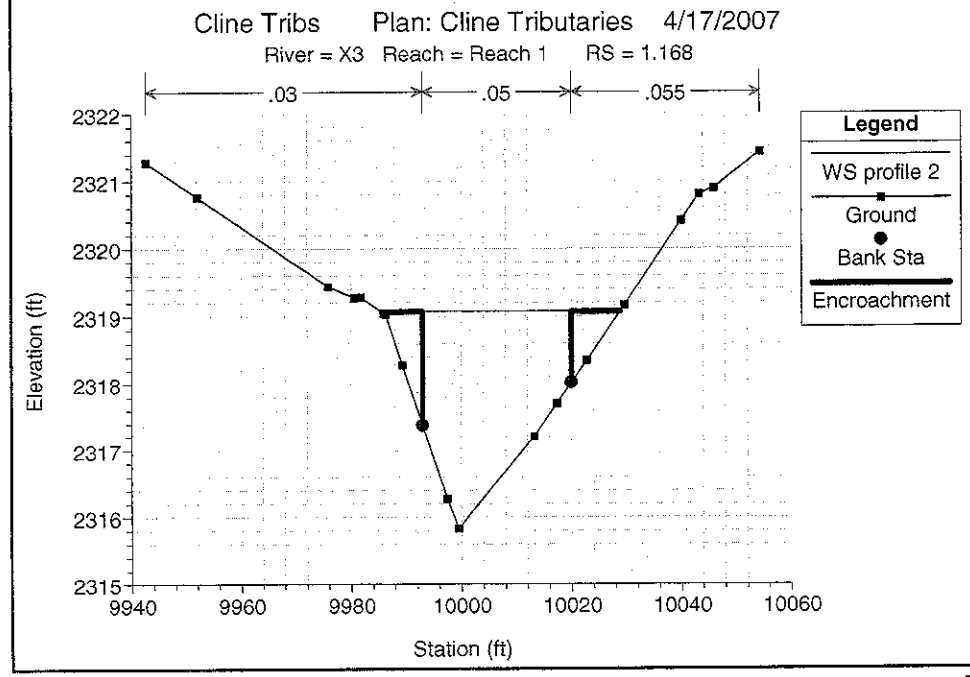

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.149
.065
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

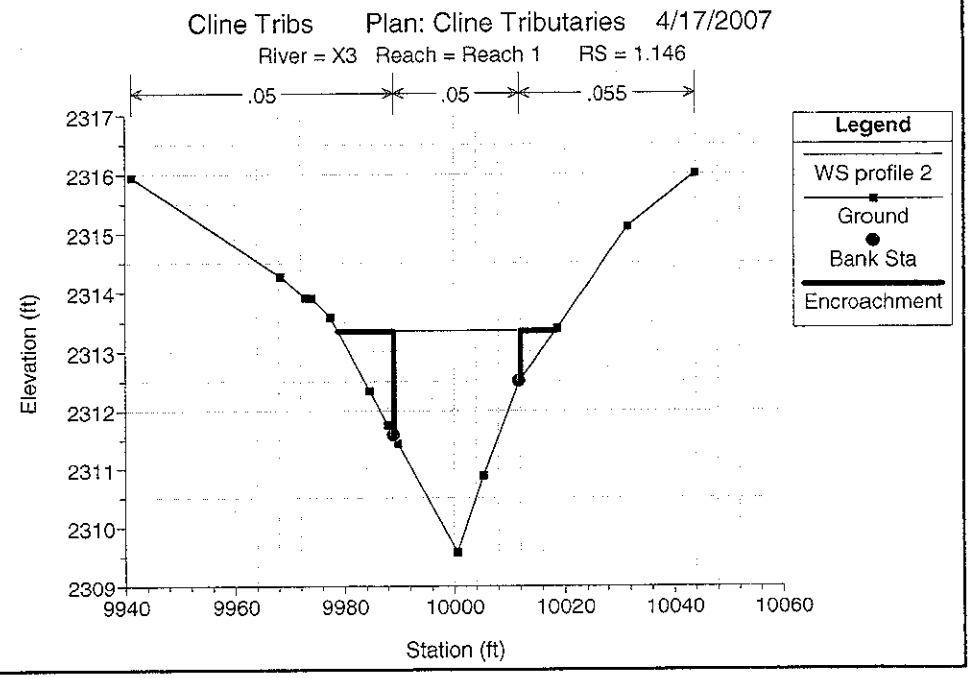

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.118
.065
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

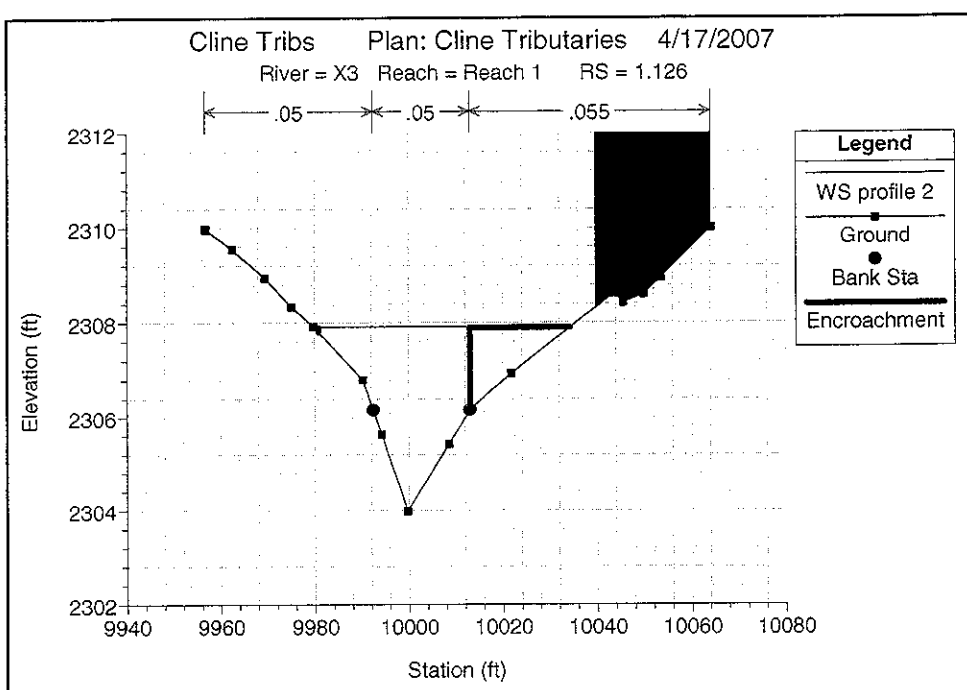

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.083
.065
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

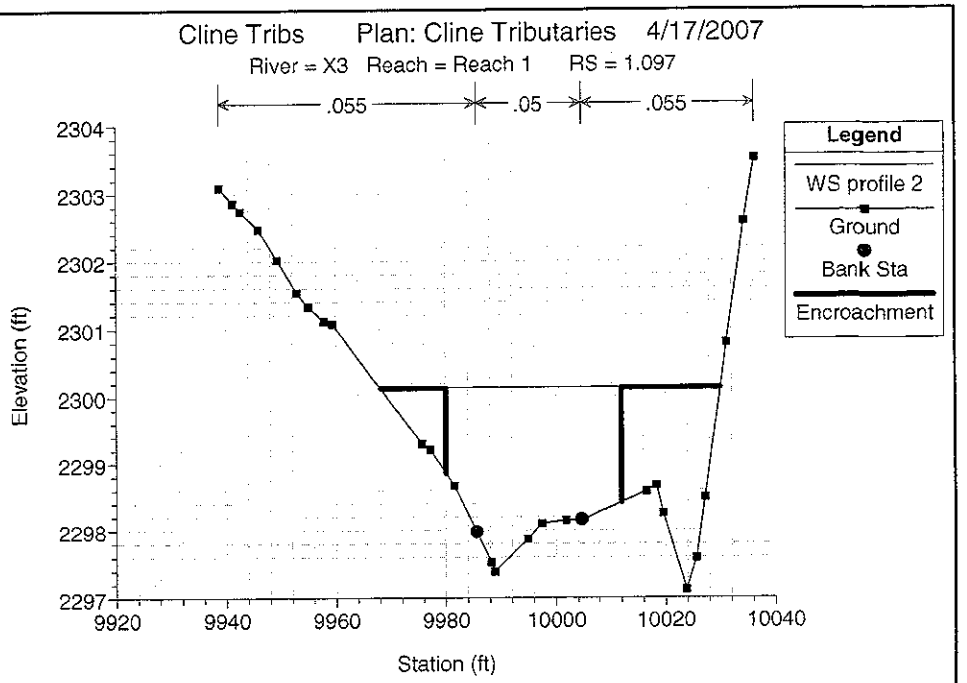

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.046 18th Street
.065
.04
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

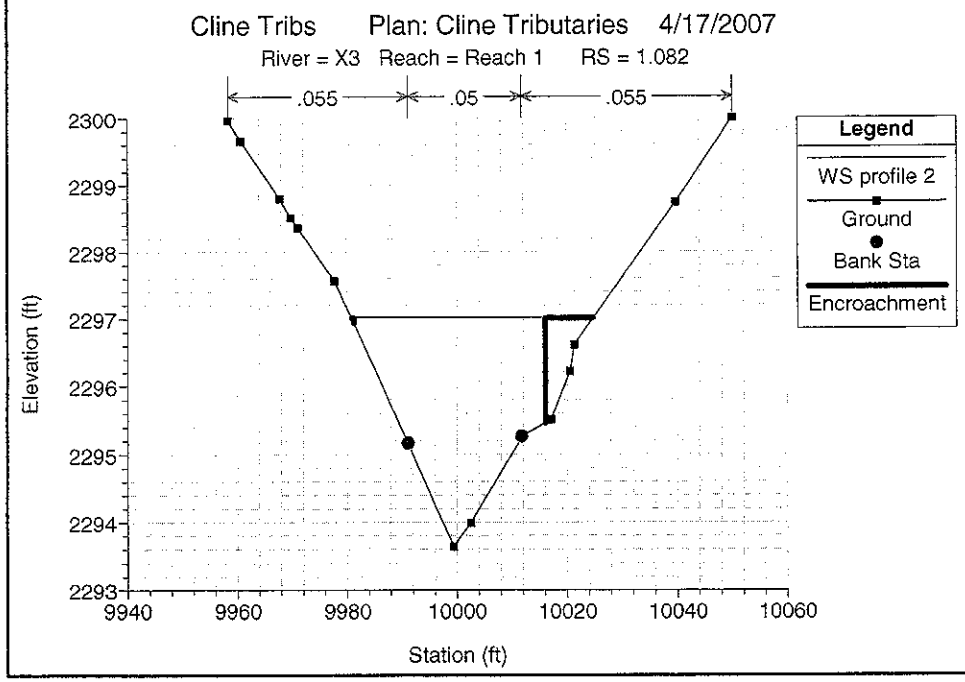

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X2 Reach = Reach 1 RS = 0.014
.065
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

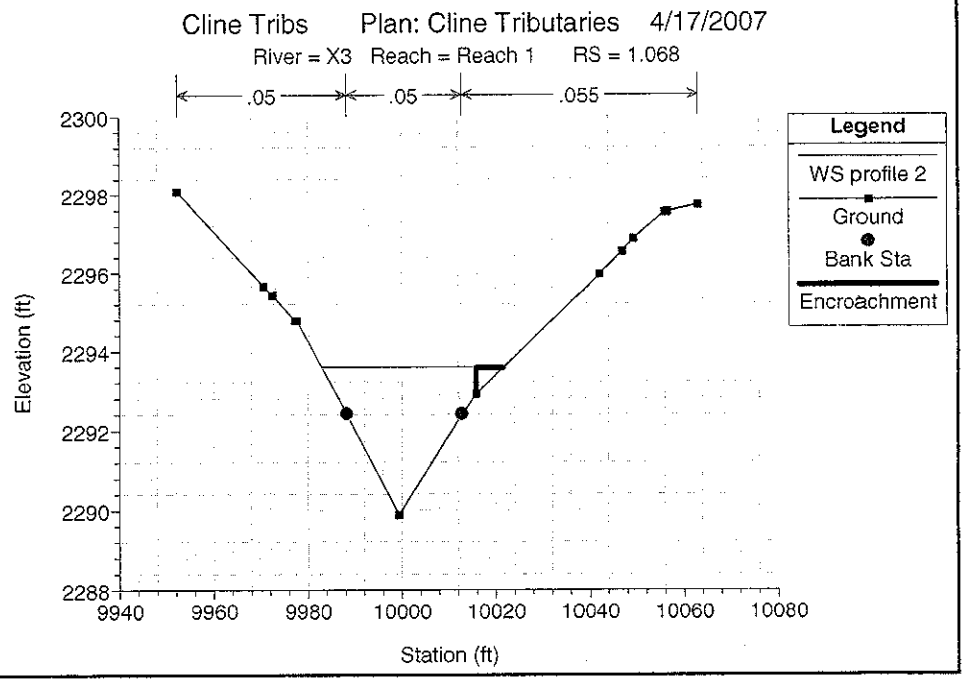

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.168
.03
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

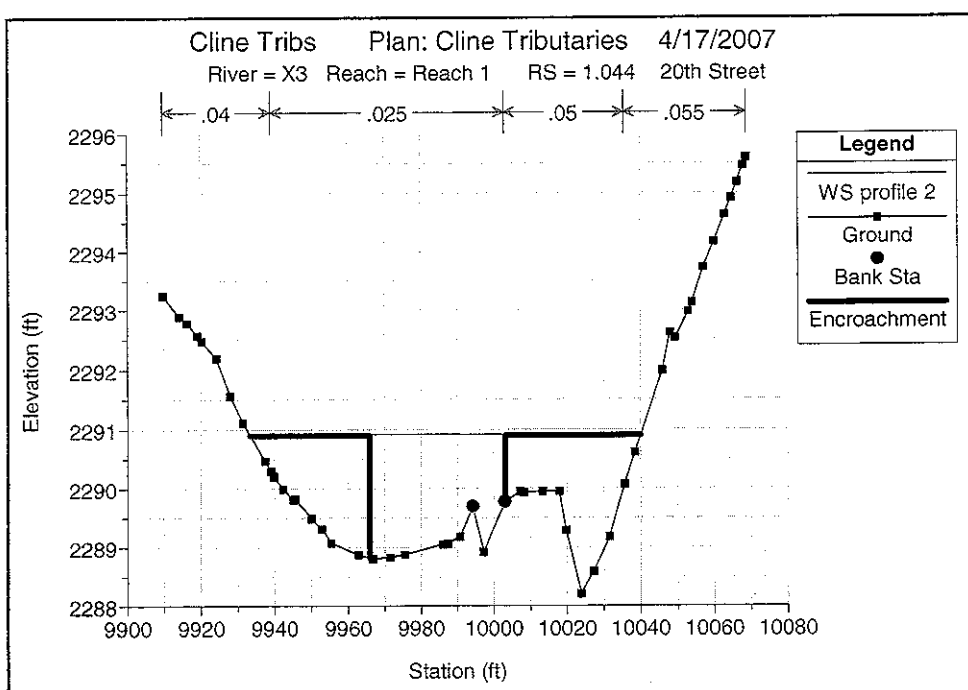

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.146
.05
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

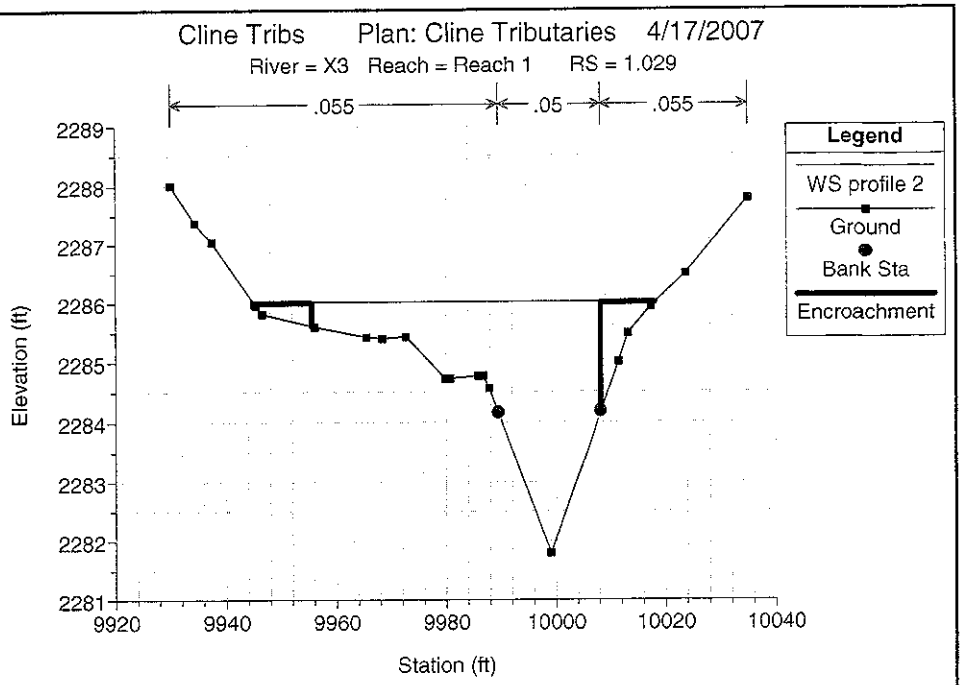

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.126
.05
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

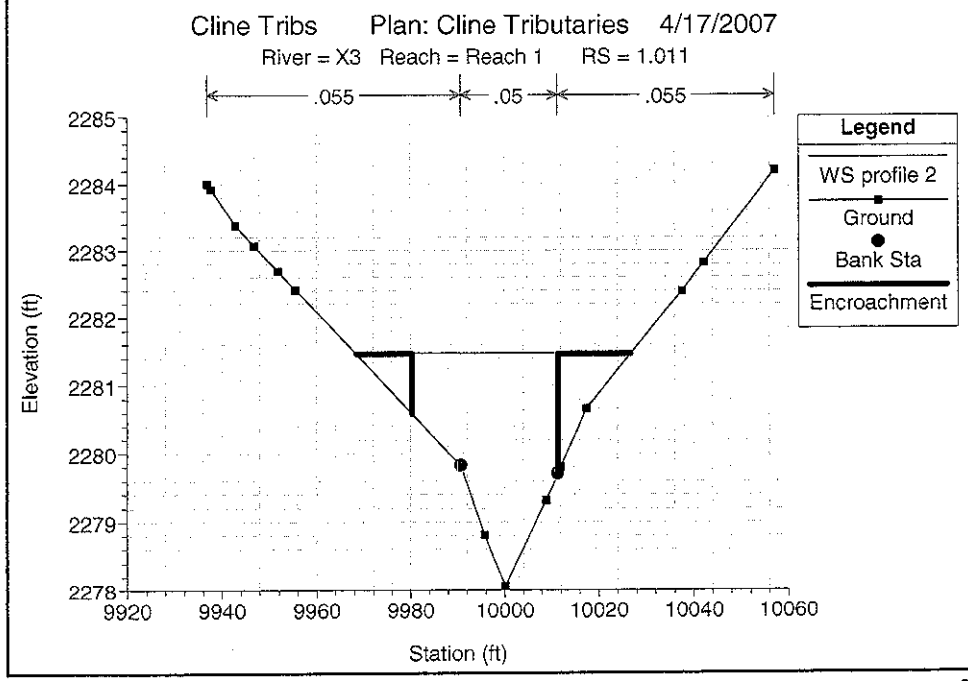

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.097
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

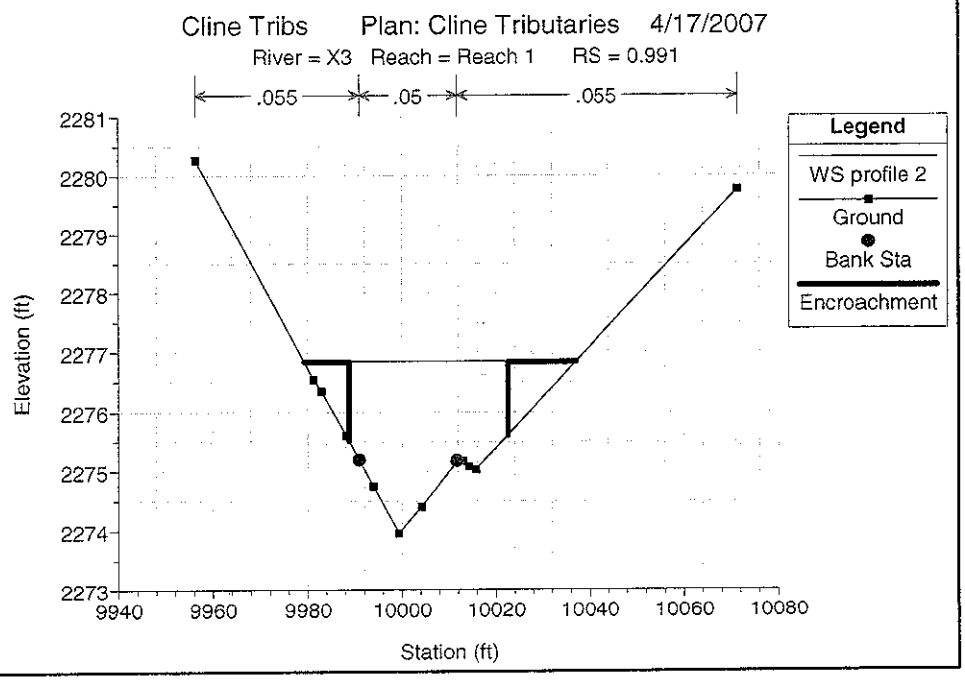

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.082
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

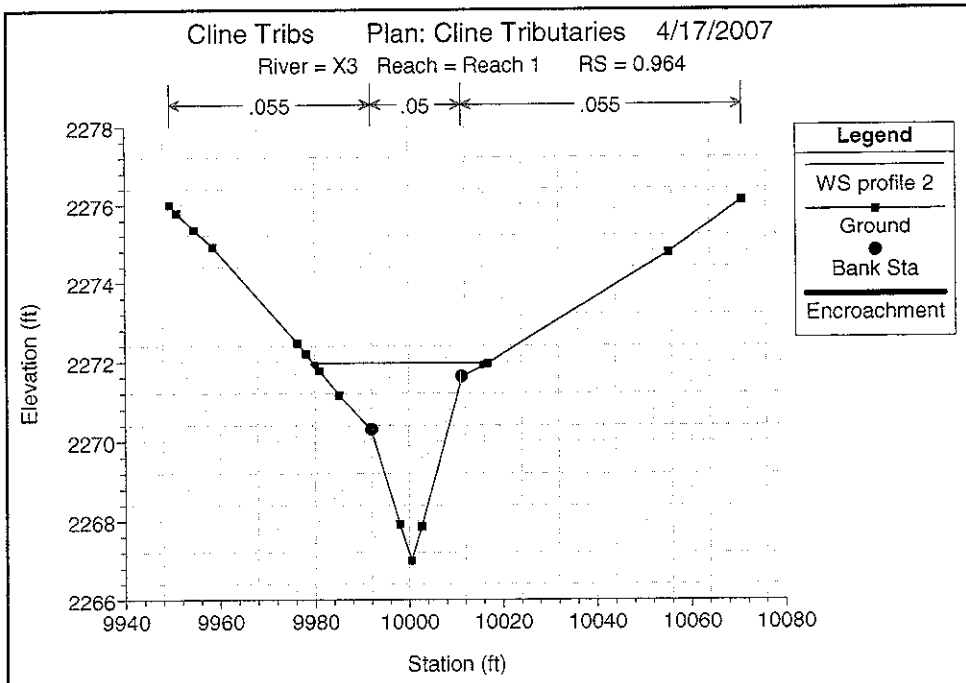

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.068
.05
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

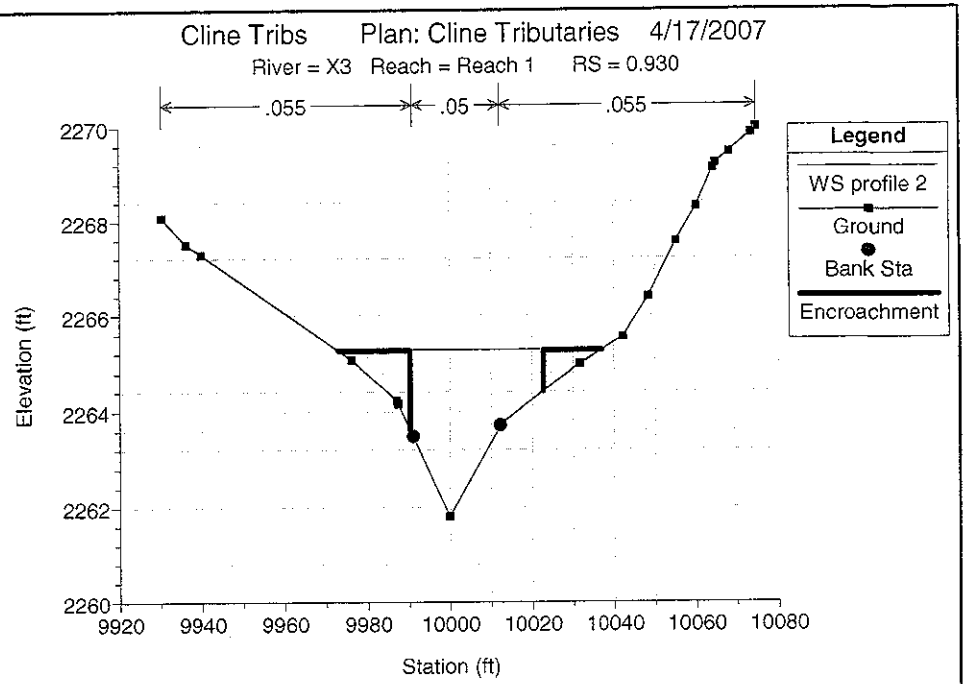

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.044 20th Street
.04
.025
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

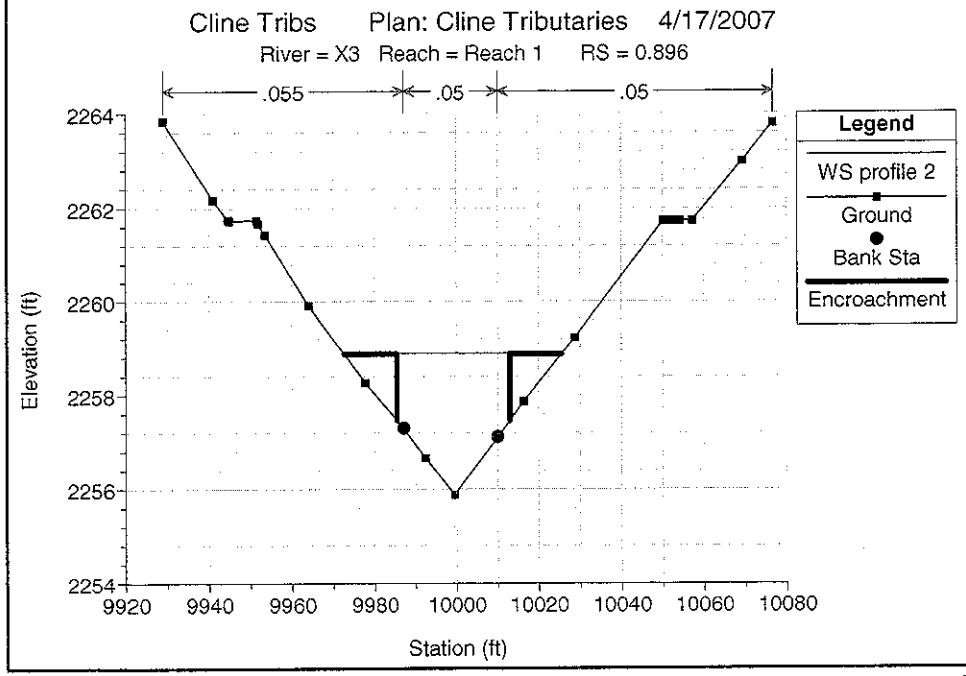

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.029
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

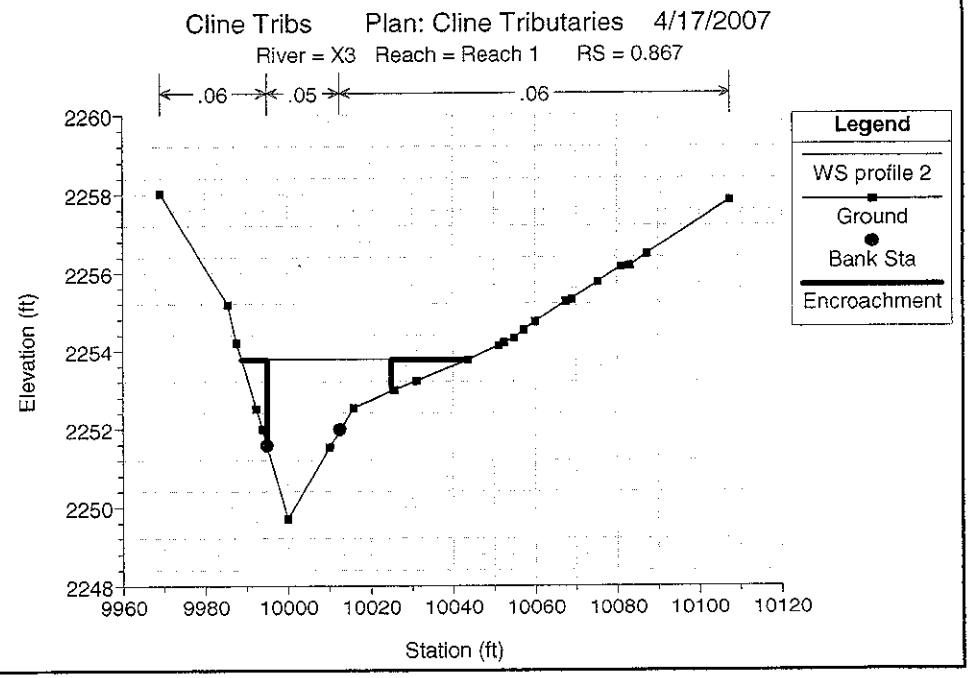

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 1.011
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

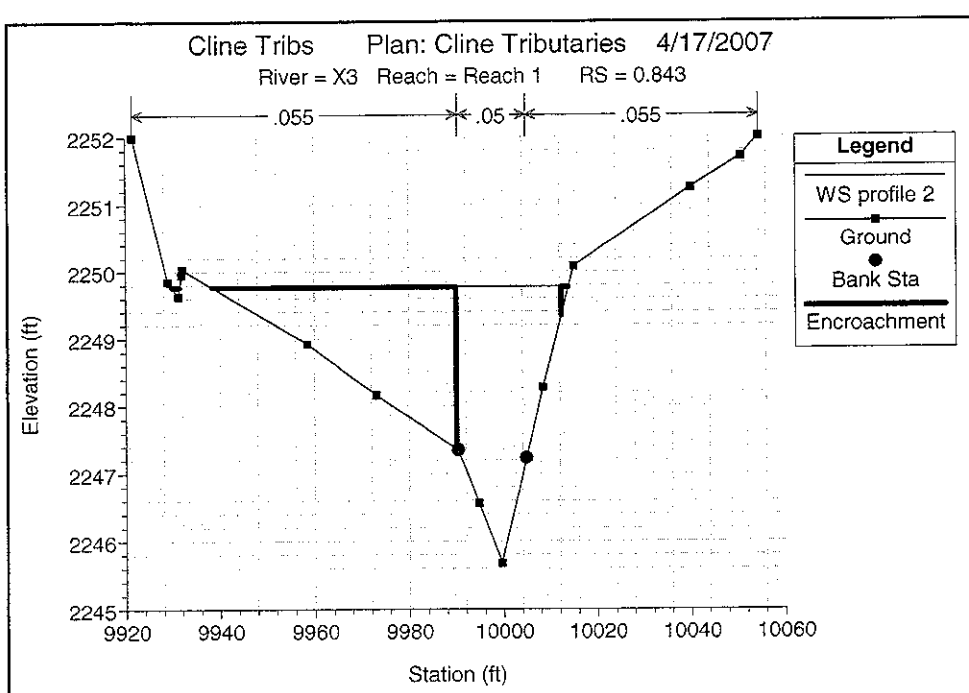

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.991
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

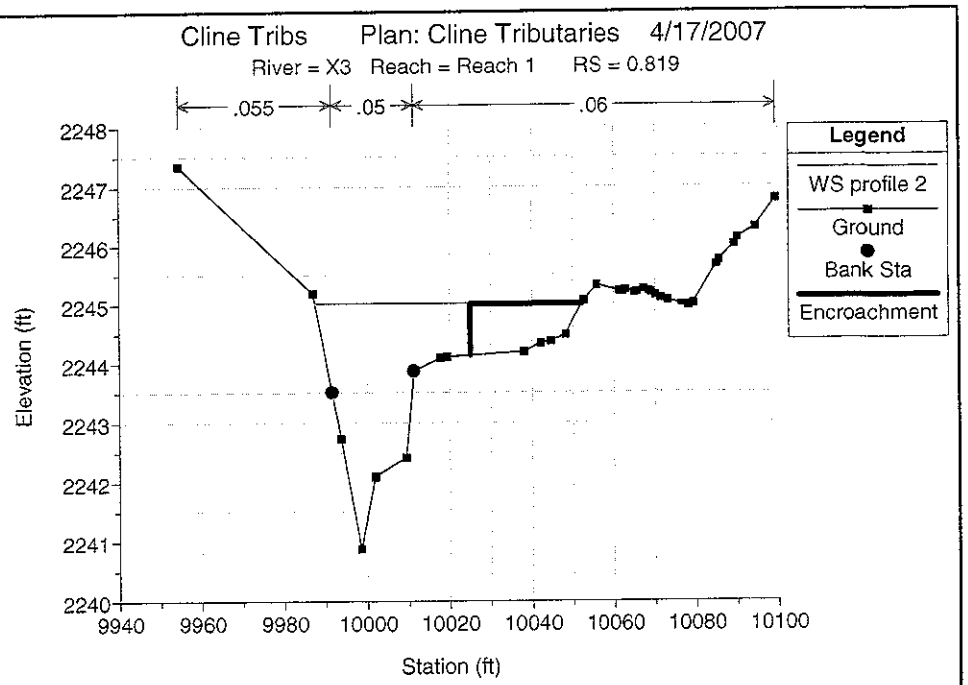

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.964
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

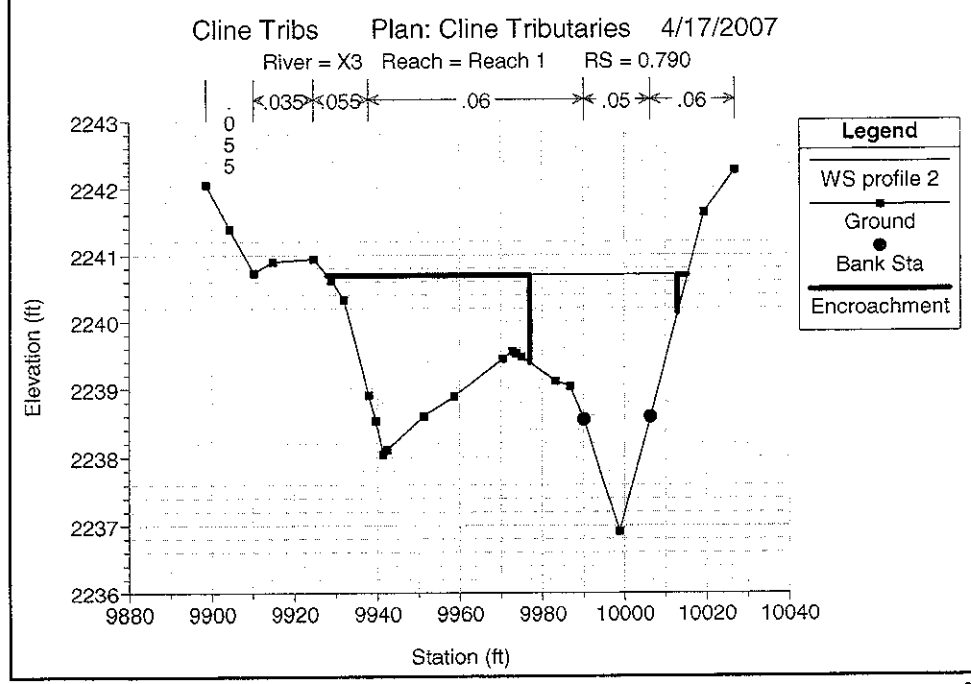

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.930
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

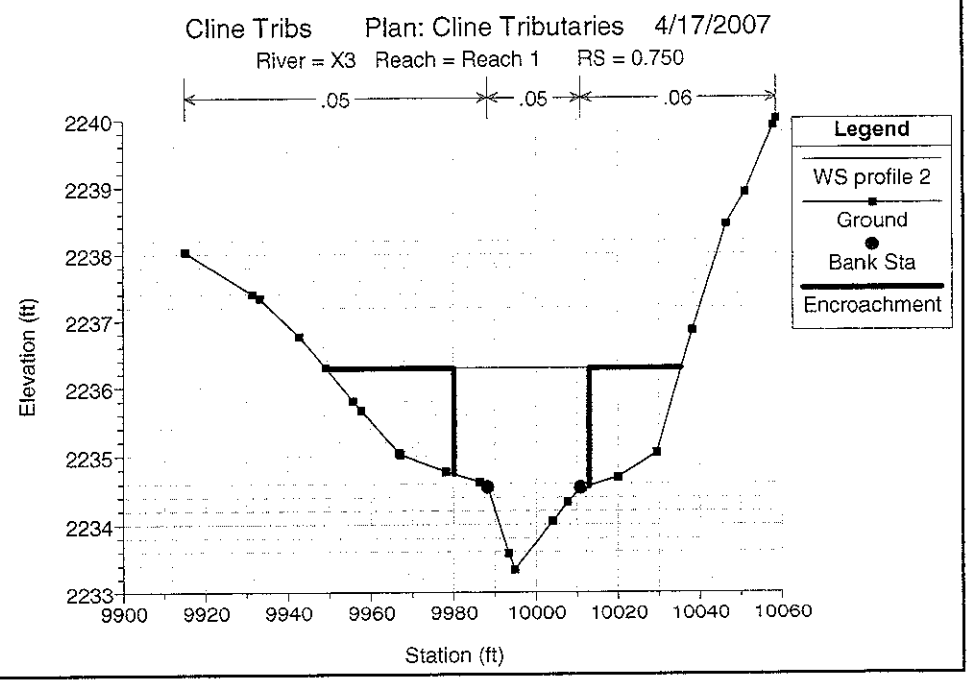

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.896
.055
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

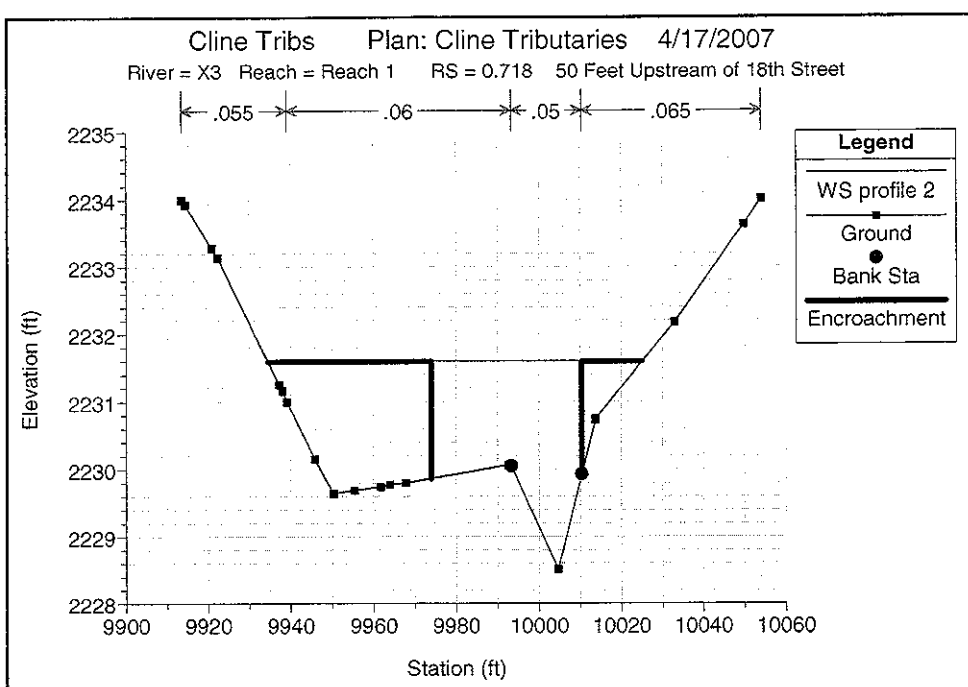

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.867
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

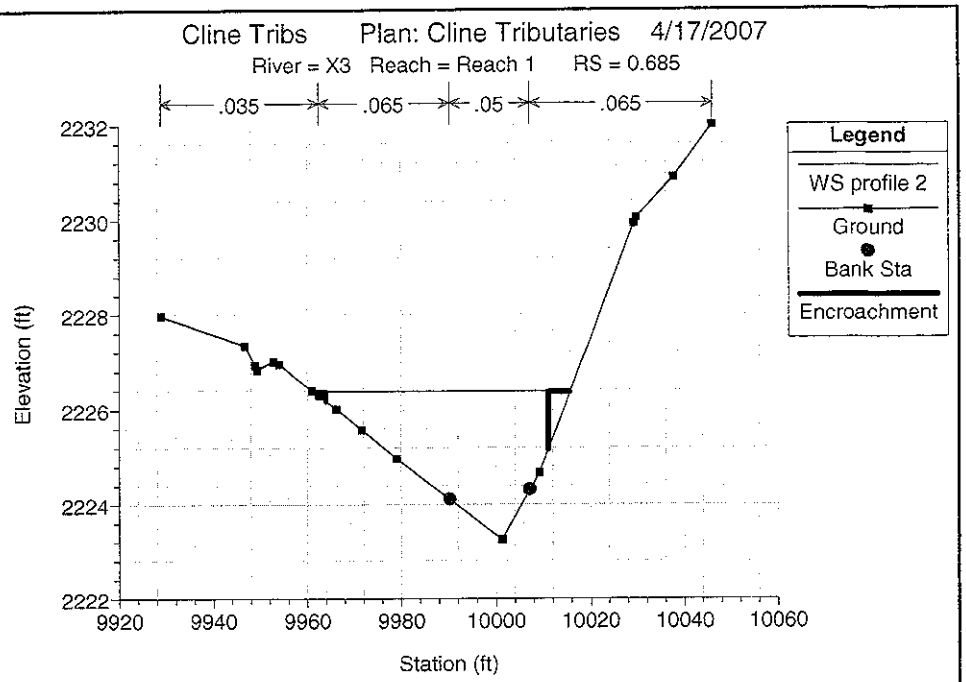

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.843
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

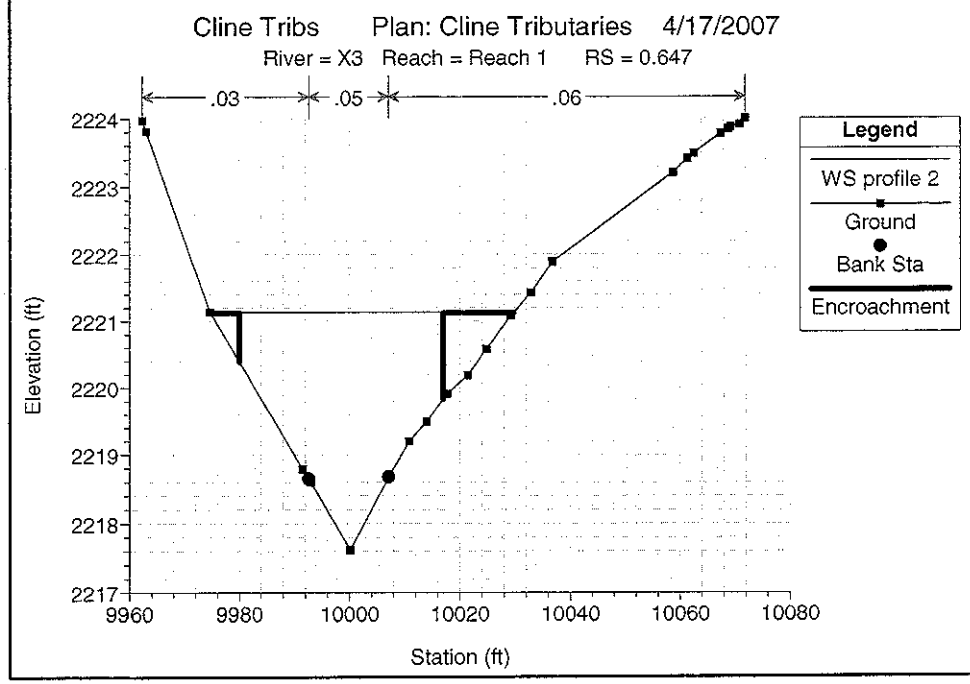

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.819
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

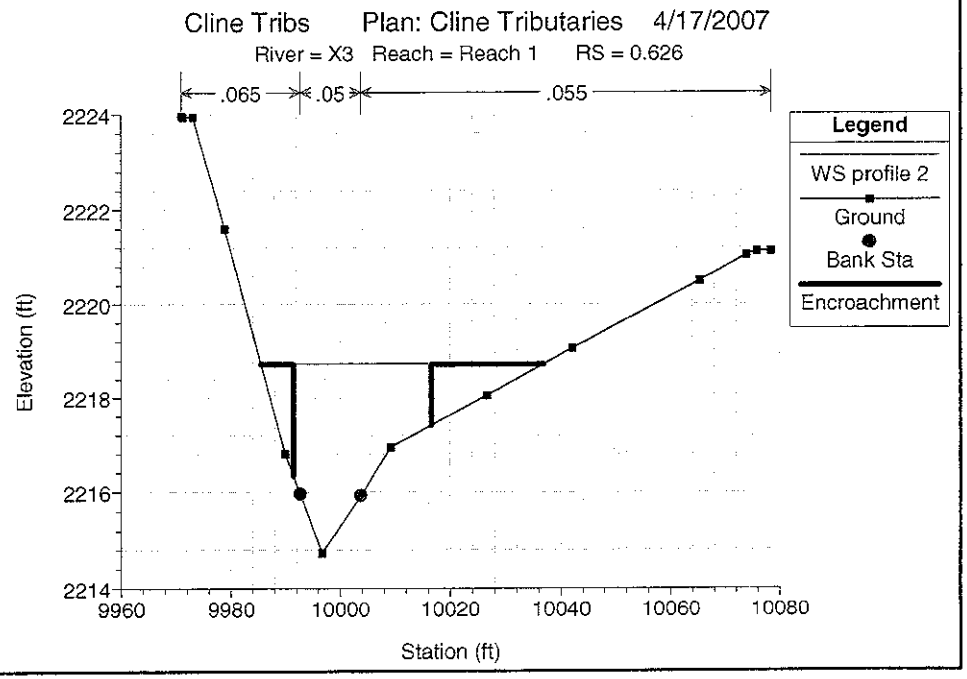

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.790
.035
.055
.06
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

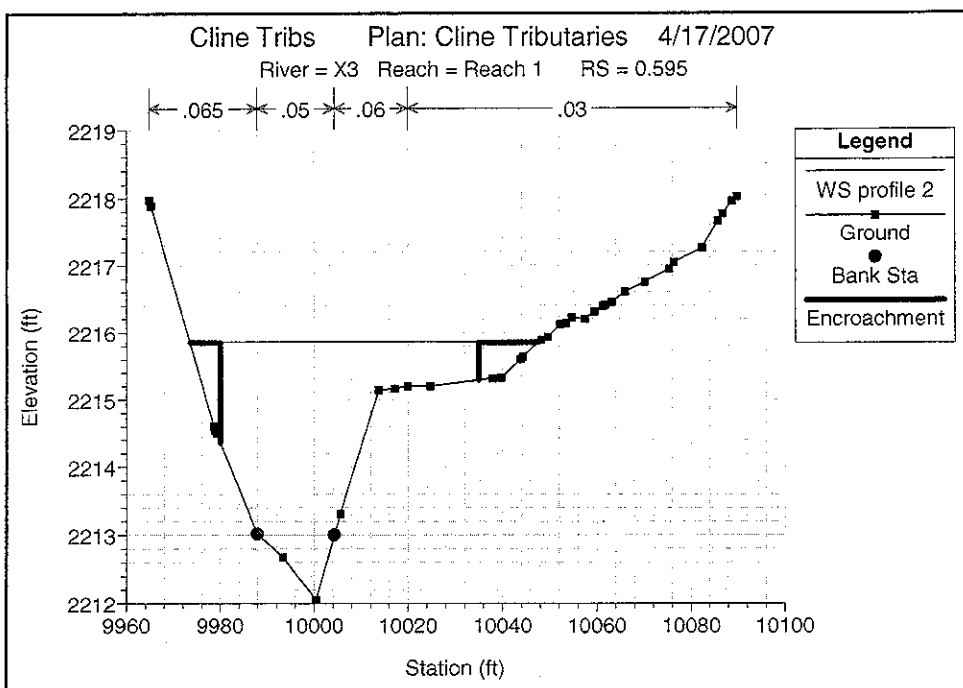

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.750
.05
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

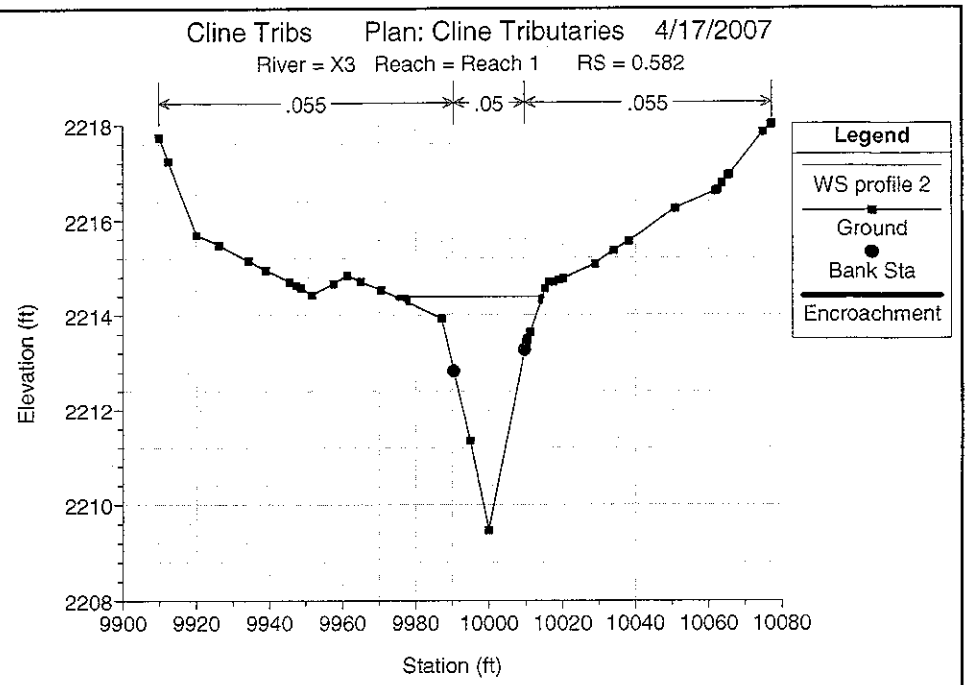

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.718 50 Feet Upstream of 18th Street
.055
.06
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

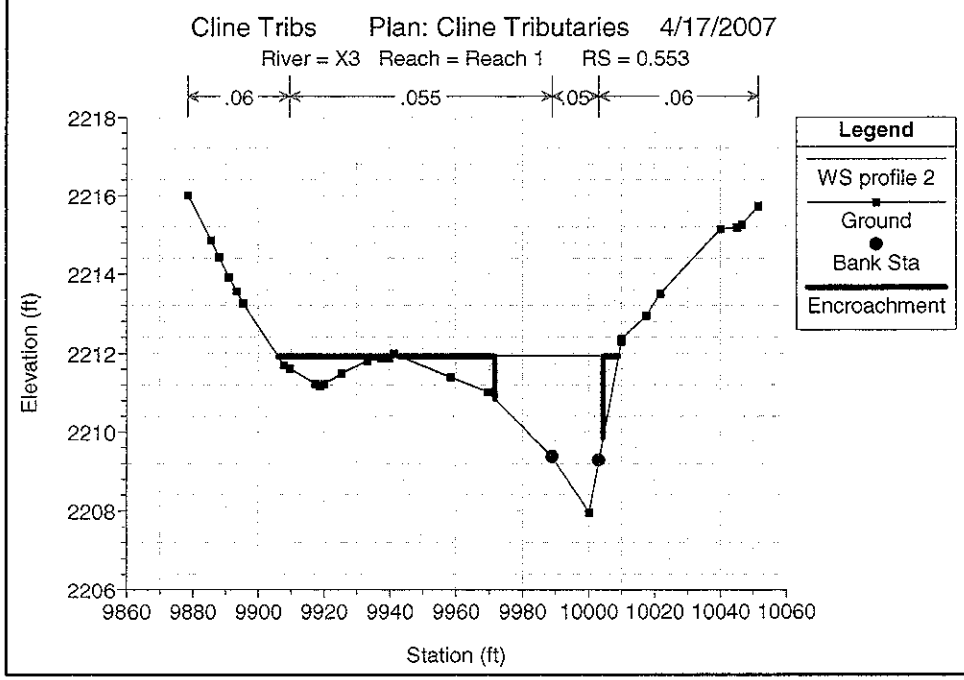

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.685
.035
.065
.05
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

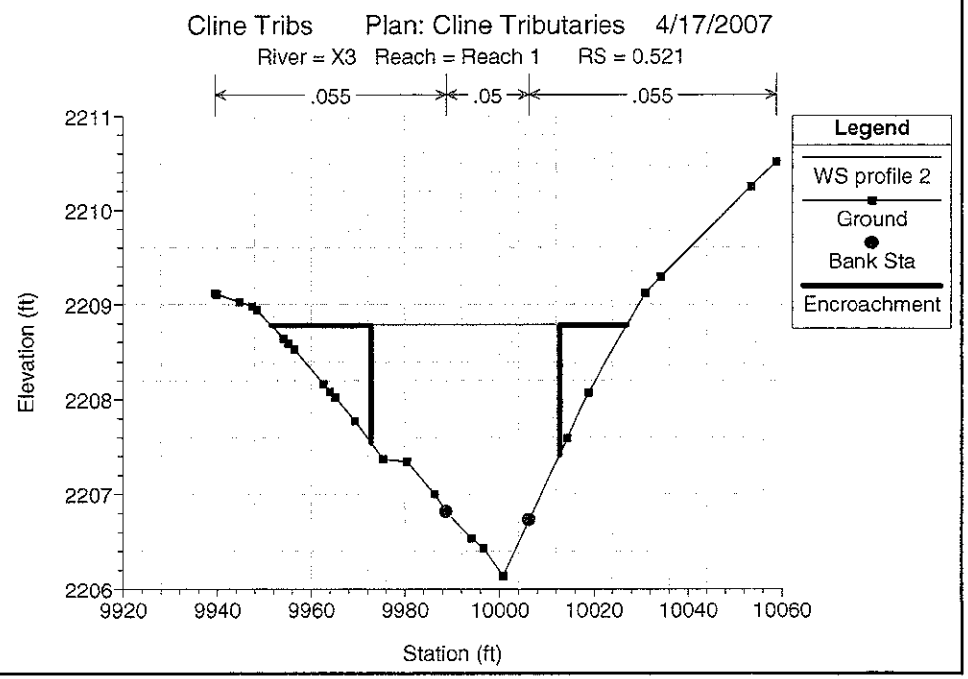

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.647
.03
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

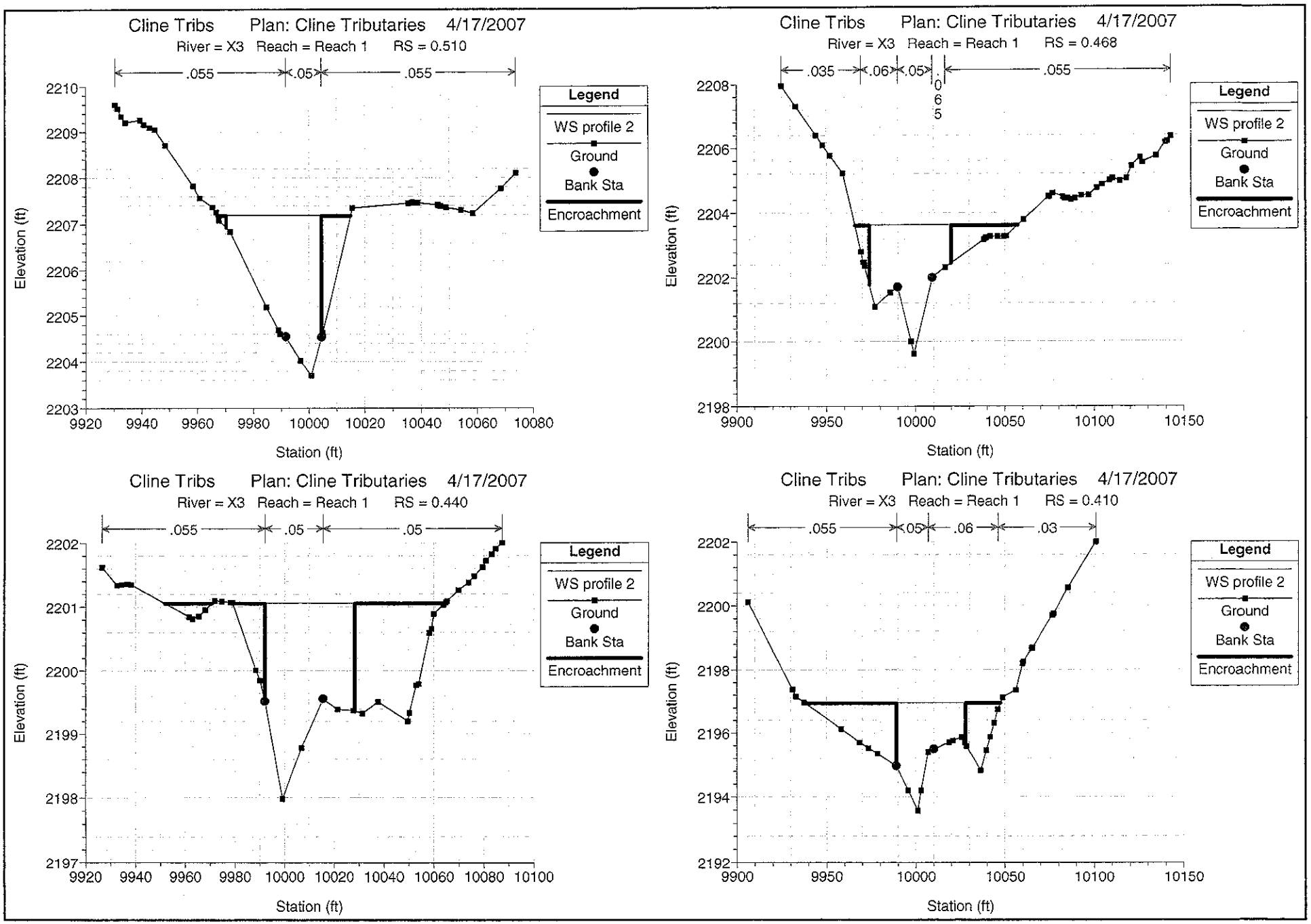

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.626
.065
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

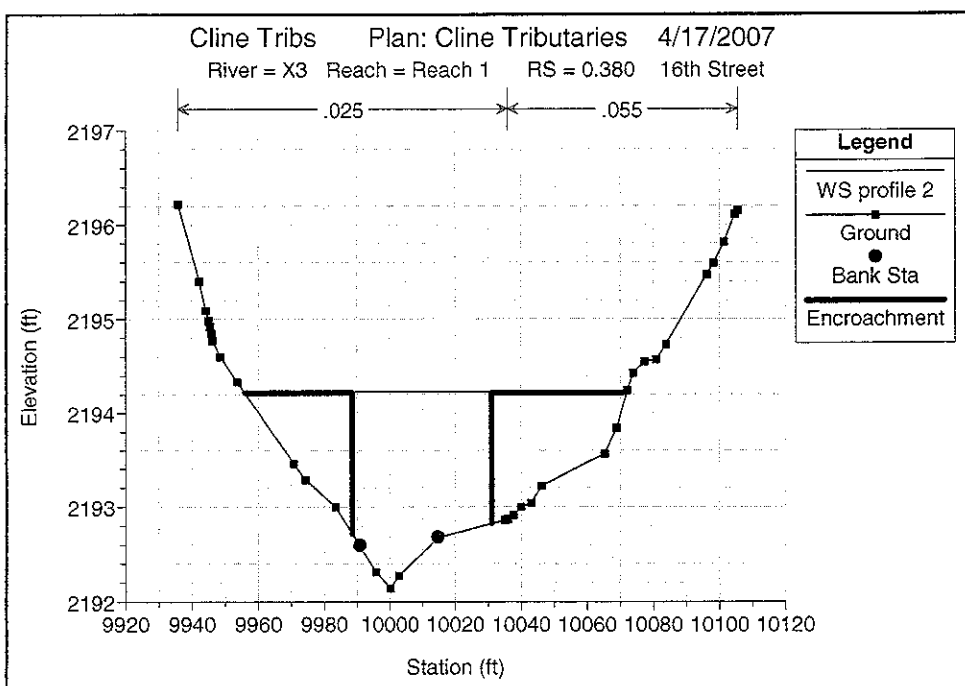

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.595
.065
.05
.06
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

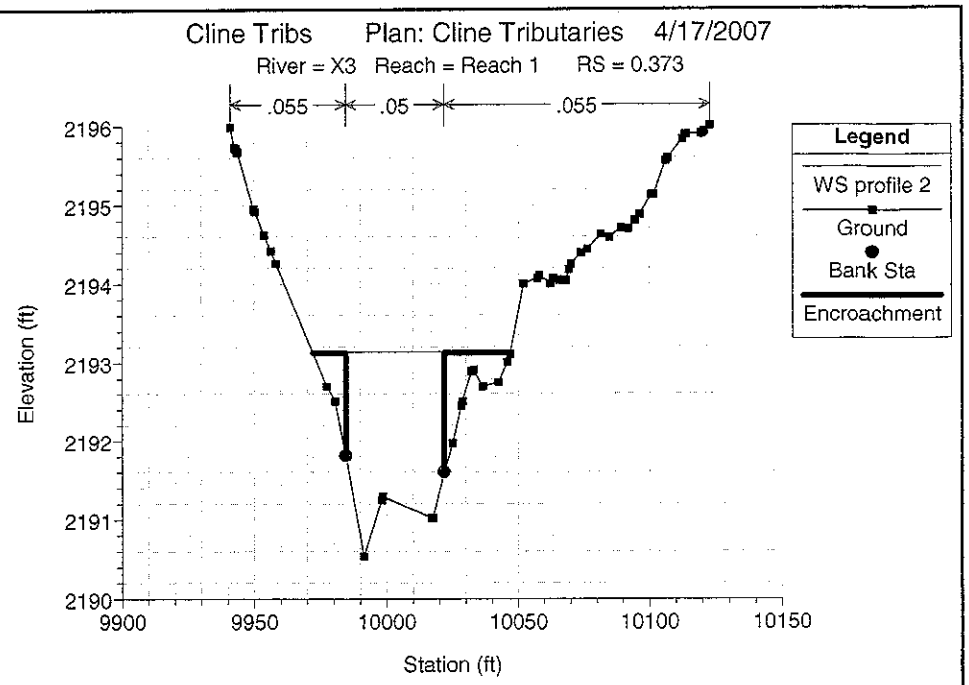

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.582
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

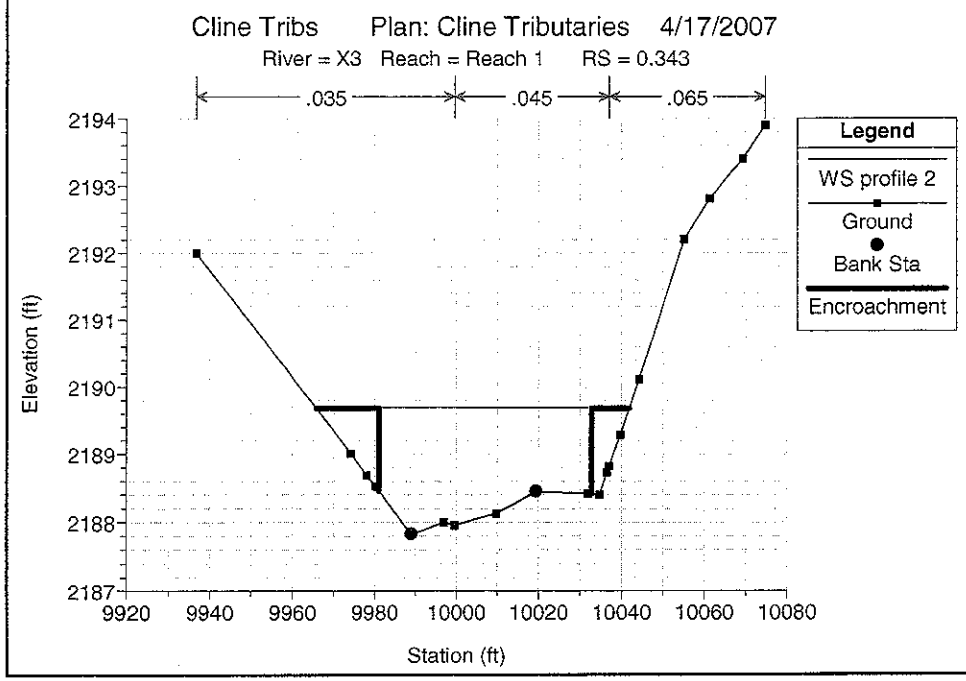

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.553
.06
.055
.05
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

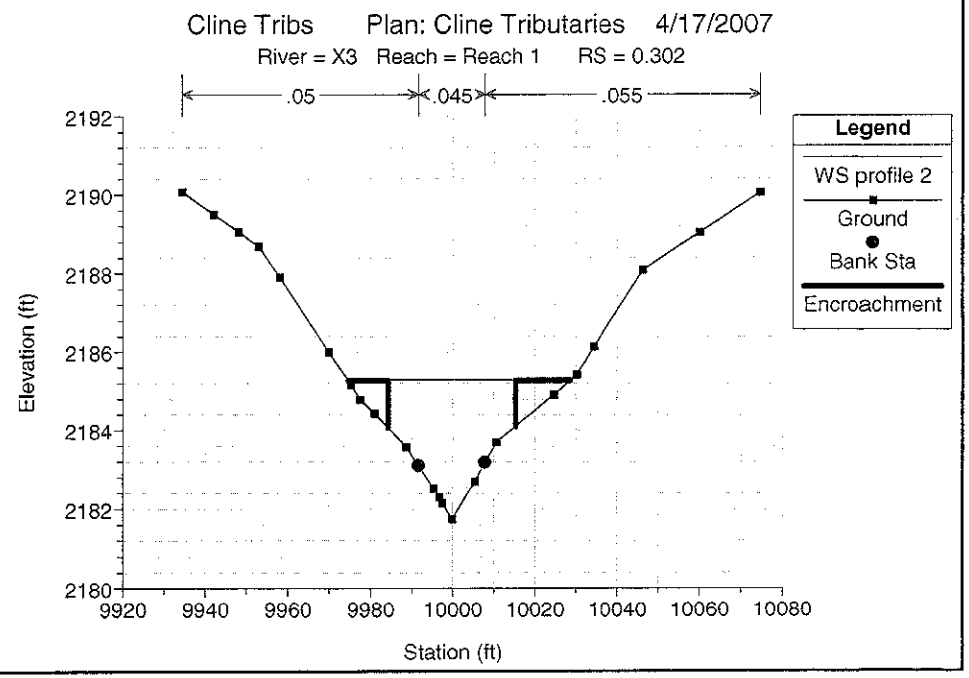

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.521
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

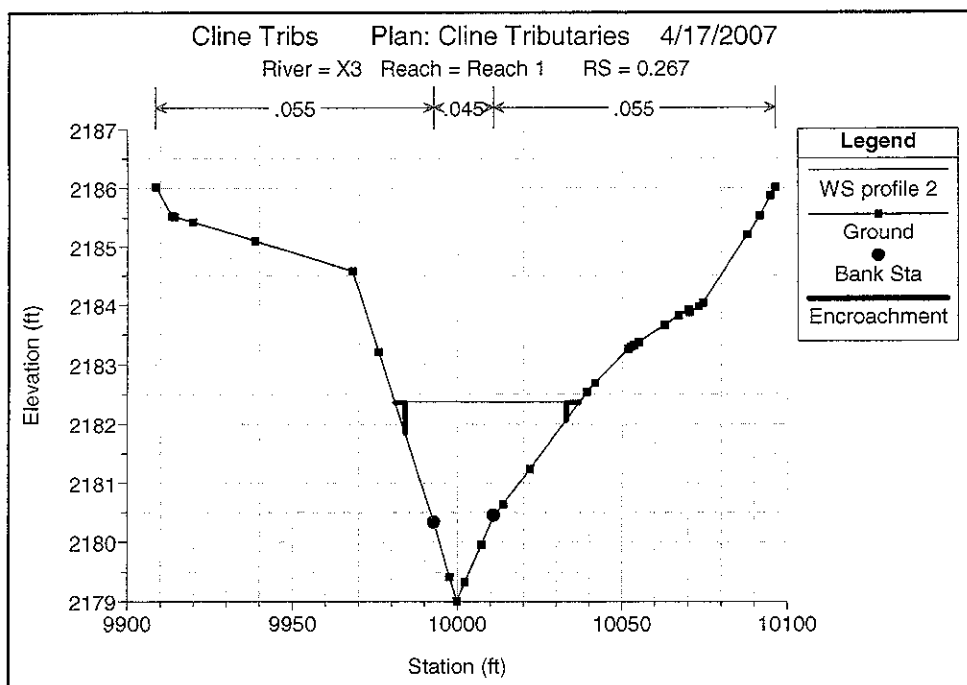

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.510
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.468
.035
.06
.05
.065
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.440
.055
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.410
.055
.05
.06
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

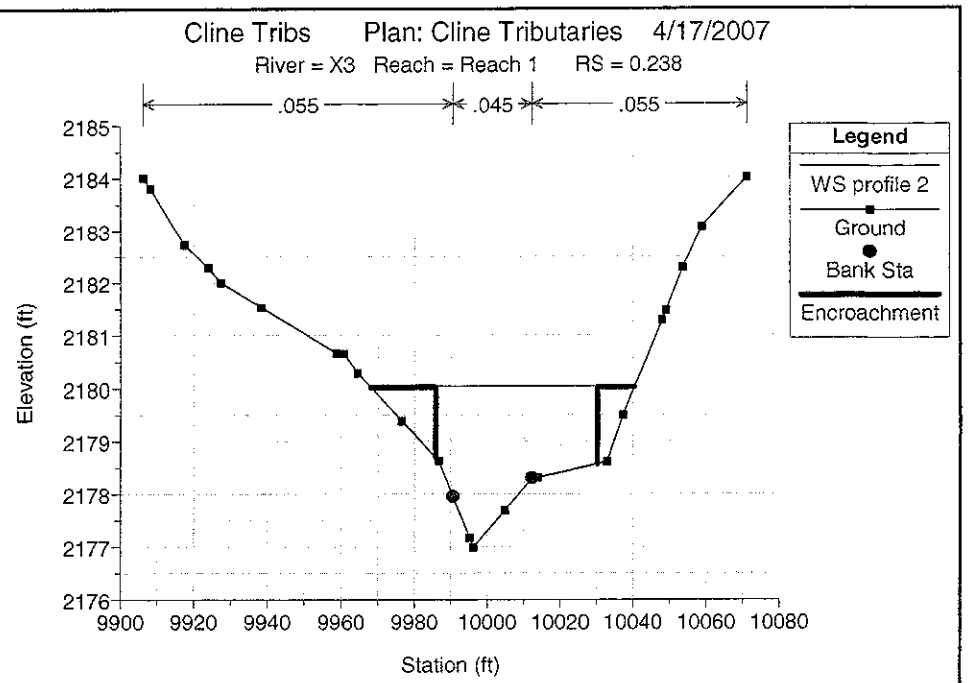

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.380 16th Street
.025
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

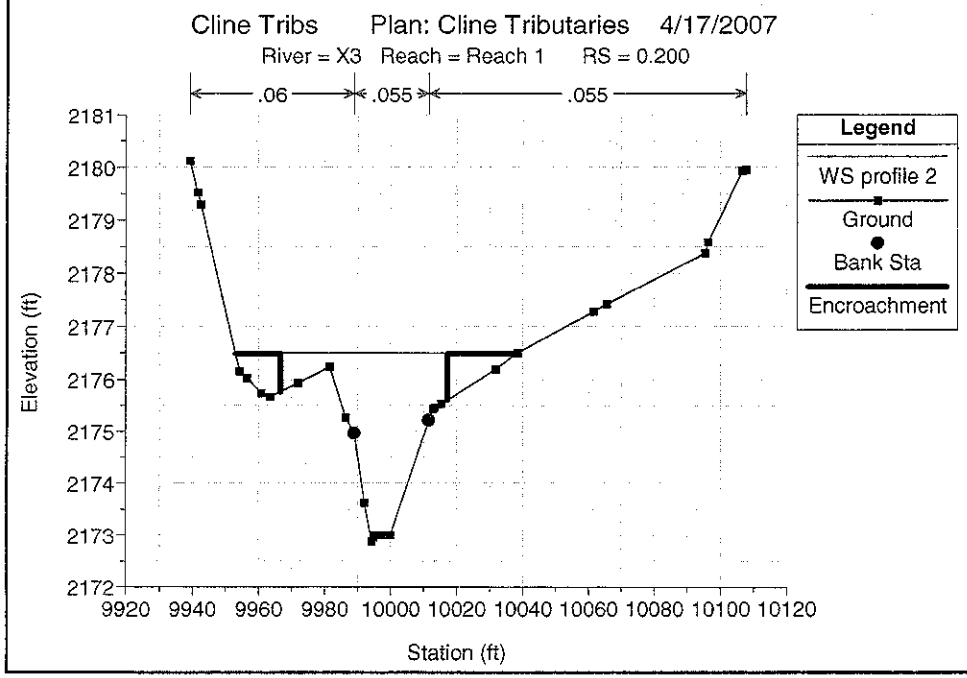

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.373
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

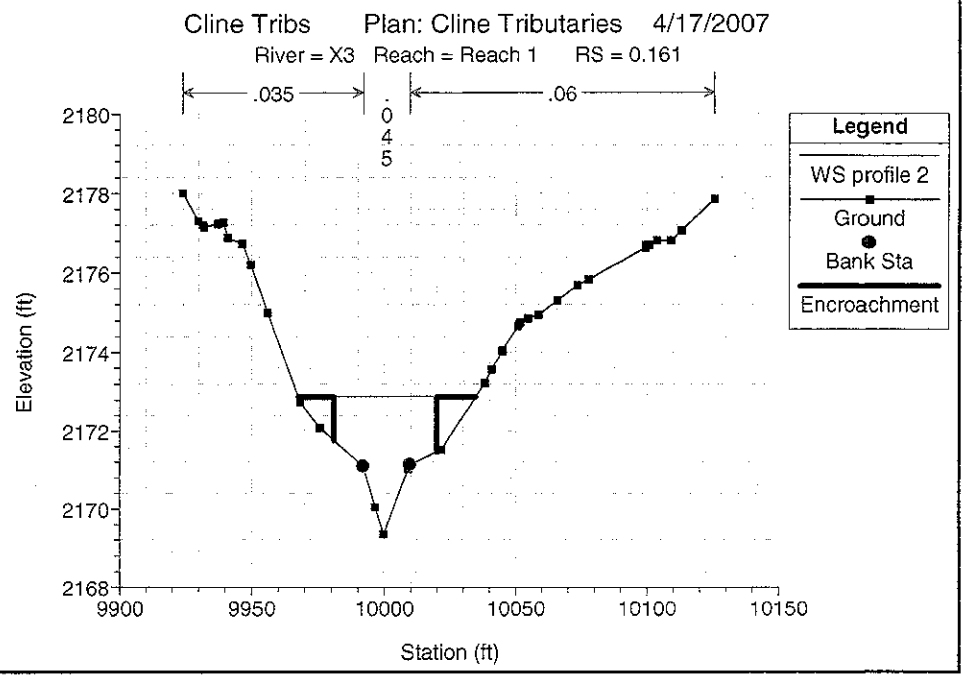

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.343
.035
.045
.065
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

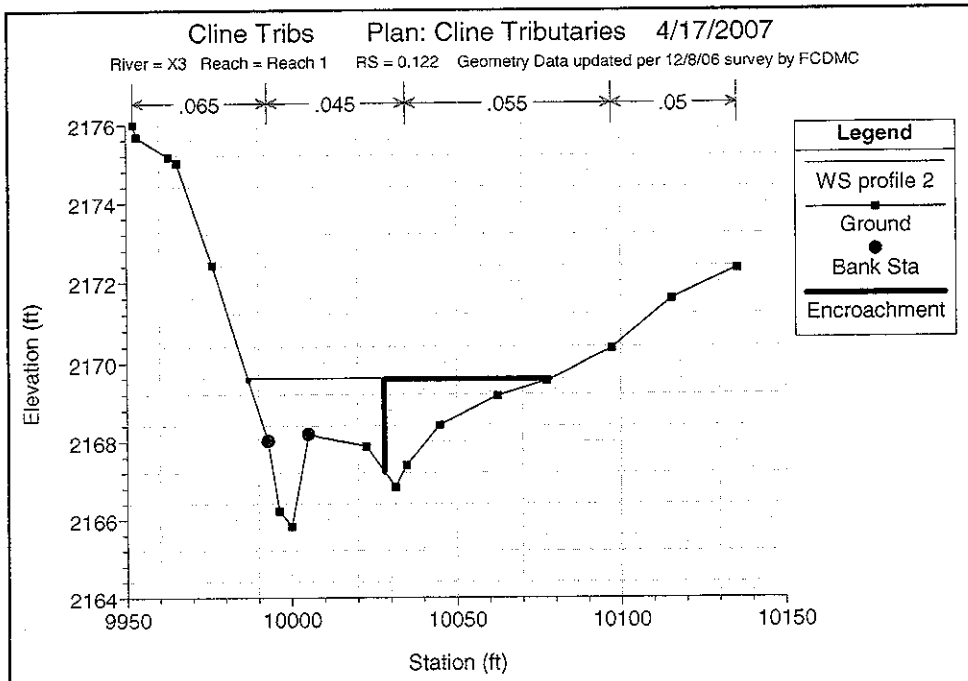

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.302
.05
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

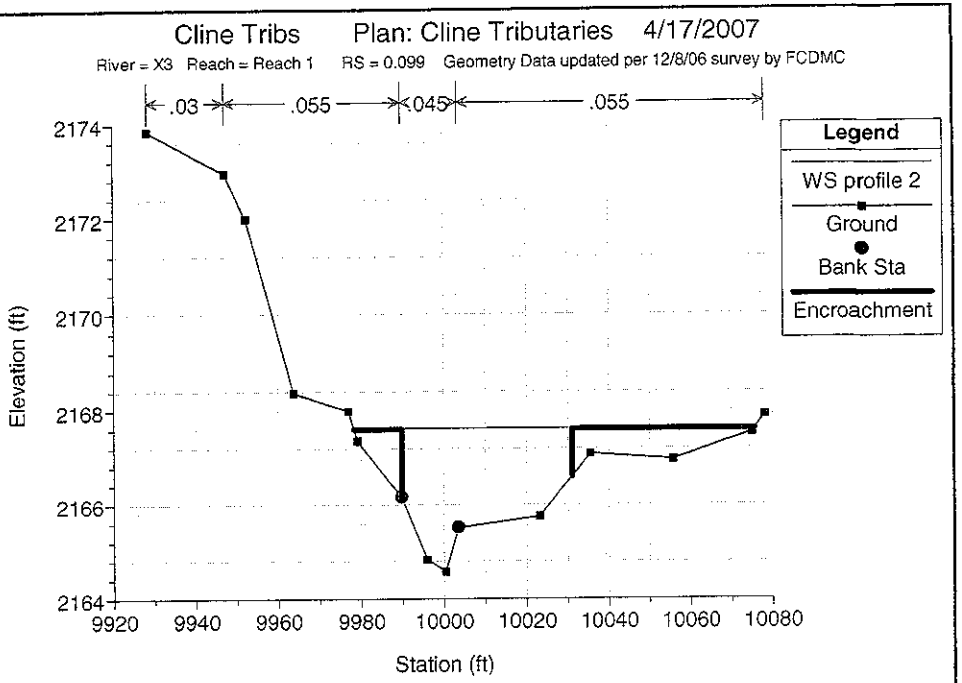

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.267
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

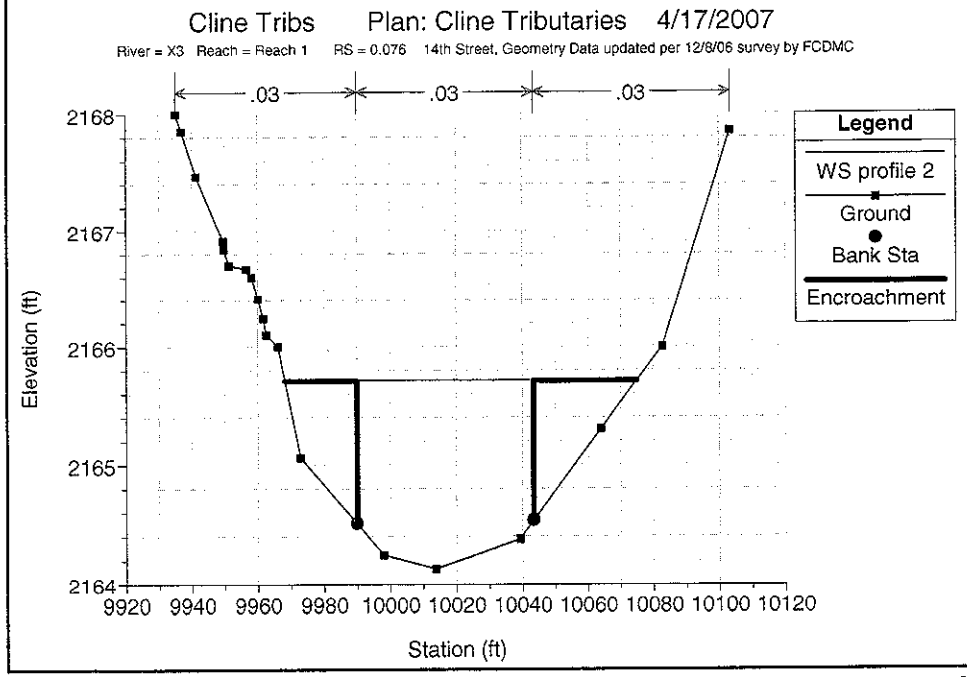

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.238
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

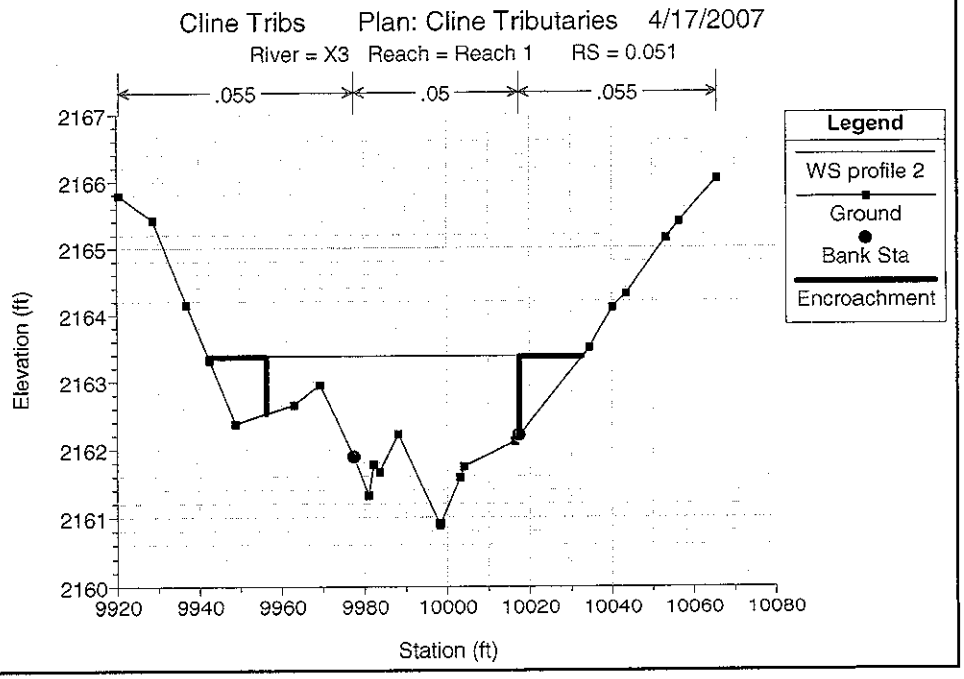

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.200
.06
.055
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

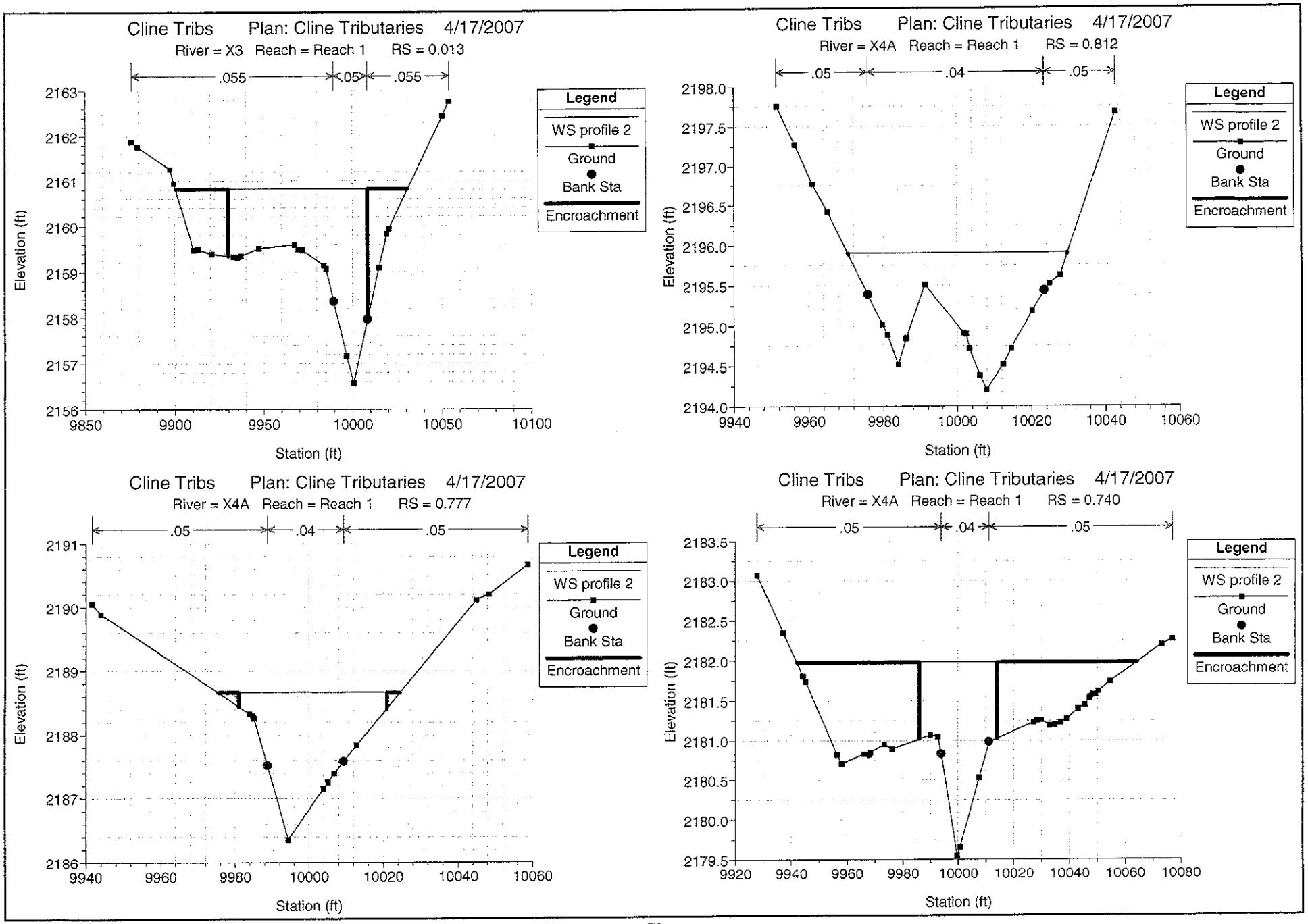

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.161
.035
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

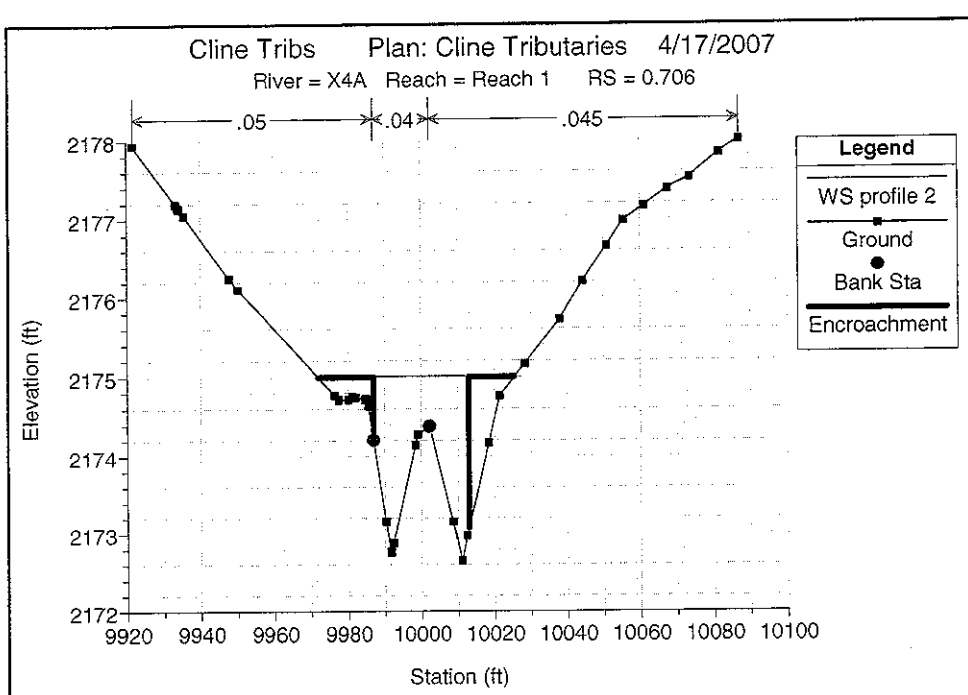

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.122 Geometry Data updated per 12/8/06 survey by FCDMC
.065
.045
.055
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

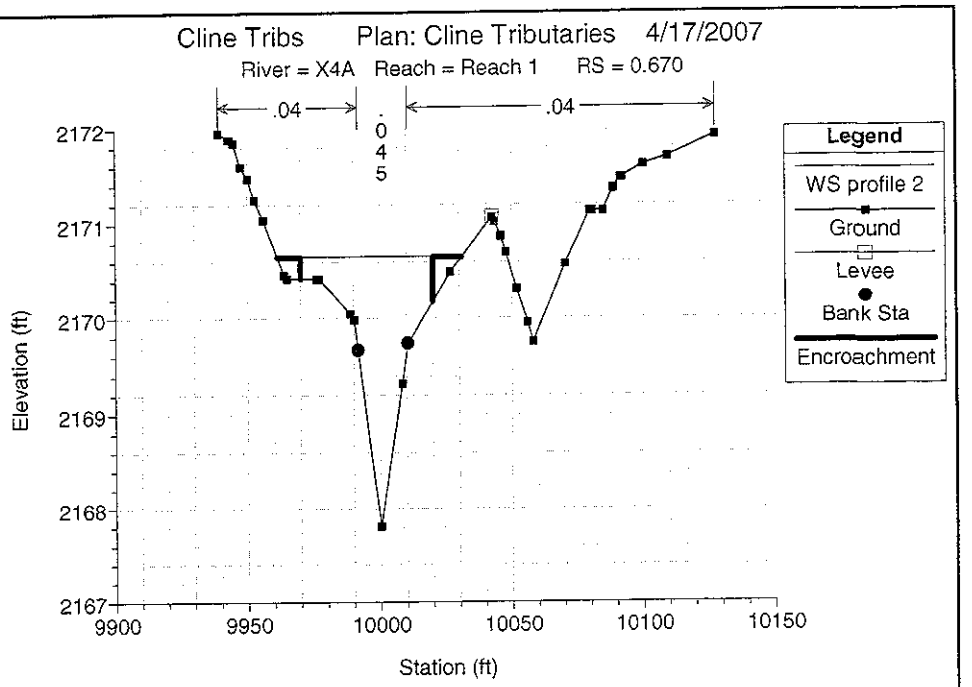

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.099 Geometry Data updated per 12/8/06 survey by FCDMC
.03
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

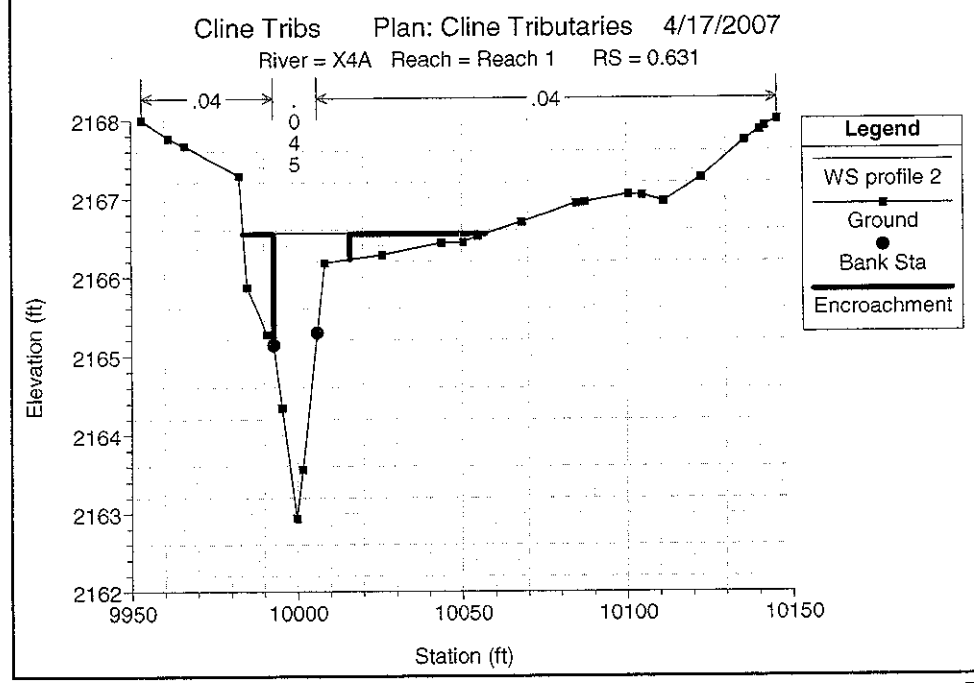

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.076 14th Street, Geometry Data updated per 12/8/06 survey by FCDMC
.03
.03
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

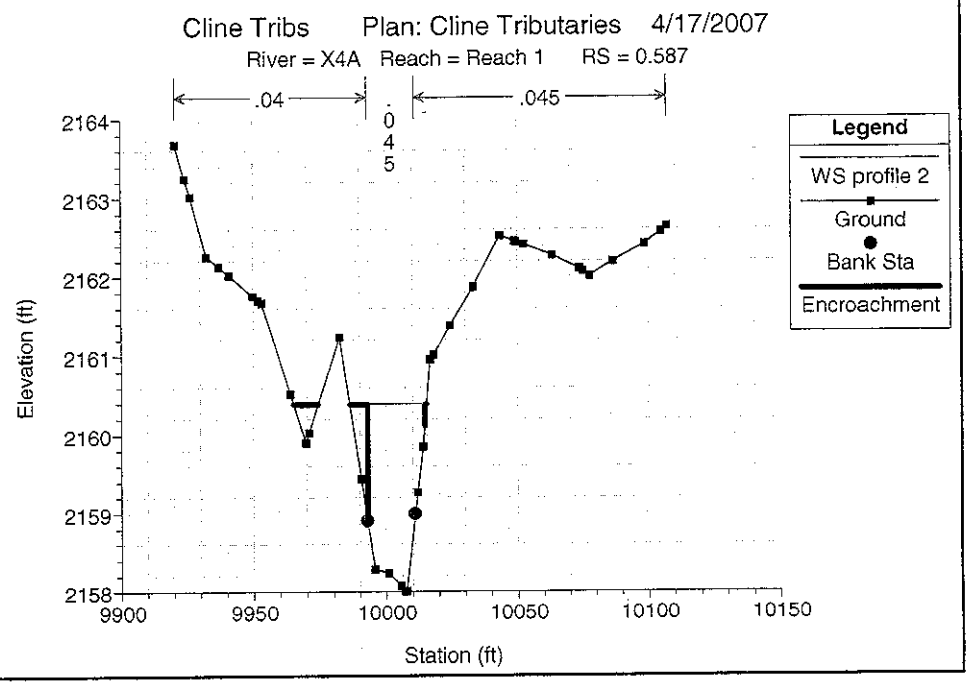

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.051
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

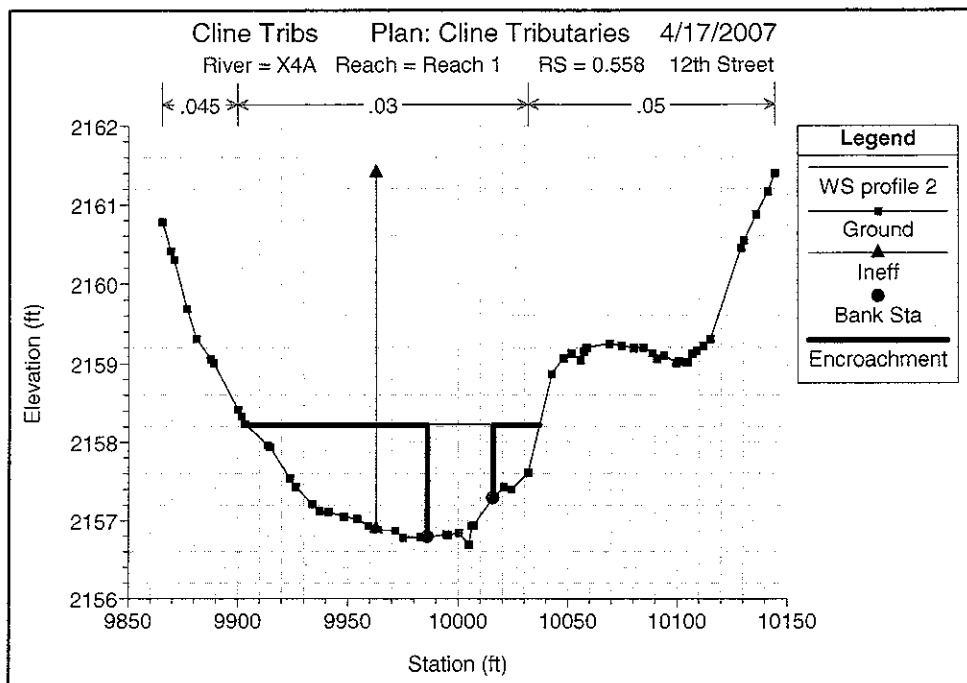

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X3 Reach = Reach 1 RS = 0.013
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.812
.05
.04
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.777
.05
.04
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.740
.05
.04
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

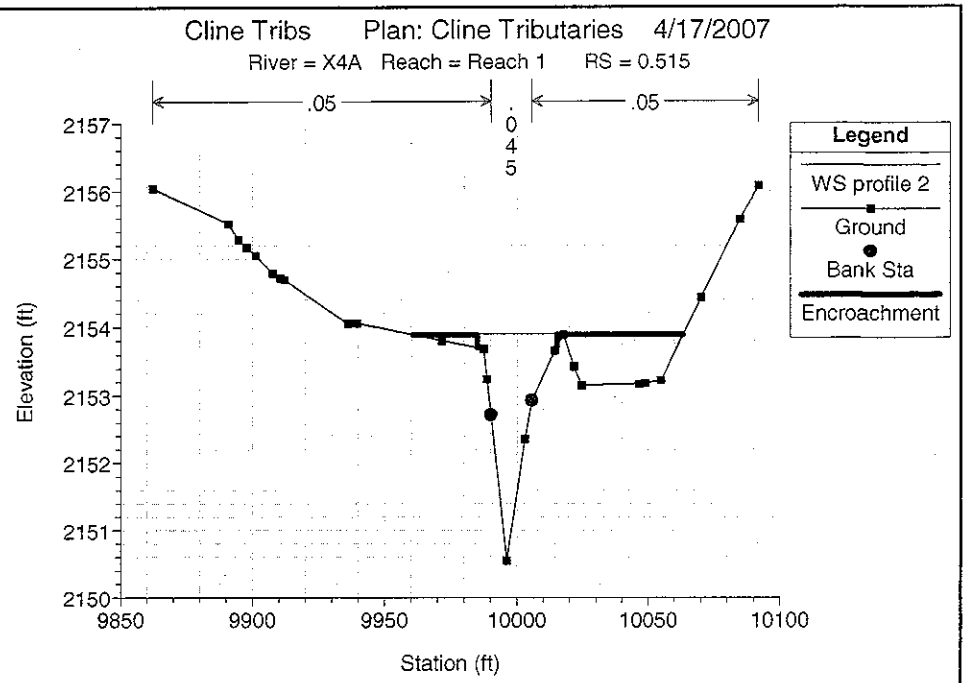

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.706
.05
.04
.045
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

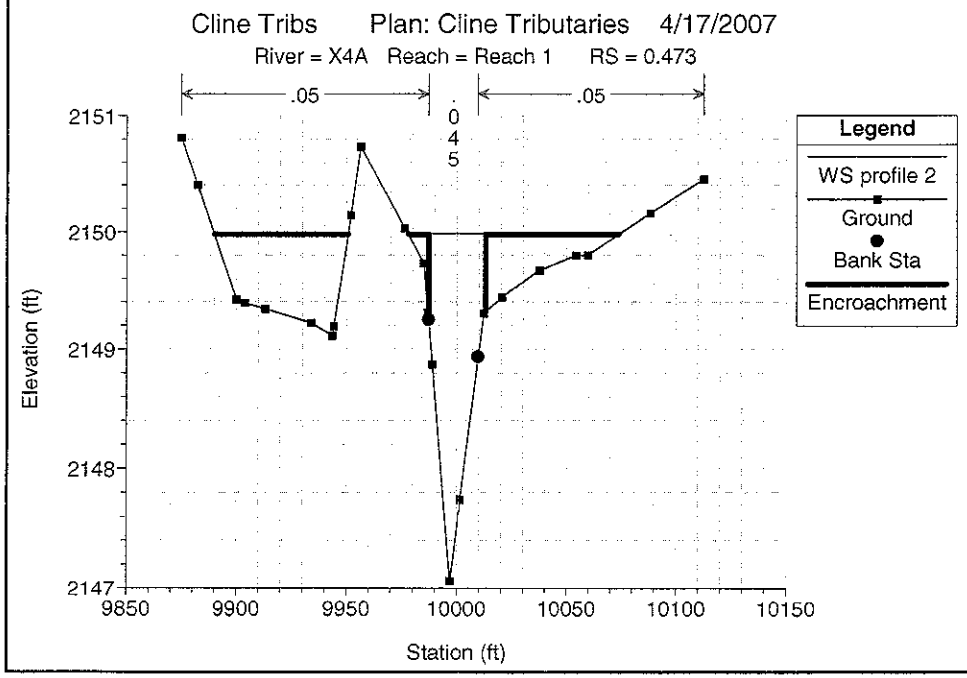

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.670
.04
.045
.04
Legend
WS profile 2
Ground
Levee
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

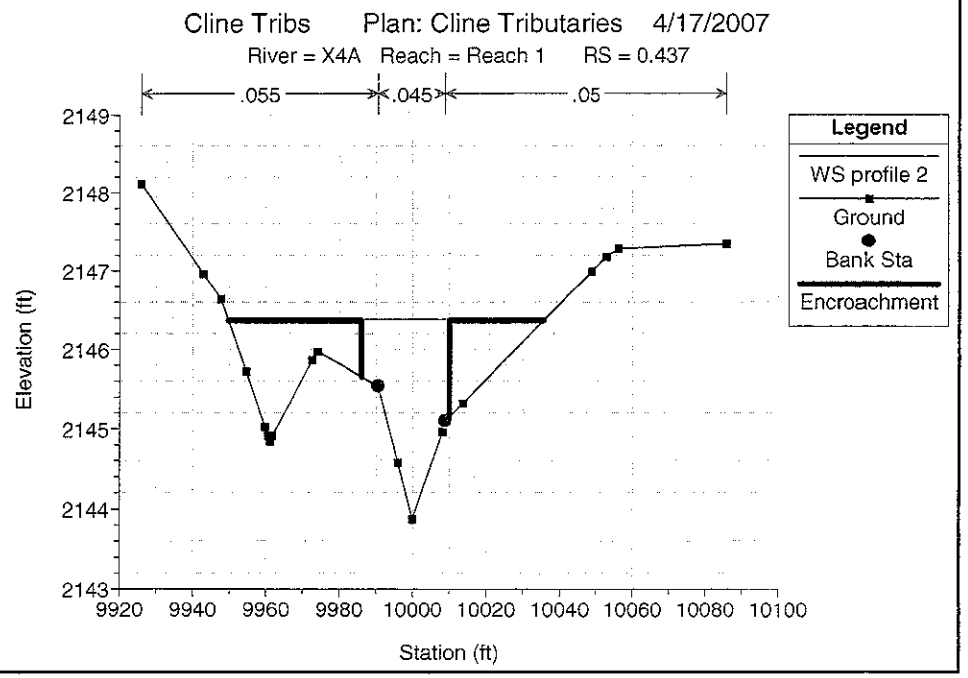

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.631
.04
.045
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

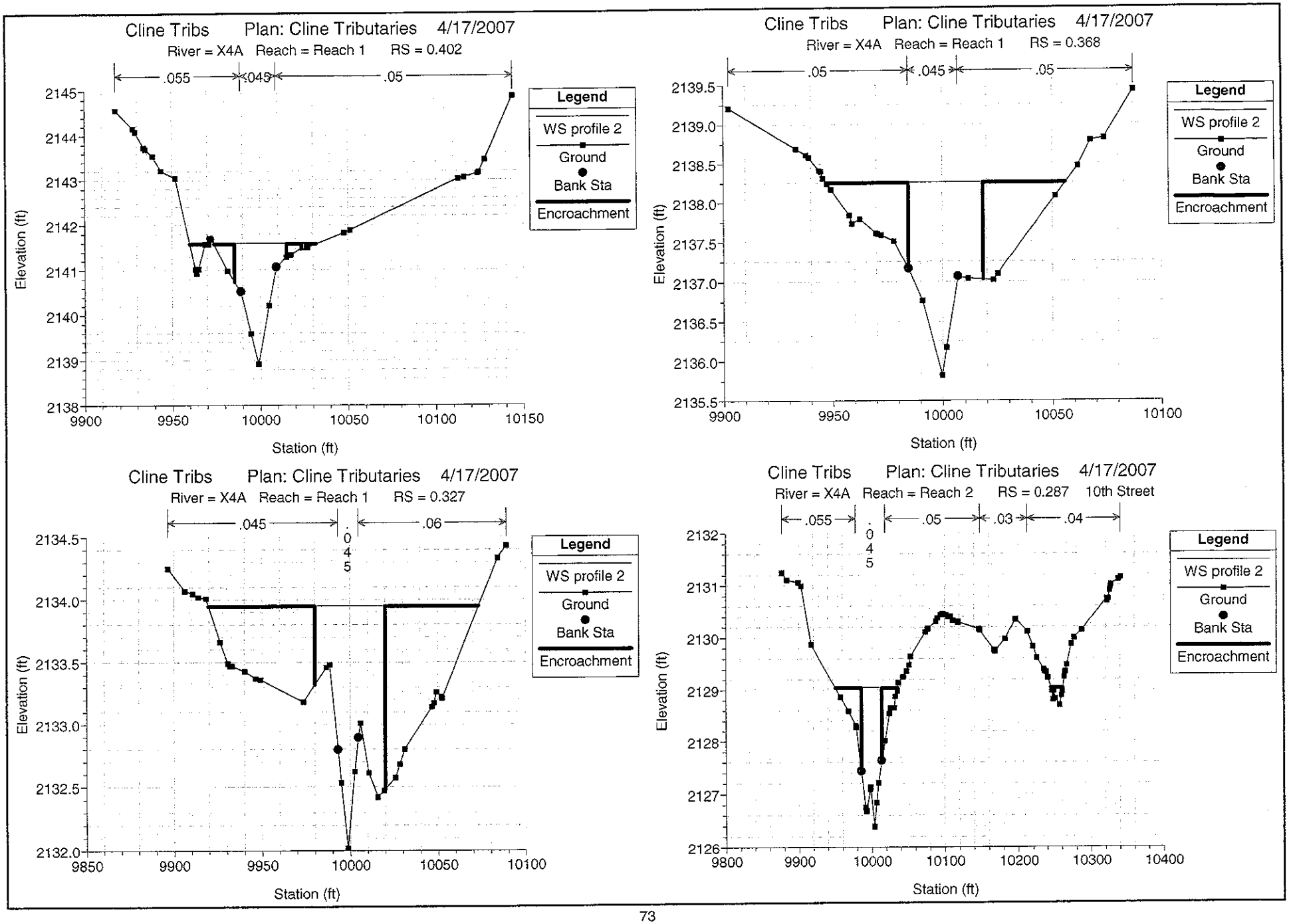

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.587
.04
.045
.045
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

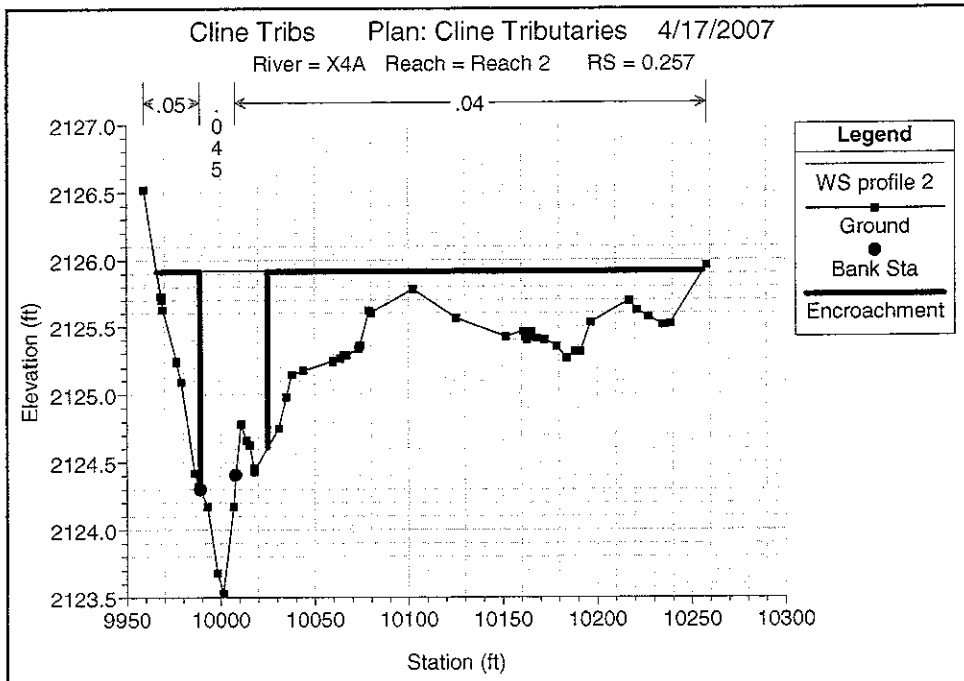

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.558 12th Street
.045
.03
.05
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

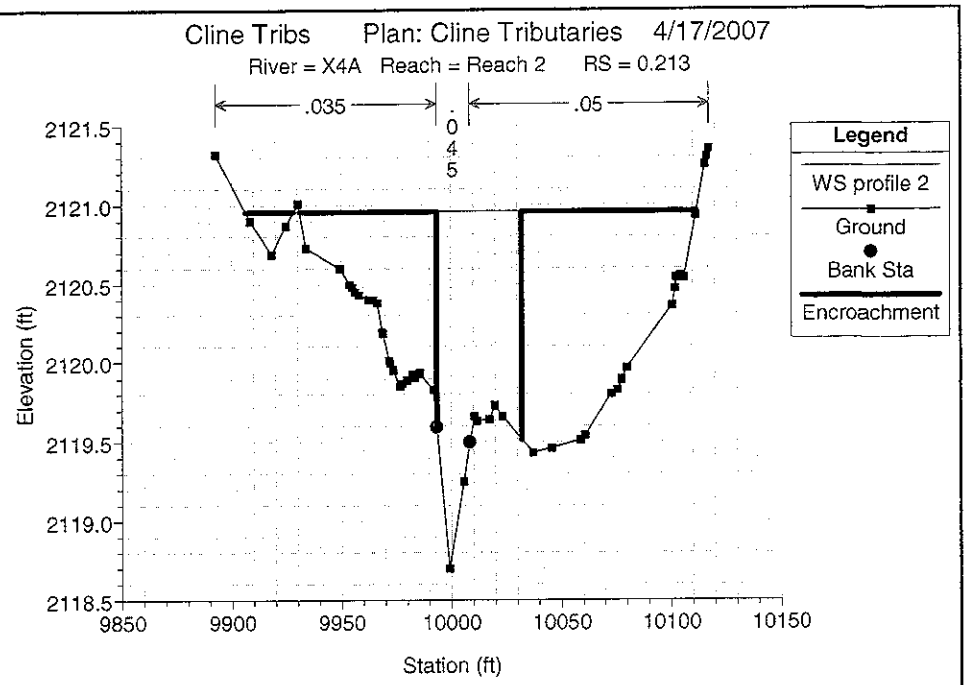

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.515
.05
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

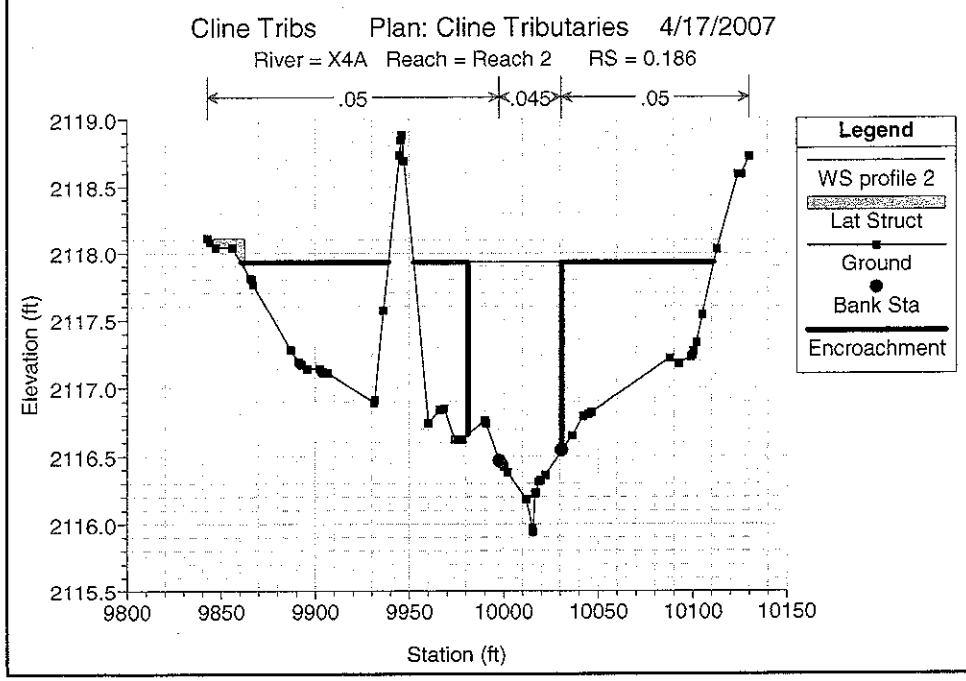

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.473
.05
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

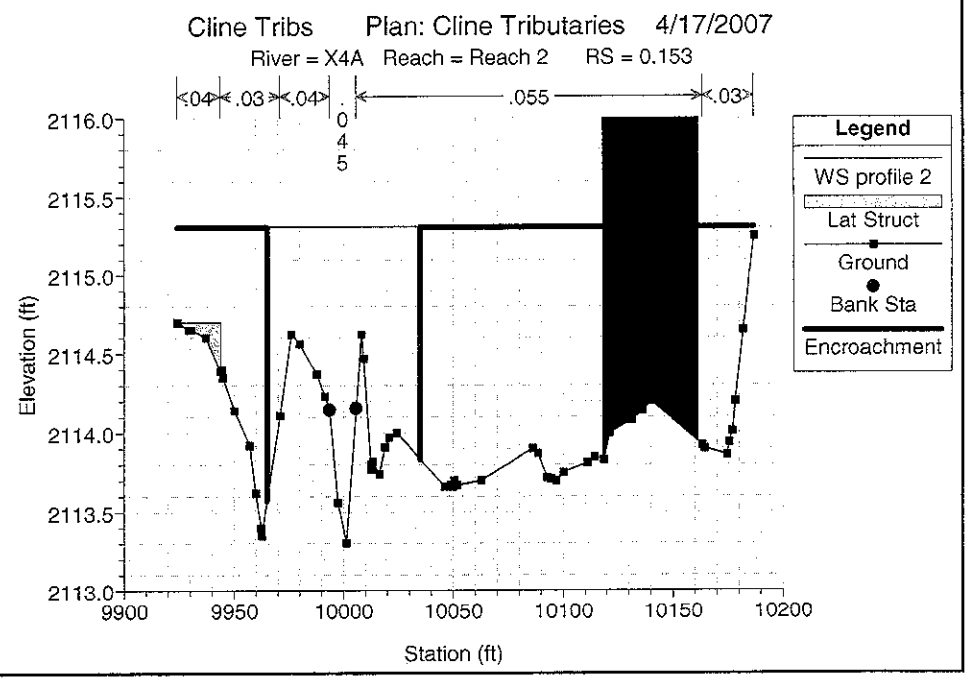

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.437
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

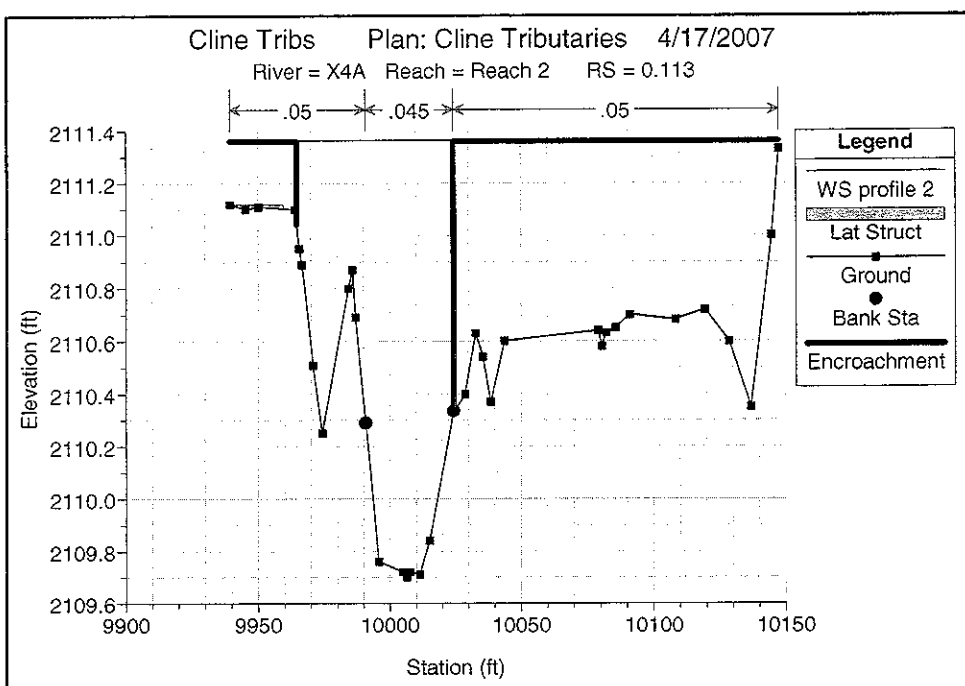

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.402
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.368
.05
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 1 RS = 0.327
.045
.045
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.287 10th Street
.055
.045
.05
.03
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

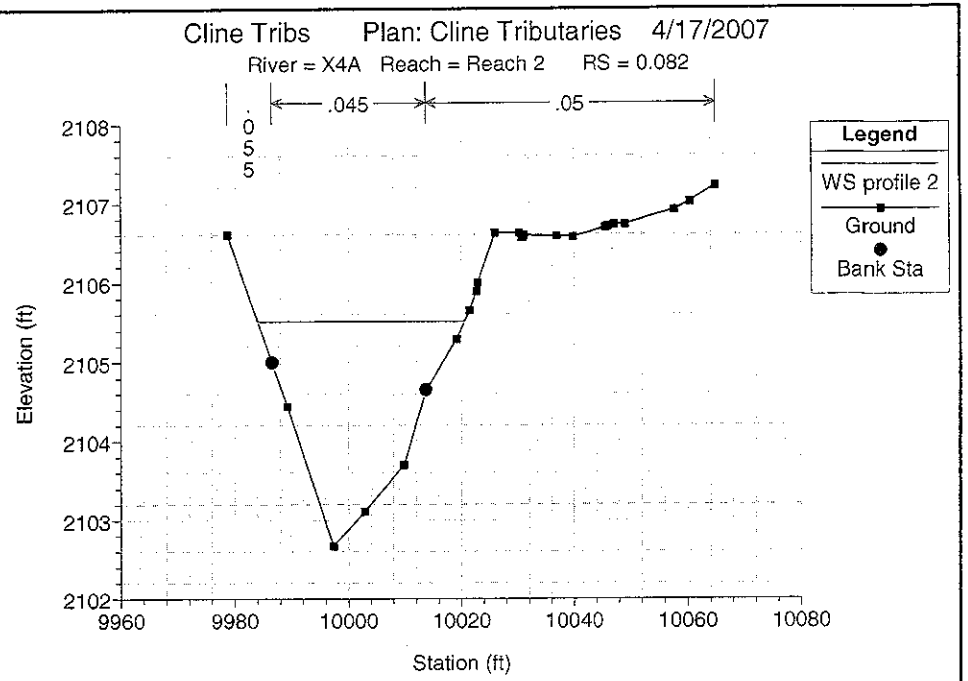

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.257
.05
.045
.04
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

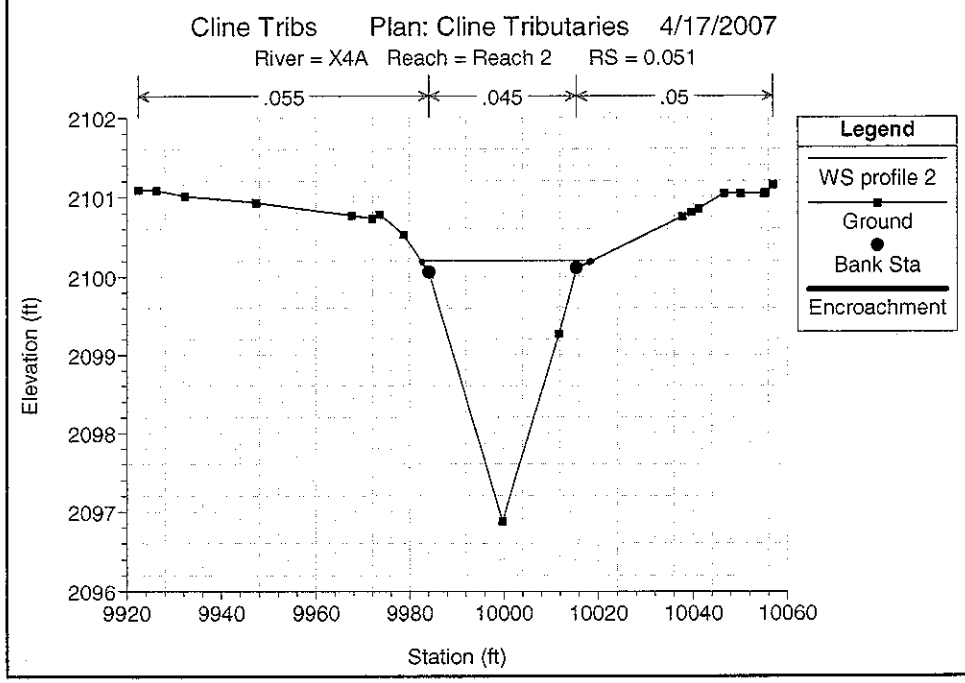

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.213
.035
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

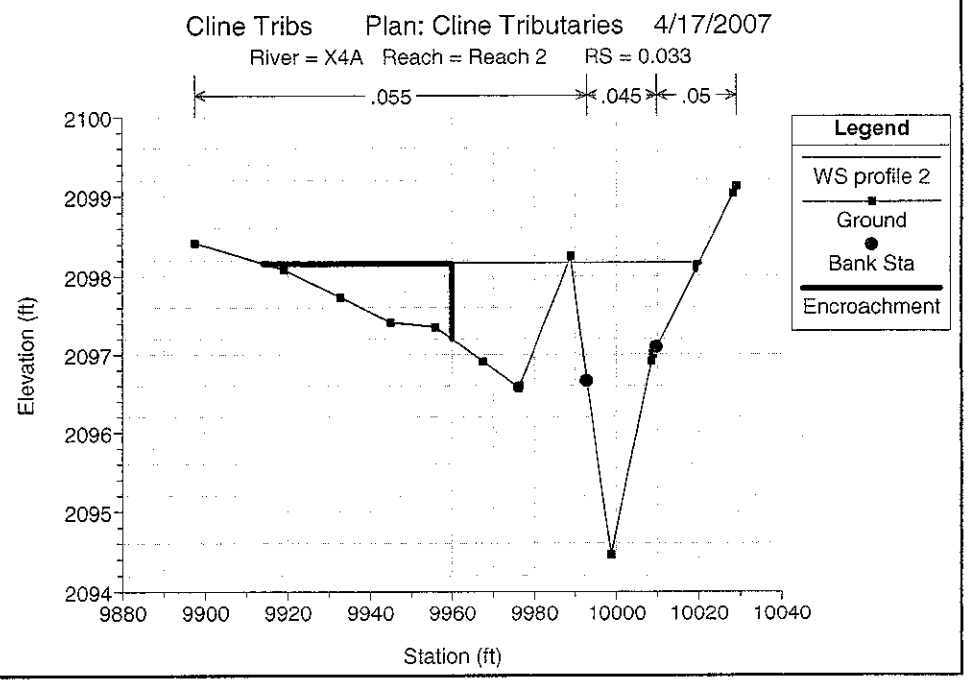

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.186
.05
.045
.05
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

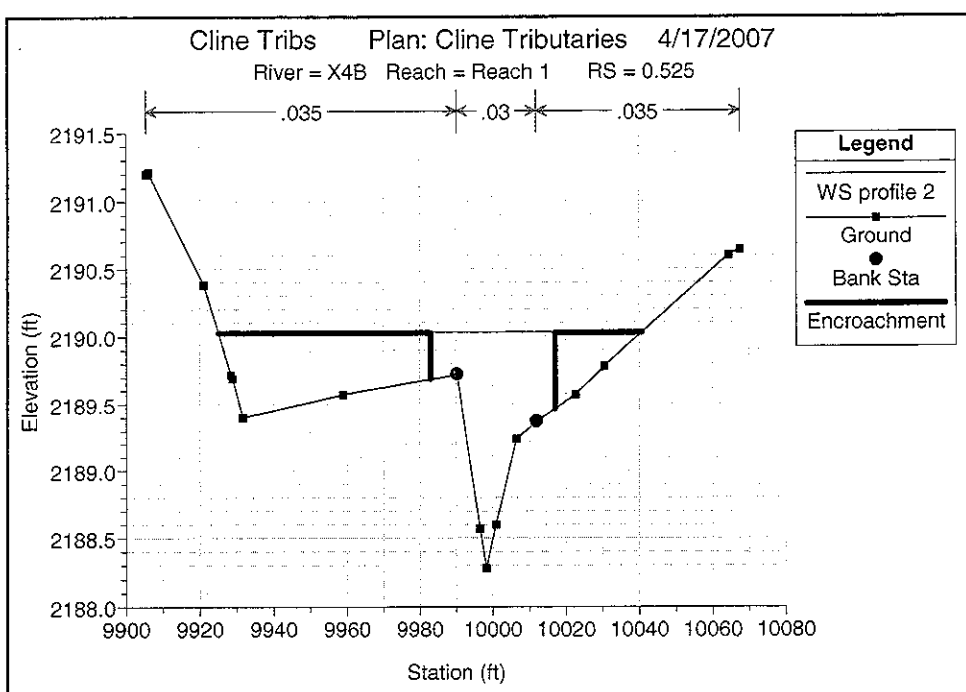

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.153
.04
.03
.04
.045
.055
.03
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

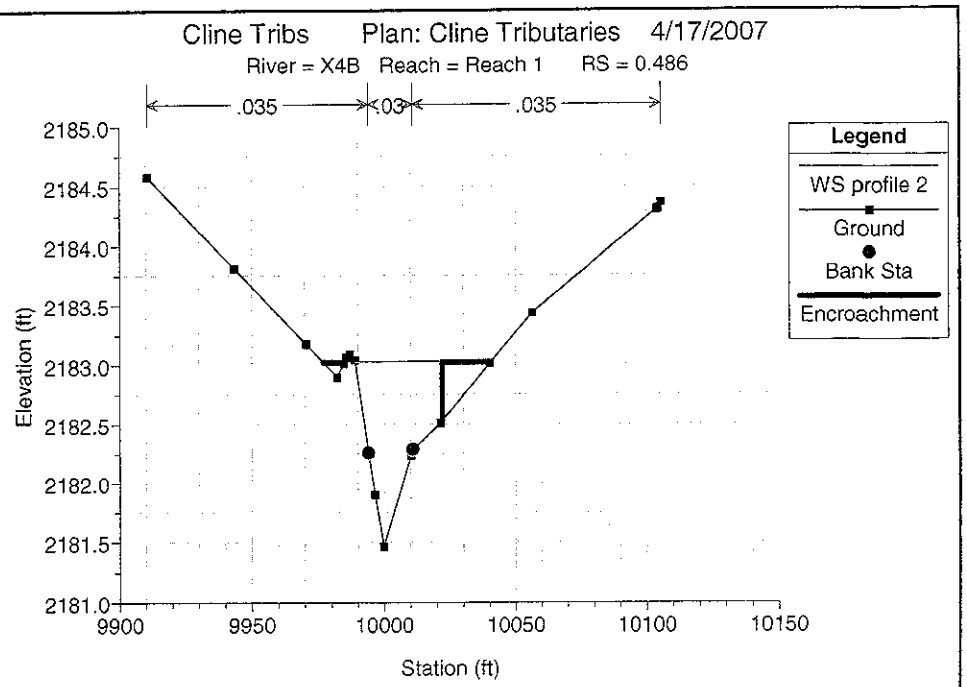

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.113
.05
.045
.05
Legend
WS profile 2
Lat Struct
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

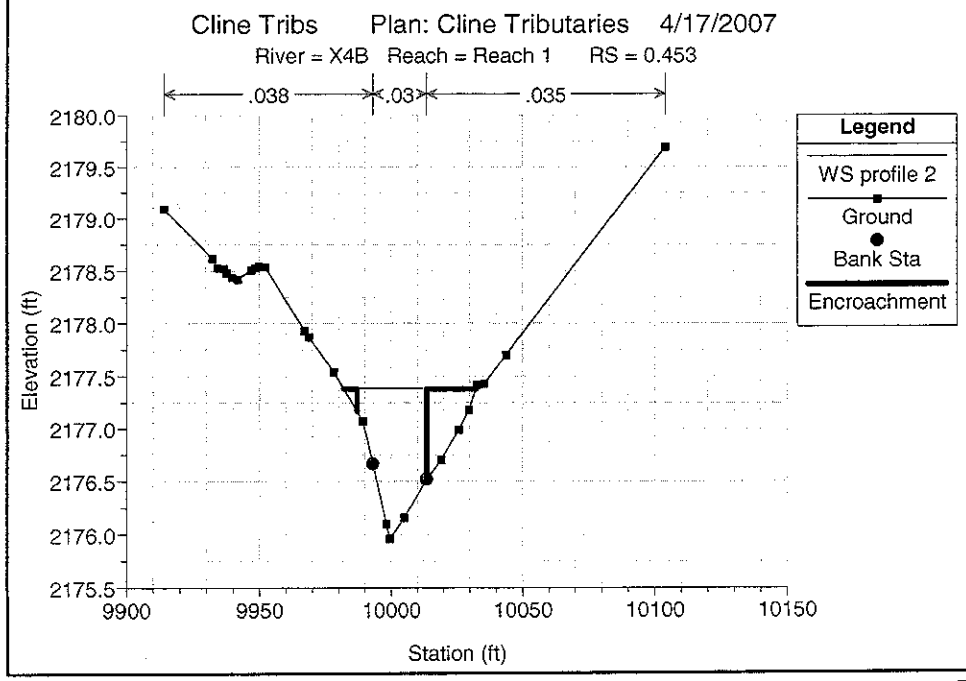

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.082
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

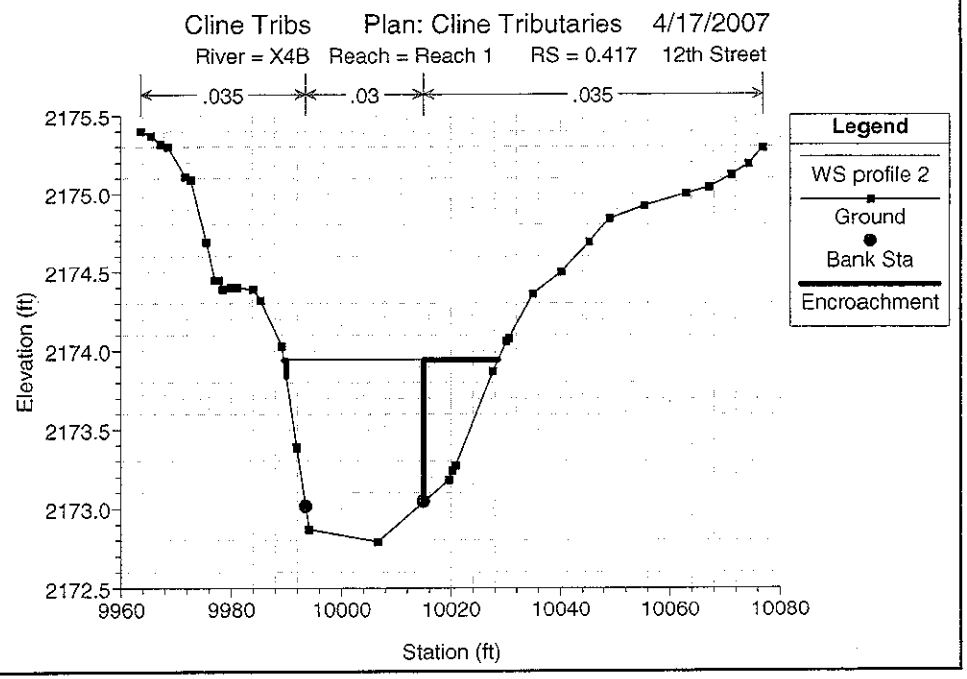

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.051
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

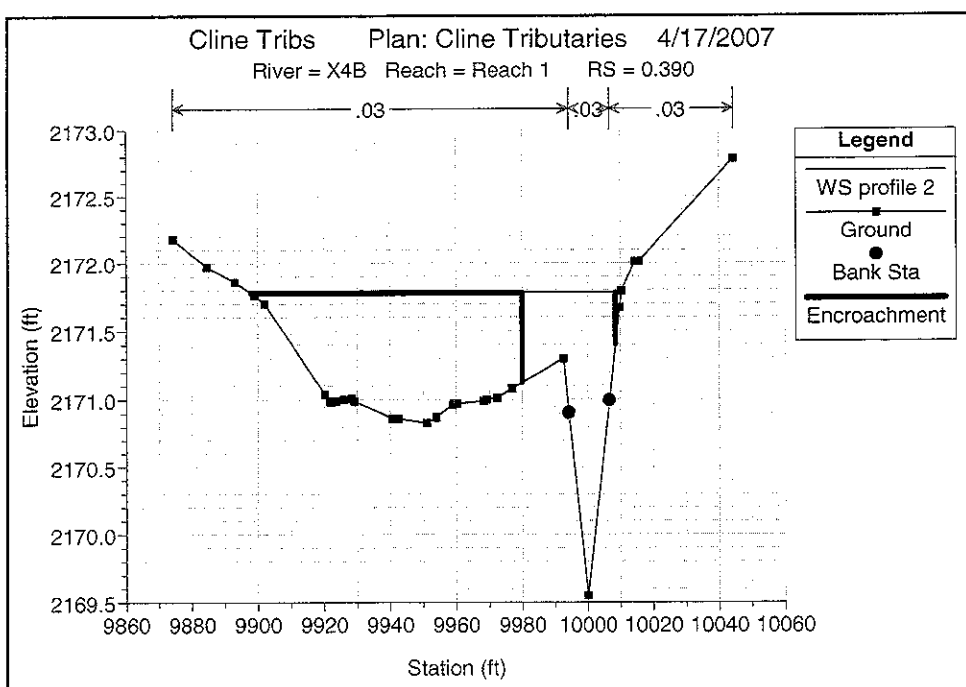

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4A Reach = Reach 2 RS = 0.033
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

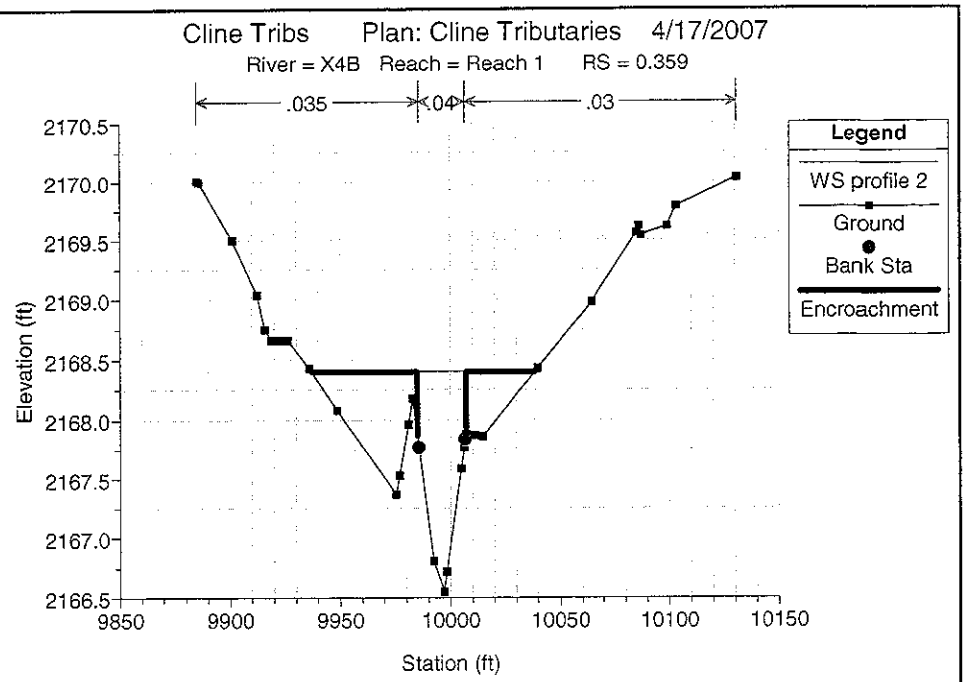

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.525
.035
.03
.035
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

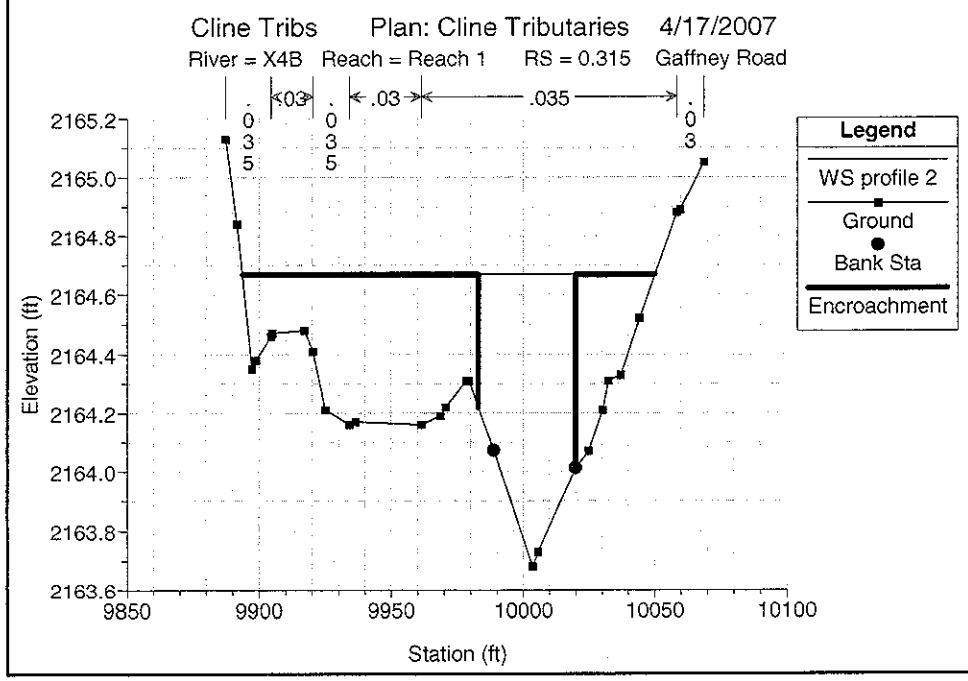

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.486
.035
.03
.035
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

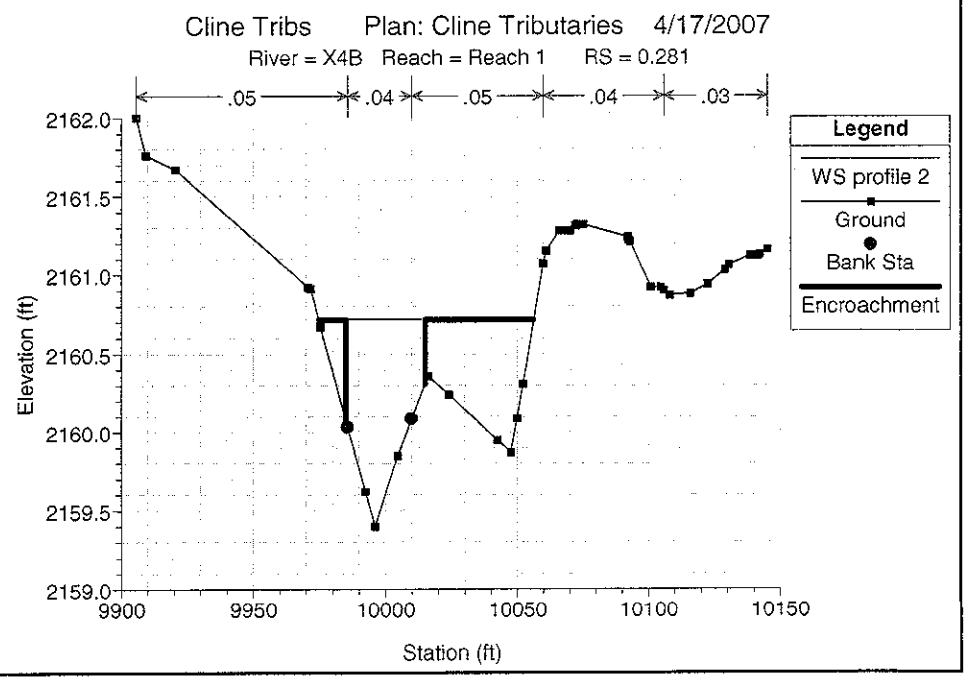

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.453
.038
.03
.035
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

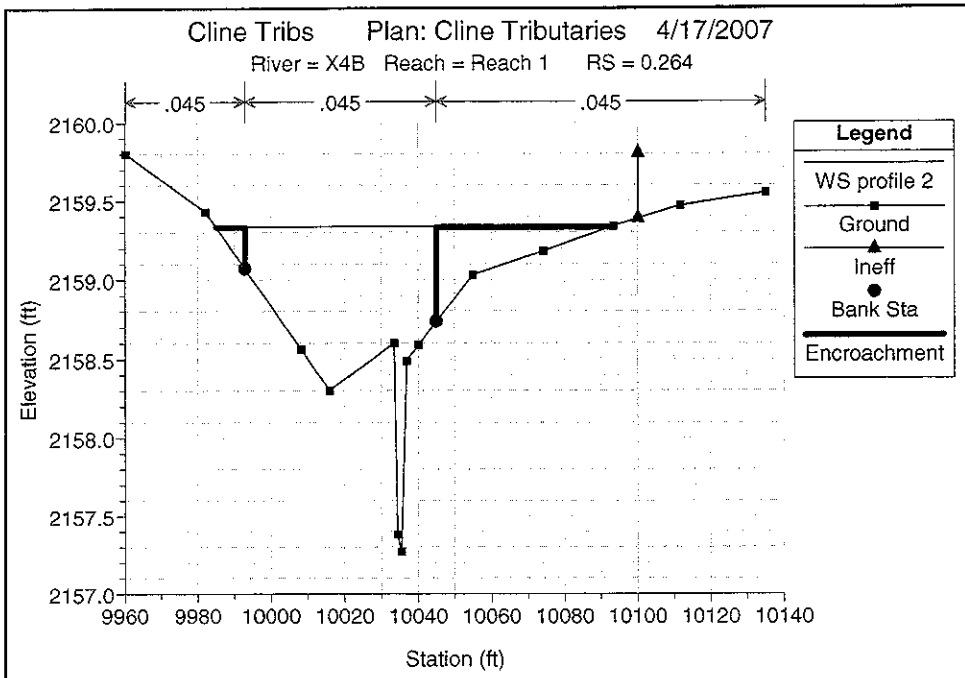

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.417 12th Street
.035
.03
.035
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

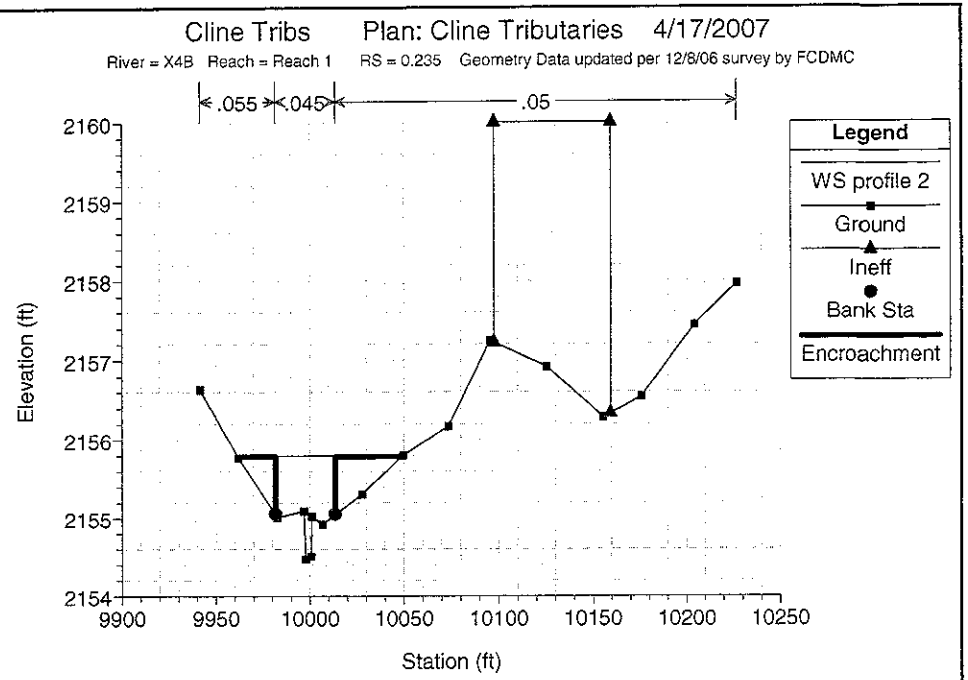

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.390
.03
.03
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

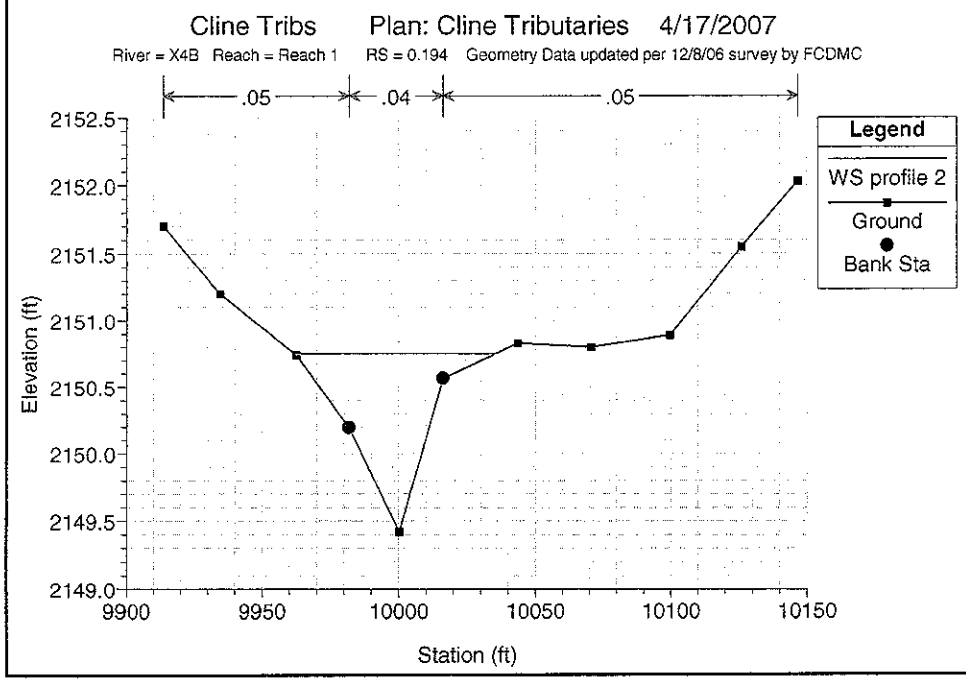

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.359
.035
.04
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

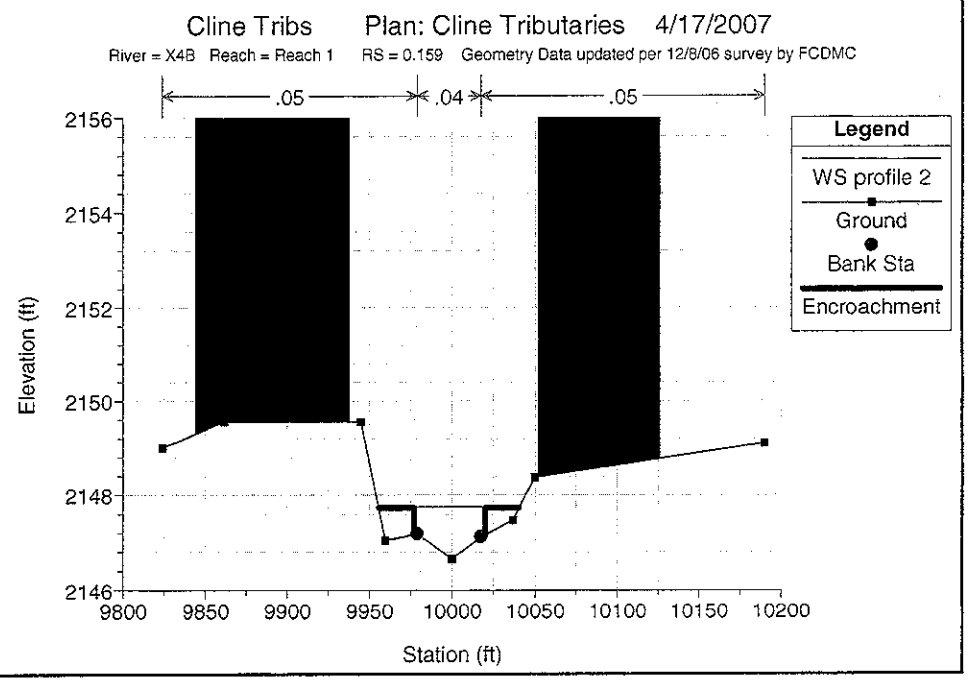

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.315 Gaffney Road
.03
.03
.035
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

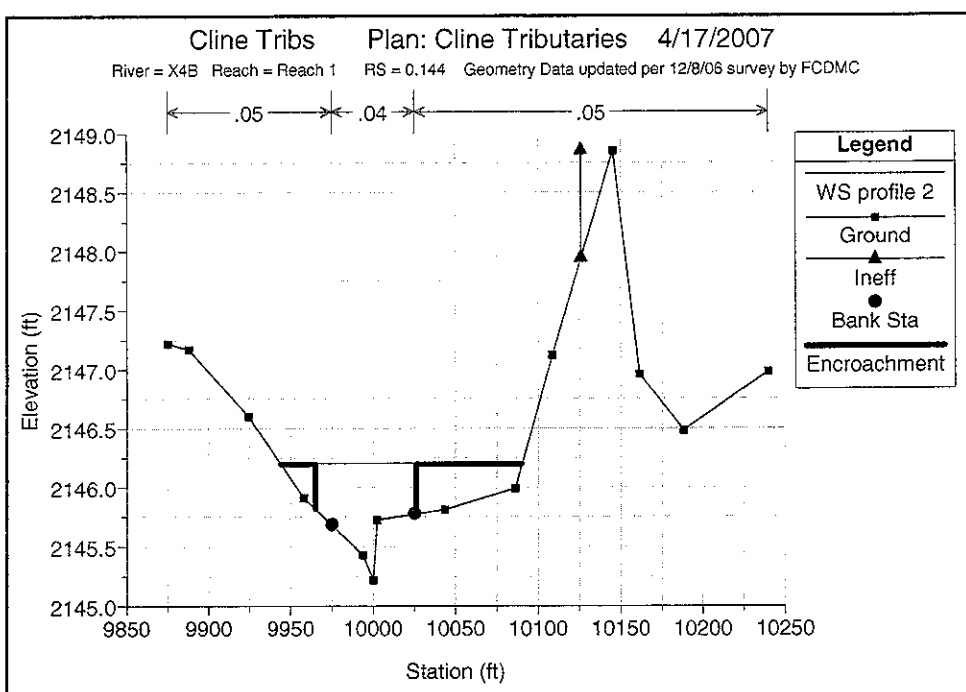

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.281
.05
.04
.05
.04
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

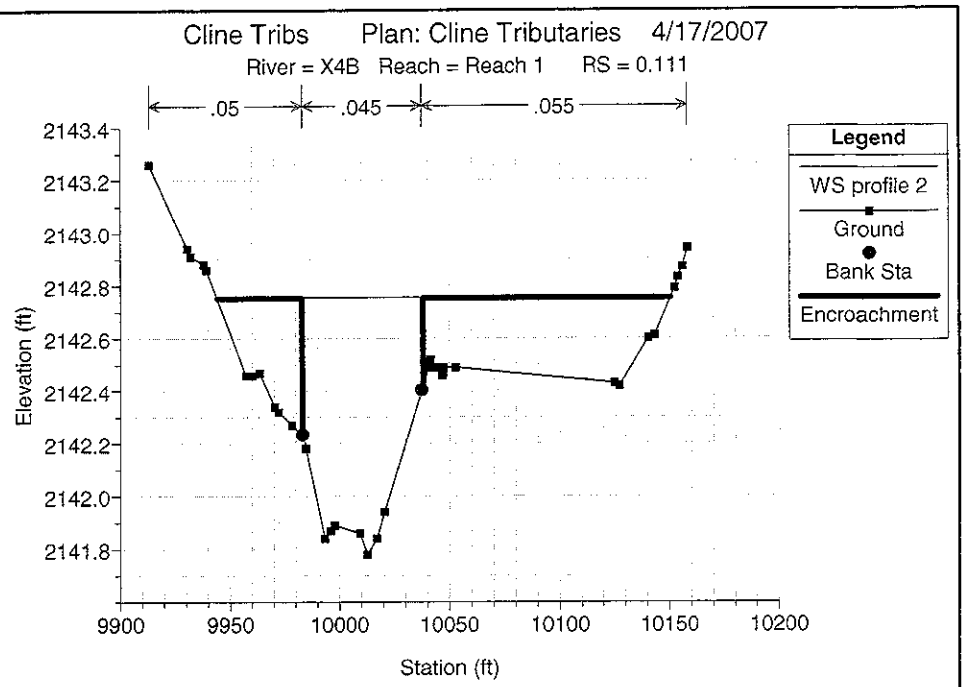

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.264
.045
.045
.045
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

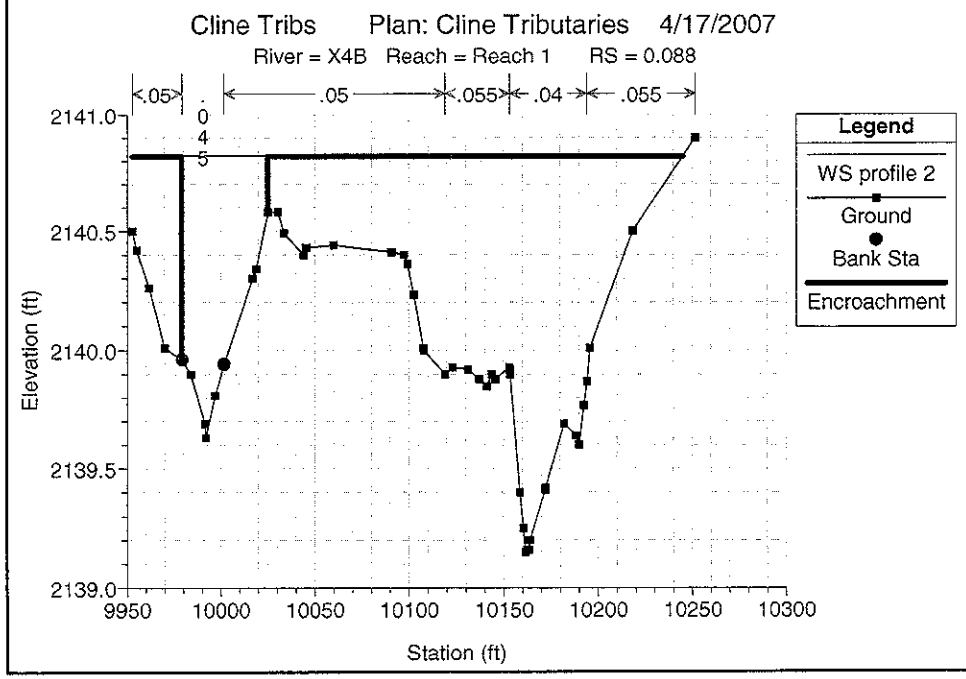

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.235 Geometry Data updated per 12/8/06 survey by FCDMC
.055
.045
.05
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

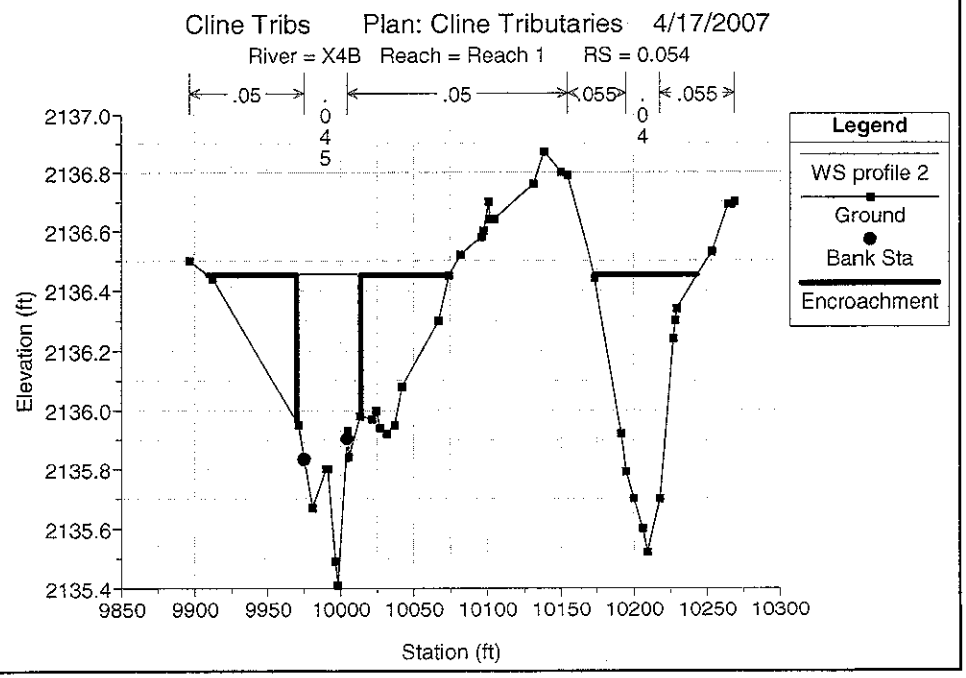

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.194 Geometry Data updated per 12/8/06 survey by FCDMC
.05
.04
.05
Legend
WS profile 2
Ground
Bank Sta
Elevation (ft)
Station (ft)

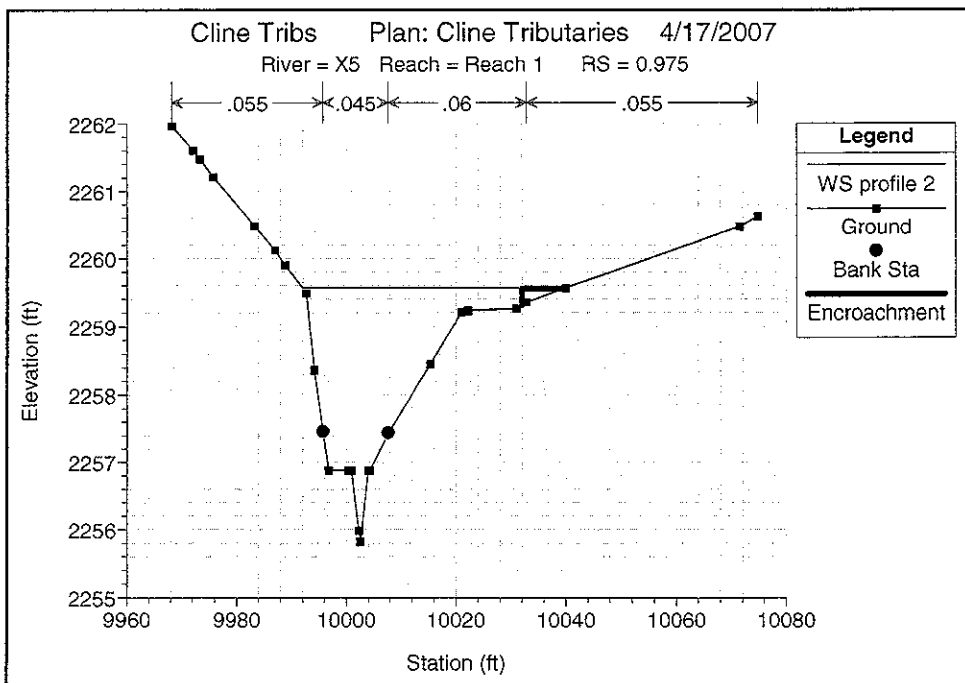

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.159 Geometry Data updated per 12/8/06 survey by FCDMC
.05
.04
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

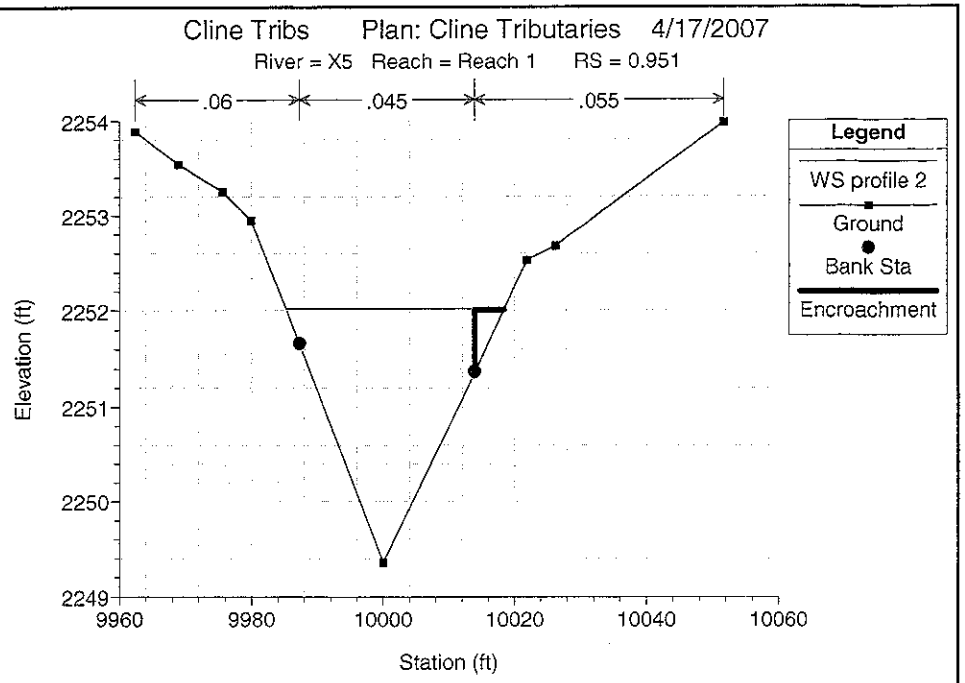

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.144 Geometry Data updated per 12/8/06 survey by FCDMC
.05
.04
.05
Legend
WS profile 2
Ground
Ineff
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

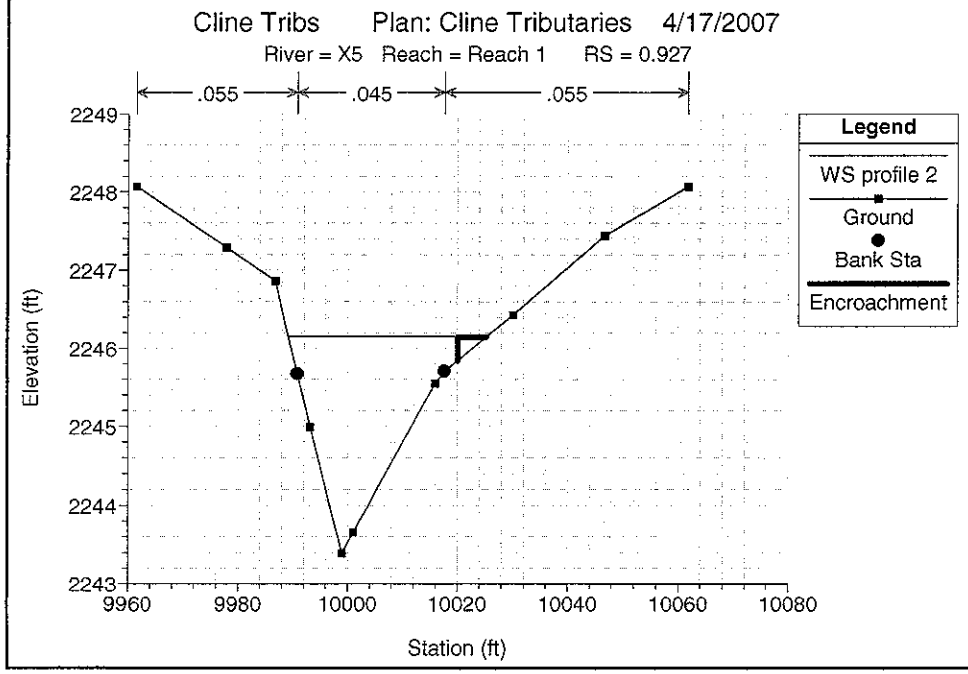

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.111
.05
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

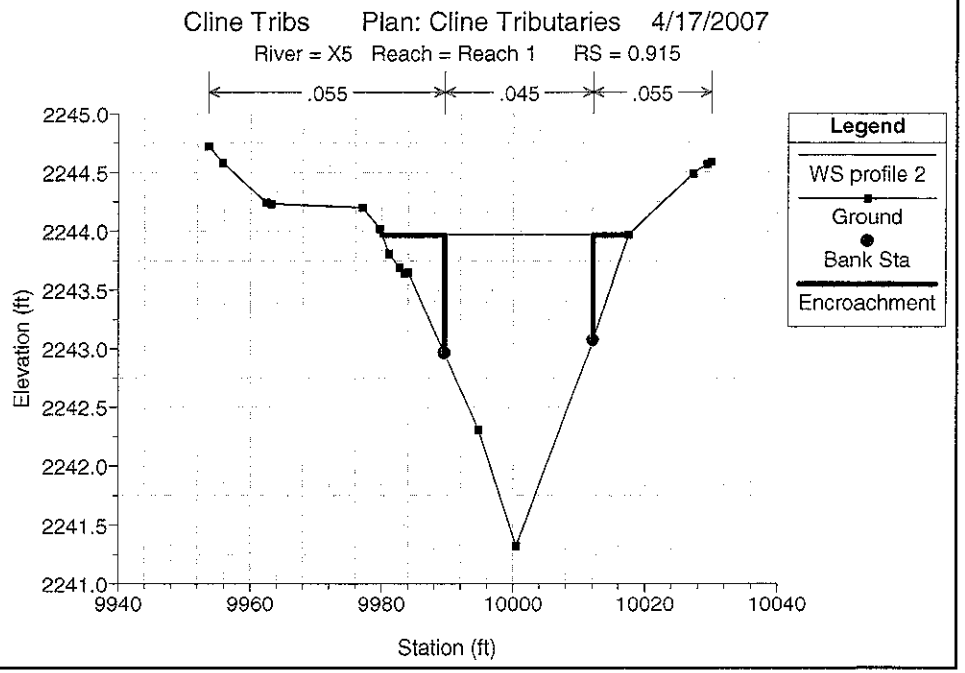

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.088
.05
.045
.05
.055
.04
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

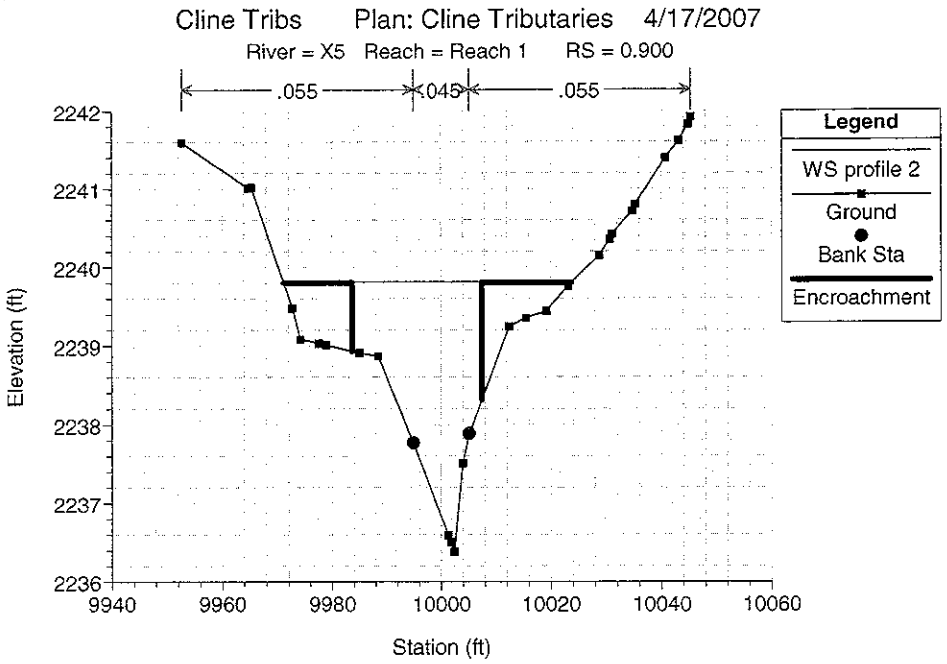

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X4B Reach = Reach 1 RS = 0.054
.05
.045
.05
.055
.04
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

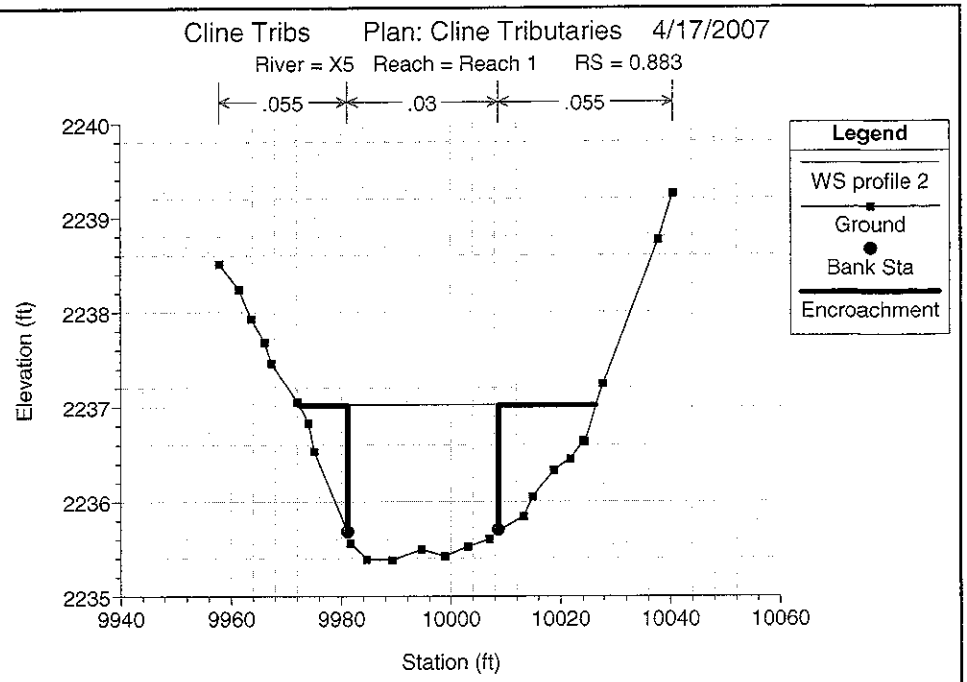

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.975
.055
.045
.06
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

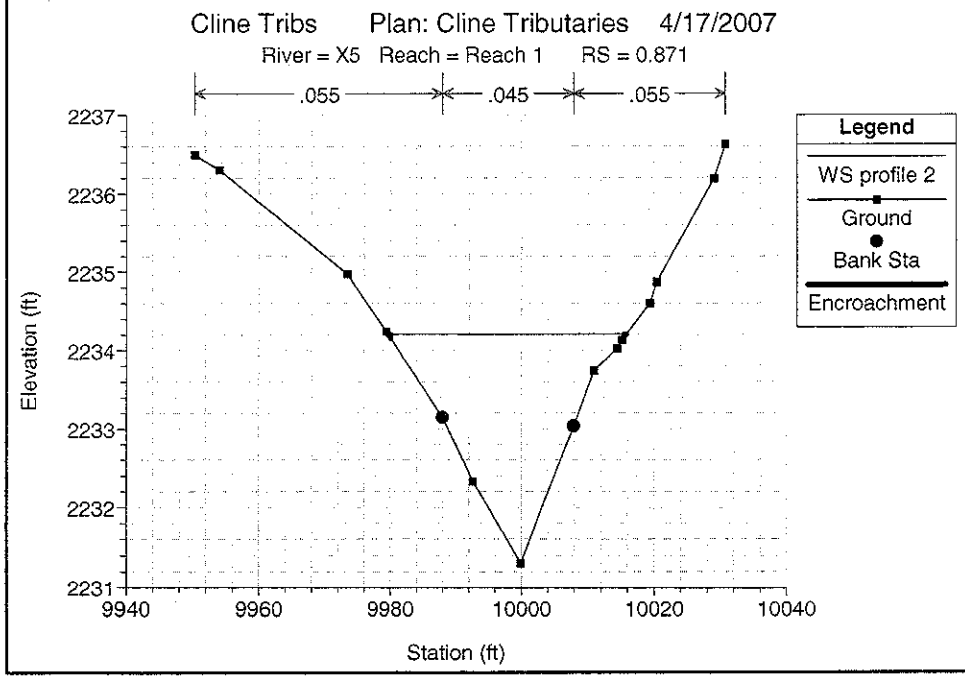

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.951
.06
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

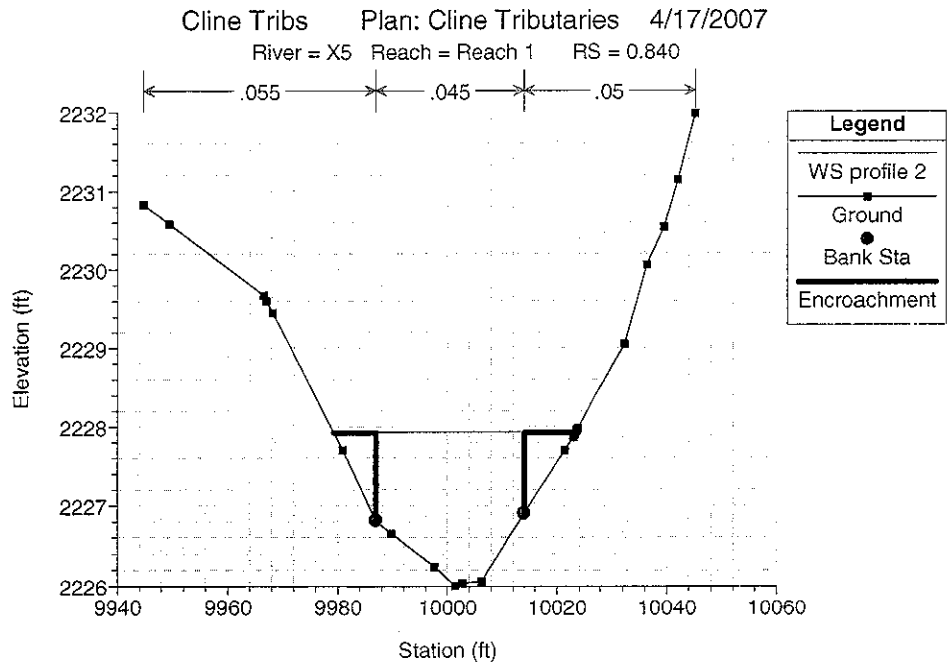

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.927
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

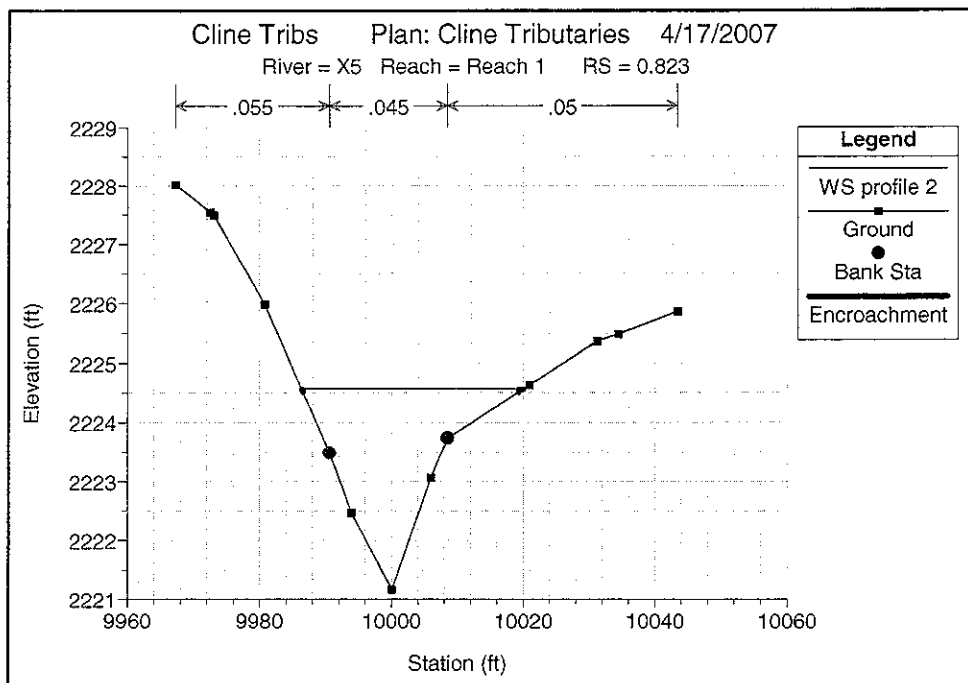

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.915
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

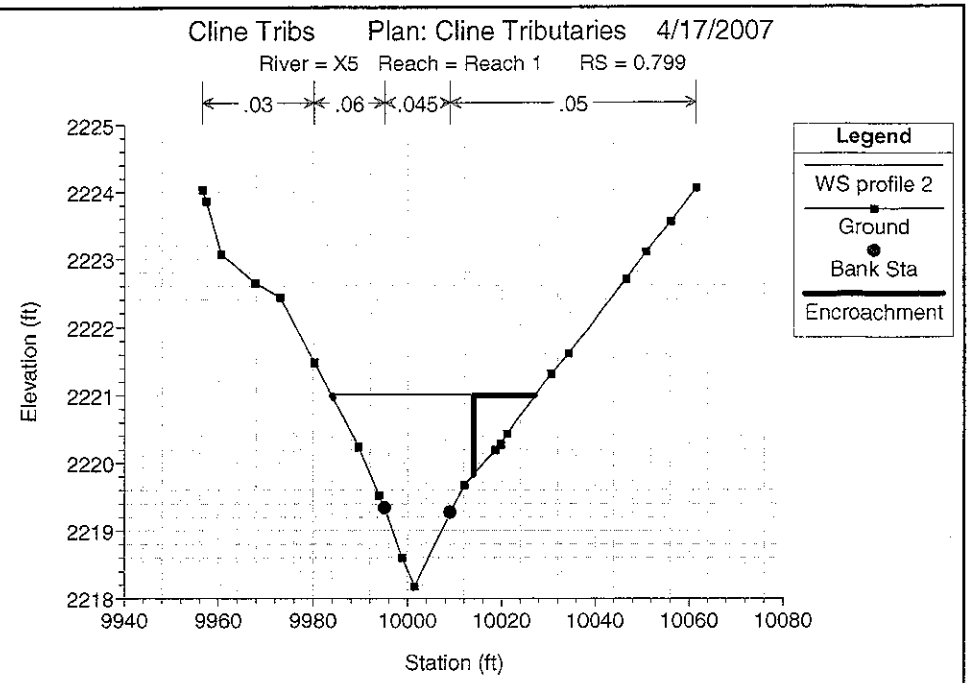

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.900
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

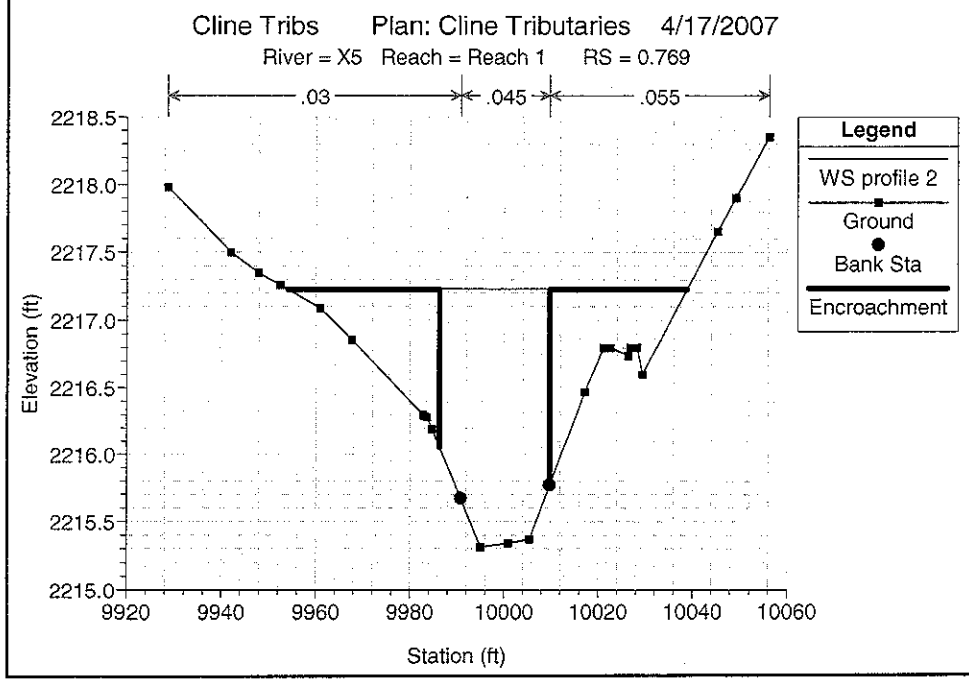

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.883
.055
.03
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

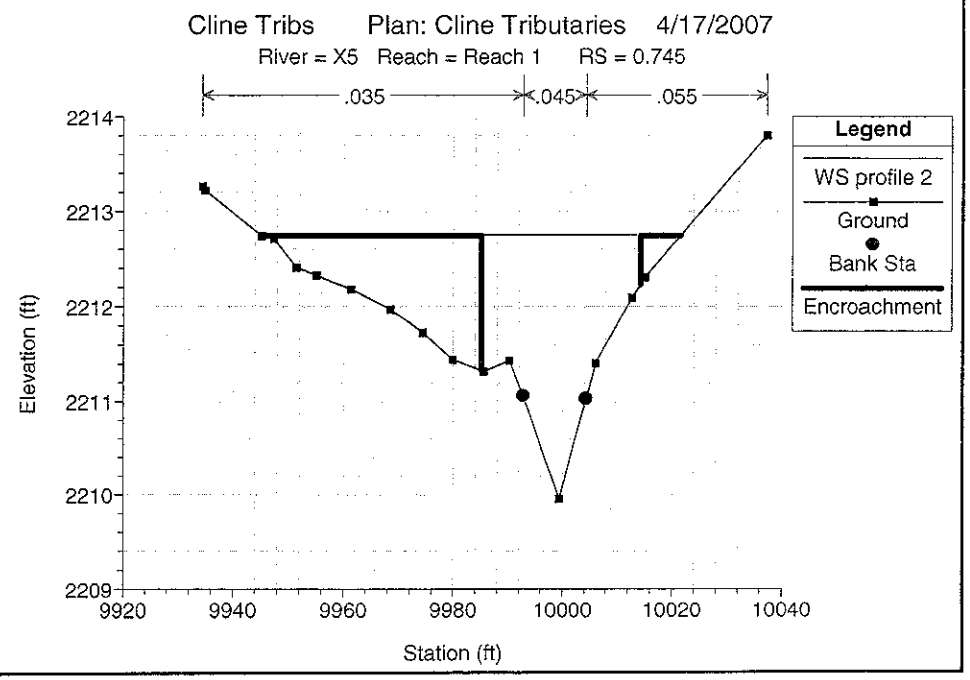

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.871
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

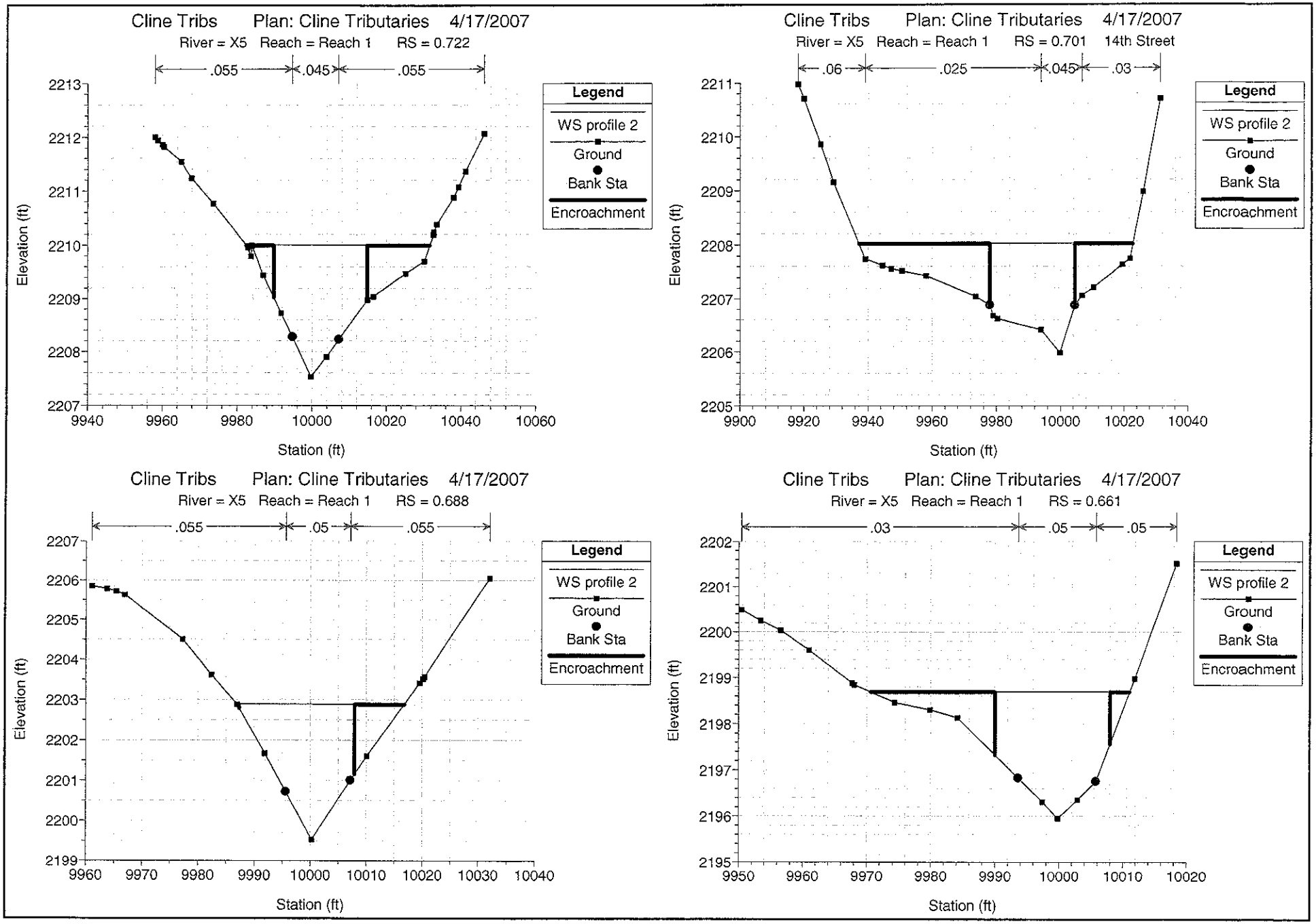

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.840
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

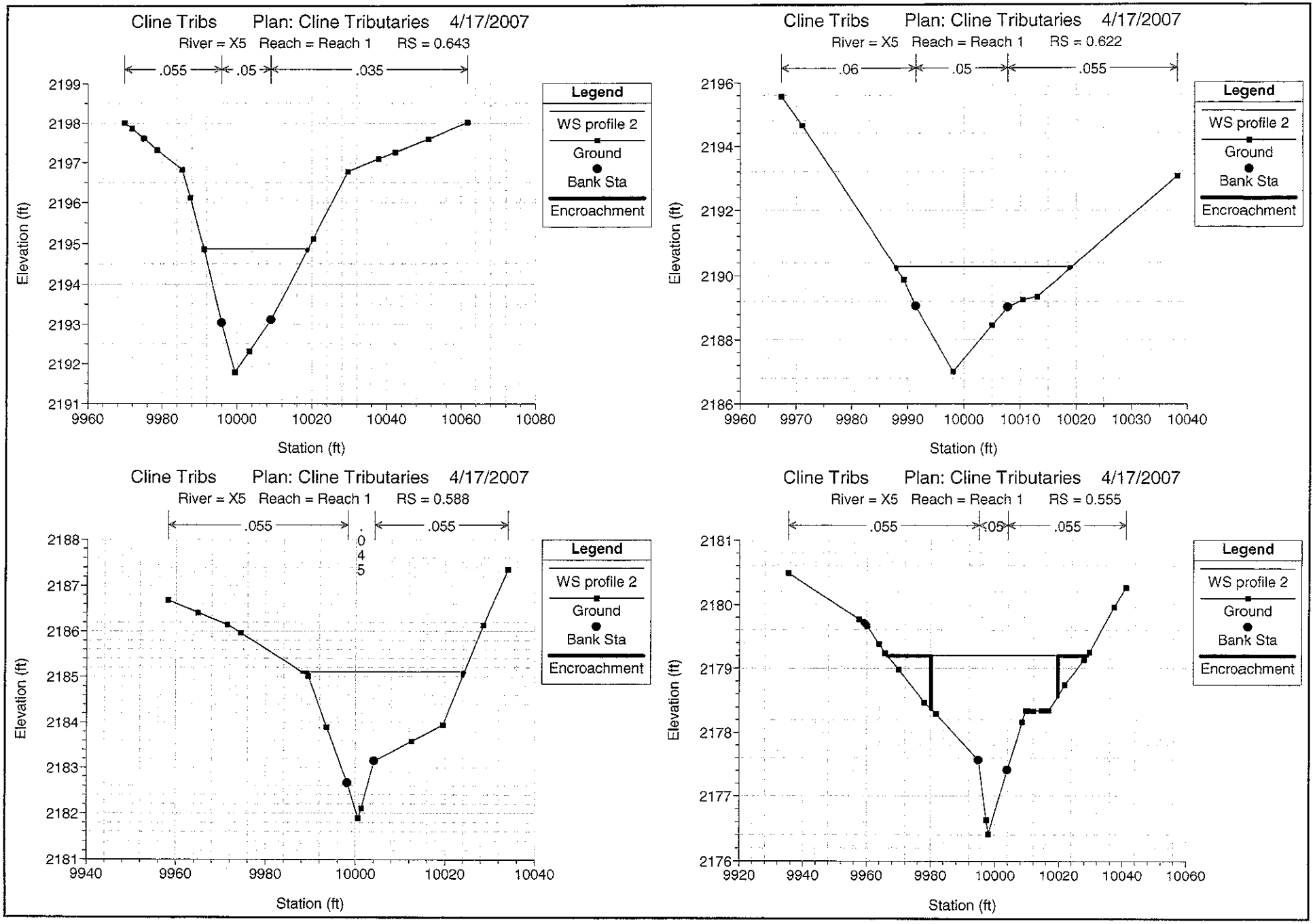

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.823
.055
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

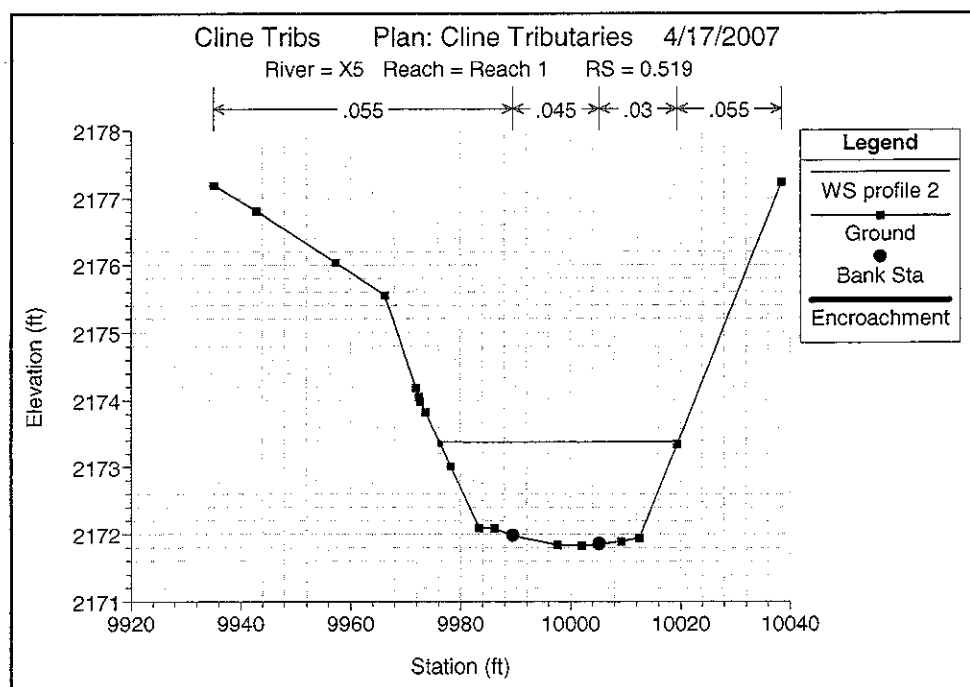

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.799
.03
.06
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

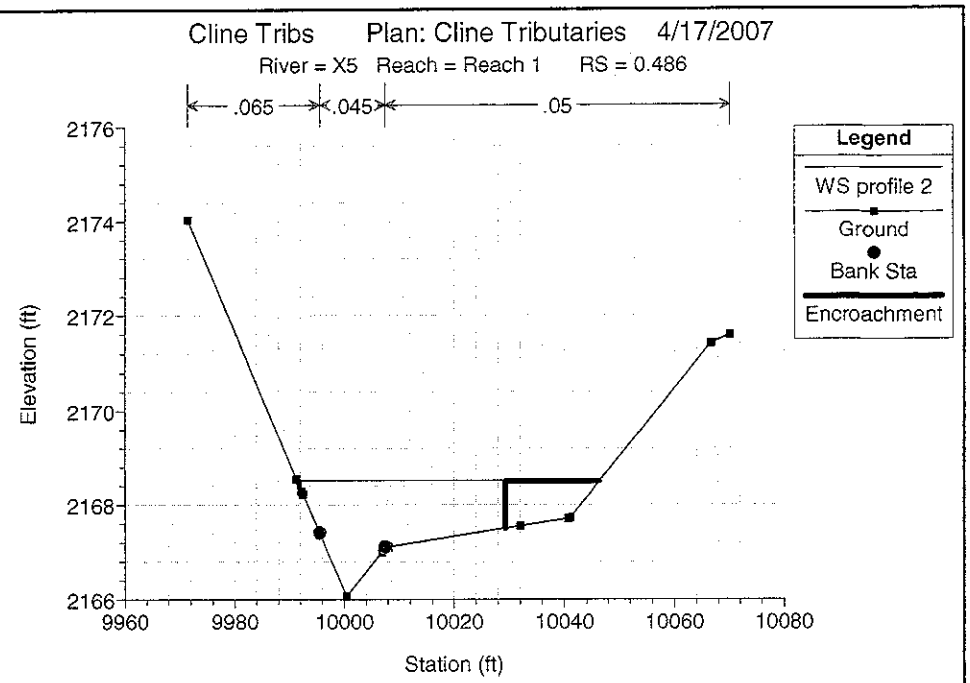

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.769
.03
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

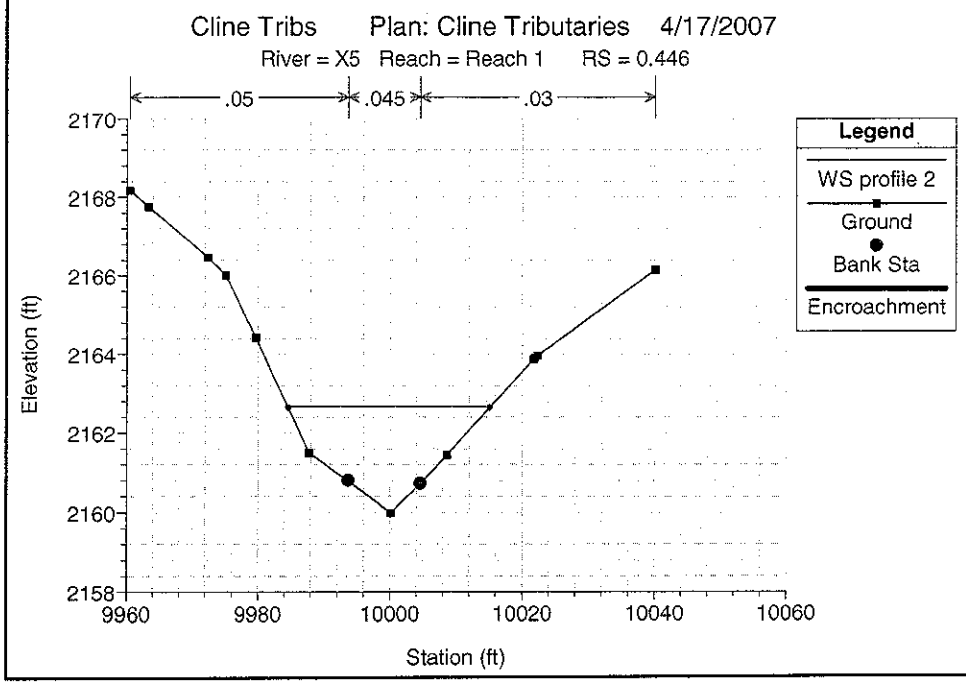

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.745
.035
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

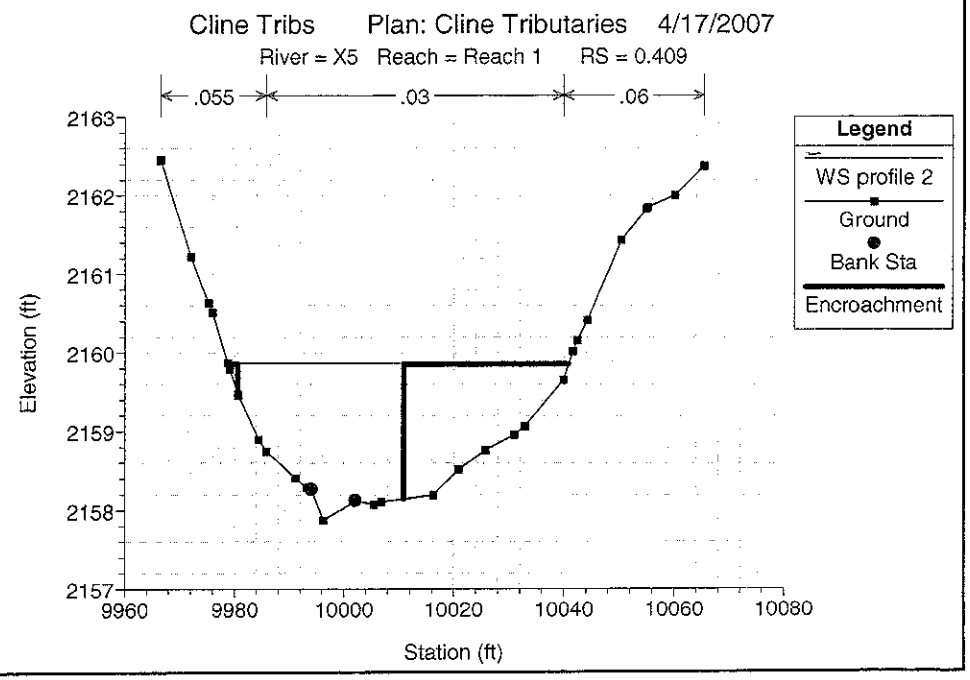

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.722
.055
.045
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.701 14th Street
.06
.025
.045
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.688
.055
.05
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.661
.03
.05
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)

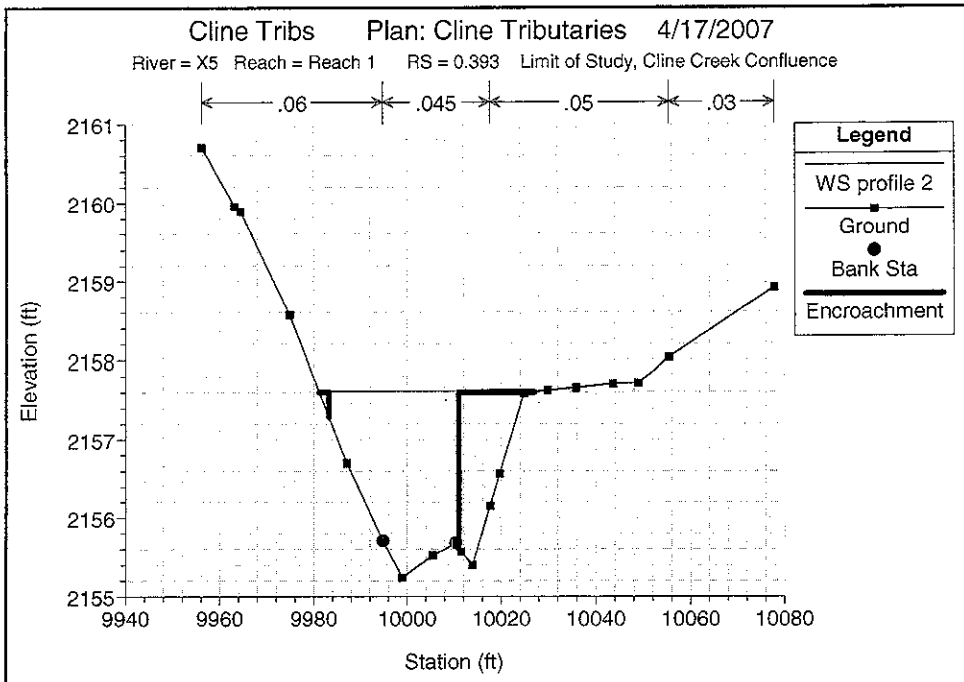

Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.643
.055
.05
.035
Elevation (ft)
Station (ft)
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.622
.06
.05
.055
Elevation (ft)
Station (ft)
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.588
.055
.045
.055
Elevation (ft)
Station (ft)
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.555
.055
.05
.055
Elevation (ft)
Station (ft)
Legend
WS profile 2
Ground
Bank Sta
Encroachment


Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.519
.055
.045
.03
.055
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.486
.065
.045
.05
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.446
.05
.045
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.409
.055
.03
.06
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
Station (ft)


Cline Tribs Plan: Cline Tributaries 4/17/2007
River = X5 Reach = Reach 1 RS = 0.393 Limit of Study, Cline Creek Confluence
.06
.045
.05
.03
Legend
WS profile 2
Ground
Bank Sta
Encroachment
Elevation (ft)
2161
2160
2159
2158
2157
2156
2155
9940
9960
9980
10000
10020
10040
10060
10080
Station (ft)

E.3 Supplemental Lateral Structure Output Tables

HEC-RAS Plan: Cline Tribs Profile: profile 1

River	Reach	River Sta	Profile	Q US	Q Leaving Total	Q DS	Q Weir	Q Gates	Wr Top Wdth	Weir Max Depth	Weir Avg Depth	Min El Weir Flow	E.G. US.	W.S. US.	E.G. DS	W.S. DS
				(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
X4A	Reach 2	0.170	profile 1	399.00	0.34	399.00	0.34		21.29	0.08	0.04	2114.70	2117.68	2117.44	2114.73	2114.56
X4A	Reach 2	0.130	profile 1	399.00	20.54	399.00	20.54		130.07	0.33	0.17	2111.10	2114.73	2114.56	2111.39	2111.04
X1	Reach 1	0.545	profile 1	708.00	0.00	708.00						2299.55	2301.57	2300.18	2296.08	2294.98
X1	Reach 1	0.420	profile 1	708.00	173.83	708.00	173.83		181.96	1.14	0.57	2276.67	2283.81	2283.12	2277.34	2276.75
X1	Reach 1	0.390	profile 1	708.00	45.21	708.00	45.21		85.69	0.74	0.39	2274.00	2277.34	2276.75	2273.17	2272.64
X1	Overflow 1	0.173	profile 1	132.00	1.00	146.00	1.00		10.30	0.18	0.13	2275.00	2276.77	2276.68	2274.70	2274.46
C8	Reach 1	0.413	profile 1	2280.00	13.36	2280.00	13.36		96.37	0.45	0.14	2109.35	2115.76	2114.32	2111.52	2109.80
C8	Reach 1	0.395	profile 1	2280.00	6.23	2280.00	6.23		21.98	0.45	0.25	2107.33	2111.52	2109.80	2106.24	2105.41

E.4 Detailed Output (RAS rep file)

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

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

PROJECT DATA
Project Title: Cline Tribs
Project File : clinetribs.prj
Run Date and Time: 4/17/2007 5:14:24 PM

Project in English units

Project Description:
This model was developed for the Flood Control District of Maricopa County by JE Fuller/Hydrology & Geomorphology Inc. Floodplain Delineation Study of Cline Creek Tributaries FCD 2004C025, Work Assignment 8 and FCD2005C024, Work Assignment 2.

The Consultant Address is 8400 S. Kyrene Road, Suite 201,
Tempe, AZ 85284.

HEC-RAS Version 3.1.3, May, 2005, sub-critical profiles
for natural conditions and floodway developed using method 1. Energy grade surcharges were held to one foot or less. The beginning water surface elevation for Tributary C8 is 2082 per the average 100-year depth of Cline Creek across the tributary area. The beginning water surface condition for Tributary X5 is based on normal depth. Each of these beginning conditions yeilded the higher, more conservative water surface condition of all boundary options. All other tributary boundary conditions are determined automatically by the HEC-RAS junction routine.

This model will replace the effective model
performed as part of the Floodplain Delineation Study of Cline Creek and Tributary Washes by Michael Baker, Jr. Inc., 8/16/1990, FCD 89-15

This model
run on 4/17/2007. Stationing based upon River Mile distance from Hydraulic Baseline from tributary confluences.

Hydrology is from the effective study
titled Flood Delineation Study of Cline Creek and Tributary Washes, FCD89-15
performed by Michael Baker Jr. Inc., April, 1990.

Discharge
Definitions:

C6 RS 1.525 = 1430 cfs
C6 RS 0.946 = 1920 cfs
C6 RS 0.248 =
2210 cfs
C8 RS 2.959 = 2280 cfs
C8 RS 0.112 = 4320 cfs
X1 RS 1.270 = 708
cfs
X1 RS 0.174 = 132 cfs
X1 RS 0.151 = 146 cfs
X1 RS 0.161 = 485 cfs
X1 RS
0.104 = 485 cfs
X1 RS 0.309 = 223 cfs
X1 RS 0.163 = 708 cfs
X2 RS 1.028 =
390 cfs
X3 RS 1.168 = 518 cfs
X4A RS 0.812 = 254 cfs
X4A RS 0.287 = 399
cfs
XfB RS 0.520 = 139 cfs
X5 RS 0.975 = 301 cfs

Roadway Crossings are at
the following locations

C6 RS 1.306 16th Street dip
C6 RS 1.052 14th Street
dip
C6 RS 0.753 12th Street culverts
C6 RS 0.506 10th Street dip
C6 RS 0.213
7th Street dip
C8 RS 1.988 Private Drive dip
C8 RS 1.122 14th Street dip

```
C8
RS 0.807 10th Street culverts
C8 RS 0.552 10th Street dip
C8 RS 0.357 Circle
Mountain Road con-arch
X1 RS 0.688 22nd Street dip
X1 RS 0.322 20th Street
dip
X1 RS 0.161 20th Street dip
X1 RS 0.113 Privat Drive dip
X1 RS 0.048
18th Street dip
X2 RS 0.784 22nd Street dip
X2 RS 0.510 Private Drive dip
X2
RS 0.423 20th Street dip
X2 RS 0.046 18th Street dip
X3 RS 1.044 20th Street
dip
X3 RS 0.718 18th Street dip
X3 RS 0.308 16th Street dip
X3 RS 0.076 14th
Street dip
X4A RS 0.558 12th Street dip
X4A RS 0.287 10th Street dip
X4B RS
0.412 12th Street dip
X4B RS 0.310 Gaffney Road dip
X5 RS 0.701 14th Street
dip

Cross section data from topographic mapping at a scale of 1-inch equals
200 feet with a 2-foot contour interval and aerial photography was provided by
Cooper Aerial of Phoenix, Arizona, under contract with the FCDMC. The
horizontal datum is Arizona Central State Plane NAD 1983, Vertical datum is
NAVD 1988.

Topographic Flight Date is 05/02/2002
Aerial Photo Flight Date
is January, 2005



PLAN DATA

Plan Title: Cline Tributaries
Plan File : x:\projects\Agency\FCDMC\2004C025\T08_ClineFDS\hec-ras\ClineTribs\clinetribs.p02

          Geometry Title: Cline Tributaries
          Geometry File : x:\projects\Agency\FCDMC\2004C025\T08_ClineFDS\hec-ras\ClineTribs\clinetribs.g01

          Flow Title    : Cline Tributaries
          Flow File     : x:\projects\Agency\FCDMC\2004C025\T08_ClineFDS\hec-ras\ClineTribs\clinetribs.f01

Plan Summary Information:
Number of:  Cross Sections =  335    Multiple Openings  =    0
            Culverts       =    3    Inline Structures  =    0
            Bridges        =    0    Lateral Structures =    8

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

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

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

River = X1                Reach = Reach 3
RS      Profile            Method  Value1  Value2
0.163   profile 2              1 9974.5810035.24
0.113   profile 2              1    995110026.23
0.110   profile 2              1    995110012.19
0.082   profile 2              1    9975 10038.1
0.048   profile 2              1 9985.0310027.68
0.040   profile 2              1 9982.8110027.42
0.015   profile 2              1    991510020.95

River = X1                Reach = Reach 1
RS      Profile            Method  Value1  Value2
1.053   profile 2              1 9990.28 10024.9
1.047   profile 2              1 9994.01   10032
1.028   profile 2              1    9980   10020
1.002   profile 2              1    997510012.06
0.979   profile 2              1    9966   10014
0.956   profile 2              1    996510008.87
```

0.931	profile 2	1	997	510010.08
0.894	profile 2	1	9978.18	10022.86
0.858	profile 2	1	9985	10015
0.827	profile 2	1	9989.61	10029
0.796	profile 2	1	9970	10020
0.776	profile 2	1	992	010013.97
0.763	profile 2	1	992	510017.37
0.759	profile 2	1	991	810019.54
0.731	profile 2	1	989	710007.02
0.688	profile 2	1	994	310020.21
0.684	profile 2	1	9961.33	10018
0.661	profile 2	1	995	910011.81
0.628	profile 2	1	9975.72	10014.18
0.587	profile 2	1	997	810015.83

River = X1 Reach = Reach 2

RS	Profile	Method	Value1	Value2
0.241	profile 2	1	9991.7	10015
0.209	profile 2	1	9988.77	10015

River = X4A Reach = Reach 2

RS	Profile	Method	Value1	Value2
0.287	profile 2	1	9986	10014
0.257	profile 2	1	9989	10025
0.213	profile 2	1	9993.37	10032.13
0.186	profile 2	1	9981.23	10030.8
0.153	profile 2	1	9965	10035
0.113	profile 2	1	9964.61	10024.37
0.051	profile 2	1	9982.66	10018.13
0.033	profile 2	1	996	010019.15

River = X4A Reach = Reach 1

RS	Profile	Method	Value1	Value2
0.812	profile 2	1	9970.63	10029.71
0.777	profile 2	1	9981	10021
0.740	profile 2	1	9986	10014
0.706	profile 2	1	9987	10013
0.670	profile 2	1	9970	10020
0.631	profile 2	1	9993	10016
0.587	profile 2	1	9993	10014.7
0.558	profile 2	1	9986	10016
0.515	profile 2	1	9985	10015
0.473	profile 2	1	9987.1	10013
0.437	profile 2	1	9986	10010
0.402	profile 2	1	9985.4	10015
0.368	profile 2	1	9984.54	10018.25
0.327	profile 2	1	9980	10020

River = C6 Reach = Reach 3

RS	Profile	Method	Value1	Value2
0.248	profile 2	1	9859.17	10080.76
0.213	profile 2	1	985	510021.92
0.175	profile 2	1	9883.17	10017.28
0.134	profile 2	1	9978.32	10083.67
0.102	profile 2	1	9960	10072

River = C6 Reach = Reach 2

RS	Profile	Method	Value1	Value2
0.946	profile 2	1	990	810018.35
0.909	profile 2	1	994	610020.81
0.871	profile 2	1	995	510027.08
0.832	profile 2	1	995	710022.71
0.791	profile 2	1	995	610023.74
0.759	profile 2	1	9960.67	10030.64
0.747	profile 2	1	9968.63	10042.95
0.706	profile 2	1	993	510018.78
0.669	profile 2	1	998	510026.03
0.631	profile 2	1	995	510028.19
0.608	profile 2	1	996	910027.12
0.584	profile 2	1	9970.21	10054
0.544	profile 2	1	9980.82	10032
0.506	profile 2	1	9981.72	10050
0.466	profile 2	1	9942	10040
0.426	profile 2	1	9929.3	10028
0.39	profile 2	1	9919	10015
0.349	profile 2	1	9910	10030
0.311	profile 2	1	9900	10025
0.274	profile 2	1	9913	10045.7

River = C6 Reach = Reach 1

RS	Profile	Method	Value1	Value2
1.525	profile 2	1	9872.36	10025.96
1.484	profile 2	1	9940	10014
1.461	profile 2	1	9946.91	10007.91
1.437	profile 2	1	9955.72	10008.17
1.395	profile 2	1	9962.42	10026.52
1.389	profile 2	1	9971.63	10029.53
1.349	profile 2	1	9984.8	10052
1.306	profile 2	1	9975	10030
1.292	profile 2	1	9975	10030
1.252	profile 2	1	9972.56	10017
1.202	profile 2	1	9967.78	10023
1.170	profile 2	1	996	410035.85
1.126	profile 2	1	997	010030.13
1.094	profile 2	1	9986.21	10033.18
1.058	profile 2	1	9958	10015

```
1.052   profile 2              1    9958   10015
1.022   profile 2              1    994210010.62
0.990   profile 2              1 9939.9910019.99

River = C8                Reach = Reach 1
RS      Profile            Method  Value1  Value2
2.904   profile 2              1 9933.42   10044
2.870   profile 2              1 9932.68   10080
2.828   profile 2              1 9890.63   10020
2.791   profile 2              1  9926.710033.57
2.748   profile 2              1 9968.03   10067
2.711   profile 2              1 9971.7610078.78
2.675   profile 2              1 9968.2910067.87
2.640   profile 2              1 9914.51   10024
2.498   profile 2              1 9978.23   10120
2.453   profile 2              1 9959.3510039.17
2.415   profile 2              1    993710017.39
2.374   profile 2              1    992210018.96
2.338   profile 2              1 9922.9210013.95
2.300   profile 2              1 9924.24 10017.9
2.256   profile 2              1    9947   10053
2.215   profile 2              1 9942.3510060.48
2.175   profile 2              1 9923.93   10070
2.125   profile 2              1 9776.01   10025
1.988   profile 2              1    9960   10040
1.985   profile 2              1    9965   10045
1.966   profile 2              1 9964.27   10060
1.929   profile 2              1    9960   10055
1.915   profile 2              1    9906   10050
1.883   profile 2              1    984010019.06
1.847   profile 2              1    986010029.05
1.810   profile 2              1 9954.17   10050
1.775   profile 2              1 9983.48   10080
1.734   profile 2              1    9978   10075
1.695   profile 2              1    9945   10045
1.654   profile 2              1    9930   10017
1.625   profile 2              1    996210037.82
1.609   profile 2              1    9940   10025
1.596   profile 2              1    9940   10025
1.574   profile 2              1    9940   10033
1.552   profile 2              1    9935   10025
1.536   profile 2              1 9947.7310033.05
1.517   profile 2              1    990010015.67
1.488   profile 2              1    9885 10017.8
1.430   profile 2              1    983510015.23
1.384   profile 2              1    990010039.12
1.362   profile 2              1    987310021.33
1.306   profile 2              1    988010026.31
1.267   profile 2              1    9855   10025
1.241   profile 2              1    9850   10025
1.210   profile 2              1    985510026.22
1.173   profile 2              1    986210022.41
1.122   profile 2              1    9945   10050
1.066   profile 2              1    9960   10040
1.026   profile 2              1    9967   10070
0.995   profile 2              1    996010059.77
0.966   profile 2              1    993010015.29
0.931   profile 2              1    9940   10040
0.890   profile 2              1    9965   10082
0.853   profile 2              1 9970.43   10060
0.811   profile 2              1  9957.6   10125
0.805   profile 2              1  9963.6   10113
0.767   profile 2              1    9950   10032
0.552   profile 2              1 9963.01   10045
0.287   profile 2              1    993010030.27
0.247   profile 2              1    9948   10052
0.199   profile 2              1    9937   10045

River = C8                Reach = Reach 2
RS      Profile            Method  Value1  Value2
0.112   profile 2              1 9977.4810348.05
0.097   profile 2              1 9980.5610321.84

River = X3                Reach = Reach 1
RS      Profile            Method  Value1  Value2
1.168   profile 2              1    9993   10020
1.146   profile 2              1    9989   10012
1.126   profile 2              1  9980.8   10013
1.097   profile 2              1    9980   10012
1.082   profile 2              1 9981.2410016.02
1.068   profile 2              1 9982.8710015.83
1.044   profile 2              1 9965.9210003.05
1.029   profile 2              1 9955.5210008.22
1.011   profile 2              1 9980.3210011.33
0.991   profile 2              1 9988.76 10022.6
0.964   profile 2              1 9980.2510015.68
0.930   profile 2              1 9990.2610022.74
0.896   profile 2              1 9985.4310012.97
0.867   profile 2              1    9995   10025
0.843   profile 2              1    999010012.39
0.819   profile 2              1 9987.38   10025
0.790   profile 2              1    9977   10013
0.750   profile 2              1 9980.1510012.86
0.718   profile 2              1 9973.95 10010.4
0.685   profile 2              1    9964   10011
0.647   profile 2              1    9980   10017
```

0.626	profile 2	1	9991.4510016.61	
0.595	profile 2	1	9980	10035
0.582	profile 2	1	9977.9110013.96	
0.553	profile 2	1	9971.710004.44	
0.521	profile 2	1	9972.7910012.71	
0.510	profile 2	1	9970.1910004.46	
0.468	profile 2	1	9973.9410019.85	
0.440	profile 2	1	9992.1710028.36	
0.410	profile 2	1	9989.1110028.02	
0.380	profile 2	1	9988.5210031.08	
0.373	profile 2	1	9984.5910021.76	
0.343	profile 2	1	9981.0410032.83	
0.302	profile 2	1	9984.2110015.24	
0.267	profile 2	1	9984	10033
0.238	profile 2	1	9985.8310030.19	
0.200	profile 2	1	9966.5610017.17	
0.161	profile 2	1	9981.0810019.93	
0.122	profile 2	1	9986.96	10028
0.099	profile 2	1	9989.85	10031
0.076	profile 2	1	999010043.42	
0.051	profile 2	1	9956.2910017.45	
0.013	profile 2	1	9930	10008.4

River = X2 Reach = Reach 1

RS	Profile	Method	Value1	Value2
0.838	profile 2	1	997810010.94	
0.808	profile 2	1	997210012.81	
0.784	profile 2	1	1985	10020
0.773	profile 2	1	9973	10018.6
0.747	profile 2	1	9977.7510017.59	
0.724	profile 2	1	9974.87	10013
0.698	profile 2	1	9970	10022
0.676	profile 2	1	997510009.09	
0.657	profile 2	1	9974.0410006.61	
0.655	profile 2	1	9980.4810012.07	
0.646	profile 2	1	9974.8310009.85	
0.623	profile 2	1	9993.4410027.09	
0.595	profile 2	1	9969.5810007.55	
0.569	profile 2	1	9976	10019
0.550	profile 2	1	9985.09	10021.2
0.530	profile 2	1	9990	10027
0.510	profile 2	1	9978	10022
0.504	profile 2	1	9980.7910020.82	
0.481	profile 2	1	997610009.19	
0.462	profile 2	1	9986.9910024.29	
0.423	profile 2	1	9976.96	10012
0.403	profile 2	1	9982.98	10012.2
0.367	profile 2	1	9968.810004.73	
0.326	profile 2	1	9968.66	10012
0.294	profile 2	1	996910010.44	
0.256	profile 2	1	9985	10025
0.211	profile 2	1	998510025.71	
0.179	profile 2	1	9989.15	10029
0.149	profile 2	1	996810006.95	
0.118	profile 2	1	9983	10016
0.083	profile 2	1	9987.78	10038
0.046	profile 2	1	9972.27	10010
0.014	profile 2	1	9982.53	10017.3

River = X4B Reach = Reach 1

RS	Profile	Method	Value1	Value2
0.525	profile 2	1	9983	10017
0.486	profile 2	1	9988	10022
0.453	profile 2	1	9987	10013.5
0.417	profile 2	1	9990.05	10015
0.390	profile 2	1	9980	10008.5
0.359	profile 2	1	9985	10007
0.315	profile 2	1	9983	10020
0.281	profile 2	1	9985	10015
0.264	profile 2	1	9993	10045
0.235	profile 2	1	9981.6510013.65	
0.194	profile 2	1	9961.9710035.37	
0.159	profile 2	1	9977	10020
0.144	profile 2	1	9965	10026
0.111	profile 2	1	9983	10038
0.088	profile 2	1	9979	10025
0.054	profile 2	1	9970	10014

River = X5 Reach = Reach 1

RS	Profile	Method	Value1	Value2
0.975	profile 2	1	9991.9	10032
0.951	profile 2	1	9985.0810013.97	
0.927	profile 2	1	9989.12	10020
0.915	profile 2	1	9989.5410012.12	
0.900	profile 2	1	9983.6710007.43	
0.883	profile 2	1	9981.1710008.68	
0.871	profile 2	1	9980.0210015.42	
0.840	profile 2	1	9986.91	10014
0.823	profile 2	1	9986.5310019.31	
0.799	profile 2	1	9984.2410014.04	
0.769	profile 2	1	9986.2610009.69	
0.745	profile 2	1	9985.0910014.26	
0.722	profile 2	1	9989.7210014.82	
0.701	profile 2	1	9977.9210004.47	
0.688	profile 2	1	9987.28	10007.9
0.661	profile 2	1	9990	10008

0.643	profile 2	1	9991.3710018.69
0.622	profile 2	1	998810018.86
0.588	profile 2	1	9989.3610023.96
0.555	profile 2	1	9980.1310019.61
0.519	profile 2	1	9976.3810019.38
0.486	profile 2	1	9991.7810029.31
0.446	profile 2	1	9984.5910015.03
0.409	profile 2	1	9980.5610010.89
0.393	profile 2	1	9983.2610011.01

FLOW DATA

Flow Title: Cline Tributaries
Flow File : x:\projects\Agency\FCDMC\2004C025\T08_ClineFDS\hec-ras\ClineTribs\clinetribs.f01

Flow Data (cfs)

River	Reach	RS	profile 1	profile 2
C6	Reach 1	1.525	1430	1430
C6	Reach 2	0.946	1920	1920
C6	Reach 3	0.248	2210	2210
C8	Reach 1	2.959	2280	2280
C8	Reach 2	0.112	4320	4320
X1	Reach 1	1.270	708	708
X1	Overflow 1	0.174	132	132
X1	Overflow 1	0.151	146	146
X1	Split 1 Upper	0.161	485	485
X1	Split 1 Lower	0.104	485	485
X1	Reach 2	0.309	223	223
X1	Reach 3	0.163	708	708
X2	Reach 1	1.028	390	390
X3	Reach 1	1.168	518	518
X4A	Reach 1	0.812	254	254
X4A	Reach 2	0.287	399	399
X4B	Reach 1	0.525	139	139
X5	Reach 1	0.975	301	301

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
C8	Reach 1	profile 1	Normal S = 0.002	
C8	Reach 1	profile 2	Normal S = 0.002	
C8	Reach 2	profile 1		Known WS = 2082
C8	Reach 2	profile 2		Known WS = 2082
X1	Reach 1	profile 1	Normal S = 0.002	
X1	Reach 1	profile 2	Normal S = 0.002	
X1	Overflow 1	profile 1	Normal S = 0.027	
X1	Overflow 1	profile 2	Normal S = 0.027	
X2	Reach 1	profile 1	Normal S = 0.002	
X2	Reach 1	profile 2	Normal S = 0.002	
X3	Reach 1	profile 1	Normal S = 0.002	
X3	Reach 1	profile 2	Normal S = 0.002	
X4A	Reach 1	profile 1	Normal S = 0.002	
X4A	Reach 1	profile 2	Normal S = 0.002	
X4B	Reach 1	profile 1	Normal S = 0.002	
X4B	Reach 1	profile 2	Normal S = 0.002	
X5	Reach 1	profile 1	Normal S = 0.06	Normal S = 0.019
X5	Reach 1	profile 2	Normal S = 0.06	Normal S = 0.019

GEOMETRY DATA

Geometry Title: Cline Tributaries
Geometry File : x:\projects\Agency\FCDMC\2004C025\T08_ClineFDS\hec-ras\ClineTribs\clinetribs.g01

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
C6	Reach 1	Junction 2	Junction 3
C6	Reach 2	Junction 3	Junction 5
C6	Reach 3	Junction 5	Junction 6
C8	Reach 1		Junction 6
C8	Reach 2	Junction 6	
X1	Reach 1		Split 1
X1	Overflow 1		Junction 1B
X1	Split 1 Upper	Split 1	Junction 1B
X1	Split 1 Lower	Junction 1B	Junction 1
X1	Reach 2	Split 1	Junction 1
X1	Reach 3	Junction 1	Junction 2
X2	Reach 1		Junction 2
X3	Reach 1		Junction 3
X4A	Reach 1		Junction 4
X4A	Reach 2	Junction 4	Junction 5
X4B	Reach 1		Junction 4
X5	Reach 1		

JUNCTION INFORMATION

```
Name: Junction 2
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
X2              Reach 1          to C6              Reach 1           92.45
X1              Reach 3          to C6              Reach 1          100.64

Name: Junction 3
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
X3              Reach 1          to C6              Reach 2           83.77
C6              Reach 1          to C6              Reach 2          230.93

Name: Junction 4
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
X4B             Reach 1          to X4A             Reach 2          297.83
X4A             Reach 1          to X4A             Reach 2          208.89

Name: Junction 5
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
X4A             Reach 2          to C6              Reach 3          107.45
C6              Reach 2          to C6              Reach 3          139.73

Name: Junction 1
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
X1              Split 1 Lower    to X1              Reach 3          242.78
X1              Reach 2          to X1              Reach 3           241.9

Name: Split 1
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
X1              Reach 1          to X1              Split 1 Upper        91
X1              Reach 1          to X1              Reach 2           70.53

Name: Junction 1B
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
X1              Split 1 Upper    to X1              Split 1 Lower    109.39
X1              Overflow 1       to X1              Split 1 Lower        95

Name: Junction 6
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach        Length   Angle
C8              Reach 1          to C8              Reach 2          205.16
C6              Reach 3          to C8              Reach 2          153.22

CROSS SECTION


RIVER: C6
REACH: Reach 1            RS: 1.525

INPUT
Description: Junction 2 Confluence with X1 and X2
Station Elevation Data     num=       39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9815.118 2222.019816.188 2221.989818.488 2221.939819.908 2221.859821.148 2221.79
9822.278 2221.749835.748 2221.059846.488 2220.639848.178 2220.549850.728 2220.44
9863.768 2218.889872.958 2217.859876.358 2218.049897.558 2219.119906.348 2219.99
9909.128 2220.229912.508 2220.229917.818 2220.249918.988 2220.249919.648 2220.23
9920.848 2220.229921.798 2220.289924.388 2220.229929.218 2219.669929.968 2219.55
9936.498 2218.659938.748 2218.339945.368 2218.459960.018  2218.79966.488 2218.02
 9977.692216.9629987.458 2216.049991.128  2215.79997.738 2215.0610012.21 2217.27
10030.44 2220.3310041.68 2221.2710052.19 2222.1510063.58 2222.99

Manning's n Values         num=        6
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9815.118     .059850.728    .0459906.348    .055 9977.69     .0510012.21    .065
10052.19     .04
```

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.69	10012.21	196.51	217.04	227.85	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2220.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.051	0.050	0.065
W.S. Elev (ft)	2219.57	Reach Len. (ft)	196.51	217.04	227.85
Crit W.S. (ft)	2219.57	Flow Area (sq ft)	99.26	120.35	15.69
E.G. Slope (ft/ft)	0.015067	Area (sq ft)	99.26	120.35	15.69
Q Total (cfs)	1430.00	Flow (cfs)	377.84	1004.37	47.79
Top Width (ft)	140.07	Top Width (ft)	91.88	34.52	13.67
Vel Total (ft/s)	6.08	Avg. Vel. (ft/s)	3.81	8.35	3.05
Max Chl Dpth (ft)	4.50	Hydr. Depth (ft)	1.08	3.49	1.15
Conv. Total (cfs)	11649.9	Conv. (cfs)	3078.2	8182.3	389.4
Length Wtd. (ft)	210.24	Wetted Per. (ft)	92.21	34.78	13.86
Min Ch El (ft)	2215.06	Shear (lb/sq ft)	1.01	3.26	1.06
Alpha	1.44	Stream Power (lb/ft s)	3.85	27.17	3.24
Frctn Loss (ft)	3.69	Cum Volume (acre-ft)	6.85	6.75	3.04
C & E Loss (ft)	0.01	Cum SA (acres)	5.25	1.80	2.61

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2220.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.052	0.050	0.065
W.S. Elev (ft)	2219.59	Reach Len. (ft)	196.51	217.04	227.85
Crit W.S. (ft)	2219.59	Flow Area (sq ft)	89.54	121.35	16.08
E.G. Slope (ft/ft)	0.015448	Area (sq ft)	89.54	121.35	16.08
Q Total (cfs)	1430.00	Flow (cfs)	348.64	1031.13	50.22
Top Width (ft)	126.32	Top Width (ft)	78.05	34.52	13.75
Vel Total (ft/s)	6.30	Avg. Vel. (ft/s)	3.89	8.50	3.12
Max Chl Dpth (ft)	4.53	Hydr. Depth (ft)	1.15	3.52	1.17
Conv. Total (cfs)	11505.5	Conv. (cfs)	2805.1	8296.3	404.1
Length Wtd. (ft)	210.79	Wetted Per. (ft)	79.96	34.78	13.96
Min Ch El (ft)	2215.06	Shear (lb/sq ft)	1.08	3.37	1.11
Alpha	1.41	Stream Power (lb/ft s)	4.20	28.59	3.47
Frctn Loss (ft)	2.70	Cum Volume (acre-ft)	4.04	7.31	1.33
C & E Loss (ft)	0.06	Cum SA (acres)	1.55	1.80	0.72

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9847.63	9880.15	99.57	23.91	22.21	6.96	1.08	4.16
2	LOB	9880.15	9912.66	54.55	16.60	22.00	3.81	0.76	3.29
3	LOB	9912.66	9945.18	37.75	13.02	15.39	2.64	0.85	2.90
4	LOB	9945.18	9977.69	185.97	45.74	32.60	13.01	1.41	4.07
5	Chan	9977.69	9982.62	100.41	13.98	4.95	7.02	2.84	7.18
6	Chan	9982.62	9987.55	129.33	16.28	4.95	9.04	3.30	7.95
7	Chan	9987.55	9992.48	160.91	18.56	4.95	11.25	3.76	8.67
8	Chan	9992.48	9997.42	195.91	20.88	4.95	13.70	4.23	9.38
9	Chan	9997.42	10002.35	190.48	20.59	4.99	13.32	4.17	9.25
10	Chan	10002.35	10007.28	136.84	16.88	4.99	9.57	3.42	8.10
11	Chan	10007.28	10012.21	90.48	13.17	4.99	6.33	2.67	6.87
12	ROB	10012.21	10022.48	46.74	14.72	10.42	3.27	1.43	3.18
13	ROB	10022.48	10032.76	1.05	0.97	3.44	0.07	0.29	1.08

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9847.63	9880.15	57.23	12.15	9.48	4.00	1.56	4.71
2	LOB	9880.15	9912.66	57.96	17.24	22.29	4.05	0.78	3.36
3	LOB	9912.66	9945.18	39.85	13.46	15.59	2.79	0.87	2.96
4	LOB	9945.18	9977.69	193.61	46.68	32.60	13.54	1.44	4.15

5	Chan	9977.69	9982.62	103.44	14.13	4.95	7.23	2.86	7.32
6	Chan	9982.62	9987.55	132.91	16.42	4.95	9.29	3.33	8.10
7	Chan	9987.55	9992.48	165.07	18.70	4.95	11.54	3.79	8.83
8	Chan	9992.48	9997.42	200.69	21.03	4.95	14.03	4.26	9.54
9	Chan	9997.42	10002.35	195.16	20.73	4.99	13.65	4.20	9.41
10	Chan	10002.35	10007.28	140.56	17.03	4.99	9.83	3.45	8.25
11	Chan	10007.28	10012.21	93.30	13.32	4.99	6.52	2.70	7.01
12	ROB	10012.21	10022.48	49.00	15.02	10.42	3.43	1.46	3.26
13	ROB	10022.48	10032.76	1.23	1.07	3.54	0.09	0.31	1.15

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: C6
REACH: Reach 1 RS: 1.484

INPUT
Description:
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9776.341	2220.089	782.711	2219.539	798.451	2218.179	809.781	2217.229	821.401	2216.23
9822.991	2215.789	830.201	2214.939	832.301	2214.939	834.381	2214.939	840.271	2213.88
9840.931	2213.689	841.911	2213.719	853.081	2213.999	868.381	2216.059	868.821	2216.11
9869.001	2216.129	869.301	2216.139	894.141	2217.389	897.821	2217.549	899.621	2217.26
9907.041	2217.049	907.291	2217.039	907.351	2217.039	907.611	2217.019	908.411	2216.95
9920.841	2216.089	923.791	2215.799	927.641	2214.759	929.281	2214.289	940.061	2211.24
9940.491	2211.279	954.921	2212.719	958.551	2212.819	963.561	2212.859	968.281	2212.91
9972.261	2212.919	974.621	2212.879	978.291	2212.64	9980.02	2212.469	980.021	2212.46
9984.601	2212.139	990.611	2211.689	993.261	2211.111	0000.84	2209.610	009.36	2212.93
10012.55	2214.141	0015.37	2214.841	0016.28	2214.981	0017.03	2215.081	0017.36	2215.13
10025.88	2215.531	0027.34	2215.99	10031.5	2216.651	0032.18	2216.551	0032.49	2216.53
10033.23	2216.511	0037.96	2216.7	10040.5	2216.811	0045.75	2216.94	10049.3	2217.12
10050.62	2217.211	0051.71	2217.271	0057.85	2217.511	0064.94	2217.851	0065.93	2217.86
10068.98	2218	10069.93	2218	10077.01	2218.191	0079.01	2218.181	0084.58	2218.34

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9776.341	.055	9822.991	.045	9868.381	.069	9929.281	.055	9984.601	.05
10009.36	.06								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.021	10009.36	126.76	120.59	117.31	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2215.38	Element			
Vel Head (ft)	0.93	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2214.46	Reach Len. (ft)	126.76	120.59	117.31
Crit W.S. (ft)	2214.46	Flow Area (sq ft)	106.11	91.61	3.14
E.G. Slope (ft/ft)	0.020722	Area (sq ft)	106.11	91.61	3.14
Q Total (cfs)	1430.00	Flow (cfs)	599.75	821.73	8.52
Top Width (ft)	104.65	Top Width (ft)	70.85	29.34	4.46
Vel Total (ft/s)	7.12	Avg. Vel. (ft/s)	5.65	8.97	2.71
Max Chl Dpth (ft)	4.86	Hydr. Depth (ft)	1.50	3.12	0.70
Conv. Total (cfs)	9933.8	Conv. (cfs)	4166.3	5708.3	59.2
Length Wtd. (ft)	123.76	Wetted Per. (ft)	71.50	30.21	4.72
Min Ch El (ft)	2209.60	Shear (lb/sq ft)	1.92	3.92	0.86
Alpha	1.18	Stream Power (lb/ft s)	10.85	35.19	2.33
Frctn Loss (ft)	2.00	Cum Volume (acre-ft)	6.39	6.22	2.99
C & E Loss (ft)	0.10	Cum SA (acres)	4.89	1.64	2.56

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2215.90	Element			
Vel Head (ft)	0.68	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2215.23	Reach Len. (ft)	126.76	120.59	117.31
Crit W.S. (ft)		Flow Area (sq ft)	109.04	114.17	6.70
E.G. Slope (ft/ft)	0.010775	Area (sq ft)	109.04	114.17	6.70
Q Total (cfs)	1430.00	Flow (cfs)	559.34	851.31	19.35
Top Width (ft)	74.00	Top Width (ft)	40.02	29.34	4.64
Vel Total (ft/s)	6.22	Avg. Vel. (ft/s)	5.13	7.46	2.89
Max Chl Dpth (ft)	5.62	Hydr. Depth (ft)	2.72	3.89	1.44
Conv. Total (cfs)	13776.0	Conv. (cfs)	5388.5	8201.2	186.4
Length Wtd. (ft)	123.96	Wetted Per. (ft)	44.08	30.21	5.63
Min Ch El (ft)	2209.60	Shear (lb/sq ft)	1.66	2.54	0.80

Alpha	1.12	Stream Power (lb/ft s)	8.54	18.96	2.31
Frctn Loss (ft)	1.56	Cum Volume (acre-ft)	3.60	6.72	1.27
C & E Loss (ft)	0.07	Cum SA (acres)	1.28	1.64	0.67

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9817.08	9857.81	28.67	9.69	19.62	2.00	0.50	2.96
2	LOB	9857.81	9898.55						
3	LOB	9898.55	9939.28	81.47	15.92	11.03	5.70	1.50	5.12
4	LOB	9939.28	9980.02	489.61	80.49	40.86	34.24	1.98	6.08
5	Chan	9980.02	9984.21	56.47	9.00	4.20	3.95	2.15	6.28
6	Chan	9984.21	9988.40	77.03	10.28	4.20	5.39	2.45	7.49
7	Chan	9988.40	9992.59	98.00	11.87	4.24	6.85	2.83	8.25
8	Chan	9992.59	9996.79	147.37	15.22	4.28	10.31	3.63	9.68
9	Chan	9996.79	10000.98	207.86	18.71	4.28	14.54	4.46	11.11
10	Chan	10000.98	10005.17	166.25	16.69	4.50	11.63	3.98	9.96
11	Chan	10005.17	10009.36	68.75	9.83	4.50	4.81	2.34	7.00
12	ROB	10009.36	10024.40	8.52	3.14	4.72	0.60	0.70	2.71

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9939.28	9980.02	559.34	109.04	44.08	39.11	2.72	5.13
2	Chan	9980.02	9984.21	68.51	12.22	4.20	4.79	2.92	5.61
3	Chan	9984.21	9988.40	88.34	13.51	4.20	6.18	3.22	6.54
4	Chan	9988.40	9992.59	106.50	15.10	4.24	7.45	3.60	7.05
5	Chan	9992.59	9996.79	147.85	18.44	4.28	10.34	4.40	8.02
6	Chan	9996.79	10000.98	197.30	21.93	4.28	13.80	5.23	9.00
7	Chan	10000.98	10005.17	162.49	19.92	4.50	11.36	4.75	8.16
8	Chan	10005.17	10009.36	80.33	13.05	4.50	5.62	3.11	6.16
9	ROB	10009.36	10024.40	19.35	6.70	5.63	1.35	1.44	2.89

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: C6
REACH: Reach 1 RS: 1.461

INPUT
Description:
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9823.27	2215.3	9823.6	2215.22	9824.23	2215.14	9829.37	2214.69	9830.75	2214.46
9834.47	2214.2	9835.57	2214	9837.48	2213.73	9839.09	2213.53	9840.55	2213.28
9846.51	2212.7	9846.77	2212.7	9847.03	2212.6	9851.62	2212	9852.83	2211.8
9853.39	2211.76	9864.09	2211.4	9871.11	2211.6	9873.89	2211.68	9877.67	2211.8
9889	2211.83	9892.99	2211.9	9897.83	2211.92	9903.56	2211.91	9909.06	2211.89
9909.73	2211.93	9911.69	2211.8	9916.19	2211.84	9916.76	2211.85	9916.94	2211.86
9921.3	2211.76	9922.54	2211.7	9924.28	2211.69	9927.42	2211.47	9930.04	2211.48
9937.13	2211.51	9938.71	2211.5	9940.29	2211.35	9942.36	2211.39	9944.95	2211.38
9950.17	2211.16	9950.33	2211.2	9952.12	2211.15	9959.6	2210.89	9959.74	2210.88
9964.84	2210.76	9969.31	2210.7	9971.97	2210.65	9972.24	2210.66	9980.3	2210.58
9985.18	2210.42	9991.94	2210.7	9992.35	2210.67	9992.77	2210.66	9994.23	2210
9996.38	2209.14	10000.03	2207.74	10005.99	2209.91	10006.86	2210	10007.91	2210.364
10010.29	2210.94	10011.8	2211.29	10015.21	2211.17	10015.37	2211.17	10017.95	2211.1
10053.91	2212	10067.73	2212.3	10078.45	2213.71	10080.91	2214	10085.15	2214.2
10093.99	2214.67	10102.38	2215.1	10104.58	2215.21	10122.65	2215.99	10123.3	2216

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9823.27	.055	9853.39	.03	9994.23	.05	10007.91	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.23	10007.91	131.74	128.49	126.75	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2213.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.030	0.050	0.060
W.S. Elev (ft)	2212.48	Reach Len. (ft)	131.74	128.49	126.75

Crit W.S. (ft)	2212.48	Flow Area (sq ft)	157.83	47.44	52.54
E.G. Slope (ft/ft)	0.012982	Area (sq ft)	157.83	47.44	52.54
Q Total (cfs)	1430.00	Flow (cfs)	943.08	353.23	133.70
Top Width (ft)	221.17	Top Width (ft)	146.29	13.68	61.21
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)	5.98	7.45	2.54
Max Chl Dpth (ft)	4.74	Hydr. Depth (ft)	1.08	3.47	0.86
Conv. Total (cfs)	12550.8	Conv. (cfs)	8277.2	3100.2	1173.4
Length Wtd. (ft)	129.87	Wetted Per. (ft)	146.54	14.55	61.34
Min Ch El (ft)	2207.74	Shear (lb/sq ft)	0.87	2.64	0.69
Alpha	1.23	Stream Power (lb/ft s)	5.22	19.67	1.77
Frctn Loss (ft)	1.61	Cum Volume (acre-ft)	6.00	6.02	2.91
C & E Loss (ft)	0.03	Cum SA (acres)	4.57	1.58	2.48

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2214.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.030	0.050	
W.S. Elev (ft)	2212.93	Reach Len. (ft)	131.74	128.49	126.75
Crit W.S. (ft)	2212.93	Flow Area (sq ft)	102.67	53.52	
E.G. Slope (ft/ft)	0.014900	Area (sq ft)	102.67	53.52	
Q Total (cfs)	1430.00	Flow (cfs)	1014.85	415.15	
Top Width (ft)	61.00	Top Width (ft)	47.32	13.68	
Vel Total (ft/s)	9.16	Avg. Vel. (ft/s)	9.88	7.76	
Max Chl Dpth (ft)	5.18	Hydr. Depth (ft)	2.17	3.91	
Conv. Total (cfs)	11715.2	Conv. (cfs)	8314.1	3401.1	
Length Wtd. (ft)	130.06	Wetted Per. (ft)	49.12	17.11	
Min Ch El (ft)	2207.74	Shear (lb/sq ft)	1.94	2.91	
Alpha	1.04	Stream Power (lb/ft s)	19.22	22.57	
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)	3.29	6.49	1.26
C & E Loss (ft)	0.02	Cum SA (acres)	1.15	1.58	0.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9823.27	9857.46	16.97	5.19	9.57	1.19	0.55	3.27
2	LOB	9857.46	9891.65	123.77	27.66	34.20	8.66	0.81	4.47
3	LOB	9891.65	9925.85	81.84	21.58	34.20	5.72	0.63	3.79
4	LOB	9925.85	9960.04	228.59	39.98	34.22	15.99	1.17	5.72
5	LOB	9960.04	9994.23	491.90	63.41	34.35	34.40	1.85	7.76
6	Chan	9994.23	9996.19	35.76	5.61	2.10	2.50	2.87	6.37
7	Chan	9996.19	9998.14	53.28	7.11	2.09	3.73	3.64	7.49
8	Chan	9998.14	10000.09	72.81	8.58	2.09	5.09	4.39	8.49
9	Chan	10000.09	10002.05	72.46	8.53	2.08	5.07	4.36	8.49
10	Chan	10002.05	10004.00	53.91	7.14	2.08	3.77	3.66	7.55
11	Chan	10004.00	10005.96	37.66	5.76	2.08	2.63	2.95	6.54
12	Chan	10005.96	10007.91	27.36	4.70	2.02	1.91	2.41	5.82
13	ROB	10007.91	10030.99	91.07	30.24	23.19	6.37	1.31	3.01
14	ROB	10030.99	10054.07	37.32	17.67	23.09	2.61	0.77	2.11
15	ROB	10054.07	10077.14	5.31	4.62	15.06	0.37	0.31	1.15

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9925.85	9960.04	199.42	24.09	14.77	13.95	1.83	8.28
2	LOB	9960.04	9994.23	815.43	78.59	34.35	57.02	2.30	10.38
3	Chan	9994.23	9996.19	45.51	6.48	2.10	3.18	3.32	7.02
4	Chan	9996.19	9998.14	64.64	7.98	2.09	4.52	4.08	8.10
5	Chan	9998.14	10000.09	85.63	9.44	2.09	5.99	4.83	9.07
6	Chan	10000.09	10002.05	85.30	9.40	2.08	5.96	4.81	9.07
7	Chan	10002.05	10004.00	65.36	8.01	2.08	4.57	4.10	8.16
8	Chan	10004.00	10005.96	47.65	6.63	2.08	3.33	3.39	7.19
9	Chan	10005.96	10007.91	21.06	5.57	4.58	1.47	2.85	3.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.437

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9893.872	2212.389	895.062	2212.239	896.932	2211.849	897.192	2211.89	899.522	2211.3
9905.332	2210.749	911.032	2209.899	918.522	2208.929	921.922	2208.479	928.092	2207.66
9930.072	2207.399	933.172	2207.789	937.612	2208.429	944.842	2208.139	957.302	2207.46
9960.932	2207.679	971.082	2208.219	979.502	2206.82	9989.92	2204.851	9989.902	2204.85
9995.492	2203.839	999.902	2203.141	0006.47	2205.051	0006.72	2205.111	0006.96	2205.18
10016.11	2207.831	0018.93	2207.981	0038.35	2208.721	0073.13	2210.061	0073.93	2210.04
10074.29	2210.1	10075.2	2210.17	10076.5	2210.111	0077.38	2210.171	0080.12	2210.13
10081.79	2210.221	0085.61	2210.341	0088.12	2210.43	10091.5	2210.621	0095.45	2210.9

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9893.872	.065	9989.9	.051	0006.47	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.91	0006.47	212.63	220.64	224.94	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2210.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2209.32	Reach Len. (ft)	212.63	220.64	224.94
Crit W.S. (ft)	2209.32	Flow Area (sq ft)	123.52	87.96	55.52
E.G. Slope (ft/ft)	0.011808	Area (sq ft)	123.52	87.96	55.52
Q Total (cfs)	1430.00	Flow (cfs)	427.76	850.23	152.01
Top Width (ft)	138.63	Top Width (ft)	74.50	16.57	47.56
Vel Total (ft/s)	5.36	Avg. Vel. (ft/s)	3.46	9.67	2.74
Max Chl Dpth (ft)	6.18	Hydr. Depth (ft)	1.66	5.31	1.17
Conv. Total (cfs)	13159.5	Conv. (cfs)	3936.5	7824.2	1398.8
Length Wtd. (ft)	218.50	Wetted Per. (ft)	75.04	16.99	47.99
Min Ch El (ft)	2203.14	Shear (lb/sq ft)	1.21	3.82	0.85
Alpha	2.09	Stream Power (lb/ft s)	4.20	36.90	2.34
Frctn Loss (ft)	2.61	Cum Volume (acre-ft)	5.58	5.83	2.75
C & E Loss (ft)	0.00	Cum SA (acres)	4.24	1.54	2.32

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2210.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.56	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2209.43	Reach Len. (ft)	212.63	220.64	224.94
Crit W.S. (ft)	2209.43	Flow Area (sq ft)	78.47	89.73	7.05
E.G. Slope (ft/ft)	0.016106	Area (sq ft)	78.47	89.73	7.05
Q Total (cfs)	1430.00	Flow (cfs)	379.97	1026.38	23.65
Top Width (ft)	52.45	Top Width (ft)	34.18	16.57	1.70
Vel Total (ft/s)	8.16	Avg. Vel. (ft/s)	4.84	11.44	3.36
Max Chl Dpth (ft)	6.29	Hydr. Depth (ft)	2.30	5.42	4.15
Conv. Total (cfs)	11267.8	Conv. (cfs)	2994.0	8087.4	186.3
Length Wtd. (ft)	218.06	Wetted Per. (ft)	36.39	16.99	5.67
Min Ch El (ft)	2203.14	Shear (lb/sq ft)	2.17	5.31	1.25
Alpha	1.51	Stream Power (lb/ft s)	10.50	60.75	4.20
Frctn Loss (ft)	2.08	Cum Volume (acre-ft)	3.02	6.28	1.25
C & E Loss (ft)	0.20	Cum SA (acres)	1.03	1.53	0.66

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9913.08	9932.28	43.30	18.07	17.03	3.03	1.07	2.40
2	LOB	9932.28	9951.49	62.08	23.57	19.27	4.34	1.23	2.63
3	LOB	9951.49	9970.69	92.55	29.93	19.23	6.47	1.56	3.09
4	LOB	9970.69	9989.90	229.83	51.95	19.51	16.07	2.70	4.42
5	Chan	9989.90	9992.27	98.83	11.10	2.41	6.91	4.69	8.90
6	Chan	9992.27	9994.64	114.47	12.12	2.41	8.00	5.12	9.44
7	Chan	9994.64	9997.00	130.75	13.12	2.40	9.14	5.54	9.97
8	Chan	9997.00	9999.37	145.90	14.00	2.40	10.20	5.92	10.42
9	Chan	9999.37	10001.74	145.97	14.13	2.45	10.21	5.97	10.33
10	Chan	10001.74	10004.10	119.51	12.56	2.47	8.36	5.31	9.51
11	Chan	10004.10	10006.47	94.80	10.93	2.47	6.63	4.62	8.67
12	ROB	10006.47	10024.27	125.59	38.49	18.20	8.78	2.16	3.26
13	ROB	10024.27	10042.06	24.36	14.27	17.81	1.70	0.80	1.71
14	ROB	10042.06	10059.86	2.05	2.76	11.98	0.14	0.23	0.74

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9951.49	9970.69	86.46	24.48	16.88	6.05	1.63	3.53
2	LOB	9970.69	9989.90	293.51	53.99	19.51	20.53	2.81	5.44
3	Chan	9989.90	9992.27	119.85	11.35	2.41	8.38	4.80	10.56
4	Chan	9992.27	9994.64	138.38	12.38	2.41	9.68	5.23	11.18
5	Chan	9994.64	9997.00	157.66	13.37	2.40	11.02	5.65	11.79
6	Chan	9997.00	9999.37	175.57	14.25	2.40	12.28	6.02	12.32
7	Chan	9999.37	10001.74	175.61	14.38	2.45	12.28	6.07	12.21
8	Chan	10001.74	10004.10	144.29	12.81	2.47	10.09	5.41	11.26
9	Chan	10004.10	10006.47	115.02	11.18	2.47	8.04	4.72	10.28
10	ROB	10006.47	10024.27	23.65	7.05	5.67	1.65	4.15	3.36

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.395

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9913.886	2208.329	922.846	2207.689	922.886	2207.689	923.116	2207.659	928.906	2206.91
9931.286	2206.619	936.106	2206.149	946.466	2205.049	953.426	2204.39	960.296	2202.96
9965.726	2202.31	9965.73	2202.319	970.956	2202.259	974.486	2202.249	983.936	2202.53
9984.236	2202.549	984.666	2202.559	992.796	2202.49	997.756	2202.32	9997.76	2202.32
10003.36	2202.23	10010.91	2202.141	0011.81	2202.131	0013.22	2202.131	0019.24	2202.212
10026.51	2202.31	10037.62	2202.541	0039.82	2202.581	0040.83	2202.81	0049.09	2204.66
10051.39	2205.181	0051.58	2205.231	0059.82	2205.221	0064.46	2205.361	0067.62	2205.43
10079.67	2205.641	0081.29	2205.681	0084.83	2205.741	0087.86	2205.81	0093.87	2205.96
10097.4	2206.031	0102.67	2206.17						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9913.886	.055	9965.726	.045	9984.666	.031	0026.51	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9997.76	10019.24	22.77	32.46	37.6	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2205.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.94	Wt. n-Val.	0.039	0.030	0.042
W.S. Elev (ft)	2204.62	Reach Len. (ft)	22.77	32.46	37.60
Crit W.S. (ft)	2204.55	Flow Area (sq ft)	90.01	52.02	55.39

E.G. Slope (ft/ft)	0.012044	Area (sq ft)	90.01	52.02	55.39
Q Total (cfs)	1430.00	Flow (cfs)	594.00	509.94	326.06
Top Width (ft)	98.50	Top Width (ft)	47.35	21.48	29.67
Vel Total (ft/s)	7.24	Avg. Vel. (ft/s)	6.60	9.80	5.89
Max Chl Dpth (ft)	2.49	Hydr. Depth (ft)	1.90	2.42	1.87
Conv. Total (cfs)	13030.1	Conv. (cfs)	5412.5	4646.5	2971.0
Length Wtd. (ft)	30.39	Wetted Per. (ft)	47.54	21.48	29.90
Min Ch El (ft)	2202.13	Shear (lb/sq ft)	1.42	1.82	1.39
Alpha	1.15	Stream Power (lb/ft s)	9.39	17.85	8.20
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	5.06	5.47	2.47
C & E Loss (ft)	0.01	Cum SA (acres)	3.94	1.44	2.12

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2206.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.	0.038	0.030	0.030
W.S. Elev (ft)	2205.39	Reach Len. (ft)	22.77	32.46	37.60
Crit W.S. (ft)		Flow Area (sq ft)	105.93	68.44	22.74
E.G. Slope (ft/ft)	0.006282	Area (sq ft)	105.93	68.44	22.74
Q Total (cfs)	1430.00	Flow (cfs)	657.84	581.67	190.49
Top Width (ft)	64.10	Top Width (ft)	35.34	21.48	7.28
Vel Total (ft/s)	7.26	Avg. Vel. (ft/s)	6.21	8.50	8.38
Max Chl Dpth (ft)	3.25	Hydr. Depth (ft)	3.00	3.19	3.12
Conv. Total (cfs)	18042.2	Conv. (cfs)	8299.9	7338.9	2403.4
Length Wtd. (ft)	29.94	Wetted Per. (ft)	38.05	21.48	10.35
Min Ch El (ft)	2202.13	Shear (lb/sq ft)	1.09	1.25	0.86
Alpha	1.07	Stream Power (lb/ft s)	6.78	10.62	7.21
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	2.56	5.87	1.17
C & E Loss (ft)	0.04	Cum SA (acres)	0.86	1.44	0.64

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9947.44	9964.21	44.90	14.71	13.97	3.14	1.07	3.05
2	LOB	9964.21	9980.99	241.07	38.82	16.79	16.86	2.31	6.21
3	LOB	9980.99	9997.76	308.04	36.49	16.78	21.54	2.18	8.44
4	Chan	9997.76	10000.83	68.04	7.13	3.07	4.76	2.33	9.54
5	Chan	10000.83	10003.90	70.48	7.29	3.07	4.93	2.37	9.67
6	Chan	10003.90	10006.97	72.50	7.41	3.07	5.07	2.42	9.78
7	Chan	10006.97	10010.03	74.34	7.52	3.07	5.20	2.45	9.88
8	Chan	10010.03	10013.10	76.01	7.62	3.07	5.32	2.48	9.97
9	Chan	10013.10	10016.17	75.35	7.59	3.07	5.27	2.47	9.93
10	Chan	10016.17	10019.24	73.21	7.45	3.07	5.12	2.43	9.82
11	ROB	10019.24	10035.93	265.23	37.99	16.69	18.55	2.28	6.98
12	ROB	10035.93	10052.61	60.83	17.40	13.22	4.25	1.34	3.50

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9947.44	9964.21	11.40	4.99	4.48	0.80	2.79	2.29
2	LOB	9964.21	9980.99	279.72	51.64	16.79	19.56	3.08	5.42
3	LOB	9980.99	9997.76	366.72	49.30	16.78	25.65	2.94	7.44
4	Chan	9997.76	10000.83	78.92	9.48	3.07	5.52	3.09	8.33
5	Chan	10000.83	10003.90	81.05	9.63	3.07	5.67	3.14	8.41
6	Chan	10003.90	10006.97	82.79	9.76	3.07	5.79	3.18	8.49
7	Chan	10006.97	10010.03	84.39	9.87	3.07	5.90	3.22	8.55
8	Chan	10010.03	10013.10	85.84	9.97	3.07	6.00	3.25	8.61
9	Chan	10013.10	10016.17	85.27	9.93	3.07	5.96	3.24	8.59
10	Chan	10016.17	10019.24	83.41	9.80	3.07	5.83	3.19	8.51
11	ROB	10019.24	10035.93	190.49	22.74	10.35	13.32	3.12	8.38

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: C6
REACH: Reach 1 RS: 1.389

INPUT
Description:
Station Elevation Data num= 32

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9921.944 2207.119927.774 2206.639931.274 2206.269941.014 2205.239941.044 2205.22
9949.664 2203.129953.434 2203.319957.604 2203.299964.644 2202.929966.654 2202.88
9971.944 2202.739975.714 2202.639979.554 2202.489983.924 2202.099990.984 2201.69
 9994.852200.8919994.854 2200.8910000.02 2199.7510002.94 2200.7510008.39 2202.57
10013.53  2202.410020.51 2202.19 10021.9 2202.1910024.28 2202.1910029.61 2202.13
 10036.5 2201.9110037.39 2201.8810037.73 2201.9610052.69 2205.2310069.75  2205.6
10080.76  2205.810081.22 2205.78
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Manning's n Values num= 5

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     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9921.944    .0559957.604     .039983.924      .06 9994.85     .0510002.94      .04
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Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

9994.8510002.94 213.73 210.03 208.05 .1 .3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2205.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.041	0.050	0.040
W.S. Elev (ft)	2204.22	Reach Len. (ft)	213.73	210.03	208.05
Crit W.S. (ft)	2204.22	Flow Area (sq ft)	76.46	31.75	84.58
E.G. Slope (ft/ft)	0.016885	Area (sq ft)	76.46	31.75	84.58
Q Total (cfs)	1430.00	Flow (cfs)	516.55	297.88	615.56
Top Width (ft)	102.91	Top Width (ft)	49.70	8.09	45.12
Vel Total (ft/s)	7.42	Avg. Vel. (ft/s)	6.76	9.38	7.28
Max Chl Dpth (ft)	4.47	Hydr. Depth (ft)	1.54	3.92	1.87
Conv. Total (cfs)	11004.9	Conv. (cfs)	3975.3	2292.4	4737.2
Length Wtd. (ft)	209.96	Wetted Per. (ft)	49.96	8.38	45.68
Min Ch El (ft)	2199.75	Shear (lb/sq ft)	1.61	3.99	1.95
Alpha	1.05	Stream Power (lb/ft s)	10.90	37.46	14.20
Frctn Loss (ft)	3.13	Cum Volume (acre-ft)	5.01	5.44	2.41
C & E Loss (ft)	0.02	Cum SA (acres)	3.91	1.43	2.09

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2205.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.29	Wt. n-Val.	0.044	0.050	0.040
W.S. Elev (ft)	2204.63	Reach Len. (ft)	213.73	210.03	208.05
Crit W.S. (ft)	2204.63	Flow Area (sq ft)	58.31	35.04	65.55
E.G. Slope (ft/ft)	0.018802	Area (sq ft)	58.31	35.04	65.55
Q Total (cfs)	1430.00	Flow (cfs)	489.55	370.47	569.99
Top Width (ft)	57.90	Top Width (ft)	23.22	8.09	26.59
Vel Total (ft/s)	9.00	Avg. Vel. (ft/s)	8.40	10.57	8.70
Max Chl Dpth (ft)	4.88	Hydr. Depth (ft)	2.51	4.33	2.47
Conv. Total (cfs)	10428.8	Conv. (cfs)	3570.2	2701.8	4156.9
Length Wtd. (ft)	210.07	Wetted Per. (ft)	25.22	8.38	29.39
Min Ch El (ft)	2199.75	Shear (lb/sq ft)	2.71	4.91	2.62
Alpha	1.03	Stream Power (lb/ft s)	22.78	51.88	22.77
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	2.52	5.84	1.13
C & E Loss (ft)	0.04	Cum SA (acres)	0.84	1.43	0.63

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9936.53	9951.11	10.53	4.01	6.09	0.74	0.67	2.63
2	LOB	9951.11	9965.69	84.00	15.29	14.59	5.87	1.05	5.49
3	LOB	9965.69	9980.27	187.06	22.22	14.59	13.08	1.52	8.42
4	LOB	9980.27	9994.85	234.96	34.95	14.69	16.43	2.40	6.72
5	Chan	9994.85	9996.01	34.59	4.00	1.18	2.42	3.46	8.66
6	Chan	9996.01	9997.16	38.92	4.29	1.18	2.72	3.71	9.08
7	Chan	9997.16	9998.32	43.52	4.59	1.18	3.04	3.97	9.49
8	Chan	9998.32	9999.47	48.24	4.88	1.18	3.37	4.22	9.89
9	Chan	9999.47	10000.63	50.89	5.07	1.20	3.56	4.39	10.04
10	Chan	10000.63	10001.78	44.32	4.69	1.22	3.10	4.06	9.44
11	Chan	10001.78	10002.94	37.39	4.24	1.22	2.61	3.67	8.82
12	ROB	10002.94	10018.60	247.72	32.46	15.96	17.32	2.07	7.63
13	ROB	10018.60	10034.25	251.28	32.49	15.66	17.57	2.08	7.73
14	ROB	10034.25	10049.91	116.56	19.63	14.07	8.15	1.42	5.94

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9965.69	9980.27	164.30	17.43	10.53	11.49	2.02	9.42
2	LOB	9980.27	9994.85	325.25	40.87	14.69	22.74	2.80	7.96
3	Chan	9994.85	9996.01	43.97	4.47	1.18	3.07	3.86	9.85
4	Chan	9996.01	9997.16	48.87	4.76	1.18	3.42	4.12	10.27
5	Chan	9997.16	9998.32	54.07	5.06	1.18	3.78	4.37	10.70

6	Chan	9998.32	9999.47	59.38	5.35	1.18	4.15	4.63	11.11
7	Chan	9999.47	10000.63	62.29	5.54	1.20	4.36	4.79	11.24
8	Chan	10000.63	10001.78	54.86	5.16	1.22	3.84	4.47	10.63
9	Chan	10001.78	10002.94	47.04	4.71	1.22	3.29	4.07	9.99
10	ROB	10002.94	10018.60	355.75	38.82	15.96	24.88	2.48	9.16
11	ROB	10018.60	10034.25	214.23	26.73	13.43	14.98	2.44	8.02

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.349

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9916.508	2205.519	917.548	2205.429	920.188	2204.599	921.208	2204.369	929.798	2204.03
9940.468	2203.629	947.098	2203.389	952.198	2203.419	977.728	2203.399	982.248	2203.34
9982.598	2202.979	987.438	2197.769	989.878	2197.3	9989.88	2197.39	999.878	2195.17
10010.6	2197.741	0014.11	2198.611	0026.89	2198.961	0037.43	2199.171	0046.99	2199.37
10064.34	2198.931	0065.84	2198.871	0066.89	2198.951	0069.82	2199.131	0075.81	2199.33
10080.73	2199.461	0083.29	2199.541	0105.68	2200.371	0112.78	2200.691	0116.76	2200.82

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9916.508	.035	9989.88	.05	10010.6	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.88	10010.6	266.56	227.66	206.36	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
9947.1	9982.25	2206

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2201.37	Element			
Vel Head (ft)	0.83	Wt. n-Val.	0.035	0.050	0.040
W.S. Elev (ft)	2200.55	Reach Len. (ft)	266.56	227.66	206.36
Crit W.S. (ft)	2200.55	Flow Area (sq ft)	10.96	86.94	121.15
E.G. Slope (ft/ft)	0.013237	Area (sq ft)	10.96	86.94	121.15
Q Total (cfs)	1430.00	Flow (cfs)	77.60	760.49	591.91
Top Width (ft)	124.71	Top Width (ft)	5.03	20.72	98.96
Vel Total (ft/s)	6.53	Avg. Vel. (ft/s)	7.08	8.75	4.89
Max Chl Dpth (ft)	5.38	Hydr. Depth (ft)	2.18	4.20	1.22
Conv. Total (cfs)	12429.2	Conv. (cfs)	674.5	6610.0	5144.7
Length Wtd. (ft)	222.62	Wetted Per. (ft)	6.29	21.25	99.12
Min Ch El (ft)	2195.17	Shear (lb/sq ft)	1.44	3.38	1.01
Alpha	1.25	Stream Power (lb/ft s)	10.20	29.58	4.93
Frctn Loss (ft)	1.94	Cum Volume (acre-ft)	4.80	5.15	1.92
C & E Loss (ft)	0.01	Cum SA (acres)	3.78	1.36	1.74

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2201.87	Element			
Vel Head (ft)	1.15	Wt. n-Val.	0.035	0.050	0.040
W.S. Elev (ft)	2200.72	Reach Len. (ft)	266.56	227.66	206.36
Crit W.S. (ft)	2200.72	Flow Area (sq ft)	11.85	90.56	72.03
E.G. Slope (ft/ft)	0.015194	Area (sq ft)	11.85	90.56	72.03
Q Total (cfs)	1430.00	Flow (cfs)	92.72	872.04	465.24
Top Width (ft)	67.20	Top Width (ft)	5.08	20.72	41.40
Vel Total (ft/s)	8.20	Avg. Vel. (ft/s)	7.83	9.63	6.46
Max Chl Dpth (ft)	5.55	Hydr. Depth (ft)	2.33	4.37	1.74
Conv. Total (cfs)	11601.2	Conv. (cfs)	752.2	7074.6	3774.4
Length Wtd. (ft)	225.87	Wetted Per. (ft)	6.48	21.25	42.99
Min Ch El (ft)	2195.17	Shear (lb/sq ft)	1.73	4.04	1.59
Alpha	1.10	Stream Power (lb/ft s)	13.57	38.93	10.26
Frctn Loss (ft)	2.48	Cum Volume (acre-ft)	2.35	5.53	0.80
C & E Loss (ft)	0.03	Cum SA (acres)	0.77	1.36	0.46

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.21	9989.88	77.60	10.96	6.29	5.43	2.18	7.08
2	Chan	9989.88	9992.84	81.62	10.54	3.03	5.71	3.56	7.75
3	Chan	9992.84	9995.80	107.11	12.40	3.03	7.49	4.19	8.63
4	Chan	9995.80	9998.76	135.30	14.27	3.03	9.46	4.82	9.48
5	Chan	9998.76	10001.72	152.74	15.37	3.04	10.68	5.19	9.94
6	Chan	10001.72	10004.68	123.67	13.55	3.04	8.65	4.58	9.12
7	Chan	10004.68	10007.64	93.40	11.45	3.04	6.53	3.87	8.16
8	Chan	10007.64	10010.60	66.64	9.35	3.04	4.66	3.16	7.13
9	ROB	10010.60	10031.83	222.83	38.40	21.34	15.58	1.81	5.80
10	ROB	10031.83	10053.06	130.50	27.80	21.24	9.13	1.31	4.69
11	ROB	10053.06	10074.30	158.03	31.19	21.25	11.05	1.47	5.07
12	ROB	10074.30	10095.53	73.69	19.73	21.24	5.15	0.93	3.73
13	ROB	10095.53	10116.76	6.86	4.02	14.04	0.48	0.29	1.71

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.21	9989.88	92.72	11.85	6.48	6.48	2.33	7.83
2	Chan	9989.88	9992.84	94.81	11.05	3.03	6.63	3.73	8.58
3	Chan	9992.84	9995.80	122.97	12.92	3.03	8.60	4.37	9.52
4	Chan	9995.80	9998.76	153.98	14.79	3.03	10.77	5.00	10.41
5	Chan	9998.76	10001.72	173.10	15.89	3.04	12.11	5.37	10.90
6	Chan	10001.72	10004.68	141.17	14.07	3.04	9.87	4.75	10.03
7	Chan	10004.68	10007.64	107.83	11.97	3.04	7.54	4.04	9.01
8	Chan	10007.64	10010.60	78.18	9.87	3.04	5.47	3.33	7.92
9	ROB	10010.60	10031.83	298.12	42.11	21.34	20.85	1.98	7.08
10	ROB	10031.83	10053.06	167.12	29.92	21.65	11.69	1.48	5.59

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.306

INPUT
Description: 16th Street
Station Elevation Data num= 36

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9918.734 2198.749924.104 2198.679931.964 2198.32 9938.98    21989942.104 2197.82
9942.684 2197.799943.254 2197.769949.224 2197.749952.254 2197.589958.864 2197.36
 9972.36    21969979.354 2195.15 9983.342194.3219983.344 2194.329995.374 2193.04
9995.874 2192.959998.014 2192.6410001.53 2192.77 10017.9 2193.5410025.42 2193.89
   100302194.10210031.26 2194.1610039.67 2194.5610043.35 2194.7310047.84 2194.94
 10054.5 2195.2910064.72 2195.7410066.88 2195.8510073.79 2196.1410076.38 2196.41
10079.08 2196.3810102.46 2198.0810104.77 2198.2410104.84 2198.2510104.95 2198.25
10106.84 2198.21
```

Manning's n Values num= 4

```
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9918.734     .069983.344     .059995.874     .02510079.08     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9983.34   10030             59.78   74.56   82.97              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

```
  E.G. Elev (ft)          2197.28    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.95    Wt. n-Val.                  0.060      0.028     0.025
  W.S. Elev (ft)          2196.33    Reach Len. (ft)             59.78      74.56     82.97
```

Crit W.S. (ft)	2196.33	Flow Area (sq ft)	12.11	135.98	52.11
E.G. Slope (ft/ft)	0.006155	Area (sq ft)	12.11	135.98	52.11
Q Total (cfs)	1430.00	Flow (cfs)	21.01	1143.50	265.50
Top Width (ft)	106.44	Top Width (ft)	14.21	46.66	45.57
Vel Total (ft/s)	7.14	Avg. Vel. (ft/s)	1.73	8.41	5.10
Max Chl Dpth (ft)	3.69	Hydr. Depth (ft)	0.85	2.91	1.14
Conv. Total (cfs)	18226.6	Conv. (cfs)	267.7	14574.9	3384.0
Length Wtd. (ft)	74.40	Wetted Per. (ft)	14.36	46.79	45.63
Min Ch El (ft)	2192.64	Shear (lb/sq ft)	0.32	1.12	0.44
Alpha	1.20	Stream Power (lb/ft s)	0.56	9.39	2.24
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	4.73	4.57	1.51
C & E Loss (ft)	0.02	Cum SA (acres)	3.72	1.18	1.40

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2197.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.45	Wt. n-Val.	0.060	0.028	
W.S. Elev (ft)	2196.49	Reach Len. (ft)	59.78	74.56	82.97
Crit W.S. (ft)	2196.49	Flow Area (sq ft)	11.66	143.58	
E.G. Slope (ft/ft)	0.008332	Area (sq ft)	11.66	143.58	
Q Total (cfs)	1430.00	Flow (cfs)	30.73	1399.27	
Top Width (ft)	55.00	Top Width (ft)	8.34	46.66	
Vel Total (ft/s)	9.21	Avg. Vel. (ft/s)	2.64	9.75	
Max Chl Dpth (ft)	3.85	Hydr. Depth (ft)	1.40	3.08	
Conv. Total (cfs)	15666.1	Conv. (cfs)	336.7	15329.5	
Length Wtd. (ft)	73.55	Wetted Per. (ft)	9.27	49.18	
Min Ch El (ft)	2192.64	Shear (lb/sq ft)	0.65	1.52	
Alpha	1.10	Stream Power (lb/ft s)	1.73	14.80	
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)	2.28	4.92	0.63
C & E Loss (ft)	0.01	Cum SA (acres)	0.73	1.18	0.37

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: 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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.50	9970.42	0.02	0.08	1.29	0.00	0.06	0.30
2	LOB	9970.42	9983.34	20.98	12.03	13.07	1.47	0.93	1.74
3	Chan	9983.34	9990.01	64.05	15.73	6.70	4.48	2.36	4.07
4	Chan	9990.01	9996.67	113.92	20.50	6.71	7.97	3.08	5.56
5	Chan	9996.67	10003.34	257.71	23.90	6.68	18.02	3.58	10.78
6	Chan	10003.34	10010.00	226.30	22.09	6.67	15.83	3.31	10.24
7	Chan	10010.00	10016.67	191.75	20.00	6.67	13.41	3.00	9.59
8	Chan	10016.67	10023.33	159.62	17.91	6.67	11.16	2.69	8.91
9	Chan	10023.33	10030.00	130.16	15.85	6.67	9.10	2.38	8.21
10	ROB	10030.00	10045.37	175.67	28.60	15.39	12.28	1.86	6.14
11	ROB	10045.37	10060.74	75.47	17.23	15.39	5.28	1.12	4.38
12	ROB	10060.74	10076.10	14.35	6.28	14.86	1.00	0.42	2.29

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9970.42	9983.34	30.73	11.66	9.27	2.15	1.40	2.64
2	Chan	9983.34	9990.01	81.95	16.81	6.70	5.73	2.52	4.87
3	Chan	9990.01	9996.67	141.96	21.59	6.71	9.93	3.24	6.58
4	Chan	9996.67	10003.34	317.71	24.98	6.68	22.22	3.75	12.72
5	Chan	10003.34	10010.00	280.64	23.17	6.67	19.63	3.48	12.11
6	Chan	10010.00	10016.67	239.73	21.08	6.67	16.76	3.16	11.37
7	Chan	10016.67	10023.33	201.56	19.00	6.67	14.10	2.85	10.61
8	Chan	10023.33	10030.00	135.72	16.94	9.06	9.49	2.54	8.01

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: 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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.292

INPUT
Description:
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9893.762	2197.99	9899.002	2197.84	9905.172	2197.75	9922.672	2197.68	9926.812	2197.7
9928.772	2197.41	9934.742	2196.54	9941.182	2195.61	9941.862	2195.52	9943.152	2195.4
9944.822	2195.32	9962.352	2194.55	9963.642	2194.34	9964.302	2194.29	9965.702	2193.95
9977.052	2191.88	9980.702	2192.02	9988.6	2192.23	9988.602	2192.23	9994.912	2190.85
9999.512	2189.69	10006.05	2190.78	10016.61	2192.56	10027.13	2192.98	10037.56	2193.26
10042.8	2193.41	10054.28	2194.61	10056.81	2194.88	10060.52	2195.01	10075.55	2195.43
10091.31	2195.88	10104.36	2197.54	10108.67	2198.01				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9893.762	.055	9988.602	.05	10016.61	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.6	10016.61	196.49	209.48	216.43	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2195.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.14	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2194.52	Reach Len. (ft)	196.49	209.48	216.43
Crit W.S. (ft)	2194.52	Flow Area (sq ft)	47.35	96.41	45.13
E.G. Slope (ft/ft)	0.021559	Area (sq ft)	47.35	96.41	45.13
Q Total (cfs)	1430.00	Flow (cfs)	278.04	947.13	204.83
Top Width (ft)	90.86	Top Width (ft)	26.05	28.01	36.80
Vel Total (ft/s)	7.57	Avg. Vel. (ft/s)	5.87	9.82	4.54
Max Chl Dpth (ft)	4.83	Hydr. Depth (ft)	1.82	3.44	1.23
Conv. Total (cfs)	9739.2	Conv. (cfs)	1893.6	6450.6	1395.0
Length Wtd. (ft)	208.78	Wetted Per. (ft)	26.30	28.54	36.87
Min Ch El (ft)	2189.69	Shear (lb/sq ft)	2.42	4.55	1.65
Alpha	1.28	Stream Power (lb/ft s)	14.23	44.66	7.48
Frctn Loss (ft)	3.96	Cum Volume (acre-ft)	4.69	4.37	1.41
C & E Loss (ft)	0.01	Cum SA (acres)	3.69	1.12	1.32

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2196.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.41	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2194.66	Reach Len. (ft)	196.49	209.48	216.43
Crit W.S. (ft)	2194.66	Flow Area (sq ft)	35.28	100.47	24.63
E.G. Slope (ft/ft)	0.022911	Area (sq ft)	35.28	100.47	24.63
Q Total (cfs)	1430.00	Flow (cfs)	243.90	1045.90	140.19
Top Width (ft)	55.00	Top Width (ft)	13.60	28.01	13.39
Vel Total (ft/s)	8.92	Avg. Vel. (ft/s)	6.91	10.41	5.69
Max Chl Dpth (ft)	4.97	Hydr. Depth (ft)	2.59	3.59	1.84
Conv. Total (cfs)	9447.4	Conv. (cfs)	1611.4	6909.8	926.2
Length Wtd. (ft)	208.28	Wetted Per. (ft)	16.05	28.54	15.01
Min Ch El (ft)	2189.69	Shear (lb/sq ft)	3.14	5.04	2.35
Alpha	1.14	Stream Power (lb/ft s)	21.74	52.42	13.36
Frctn Loss (ft)	3.79	Cum Volume (acre-ft)	2.25	4.71	0.61
C & E Loss (ft)	0.05	Cum SA (acres)	0.72	1.12	0.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9950.67	9969.63	12.03	4.52	7.20	0.84	0.64	2.66
2	LOB	9969.63	9988.60	266.01	42.83	19.10	18.60	2.26	6.21
3	Chan	9988.60	9992.60	89.00	10.90	4.10	6.22	2.73	8.16
4	Chan	9992.60	9996.60	142.08	14.46	4.11	9.94	3.61	9.83
5	Chan	9996.60	10000.61	207.69	18.15	4.11	14.52	4.54	11.44
6	Chan	10000.61	10004.61	192.44	17.25	4.06	13.46	4.31	11.15
7	Chan	10004.61	10008.61	145.31	14.58	4.06	10.16	3.64	9.97
8	Chan	10008.61	10012.61	103.35	11.88	4.06	7.23	2.97	8.70
9	Chan	10012.61	10016.61	67.26	9.18	4.06	4.70	2.30	7.32
10	ROB	10016.61	10035.02	153.34	29.69	18.42	10.72	1.61	5.16
11	ROB	10035.02	10053.43	51.49	15.43	18.45	3.60	0.84	3.34

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.63	9988.60	243.91	35.28	16.05	17.06	2.59	6.91
2	Chan	9988.60	9992.60	100.24	11.48	4.10	7.01	2.87	8.73
3	Chan	9992.60	9996.60	156.73	15.04	4.11	10.96	3.76	10.42
4	Chan	9996.60	10000.61	226.11	18.73	4.11	15.81	4.68	12.07
5	Chan	10000.61	10004.61	210.07	17.83	4.06	14.69	4.46	11.78
6	Chan	10004.61	10008.61	160.20	15.16	4.06	11.20	3.79	10.57
7	Chan	10008.61	10012.61	115.60	12.46	4.06	8.08	3.11	9.27
8	Chan	10012.61	10016.61	76.95	9.76	4.06	5.38	2.44	7.88
9	ROB	10016.61	10035.02	140.20	24.63	15.01	9.80	1.84	5.69

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.252

INPUT
Description:
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9892.253	2193.819	903.973	2192.979	927.093	2191.579	927.883	2191.589	928.163	2191.59
9929.403	2191.69	929.763	2191.79	930.343	2191.739	931.643	2191.739	933.493	2191.56
9935.123	2191.599	957.933	2191.279	968.693	2191.119	976.253	2189.32	9984.15	2187.477
9988.553	2186.451	0000.54	2185.3	10002.5	2185.131	0002.65	2185.091	0003.16	2185.21
10004.45	2185.491	0009.41	2186.471	0017.16	2187.951	0026.84	2188.631	0038.31	2189.41
10042.27	2189.681	0049.57	2190.581	0053.58	2191.171	0060.71	2191.231	0065.73	2191.31
10073.97	2191.461	0083.29	2191.551	0085.75	2191.581	0093.22	2191.661	0097.66	2191.66
10103.64	2191.731	0108.76	2192.07						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9892.253	.06	9984.15	.05	10017.16	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.15	10017.16	252	267.52	264	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2191.43	Element			
Vel Head (ft)	1.23	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2190.19	Reach Len. (ft)	252.00	267.52	264.00
Crit W.S. (ft)	2190.13	Flow Area (sq ft)	15.79	129.35	35.53
E.G. Slope (ft/ft)	0.016815	Area (sq ft)	15.79	129.35	35.53
Q Total (cfs)	1430.00	Flow (cfs)	61.21	1227.47	141.32
Top Width (ft)	73.87	Top Width (ft)	11.59	33.01	29.28
Vel Total (ft/s)	7.92	Avg. Vel. (ft/s)	3.88	9.49	3.98
Max Chl Dpth (ft)	5.10	Hydr. Depth (ft)	1.36	3.92	1.21
Conv. Total (cfs)	11027.9	Conv. (cfs)	472.0	9466.0	1089.8
Length Wtd. (ft)	264.83	Wetted Per. (ft)	11.90	33.48	29.37
Min Ch El (ft)	2185.09	Shear (lb/sq ft)	1.39	4.06	1.27

Alpha	1.27	Stream Power (lb/ft s)	5.40	38.49	5.05
Frctn Loss (ft)	4.37	Cum Volume (acre-ft)	4.54	3.83	1.21
C & E Loss (ft)	0.06	Cum SA (acres)	3.61	0.97	1.16

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2191.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.	0.060	0.050	
W.S. Elev (ft)	2190.70	Reach Len. (ft)	252.00	267.52	264.00
Crit W.S. (ft)		Flow Area (sq ft)	21.67	145.65	
E.G. Slope (ft/ft)	0.014814	Area (sq ft)	21.67	145.65	
Q Total (cfs)	1430.00	Flow (cfs)	94.68	1335.32	
Top Width (ft)	44.44	Top Width (ft)	11.59	32.85	
Vel Total (ft/s)	8.55	Avg. Vel. (ft/s)	4.37	9.17	
Max Chl Dpth (ft)	5.61	Hydr. Depth (ft)	1.87	4.43	
Conv. Total (cfs)	11748.9	Conv. (cfs)	777.9	10971.0	
Length Wtd. (ft)	264.88	Wetted Per. (ft)	12.41	36.09	
Min Ch El (ft)	2185.09	Shear (lb/sq ft)	1.61	3.73	
Alpha	1.09	Stream Power (lb/ft s)	7.05	34.22	
Frctn Loss (ft)	4.47	Cum Volume (acre-ft)	2.12	4.12	0.55
C & E Loss (ft)	0.02	Cum SA (acres)	0.66	0.97	0.32

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9965.77	9984.15	61.21	15.79	11.90	4.28	1.36	3.88
2	Chan	9984.15	9988.87	125.93	15.40	4.84	8.81	3.27	8.18
3	Chan	9988.87	9993.58	179.03	18.86	4.74	12.52	4.00	9.49
4	Chan	9993.58	9998.30	214.04	21.00	4.74	14.97	4.45	10.19
5	Chan	9998.30	10003.01	250.38	23.09	4.75	17.51	4.90	10.84
6	Chan	10003.01	10007.73	217.67	21.34	4.81	15.22	4.53	10.20
7	Chan	10007.73	10012.44	148.60	16.96	4.80	10.39	3.60	8.76
8	Chan	10012.44	10017.16	91.83	12.70	4.80	6.42	2.69	7.23
9	ROB	10017.16	10035.48	128.11	29.40	18.36	8.96	1.60	4.36
10	ROB	10035.48	10053.80	13.21	6.13	11.00	0.92	0.56	2.16

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9965.77	9984.15	94.68	21.67	12.41	6.62	1.87	4.37
2	Chan	9984.15	9988.87	146.30	17.79	4.84	10.23	3.77	8.22
3	Chan	9988.87	9993.58	199.52	21.25	4.74	13.95	4.51	9.39
4	Chan	9993.58	9998.30	234.00	23.39	4.74	16.36	4.96	10.01
5	Chan	9998.30	10003.01	269.51	25.48	4.75	18.85	5.40	10.58
6	Chan	10003.01	10007.73	237.31	23.74	4.81	16.59	5.03	10.00
7	Chan	10007.73	10012.44	169.09	19.35	4.80	11.82	4.10	8.74
8	Chan	10012.44	10017.16	79.59	14.65	7.42	5.57	3.22	5.43

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: C6
REACH: Reach 1 RS: 1.202

INPUT
Description:
Station Elevation Data num= 53

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9825.078	2188.93	9825.188	2188.92	9828.118	2188.67	9828.718	2188.62	9831.608	2188.58
9835.268	2188.58	9836.418	2188.58	9837.978	2188.42	9845.408	2187.66	9867.86	2185.97
9874.268	2185.49	9879.578	2185.13	9881.358	2185.24	9886.268	2185.56	9890.908	2185.84
9892.238	2185.93	9893.108	2185.99	9894.948	2186.08	9897.668	2186.14	9899.468	2186.15
9926.268	2186.37	9938.958	2186.48	9943.288	2186.56	9952.098	2186.66	9953.488	2186.67
9957.978	2186.51	9965.078	2186.24	9967.188	2186.11	9971.208	2185.11	9983.568	2182.02
9988.008	2182.24	9990.448	2182.33	9990.45	2182.33	9993.108	2181.81	9999.678	2180.39
10007.25	2182.42	10012.22	2183.76	10012.85	2183.92	10025.12	2184.07	10038.31	2184.49
10039.51	2184.53	10042.58	2184.85	10044.71	2185.04	10051.66	2185.73	10059.81	2186.35
10060.63	2186.41	10060.95	2186.44	10068.37	2187.05	10079.23	2187.81	10081.32	2187.97
10081.97	2188.02	10083.94	2188.2	10086.2	2188.44				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9825.078	.05	59845.408	.04	9967.188	.065	9990.45	.05	10007.25	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.45	10007.25	168.98	164.83	166.02	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2187.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.04	Wt. n-Val.	0.063	0.050	0.060
W.S. Elev (ft)	2185.96	Reach Len. (ft)	168.98	164.83	166.02
Crit W.S. (ft)	2185.96	Flow Area (sq ft)	67.60	76.81	74.20
E.G. Slope (ft/ft)	0.016186	Area (sq ft)	67.60	76.81	74.20
Q Total (cfs)	1430.00	Flow (cfs)	331.05	785.38	313.57
Top Width (ft)	111.76	Top Width (ft)	47.47	16.80	47.49
Vel Total (ft/s)	6.54	Avg. Vel. (ft/s)	4.90	10.23	4.23
Max Chl Dpth (ft)	5.57	Hydr. Depth (ft)	1.42	4.57	1.56
Conv. Total (cfs)	11240.0	Conv. (cfs)	2602.1	6173.2	2464.7
Length Wtd. (ft)	166.07	Wetted Per. (ft)	48.02	17.27	47.76
Min Ch El (ft)	2180.39	Shear (lb/sq ft)	1.42	4.49	1.57
Alpha	1.56	Stream Power (lb/ft s)	6.97	45.95	6.63
Frctn Loss (ft)	2.78	Cum Volume (acre-ft)	4.30	3.20	0.88
C & E Loss (ft)	0.07	Cum SA (acres)	3.44	0.82	0.92

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2187.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.42	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2186.03	Reach Len. (ft)	168.98	164.83	166.02
Crit W.S. (ft)	2186.03	Flow Area (sq ft)	58.54	77.86	36.71
E.G. Slope (ft/ft)	0.019433	Area (sq ft)	58.54	77.86	36.71
Q Total (cfs)	1430.00	Flow (cfs)	345.49	880.18	204.34
Top Width (ft)	55.22	Top Width (ft)	22.67	16.80	15.75
Vel Total (ft/s)	8.26	Avg. Vel. (ft/s)	5.90	11.31	5.57
Max Chl Dpth (ft)	5.64	Hydr. Depth (ft)	2.58	4.63	2.33
Conv. Total (cfs)	10258.1	Conv. (cfs)	2478.3	6313.9	1465.8
Length Wtd. (ft)	165.72	Wetted Per. (ft)	23.23	17.27	17.93
Min Ch El (ft)	2180.39	Shear (lb/sq ft)	3.06	5.47	2.48
Alpha	1.34	Stream Power (lb/ft s)	18.05	61.83	13.83
Frctn Loss (ft)	3.17	Cum Volume (acre-ft)	1.89	3.43	0.44
C & E Loss (ft)	0.08	Cum SA (acres)	0.56	0.82	0.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9858.15	9891.23	28.56	10.39	23.34	2.00	0.45	2.75
2	LOB	9891.23	9924.30	0.05	0.08	1.51	0.00	0.05	0.65
3	LOB	9924.30	9957.38						
4	LOB	9957.38	9990.45	302.44	57.13	23.17	21.15	2.52	5.29
5	Chan	9990.45	9992.85	84.77	9.29	2.45	5.93	3.87	9.13
6	Chan	9992.85	9995.25	103.09	10.46	2.45	7.21	4.36	9.86
7	Chan	9995.25	9997.65	124.34	11.71	2.46	8.70	4.88	10.62
8	Chan	9997.65	10000.05	146.29	12.91	2.46	10.23	5.38	11.33
9	Chan	10000.05	10002.45	135.17	12.37	2.49	9.45	5.15	10.93
10	Chan	10002.45	10004.85	108.11	10.81	2.48	7.56	4.51	10.00
11	Chan	10004.85	10007.25	83.61	9.27	2.49	5.85	3.86	9.02
12	ROB	10007.25	10023.04	176.38	35.80	15.99	12.33	2.27	4.93
13	ROB	10023.04	10038.83	110.67	26.94	15.80	7.74	1.71	4.11
14	ROB	10038.83	10054.62	26.52	11.45	15.86	1.85	0.73	2.32

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.38	9990.45	345.49	58.54	23.23	24.16	2.58	5.90
2	Chan	9990.45	9992.85	95.41	9.44	2.45	6.67	3.93	10.11
3	Chan	9992.85	9995.25	115.68	10.61	2.45	8.09	4.42	10.91
4	Chan	9995.25	9997.65	139.19	11.85	2.46	9.73	4.94	11.74
5	Chan	9997.65	10000.05	163.43	13.06	2.46	11.43	5.44	12.51

6	Chan	10000.05	10002.45	151.13	12.52	2.49	10.57	5.21	12.08
7	Chan	10002.45	10004.85	121.22	10.96	2.48	8.48	4.57	11.06
8	Chan	10004.85	10007.25	94.11	9.42	2.49	6.58	3.92	9.99
9	ROB	10007.25	10023.04	204.34	36.71	17.93	14.29	2.33	5.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.170

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9791.355	2185.59	9803.875	2185.14	9834.435	2181.91	9835.965	2181.75	9836.955	2181.65
9847.535	2180.59	851.755	2180.14	9859.725	2181.25	9863.455	2181.76	9871.655	2181.88
9891.755	2182.19	899.625	2182.51	9906.155	2182.61	9911.045	2182.74	9922.525	2183.12
9924.815	2183.25	9928.035	2183.41	9928.905	2183.46	9938.325	2183.16	9966.785	2182.24
9970.485	2182.13	9971.135	2182.01	9984.28	2180.27	9994.065	2178.99	9994.355	2178.98
9999.445	2178.52	10000.48	2178.46	10000.55	2178.42	10002.53	2178.66	10018.6	2180.56
10022.01	2180.55	10028.67	2180.58	10038.37	2183.24	10041.79	2184.18	10042.63	2184.39
10059.35	2185.73	10071.19	2186.81	10073.26	2187.11	10076.22	2187.29		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9791.355	.05	59834.435	.04	9984.28	.05	10018.6	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.28	10018.6	222.76	235.44	242.15	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2183.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.	0.040	0.050	0.060
W.S. Elev (ft)	2182.55	Reach Len. (ft)	222.76	235.44	242.15
Crit W.S. (ft)	2182.55	Flow Area (sq ft)	88.36	108.55	27.09
E.G. Slope (ft/ft)	0.017334	Area (sq ft)	88.36	108.55	27.09
Q Total (cfs)	1430.00	Flow (cfs)	400.99	910.90	118.10
Top Width (ft)	152.44	Top Width (ft)	100.87	34.32	17.25
Vel Total (ft/s)	6.38	Avg. Vel. (ft/s)	4.54	8.39	4.36
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)	0.88	3.16	1.57
Conv. Total (cfs)	10861.4	Conv. (cfs)	3045.7	6918.6	897.0
Length Wtd. (ft)	233.01	Wetted Per. (ft)	101.25	34.56	17.52
Min Ch El (ft)	2178.42	Shear (lb/sq ft)	0.94	3.40	1.67
Alpha	1.28	Stream Power (lb/ft s)	4.29	28.52	7.30
Frctn Loss (ft)	2.90	Cum Volume (acre-ft)	4.00	2.85	0.69
C & E Loss (ft)	0.04	Cum SA (acres)	3.15	0.72	0.80

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2183.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.	0.040	0.050	0.060
W.S. Elev (ft)	2182.85	Reach Len. (ft)	222.76	235.44	242.15
Crit W.S. (ft)	2182.85	Flow Area (sq ft)	26.93	118.82	32.25
E.G. Slope (ft/ft)	0.018861	Area (sq ft)	26.93	118.82	32.25
Q Total (cfs)	1430.00	Flow (cfs)	162.52	1104.58	162.89
Top Width (ft)	71.85	Top Width (ft)	20.28	34.32	17.25
Vel Total (ft/s)	8.03	Avg. Vel. (ft/s)	6.04	9.30	5.05
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	1.33	3.46	1.87
Conv. Total (cfs)	10412.5	Conv. (cfs)	1183.4	8042.9	1186.1
Length Wtd. (ft)	235.15	Wetted Per. (ft)	20.93	34.56	17.81
Min Ch El (ft)	2178.42	Shear (lb/sq ft)	1.52	4.05	2.13
Alpha	1.14	Stream Power (lb/ft s)	9.15	37.63	10.77
Frctn Loss (ft)	3.17	Cum Volume (acre-ft)	1.72	3.06	0.31
C & E Loss (ft)	0.07	Cum SA (acres)	0.48	0.72	0.21

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9791.36	9829.94	0.08	0.13	1.56	0.01	0.08	0.60
2	LOB	9829.94	9868.53	279.68	51.24	38.81	19.56	1.33	5.46
3	LOB	9868.53	9907.11	39.99	15.38	33.68	2.80	0.46	2.60
4	LOB	9907.11	9945.70						
5	LOB	9945.70	9984.28	81.25	21.61	27.20	5.68	0.80	3.76
6	Chan	9984.28	9989.18	91.67	12.71	4.94	6.41	2.59	7.21
7	Chan	9989.18	9994.09	132.83	15.88	4.95	9.29	3.24	8.36
8	Chan	9994.09	9998.99	171.33	18.47	4.92	11.98	3.77	9.28
9	Chan	9998.99	10003.89	186.21	19.44	4.94	13.02	3.97	9.58
10	Chan	10003.89	10008.79	146.87	16.86	4.94	10.27	3.44	8.71
11	Chan	10008.79	10013.70	107.98	14.02	4.94	7.55	2.86	7.70
12	Chan	10013.70	10018.60	74.00	11.17	4.94	5.17	2.28	6.62
13	ROB	10018.60	10030.12	106.79	22.59	11.58	7.47	1.96	4.73
14	ROB	10030.12	10041.65	11.31	4.50	5.94	0.79	0.79	2.52

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9945.70	9984.28	162.53	26.93	20.93	11.37	1.33	6.04
2	Chan	9984.28	9989.18	115.04	14.18	4.94	8.04	2.89	8.11
3	Chan	9989.18	9994.09	161.00	17.35	4.95	11.26	3.54	9.28
4	Chan	9994.09	9998.99	203.60	19.93	4.92	14.24	4.07	10.21
5	Chan	9998.99	10003.89	219.92	20.91	4.94	15.38	4.26	10.52
6	Chan	10003.89	10008.79	176.58	18.32	4.94	12.35	3.74	9.64
7	Chan	10008.79	10013.70	133.35	15.48	4.94	9.33	3.16	8.61
8	Chan	10013.70	10018.60	95.09	12.64	4.94	6.65	2.58	7.52
9	ROB	10018.60	10030.12	143.07	26.04	11.58	10.01	2.26	5.50
10	ROB	10030.12	10041.65	19.82	6.21	6.24	1.39	1.08	3.19

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.126

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9740.35	2180	9741.91	2179.87	9747.9	2179.24	9752.62	2179.18	9776.39	2178.76
9778.73	2178.7	9784.22	2178.55	9796	2178.25	9846.49	2176.98	9851.84	2177.07
9859.82	2177.3	9866.87	2177.57	9878.06	2177.72	9902.68	2178.16	9912.27	2178.32
9912.96	2178.3	9921.06	2178.26	9951.04	2177.89	9965.26	2177.86	99702	2177.165
9985.1	2174.95	9992.99	2173.8	9993.72	2173.71	9996.06	2173.43	10001.13	2172.8
10017.96	2176.82	10018.71	2177	10019.7	2177.09	10039.39	2179.45	10052.55	2180.22
10058.5	2180.37	10062.19	2180.5	10070.63	2180.66	10077.78	2180.81		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9740.35	.06	9741.91	.045	9912.96	.06	9951.04	.045	10019.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970	10019.7	159.53	169.92	175.44	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2179.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.	0.046	0.045	0.060
W.S. Elev (ft)	2178.34	Reach Len. (ft)	159.53	169.92	175.44
Crit W.S. (ft)	2178.34	Flow Area (sq ft)	96.94	168.51	6.52
E.G. Slope (ft/ft)	0.009363	Area (sq ft)	96.94	168.51	6.52
Q Total (cfs)	1430.00	Flow (cfs)	216.49	1202.15	11.36
Top Width (ft)	237.66	Top Width (ft)	177.53	49.70	10.43

Vel Total (ft/s)	5.26	Avg. Vel. (ft/s)	2.23	7.13	1.74
Max Chl Dpth (ft)	5.54	Hydr. Depth (ft)	0.55	3.39	0.62
Conv. Total (cfs)	14778.4	Conv. (cfs)	2237.3	12423.7	117.4
Length Wtd. (ft)	167.91	Wetted Per. (ft)	177.61	50.51	10.50
Min Ch El (ft)	2172.80	Shear (lb/sq ft)	0.32	1.95	0.36
Alpha	1.58	Stream Power (lb/ft s)	0.71	13.91	0.63
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	3.53	2.10	0.59
C & E Loss (ft)	0.01	Cum SA (acres)	2.44	0.50	0.72

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2179.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.		0.045	0.060
W.S. Elev (ft)	2178.63	Reach Len. (ft)	159.53	169.92	175.44
Crit W.S. (ft)		Flow Area (sq ft)		183.14	9.59
E.G. Slope (ft/ft)	0.010109	Area (sq ft)		183.14	9.59
Q Total (cfs)	1430.00	Flow (cfs)		1407.95	22.05
Top Width (ft)	60.13	Top Width (ft)		49.70	10.43
Vel Total (ft/s)	7.42	Avg. Vel. (ft/s)		7.69	2.30
Max Chl Dpth (ft)	5.83	Hydr. Depth (ft)		3.68	0.92
Conv. Total (cfs)	14222.4	Conv. (cfs)		14003.1	219.3
Length Wtd. (ft)	170.07	Wetted Per. (ft)		51.97	10.80
Min Ch El (ft)	2172.80	Shear (lb/sq ft)		2.22	0.56
Alpha	1.06	Stream Power (lb/ft s)		17.10	1.29
Frctn Loss (ft)	2.36	Cum Volume (acre-ft)	1.65	2.25	0.19
C & E Loss (ft)	0.10	Cum SA (acres)	0.43	0.50	0.13

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9786.28	9832.21	36.04	19.90	39.75	2.52	0.50	1.81
2	LOB	9832.21	9878.14	138.52	47.31	45.94	9.69	1.03	2.93
3	LOB	9878.14	9924.07	14.44	11.55	45.94	1.01	0.25	1.25
4	LOB	9924.07	9970.00	27.50	18.18	45.98	1.92	0.40	1.51
5	Chan	9970.00	9977.10	50.59	12.04	7.18	3.54	1.70	4.20
6	Chan	9977.10	9984.20	112.39	19.44	7.18	7.86	2.74	5.78
7	Chan	9984.20	9991.30	192.14	26.81	7.17	13.44	3.78	7.17
8	Chan	9991.30	9998.40	283.20	33.80	7.16	19.80	4.76	8.38
9	Chan	9998.40	10005.50	320.57	36.59	7.24	22.42	5.15	8.76
10	Chan	10005.50	10012.60	179.34	25.90	7.30	12.54	3.65	6.92
11	Chan	10012.60	10019.70	63.92	13.93	7.28	4.47	1.96	4.59
12	ROB	10019.70	10031.32	11.36	6.52	10.50	0.79	0.62	1.74

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9970.00	9977.10	60.45	14.13	8.64	4.23	1.99	4.28
2	Chan	9977.10	9984.20	138.07	21.53	7.18	9.66	3.03	6.41
3	Chan	9984.20	9991.30	225.62	28.90	7.17	15.78	4.07	7.81
4	Chan	9991.30	9998.40	324.31	35.90	7.16	22.68	5.06	9.03
5	Chan	9998.40	10005.50	364.39	38.68	7.24	25.48	5.45	9.42
6	Chan	10005.50	10012.60	211.49	27.99	7.30	14.79	3.94	7.56
7	Chan	10012.60	10019.70	83.62	16.02	7.28	5.85	2.26	5.22
8	ROB	10019.70	10031.32	22.05	9.59	10.80	1.54	0.92	2.30

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: C6
REACH: Reach 1 RS: 1.094

```
INPUT
Description:
Station Elevation Data     num=      51
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
9813.533  2176.19841.303 2175.549848.853 2175.339851.853 2175.259861.883 2175.04
9872.163 2174.949872.283 2174.949872.443 2174.919875.403 2174.579877.703 2174.41
9883.263    21749891.523 2173.429892.363 2173.599900.383 2175.089903.793 2175.72
9904.093 2175.779913.683 2174.819917.423 2174.259918.553  2174.39926.143 2174.85
9931.663 2174.739946.723 2174.399952.843 2174.269966.073 2173.959969.813 2173.95
9970.033 2173.959970.683 2173.959970.853 2173.959973.533 2173.939973.823 2173.93
9973.993 2173.959977.413 2173.34 9985.222171.656  9986.22171.4449992.243 2170.14
9998.533 2168.8910000.89  2168.410009.56 2171.7810015.15 2173.9610016.47 2174.54
10026.72 2175.0610036.94 2175.3510060.93 2176.01 10067.8  2176.210070.01 2176.25
10078.93 2176.3210089.42 2176.4610127.74  2176.610129.27 2176.57   10133  2176.6
10139.04 2176.72

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9813.533     .045  9986.2     .0510009.56     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9986.210009.56            211.58     190  178.51              .1       .3
Blocked Obstructions      num=        1
   Sta L   Sta R    Elev
10075.0310125.77    2180
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2176.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.	0.045	0.050	0.060
W.S. Elev (ft)	2175.24	Reach Len. (ft)	211.58	190.00	178.51
Crit W.S. (ft)	2175.24	Flow Area (sq ft)	118.21	123.16	19.72
E.G. Slope (ft/ft)	0.009035	Area (sq ft)	118.21	123.16	19.72
Q Total (cfs)	1430.00	Flow (cfs)	363.13	1026.35	40.52
Top Width (ft)	172.91	Top Width (ft)	125.93	23.36	23.62
Vel Total (ft/s)	5.48	Avg. Vel. (ft/s)	3.07	8.33	2.06
Max Chl Dpth (ft)	6.84	Hydr. Depth (ft)	0.94	5.27	0.83
Conv. Total (cfs)	15044.0	Conv. (cfs)	3820.2	10797.5	426.3
Length Wtd. (ft)	195.65	Wetted Per. (ft)	126.52	24.31	24.17
Min Ch El (ft)	2168.40	Shear (lb/sq ft)	0.53	2.86	0.46
Alpha	1.75	Stream Power (lb/ft s)	1.62	23.82	0.95
Frctn Loss (ft)	2.14	Cum Volume (acre-ft)	3.13	1.53	0.54
C & E Loss (ft)	0.05	Cum SA (acres)	1.88	0.35	0.66

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2177.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.89	Wt. n-Val.		0.050	0.060
W.S. Elev (ft)	2175.20	Reach Len. (ft)	211.58	190.00	178.51
Crit W.S. (ft)	2174.60	Flow Area (sq ft)		122.12	18.70
E.G. Slope (ft/ft)	0.020120	Area (sq ft)		122.12	18.70
Q Total (cfs)	1430.00	Flow (cfs)		1372.11	57.89
Top Width (ft)	45.41	Top Width (ft)		23.36	22.05
Vel Total (ft/s)	10.16	Avg. Vel. (ft/s)		11.24	3.10
Max Chl Dpth (ft)	6.80	Hydr. Depth (ft)		5.23	0.85
Conv. Total (cfs)	10081.4	Conv. (cfs)		9673.3	408.1
Length Wtd. (ft)	192.30	Wetted Per. (ft)		28.06	22.59
Min Ch El (ft)	2168.40	Shear (lb/sq ft)		5.47	1.04
Alpha	1.18	Stream Power (lb/ft s)		61.42	3.22
Frctn Loss (ft)	4.01	Cum Volume (acre-ft)	1.65	1.65	0.13
C & E Loss (ft)	0.17	Cum SA (acres)	0.43	0.35	0.07

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9848.07	9882.60	17.83	11.87	30.48	1.25	0.39	1.50
2	LOB	9882.60	9917.13	70.21	25.62	26.69	4.91	0.97	2.74
3	LOB	9917.13	9951.67	51.99	23.72	34.56	3.64	0.69	2.19
4	LOB	9951.67	9986.20	223.10	57.00	34.79	15.60	1.65	3.91
5	Chan	9986.20	9989.54	98.29	13.88	3.41	6.87	4.16	7.08
6	Chan	9989.54	9992.87	128.28	16.28	3.41	8.97	4.88	7.88
7	Chan	9992.87	9996.21	159.83	18.56	3.40	11.18	5.56	8.61
8	Chan	9996.21	9999.55	192.90	20.78	3.41	13.49	6.23	9.28
9	Chan	9999.55	10002.89	205.83	21.87	3.51	14.39	6.55	9.41
10	Chan	10002.89	10006.22	147.76	18.07	3.58	10.33	5.41	8.18
11	Chan	10006.22	10009.56	93.47	13.73	3.58	6.54	4.11	6.81
12	ROB	10009.56	10035.46	40.52	19.72	24.17	2.83	0.83	2.06

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9986.20	9989.54	82.89	13.73	7.17	5.80	4.11	6.04
2	Chan	9989.54	9992.87	177.87	16.13	3.41	12.44	4.83	11.03
3	Chan	9992.87	9996.21	222.03	18.41	3.40	15.53	5.52	12.06
4	Chan	9996.21	9999.55	268.37	20.63	3.41	18.77	6.18	13.01
5	Chan	9999.55	10002.89	286.53	21.72	3.51	20.04	6.51	13.19
6	Chan	10002.89	10006.22	205.19	17.92	3.58	14.35	5.37	11.45
7	Chan	10006.22	10009.56	129.23	13.58	3.58	9.04	4.07	9.52
8	ROB	10009.56	10035.46	57.89	18.70	22.59	4.05	0.85	3.10

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: C6
REACH: Reach 1 RS: 1.058

INPUT
Description:
Station Elevation Data num= 78

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9782.422	2174	9783.172	2173.98	9792.292	2173.71	9792.602	2173.79	801.832	2173.46
9805.032	2173.37	9805.062	2173.37	9815.172	2173.09	9815.292	2173.09	9826.552	2172.43
9826.762	2172.43	9827.032	2172.42	9836.722	2172.14	9836.822	2172.13	9836.902	2172.13
9849.162	2171.69	9849.272	2171.69	9858.962	2171.09	9859.002	2171.08	9869.212	2170.75
9869.302	2170.75	9869.352	2170.75	9879.552	2170.69	9879.742	2170.69	9879.852	2170.69
9891.742	2170.59	9892.212	2170.58	9893.422	2170.52	9898.682	2170.48	9904.112	2170.44
9908.412	2170.24	9909.072	2170.25	9922.102	2170.03	9926.632	2169.91	9928.082	2169.91
9928.662	2169.91	9931.552	2170.06	9937.162	2170.08	9943.322	2170.05	9949.922	2170.17
9958.022	2170.17	9958.672	2170.2	9967.652	2169.93	9976.672	2169.56	9986.352	2168.78
9987.03	2168.78	9987.032	2168.78	9987.292	2168.81	9990.102	2168.1	9997.492	2166.2
10002.62	2167.21	10008.29	2168.28	10009	2168.37	10010.17	2168.44	10015	2168.93
10016.9	2169.13	10021.91	2169.51	10028.55	2169.88	10033.8	2170.24	10038.36	2170.44
10051.03	2171.02	10057.2	2171.25	10058.24	2171.29	10067.22	2171.74	10068.39	2171.77
10076.58	2171.94	10078.74	2171.97	10084.4	2171.97	10086.93	2171.97	10089.23	2171.98
10094.22	2171.63	10098.55	2171.61	10100.73	2171.55	10119.01	2171.98	10121.66	2171.94
10123.09	2171.95	10125.11	2171.99	10128.22	2172.01				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9782.422	.055	9987.03	.05	10015	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.03	10015	31.65	30.85	30.43	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2171.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2171.32	Reach Len. (ft)	31.65	30.85	30.43
Crit W.S. (ft)	2171.32	Flow Area (sq ft)	143.69	101.81	45.07
E.G. Slope (ft/ft)	0.013494	Area (sq ft)	143.69	101.81	45.07
Q Total (cfs)	1430.00	Flow (cfs)	477.43	820.76	131.81
Top Width (ft)	203.72	Top Width (ft)	131.84	27.97	43.91
Vel Total (ft/s)	4.92	Avg. Vel. (ft/s)	3.32	8.06	2.92
Max Chl Dpth (ft)	5.12	Hydr. Depth (ft)	1.09	3.64	1.03
Conv. Total (cfs)	12310.2	Conv. (cfs)	4110.0	7065.6	1134.7
Length Wtd. (ft)	31.02	Wetted Per. (ft)	131.91	28.53	43.98
Min Ch El (ft)	2166.20	Shear (lb/sq ft)	0.92	3.01	0.86
Alpha	1.72	Stream Power (lb/ft s)	3.05	24.23	2.52
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	2.50	1.04	0.41
C & E Loss (ft)	0.01	Cum SA (acres)	1.26	0.24	0.52

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2172.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.33	Wt. n-Val.	0.055	0.050	

W.S. Elev (ft)	2171.57	Reach Len. (ft)	31.65	30.85	30.43
Crit W.S. (ft)	2171.57	Flow Area (sq ft)	56.15	108.83	
E.G. Slope (ft/ft)	0.021630	Area (sq ft)	56.15	108.83	
Q Total (cfs)	1430.00	Flow (cfs)	335.34	1094.67	
Top Width (ft)	57.00	Top Width (ft)	29.03	27.97	
Vel Total (ft/s)	8.67	Avg. Vel. (ft/s)	5.97	10.06	
Max Chl Dpth (ft)	5.37	Hydr. Depth (ft)	1.93	3.89	
Conv. Total (cfs)	9723.1	Conv. (cfs)	2280.1	7443.0	
Length Wtd. (ft)	30.94	Wetted Per. (ft)	30.48	31.17	
Min Ch El (ft)	2166.20	Shear (lb/sq ft)	2.49	4.71	
Alpha	1.14	Stream Power (lb/ft s)	14.86	47.42	
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	1.51	1.15	0.09
C & E Loss (ft)	0.02	Cum SA (acres)	0.36	0.24	0.02

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9823.34	9864.27	2.44	2.18	9.09	0.17	0.24	1.12
2	LOB	9864.27	9905.19	64.17	28.27	40.93	4.49	0.69	2.27
3	LOB	9905.19	9946.11	168.80	50.52	40.93	11.80	1.23	3.34
4	LOB	9946.11	9987.03	242.01	62.73	40.97	16.92	1.53	3.86
5	Chan	9987.03	9991.03	80.40	11.81	4.12	5.62	2.96	6.81
6	Chan	9991.03	9995.02	131.48	15.88	4.13	9.19	3.97	8.28
7	Chan	9995.02	9999.02	185.09	19.46	4.11	12.94	4.87	9.51
8	Chan	9999.02	10003.01	158.89	17.70	4.07	11.11	4.43	8.98
9	Chan	10003.01	10007.01	115.85	14.64	4.07	8.10	3.66	7.92
10	Chan	10007.01	10011.00	83.34	11.97	4.03	5.83	3.00	6.96
11	Chan	10011.00	10015.00	65.71	10.36	4.02	4.59	2.59	6.34
12	ROB	10015.00	10037.64	118.44	35.68	22.69	8.28	1.58	3.32
13	ROB	10037.64	10060.29	13.37	9.39	21.28	0.93	0.44	1.42

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9946.11	9987.03	335.34	56.15	30.48	23.45	1.93	5.97
2	Chan	9987.03	9991.03	112.95	12.81	4.12	7.90	3.21	8.81
3	Chan	9991.03	9995.02	178.57	16.88	4.13	12.49	4.23	10.58
4	Chan	9995.02	9999.02	246.84	20.46	4.11	17.26	5.12	12.06
5	Chan	9999.02	10003.01	213.62	18.70	4.07	14.94	4.68	11.42
6	Chan	10003.01	10007.01	158.68	15.64	4.07	11.10	3.91	10.15
7	Chan	10007.01	10011.00	116.87	12.97	4.03	8.17	3.25	9.01
8	Chan	10011.00	10015.00	67.13	11.36	6.66	4.69	2.84	5.91

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 1.052

INPUT
Description: 14th Street
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9776.696	21729779.406	2171.939786.786	2171.719797.676	2171.439804.856	2171.22				
9815.936	2170.949822.906	2170.739834.156	2170.459843.106	2170.259854.506	2169.96				

```
9861.396  2169.89872.966 2169.519879.646 2169.369891.386 2169.079897.846 2168.92
9909.756 2168.629923.436 2168.229928.056 2168.129929.526 2168.099934.526 2167.95
9948.286 2167.55 9948.29 2167.559953.126 2167.42 9953.13 2167.42    99582167.274
9967.116    21679971.786 2166.889986.006 2166.469990.506 2166.3410005.93 2166.74
10009.08 2166.9410012.21 2167.13   100152167.28110024.42 2167.7910027.54 2167.98
10038.37 2168.5710039.76 2168.6410042.88 2168.8410045.93 2168.9110058.21 2169.58
10061.25 2169.6510073.57 2170.3210077.65 2170.4210090.63 2170.3410094.45 2170.44
10107.76 2170.3510116.21 2170.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9776.696    .025    9958    .025   10015    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9958   10015            170.22  159.42  153.69              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2169.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2169.15	Reach Len. (ft)	170.22	159.42	153.69
Crit W.S. (ft)	2169.15	Flow Area (sq ft)	63.15	135.64	31.88
E.G. Slope (ft/ft)	0.005297	Area (sq ft)	63.15	135.64	31.88
Q Total (cfs)	1430.00	Flow (cfs)	255.81	1045.36	128.83
Top Width (ft)	161.92	Top Width (ft)	69.67	57.00	35.25
Vel Total (ft/s)	6.20	Avg. Vel. (ft/s)	4.05	7.71	4.04
Max Chl Dpth (ft)	2.81	Hydr. Depth (ft)	0.91	2.38	0.90
Conv. Total (cfs)	19648.2	Conv. (cfs)	3514.9	14363.2	1770.1
Length Wtd. (ft)	162.18	Wetted Per. (ft)	69.69	57.03	35.30
Min Ch El (ft)	2166.34	Shear (lb/sq ft)	0.30	0.79	0.30
Alpha	1.24	Stream Power (lb/ft s)	1.21	6.06	1.21
Frctn Loss (ft)	1.25	Cum Volume (acre-ft)	2.42	0.95	0.38
C & E Loss (ft)	0.07	Cum SA (acres)	1.18	0.21	0.49

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2170.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.25	Wt. n-Val.		0.025	
W.S. Elev (ft)	2169.56	Reach Len. (ft)	170.22	159.42	153.69
Crit W.S. (ft)	2169.45	Flow Area (sq ft)		159.24	
E.G. Slope (ft/ft)	0.006434	Area (sq ft)		159.24	
Q Total (cfs)	1430.00	Flow (cfs)		1430.00	
Top Width (ft)	57.00	Top Width (ft)		57.00	
Vel Total (ft/s)	8.98	Avg. Vel. (ft/s)		8.98	
Max Chl Dpth (ft)	3.22	Hydr. Depth (ft)		2.79	
Conv. Total (cfs)	17827.0	Conv. (cfs)		17827.0	
Length Wtd. (ft)	161.74	Wetted Per. (ft)		61.60	
Min Ch El (ft)	2166.34	Shear (lb/sq ft)		1.04	
Alpha	1.00	Stream Power (lb/ft s)		9.33	
Frctn Loss (ft)	1.64	Cum Volume (acre-ft)	1.49	1.05	0.09
C & E Loss (ft)	0.03	Cum SA (acres)	0.35	0.21	0.02

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9885.48	9921.74	29.30	13.96	33.42	2.05	0.42	2.10
2	LOB	9921.74	9958.00	226.52	49.20	36.27	15.84	1.36	4.60
3	Chan	9958.00	9966.14	110.49	16.24	8.15	7.73	1.99	6.81
4	Chan	9966.14	9974.29	132.81	18.13	8.15	9.29	2.23	7.33
5	Chan	9974.29	9982.43	156.77	20.03	8.15	10.96	2.46	7.83
6	Chan	9982.43	9990.57	182.74	21.96	8.15	12.78	2.70	8.32
7	Chan	9990.57	9998.71	182.94	21.97	8.15	12.79	2.70	8.33
8	Chan	9998.71	10006.86	159.49	20.24	8.15	11.15	2.49	7.88
9	Chan	10006.86	10015.00	120.11	17.08	8.16	8.40	2.10	7.03
10	ROB	10015.00	10035.24	118.54	26.46	20.27	8.29	1.31	4.48
11	ROB	10035.24	10055.48	10.29	5.42	15.02	0.72	0.36	1.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9958.00	9966.14	139.47	19.61	10.43	9.75	2.41	7.11
2	Chan	9966.14	9974.29	191.81	21.50	8.15	13.41	2.64	8.92
3	Chan	9974.29	9982.43	220.83	23.40	8.15	15.44	2.87	9.44
4	Chan	9982.43	9990.57	251.99	25.33	8.15	17.62	3.11	9.95
5	Chan	9990.57	9998.71	252.23	25.34	8.15	17.64	3.11	9.95
6	Chan	9998.71	10006.86	224.11	23.61	8.15	15.67	2.90	9.49
7	Chan	10006.86	10015.00	149.56	20.45	10.44	10.46	2.51	7.31

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: C6
REACH: Reach 1 RS: 1.022

INPUT
Description:
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9816.314	2169.959	818.174	2169.929	822.124	2169.679	825.034	2169.589	845.534	2168.01
9848.794	2167.849	865.194	2166.269	871.224	2166.539	876.034	2166.549	889.914	2166.78
9907.864	2166.819	916.014	2166.819	927.654	2166.789	930.484	2166.779	933.224	2166.79
9947.944	2166.449	961.134	2165.879	961.944	2165.849	965.924	2165.689	986.864	2165.84
9987.694	2165.869	987.734	2165.849	988.334	2165.66	9990.192	2165.088	9998.204	2162.62
10006.07	2164.361	0009.212	2165.09	210014.13	2166.241	0029.19	2167.211	0034.27	2167.52
10038.25	2167.471	0044.18	2167.391	0049.75	2167.321	0054.39	2167.231	0057.52	2167.15
10060.82	2167.28	10063	2167.281	0065.93	2167.281	0071.01	2167.191	0072.48	2167.17
10074.17	2167.151	0084.65	2167.041	0092.47	2166.921	0100.39	2166.91	0100.62	2166.9
10100.88	2166.91	0101.16	2166.911	0116.69	2167.141	0126.14	2167.841	0127.15	2167.88
10128.54	2168.01								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9816.314	.05	9990.19	.05	10009.21	.06	10038.25	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.19	10009.21	218.44	169.43	143.28	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
9816.31	9845.47	4 2172

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2168.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.050	0.050	0.047
W.S. Elev (ft)	2167.71	Reach Len. (ft)	218.44	169.43	143.28
Crit W.S. (ft)	2167.71	Flow Area (sq ft)	172.35	73.44	74.54
E.G. Slope (ft/ft)	0.012191	Area (sq ft)	172.35	73.44	74.54
Q Total (cfs)	1430.00	Flow (cfs)	648.82	580.06	201.12
Top Width (ft)	274.21	Top Width (ft)	140.03	19.02	115.16
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)	3.76	7.90	2.70
Max Chl Dpth (ft)	5.09	Hydr. Depth (ft)	1.23	3.86	0.65
Conv. Total (cfs)	12951.2	Conv. (cfs)	5876.2	5253.4	1821.5
Length Wtd. (ft)	195.76	Wetted Per. (ft)	140.25	19.67	115.36
Min Ch El (ft)	2162.62	Shear (lb/sq ft)	0.94	2.84	0.49
Alpha	1.64	Stream Power (lb/ft s)	3.52	22.45	1.33
Frctn Loss (ft)	2.95	Cum Volume (acre-ft)	1.96	0.57	0.19
C & E Loss (ft)	0.01	Cum SA (acres)	0.77	0.07	0.22

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2169.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.050	0.050	0.060
W.S. Elev (ft)	2167.99	Reach Len. (ft)	218.44	169.43	143.28
Crit W.S. (ft)	2167.99	Flow Area (sq ft)	98.14	78.70	3.85
E.G. Slope (ft/ft)	0.018280	Area (sq ft)	98.14	78.70	3.85
Q Total (cfs)	1430.00	Flow (cfs)	620.36	797.11	12.53
Top Width (ft)	68.62	Top Width (ft)	48.19	19.02	1.41
Vel Total (ft/s)	7.91	Avg. Vel. (ft/s)	6.32	10.13	3.26
Max Chl Dpth (ft)	5.37	Hydr. Depth (ft)	2.04	4.14	2.73
Conv. Total (cfs)	10576.6	Conv. (cfs)	4588.3	5895.5	92.7
Length Wtd. (ft)	192.96	Wetted Per. (ft)	49.73	19.67	4.01
Min Ch El (ft)	2162.62	Shear (lb/sq ft)	2.25	4.57	1.09
Alpha	1.19	Stream Power (lb/ft s)	14.24	46.26	3.56
Frctn Loss (ft)	4.08	Cum Volume (acre-ft)	1.30	0.62	0.09
C & E Loss (ft)	0.03	Cum SA (acres)	0.25	0.07	0.02

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9816.31	9851.09	0.02	0.04	0.94	0.00	0.04	0.39
2	LOB	9851.09	9885.87	108.95	35.07	34.85	7.62	1.01	3.11
3	LOB	9885.87	9920.64	92.73	31.81	34.78	6.48	0.91	2.92
4	LOB	9920.64	9955.42	127.00	38.42	34.79	8.88	1.10	3.31
5	LOB	9955.42	9990.19	320.12	67.00	34.90	22.39	1.93	4.78
6	Chan	9990.19	9992.91	54.21	8.26	2.84	3.79	3.04	6.57
7	Chan	9992.91	9995.63	81.33	10.53	2.84	5.69	3.88	7.72
8	Chan	9995.63	9998.34	112.62	12.80	2.84	7.88	4.71	8.80
9	Chan	9998.34	10001.06	116.06	12.93	2.78	8.12	4.76	8.98
10	Chan	10001.06	10003.78	92.67	11.29	2.78	6.48	4.16	8.21
11	Chan	10003.78	10006.49	71.42	9.66	2.78	4.99	3.56	7.39
12	Chan	10006.49	10009.21	51.75	7.97	2.79	3.62	2.93	6.49
13	ROB	10009.21	10033.08	72.93	26.34	24.04	5.10	1.10	2.77
14	ROB	10033.08	10056.94	15.06	8.06	23.87	1.05	0.34	1.87
15	ROB	10056.94	10080.81	30.43	12.19	23.87	2.13	0.51	2.50
16	ROB	10080.81	10104.67	57.48	17.85	23.87	4.02	0.75	3.22
17	ROB	10104.67	10128.54	25.21	10.09	19.72	1.76	0.51	2.50

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9920.64	9955.42	108.98	21.52	14.83	7.62	1.60	5.06
2	LOB	9955.42	9990.19	511.38	76.62	34.90	35.76	2.20	6.67
3	Chan	9990.19	9992.91	76.92	9.01	2.84	5.38	3.32	8.54
4	Chan	9992.91	9995.63	111.97	11.29	2.84	7.83	4.15	9.92
5	Chan	9995.63	9998.34	152.00	13.55	2.84	10.63	4.99	11.22
6	Chan	9998.34	10001.06	156.50	13.68	2.78	10.94	5.03	11.44
7	Chan	10001.06	10003.78	126.62	12.04	2.78	8.85	4.43	10.51
8	Chan	10003.78	10006.49	99.31	10.41	2.78	6.94	3.83	9.54
9	Chan	10006.49	10009.21	73.79	8.72	2.79	5.16	3.21	8.46
10	ROB	10009.21	10033.08	12.53	3.85	4.01	0.88	2.73	3.26

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 1 RS: 0.990

INPUT
Description: Confluence with X3
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9804.932	2164.02	9817.212	2163.61	9824.112	2163.19	9836.412	2162.51	9837.722	2162.55
9842.022	2162.66	9872.812	2162.54	9906.192	2162.69	9913.242	2162.72	9920.582	2162.91
9927.12	2161.49	9933.442	2160.12	9936.272	2159.47	9949.242	2160.98	9951.222	2161.19
9954.592	2161.47	9955.892	2161.58	9986.802	2161.95	9990.672	2162.07	9992.282	2161.541
9992.282	2161.54	9999.322	2159.21	10010.02	2161.58	10013.7	2162.41	10014.63	2162.6
10015	2162.62	10016.09	2162.66	10019.42	2162.77	10032.91	2163.25	10034.56	2163.31
10043.65	2163.68	10057.79	2164.34	10058.8	2164.41	10059.99	2164.47	10066.11	2164.55
10069.8	2164.76	10077.99	2165.15	10082.11	2165.44	10085.15	2165.73	10088.36	2166

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9804.932	.045	9927.12	.05	9954.592	.055	9992.282	.05	10010.02	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.28	10010.02	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2163.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.050	0.050	0.050
W.S. Elev (ft)	2163.19	Reach Len. (ft)	230.93	230.93	230.93
Crit W.S. (ft)	2163.19	Flow Area (sq ft)	184.51	49.74	9.97
E.G. Slope (ft/ft)	0.019149	Area (sq ft)	184.51	49.74	9.97
Q Total (cfs)	1430.00	Flow (cfs)	1008.01	397.33	24.66
Top Width (ft)	207.21	Top Width (ft)	168.20	17.74	21.26
Vel Total (ft/s)	5.86	Avg. Vel. (ft/s)	5.46	7.99	2.47
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)	1.10	2.80	0.47
Conv. Total (cfs)	10334.0	Conv. (cfs)	7284.4	2871.3	178.2
Length Wtd. (ft)	230.93	Wetted Per. (ft)	168.80	18.38	21.39
Min Ch El (ft)	2159.21	Shear (lb/sq ft)	1.31	3.24	0.56
Alpha	1.13	Stream Power (lb/ft s)	7.14	25.85	1.38
Frctn Loss (ft)	3.74	Cum Volume (acre-ft)	1.07	0.33	0.05
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 selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2164.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.07	Wt. n-Val.	0.053	0.050	0.050
W.S. Elev (ft)	2163.64	Reach Len. (ft)	230.93	230.93	230.93
Crit W.S. (ft)	2163.64	Flow Area (sq ft)	112.19	57.62	12.13
E.G. Slope (ft/ft)	0.024752	Area (sq ft)	112.19	57.62	12.13
Q Total (cfs)	1430.00	Flow (cfs)	792.13	577.09	60.78
Top Width (ft)	80.00	Top Width (ft)	52.29	17.74	9.97
Vel Total (ft/s)	7.86	Avg. Vel. (ft/s)	7.06	10.02	5.01
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	2.15	3.25	1.22
Conv. Total (cfs)	9089.3	Conv. (cfs)	5034.9	3668.1	386.4
Length Wtd. (ft)	230.93	Wetted Per. (ft)	56.20	18.38	10.93
Min Ch El (ft)	2159.21	Shear (lb/sq ft)	3.08	4.85	1.71
Alpha	1.12	Stream Power (lb/ft s)	21.78	48.53	8.59
Frctn Loss (ft)	4.42	Cum Volume (acre-ft)	0.77	0.35	0.06
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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9804.93	9842.40	20.11	7.80	18.35	1.41	0.43	2.58
2	LOB	9842.40	9879.87	73.11	22.52	37.47	5.11	0.60	3.25
3	LOB	9879.87	9917.34	59.61	19.93	37.47	4.17	0.53	2.99
4	LOB	9917.34	9954.81	608.80	81.55	37.95	42.57	2.18	7.47
5	LOB	9954.81	9992.28	246.37	52.71	37.56	17.23	1.41	4.67
6	Chan	9992.28	9994.81	32.88	5.25	2.67	2.30	2.07	6.26
7	Chan	9994.81	9997.35	57.95	7.37	2.67	4.05	2.91	7.86
8	Chan	9997.35	9999.88	87.40	9.41	2.65	6.11	3.71	9.29
9	Chan	9999.88	10002.42	83.29	9.06	2.60	5.82	3.58	9.19
10	Chan	10002.42	10004.95	62.63	7.64	2.60	4.38	3.01	8.20
11	Chan	10004.95	10007.49	44.40	6.21	2.60	3.11	2.45	7.14
12	Chan	10007.49	10010.02	28.77	4.79	2.60	2.01	1.89	6.01
13	ROB	10010.02	10025.69	24.23	9.42	15.79	1.69	0.60	2.57
14	ROB	10025.69	10041.36	0.43	0.56	5.60	0.03	0.10	0.78

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9917.34	9954.81	348.62	42.85	18.64	24.38	2.89	8.14
2	LOB	9954.81	9992.28	443.50	69.34	37.56	31.01	1.85	6.40
3	Chan	9992.28	9994.81	52.05	6.37	2.67	3.64	2.51	8.17
4	Chan	9994.81	9997.35	84.10	8.50	2.67	5.88	3.35	9.90

5	Chan	9997.35	9999.88	120.84	10.54	2.65	8.45	4.16	11.47
6	Chan	9999.88	10002.42	115.94	10.19	2.60	8.11	4.02	11.38
7	Chan	10002.42	10004.95	90.20	8.76	2.60	6.31	3.46	10.29
8	Chan	10004.95	10007.49	67.11	7.34	2.60	4.69	2.90	9.14
9	Chan	10007.49	10010.02	46.84	5.92	2.60	3.28	2.33	7.92
10	ROB	10010.02	10025.69	60.78	12.13	10.93	4.25	1.22	5.01

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.946

INPUT
Description: Junction 3
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9812.493	2160.01	9812.823	2160.01	9822.273	2159.65	9822.473	2159.64	9822.543	2159.64
9838.803	2159.06	9839.233	2159.04	9844.393	2158.87	9855.723	2158.22	9856.953	2158.17
9857.663	2158.19	9872.453	2158.62	9886.043	2158.79	9889.123	2158.62	9893.513	2158.41
9896.193	2158.16	9908.08	2156.89	9916.403	2155.85	9923.153	2156.03	9923.643	2156.04
9924.993	2156.08	9928.643	2156.33	9938.293	2157.03	9968.383	2156.98	9970.013	2156.97
9970.413	2156.98	9970.833	2156.98	9973.173	2156.98	9987.563	2156.99	9990.242	2156.261
9990.243	2156.26	10000.18	2153.26	10001.4	2153.73	10008.452	2156.45	10010.75	2157.34
10014.51	2158.11	10018.62	2158.98	10030.56	2160.51	10037.28	2161.32		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9812.493	.045	9908.08	.05	9938.293	.055	9990.24	.04	10008.45	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.24	10008.45	183.08	191.75	192.76	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2159.76	Element			
Vel Head (ft)	0.84	Wt. n-Val.	0.052	0.045	0.055
W.S. Elev (ft)	2158.92	Reach Len. (ft)	183.08	191.75	192.76
Crit W.S. (ft)	2158.92	Flow Area (sq ft)	217.97	75.00	10.72
E.G. Slope (ft/ft)	0.014446	Area (sq ft)	217.97	75.00	10.72
Q Total (cfs)	1920.00	Flow (cfs)	1146.97	737.11	35.92
Top Width (ft)	175.54	Top Width (ft)	147.43	18.21	9.90
Vel Total (ft/s)	6.32	Avg. Vel. (ft/s)	5.26	9.83	3.35
Max Chl Dpth (ft)	5.66	Hydr. Depth (ft)	1.48	4.12	1.08
Conv. Total (cfs)	15974.7	Conv. (cfs)	9542.9	6132.9	298.9
Length Wtd. (ft)	186.71	Wetted Per. (ft)	147.76	19.25	10.23
Min Ch El (ft)	2153.26	Shear (lb/sq ft)	1.33	3.51	0.95
Alpha	1.35	Stream Power (lb/ft s)	7.00	34.54	3.17
Frctn Loss (ft)	2.69	Cum Volume (acre-ft)	8.19	13.29	2.83
C & E Loss (ft)	0.01	Cum SA (acres)	6.09	3.07	2.28

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2159.94	Element			
Vel Head (ft)	1.02	Wt. n-Val.	0.052	0.045	0.055
W.S. Elev (ft)	2158.93	Reach Len. (ft)	183.08	191.75	192.76
Crit W.S. (ft)		Flow Area (sq ft)	180.13	75.08	10.76
E.G. Slope (ft/ft)	0.016109	Area (sq ft)	180.13	75.08	10.76
Q Total (cfs)	1920.00	Flow (cfs)	1102.14	779.70	38.16
Top Width (ft)	110.35	Top Width (ft)	82.24	18.21	9.90
Vel Total (ft/s)	7.22	Avg. Vel. (ft/s)	6.12	10.39	3.55
Max Chl Dpth (ft)	5.67	Hydr. Depth (ft)	2.19	4.12	1.09
Conv. Total (cfs)	15127.5	Conv. (cfs)	8683.7	6143.2	300.7
Length Wtd. (ft)	187.19	Wetted Per. (ft)	84.55	19.25	10.23
Min Ch El (ft)	2153.26	Shear (lb/sq ft)	2.14	3.92	1.06
Alpha	1.26	Stream Power (lb/ft s)	13.11	40.74	3.75
Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	5.15	13.93	1.44
C & E Loss (ft)	0.04	Cum SA (acres)	2.75	3.07	0.75

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9812.49	9848.04	0.58	0.61	5.24	0.03	0.12	0.94
2	LOB	9848.04	9883.59	37.17	16.06	35.58	1.94	0.45	2.31
3	LOB	9883.59	9919.14	283.30	51.60	35.70	14.76	1.45	5.49
4	LOB	9919.14	9954.69	474.65	79.91	35.58	24.72	2.25	5.94
5	LOB	9954.69	9990.24	351.27	69.78	35.65	18.30	1.96	5.03
6	Chan	9990.24	9992.84	62.94	7.95	2.72	3.28	3.05	7.92
7	Chan	9992.84	9995.44	92.18	9.99	2.72	4.80	3.84	9.23
8	Chan	9995.44	9998.05	125.70	12.03	2.72	6.55	4.63	10.45
9	Chan	9998.05	10000.65	161.25	14.00	2.73	8.40	5.38	11.52
10	Chan	10000.65	10003.25	139.83	12.96	2.79	7.28	4.98	10.79
11	Chan	10003.25	10005.85	96.07	10.35	2.79	5.00	3.98	9.28
12	Chan	10005.85	10008.45	59.14	7.73	2.79	3.08	2.97	7.65
13	ROB	10008.45	10014.22	33.01	8.91	6.00	1.72	1.55	3.70
14	ROB	10014.22	10019.98	2.92	1.81	4.22	0.15	0.44	1.61

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9883.59	9919.14	219.12	30.15	13.31	11.41	2.71	7.27
2	LOB	9919.14	9954.69	507.36	80.05	35.58	26.42	2.25	6.34
3	LOB	9954.69	9990.24	375.66	69.93	35.65	19.57	1.97	5.37
4	Chan	9990.24	9992.84	66.62	7.96	2.72	3.47	3.06	8.37
5	Chan	9992.84	9995.44	97.52	10.00	2.72	5.08	3.84	9.75
6	Chan	9995.44	9998.05	132.94	12.04	2.72	6.92	4.63	11.04
7	Chan	9998.05	10000.65	170.50	14.01	2.73	8.88	5.39	12.17
8	Chan	10000.65	10003.25	147.88	12.97	2.79	7.70	4.99	11.40
9	Chan	10003.25	10005.85	101.63	10.36	2.79	5.29	3.98	9.81
10	Chan	10005.85	10008.45	62.60	7.74	2.79	3.26	2.98	8.08
11	ROB	10008.45	10014.22	35.04	8.94	6.00	1.82	1.55	3.92
12	ROB	10014.22	10019.98	3.13	1.82	4.23	0.16	0.44	1.72

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: C6
REACH: Reach 2 RS: 0.909

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9852.404	2158.029853.514	2157.849856.134	2157.289860.584	2156.719870.564	2155.59				
9885.544	2153.879888.264	2153.699889.744	2153.44	9891.642153.5649895.864	2153.84				
9910.274	2154.819919.064	2155.299925.804	2154.689933.864	2153.879936.244	2153.15				
9940.864	2152.839949.914	2150.969950.194	2150.899957.404	2152.629958.774	2152.98				
9964.964	2153.119969.534	2153.199972.284	2153.149984.734	2152.86	9991.642151.521				
9991.644	2151.529999.874	2149.8510003.34	2150.7210007.67	2151.9610023.07	2155.73				
10039.12	2159.5210043.39	2159.97							

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9852.404	.069940.864	.0459957.404	.055	9991.64	.04510007.67	.06			

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.6410007.67		190.44	200.48	202.96	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2156.12	Element			
Vel Head (ft)	0.95	Wt. n-Val.	0.051	0.045	0.060
W.S. Elev (ft)	2155.18	Reach Len. (ft)	190.44	200.48	202.96
Crit W.S. (ft)	2155.12	Flow Area (sq ft)	193.65	70.53	21.12
E.G. Slope (ft/ft)	0.014387	Area (sq ft)	193.65	70.53	21.12
Q Total (cfs)	1920.00	Flow (cfs)	1099.09	736.45	84.46
Top Width (ft)	143.28	Top Width (ft)	114.11	16.03	13.14
Vel Total (ft/s)	6.73	Avg. Vel. (ft/s)	5.68	10.44	4.00
Max Chl Dpth (ft)	5.33	Hydr. Depth (ft)	1.70	4.40	1.61
Conv. Total (cfs)	16007.3	Conv. (cfs)	9163.3	6139.8	704.2
Length Wtd. (ft)	197.45	Wetted Per. (ft)	115.04	16.48	13.52
Min Ch El (ft)	2149.85	Shear (lb/sq ft)	1.51	3.84	1.40
Alpha	1.35	Stream Power (lb/ft s)	8.58	40.14	5.61
Frctn Loss (ft)	2.88	Cum Volume (acre-ft)	7.32	12.97	2.76
C & E Loss (ft)	0.02	Cum SA (acres)	5.54	2.99	2.23

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2156.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.40	Wt. n-Val.	0.051	0.045	0.060
W.S. Elev (ft)	2155.38	Reach Len. (ft)	190.44	200.48	202.96
Crit W.S. (ft)	2155.38	Flow Area (sq ft)	129.16	73.85	23.84
E.G. Slope (ft/ft)	0.017288	Area (sq ft)	129.16	73.85	23.84
Q Total (cfs)	1920.00	Flow (cfs)	936.28	871.58	112.15
Top Width (ft)	74.81	Top Width (ft)	45.64	16.03	13.14
Vel Total (ft/s)	8.46	Avg. Vel. (ft/s)	7.25	11.80	4.70
Max Chl Dpth (ft)	5.53	Hydr. Depth (ft)	2.83	4.61	1.81
Conv. Total (cfs)	14602.7	Conv. (cfs)	7120.9	6628.8	852.9
Length Wtd. (ft)	197.87	Wetted Per. (ft)	49.73	16.48	13.73
Min Ch El (ft)	2149.85	Shear (lb/sq ft)	2.80	4.84	1.87
Alpha	1.26	Stream Power (lb/ft s)	20.32	57.08	8.81
Frctn Loss (ft)	3.04	Cum Volume (acre-ft)	4.50	13.60	1.37
C & E Loss (ft)	0.09	Cum SA (acres)	2.48	2.99	0.70

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9852.40	9880.25	3.05	2.12	6.12	0.16	0.35	1.44
2	LOB	9880.25	9908.10	103.01	32.19	27.95	5.36	1.16	3.20
3	LOB	9908.10	9935.95	28.53	14.17	24.66	1.49	0.58	2.01
4	LOB	9935.95	9963.79	602.91	80.25	28.32	31.40	2.88	7.51
5	LOB	9963.79	9991.64	361.60	64.92	27.98	18.83	2.33	5.57
6	Chan	9991.64	9993.93	85.26	8.90	2.34	4.44	3.89	9.58
7	Chan	9993.93	9996.22	102.91	9.97	2.34	5.36	4.35	10.33
8	Chan	9996.22	9998.51	121.87	11.03	2.34	6.35	4.82	11.05
9	Chan	9998.51	10000.80	137.91	11.90	2.35	7.18	5.20	11.59
10	Chan	10000.80	10003.09	120.58	11.01	2.36	6.28	4.81	10.96
11	Chan	10003.09	10005.38	95.78	9.62	2.38	4.99	4.20	9.96
12	Chan	10005.38	10007.67	72.14	8.12	2.38	3.76	3.54	8.89
13	ROB	10007.67	10014.81	75.33	16.73	7.35	3.92	2.34	4.50
14	ROB	10014.81	10021.96	9.13	4.40	6.17	0.48	0.73	2.08

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9935.95	9963.79	470.57	58.47	21.75	24.51	3.29	8.05
2	LOB	9963.79	9991.64	465.71	70.69	27.98	24.26	2.54	6.59
3	Chan	9991.64	9993.93	101.98	9.38	2.34	5.31	4.09	10.88
4	Chan	9993.93	9996.22	121.99	10.44	2.34	6.35	4.56	11.68
5	Chan	9996.22	9998.51	143.40	11.50	2.34	7.47	5.02	12.47
6	Chan	9998.51	10000.80	161.46	12.37	2.35	8.41	5.40	13.05
7	Chan	10000.80	10003.09	141.91	11.48	2.36	7.39	5.01	12.36
8	Chan	10003.09	10005.38	113.85	10.09	2.38	5.93	4.41	11.28
9	Chan	10005.38	10007.67	86.99	8.59	2.38	4.53	3.75	10.13
10	ROB	10007.67	10014.81	97.02	18.21	7.35	5.05	2.55	5.33
11	ROB	10014.81	10021.96	15.12	5.64	6.38	0.79	0.94	2.68

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.871

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9823.508	2153.959	834.988	2153.899	862.488	2153.649	878.388	2153.339	886.738	2153.19
9890.098	2153.069	947.268	2152.389	950.758	2152.19	964.638	2149.869	965.588	2149.73
9966.538	2149.54	9966.54	2149.549	978.658	2147.29	990.228	2148.439	990.378	2148.44

9990.478 2148.4310001.46 2147.5810012.43 2148.4710013.86 2148.5710018.662149.743
10021.84 2150.5210030.59 2153.0910048.16 2159.1710055.19 2160.03

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9823.508	.045	9966.54	.0510018.66		.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9966.5410018.66		172.26	209.8	220.83	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2153.22	Element			
Vel Head (ft)	1.16	Wt. n-Val.	0.045	0.050	0.060
W.S. Elev (ft)	2152.06	Reach Len. (ft)	172.26	209.80	220.83
Crit W.S. (ft)		Flow Area (sq ft)	19.43	202.45	10.16
E.G. Slope (ft/ft)	0.014789	Area (sq ft)	19.43	202.45	10.16
Q Total (cfs)	1920.00	Flow (cfs)	89.83	1796.35	33.82
Top Width (ft)	76.06	Top Width (ft)	15.52	52.12	8.42
Vel Total (ft/s)	8.27	Avg. Vel. (ft/s)	4.62	8.87	3.33
Max Chl Dpth (ft)	4.86	Hydr. Depth (ft)	1.25	3.88	1.21
Conv. Total (cfs)	15788.1	Conv. (cfs)	738.7	14771.3	278.1
Length Wtd. (ft)	204.92	Wetted Per. (ft)	15.73	52.62	8.73
Min Ch El (ft)	2147.20	Shear (lb/sq ft)	1.14	3.55	1.07
Alpha	1.09	Stream Power (lb/ft s)	5.27	31.52	3.58
Frctn Loss (ft)	2.50	Cum Volume (acre-ft)	6.86	12.35	2.68
C & E Loss (ft)	0.09	Cum SA (acres)	5.25	2.84	2.18

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2153.24	Element			
Vel Head (ft)	1.11	Wt. n-Val.	0.045	0.050	0.060
W.S. Elev (ft)	2152.13	Reach Len. (ft)	172.26	209.80	220.83
Crit W.S. (ft)		Flow Area (sq ft)	19.00	206.30	10.78
E.G. Slope (ft/ft)	0.013736	Area (sq ft)	19.00	206.30	10.78
Q Total (cfs)	1920.00	Flow (cfs)	97.70	1786.51	35.79
Top Width (ft)	72.08	Top Width (ft)	11.54	52.12	8.42
Vel Total (ft/s)	8.13	Avg. Vel. (ft/s)	5.14	8.66	3.32
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)	1.65	3.96	1.28
Conv. Total (cfs)	16382.2	Conv. (cfs)	833.6	15243.2	305.4
Length Wtd. (ft)	205.54	Wetted Per. (ft)	12.41	52.62	8.81
Min Ch El (ft)	2147.20	Shear (lb/sq ft)	1.31	3.36	1.05
Alpha	1.08	Stream Power (lb/ft s)	6.75	29.11	3.48
Frctn Loss (ft)	2.08	Cum Volume (acre-ft)	4.18	12.96	1.29
C & E Loss (ft)	0.10	Cum SA (acres)	2.36	2.83	0.65

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9937.93	9966.54	89.83	19.43	15.73	4.68	1.25	4.62
2	Chan	9966.54	9973.99	186.56	24.10	7.58	9.72	3.24	7.74
3	Chan	9973.99	9981.43	326.52	33.66	7.55	17.01	4.52	9.70
4	Chan	9981.43	9988.88	286.67	31.03	7.49	14.93	4.17	9.24
5	Chan	9988.88	9996.32	248.19	28.44	7.47	12.93	3.82	8.73
6	Chan	9996.32	10003.77	303.93	32.11	7.47	15.83	4.31	9.47
7	Chan	10003.77	10011.21	266.93	29.70	7.47	13.90	3.99	8.99
8	Chan	10011.21	10018.66	177.54	23.41	7.59	9.25	3.14	7.58
9	ROB	10018.66	10025.97	33.68	9.97	7.57	1.75	1.37	3.38
10	ROB	10025.97	10033.27	0.15	0.18	1.16	0.01	0.16	0.82

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9937.93	9966.54	97.70	19.00	12.41	5.09	1.65	5.14
2	Chan	9966.54	9973.99	186.76	24.65	7.58	9.73	3.31	7.58
3	Chan	9973.99	9981.43	323.42	34.21	7.55	16.84	4.59	9.45
4	Chan	9981.43	9988.88	284.59	31.58	7.49	14.82	4.24	9.01
5	Chan	9988.88	9996.32	247.04	28.99	7.47	12.87	3.89	8.52
6	Chan	9996.32	10003.77	301.43	32.66	7.47	15.70	4.39	9.23
7	Chan	10003.77	10011.21	265.34	30.25	7.47	13.82	4.06	8.77
8	Chan	10011.21	10018.66	177.93	23.96	7.59	9.27	3.22	7.43
9	ROB	10018.66	10025.97	35.53	10.51	7.57	1.85	1.44	3.38
10	ROB	10025.97	10033.27	0.26	0.26	1.23	0.01	0.24	0.97

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: C6

REACH: Reach 2 RS: 0.832

INPUT
Description:
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9777.511	2151.939	794.421	2150.969	794.621	2150.959	835.091	2150.199	842.711	2150.02
9872.721	2150.089	890.381	2150.049	896.491	2150.019	904.611	2149.889	907.961	2149.77
9923.431	2149.859	928.451	2149.789	937.811	2149.489	961.781	2146.499	962.531	2146.4
9962.661	2146.389	963.031	2146.399	976.361	2146.86	9976.562	2146.832	9989.241	2145
9996.031	2144.349	998.171	2144.329	999.461	2144.319	999.821	2144.371	0003.09	2144.75
10006.43	2145.111	0011.47	2145.311	0013.48	2145.431	0016.83	2146.991	0019.75	2148.35
10040.9	2158.481	0053.76	2159.85	10055.4	2160.01				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9777.511	.045	9937.811	.055	9976.56	.051	0016.83	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9976.56	10016.83	189.58	212.63	218.23	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2150.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2149.77	Reach Len. (ft)	189.58	212.63	218.23
Crit W.S. (ft)		Flow Area (sq ft)	90.64	180.96	8.22
E.G. Slope (ft/ft)	0.010257	Area (sq ft)	90.64	180.96	8.22
Q Total (cfs)	1920.00	Flow (cfs)	426.44	1469.47	24.10
Top Width (ft)	93.85	Top Width (ft)	47.70	40.27	5.88
Vel Total (ft/s)	6.86	Avg. Vel. (ft/s)	4.70	8.12	2.93
Max Chl Dpth (ft)	5.46	Hydr. Depth (ft)	1.90	4.49	1.40
Conv. Total (cfs)	18957.6	Conv. (cfs)	4210.5	14509.2	237.9
Length Wtd. (ft)	207.23	Wetted Per. (ft)	47.90	40.83	6.50
Min Ch El (ft)	2144.31	Shear (lb/sq ft)	1.21	2.84	0.81
Alpha	1.18	Stream Power (lb/ft s)	5.70	23.04	2.37
Frctn Loss (ft)	2.72	Cum Volume (acre-ft)	6.64	11.42	2.64
C & E Loss (ft)	0.02	Cum SA (acres)	5.13	2.61	2.14

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2151.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2150.28	Reach Len. (ft)	189.58	212.63	218.23
Crit W.S. (ft)		Flow Area (sq ft)	70.87	201.52	11.22
E.G. Slope (ft/ft)	0.007745	Area (sq ft)	70.87	201.52	11.22
Q Total (cfs)	1920.00	Flow (cfs)	358.83	1527.72	33.45
Top Width (ft)	65.71	Top Width (ft)	19.56	40.27	5.88
Vel Total (ft/s)	6.77	Avg. Vel. (ft/s)	5.06	7.58	2.98
Max Chl Dpth (ft)	5.97	Hydr. Depth (ft)	3.62	5.00	1.91
Conv. Total (cfs)	21816.5	Conv. (cfs)	4077.3	17359.2	380.1
Length Wtd. (ft)	209.14	Wetted Per. (ft)	22.80	40.83	7.01
Min Ch El (ft)	2144.31	Shear (lb/sq ft)	1.50	2.39	0.77
Alpha	1.11	Stream Power (lb/ft s)	7.61	18.09	2.31
Frctn Loss (ft)	2.48	Cum Volume (acre-ft)	4.00	11.97	1.23
C & E Loss (ft)	0.07	Cum SA (acres)	2.30	2.61	0.62

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9896.94	9936.75	0.84	1.00	7.89	0.04	0.13	0.84
2	LOB	9936.75	9976.56	425.60	89.64	40.01	22.17	2.25	4.75
3	Chan	9976.56	9982.31	127.22	19.27	5.81	6.63	3.35	6.60
4	Chan	9982.31	9988.07	184.06	24.06	5.81	9.59	4.18	7.65
5	Chan	9988.07	9993.82	242.63	28.34	5.79	12.64	4.93	8.56
6	Chan	9993.82	9999.57	283.01	31.04	5.76	14.74	5.40	9.12
7	Chan	9999.57	10005.32	256.52	29.31	5.79	13.36	5.10	8.75
8	Chan	10005.32	10011.08	216.53	26.43	5.76	11.28	4.59	8.19
9	Chan	10011.08	10016.83	159.50	22.51	6.10	8.31	3.91	7.09
10	ROB	10016.83	10024.54	24.10	8.22	6.50	1.26	1.40	2.93

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9936.75	9976.56	358.83	70.87	22.80	18.69	3.62	5.06
2	Chan	9976.56	9982.31	140.38	22.21	5.81	7.31	3.86	6.32
3	Chan	9982.31	9988.07	194.28	26.99	5.81	10.12	4.69	7.20
4	Chan	9988.07	9993.82	249.11	31.28	5.79	12.97	5.44	7.96

5	Chan	9993.82	9999.57	286.64	33.97	5.76	14.93	5.91	8.44
6	Chan	9999.57	10005.32	262.01	32.25	5.79	13.65	5.61	8.12
7	Chan	10005.32	10011.08	224.84	29.36	5.76	11.71	5.10	7.66
8	Chan	10011.08	10016.83	170.46	25.44	6.10	8.88	4.42	6.70
9	ROB	10016.83	10024.54	33.45	11.22	7.01	1.74	1.91	2.98

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: C6
REACH: Reach 2 RS: 0.791

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9777.75	2151.98	9785.24	2151.62	9789.71	2151.43	9790.81	2151.26	9800.17	2150.2
9810.44	2149.03	9811.72	2148.86	9819.88	2148.49	9823.08	2148.49	9828.43	2148.4
9831.25	2148.34	9843.59	2147.89	9892.38	2146.52	9895.3	2146.52	9902.58	2146.02
9930.29	2145.36	9931.09	2145.34	9931.86	2145.32	9933.46	2145.34	9937.94	2145.34
9938.54	2145.34	9939.53	2145.32	9952.96	2145.04	9957.15	2144.94	9970.25	2144.71
9972.73	2144.66	9973.61	2144.64	9974.36	2144.5	9984.1	2142.55	9989.12	2143.85
9989.81	2144.08	9992.5	2143.41	10000.33	2141.18	10007.77	2143.18	10008.33	2143.28
10012.64	2144.276	10031.6	2148.66	10031.88	2148.72	10040.19	2149.01	10041.4	2149.15
10048.32	2149.96	10054.74	2150.71	10083.21	2154.06				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9777.75	.055	9974.36	.05	10012.64	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.36	10012.64	235.51	172.38	159.5	.3	.5

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2147.90	Element			
Vel Head (ft)	1.05	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2146.84	Reach Len. (ft)	235.51	172.38	159.50
Crit W.S. (ft)		Flow Area (sq ft)	118.38	146.47	14.25
E.G. Slope (ft/ft)	0.017324	Area (sq ft)	118.38	146.47	14.25
Q Total (cfs)	1920.00	Flow (cfs)	492.49	1373.58	53.93
Top Width (ft)	142.88	Top Width (ft)	93.49	38.28	11.10
Vel Total (ft/s)	6.88	Avg. Vel. (ft/s)	4.16	9.38	3.78
Max Chl Dpth (ft)	5.66	Hydr. Depth (ft)	1.27	3.83	1.28
Conv. Total (cfs)	14587.5	Conv. (cfs)	3741.8	10436.0	409.8
Length Wtd. (ft)	180.30	Wetted Per. (ft)	93.54	39.46	11.40
Min Ch El (ft)	2141.18	Shear (lb/sq ft)	1.37	4.01	1.35
Alpha	1.43	Stream Power (lb/ft s)	5.69	37.65	5.12
Frctn Loss (ft)	1.70	Cum Volume (acre-ft)	6.18	10.62	2.58
C & E Loss (ft)	0.24	Cum SA (acres)	4.82	2.42	2.10

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2148.52	Element			
Vel Head (ft)	1.50	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2147.01	Reach Len. (ft)	235.51	172.38	159.50
Crit W.S. (ft)	2147.01	Flow Area (sq ft)	40.73	152.99	16.15
E.G. Slope (ft/ft)	0.020332	Area (sq ft)	40.73	152.99	16.15
Q Total (cfs)	1920.00	Flow (cfs)	248.61	1600.17	71.22
Top Width (ft)	67.74	Top Width (ft)	18.36	38.28	11.10
Vel Total (ft/s)	9.15	Avg. Vel. (ft/s)	6.10	10.46	4.41
Max Chl Dpth (ft)	5.83	Hydr. Depth (ft)	2.22	4.00	1.45
Conv. Total (cfs)	13465.0	Conv. (cfs)	1743.5	11222.0	499.5
Length Wtd. (ft)	176.23	Wetted Per. (ft)	20.42	39.46	11.56
Min Ch El (ft)	2141.18	Shear (lb/sq ft)	2.53	4.92	1.77
Alpha	1.16	Stream Power (lb/ft s)	15.45	51.48	7.82
Frctn Loss (ft)	1.67	Cum Volume (acre-ft)	3.76	11.11	1.16
C & E Loss (ft)	0.47	Cum SA (acres)	2.21	2.42	0.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9856.40	9895.72	3.17	2.94	14.85	0.17	0.20	1.08
2	LOB	9895.72	9935.04	145.44	43.14	39.35	7.58	1.10	3.37
3	LOB	9935.04	9974.36	343.87	72.29	39.34	17.91	1.84	4.76
4	Chan	9974.36	9979.83	121.40	15.81	5.58	6.32	2.89	7.68
5	Chan	9979.83	9985.30	201.73	21.46	5.59	10.51	3.93	9.40
6	Chan	9985.30	9990.77	150.28	18.08	5.66	7.83	3.31	8.31
7	Chan	9990.77	9996.23	183.45	20.39	5.67	9.55	3.73	9.00
8	Chan	9996.23	10001.70	317.06	28.33	5.68	16.51	5.18	11.19
9	Chan	10001.70	10007.17	256.76	24.93	5.66	13.37	4.56	10.30
10	Chan	10007.17	10012.64	142.89	17.48	5.61	7.44	3.20	8.18
11	ROB	10012.64	10026.75	53.93	14.25	11.40	2.81	1.28	3.78

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9935.04	9974.36	248.61	40.73	20.42	12.95	2.22	6.10
2	Chan	9974.36	9979.83	144.94	16.74	5.58	7.55	3.06	8.66
3	Chan	9979.83	9985.30	234.99	22.39	5.59	12.24	4.10	10.49
4	Chan	9985.30	9990.77	177.33	19.01	5.66	9.24	3.48	9.33
5	Chan	9990.77	9996.23	214.48	21.32	5.67	11.17	3.90	10.06
6	Chan	9996.23	10001.70	363.14	29.26	5.68	18.91	5.35	12.41
7	Chan	10001.70	10007.17	296.21	25.86	5.66	15.43	4.73	11.45
8	Chan	10007.17	10012.64	169.09	18.41	5.61	8.81	3.37	9.19
9	ROB	10012.64	10026.75	71.22	16.15	11.56	3.71	1.45	4.41

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.759

INPUT
Description: 12th Street Culvert - Upstream Cross Section
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9808.72	2148	9813.25	2147.85	9816.97	2147.7	9821.49	2147.4	9825.01	2147.2
9830.95	2146.9	9839.22	2146.4	9842.29	2146.3	9852.8	2145.86	9855.16	2145.72
9857.01	2145.7	9865.48	2145.61	9868.54	2145.52	9877.46	2145.52	9880.82	2145.52
9889.83	2145.52	9893.59	2145.52	9901.25	2145.52	9904.94	2145.52	9912.64	2145.51
9915.46	2145.51	9922.13	2145.52	9927.96	2145.52	9937.16	2145.53	9946.35	2145.53
9954.52	2145.54	9956.55	2145.54	9966.48	2145.55	9969.37	2145.52	9969.37	2140.26
10030.64	2140.26	10030.64	2145.66	10042	2145.69	10075.33	2145.81	10075.46	2145.85
10087.82	2146.04	10088.06	2146.05	10099.21	2147.21	10099.56	2147.22	10111.72	2148.08
10112.2	2148.12	10123.34	2149.41	10123.78	2149.51	10128.93	2149.92		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9808.72	.04	9956.55	.05	10042	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.37	10030.64	62.35	62.35	62.35	.3	.5

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2145.96	Element			
Vel Head (ft)	0.58	Wt. n-Val.		0.050	
W.S. Elev (ft)	2145.38	Reach Len. (ft)	62.35	62.35	62.35
Crit W.S. (ft)	2143.38	Flow Area (sq ft)		313.80	
E.G. Slope (ft/ft)	0.005901	Area (sq ft)		313.80	
Q Total (cfs)	1920.00	Flow (cfs)		1920.00	
Top Width (ft)	61.27	Top Width (ft)		61.27	
Vel Total (ft/s)	6.12	Avg. Vel. (ft/s)		6.12	
Max Chl Dpth (ft)	5.12	Hydr. Depth (ft)		5.12	
Conv. Total (cfs)	24994.9	Conv. (cfs)		24994.9	
Length Wtd. (ft)	62.35	Wetted Per. (ft)		71.51	
Min Ch El (ft)	2140.26	Shear (lb/sq ft)		1.62	

Alpha	1.00	Stream Power (lb/ft s)		9.89	
Frctn Loss (ft)		Cum Volume (acre-ft)	5.86	9.71	2.56
C & E Loss (ft)		Cum SA (acres)	4.57	2.22	2.08

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2146.06	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.050	
W.S. Elev (ft)	2145.51	Reach Len. (ft)	62.35	62.35	62.35
Crit W.S. (ft)	2143.38	Flow Area (sq ft)		321.38	
E.G. Slope (ft/ft)	0.005474	Area (sq ft)		321.38	
Q Total (cfs)	1920.00	Flow (cfs)		1920.00	
Top Width (ft)	61.27	Top Width (ft)		61.27	
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)		5.97	
Max Chl Dpth (ft)	5.25	Hydr. Depth (ft)		5.25	
Conv. Total (cfs)	25949.9	Conv. (cfs)		25949.9	
Length Wtd. (ft)	62.35	Wetted Per. (ft)		71.76	
Min Ch El (ft)	2140.26	Shear (lb/sq ft)		1.53	
Alpha	1.00	Stream Power (lb/ft s)		9.14	
Frctn Loss (ft)		Cum Volume (acre-ft)	3.65	10.17	1.13
C & E Loss (ft)		Cum SA (acres)	2.16	2.22	0.55

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9969.37	9978.12	218.25	44.83	13.87	11.37	5.12	4.87
2	Chan	9978.12	9986.88	296.71	44.83	8.75	15.45	5.12	6.62
3	Chan	9986.88	9995.63	296.71	44.83	8.75	15.45	5.12	6.62
4	Chan	9995.63	10004.38	296.67	44.82	8.75	15.45	5.12	6.62
5	Chan	10004.38	10013.13	296.71	44.83	8.75	15.45	5.12	6.62
6	Chan	10013.13	10021.89	296.71	44.83	8.75	15.45	5.12	6.62
7	Chan	10021.89	10030.64	218.25	44.83	13.87	11.37	5.12	4.87

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9969.37	9978.12	217.25	45.91	14.00	11.32	5.25	4.73
2	Chan	9978.12	9986.88	297.11	45.91	8.75	15.47	5.25	6.47
3	Chan	9986.88	9995.63	297.11	45.91	8.75	15.47	5.25	6.47
4	Chan	9995.63	10004.38	297.07	45.91	8.75	15.47	5.25	6.47
5	Chan	10004.38	10013.13	297.11	45.91	8.75	15.47	5.25	6.47
6	Chan	10013.13	10021.89	297.11	45.91	8.75	15.47	5.25	6.47
7	Chan	10021.89	10030.64	217.25	45.91	14.00	11.32	5.25	4.73

CULVERT

RIVER: C6
REACH: Reach 2 RS: 0.753

INPUT
Description: 7-7'x4' Concrete Box Culverts at 12 Street
Skew angle of 32
Degrees was not applied to geometry.
Distance from Upstream XS = .3
Deck/Roadway Width = 62
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 6

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9808.72	2146.85		9830.58	2146		9902.53	2145.44	
9988.29	2146.12		10072.91	2148.4		10129.02	2149.57	

Upstream Bridge Cross Section Data
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9808.72	2147.937	9813.25	2147.787	9816.97	2147.636	9821.49	2147.336	9825.01	2147.136
9830.95	2146.836	9839.22	2146.336	9842.29	2146.237	9852.82	2145.796	9855.16	2145.656
9857.01	2145.636	9865.48	2145.546	9868.54	2145.457	9877.46	2145.457	9880.82	2145.457
9889.83	2145.457	9893.59	2145.457	9901.25	2145.457	9904.94	2145.457	9912.64	2145.447
9915.46	2145.447	9922.13	2145.457	9927.96	2145.457	9937.16	2145.467	9946.35	2145.467
9954.52	2145.477	9956.55	2145.477	9966.48	2145.487	9969.37	2145.457	9969.37	2140.26
10030.64	2140.26	10030.64	2145.596	10042	2145.69	10075.33	2145.73	10075.46	2145.787
10087.82	2145.97	10088.06	2145.98	10099.21	2147.13	10099.56	2147.15	10111.72	2148.017
10112.22	2148.05	10123.34	2149.33	10123.78	2149.43	10128.93	2149.856		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9808.72	.04	9956.55	.05	10042	.04

Bank Sta: Left	Right	Coeff Contr.	Expan.
9969.37	10030.64	.3	.5

Downstream Deck/Roadway Coordinates
num= 5

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9816	2148.89		9831.58	2145.01		10017.6	2145.87	
10101.24	2147.95		10133.42	2148.14				

Downstream Bridge Cross Section Data

```
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    98162148.108 9818.682148.108 9829.062147.808 9837.072147.508 9865.672146.698
 9866.452146.708 9867.062146.658 9867.892146.628 9868.612146.598 9897.132145.418
 9898.542145.408  9900.12145.268 9904.122145.228 9926.922145.208 9948.222145.298
 9958.632145.298 9968.632145.298 9968.63 2139.8210030.31 2139.8210030.312145.258
10040.312145.287 10073.82145.30810103.662145.70810110.722146.23810116.452146.598
 10122.42147.18810133.422148.108

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9816     .04 9958.63     .0510040.31     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
       9968.6310030.31              .3       .5

Upstream Embankment side slope              =       2 horiz. to 1.0 vertical
Downstream Embankment side slope            =       2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1          Box       4       7
FHWA Chart # 9 - flared wingwalls and Inlet top edge bevel
FHWA Scale # 2 - Wingwall flared 18 to 33.7 deg.; inlet top edge bevel=0.083D
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                .2      62     .013     .013        0                .2                 1
Number of Barrels =  7
Upstream   Elevation =  2140.26
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
 9973.37 9982.23 9991.03 9999.9510008.8110017.6710026.53
Downstream Elevation =  2139.82
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.    Sta.
 9972.63 9981.53 9990.43 9999.3310008.2310017.1310026.03

CULVERT OUTPUT  Profile #profile 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)       1871.37    Culv Full Len (ft)
  # Barrels                      7    Culv Vel US (ft/s)         10.71
  Q Barrel (cfs)            267.34    Culv Vel DS (ft/s)         12.29
  E.G. US. (ft)            2145.96    Culv Inv El Up (ft)      2140.26
  W.S. US. (ft)            2145.38    Culv Inv El Dn (ft)      2139.82
  E.G. DS (ft)             2144.54    Culv Frctn Ls (ft)          0.33
  W.S. DS (ft)             2143.30    Culv Exit Loss (ft)         0.73
  Delta EG (ft)               1.42    Culv Entr Loss (ft)         0.36
  Delta WS (ft)               2.08    Q Weir (cfs)               48.63
  E.G. IC (ft)             2145.85    Weir Sta Lft (ft)        9848.88
  E.G. OC (ft)             2145.96    Weir Sta Rgt (ft)        9968.16
  Culvert Control            Inlet    Weir Submerg                0.00
  Culv WS Inlet (ft)       2143.83    Weir Max Depth (ft)         0.50
  Culv WS Outlet (ft)      2142.93    Weir Avg Depth (ft)         0.28
  Culv Nml Depth (ft)         2.91    Weir Flow Area (sq ft)     33.61
  Culv Crt Depth (ft)         3.56    Min El Weir Flow (ft)    2145.47

Note:    The flow in the culvert is entirely supercritical.

CULVERT OUTPUT  Profile #profile 2  Culv Group:  Culvert #1

  Q Culv Group (cfs)       1918.91    Culv Full Len (ft)
  # Barrels                      7    Culv Vel US (ft/s)         10.80
  Q Barrel (cfs)            274.13    Culv Vel DS (ft/s)         12.37
  E.G. US. (ft)            2146.06    Culv Inv El Up (ft)      2140.26
  W.S. US. (ft)            2145.51    Culv Inv El Dn (ft)      2139.82
  E.G. DS (ft)             2144.55    Culv Frctn Ls (ft)          0.33
  W.S. DS (ft)             2143.33    Culv Exit Loss (ft)         0.81
  Delta EG (ft)               1.51    Culv Entr Loss (ft)         0.36
  Delta WS (ft)               2.18    Q Weir (cfs)                1.09
  E.G. IC (ft)             2145.97    Weir Sta Lft (ft)        9960.67
  E.G. OC (ft)             2146.06    Weir Sta Rgt (ft)        9980.16
  Culvert Control            Inlet    Weir Submerg                0.00
  Culv WS Inlet (ft)       2143.89    Weir Max Depth (ft)         0.15
  Culv WS Outlet (ft)      2142.99    Weir Avg Depth (ft)         0.08
  Culv Nml Depth (ft)         2.97    Weir Flow Area (sq ft)      1.51
  Culv Crt Depth (ft)         3.62    Min El Weir Flow (ft)    2145.91

Note:    The flow in the culvert is entirely supercritical.

CROSS SECTION


RIVER: C6
REACH: Reach 2            RS: 0.747

INPUT
Description: 12th Street Culvert - Downstream Cross Section
Station Elevation Data    num=      27
```

```
    Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   9816    2148 9818.68    2148 9829.06  2147.7 9837.07  2147.4 9865.67 2146.59
 9866.45  2146.6 9867.06 2146.55 9867.89 2146.52 9868.61 2146.49 9897.13 2145.31
 9898.54  2145.3  9900.1 2145.16 9904.12 2145.12 9926.92  2145.1 9948.22 2145.19
 9958.63 2145.19 9968.63 2145.19 9968.63 2139.8210030.31 2139.8210030.31 2145.15
10040.312145.161 10073.8  2145.210103.66  2145.610110.72 2146.1310116.45 2146.49
 10122.4 2147.0810133.42    2148

Manning's n Values          num=        3
    Sta   n Val     Sta   n Val     Sta   n Val
   9816     .04 9958.63     .0510040.31     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9968.6310030.31             236.1  217.01  194.97             .3       .5
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2144.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.		0.050	
W.S. Elev (ft)	2143.30	Reach Len. (ft)	236.10	217.01	194.97
Crit W.S. (ft)		Flow Area (sq ft)		214.84	
E.G. Slope (ft/ft)	0.019754	Area (sq ft)		214.84	
Q Total (cfs)	1920.00	Flow (cfs)		1920.00	
Top Width (ft)	61.68	Top Width (ft)		61.68	
Vel Total (ft/s)	8.94	Avg. Vel. (ft/s)		8.94	
Max Chl Dpth (ft)	3.48	Hydr. Depth (ft)		3.48	
Conv. Total (cfs)	13660.7	Conv. (cfs)		13660.7	
Length Wtd. (ft)	219.97	Wetted Per. (ft)		68.65	
Min Ch El (ft)	2139.82	Shear (lb/sq ft)		3.86	
Alpha	1.00	Stream Power (lb/ft s)		34.49	
Frctn Loss (ft)	3.58	Cum Volume (acre-ft)	5.86	9.33	2.56
C & E Loss (ft)	0.04	Cum SA (acres)	4.57	2.14	2.08

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2144.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.22	Wt. n-Val.		0.050	
W.S. Elev (ft)	2143.33	Reach Len. (ft)	236.10	217.01	194.97
Crit W.S. (ft)		Flow Area (sq ft)		216.35	
E.G. Slope (ft/ft)	0.019318	Area (sq ft)		216.35	
Q Total (cfs)	1920.00	Flow (cfs)		1920.00	
Top Width (ft)	61.68	Top Width (ft)		61.68	
Vel Total (ft/s)	8.87	Avg. Vel. (ft/s)		8.87	
Max Chl Dpth (ft)	3.51	Hydr. Depth (ft)		3.51	
Conv. Total (cfs)	13814.1	Conv. (cfs)		13814.1	
Length Wtd. (ft)	219.97	Wetted Per. (ft)		68.69	
Min Ch El (ft)	2139.82	Shear (lb/sq ft)		3.80	
Alpha	1.00	Stream Power (lb/ft s)		33.71	
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	3.65	9.79	1.13
C & E Loss (ft)	0.00	Cum SA (acres)	2.16	2.14	0.55

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9968.63	9977.44	232.92	30.69	12.29	12.13	3.48	7.59
2	Chan	9977.44	9986.25	290.84	30.69	8.81	15.15	3.48	9.48
3	Chan	9986.25	9995.06	290.84	30.69	8.81	15.15	3.48	9.48
4	Chan	9995.06	10003.88	290.81	30.69	8.81	15.15	3.48	9.48
5	Chan	10003.88	10012.69	290.84	30.69	8.81	15.15	3.48	9.48
6	Chan	10012.69	10021.50	290.84	30.69	8.81	15.15	3.48	9.48
7	Chan	10021.50	10030.31	232.92	30.69	12.29	12.13	3.48	7.59

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9968.63	9977.44	232.69	30.91	12.32	12.12	3.51	7.53
2	Chan	9977.44	9986.25	290.93	30.91	8.81	15.15	3.51	9.41
3	Chan	9986.25	9995.06	290.93	30.91	8.81	15.15	3.51	9.41
4	Chan	9995.06	10003.88	290.90	30.90	8.81	15.15	3.51	9.41
5	Chan	10003.88	10012.69	290.93	30.91	8.81	15.15	3.51	9.41
6	Chan	10012.69	10021.50	290.93	30.91	8.81	15.15	3.51	9.41
7	Chan	10021.50	10030.31	232.69	30.91	12.32	12.12	3.51	7.53

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: C6
REACH: Reach 2 RS: 0.706

INPUT
Description:
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9779.054	2142.01	9785.49	2141.6	469787.004	2141.569	803.674	2139.629	807.884	2139.11
9809.624	2139.1	69828.364	2139.5	29844.994	2139.729	851.454	2139.749	859.004	2139.33
9862.784	2139.19	873.574	2139.9	69874.764	2140.029	875.094	2140.029	876.684	2140.02
9877.494	2140.029	879.074	2140	9879.084	2140	9879.324	2140.029	879.604	2140.02
9881.824	2140.029	883.284	2140.039	883.824	2140.039	884.174	2140.049	884.384	2140.04
9885.874	2140.049	894.894	2140.079	900.054	2139.939	903.764	2139.789	921.294	2139.05
9927.394	2138.749	932.034	2138.559	940.024	2138.229	944.254	2138.019	956.764	2137.37
9958.644	2137.249	961.914	2137.159	966.714	2137.059	973.524	2136.95	9985.49	2136.62
9985.494	2136.629	992.264	2135.259	999.824	2133.481	0009.73	2136.71	710016.26	2138.85
10020.02	2140.221	0041.57	2143.461	0045.79	2144.011	0046.06	2144.04		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9779.054	.055	9985.49	.045	10009.73	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.49	10009.73	187.77	192.95	192.08	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2140.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2139.77	Reach Len. (ft)	187.77	192.95	192.08
Crit W.S. (ft)	2139.77	Flow Area (sq ft)	161.22	113.03	14.10
E.G. Slope (ft/ft)	0.013612	Area (sq ft)	161.22	113.03	14.10
Q Total (cfs)	1920.00	Flow (cfs)	669.03	1187.56	63.41
Top Width (ft)	183.42	Top Width (ft)	150.14	24.24	9.04
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)	4.15	10.51	4.50
Max Chl Dpth (ft)	6.29	Hydr. Depth (ft)	1.07	4.66	1.56
Conv. Total (cfs)	16456.9	Conv. (cfs)	5734.5	10178.9	543.5
Length Wtd. (ft)	191.52	Wetted Per. (ft)	150.29	25.10	9.55
Min Ch El (ft)	2133.48	Shear (lb/sq ft)	0.91	3.83	1.26
Alpha	1.69	Stream Power (lb/ft s)	3.78	40.21	5.64
Frctn Loss (ft)	2.37	Cum Volume (acre-ft)	5.43	8.52	2.52
C & E Loss (ft)	0.01	Cum SA (acres)	4.16	1.92	2.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2141.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2139.77	Reach Len. (ft)	187.77	192.95	192.08
Crit W.S. (ft)		Flow Area (sq ft)	120.64	113.07	14.11
E.G. Slope (ft/ft)	0.013623	Area (sq ft)	120.64	113.07	14.11
Q Total (cfs)	1920.00	Flow (cfs)	667.82	1188.67	63.52
Top Width (ft)	83.78	Top Width (ft)	50.49	24.24	9.05
Vel Total (ft/s)	7.75	Avg. Vel. (ft/s)	5.54	10.51	4.50
Max Chl Dpth (ft)	6.29	Hydr. Depth (ft)	2.39	4.66	1.56
Conv. Total (cfs)	16450.2	Conv. (cfs)	5721.7	10184.3	544.2
Length Wtd. (ft)	192.02	Wetted Per. (ft)	51.87	25.10	9.55
Min Ch El (ft)	2133.48	Shear (lb/sq ft)	1.98	3.83	1.26
Alpha	1.33	Stream Power (lb/ft s)	10.95	40.28	5.66
Frctn Loss (ft)	2.99	Cum Volume (acre-ft)	3.32	8.97	1.10
C & E Loss (ft)	0.09	Cum SA (acres)	2.03	1.92	0.53

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9779.05	9820.34	13.72	8.28	17.97	0.71	0.46	1.66
2	LOB	9820.34	9861.63	8.03	8.38	41.31	0.42	0.20	0.96
3	LOB	9861.63	9902.92	5.02	3.52	9.55	0.26	0.37	1.43
4	LOB	9902.92	9944.20	87.07	34.62	40.16	4.54	0.86	2.51
5	LOB	9944.20	9985.49	555.20	106.42	41.32	28.92	2.58	5.22
6	Chan	9985.49	9988.95	103.99	12.11	3.53	5.42	3.50	8.59
7	Chan	9988.95	9992.42	140.98	14.53	3.53	7.34	4.20	9.70
8	Chan	9992.42	9995.88	185.29	17.17	3.56	9.65	4.96	10.79
9	Chan	9995.88	9999.34	238.50	19.98	3.56	12.42	5.77	11.94
10	Chan	9999.34	10002.80	241.46	20.29	3.63	12.58	5.86	11.90
11	Chan	10002.80	10006.27	169.61	16.44	3.64	8.83	4.75	10.32
12	Chan	10006.27	10009.73	107.73	12.52	3.64	5.61	3.62	8.61
13	ROB	10009.73	10017.00	62.58	13.52	7.65	3.26	1.86	4.63
14	ROB	10017.00	10024.26	0.83	0.58	1.89	0.04	0.32	1.43

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9902.92	9944.20	52.91	14.16	10.55	2.76	1.54	3.74
2	LOB	9944.20	9985.49	614.90	106.48	41.32	32.03	2.58	5.77
3	Chan	9985.49	9988.95	104.10	12.11	3.53	5.42	3.50	8.59
4	Chan	9988.95	9992.42	141.12	14.54	3.53	7.35	4.20	9.71
5	Chan	9992.42	9995.88	185.46	17.17	3.56	9.66	4.96	10.80
6	Chan	9995.88	9999.34	238.70	19.98	3.56	12.43	5.77	11.95
7	Chan	9999.34	10002.80	241.66	20.30	3.63	12.59	5.86	11.91
8	Chan	10002.80	10006.27	169.77	16.44	3.64	8.84	4.75	10.32
9	Chan	10006.27	10009.73	107.85	12.52	3.64	5.62	3.62	8.61
10	ROB	10009.73	10017.00	62.68	13.53	7.65	3.26	1.86	4.63
11	ROB	10017.00	10024.26	0.83	0.58	1.90	0.04	0.32	1.44

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: C6
REACH: Reach 2 RS: 0.669

INPUT
Description:
Station Elevation Data num= 38

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9770.481 2138.569783.911 2138.219791.331 2138.089794.751 2137.939795.631 2137.91
9798.971 2137.849806.231 2137.719814.441 2137.439825.361 2134.989829.021 2134.12
9833.881 2132.979838.301  2133.89844.571 2134.929871.141 2135.629899.981 2136.46
9900.971 2136.499910.301 2136.229919.571 2135.949925.531 2135.759950.191  2134.8
9974.011 2133.29 9982.132132.7239982.311 2132.71    99852132.1739994.831 2130.21
9998.531 2129.4510000.62 2129.7910008.79 2130.6710016.452132.90510024.21 2135.17
10025.58 2135.5210043.35 2137.9910056.57  2139.810056.73 2139.8210057.23 2139.91
10058.98 2140.09 10076.7 2141.9510079.72 2142.21
```

Manning's n Values num= 4

```
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9770.481     .079871.141     .05 9982.13    .04510016.45     .06
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
998510016.45 195.55 200.48 203.96 .1 .3
Ineffective Flow num= 1

```
   Sta L   Sta R    Elev  Permanent
9770.4819835.741 2138.56       T
```

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2136.90	Element			
Vel Head (ft)	1.24	Wt. n-Val.	0.051	0.045	0.060
W.S. Elev (ft)	2135.66	Reach Len. (ft)	195.55	200.48	203.96
Crit W.S. (ft)	2135.66	Flow Area (sq ft)	103.03	152.25	13.13
E.G. Slope (ft/ft)	0.011307	Area (sq ft)	123.12	152.25	13.13
Q Total (cfs)	1920.00	Flow (cfs)	371.35	1508.64	40.02
Top Width (ft)	149.14	Top Width (ft)	107.53	31.45	10.16
Vel Total (ft/s)	7.15	Avg. Vel. (ft/s)	3.60	9.91	3.05
Max Chl Dpth (ft)	6.21	Hydr. Depth (ft)	1.09	4.84	1.29
Conv. Total (cfs)	18055.9	Conv. (cfs)	3492.2	14187.4	376.3
Length Wtd. (ft)	199.83	Wetted Per. (ft)	94.39	32.12	10.54
Min Ch El (ft)	2129.45	Shear (lb/sq ft)	0.77	3.35	0.88
Alpha	1.56	Stream Power (lb/ft s)	2.78	33.16	2.68
Frctn Loss (ft)	2.23	Cum Volume (acre-ft)	4.81	7.93	2.46
C & E Loss (ft)	0.05	Cum SA (acres)	3.61	1.80	2.02

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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2137.93	Element			
Vel Head (ft)	2.12	Wt. n-Val.		0.045	0.060
W.S. Elev (ft)	2135.81	Reach Len. (ft)	195.55	200.48	203.96
Crit W.S. (ft)	2135.81	Flow Area (sq ft)		156.85	14.50
E.G. Slope (ft/ft)	0.017940	Area (sq ft)		156.85	14.50
Q Total (cfs)	1920.00	Flow (cfs)		1859.08	60.92
Top Width (ft)	41.03	Top Width (ft)		31.45	9.58

Vel Total (ft/s)	11.20	Avg. Vel. (ft/s)		11.85	4.20
Max Chl Dpth (ft)	6.36	Hydr. Depth (ft)		4.99	1.51
Conv. Total (cfs)	14334.8	Conv. (cfs)		13880.0	454.8
Length Wtd. (ft)	200.14	Wetted Per. (ft)		35.75	10.18
Min Ch El (ft)	2129.45	Shear (lb/sq ft)		4.91	1.60
Alpha	1.09	Stream Power (lb/ft s)		58.24	6.70
Frctn Loss (ft)	2.57	Cum Volume (acre-ft)	3.06	8.37	1.04
C & E Loss (ft)	0.34	Cum SA (acres)	1.92	1.80	0.49

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9803.11	9835.74	0.00	20.09	13.77	0.00	1.50	0.00
2	LOB	9835.74	9885.49	39.53	24.04	37.04	2.06	0.65	1.64
3	LOB	9885.49	9935.25	0.88	1.07	7.47	0.05	0.14	0.82
4	LOB	9935.25	9985.00	330.93	77.91	49.89	17.24	1.57	4.25
5	Chan	9985.00	9989.49	150.13	17.70	4.58	7.82	3.94	8.48
6	Chan	9989.49	9993.99	211.30	21.72	4.58	11.01	4.84	9.73
7	Chan	9993.99	9998.48	281.18	25.80	4.59	14.64	5.74	10.90
8	Chan	9998.48	10002.97	295.58	26.46	4.54	15.39	5.89	11.17
9	Chan	10002.97	10007.46	254.63	24.17	4.52	13.26	5.38	10.54
10	Chan	10007.46	10011.96	199.21	21.06	4.63	10.38	4.69	9.46
11	Chan	10011.96	10016.45	116.62	15.34	4.68	6.07	3.41	7.60
12	ROB	10016.45	10029.10	40.02	13.13	10.54	2.08	1.29	3.05

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9985.00	9989.49	131.12	18.35	8.22	6.83	4.09	7.14
2	Chan	9989.49	9993.99	269.42	22.38	4.58	14.03	4.98	12.04
3	Chan	9993.99	9998.48	355.76	26.45	4.59	18.53	5.89	13.45
4	Chan	9998.48	10002.97	373.59	27.12	4.54	19.46	6.04	13.77
5	Chan	10002.97	10007.46	323.07	24.82	4.52	16.83	5.52	13.02
6	Chan	10007.46	10011.96	254.40	21.72	4.63	13.25	4.83	11.71
7	Chan	10011.96	10016.45	151.73	16.00	4.68	7.90	3.56	9.49
8	ROB	10016.45	10029.10	60.92	14.50	10.18	3.17	1.51	4.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.631

INPUT
Description:
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9811.809	2135.11	9816.729	2133.99	9829.239	2132.49	9832.599	2132.54	9834.469	2132.6
9843.439	2132.41	9850.989	2132.18	9855.109	2131.87	9865.899	2129.18	9870.399	2128.08
9882.349	2130.3	9885.149	2130.82	9886.329	2131.04	9887.239	2131.06	9911.159	2131.23
9915.639	2131.29	9918.689	2131.29	9919.189	2131.29	9922.369	2131.29	9925.939	2131.24
9925.949	2131.24	9927.209	2131.39	9935.829	2131.28	9940.339	2131.25	9940.679	2131.25
9941.949	2131.22	9943.279	2131.17	9963.319	2130.37	9969.189	2129.95	9986.949	2128.65
9986.95	2128.64	9987.909	2127.94	9993.279	2127.22	9994.759	2126.87	9999.739	2125.69
10000.25	2125.77	10010.01	2127.18	10028.19	2129.09	10039.56	2130.21	10051.2	2131.89
10055.91	2132.52	10057.38	2132.64	10060.83	2132.93	10065.22	2133.31	10069.39	2133.75

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10078.97 2134.64

Manning's n Values          num=        5
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
9811.809     .069855.109     .059885.149     .055 9986.95     .04510028.19     .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9986.9510028.19           123.68  122.72  149.56              .1       .3
Ineffective Flow     num=        1
   Sta L   Sta R    Elev  Permanent
9811.8099913.659 2135.11       T

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2132.70    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.06    Wt. n-Val.                  0.055      0.045      0.055
  W.S. Elev (ft)          2131.64    Reach Len. (ft)            123.68     122.72     149.56
  Crit W.S. (ft)          2131.64    Flow Area (sq ft)           79.31     175.59      29.68
  E.G. Slope (ft/ft)     0.010982    Area (sq ft)               151.46     175.59      29.68
  Q Total (cfs)           1920.00    Flow (cfs)                 236.47    1579.13     104.40
  Top Width (ft)           193.42    Top Width (ft)             130.91      41.24      21.27
  Vel Total (ft/s)           6.75    Avg. Vel. (ft/s)             2.98       8.99       3.52
  Max Chl Dpth (ft)          5.95    Hydr. Depth (ft)             1.08       4.26       1.40
  Conv. Total (cfs)       18321.8    Conv. (cfs)                2256.5    15069.0      996.2
  Length Wtd. (ft)         124.79    Wetted Per. (ft)            73.37      41.91      21.43
  Min Ch El (ft)          2125.69    Shear (lb/sq ft)             0.74       2.87       0.95
  Alpha                      1.50    Stream Power (lb/ft s)       2.21      25.83       3.34
  Frctn Loss (ft)            1.38    Cum Volume (acre-ft)         4.20       7.18       2.36
  C & E Loss (ft)            0.05    Cum SA (acres)               3.07       1.63       1.95

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2132.97    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.99    Wt. n-Val.                  0.055      0.045
  W.S. Elev (ft)          2131.98    Reach Len. (ft)            123.68     122.72     149.56
  Crit W.S. (ft)                     Flow Area (sq ft)           70.43     189.85
  E.G. Slope (ft/ft)     0.009645    Area (sq ft)                70.43     189.85
  Q Total (cfs)           1920.00    Flow (cfs)                 307.87    1612.13
  Top Width (ft)            73.19    Top Width (ft)             31.95      41.24
  Vel Total (ft/s)           7.38    Avg. Vel. (ft/s)            4.37       8.49
  Max Chl Dpth (ft)          6.29    Hydr. Depth (ft)            2.20       4.60
  Conv. Total (cfs)       19550.6    Conv. (cfs)               3135.0    16415.6
  Length Wtd. (ft)         122.85    Wetted Per. (ft)            33.30      44.80
  Min Ch El (ft)          2125.69    Shear (lb/sq ft)             1.27       2.55
  Alpha                      1.17    Stream Power (lb/ft s)       5.57      21.67
  Frctn Loss (ft)            1.52    Cum Volume (acre-ft)         2.90       7.57       1.00
  C & E Loss (ft)            0.07    Cum SA (acres)               1.85       1.63       0.47

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 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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area      W.P.    Percent      Hydr   Velocity
                         (ft)        (ft)           (cfs)    (sq ft)     (ft)       Conv  Depth(ft)    (ft/s)
  1           LOB        9845.76     9879.71        0.00      50.74    24.26       0.00       2.14      0.00
  2           LOB        9879.71     9913.66        0.00      21.42    34.06       0.00       0.63      0.00
  3           LOB        9913.66     9950.31       21.63      15.97    36.65       1.13       0.44      1.36
  4           LOB        9950.31     9986.95      214.83      63.34    36.72      11.19       1.73      3.39
  5           Chan       9986.95     9992.84      188.03      23.08     6.17       9.79       3.92      8.15
  6           Chan       9992.84     9998.73      287.51      29.54     6.05      14.97       5.01      9.73
  7           Chan       9998.73     10004.63     351.74      33.17     5.97      18.32       5.63     10.60
  8           Chan       10004.63    10010.52     271.28      28.34     5.95      14.13       4.81      9.57
  9           Chan       10010.52    10016.41     208.05      24.13     5.92      10.84       4.10      8.62
  10          Chan       10016.41    10022.30     158.33      20.48     5.92       8.25       3.48      7.73
  11          Chan       10022.30    10028.19     114.20      16.84     5.92       5.95       2.86      6.78
  12          ROB        10028.19    10038.35      84.30      20.80    10.21       4.39       2.05      4.05
  13          ROB        10038.35    10048.50      20.07       8.81    10.25       1.05       0.87      2.28
  14          ROB        10048.50    10058.66       0.03       0.07     0.97       0.00       0.07      0.42

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.

  Profile #profile 2

              Pos        Left Sta    Right Sta      Flow       Area      W.P.    Percent      Hydr   Velocity
                         (ft)        (ft)           (cfs)    (sq ft)     (ft)       Conv  Depth(ft)    (ft/s)
  1           LOB        9950.31     9986.95      307.88      70.43    33.30      16.04       2.20      4.37
```

2	Chan	9986.95	9992.84	198.26	25.12	6.17	10.33	4.26	7.89
3	Chan	9992.84	9998.73	294.25	31.58	6.05	15.33	5.36	9.32
4	Chan	9998.73	10004.63	355.76	35.21	5.97	18.53	5.98	10.10
5	Chan	10004.63	10010.52	278.90	30.38	5.95	14.53	5.16	9.18
6	Chan	10010.52	10016.41	218.09	26.17	5.92	11.36	4.44	8.33
7	Chan	10016.41	10022.30	169.82	22.52	5.92	8.84	3.82	7.54
8	Chan	10022.30	10028.19	97.04	18.87	8.82	5.05	3.20	5.14

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: C6
REACH: Reach 2 RS: 0.608

INPUT
Description:
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9833.992	2131.749	834.082	2131.749	840.472	2131.589	841.642	2131.539	844.032	2131.44
9845.702	2131.369	857.052	2130.839	862.352	2130.529	863.972	2130.479	867.132	2130.45
9871.102	2130.219	879.742	2129.59	891.102	2128.89	896.382	2128.419	902.112	2128.03
9909.162	2128.039	909.772	2128.039	914.122	2128.029	917.362	2127.439	926.592	2125.93
9938.392	2127.759	943.622	2128.579	951.882	2128.659	958.912	2128.739	960.502	2128.77
9963.712	2128.749	964.312	2128.749	968.662	2128.69	971.202	2128.529	986.562	2128.03
9993.58	2125.889	993.582	2125.889	999.432	2123.99	10002.46	2124.43	10007.39	2124.93
10011.41	2125.37	10018.77	2125.22	10023.28	2125.21	10027.12	2125.85	110033.95	2127.01
10039.19	2127.93	10050.57	2128.24	10088.94	2129.31	10091.17	2129.37	10092.9	2129.43
10094.67	2129.46	10095.4	2129.47	10097.53	2129.49	10100.93	2129.49	10102.21	2129.49
10115.07	2129.47	10129.48	2129.8						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9833.992	.069	914.122	.059	938.392	.055	9993.58	.045	10027.12	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.58	10027.12	101.48	127.28	117.96	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2130.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.	0.053	0.045	0.055
W.S. Elev (ft)	2129.22	Reach Len. (ft)	101.48	127.28	117.96
Crit W.S. (ft)	2129.22	Flow Area (sq ft)	132.41	140.15	58.36
E.G. Slope (ft/ft)	0.011082	Area (sq ft)	132.41	140.15	58.36
Q Total (cfs)	1920.00	Flow (cfs)	501.83	1253.01	165.16
Top Width (ft)	201.42	Top Width (ft)	109.29	33.54	58.59
Vel Total (ft/s)	5.80	Avg. Vel. (ft/s)	3.79	8.94	2.83
Max Chl Dpth (ft)	5.23	Hydr. Depth (ft)	1.21	4.18	1.00
Conv. Total (cfs)	18238.9	Conv. (cfs)	4767.1	11902.9	1568.9
Length Wtd. (ft)	123.27	Wetted Per. (ft)	110.05	33.98	58.79
Min Ch El (ft)	2123.99	Shear (lb/sq ft)	0.83	2.85	0.69
Alpha	1.68	Stream Power (lb/ft s)	3.15	25.51	1.94
Frctn Loss (ft)	1.36	Cum Volume (acre-ft)	3.80	6.73	2.21
C & E Loss (ft)	0.02	Cum SA (acres)	2.73	1.53	1.81

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2131.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.68	Wt. n-Val.	0.055	0.045	
W.S. Elev (ft)	2129.71	Reach Len. (ft)	101.48	127.28	117.96
Crit W.S. (ft)	2129.71	Flow Area (sq ft)	43.92	156.58	
E.G. Slope (ft/ft)	0.016363	Area (sq ft)	43.92	156.58	
Q Total (cfs)	1920.00	Flow (cfs)	215.11	1704.89	
Top Width (ft)	58.12	Top Width (ft)	24.58	33.54	
Vel Total (ft/s)	9.58	Avg. Vel. (ft/s)	4.90	10.89	
Max Chl Dpth (ft)	5.72	Hydr. Depth (ft)	1.79	4.67	
Conv. Total (cfs)	15009.6	Conv. (cfs)	1681.7	13327.9	
Length Wtd. (ft)	125.71	Wetted Per. (ft)	26.03	37.83	
Min Ch El (ft)	2123.99	Shear (lb/sq ft)	1.72	4.23	
Alpha	1.18	Stream Power (lb/ft s)	8.44	46.03	
Frctn Loss (ft)	1.71	Cum Volume (acre-ft)	2.74	7.08	1.00
C & E Loss (ft)	0.16	Cum SA (acres)	1.77	1.53	0.47

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9865.91	9897.83	8.68	5.92	13.57	0.45	0.44	1.47
2	LOB	9897.83	9929.75	260.38	56.70	32.14	13.56	1.78	4.59
3	LOB	9929.75	9961.66	126.27	34.06	32.08	6.58	1.07	3.71
4	LOB	9961.66	9993.58	106.50	35.73	32.25	5.55	1.12	2.98
5	Chan	9993.58	9998.37	169.37	19.71	5.03	8.82	4.11	8.59
6	Chan	9998.37	10003.16	238.12	23.88	4.88	12.40	4.98	9.97
7	Chan	10003.16	10007.95	200.80	21.44	4.82	10.46	4.48	9.36
8	Chan	10007.95	10012.75	165.96	19.12	4.81	8.64	3.99	8.68
9	Chan	10012.75	10017.54	161.95	18.81	4.79	8.44	3.93	8.61
10	Chan	10017.54	10022.33	167.31	19.18	4.79	8.71	4.00	8.72
11	Chan	10022.33	10027.12	149.50	18.01	4.85	7.79	3.76	8.30
12	ROB	10027.12	10047.59	130.61	38.10	20.65	6.80	1.86	3.43
13	ROB	10047.59	10068.06	30.67	15.92	20.48	1.60	0.78	1.93
14	ROB	10068.06	10088.54	3.89	4.34	17.65	0.20	0.25	0.89

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9961.66	9993.58	215.11	43.92	26.03	11.20	1.79	4.90
2	Chan	9993.58	9998.37	240.78	22.06	5.03	12.54	4.60	10.92
3	Chan	9998.37	10003.16	328.09	26.23	4.88	17.09	5.47	12.51
4	Chan	10003.16	10007.95	281.37	23.79	4.82	14.65	4.97	11.83
5	Chan	10007.95	10012.75	237.22	21.47	4.81	12.36	4.48	11.05
6	Chan	10012.75	10017.54	232.19	21.16	4.79	12.09	4.42	10.97
7	Chan	10017.54	10022.33	239.01	21.53	4.79	12.45	4.49	11.10
8	Chan	10022.33	10027.12	146.23	20.36	8.70	7.62	4.25	7.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.584

INPUT
Description:
Station Elevation Data num= 48

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9945.132	2129.03	9949.862	2128.65	9960.152	2127.77	9968.902	2127.07	9975.61	2125.178
9980.712	2123.74	9988.582	2121.28	9991.422	2120.67	9995.112	2120.13	9998.422	2120.13
9999.182	2120.04	9999.612	2120.05	10002.29	2120.13	10003.03	2120.11	10003.16	2120.13
10003.26	2120.13	10003.31	2120.13	10004.08	2120.27	10004.66	2120.42	10016.9	2123.7
10022.25	2125.12	10026.06	2126.14	10041.7	2126.23	10051.74	2126.44	10054.95	2126.28
10056.69	2126.19	10059.62	2126	10070.93	2125.43	10070.99	2125.43	10071.01	2125.43
10088.13	2127.11	10091.95	2127.38	10098.28	2127.38	10101.25	2127.38	10110.45	2127.36
10114.24	2127.12	10122.69	2126.95	10125.29	2127.03	10126	2127.04	10136.09	2127.13
10139.65	2127.11	10167.57	2127.45	10169.99	2127.41	10172.78	2127.32	10175.71	2127.37
10179.9	2127.23	10185.21	2127.36	10189.4	2127.48				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9945.132	.065	9975.61	.05	10022.25	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.61	10022.25	231.48	208.97	193.08	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2127.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.08	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2126.70	Reach Len. (ft)	231.48	208.97	193.08
Crit W.S. (ft)	2125.94	Flow Area (sq ft)	4.12	215.81	39.13
E.G. Slope (ft/ft)	0.011048	Area (sq ft)	4.12	215.81	39.13

Q Total (cfs)	1920.00	Flow (cfs)	8.05	1837.01	74.93
Top Width (ft)	113.85	Top Width (ft)	5.41	46.64	61.81
Vel Total (ft/s)	7.41	Avg. Vel. (ft/s)	1.95	8.51	1.91
Max Chl Dpth (ft)	6.66	Hydr. Depth (ft)	0.76	4.63	0.63
Conv. Total (cfs)	18266.3	Conv. (cfs)	76.6	17476.8	712.9
Length Wtd. (ft)	207.45	Wetted Per. (ft)	5.62	47.98	62.03
Min Ch El (ft)	2120.04	Shear (lb/sq ft)	0.51	3.10	0.44
Alpha	1.27	Stream Power (lb/ft s)	0.99	26.41	0.83
Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	3.64	6.21	2.08
C & E Loss (ft)	0.08	Cum SA (acres)	2.60	1.41	1.65

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2127.87	Element			
Vel Head (ft)	1.15	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2126.71	Reach Len. (ft)	231.48	208.97	193.08
Crit W.S. (ft)		Flow Area (sq ft)	4.18	216.36	16.96
E.G. Slope (ft/ft)	0.011502	Area (sq ft)	4.18	216.36	16.96
Q Total (cfs)	1920.00	Flow (cfs)	8.42	1882.25	29.33
Top Width (ft)	83.79	Top Width (ft)	5.40	46.64	31.75
Vel Total (ft/s)	8.08	Avg. Vel. (ft/s)	2.01	8.70	1.73
Max Chl Dpth (ft)	6.67	Hydr. Depth (ft)	0.77	4.64	0.53
Conv. Total (cfs)	17902.6	Conv. (cfs)	78.5	17550.6	273.5
Length Wtd. (ft)	207.83	Wetted Per. (ft)	5.62	47.98	32.28
Min Ch El (ft)	2120.04	Shear (lb/sq ft)	0.53	3.24	0.38
Alpha	1.14	Stream Power (lb/ft s)	1.08	28.17	0.65
Frctn Loss (ft)	3.01	Cum Volume (acre-ft)	2.68	6.54	0.98
C & E Loss (ft)	0.07	Cum SA (acres)	1.73	1.41	0.43

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.52	9975.61	8.05	4.12	5.62	0.42	0.76	1.95
2	Chan	9975.61	9982.27	85.41	16.45	6.94	4.45	2.47	5.19
3	Chan	9982.27	9988.94	230.63	29.92	6.97	12.01	4.49	7.71
4	Chan	9988.94	9995.60	394.65	40.79	6.76	20.55	6.12	9.67
5	Chan	9995.60	10002.26	451.25	43.97	6.67	23.50	6.60	10.26
6	Chan	10002.26	10008.92	377.91	39.96	6.85	19.68	6.00	9.46
7	Chan	10008.92	10015.59	211.65	28.30	6.90	11.02	4.25	7.48
8	Chan	10015.59	10022.25	85.51	16.43	6.90	4.45	2.47	5.21
9	ROB	10022.25	10055.68	28.29	17.29	33.57	1.47	0.52	1.64
10	ROB	10055.68	10089.11	46.65	21.85	28.46	2.43	0.77	2.14

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.52	9975.61	8.42	4.18	5.62	0.44	0.77	2.01
2	Chan	9975.61	9982.27	87.87	16.53	6.94	4.58	2.48	5.32
3	Chan	9982.27	9988.94	236.41	30.00	6.97	12.31	4.50	7.88
4	Chan	9988.94	9995.60	404.08	40.87	6.76	21.05	6.13	9.89
5	Chan	9995.60	10002.26	461.93	44.05	6.67	24.06	6.61	10.49
6	Chan	10002.26	10008.92	386.97	40.03	6.85	20.15	6.01	9.67
7	Chan	10008.92	10015.59	217.02	28.37	6.90	11.30	4.26	7.65
8	Chan	10015.59	10022.25	87.97	16.50	6.90	4.58	2.48	5.33
9	ROB	10022.25	10055.68	29.33	16.96	32.28	1.53	0.53	1.73

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: C6
REACH: Reach 2 RS: 0.544

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

9957.127 2128.129968.267 2127.759969.497 2127.729977.087 2124.37 9987.22119.851
9994.587 2116.559999.487 2116.4810000.35 2116.47 10001.5 2116.8310003.03 2117.25
10013.27 2120.1510021.17 2120.2810031.87 2120.4510039.92 2121.25 10055.1 2122.59
10057.59 2122.6210112.69 2123.33

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9957.127	.06	9987.2	.05	10013.27	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.2	10013.27	234.95	202.17	178.78	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2124.58	Element			
Vel Head (ft)	1.88	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2122.70	Reach Len. (ft)	234.95	202.17	178.78
Crit W.S. (ft)	2122.51	Flow Area (sq ft)	9.10	125.56	71.97
E.G. Slope (ft/ft)	0.021669	Area (sq ft)	9.10	125.56	71.97
Q Total (cfs)	1920.00	Flow (cfs)	39.55	1519.56	360.90
Top Width (ft)	83.18	Top Width (ft)	6.38	26.07	50.72
Vel Total (ft/s)	9.29	Avg. Vel. (ft/s)	4.35	12.10	5.01
Max Chl Dpth (ft)	6.23	Hydr. Depth (ft)	1.43	4.82	1.42
Conv. Total (cfs)	13043.1	Conv. (cfs)	268.7	10322.7	2451.7
Length Wtd. (ft)	198.92	Wetted Per. (ft)	6.99	27.29	50.83
Min Ch El (ft)	2116.47	Shear (lb/sq ft)	1.76	6.22	1.92
Alpha	1.40	Stream Power (lb/ft s)	7.65	75.33	9.61
Frctn Loss (ft)	3.55	Cum Volume (acre-ft)	3.60	5.39	1.83
C & E Loss (ft)	0.28	Cum SA (acres)	2.56	1.23	1.40

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2124.79	Element			
Vel Head (ft)	1.83	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2122.97	Reach Len. (ft)	234.95	202.17	178.78
Crit W.S. (ft)	2122.97	Flow Area (sq ft)	10.77	132.40	49.87
E.G. Slope (ft/ft)	0.018794	Area (sq ft)	10.77	132.40	49.87
Q Total (cfs)	1920.00	Flow (cfs)	47.62	1546.00	326.38
Top Width (ft)	51.18	Top Width (ft)	6.38	26.07	18.73
Vel Total (ft/s)	9.95	Avg. Vel. (ft/s)	4.42	11.68	6.54
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)	1.69	5.08	2.66
Conv. Total (cfs)	14005.3	Conv. (cfs)	347.4	11277.2	2380.8
Length Wtd. (ft)	200.36	Wetted Per. (ft)	7.25	27.29	21.24
Min Ch El (ft)	2116.47	Shear (lb/sq ft)	1.74	5.69	2.76
Alpha	1.19	Stream Power (lb/ft s)	7.71	66.47	18.03
Frctn Loss (ft)	3.19	Cum Volume (acre-ft)	2.65	5.70	0.83
C & E Loss (ft)	0.23	Cum SA (acres)	1.70	1.23	0.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.17	9981.19	0.02	0.03	0.40	0.00	0.08	0.63
2	LOB	9981.19	9987.20	39.53	9.07	6.59	2.06	1.51	4.36
3	Chan	9987.20	9990.93	130.27	13.72	4.08	6.78	3.68	9.49
4	Chan	9990.93	9994.65	242.64	19.91	4.07	12.64	5.35	12.18
5	Chan	9994.65	9998.37	327.85	23.02	3.72	17.08	6.18	14.24
6	Chan	9998.37	10002.10	316.34	22.71	3.80	16.48	6.10	13.93
7	Chan	10002.10	10005.82	238.84	19.33	3.87	12.44	5.19	12.36
8	Chan	10005.82	10009.54	163.51	15.40	3.87	8.52	4.13	10.62
9	Chan	10009.54	10013.27	100.12	11.47	3.87	5.21	3.08	8.73
10	ROB	10013.27	10033.15	274.97	47.48	19.89	14.32	2.39	5.79
11	ROB	10033.15	10053.04	85.34	23.56	19.97	4.44	1.19	3.62
12	ROB	10053.04	10072.92	0.58	0.93	10.96	0.03	0.08	0.62

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

Profile #profile 2

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	9975.17	9981.19	0.13	0.13	0.66	0.01	0.34	1.07
2	LOB	9981.19	9987.20	47.49	10.65	6.59	2.47	1.77	4.46
3	Chan	9987.20	9990.93	136.49	14.70	4.08	7.11	3.95	9.29
4	Chan	9990.93	9994.65	245.52	20.89	4.07	12.79	5.61	11.75
5	Chan	9994.65	9998.37	328.27	24.00	3.72	17.10	6.44	13.68
6	Chan	9998.37	10002.10	317.03	23.69	3.80	16.51	6.36	13.38
7	Chan	10002.10	10005.82	242.26	20.30	3.87	12.62	5.45	11.93
8	Chan	10005.82	10009.54	169.25	16.37	3.87	8.82	4.40	10.34
9	Chan	10009.54	10013.27	107.19	12.45	3.87	5.58	3.34	8.61
10	ROB	10013.27	10033.15	326.38	49.87	21.24	17.00	2.66	6.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.506

INPUT
Description: 10th Street 100 Feet Downstream
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9950.997	2123.65	9976.747	2122.49	9983.117	2119.05	9984.747	2118.21	9987.59	2117.194
9987.687	2117.16	9990.947	2116.61	9998.227	2115.06	9998.557	2114.98	9999.377	2115.12
10009.54	2116.87	10014.23	2116.65	10018.59	2116.46	10019.94	2116.54	10023.25	2116.72
10031.61	2115.67	10031.88	2115.64	10032.42	2115.56	10033.65	2115.75	10041.88	2117.116
10048.41	2118.21	10050.81	2118.61	10053.04	2118.58	10055.44	2118.56	10059.46	2118.58
10062.99	2118.58	10075.75	2118.76	10078.74	2118.86	10082.31	2118.96	10087.1	2119.09
10092.63	2119.12	10100.62	2119.06	10104.72	2119.06	10109.68	2118.95	10109.97	2118.94
10110.47	2118.95	10129.91	2119.37	10135.48	2119.53	10139.06	2119.61	10151.51	2120.06
10157.89	2120.37	10171.04	2120.58	10172.48	2120.55	10173.58	2120.54	10175.34	2120.56
10176.22	2120.55	10178.01	2120.55	10182.4	2120.45	10185.73	2120.49	10191.28	2120.61
10200.73	2120.96	10202.52	2120.98	10208.32	2121.01	10212.63	2121.34	10221.82	2122.13
10222.19	2122.16	10222.36	2122.17	10227.8	2122.23	10229.22	2122.23		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9950.997	.06	9987.59	.05	10041.88	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.59	10041.88	201.34	210.67	216.58	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
10183.5	10229.22	2126

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2120.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.95	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2119.80	Reach Len. (ft)	201.34	210.67	216.58
Crit W.S. (ft)	2119.80	Flow Area (sq ft)	8.42	192.68	89.89
E.G. Slope (ft/ft)	0.014966	Area (sq ft)	8.42	192.68	89.89
Q Total (cfs)	1920.00	Flow (cfs)	30.48	1617.95	271.57
Top Width (ft)	162.86	Top Width (ft)	5.87	54.29	102.70
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	3.62	8.40	3.02
Max Chl Dpth (ft)	4.82	Hydr. Depth (ft)	1.43	3.55	0.88
Conv. Total (cfs)	15694.4	Conv. (cfs)	249.2	13225.3	2219.9
Length Wtd. (ft)	210.89	Wetted Per. (ft)	6.44	54.89	102.85
Min Ch El (ft)	2114.98	Shear (lb/sq ft)	1.22	3.28	0.82
Alpha	1.40	Stream Power (lb/ft s)	4.42	27.54	2.47
Frctn Loss (ft)	2.68	Cum Volume (acre-ft)	3.55	4.65	1.50
C & E Loss (ft)	0.05	Cum SA (acres)	2.53	1.05	1.08

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2121.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.07	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2120.13	Reach Len. (ft)	201.34	210.67	216.58
Crit W.S. (ft)		Flow Area (sq ft)	10.30	210.10	18.96
E.G. Slope (ft/ft)	0.013697	Area (sq ft)	10.30	210.10	18.96
Q Total (cfs)	1920.00	Flow (cfs)	39.52	1787.97	92.51
Top Width (ft)	68.28	Top Width (ft)	5.87	54.29	8.12
Vel Total (ft/s)	8.02	Avg. Vel. (ft/s)	3.84	8.51	4.88

Max Chl Dpth (ft)	5.15	Hydr. Depth (ft)	1.75	3.87	2.33
Conv. Total (cfs)	16405.3	Conv. (cfs)	337.7	15277.2	790.4
Length Wtd. (ft)	210.72	Wetted Per. (ft)	6.76	54.89	9.89
Min Ch El (ft)	2114.98	Shear (lb/sq ft)	1.30	3.27	1.64
Alpha	1.07	Stream Power (lb/ft s)	5.00	27.85	8.00
Frctn Loss (ft)	3.05	Cum Volume (acre-ft)	2.59	4.91	0.69
C & E Loss (ft)	0.02	Cum SA (acres)	1.67	1.05	0.26

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.27	9987.59	30.48	8.42	6.44	1.59	1.43	3.62
2	Chan	9987.59	9995.35	205.88	25.88	7.91	10.72	3.34	7.95
3	Chan	9995.35	10003.10	332.90	34.51	7.90	17.34	4.45	9.65
4	Chan	10003.10	10010.86	213.32	26.37	7.85	11.11	3.40	8.09
5	Chan	10010.86	10018.61	191.65	24.61	7.76	9.98	3.17	7.79
6	Chan	10018.61	10026.37	197.87	25.12	7.79	10.31	3.24	7.88
7	Chan	10026.37	10034.12	270.20	30.34	7.83	14.07	3.91	8.90
8	Chan	10034.12	10041.88	206.12	25.84	7.86	10.74	3.33	7.98
9	ROB	10041.88	10079.35	182.69	50.35	37.59	9.52	1.34	3.63
10	ROB	10079.35	10116.82	71.35	28.61	37.47	3.72	0.76	2.49
11	ROB	10116.82	10154.28	17.52	10.93	27.78	0.91	0.39	1.60

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.27	9987.59	39.52	10.30	6.76	2.06	1.75	3.84
2	Chan	9987.59	9995.35	229.79	28.37	7.91	11.97	3.66	8.10
3	Chan	9995.35	10003.10	358.09	37.00	7.90	18.65	4.77	9.68
4	Chan	10003.10	10010.86	237.46	28.85	7.85	12.37	3.72	8.23
5	Chan	10010.86	10018.61	215.53	27.10	7.76	11.23	3.49	7.95
6	Chan	10018.61	10026.37	221.84	27.61	7.79	11.55	3.56	8.04
7	Chan	10026.37	10034.12	295.14	32.83	7.83	15.37	4.23	8.99
8	Chan	10034.12	10041.88	230.12	28.33	7.86	11.99	3.65	8.12
9	ROB	10041.88	10079.35	92.51	18.96	9.89	4.82	2.33	4.88

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: C6
REACH: Reach 2 RS: 0.466

INPUT
Description:
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9823.255	21209829.685	2119.569842.475		2118.559849.405		2118.039858.115		2117.38	
9867.765	2116.989874.735	2116.739877.745		2116.629887.035		2116.329887.165		2116.32	
9897.815	2116.169905.295	2116.059908.275		2116.059915.625		21169927.665		2115.96	
9928.205	2115.969931.135	2115.969937.315		2116.139950.595		2116.339957.245		2116.4	
9959.045	2116.059971.715	2115.559973.155		2115.51 9980.942		2114.0499990.255		2112.3	
9992.675	2111.849995.695	2111.34 10005.3		2112.1810006.48		2112.310007.96		2112.39	
10018.36	2113.7610022.06	2114.210028.43		2115.1610029.11		2115.2610044.55		2115.59	
10047.95	2115.5810052.24	2115.57 10056.8		2115.5410066.67		2115.6210068.11		2115.63	
10079.18	2116.310081.31	2116.3610083.85		2116.510087.32		2116.7310093.79		2117.11	
10100.42	2117.36 10107.5	2117.6110110.19		2117.7210120.93		2118.0210134.08		2118.41	

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9823.255	.065	9849.405	.045	9950.595	.065	9980.94	.051	10018.36	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.94	10018.36	190.02	209.57	224.29	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2117.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.053	0.050	0.055
W.S. Elev (ft)	2116.90	Reach Len. (ft)	190.02	209.57	224.29
Crit W.S. (ft)	2116.90	Flow Area (sq ft)	92.98	163.88	94.13
E.G. Slope (ft/ft)	0.010890	Area (sq ft)	92.98	163.88	94.13
Q Total (cfs)	1920.00	Flow (cfs)	251.56	1351.23	317.21
Top Width (ft)	220.29	Top Width (ft)	110.99	37.42	71.88
Vel Total (ft/s)	5.47	Avg. Vel. (ft/s)	2.71	8.25	3.37
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)	0.84	4.38	1.31
Conv. Total (cfs)	18398.5	Conv. (cfs)	2410.6	12948.2	3039.7
Length Wtd. (ft)	207.81	Wetted Per. (ft)	111.19	37.80	72.03

Min Ch El (ft)	2111.34	Shear (lb/sq ft)	0.57	2.95	0.89
Alpha	1.69	Stream Power (lb/ft s)	1.54	24.30	2.99
Frctn Loss (ft)	2.57	Cum Volume (acre-ft)	3.32	3.79	1.04
C & E Loss (ft)	0.02	Cum SA (acres)	2.26	0.83	0.65

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2118.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.26	Wt. n-Val.	0.063	0.050	0.055
W.S. Elev (ft)	2116.87	Reach Len. (ft)	190.02	209.57	224.29
Crit W.S. (ft)	2116.87	Flow Area (sq ft)	41.46	162.68	42.03
E.G. Slope (ft/ft)	0.015287	Area (sq ft)	41.46	162.68	42.03
Q Total (cfs)	1920.00	Flow (cfs)	129.42	1581.50	209.08
Top Width (ft)	98.00	Top Width (ft)	38.94	37.42	21.64
Vel Total (ft/s)	7.80	Avg. Vel. (ft/s)	3.12	9.72	4.97
Max Chl Dpth (ft)	5.53	Hydr. Depth (ft)	1.06	4.35	1.94
Conv. Total (cfs)	15528.8	Conv. (cfs)	1046.7	12791.0	1691.0
Length Wtd. (ft)	207.72	Wetted Per. (ft)	39.79	37.80	23.12
Min Ch El (ft)	2111.34	Shear (lb/sq ft)	0.99	4.11	1.73
Alpha	1.33	Stream Power (lb/ft s)	3.10	39.93	8.63
Frctn Loss (ft)	3.36	Cum Volume (acre-ft)	2.47	4.00	0.54
C & E Loss (ft)	0.03	Cum SA (acres)	1.56	0.83	0.19

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9854.79	9886.33	6.83	4.70	16.39	0.36	0.29	1.45
2	LOB	9886.33	9917.87	69.13	24.49	31.54	3.60	0.78	2.82
3	LOB	9917.87	9949.40	75.67	25.86	31.54	3.94	0.82	2.93
4	LOB	9949.40	9980.94	99.94	37.93	31.72	5.21	1.20	2.63
5	Chan	9980.94	9986.29	121.35	17.93	5.44	6.32	3.35	6.77
6	Chan	9986.29	9991.63	187.75	23.30	5.44	9.78	4.36	8.06
7	Chan	9991.63	9996.98	260.19	28.28	5.41	13.55	5.29	9.20
8	Chan	9996.98	10002.32	255.53	27.88	5.37	13.31	5.22	9.16
9	Chan	10002.32	10007.67	218.37	25.37	5.37	11.37	4.75	8.61
10	Chan	10007.67	10013.01	177.40	22.44	5.39	9.24	4.20	7.91
11	Chan	10013.01	10018.36	130.63	18.68	5.39	6.80	3.49	6.99
12	ROB	10018.36	10041.50	179.86	44.82	23.25	9.37	1.94	4.01
13	ROB	10041.50	10064.65	96.76	30.84	23.15	5.04	1.33	3.14
14	ROB	10064.65	10087.79	40.50	18.30	23.18	2.11	0.79	2.21
15	ROB	10087.79	10110.94	0.08	0.18	2.45	0.00	0.07	0.45

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9917.87	9949.40	12.63	4.54	8.07	0.66	0.61	2.78
2	LOB	9949.40	9980.94	116.78	36.92	31.72	6.08	1.17	3.16
3	Chan	9980.94	9986.29	141.47	17.76	5.44	7.37	3.32	7.97
4	Chan	9986.29	9991.63	219.68	23.13	5.44	11.44	4.33	9.50
5	Chan	9991.63	9996.98	305.11	28.11	5.41	15.89	5.26	10.86
6	Chan	9996.98	10002.32	299.60	27.71	5.37	15.60	5.18	10.81
7	Chan	10002.32	10007.67	255.78	25.20	5.37	13.32	4.71	10.15
8	Chan	10007.67	10013.01	207.48	22.27	5.39	10.81	4.17	9.32
9	Chan	10013.01	10018.36	152.38	18.51	5.39	7.94	3.46	8.23
10	ROB	10018.36	10041.50	209.08	42.03	23.12	10.89	1.94	4.97

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: 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: C6
REACH: Reach 2 RS: 0.426

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9808.058	2113.989	819.168	2113.219	819.258	2113.239	822.558	2113.129	825.688	2113.24
9874.918	2112.359	880.218	2112.269	888.218	2112.149	902.558	2111.869	918.908	2111.5
9933.278	2111.199	940.188	2111.139	956.568	2110.619	959.978	2110.779	961.688	2110.64
9976.668	2109.99	982.468	2109.729	985.498	2110.12	9989.52	2108.918	9993.588	2107.69
10000.1	2105.84	10005.36	2107.05	10012.88	2108.77	10021.05	2107.73	10021.3	2107.7
10021.49	2107.65	10022.96	2108	10028.22	2109.233	10040.5	2112.11	10052.78	2112.73
10057.23	2112.96	10065.44	2113.37	10067.92	2113.54	10071.7	2113.74		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9808.058	.059	918.908	.06	9989.5	.05	10028.22	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.5	10028.22	196.72	193.44	190.9	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2112.97	Element			
Vel Head (ft)	1.03	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2111.94	Reach Len. (ft)	196.72	193.44	190.90
Crit W.S. (ft)	2111.94	Flow Area (sq ft)	104.83	163.33	15.64
E.G. Slope (ft/ft)	0.014146	Area (sq ft)	104.83	163.33	15.64
Q Total (cfs)	1920.00	Flow (cfs)	378.40	1481.17	60.43
Top Width (ft)	141.34	Top Width (ft)	91.06	38.72	11.56
Vel Total (ft/s)	6.77	Avg. Vel. (ft/s)	3.61	9.07	3.86
Max Chl Dpth (ft)	6.10	Hydr. Depth (ft)	1.15	4.22	1.35
Conv. Total (cfs)	16142.7	Conv. (cfs)	3181.5	12453.2	508.1
Length Wtd. (ft)	194.11	Wetted Per. (ft)	91.42	39.75	11.87
Min Ch El (ft)	2105.84	Shear (lb/sq ft)	1.01	3.63	1.16
Alpha	1.45	Stream Power (lb/ft s)	3.66	32.91	4.50
Frctn Loss (ft)	3.18	Cum Volume (acre-ft)	2.89	3.00	0.76
C & E Loss (ft)	0.01	Cum SA (acres)	1.82	0.64	0.43

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2113.07	Element			
Vel Head (ft)	1.17	Wt. n-Val.	0.060	0.050	
W.S. Elev (ft)	2111.90	Reach Len. (ft)	196.72	193.44	190.90
Crit W.S. (ft)	2111.90	Flow Area (sq ft)	92.04	161.06	
E.G. Slope (ft/ft)	0.017116	Area (sq ft)	92.04	161.06	
Q Total (cfs)	1920.00	Flow (cfs)	391.58	1528.42	
Top Width (ft)	98.70	Top Width (ft)	60.20	38.50	
Vel Total (ft/s)	7.59	Avg. Vel. (ft/s)	4.25	9.49	
Max Chl Dpth (ft)	6.06	Hydr. Depth (ft)	1.53	4.18	
Conv. Total (cfs)	14675.8	Conv. (cfs)	2993.1	11682.7	
Length Wtd. (ft)	194.23	Wetted Per. (ft)	61.18	42.24	
Min Ch El (ft)	2105.84	Shear (lb/sq ft)	1.61	4.07	
Alpha	1.31	Stream Power (lb/ft s)	6.84	38.67	
Frctn Loss (ft)	3.63	Cum Volume (acre-ft)	2.18	3.23	0.43
C & E Loss (ft)	0.00	Cum SA (acres)	1.35	0.64	0.13

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9880.64	9916.92	3.87	3.59	18.49	0.20	0.19	1.08
2	LOB	9916.92	9953.21	63.82	28.03	36.30	3.32	0.77	2.28
3	LOB	9953.21	9989.50	310.72	73.21	36.64	16.18	2.02	4.24
4	Chan	9989.50	9995.03	176.54	21.30	5.77	9.19	3.85	8.29

5	Chan	9995.03	10000.56	314.62	30.07	5.74	16.39	5.44	10.46
6	Chan	10000.56	10006.09	309.56	29.64	5.68	16.12	5.36	10.45
7	Chan	10006.09	10011.63	197.44	22.63	5.68	10.28	4.09	8.73
8	Chan	10011.63	10017.16	147.36	18.88	5.60	7.68	3.41	7.80
9	Chan	10017.16	10022.69	193.80	22.26	5.60	10.09	4.03	8.70
10	Chan	10022.69	10028.22	141.84	18.56	5.68	7.39	3.36	7.64
11	ROB	10028.22	10036.92	59.12	14.69	8.93	3.08	1.69	4.03
12	ROB	10036.92	10045.61	1.31	0.96	2.94	0.07	0.33	1.37

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9916.92	9953.21	54.38	20.42	24.54	2.83	0.85	2.66
2	LOB	9953.21	9989.50	337.21	71.63	36.64	17.56	1.97	4.71
3	Chan	9989.50	9995.03	186.36	21.06	5.77	9.71	3.81	8.85
4	Chan	9995.03	10000.56	333.97	29.83	5.74	17.39	5.39	11.20
5	Chan	10000.56	10006.09	328.54	29.40	5.68	17.11	5.31	11.18
6	Chan	10006.09	10011.63	208.66	22.39	5.68	10.87	4.05	9.32
7	Chan	10011.63	10017.16	155.18	18.64	5.60	8.08	3.37	8.33
8	Chan	10017.16	10022.69	204.76	22.02	5.60	10.66	3.98	9.30
9	Chan	10022.69	10028.22	110.95	17.73	8.17	5.78	3.34	6.26

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.39

INPUT
Description:
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9821.253	2110.069	830.233	2109.579	837.403	2109.349	846.623	2109.099	864.773	2108.25
9865.053	2108.249	865.263	2108.249	867.833	2108.259	868.213	2108.249	869.843	2108.22
9873.053	2108.229	878.093	2108.259	884.323	2108.219	896.943	2108.189	909.673	2108.13
9915.993	2108.19	917.653	2107.899	918.933	2107.74	9928.52	2106.509	9940.933	2104.91
9941.083	2104.899	941.513	2104.929	953.453	2106.159	958.113	2106.599	962.943	2106.15
9973.063	2105.33	9975.36	2105.399	975.363	2105.399	980.663	2104.849	989.253	2103.9
10006.2	2103.49	10007.09	2103.47	10009.13	2103.98	100152	2105.407	10018.62	2106.282
10029	2108.81	10041.72	2109.21	0053.34	2109.52	10058.15	2109.88	10059.2	2109.95
10062.48	2110.18								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9821.253	.05	9909.673	.06	9975.36	.05	10018.6	.06	10053.34	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.36	10015	230.23	216.14	206.54	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2108.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.14	Wt. n-Val.	0.060	0.050	0.052
W.S. Elev (ft)	2107.77	Reach Len. (ft)	230.23	216.14	206.54
Crit W.S. (ft)	2107.77	Flow Area (sq ft)	99.35	142.36	11.46
E.G. Slope (ft/ft)	0.019259	Area (sq ft)	99.35	142.36	11.46
Q Total (cfs)	1920.00	Flow (cfs)	494.62	1369.54	55.84
Top Width (ft)	106.01	Top Width (ft)	56.66	39.64	9.71
Vel Total (ft/s)	7.58	Avg. Vel. (ft/s)	4.98	9.62	4.87
Max Chl Dpth (ft)	4.30	Hydr. Depth (ft)	1.75	3.59	1.18
Conv. Total (cfs)	13835.1	Conv. (cfs)	3564.1	9868.6	402.4
Length Wtd. (ft)	217.27	Wetted Per. (ft)	56.98	39.96	9.99
Min Ch El (ft)	2103.47	Shear (lb/sq ft)	2.10	4.28	1.38
Alpha	1.27	Stream Power (lb/ft s)	10.44	41.21	6.72
Frctn Loss (ft)	3.72	Cum Volume (acre-ft)	2.43	2.33	0.70
C & E Loss (ft)	0.03	Cum SA (acres)	1.49	0.47	0.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2108.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.060	0.050	
W.S. Elev (ft)	2107.81	Reach Len. (ft)	230.23	216.14	206.54
Crit W.S. (ft)	2107.81	Flow Area (sq ft)	101.81	144.09	
E.G. Slope (ft/ft)	0.020509	Area (sq ft)	101.81	144.09	
Q Total (cfs)	1920.00	Flow (cfs)	533.03	1386.97	
Top Width (ft)	96.00	Top Width (ft)	56.36	39.64	
Vel Total (ft/s)	7.81	Avg. Vel. (ft/s)	5.24	9.63	
Max Chl Dpth (ft)	4.34	Hydr. Depth (ft)	1.81	3.63	
Conv. Total (cfs)	13406.9	Conv. (cfs)	3722.0	9684.9	
Length Wtd. (ft)	217.77	Wetted Per. (ft)	56.76	42.36	
Min Ch El (ft)	2103.47	Shear (lb/sq ft)	2.30	4.36	
Alpha	1.22	Stream Power (lb/ft s)	12.02	41.92	
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	1.74	2.55	0.43
C & E Loss (ft)	0.03	Cum SA (acres)	1.08	0.47	0.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9913.72	9944.54	194.25	41.54	26.04	10.12	1.61	4.68
2	LOB	9944.54	9975.36	300.37	57.81	30.94	15.64	1.88	5.20
3	Chan	9975.36	9981.02	118.02	15.12	5.69	6.15	2.67	7.80
4	Chan	9981.02	9986.69	165.82	18.55	5.70	8.64	3.28	8.94
5	Chan	9986.69	9992.35	215.02	21.66	5.68	11.20	3.82	9.93
6	Chan	9992.35	9998.01	233.20	22.71	5.66	12.15	4.01	10.27
7	Chan	9998.01	10003.67	246.62	23.49	5.66	12.84	4.15	10.50
8	Chan	10003.67	10009.34	246.00	23.56	5.73	12.81	4.16	10.44
9	Chan	10009.34	10015.00	144.86	17.26	5.83	7.54	3.05	8.39
10	ROB	10015.00	10024.50	55.84	11.45	9.77	2.91	1.21	4.88
11	ROB	10024.50	10033.99	0.00	0.01	0.22	0.00	0.03	0.29

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9913.72	9944.54	210.77	42.65	25.82	10.98	1.67	4.94
2	LOB	9944.54	9975.36	322.25	59.16	30.94	16.78	1.92	5.45
3	Chan	9975.36	9981.02	123.07	15.37	5.69	6.41	2.71	8.01
4	Chan	9981.02	9986.69	172.07	18.80	5.70	8.96	3.32	9.15
5	Chan	9986.69	9992.35	222.42	21.90	5.68	11.58	3.87	10.15
6	Chan	9992.35	9998.01	241.01	22.96	5.66	12.55	4.05	10.50
7	Chan	9998.01	10003.67	254.73	23.74	5.66	13.27	4.19	10.73
8	Chan	10003.67	10009.34	254.07	23.81	5.73	13.23	4.21	10.67
9	Chan	10009.34	10015.00	119.60	17.51	8.23	6.23	3.09	6.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 2 RS: 0.349

INPUT
Description:
Station Elevation Data num= 39

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9872.953 2106.119877.493  2105.89878.703 2105.719894.813 2103.879904.683 2102.71
9906.023 2102.789914.823 2103.329918.533 2103.359922.473 2103.359924.513 2103.39
9934.893 2103.589935.413 2103.539938.873 2103.639946.873 2103.579948.543 2103.56
9949.103 2103.559953.463 2103.619975.383 2103.91 9985.532100.5119985.533 2100.51
9991.823 2098.429995.003 2097.869999.003 2097.1610010.59 2099.3810013.83 2099.99
10015.11 2100.2610027.09 2100.6210028.22 2100.6610044.95 2102.8310054.74 2103.91
10064.75    210510065.19    210510068.95 2104.9910077.52 2104.9610078.31 2104.95
10078.52 2104.98 10078.6 2104.9810078.73    210510091.56 2106.39

Manning's n Values          num=        4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9872.953     .059894.813     .055 9985.53     .0510015.11     .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9985.5310015.11            207.96  200.32   194.8              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2104.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.40	Wt. n-Val.	0.055	0.050	0.065
W.S. Elev (ft)	2103.55	Reach Len. (ft)	207.96	200.32	194.80
Crit W.S. (ft)	2103.55	Flow Area (sq ft)	24.95	145.17	73.11
E.G. Slope (ft/ft)	0.015302	Area (sq ft)	24.95	145.17	73.11
Q Total (cfs)	1920.00	Flow (cfs)	75.92	1515.90	328.18
Top Width (ft)	111.76	Top Width (ft)	45.81	29.58	36.37
Vel Total (ft/s)	7.89	Avg. Vel. (ft/s)	3.04	10.44	4.49
Max Chl Dpth (ft)	6.39	Hydr. Depth (ft)	0.54	4.91	2.01
Conv. Total (cfs)	15521.3	Conv. (cfs)	613.7	12254.6	2653.0
Length Wtd. (ft)	201.18	Wetted Per. (ft)	46.38	30.32	36.56
Min Ch El (ft)	2097.16	Shear (lb/sq ft)	0.51	4.57	1.91
Alpha	1.44	Stream Power (lb/ft s)	1.56	47.76	8.58
Frctn Loss (ft)	2.73	Cum Volume (acre-ft)	2.10	1.61	0.50
C & E Loss (ft)	0.20	Cum SA (acres)	1.22	0.30	0.28

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2105.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.41	Wt. n-Val.	0.055	0.050	0.065
W.S. Elev (ft)	2103.80	Reach Len. (ft)	207.96	200.32	194.80
Crit W.S. (ft)	2103.44	Flow Area (sq ft)	31.76	152.39	49.13
E.G. Slope (ft/ft)	0.013948	Area (sq ft)	31.76	152.39	49.13
Q Total (cfs)	1920.00	Flow (cfs)	89.93	1569.25	260.82
Top Width (ft)	111.23	Top Width (ft)	66.76	29.58	14.89
Vel Total (ft/s)	8.23	Avg. Vel. (ft/s)	2.83	10.30	5.31
Max Chl Dpth (ft)	6.63	Hydr. Depth (ft)	0.48	5.15	3.30
Conv. Total (cfs)	16257.3	Conv. (cfs)	761.5	13287.4	2208.4
Length Wtd. (ft)	201.12	Wetted Per. (ft)	68.08	30.32	17.81
Min Ch El (ft)	2097.16	Shear (lb/sq ft)	0.41	4.38	2.40
Alpha	1.34	Stream Power (lb/ft s)	1.15	45.06	12.75
Frctn Loss (ft)	2.55	Cum Volume (acre-ft)	1.39	1.81	0.32
C & E Loss (ft)	0.16	Cum SA (acres)	0.76	0.30	0.10

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9895.47	9917.98	17.38	9.18	20.52	0.91	0.45	1.89
2	LOB	9917.98	9940.50	1.58	1.98	16.22	0.08	0.12	0.80
3	LOB	9940.50	9963.02						
4	LOB	9963.02	9985.53	56.96	13.79	9.57	2.97	1.52	4.13
5	Chan	9985.53	9989.76	132.66	15.81	4.45	6.91	3.74	8.39
6	Chan	9989.76	9993.98	222.12	21.38	4.37	11.57	5.06	10.39
7	Chan	9993.98	9998.21	288.98	24.85	4.29	15.05	5.88	11.63
8	Chan	9998.21	10002.43	307.61	25.83	4.30	16.02	6.11	11.91
9	Chan	10002.43	10006.66	244.68	22.52	4.30	12.74	5.33	10.87
10	Chan	10006.66	10010.88	185.92	19.10	4.30	9.68	4.52	9.74
11	Chan	10010.88	10015.11	133.94	15.69	4.31	6.98	3.71	8.54
12	ROB	10015.11	10030.40	242.11	46.55	15.31	12.61	3.04	5.20
13	ROB	10030.40	10045.69	83.93	24.71	15.42	4.37	1.62	3.40
14	ROB	10045.69	10060.98	2.13	1.85	5.83	0.11	0.32	1.15

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9895.47	9917.98	10.22	4.46	8.76	0.53	0.56	2.29
2	LOB	9917.98	9940.50	12.15	7.22	22.52	0.63	0.32	1.68
3	LOB	9940.50	9963.02	4.30	3.87	22.52	0.22	0.17	1.11
4	LOB	9963.02	9985.53	63.27	16.20	14.28	3.30	1.18	3.90
5	Chan	9985.53	9989.76	140.96	16.84	4.45	7.34	3.99	8.37
6	Chan	9989.76	9993.98	229.79	22.41	4.37	11.97	5.30	10.25
7	Chan	9993.98	9998.21	295.76	25.88	4.29	15.40	6.13	11.43
8	Chan	9998.21	10002.43	314.04	26.86	4.30	16.36	6.35	11.69
9	Chan	10002.43	10006.66	252.15	23.55	4.30	13.13	5.57	10.71
10	Chan	10006.66	10010.88	194.11	20.13	4.30	10.11	4.76	9.64
11	Chan	10010.88	10015.11	142.44	16.72	4.31	7.42	3.96	8.52
12	ROB	10015.11	10030.40	260.82	49.13	17.81	13.58	3.30	5.31

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: C6
REACH: Reach 2 RS: 0.311

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9801.248	2104.499	811.528	2104.249	830.488	2103.789	836.348	2103.69	851.978	2100.22
9853.608	2099.639	857.118	2099.519	861.038	2099.359	866.518	2099.149	867.208	2099.43
9868.448	2099.839	869.398	2100.49	869.648	2100.479	870.008	2100.539	870.368	2100.53
9871.148	2100.479	873.108	2100.619	873.518	2100.59	873.918	2100.329	874.558	2099.78
9875.158	2099.439	875.618	2099.439	875.708	2099.439	891.958	2099.529	893.158	2099.52
9894.708	2099.659	896.228	2099.699	904.908	2099.659	905.658	2099.659	906.918	2099.7
9911.948	2099.649	913.228	2099.689	916.228	2099.689	925.558	2099.779	929.628	2099.82
9932.228	2099.849	940.798	2100.019	942.308	2100.059	943.088	2100.069	946.738	2100.19
9956.558	2100.679	965.318	2100.929	972.338	2100.89	975.208	2100.889	981.178	2099.34
9986.25	2098.215	9990.238	2097.339	998.948	2095.11	0010.59	2098.31	0011.79	2098.58
10012.27	2098.461	0012.43	2098.510	012.81	2098.591	0012.87	2098.611	0012.94	2098.61
10016.92	2098.611	0019.59	2098.611	0023.95	2098.861	0027.46	2099.051	0033.36	2099.8
10037.42	2100.31	0038.99	2100.481	0040.48	2100.71	0052.25	2101.741	0055.77	2102.05
10073.26	2103.41								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9801.248	.065	9851.978	.045	9986.25	.05	10010.59	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.25	10010.59	208.78	190.99	178.52	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2101.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.045	0.050	0.065
W.S. Elev (ft)	2101.19	Reach Len. (ft)	208.78	190.99	178.52
Crit W.S. (ft)	2101.19	Flow Area (sq ft)	175.76	109.24	60.63
E.G. Slope (ft/ft)	0.012158	Area (sq ft)	175.76	109.24	60.63
Q Total (cfs)	1920.00	Flow (cfs)	749.26	952.99	217.75
Top Width (ft)	198.54	Top Width (ft)	138.76	24.34	35.44
Vel Total (ft/s)	5.56	Avg. Vel. (ft/s)	4.26	8.72	3.59
Max Chl Dpth (ft)	6.09	Hydr. Depth (ft)	1.27	4.49	1.71
Conv. Total (cfs)	17412.6	Conv. (cfs)	6795.1	8642.7	1974.8
Length Wtd. (ft)	197.84	Wetted Per. (ft)	139.97	25.15	35.65
Min Ch El (ft)	2095.10	Shear (lb/sq ft)	0.95	3.30	1.29
Alpha	1.50	Stream Power (lb/ft s)	4.06	28.76	4.64
Frctn Loss (ft)	2.76	Cum Volume (acre-ft)	1.62	1.03	0.20
C & E Loss (ft)	0.07	Cum SA (acres)	0.78	0.17	0.12

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2102.50	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.87	Wt. n-Val.	0.045	0.050	0.065
W.S. Elev (ft)	2101.63	Reach Len. (ft)	208.78	190.99	178.52
Crit W.S. (ft)		Flow Area (sq ft)	135.78	119.93	42.96
E.G. Slope (ft/ft)	0.011548	Area (sq ft)	135.78	119.93	42.96
Q Total (cfs)	1920.00	Flow (cfs)	640.64	1085.03	194.33
Top Width (ft)	125.00	Top Width (ft)	86.25	24.34	14.41
Vel Total (ft/s)	6.43	Avg. Vel. (ft/s)	4.72	9.05	4.52
Max Chl Dpth (ft)	6.53	Hydr. Depth (ft)	1.57	4.93	2.98
Conv. Total (cfs)	17867.0	Conv. (cfs)	5961.6	10097.0	1808.4
Length Wtd. (ft)	196.17	Wetted Per. (ft)	88.55	25.15	17.20
Min Ch El (ft)	2095.10	Shear (lb/sq ft)	1.11	3.44	1.80
Alpha	1.35	Stream Power (lb/ft s)	5.22	31.10	8.15
Frctn Loss (ft)	2.96	Cum Volume (acre-ft)	0.99	1.19	0.11
C & E Loss (ft)	0.00	Cum SA (acres)	0.39	0.17	0.03

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9838.25	9875.25	157.99	36.66	28.62	8.23	1.32	4.31
2	LOB	9875.25	9912.25	290.95	59.86	37.01	15.15	1.62	4.86
3	LOB	9912.25	9949.25	205.86	48.64	37.01	10.72	1.31	4.23
4	LOB	9949.25	9986.25	94.46	30.59	37.33	4.92	0.83	3.09
5	Chan	9986.25	9989.73	82.83	11.69	3.56	4.31	3.36	7.09
6	Chan	9989.73	9993.20	118.37	14.52	3.58	6.17	4.18	8.15
7	Chan	9993.20	9996.68	163.20	17.61	3.59	8.50	5.06	9.27
8	Chan	9996.68	10000.16	206.83	20.31	3.59	10.77	5.84	10.18
9	Chan	10000.16	10003.64	174.36	18.36	3.61	9.08	5.28	9.50
10	Chan	10003.64	10007.11	124.96	15.03	3.61	6.51	4.32	8.31
11	Chan	10007.11	10010.59	82.43	11.71	3.61	4.29	3.37	7.04
12	ROB	10010.59	10023.12	133.83	32.28	12.61	6.97	2.58	4.15
13	ROB	10023.12	10035.66	76.51	23.08	12.61	3.98	1.84	3.32
14	ROB	10035.66	10048.19	7.41	5.27	10.43	0.39	0.51	1.41

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9875.25	9912.25	119.68	24.06	14.21	6.23	1.96	4.97
2	LOB	9912.25	9949.25	330.28	64.89	37.01	17.20	1.75	5.09
3	LOB	9949.25	9986.25	190.68	46.83	37.33	9.93	1.27	4.07
4	Chan	9986.25	9989.73	99.40	13.22	3.56	5.18	3.80	7.52
5	Chan	9989.73	9993.20	136.76	16.04	3.58	7.12	4.61	8.52
6	Chan	9993.20	9996.68	183.33	19.14	3.59	9.55	5.50	9.58
7	Chan	9996.68	10000.16	228.25	21.84	3.59	11.89	6.28	10.45
8	Chan	10000.16	10003.64	194.81	19.89	3.61	10.15	5.72	9.80
9	Chan	10003.64	10007.11	143.59	16.56	3.61	7.48	4.76	8.67
10	Chan	10007.11	10010.59	98.89	13.24	3.61	5.15	3.81	7.47
11	ROB	10010.59	10023.12	181.35	37.78	12.61	9.45	3.01	4.80
12	ROB	10023.12	10035.66	12.98	5.18	4.59	0.68	2.76	2.50

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: C6
REACH: Reach 2 RS: 0.274

INPUT
Description: Confluence with X4A
Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9787.02	2098.85	9790.32	2098.71	9798.54	2098.41	9801.95	2098.34	9806.64	2098.29
9809.1	2098.21	9810.3	2098.15	9811.19	2098.15	9833	2097.4	9842.68	2097.14
9849.71	2096.92	9861.85	2096.34	9861.88	2096.34	9862.63	2096.26	9884.7	2096.61
9911.43	2097.24	9911.95	2097.24	9915.47	2097.24	9918.52	2097.24	9922.17	2097.29
9924.39	2097.25	9925.06	2097.24	9927.2	2097.17	9934.58	2097.11	9936.8	2097.01
9939.36	2096.91	9940.96	2096.92	9942.09	2096.93	9947.58	2096.97	9950.49	2096.96
9962.3	2097.45	9972.62	2097.86	9978.28	2097.21	9981.39	2096.83	9983.99	2097.2
9986.03	2097.23	9990.77	2096.14	10000.24	2093.82	10007.91	2096.32	10008.49	2096.5
10008.95	2096.43	10013.39	2095.57	10023.15	2095.99	10036.07	2096.38	10045.7	2096.62
10047.33	2096.71	10048.61	2096.77	10061.56	2097.91	10064.14	2098.08	10068.56	2098.46
10084.94	2099.22	10101.92	2100	10102.56	2100.03	10103.35	2100.06	10105.25	2100.1
10110.22	2100.29	10114.39	2100.47	10118.83	2100.67	10121.57	2100.79	10121.95	2100.8
10129.3	2101.09	10129.35	2101.09						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9787.02	.05	9990.77	.05	10045.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.77	10045.7	138.47	139.73	175.99	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2098.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.050	0.050	0.060
W.S. Elev (ft)	2098.30	Reach Len. (ft)	139.73	139.73	139.73
Crit W.S. (ft)		Flow Area (sq ft)	217.70	137.52	18.21
E.G. Slope (ft/ft)	0.016214	Area (sq ft)	217.70	137.52	18.21
Q Total (cfs)	1920.00	Flow (cfs)	917.66	950.17	52.17
Top Width (ft)	260.79	Top Width (ft)	184.88	54.93	20.98
Vel Total (ft/s)	5.14	Avg. Vel. (ft/s)	4.22	6.91	2.86
Max Chl Dpth (ft)	4.48	Hydr. Depth (ft)	1.18	2.50	0.87
Conv. Total (cfs)	15078.3	Conv. (cfs)	7206.7	7461.9	409.7
Length Wtd. (ft)	139.73	Wetted Per. (ft)	185.17	55.74	21.05
Min Ch El (ft)	2093.82	Shear (lb/sq ft)	1.19	2.50	0.88
Alpha	1.22	Stream Power (lb/ft s)	5.02	17.26	2.51
Frctn Loss (ft)	2.81	Cum Volume (acre-ft)	0.68	0.49	0.04
C & E Loss (ft)	0.01	Cum SA (acres)			

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2099.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.	0.050	0.050	
W.S. Elev (ft)	2098.66	Reach Len. (ft)	139.73	139.73	139.73
Crit W.S. (ft)	2098.61	Flow Area (sq ft)	113.46	157.10	
E.G. Slope (ft/ft)	0.020615	Area (sq ft)	113.46	157.10	
Q Total (cfs)	1920.00	Flow (cfs)	614.07	1305.93	
Top Width (ft)	132.70	Top Width (ft)	77.77	54.93	
Vel Total (ft/s)	7.10	Avg. Vel. (ft/s)	5.41	8.31	
Max Chl Dpth (ft)	4.83	Hydr. Depth (ft)	1.46	2.86	
Conv. Total (cfs)	13372.3	Conv. (cfs)	4276.8	9095.4	
Length Wtd. (ft)	139.73	Wetted Per. (ft)	79.42	57.78	
Min Ch El (ft)	2093.82	Shear (lb/sq ft)	1.84	3.50	
Alpha	1.12	Stream Power (lb/ft s)	9.95	29.09	
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	0.39	0.58	0.02
C & E Loss (ft)	0.03	Cum SA (acres)			

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9787.02	9827.77	13.39	7.58	21.90	0.70	0.35	1.77
2	LOB	9827.77	9868.52	252.76	56.63	40.78	13.16	1.39	4.46
3	LOB	9868.52	9909.27	308.01	63.75	40.76	16.04	1.56	4.83
4	LOB	9909.27	9950.02	192.46	48.08	40.76	10.02	1.18	4.00
5	LOB	9950.02	9990.77	151.03	41.66	40.98	7.87	1.02	3.63
6	Chan	9990.77	9998.62	188.65	24.48	8.08	9.83	3.12	7.71
7	Chan	9998.62	10006.46	240.39	28.50	8.22	12.52	3.63	8.43
8	Chan	10006.46	10014.31	111.71	17.84	8.04	5.82	2.27	6.26
9	Chan	10014.31	10022.16	134.66	19.77	7.85	7.01	2.52	6.81
10	Chan	10022.16	10030.01	109.12	17.43	7.85	5.68	2.22	6.26
11	Chan	10030.01	10037.85	90.44	15.57	7.85	4.71	1.98	5.81
12	Chan	10037.85	10045.70	75.21	13.94	7.85	3.92	1.78	5.40
13	ROB	10045.70	10062.43	51.49	17.46	16.78	2.68	1.04	2.95
14	ROB	10062.43	10079.16	0.68	0.75	4.26	0.04	0.18	0.90

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9909.27	9950.02	318.47	57.27	38.44	16.59	1.55	5.56
2	LOB	9950.02	9990.77	295.60	56.19	40.98	15.40	1.38	5.26
3	Chan	9990.77	9998.62	253.56	27.28	8.08	13.21	3.48	9.30
4	Chan	9998.62	10006.46	315.33	31.30	8.22	16.42	3.99	10.07
5	Chan	10006.46	10014.31	159.82	20.64	8.04	8.32	2.63	7.74
6	Chan	10014.31	10022.16	188.41	22.57	7.85	9.81	2.88	8.35
7	Chan	10022.16	10030.01	156.96	20.22	7.85	8.17	2.58	7.76
8	Chan	10030.01	10037.85	133.68	18.36	7.85	6.96	2.34	7.28
9	Chan	10037.85	10045.70	98.18	16.73	9.88	5.11	2.13	5.87

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: C6
REACH: Reach 3 RS: 0.248

INPUT
Description: Junction 5
Station Elevation Data num= 67

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9726.935	2096.01	9730.815	2095.85	9733.455	2095.86	9798.005	2094.06	9813.485	2093.84
9815.455	2093.78	9817.615	2093.69	9820.425	2093.57	9840.985	2093.69	847.835	2093.63
9849.785	2093.67	9860.305	2093.76	9864.095	2093.82	9867.335	2093.88	9886.035	2094.25
9890.675	2094.57	9898.335	2094.69	9903.325	2094.83	9913.495	2095.04	9916.585	2094.96
9916.835	2094.97	9917.215	2094.99	9926.355	2095.34	9930.935	2095.42	9933.195	2095.27
9935.815	2095.14	9957.235	2095.19	9957.875	2095.21	9958.015	2095.22	9959.475	2095.03
9965.815	2094.44	9967.925	2094.49	9970.855	2094.48	9981.535	2096.25	9982.345	2096.81
9985.315	2095.45	9987.12	2094.43	29993.135	2091.04	10002.76	2093.97	10005.17	2094.57
10013.77	2094.41	10014.66	2094.41	10020.13	2094.42	10020.47	2094.39	10022.23	2094.45
10024.38	2094.37	10025.05	2094.3	10025.7	2094.27	10027.58	2093.98	10030.42	2093.64
10033.06	2093.36	10036.96	2092.71	0042.63	2092.86	10048.48	2092.81	0054.52	2092.39
10058.39	2092.19	10061.64	2092.91	0066.41	2093.89	10069.16	2094.16	10071.44	2094.35
10074.44	2094.53	10083.39	2095.7	10087.5	2095.91	0090.48	2096.58	10093.57	2096.94
10094.18	2096.99	10097.98	2097.8						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9726.935	.06	9798.005	.05	9987.12	.05	10069.16	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.12	10069.16	148	184.27	169	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2095.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.051	0.050	0.060
W.S. Elev (ft)	2095.36	Reach Len. (ft)	148.00	184.27	169.00
Crit W.S. (ft)	2095.36	Flow Area (sq ft)	204.00	165.43	7.87
E.G. Slope (ft/ft)	0.024831	Area (sq ft)	204.00	165.43	7.87
Q Total (cfs)	2210.00	Flow (cfs)	967.04	1219.33	23.63
Top Width (ft)	315.31	Top Width (ft)	221.67	82.04	11.60
Vel Total (ft/s)	5.86	Avg. Vel. (ft/s)	4.74	7.37	3.00
Max Chl Dpth (ft)	4.32	Hydr. Depth (ft)	0.92	2.02	0.68
Conv. Total (cfs)	14024.9	Conv. (cfs)	6136.9	7738.0	150.0
Length Wtd. (ft)	169.62	Wetted Per. (ft)	222.09	83.78	11.67
Min Ch El (ft)	2091.04	Shear (lb/sq ft)	1.42	3.06	1.05
Alpha	1.16	Stream Power (lb/ft s)	6.75	22.56	3.14
Frctn Loss (ft)	2.30	Cum Volume (acre-ft)	2.66	2.56	1.33
C & E Loss (ft)	0.01	Cum SA (acres)	2.15	0.53	0.34

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2096.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.050	0.050	0.060
W.S. Elev (ft)	2095.82	Reach Len. (ft)	148.00	184.27	169.00
Crit W.S. (ft)	2095.82	Flow Area (sq ft)	129.43	203.56	13.26
E.G. Slope (ft/ft)	0.021057	Area (sq ft)	129.43	203.56	13.26
Q Total (cfs)	2210.00	Flow (cfs)	572.78	1586.63	50.59
Top Width (ft)	216.03	Top Width (ft)	122.39	82.04	11.60
Vel Total (ft/s)	6.38	Avg. Vel. (ft/s)	4.43	7.79	3.81
Max Chl Dpth (ft)	4.78	Hydr. Depth (ft)	1.06	2.48	1.14
Conv. Total (cfs)	15229.9	Conv. (cfs)	3947.2	10934.0	348.7
Length Wtd. (ft)	174.44	Wetted Per. (ft)	125.00	83.78	12.13
Min Ch El (ft)	2091.04	Shear (lb/sq ft)	1.36	3.19	1.44
Alpha	1.20	Stream Power (lb/ft s)	6.02	24.90	5.48
Frctn Loss (ft)	2.32	Cum Volume (acre-ft)	1.70	2.78	1.24
C & E Loss (ft)	0.02	Cum SA (acres)	1.16	0.53	0.28

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	9726.94	9778.97	19.78	10.51	27.47	0.90	0.38	1.88
2	LOB	9778.97	9831.01	373.10	71.62	52.05	16.88	1.38	5.21
3	LOB	9831.01	9883.05	472.79	81.69	52.04	21.39	1.57	5.79
4	LOB	9883.05	9935.08	65.36	24.02	47.47	2.96	0.51	2.72
5	LOB	9935.08	9987.12	36.01	16.16	43.06	1.63	0.38	2.23
6	Chan	9987.12	9998.84	304.23	35.43	12.87	13.77	3.02	8.59
7	Chan	9998.84	10010.56	75.36	14.90	11.97	3.41	1.27	5.06
8	Chan	10010.56	10022.28	45.74	10.95	11.72	2.07	0.93	4.18
9	Chan	10022.28	10034.00	94.14	16.93	11.80	4.26	1.44	5.56
10	Chan	10034.00	10045.72	237.87	29.49	11.76	10.76	2.52	8.07
11	Chan	10045.72	10057.44	281.22	32.58	11.74	12.73	2.78	8.63
12	Chan	10057.44	10069.16	180.77	25.14	11.91	8.18	2.15	7.19
13	ROB	10069.16	10074.92	19.51	5.64	5.78	0.88	0.98	3.46
14	ROB	10074.92	10080.69	4.12	2.23	5.81	0.19	0.39	1.85

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9831.01	9883.05	259.48	44.49	25.95	11.74	1.86	5.83
2	LOB	9883.05	9935.08	185.53	48.06	52.07	8.40	0.92	3.86
3	LOB	9935.08	9987.12	127.76	36.88	46.98	5.78	0.79	3.46
4	Chan	9987.12	9998.84	364.14	40.88	12.87	16.48	3.49	8.91
5	Chan	9998.84	10010.56	119.46	20.35	11.97	5.41	1.74	5.87
6	Chan	10010.56	10022.28	84.55	16.40	11.72	3.83	1.40	5.16
7	Chan	10022.28	10034.00	141.34	22.38	11.80	6.40	1.91	6.32
8	Chan	10034.00	10045.72	297.56	34.94	11.76	13.46	2.98	8.52
9	Chan	10045.72	10057.44	343.18	38.03	11.74	15.53	3.24	9.02
10	Chan	10057.44	10069.16	236.40	30.59	11.91	10.70	2.61	7.73
11	ROB	10069.16	10074.92	35.79	8.32	5.78	1.62	1.44	4.30
12	ROB	10074.92	10080.69	14.78	4.91	5.81	0.67	0.85	3.01
13	ROB	10080.69	10086.45	0.02	0.03	0.54	0.00	0.47	0.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 3 RS: 0.213

INPUT
Description: 7th Street
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9741.345	2092.99	9741.805	2092.99	9760.875	2092.73	9766.295	2092.66	9768.855	2092.56
9780.475	2092.02	9785.405	2091.79	9786.025	2091.69	9786.955	2091.66	9789.595	2091.58
9794.695	2091.43	9796.735	2091.39	9802.865	2091.22	9805.425	2091.29	9811.305	2091.15
9812.765	2091.12	9814.515	2091.05	9829.605	2091.28	9832.535	2091.28	9837.405	2091.32
9877.885	2091.34	9879.315	2091.37	9880.475	2091.49	9883.585	2091.47	9886.185	2091.54
9887.075	2091.56	9889.405	2091.67	9895.205	2091.89	9897.075	2091.94	9909.525	2092.25
9910.395	2092.27	9912.345	2092.33	9915.235	2092.39	9922.955	2092.29	9927.305	2092.27
9928.085	2092.29	9930.245	2092.44	9931.355	2092.45	9932.835	2092.52	9937.685	2092.71
9938.725	2092.71	9941.085	2092.67	9943.965	2092.62	9945.995	2092.55	9964.185	2092.24
9968.875	2092.16	9971.835	2092.01	9972.545	2091.98	9974.265	2091.81	9977.485	2090.81
9977.49	2090.80	9983.52	2088.94	19983.505	2088.94	9989.075	2087.52	9990.295	2087.8
9992.765	2087.89	9994.355	2086.94	9995.245	2086.99	9995.625	2086.88	10000.93	2086.75
10006.3	2086.87	10008.73	2086.94	10011.41	2087.96	10012.59	2088.54	10018.67	2091.39
10029.99	2096.66								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9741.345	.065	9796.735	.035	9812.765	.055	9909.525	.035	9930.245	.055
9983.5	.051	10012.59	.065						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.51	10012.59	191.7	200.66	212.3	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft) 2093.64 Element Left OB Channel Right OB

Vel Head (ft)	0.74	Wt. n-Val.	0.051	0.050	0.065
W.S. Elev (ft)	2092.90	Reach Len. (ft)	191.70	200.66	212.30
Crit W.S. (ft)	2092.90	Flow Area (sq ft)	255.40	161.10	20.31
E.G. Slope (ft/ft)	0.008547	Area (sq ft)	255.40	161.10	20.31
Q Total (cfs)	2210.00	Flow (cfs)	780.44	1362.06	67.50
Top Width (ft)	273.61	Top Width (ft)	235.20	29.09	9.33
Vel Total (ft/s)	5.06	Avg. Vel. (ft/s)	3.06	8.45	3.32
Max Chl Dpth (ft)	6.15	Hydr. Depth (ft)	1.09	5.54	2.18
Conv. Total (cfs)	23904.8	Conv. (cfs)	8441.8	14732.9	730.1
Length Wtd. (ft)	197.07	Wetted Per. (ft)	235.71	29.85	10.30
Min Ch El (ft)	2086.75	Shear (lb/sq ft)	0.58	2.88	1.05
Alpha	1.86	Stream Power (lb/ft s)	1.77	24.35	3.50
Frctn Loss (ft)	2.29	Cum Volume (acre-ft)	1.88	1.87	1.28
C & E Loss (ft)	0.01	Cum SA (acres)	1.37	0.30	0.30

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2094.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.052	0.050	0.065
W.S. Elev (ft)	2093.24	Reach Len. (ft)	191.70	200.66	212.30
Crit W.S. (ft)	2093.24	Flow Area (sq ft)	171.21	170.83	23.43
E.G. Slope (ft/ft)	0.009170	Area (sq ft)	171.21	170.83	23.43
Q Total (cfs)	2210.00	Flow (cfs)	567.56	1555.61	86.83
Top Width (ft)	166.92	Top Width (ft)	128.50	29.09	9.33
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)	3.31	9.11	3.71
Max Chl Dpth (ft)	6.49	Hydr. Depth (ft)	1.33	5.87	2.51
Conv. Total (cfs)	23077.9	Conv. (cfs)	5926.8	16244.4	906.7
Length Wtd. (ft)	197.90	Wetted Per. (ft)	130.89	29.85	10.63
Min Ch El (ft)	2086.75	Shear (lb/sq ft)	0.75	3.28	1.26
Alpha	1.69	Stream Power (lb/ft s)	2.48	29.84	4.68
Frctn Loss (ft)	2.35	Cum Volume (acre-ft)	1.19	1.99	1.17
C & E Loss (ft)	0.00	Cum SA (acres)	0.73	0.30	0.24

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9741.35	9789.78	26.89	20.69	41.50	1.22	0.50	1.30
2	LOB	9789.78	9838.21	321.43	79.97	48.44	14.54	1.65	4.02
3	LOB	9838.21	9886.64	245.80	75.11	48.43	11.12	1.55	3.27
4	LOB	9886.64	9935.07	88.69	36.30	48.45	4.01	0.75	2.44
5	LOB	9935.07	9983.50	97.64	43.33	48.89	4.42	0.89	2.25
6	Chan	9983.50	9987.66	135.56	18.66	4.29	6.13	4.49	7.27
7	Chan	9987.66	9991.81	173.38	21.51	4.23	7.85	5.18	8.06
8	Chan	9991.81	9995.97	194.11	23.33	4.37	8.78	5.61	8.32
9	Chan	9995.97	10000.12	229.51	25.27	4.16	10.38	6.08	9.08
10	Chan	10000.12	10004.28	231.89	25.43	4.16	10.49	6.12	9.12
11	Chan	10004.28	10008.43	226.10	25.05	4.16	10.23	6.03	9.03
12	Chan	10008.43	10012.59	171.52	21.86	4.48	7.76	5.26	7.85
13	ROB	10012.59	10016.07	48.60	12.34	3.84	2.20	3.55	3.94
14	ROB	10016.07	10019.55	17.41	6.66	3.84	0.79	1.91	2.61
15	ROB	10019.55	10023.03	1.49	1.30	2.61	0.07	0.55	1.14

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9838.21	9886.64	221.65	59.21	33.55	10.03	1.87	3.74
2	LOB	9886.64	9935.07	171.99	52.49	48.45	7.78	1.08	3.28
3	LOB	9935.07	9983.50	173.93	59.51	48.89	7.87	1.23	2.92
4	Chan	9983.50	9987.66	158.38	20.04	4.29	7.17	4.82	7.90
5	Chan	9987.66	9991.81	199.47	22.90	4.23	9.03	5.51	8.71
6	Chan	9991.81	9995.97	221.57	24.72	4.37	10.03	5.95	8.97
7	Chan	9995.97	10000.12	260.09	26.66	4.16	11.77	6.41	9.76

8	Chan	10000.12	10004.28	262.65	26.82	4.16	11.88	6.45	9.79
9	Chan	10004.28	10008.43	256.43	26.44	4.16	11.60	6.36	9.70
10	Chan	10008.43	10012.59	197.01	23.25	4.48	8.91	5.60	8.47
11	ROB	10012.59	10016.07	59.62	13.50	3.84	2.70	3.88	4.41
12	ROB	10016.07	10019.55	24.02	7.83	3.84	1.09	2.25	3.07
13	ROB	10019.55	10023.03	3.19	2.10	2.95	0.14	0.88	1.52

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 3 RS: 0.175

INPUT
Description:
Station Elevation Data num= 48

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9755.402	2090.339	759.402	2090.39	770.862	2090.269	775.412	2090.279	792.112	2090.16
9800.742	2090.099	801.232	2090.099	801.582	2090.089	805.972	2089.979	806.632	2089.94
9807.982	2089.879	811.082	2089.739	824.182	2089.129	862.712	2086.99	862.782	2086.9
9865.022	2087.179	870.102	2087.79	876.002	2087.559	886.052	2086.999	892.642	2087.4
9906.772	2088.349	911.702	2088.399	917.312	2088.589	920.022	2088.819	923.802	2089.08
9924.052	2089.19	940.282	2088.449	943.952	2088.359	954.762	2087.95	9956.76	2087.71
9956.762	2087.719	959.932	2087.299	961.672	2087.059	963.192	2086.949	965.642	2086.75
9967.432	2086.799	968.802	2086.819	975.242	2086.85	9978.42	2086.589	978.422	2086.58
9985.592	2085.629	991.592	2085.36	10000.12	2084.98	10006.72	2086.36	10007.91	2086.56
10011.592	2087.658	10024.5	2091.51	10029.35	2093.04				

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9755.402	.039	792.112	.055	9906.772	.035	9956.76	.059	968.802	.06
9978.422	.051	0006.72	.065						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.42	10006.72	215.13	218.88	223.76	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2090.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.	0.051	0.050	0.065
W.S. Elev (ft)	2089.36	Reach Len. (ft)	215.13	218.88	223.76
Crit W.S. (ft)	2089.36	Flow Area (sq ft)	228.60	106.58	16.55
E.G. Slope (ft/ft)	0.016714	Area (sq ft)	228.60	106.58	16.55
Q Total (cfs)	2210.00	Flow (cfs)	1159.57	986.14	64.29
Top Width (ft)	198.18	Top Width (ft)	159.31	28.30	10.56
Vel Total (ft/s)	6.28	Avg. Vel. (ft/s)	5.07	9.25	3.88
Max Chl Dpth (ft)	4.38	Hydr. Depth (ft)	1.43	3.77	1.57
Conv. Total (cfs)	17094.2	Conv. (cfs)	8969.2	7627.8	497.2
Length Wtd. (ft)	218.31	Wetted Per. (ft)	159.62	28.52	10.99
Min Ch El (ft)	2084.98	Shear (lb/sq ft)	1.49	3.90	1.57
Alpha	1.32	Stream Power (lb/ft s)	7.58	36.08	6.11
Frctn Loss (ft)	3.31	Cum Volume (acre-ft)	0.82	1.25	1.19
C & E Loss (ft)	0.02	Cum SA (acres)	0.50	0.17	0.25

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2090.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.98	Wt. n-Val.	0.048	0.050	0.065
W.S. Elev (ft)	2089.69	Reach Len. (ft)	215.13	218.88	223.76
Crit W.S. (ft)	2089.69	Flow Area (sq ft)	168.35	116.08	20.09
E.G. Slope (ft/ft)	0.015918	Area (sq ft)	168.35	116.08	20.09
Q Total (cfs)	2210.00	Flow (cfs)	1015.61	1109.43	84.96
Top Width (ft)	134.11	Top Width (ft)	95.25	28.30	10.56
Vel Total (ft/s)	7.26	Avg. Vel. (ft/s)	6.03	9.56	4.23
Max Chl Dpth (ft)	4.71	Hydr. Depth (ft)	1.77	4.10	1.90
Conv. Total (cfs)	17516.6	Conv. (cfs)	8049.8	8793.4	673.4
Length Wtd. (ft)	218.54	Wetted Per. (ft)	97.97	28.52	11.32
Min Ch El (ft)	2084.98	Shear (lb/sq ft)	1.71	4.04	1.76
Alpha	1.20	Stream Power (lb/ft s)	10.30	38.66	7.46
Frctn Loss (ft)	3.34	Cum Volume (acre-ft)	0.45	1.33	1.06
C & E Loss (ft)	0.03	Cum SA (acres)	0.24	0.17	0.19

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9800.01	9844.61	45.12	17.45	25.54	2.04	0.68	2.59
2	LOB	9844.61	9889.21	465.31	88.51	44.70	21.05	1.98	5.26
3	LOB	9889.21	9933.82	197.22	45.71	44.67	8.92	1.02	4.31
4	LOB	9933.82	9978.42	451.91	76.93	44.70	20.45	1.72	5.87
5	Chan	9978.42	9982.46	98.20	12.32	4.08	4.44	3.05	7.97
6	Chan	9982.46	9986.51	128.57	14.47	4.07	5.82	3.58	8.89
7	Chan	9986.51	9990.55	146.67	15.62	4.05	6.64	3.86	9.39
8	Chan	9990.55	9994.59	157.97	16.33	4.05	7.15	4.04	9.67
9	Chan	9994.59	9998.63	169.92	17.06	4.05	7.69	4.22	9.96
10	Chan	9998.63	10002.68	166.80	16.96	4.10	7.55	4.20	9.83
11	Chan	10002.68	10006.72	118.02	13.82	4.13	5.34	3.42	8.54
12	ROB	10006.72	10011.25	50.33	11.12	4.69	2.28	2.46	4.53
13	ROB	10011.25	10015.77	13.65	5.10	4.72	0.62	1.13	2.68
14	ROB	10015.77	10020.30	0.31	0.34	1.58	0.01	0.23	0.92

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9844.61	9889.21	80.19	15.79	8.59	3.63	2.61	5.08
2	LOB	9889.21	9933.82	319.24	60.67	44.67	14.45	1.36	5.26
3	LOB	9933.82	9978.42	616.18	91.89	44.70	27.88	2.06	6.71
4	Chan	9978.42	9982.46	114.17	13.67	4.08	5.17	3.38	8.35
5	Chan	9982.46	9986.51	145.82	15.82	4.07	6.60	3.91	9.21
6	Chan	9986.51	9990.55	164.61	16.98	4.05	7.45	4.20	9.70
7	Chan	9990.55	9994.59	176.26	17.69	4.05	7.98	4.38	9.97
8	Chan	9994.59	9998.63	188.56	18.42	4.05	8.53	4.56	10.24
9	Chan	9998.63	10002.68	185.24	18.32	4.10	8.38	4.53	10.11
10	Chan	10002.68	10006.72	134.76	15.18	4.13	6.10	3.75	8.88
11	ROB	10006.72	10011.25	62.54	12.63	4.69	2.83	2.79	4.95
12	ROB	10011.25	10015.77	21.16	6.61	4.72	0.96	1.46	3.20
13	ROB	10015.77	10020.30	1.26	0.85	1.91	0.06	0.56	1.49

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C6
REACH: Reach 3 RS: 0.134

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9910.892	2087.799	914.612	2087.339	921.632	2086.379	923.302	2086.159	924.612	2085.96
9942.272	2084.549	952.352	2083.739	952.662	2083.79	959.202	2083.59	965.392	2083.33
9979.612	2082.929	979.792	2082.92	9981.14	2082.53	19981.142	2082.539	994.382	2079.7
9996.522	2079.649	998.752	2079.710	001.71	2079.72	10007.1	2079.711	008.91	2079.71
10009.1	2079.841	009.47	2079.991	013.18	2081.611	019.24	2082.191	021.94	2082.47
10033.98	2083.541	044.99	2084.491	045.63	2084.551	047.16	2084.671	050.46	2084.68
10060.78	2084.691	070.29	2083.911	072.31	2083.741	073.41	2083.641	083.95	2082.63
10088.84	2082.591	094.27	2082.561	108.83	2085.91	122.62	2089.13		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9910.892	.06	9981.14	.05	10019.24	.06	10073.41	.05	10094.27	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.14	10019.24	170	169.01	166	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft) 2085.99 Element Left OB Channel Right OB

Vel Head (ft)	0.98	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2085.00	Reach Len. (ft)	153.22	153.22	153.22
Crit W.S. (ft)	2085.00	Flow Area (sq ft)	59.65	165.82	115.56
E.G. Slope (ft/ft)	0.013839	Area (sq ft)	59.65	165.82	115.56
Q Total (cfs)	2210.00	Flow (cfs)	210.51	1525.66	473.83
Top Width (ft)	168.41	Top Width (ft)	44.63	38.10	85.68
Vel Total (ft/s)	6.48	Avg. Vel. (ft/s)	3.53	9.20	4.10
Max Chl Dpth (ft)	5.36	Hydr. Depth (ft)	1.34	4.35	1.35
Conv. Total (cfs)	18786.6	Conv. (cfs)	1789.5	12969.2	4027.9
Length Wtd. (ft)	153.22	Wetted Per. (ft)	44.75	38.84	86.16
Min Ch El (ft)	2079.64	Shear (lb/sq ft)	1.15	3.69	1.16
Alpha	1.51	Stream Power (lb/ft s)	4.06	33.94	4.75
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	0.10	0.57	0.85
C & E Loss (ft)	0.01	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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2086.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.29	Wt. n-Val.	0.060	0.050	0.057
W.S. Elev (ft)	2085.34	Reach Len. (ft)	153.22	153.22	153.22
Crit W.S. (ft)	2085.34	Flow Area (sq ft)	7.06	178.65	98.68
E.G. Slope (ft/ft)	0.014705	Area (sq ft)	7.06	178.65	98.68
Q Total (cfs)	2210.00	Flow (cfs)	25.81	1780.63	403.56
Top Width (ft)	105.35	Top Width (ft)	2.82	38.10	64.43
Vel Total (ft/s)	7.77	Avg. Vel. (ft/s)	3.66	9.97	4.09
Max Chl Dpth (ft)	5.70	Hydr. Depth (ft)	2.50	4.69	1.53
Conv. Total (cfs)	18224.9	Conv. (cfs)	212.9	14684.1	3328.0
Length Wtd. (ft)	153.22	Wetted Per. (ft)	5.26	38.84	67.31
Min Ch El (ft)	2079.64	Shear (lb/sq ft)	1.23	4.22	1.35
Alpha	1.38	Stream Power (lb/ft s)	4.51	42.09	5.50
Frctn Loss (ft)	1.83	Cum Volume (acre-ft)	0.01	0.59	0.76
C & E Loss (ft)	0.01	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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9924.94	9938.99	0.14	0.25	2.49	0.01	0.10	0.57
2	LOB	9938.99	9953.04	23.67	10.74	14.09	1.07	0.76	2.20
3	LOB	9953.04	9967.09	74.85	21.40	14.06	3.39	1.52	3.50
4	LOB	9967.09	9981.14	111.86	27.27	14.11	5.06	1.94	4.10
5	Chan	9981.14	9986.58	117.46	16.63	5.57	5.32	3.05	7.06
6	Chan	9986.58	9992.03	201.10	22.96	5.57	9.10	4.22	8.76
7	Chan	9992.03	9997.47	288.78	28.38	5.50	13.07	5.21	10.17
8	Chan	9997.47	10002.91	298.43	28.83	5.44	13.50	5.30	10.35
9	Chan	10002.91	10008.35	297.80	28.80	5.44	13.47	5.29	10.34
10	Chan	10008.35	10013.80	201.98	23.49	5.85	9.14	4.32	8.60
11	Chan	10013.80	10019.24	120.11	16.73	5.47	5.43	3.07	7.18
12	ROB	10019.24	10039.92	155.06	38.45	20.76	7.02	1.86	4.03
13	ROB	10039.92	10060.59	13.66	8.94	20.70	0.62	0.43	1.53
14	ROB	10060.59	10081.27	88.11	24.25	20.76	3.99	1.17	3.63
15	ROB	10081.27	10101.94	215.79	42.91	20.89	9.76	2.08	5.03
16	ROB	10101.94	10122.62	1.21	1.02	3.05	0.05	0.34	1.19

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.09	9981.14	25.81	7.06	5.26	1.17	2.50	3.66
2	Chan	9981.14	9986.58	144.64	18.46	5.57	6.54	3.39	7.83
3	Chan	9986.58	9992.03	236.43	24.79	5.57	10.70	4.55	9.54
4	Chan	9992.03	9997.47	331.55	30.22	5.50	15.00	5.55	10.97
5	Chan	9997.47	10002.91	342.08	30.67	5.44	15.48	5.63	11.15
6	Chan	10002.91	10008.35	341.40	30.63	5.44	15.45	5.63	11.15
7	Chan	10008.35	10013.80	236.80	25.32	5.85	10.71	4.65	9.35
8	Chan	10013.80	10019.24	147.74	18.56	5.47	6.69	3.41	7.96

9	ROB	10019.24	10039.92	210.84	45.41	20.76	9.54	2.20	4.64
10	ROB	10039.92	10060.59	36.75	15.90	20.70	1.66	0.77	2.31
11	ROB	10060.59	10081.27	132.81	31.21	20.76	6.01	1.51	4.26
12	ROB	10081.27	10101.94	23.16	6.17	5.10	1.05	2.57	3.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 2.959

INPUT
Description:
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9924.743	2397.499	934.453	2394.99	949.003	2392.969	962.613	2391.229	963.033	2391.17
9968.263	2390.539	973.183	2389.99	977.573	2389.159	979.323	2388.76	9982.12	2388.25
9982.123	2388.259	986.233	2386.59	986.783	2386.69	987.413	2386.519	990.153	2385.58
9993.023	2385.589	995.733	2385.589	999.163	2385.551	0000.44	2385.531	0009.62	2386.94
10018.72	2388.295	10023.66	2389.031	0024.17	2389.11	0025.48	2389.181	0055.55	2391.13
10057.55	2391.151	0059.48	2391.21	0067.27	2391.411	0068.05	2391.411	0068.79	2391.41
10070.91	2391.33	10076.8	2391.011	0083.06	2390.561	0093.57	2389.72	10119.5	2396
10120.38	2396.221	0120.96	2396.31	0123.69	2396.59				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9924.743	.06	9982.12	.055	10018.72	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.121	10018.72	154.75	162.83	169.6	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2392.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2391.66	Reach Len. (ft)	154.75	162.83	169.60
Crit W.S. (ft)	2391.66	Flow Area (sq ft)	35.22	188.26	102.51
E.G. Slope (ft/ft)	0.014709	Area (sq ft)	35.22	188.26	102.51
Q Total (cfs)	2280.00	Flow (cfs)	139.71	1813.85	326.44
Top Width (ft)	142.41	Top Width (ft)	22.95	36.60	82.86
Vel Total (ft/s)	6.99	Avg. Vel. (ft/s)	3.97	9.64	3.18
Max Chl Dpth (ft)	6.13	Hydr. Depth (ft)	1.54	5.14	1.24
Conv. Total (cfs)	18799.3	Conv. (cfs)	1152.0	14955.8	2691.6
Length Wtd. (ft)	162.39	Wetted Per. (ft)	23.21	37.33	83.28
Min Ch El (ft)	2385.53	Shear (lb/sq ft)	1.39	4.63	1.13
Alpha	1.56	Stream Power (lb/ft s)	5.53	44.61	3.60
Frctn Loss (ft)	2.51	Cum Volume (acre-ft)	42.02	48.99	25.13
C & E Loss (ft)	0.02	Cum SA (acres)	30.32	11.45	16.46

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2392.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2391.66	Reach Len. (ft)	154.75	162.83	169.60
Crit W.S. (ft)	2391.66	Flow Area (sq ft)	35.22	188.26	102.51
E.G. Slope (ft/ft)	0.014709	Area (sq ft)	35.22	188.26	102.51
Q Total (cfs)	2280.00	Flow (cfs)	139.71	1813.85	326.44
Top Width (ft)	142.41	Top Width (ft)	22.95	36.60	82.86
Vel Total (ft/s)	6.99	Avg. Vel. (ft/s)	3.97	9.64	3.18
Max Chl Dpth (ft)	6.13	Hydr. Depth (ft)	1.54	5.14	1.24
Conv. Total (cfs)	18799.3	Conv. (cfs)	1152.0	14955.8	2691.6
Length Wtd. (ft)	162.39	Wetted Per. (ft)	23.21	37.33	83.28
Min Ch El (ft)	2385.53	Shear (lb/sq ft)	1.39	4.63	1.13
Alpha	1.56	Stream Power (lb/ft s)	5.53	44.61	3.60
Frctn Loss (ft)	2.51	Cum Volume (acre-ft)	32.16	51.68	16.27
C & E Loss (ft)	0.02	Cum SA (acres)	17.38	11.45	7.85

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9959.17	9970.65	17.07	8.24	11.56	0.75	0.72	2.07
2	LOB	9970.65	9982.12	122.65	26.98	11.65	5.38	2.35	4.55
3	Chan	9982.12	9987.35	194.49	23.31	5.60	8.53	4.46	8.34
4	Chan	9987.35	9992.58	311.68	30.45	5.38	13.67	5.82	10.23
5	Chan	9992.58	9997.81	341.66	31.81	5.23	14.98	6.08	10.74
6	Chan	9997.81	10003.03	334.61	31.48	5.26	14.68	6.02	10.63
7	Chan	10003.03	10008.26	271.96	27.87	5.29	11.93	5.33	9.76
8	Chan	10008.26	10013.49	207.74	23.70	5.29	9.11	4.53	8.76
9	Chan	10013.49	10018.72	151.72	19.63	5.29	6.65	3.75	7.73
10	ROB	10018.72	10039.71	199.33	48.16	21.09	8.74	2.29	4.14
11	ROB	10039.71	10060.71	42.53	19.04	21.03	1.87	0.91	2.23
12	ROB	10060.71	10081.70	14.90	10.14	21.02	0.65	0.48	1.47
13	ROB	10081.70	10102.70	69.67	25.17	20.15	3.06	1.27	2.77

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9959.17	9970.65	17.07	8.24	11.56	0.75	0.72	2.07
2	LOB	9970.65	9982.12	122.65	26.98	11.65	5.38	2.35	4.55
3	Chan	9982.12	9987.35	194.49	23.31	5.60	8.53	4.46	8.34
4	Chan	9987.35	9992.58	311.68	30.45	5.38	13.67	5.82	10.23
5	Chan	9992.58	9997.81	341.66	31.81	5.23	14.98	6.08	10.74
6	Chan	9997.81	10003.03	334.61	31.48	5.26	14.68	6.02	10.63
7	Chan	10003.03	10008.26	271.96	27.87	5.29	11.93	5.33	9.76
8	Chan	10008.26	10013.49	207.74	23.70	5.29	9.11	4.53	8.76
9	Chan	10013.49	10018.72	151.72	19.63	5.29	6.65	3.75	7.73
10	ROB	10018.72	10039.71	199.33	48.16	21.09	8.74	2.29	4.14
11	ROB	10039.71	10060.71	42.53	19.04	21.03	1.87	0.91	2.23
12	ROB	10060.71	10081.70	14.90	10.14	21.02	0.65	0.48	1.47
13	ROB	10081.70	10102.70	69.67	25.17	20.15	3.06	1.27	2.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: C8
REACH: Reach 1 RS: 2.928

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9902.949	2390.059	9909.119	2387.849	9912.649	2386.519	9914.739	2386.539	9921.029	2386.51
9926.529	2386.569	9930.869	2386.489	9938.409	2386.299	9939.109	2386.289	9941.529	2386.24
9950.099	2386.139	9951.789	2386.19	9954.389	2385.69	9960.019	2384.539	9962.889	2384.2
9965.579	2383.879	9967.649	2384.169	9971.859	2384.759	9972.309	2384.779	9973.449	2384.81
9978.472	2383.829	9986.709	2382.229	9994.109	2380.429	9996.659	2380.289	9999.969	2379.99
10009.61	2383.75	10018.12	2387.08	10019.31	2387.57	10019.54	2387.59	10032.43	2389.67
10035.48	2389.82	10036.07	2389.9	10038.4	2390.04	10059.6	2391	10075.79	2391.74
10079.05	2391.96								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9902.949	.06	9941.529	.065	9978.47	.05	10009.61	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.47	10009.61		126.28	129.45	130.75	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2388.59	Element			
Vel Head (ft)	1.38	Wt. n-Val.	0.064	0.055	0.060
W.S. Elev (ft)	2387.20	Reach Len. (ft)	126.28	129.45	130.75
Crit W.S. (ft)	2387.20	Flow Area (sq ft)	101.33	170.20	15.20
E.G. Slope (ft/ft)	0.016240	Area (sq ft)	101.33	170.20	15.20
Q Total (cfs)	2280.00	Flow (cfs)	437.45	1776.71	65.84
Top Width (ft)	107.61	Top Width (ft)	67.66	31.14	8.81
Vel Total (ft/s)	7.95	Avg. Vel. (ft/s)	4.32	10.44	4.33
Max Chl Dpth (ft)	7.21	Hydr. Depth (ft)	1.50	5.47	1.73

Conv. Total (cfs)	17891.2	Conv. (cfs)	3432.7	13941.9	516.6
Length Wtd. (ft)	129.00	Wetted Per. (ft)	68.13	32.24	9.46
Min Ch El (ft)	2379.99	Shear (lb/sq ft)	1.51	5.35	1.63
Alpha	1.41	Stream Power (lb/ft s)	6.51	55.88	7.06
Frctn Loss (ft)	2.30	Cum Volume (acre-ft)	41.77	48.32	24.90
C & E Loss (ft)	0.02	Cum SA (acres)	30.16	11.33	16.28

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2388.59	Element			
Vel Head (ft)	1.38	Wt. n-Val.	0.064	0.055	0.060
W.S. Elev (ft)	2387.20	Reach Len. (ft)	126.28	129.45	130.75
Crit W.S. (ft)	2387.20	Flow Area (sq ft)	101.33	170.20	15.20
E.G. Slope (ft/ft)	0.016240	Area (sq ft)	101.33	170.20	15.20
Q Total (cfs)	2280.00	Flow (cfs)	437.45	1776.71	65.84
Top Width (ft)	107.61	Top Width (ft)	67.66	31.14	8.81
Vel Total (ft/s)	7.95	Avg. Vel. (ft/s)	4.32	10.44	4.33
Max Chl Dpth (ft)	7.21	Hydr. Depth (ft)	1.50	5.47	1.73
Conv. Total (cfs)	17891.2	Conv. (cfs)	3432.7	13941.9	516.6
Length Wtd. (ft)	129.00	Wetted Per. (ft)	68.13	32.24	9.46
Min Ch El (ft)	2379.99	Shear (lb/sq ft)	1.51	5.35	1.63
Alpha	1.41	Stream Power (lb/ft s)	6.51	55.88	7.06
Frctn Loss (ft)	2.33	Cum Volume (acre-ft)	31.92	51.01	16.04
C & E Loss (ft)	0.01	Cum SA (acres)	17.22	11.33	7.67

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9902.95	9918.05	9.03	4.31	7.37	0.40	0.59	2.10
2	LOB	9918.05	9933.16	24.30	10.40	15.11	1.07	0.69	2.34
3	LOB	9933.16	9948.26	39.09	14.14	15.11	1.71	0.94	2.77
4	LOB	9948.26	9963.37	122.54	28.92	15.27	5.37	1.92	4.24
5	LOB	9963.37	9978.47	242.48	43.56	15.28	10.64	2.88	5.57
6	Chan	9978.47	9982.92	136.91	16.94	4.53	6.01	3.81	8.08
7	Chan	9982.92	9987.37	192.86	20.82	4.54	8.46	4.68	9.26
8	Chan	9987.37	9991.82	265.15	25.28	4.58	11.63	5.68	10.49
9	Chan	9991.82	9996.27	349.08	29.66	4.52	15.31	6.67	11.77
10	Chan	9996.27	10000.71	383.46	31.38	4.52	16.82	7.05	12.22
11	Chan	10000.71	10005.16	286.36	26.93	4.78	12.56	6.05	10.63
12	Chan	10005.16	10009.61	162.88	19.19	4.78	7.14	4.32	8.49
13	ROB	10009.61	10023.50	65.84	15.20	9.46	2.89	1.73	4.33

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9902.95	9918.05	9.03	4.31	7.37	0.40	0.59	2.10
2	LOB	9918.05	9933.16	24.30	10.40	15.11	1.07	0.69	2.34
3	LOB	9933.16	9948.26	39.09	14.14	15.11	1.71	0.94	2.77
4	LOB	9948.26	9963.37	122.54	28.92	15.27	5.37	1.92	4.24
5	LOB	9963.37	9978.47	242.48	43.56	15.28	10.64	2.88	5.57
6	Chan	9978.47	9982.92	136.91	16.94	4.53	6.01	3.81	8.08
7	Chan	9982.92	9987.37	192.86	20.82	4.54	8.46	4.68	9.26
8	Chan	9987.37	9991.82	265.15	25.28	4.58	11.63	5.68	10.49
9	Chan	9991.82	9996.27	349.08	29.66	4.52	15.31	6.67	11.77
10	Chan	9996.27	10000.71	383.46	31.38	4.52	16.82	7.05	12.22
11	Chan	10000.71	10005.16	286.36	26.93	4.78	12.56	6.05	10.63
12	Chan	10005.16	10009.61	162.88	19.19	4.78	7.14	4.32	8.49
13	ROB	10009.61	10023.50	65.84	15.20	9.46	2.89	1.73	4.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: C8
REACH: Reach 1 RS: 2.904

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9916.989	2387.729	926.849	2385.699	927.439	2385.589	932.549	2384.249	937.019	2382.87
9944.049	2382.69	952.819	2382.049	955.789	2381.859	958.699	2381.949	963.239	2382.45
9970.259	2383.149	973.639	2382.49	9973.64	2382.499	994.079	2378.181	0000.83	2378.02
10001.34	2378	10016.37	2380.48	10018.6	2380.871	0022.84	2382.131	0029.15	2384.04
10032.44	2383.921	0045.57	2383.451	0057.61	2384.031	0061.81	2384.241	0064.57	2384.37
10081.48	2385	10083.76	2385.081	0085.28	2385.111	0087.55	2385.111	0089.97	2385.11
10093.96	2385.11	10095.4	2385.09	10097.9	2385.221	0101.25	2385.391	0101.53	2385.39
10101.73	2385.41	0102.16	2385.41	10114.6	2385.441	0118.06	2385.751	0118.67	2385.8
10122.03	2385.961	0123.49	2385.99						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9916.989	.06	9973.64	.055	10022.84	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9973.64	10022.84		200.71	178.95	177.97	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2385.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.32	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2383.97	Reach Len. (ft)	200.71	178.95	177.97
Crit W.S. (ft)	2383.97	Flow Area (sq ft)	57.56	206.08	12.31
E.G. Slope (ft/ft)	0.019578	Area (sq ft)	57.56	206.08	12.31
Q Total (cfs)	2280.00	Flow (cfs)	251.92	2000.67	27.41
Top Width (ft)	121.01	Top Width (ft)	40.22	49.20	31.59
Vel Total (ft/s)	8.26	Avg. Vel. (ft/s)	4.38	9.71	2.23
Max Chl Dpth (ft)	5.97	Hydr. Depth (ft)	1.43	4.19	0.39
Conv. Total (cfs)	16295.0	Conv. (cfs)	1800.5	14298.7	195.9
Length Wtd. (ft)	180.02	Wetted Per. (ft)	40.54	50.07	31.88
Min Ch El (ft)	2378.00	Shear (lb/sq ft)	1.74	5.03	0.47
Alpha	1.24	Stream Power (lb/ft s)	7.59	48.84	1.05
Frctn Loss (ft)	3.56	Cum Volume (acre-ft)	41.54	47.76	24.86
C & E Loss (ft)	0.23	Cum SA (acres)	30.01	11.21	16.22

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2385.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.36	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2383.95	Reach Len. (ft)	200.71	178.95	177.97
Crit W.S. (ft)	2383.95	Flow Area (sq ft)	56.37	204.63	8.12
E.G. Slope (ft/ft)	0.020258	Area (sq ft)	56.37	204.63	8.12
Q Total (cfs)	2280.00	Flow (cfs)	247.93	2011.26	20.82
Top Width (ft)	107.56	Top Width (ft)	40.13	49.20	18.23
Vel Total (ft/s)	8.47	Avg. Vel. (ft/s)	4.40	9.83	2.56
Max Chl Dpth (ft)	5.94	Hydr. Depth (ft)	1.40	4.16	0.45
Conv. Total (cfs)	16019.1	Conv. (cfs)	1741.9	14131.0	146.2
Length Wtd. (ft)	180.61	Wetted Per. (ft)	40.44	50.07	18.95
Min Ch El (ft)	2378.00	Shear (lb/sq ft)	1.76	5.17	0.54
Alpha	1.22	Stream Power (lb/ft s)	7.75	50.80	1.39
Frctn Loss (ft)	3.53	Cum Volume (acre-ft)	31.69	50.45	16.00
C & E Loss (ft)	0.17	Cum SA (acres)	17.07	11.21	7.63

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 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.

Profile #profile 1

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	9928.32	9939.65	14.20	5.03	6.40	0.62	0.81	2.83
2	LOB	9939.65	9950.98	71.96	16.73	11.35	3.16	1.48	4.30
3	LOB	9950.98	9962.31	114.67	22.14	11.36	5.03	1.95	5.18
4	LOB	9962.31	9973.64	51.09	13.66	11.43	2.24	1.21	3.74
5	Chan	9973.64	9980.67	94.28	15.64	7.18	4.14	2.23	6.03
6	Chan	9980.67	9987.70	220.79	26.06	7.18	9.68	3.71	8.47
7	Chan	9987.70	9994.73	386.50	36.43	7.17	16.95	5.18	10.61
8	Chan	9994.73	10001.75	484.32	41.41	7.04	21.24	5.89	11.70
9	Chan	10001.75	10008.78	406.02	37.43	7.12	17.81	5.33	10.85
10	Chan	10008.78	10015.81	269.69	29.29	7.12	11.83	4.17	9.21
11	Chan	10015.81	10022.84	139.07	19.82	7.25	6.10	2.82	7.02
12	ROB	10022.84	10042.97	19.79	8.21	18.39	0.87	0.45	2.41
13	ROB	10042.97	10063.10	7.62	4.09	13.49	0.33	0.30	1.86

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9928.32	9939.65	13.72	4.84	6.30	0.60	0.79	2.83
2	LOB	9939.65	9950.98	70.73	16.40	11.35	3.10	1.45	4.31
3	LOB	9950.98	9962.31	113.64	21.80	11.36	4.98	1.92	5.21
4	LOB	9962.31	9973.64	49.83	13.33	11.43	2.19	1.18	3.74
5	Chan	9973.64	9980.67	93.73	15.43	7.18	4.11	2.20	6.07
6	Chan	9980.67	9987.70	221.46	25.85	7.18	9.71	3.68	8.57
7	Chan	9987.70	9994.73	389.15	36.23	7.17	17.07	5.15	10.74
8	Chan	9994.73	10001.75	488.21	41.20	7.04	21.41	5.86	11.85
9	Chan	10001.75	10008.78	408.91	37.22	7.12	17.93	5.30	10.98
10	Chan	10008.78	10015.81	270.90	29.08	7.12	11.88	4.14	9.32
11	Chan	10015.81	10022.84	138.90	19.62	7.25	6.09	2.79	7.08
12	ROB	10022.84	10042.97	19.96	7.69	17.48	0.88	0.45	2.59
13	ROB	10042.97	10063.10	0.86	0.43	1.47	0.04	0.42	1.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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.
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: C8
REACH: Reach 1 RS: 2.870

INPUT
Description:
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9896.026	2383.669	901.676	2381.499	908.876	2380.969	917.976	2380.539	928.636	2379.94
9932.246	2379.759	938.376	2379.379	940.156	2379.259	943.156	2379.259	946.846	2379.33
9954.076	2379.429	958.896	2379.57	9967.342	2378.798	9986.456	2377.059	986.796	2377.01
9986.866	2377.019	986.906	23779	988.466	2376.789	993.646	2376.181	000.68	2376.17
10001.79	2376.161	0003.85	2376.161	0019.76	2377.48	10023.1	2377.72	10033.6	2378.51
10037.01	2378.981	0042.85	2379.451	0043.34	2379.471	0049.93	2378.621	0057.64	2377.76
10058.55	2377.651	0059.19	2377.591	0059.92	2377.61	0064.05	2377.611	0067.29	2377.62
10070.08	2377.631	0071.99	2377.581	0078.48	2377.511	0079.57	2377.461	0080.63	2377.47
10080.65	2377.481	0080.66	2377.48	10081.6	2377.551	0096.94	2378.791	0101.33	2378.84
10112.75	2379.091	0115.13	2379.091	0116.79	2379.041	0119.07	2379.091	0133.29	2379.3
10137.92	2379.451	0139.25	2379.481	0152.65	2378.251	0159.94	2377.671	0167.83	2376.44
10172.32	2375.711	0188.18	2378.71	0197.56	2380.431	0198.38	2380.521	0216.57	2382.2
10219.24	2382.54	10222.8	2382.841	0224.03	2382.96	10230.5	2383.331	0231.48	2383.41
10234.8	2383.531	0235.91	2383.61	0236.44	2383.61	0237.52	2383.611	0240.07	2383.75
10244.2	2383.86								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9896.026	.06	9967.34	.055	10033.6	.065	10152.65	.055	10188.18	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9967.34	10033.6	224.23	220.84	209.86	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2380.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.	0.060	0.055	0.059
W.S. Elev (ft)	2379.72	Reach Len. (ft)	224.23	220.84	209.86

Crit W.S. (ft)	2379.51	Flow Area (sq ft)	12.94	163.25	228.68
E.G. Slope (ft/ft)	0.020022	Area (sq ft)	12.94	163.25	228.68
Q Total (cfs)	2280.00	Flow (cfs)	23.47	1135.91	1120.62
Top Width (ft)	261.05	Top Width (ft)	34.66	66.26	160.13
Vel Total (ft/s)	5.63	Avg. Vel. (ft/s)	1.81	6.96	4.90
Max Chl Dpth (ft)	4.01	Hydr. Depth (ft)	0.37	2.46	1.43
Conv. Total (cfs)	16113.0	Conv. (cfs)	165.9	8027.6	7919.5
Length Wtd. (ft)	217.24	Wetted Per. (ft)	34.72	66.49	160.96
Min Ch El (ft)	2376.16	Shear (lb/sq ft)	0.47	3.07	1.78
Alpha	1.13	Stream Power (lb/ft s)	0.85	21.36	8.70
Frctn Loss (ft)	4.30	Cum Volume (acre-ft)	41.38	47.00	24.37
C & E Loss (ft)	0.02	Cum SA (acres)	29.83	10.97	15.83

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2381.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2380.39	Reach Len. (ft)	224.23	220.84	209.86
Crit W.S. (ft)		Flow Area (sq ft)	36.03	207.40	101.41
E.G. Slope (ft/ft)	0.018852	Area (sq ft)	36.03	207.40	101.41
Q Total (cfs)	2280.00	Flow (cfs)	124.00	1642.51	513.49
Top Width (ft)	147.32	Top Width (ft)	34.66	66.26	46.40
Vel Total (ft/s)	6.61	Avg. Vel. (ft/s)	3.44	7.92	5.06
Max Chl Dpth (ft)	4.23	Hydr. Depth (ft)	1.04	3.13	2.19
Conv. Total (cfs)	16605.6	Conv. (cfs)	903.1	11962.7	3739.8
Length Wtd. (ft)	220.40	Wetted Per. (ft)	35.38	66.49	49.49
Min Ch El (ft)	2376.16	Shear (lb/sq ft)	1.20	3.67	2.41
Alpha	1.18	Stream Power (lb/ft s)	4.12	29.08	12.21
Frctn Loss (ft)	4.56	Cum Volume (acre-ft)	31.48	49.61	15.78
C & E Loss (ft)	0.03	Cum SA (acres)	16.89	10.97	7.49

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9924.55	9938.81	1.31	1.17	6.15	0.06	0.19	1.12
2	LOB	9938.81	9953.08	10.84	5.80	14.27	0.48	0.41	1.87
3	LOB	9953.08	9967.34	11.32	5.96	14.30	0.50	0.42	1.90
4	Chan	9967.34	9976.81	56.95	12.85	9.51	2.50	1.36	4.43
5	Chan	9976.81	9986.27	129.53	21.05	9.51	5.68	2.22	6.15
6	Chan	9986.27	9995.74	238.01	30.34	9.52	10.44	3.21	7.84
7	Chan	9995.74	10005.20	282.85	33.58	9.47	12.41	3.55	8.42
8	Chan	10005.20	10014.67	220.46	28.95	9.50	9.67	3.06	7.61
9	Chan	10014.67	10024.13	135.57	21.62	9.49	5.95	2.28	6.27
10	Chan	10024.13	10033.60	72.54	14.86	9.49	3.18	1.57	4.88
11	ROB	10033.60	10075.72	244.89	61.01	42.28	10.74	1.45	4.01
12	ROB	10075.72	10117.84	192.93	52.83	42.18	8.46	1.25	3.65
13	ROB	10117.84	10159.96	119.77	34.66	42.20	5.25	0.82	3.46
14	ROB	10159.96	10202.08	563.03	80.18	34.30	24.69	2.37	7.02

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9924.55	9938.81	14.91	5.26	6.81	0.65	0.86	2.84
2	LOB	9938.81	9953.08	54.11	15.31	14.27	2.37	1.07	3.54
3	LOB	9953.08	9967.34	54.98	15.47	14.30	2.41	1.08	3.55
4	Chan	9967.34	9976.81	109.68	19.16	9.51	4.81	2.02	5.72
5	Chan	9976.81	9986.27	198.51	27.36	9.51	8.71	2.89	7.26
6	Chan	9986.27	9995.74	322.85	36.65	9.52	14.16	3.87	8.81
7	Chan	9995.74	10005.20	373.11	39.89	9.47	16.36	4.21	9.35
8	Chan	10005.20	10014.67	303.17	35.26	9.50	13.30	3.72	8.60
9	Chan	10014.67	10024.13	205.65	27.93	9.49	9.02	2.95	7.36
10	Chan	10024.13	10033.60	129.54	21.16	9.49	5.68	2.24	6.12
11	ROB	10033.60	10075.72	458.26	89.08	42.28	20.10	2.11	5.14
12	ROB	10075.72	10117.84	55.23	12.33	7.21	2.42	2.88	4.48

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

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 2.828

INPUT
Description:
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9870.25	2378.82	9880.604	2376.37	9881.144	2376.37	9886.934	2375.71	9892.784	2374.92
9900.414	2374.29	9910.284	2373.89	9917.814	2373.82	9922.944	2374.06	9923.564	2374.06
9924.194	2374.06	9924.424	2374.03	9926.834	2373.99	9933.944	2373.89	9934.294	2373.78

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9935.644 2373.829937.444 2373.789937.704 2373.789939.144 2373.719939.784 2373.66
9940.744 2373.659947.264 2373.819948.854 2373.829950.214 2373.739951.334 2373.72
9952.034 2373.729954.744  2373.59955.994 2373.459958.064 2373.319959.024 2373.26
9961.594 2372.949961.874 2372.939963.084 2372.979969.914 2372.759975.204 2372.63
 9984.74 2372.189984.744 2372.189995.404 2371.639997.574 2371.469998.124 2371.63
9998.574  2371.89999.814  2371.810007.67 2371.4210010.84 2371.27 10014.9 2371.75
10019.36 2372.4110020.04 2372.4110021.14 2372.3210023.31 2372.2610028.24 2372.02
10029.26 2372.09 10031.1 2372.1610037.38 2372.4310044.62 2372.7210046.51 2372.81
10047.56 2372.8310048.62    237310051.53 2373.4810067.07 2375.6410068.82 2375.24
10070.89 2375.3910072.05 2375.6710072.82 2375.9110073.57 2376.1410074.29 2375.68
10075.41 2375.6810078.67 2375.8610080.19 2376.0710080.73 2376.1510081.08 2376.16
10119.65 2379.15

Manning's n Values          num=        4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 9870.25    .065 9984.74    .05510019.36    .06510046.51     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9984.7410019.36            187.59  196.38  204.66              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2375.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.065	0.055	0.064
W.S. Elev (ft)	2375.21	Reach Len. (ft)	187.59	196.38	204.66
Crit W.S. (ft)	2375.03	Flow Area (sq ft)	150.26	120.58	98.91
E.G. Slope (ft/ft)	0.019533	Area (sq ft)	150.26	120.58	98.91
Q Total (cfs)	2280.00	Flow (cfs)	655.23	1042.80	581.97
Top Width (ft)	173.36	Top Width (ft)	94.12	34.62	44.63
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	4.36	8.65	5.88
Max Chl Dpth (ft)	3.94	Hydr. Depth (ft)	1.60	3.48	2.22
Conv. Total (cfs)	16313.5	Conv. (cfs)	4688.2	7461.3	4164.0
Length Wtd. (ft)	196.83	Wetted Per. (ft)	94.24	34.79	44.83
Min Ch El (ft)	2371.27	Shear (lb/sq ft)	1.94	4.23	2.69
Alpha	1.28	Stream Power (lb/ft s)	8.48	36.56	15.83
Frctn Loss (ft)	4.35	Cum Volume (acre-ft)	40.96	46.28	23.58
C & E Loss (ft)	0.03	Cum SA (acres)	29.50	10.72	15.34

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2376.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.07	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2375.54	Reach Len. (ft)	187.59	196.38	204.66
Crit W.S. (ft)	2375.54	Flow Area (sq ft)	181.23	131.97	2.00
E.G. Slope (ft/ft)	0.022813	Area (sq ft)	181.23	131.97	2.00
Q Total (cfs)	2280.00	Flow (cfs)	965.50	1309.97	4.53
Top Width (ft)	129.37	Top Width (ft)	94.11	34.62	0.64
Vel Total (ft/s)	7.23	Avg. Vel. (ft/s)	5.33	9.93	2.26
Max Chl Dpth (ft)	4.27	Hydr. Depth (ft)	1.93	3.81	3.13
Conv. Total (cfs)	15095.2	Conv. (cfs)	6392.3	8672.9	30.0
Length Wtd. (ft)	194.45	Wetted Per. (ft)	94.57	34.79	3.77
Min Ch El (ft)	2371.27	Shear (lb/sq ft)	2.73	5.40	0.76
Alpha	1.31	Stream Power (lb/ft s)	14.54	53.63	1.71
Frctn Loss (ft)	4.28	Cum Volume (acre-ft)	30.92	48.75	15.53
C & E Loss (ft)	0.01	Cum SA (acres)	16.56	10.72	7.38

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9870.25	9893.15	0.38	0.43	2.54	0.02	0.17	0.90
2	LOB	9893.15	9916.05	69.62	23.35	22.93	3.05	1.02	2.98
3	LOB	9916.05	9938.94	106.10	30.06	22.91	4.65	1.31	3.53
4	LOB	9938.94	9961.84	152.94	37.45	22.94	6.71	1.64	4.08
5	LOB	9961.84	9984.74	326.19	58.97	22.91	14.31	2.58	5.53
6	Chan	9984.74	9989.69	126.55	15.62	4.95	5.55	3.16	8.10
7	Chan	9989.69	9994.63	144.08	16.89	4.95	6.32	3.41	8.53
8	Chan	9994.63	9999.58	154.91	17.72	5.01	6.79	3.58	8.74
9	Chan	9999.58	10004.52	151.61	17.41	4.95	6.65	3.52	8.71
10	Chan	10004.52	10009.47	169.09	18.59	4.95	7.42	3.76	9.10
11	Chan	10009.47	10014.42	170.24	18.70	4.97	7.47	3.78	9.11
12	Chan	10014.42	10019.36	126.30	15.66	5.00	5.54	3.17	8.07
13	ROB	10019.36	10039.42	383.04	59.32	20.08	16.80	2.96	6.46
14	ROB	10039.42	10059.48	196.74	38.18	20.19	8.63	1.90	5.15
15	ROB	10059.48	10079.53	2.20	1.41	4.55	0.10	0.31	1.56

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9870.25	9893.15	2.36	1.26	2.87	0.10	0.50	1.88
2	LOB	9893.15	9916.05	122.68	30.89	22.93	5.38	1.35	3.97
3	LOB	9916.05	9938.94	170.30	37.59	22.91	7.47	1.64	4.53
4	LOB	9938.94	9961.84	229.52	44.99	22.94	10.07	1.96	5.10
5	LOB	9961.84	9984.74	440.66	66.51	22.91	19.33	2.90	6.63
6	Chan	9984.74	9989.69	161.40	17.25	4.95	7.08	3.49	9.36
7	Chan	9989.69	9994.63	181.59	18.51	4.95	7.96	3.74	9.81
8	Chan	9994.63	9999.58	193.90	19.35	5.01	8.50	3.91	10.02
9	Chan	9999.58	10004.52	190.25	19.04	4.95	8.34	3.85	9.99
10	Chan	10004.52	10009.47	210.27	20.21	4.95	9.22	4.09	10.40
11	Chan	10009.47	10014.42	211.54	20.32	4.97	9.28	4.11	10.41
12	Chan	10014.42	10019.36	161.02	17.29	5.00	7.06	3.50	9.31
13	ROB	10019.36	10039.42	4.53	2.00	3.77	0.20	3.13	2.26

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 2.791

INPUT
Description:
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9893.088	2375.789	894.288	2375.419	894.318	2375.49	894.348	2375.49	898.308	2374.86
9898.898	2374.649	901.318	2374.099	902.998	2373.719	908.518	2372.779	911.468	2372.25
9920.478	2370.799	925.218	2370.579	937.728	2369.739	947.428	2369.079	956.868	2368.88
9969.648	2368.599	980.998	2368.38	9981	2368.389	993.998	2366.361	0000.38	2365.3
10004.45	2366.171	0012.44	2367.831	0020.98	2367.761	0021.67	2367.771	0022.26	2367.73
10025.91	2367.581	0032.64	2367.391	0035.22	2367.54	10035.8	2367.581	0037.62	2367.73
10043.56	2368.161	0047.27	2368.431	0050.12	2368.711	0060.39	2369.711	0061.48	2369.8
10064.52	2370.041	0067.64	2370.341	0069.41	2370.491	0071.39	2370.69	10079	2371.21
10083.28	2371.91	10090.3	2372.261	0097.24	2372.541	0142.16	2374.51	0145.07	2374.59
10152.08	2374.811	0161.85	2376.02						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9893.088	.06	9981	.05	510012.44	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
998	110012.44	221.2	227.79	233.24	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2371.57	Element			
Vel Head (ft)	1.10	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2370.47	Reach Len. (ft)	221.20	227.79	233.24
Crit W.S. (ft)	2370.47	Flow Area (sq ft)	73.30	116.92	116.12
E.G. Slope (ft/ft)	0.025261	Area (sq ft)	73.30	116.92	116.12
Q Total (cfs)	2280.00	Flow (cfs)	352.19	1192.30	735.51
Top Width (ft)	142.48	Top Width (ft)	54.30	31.44	56.74
Vel Total (ft/s)	7.44	Avg. Vel. (ft/s)	4.80	10.20	6.33
Max Chl Dpth (ft)	5.17	Hydr. Depth (ft)	1.35	3.72	2.05
Conv. Total (cfs)	14345.2	Conv. (cfs)	2215.9	7501.7	4627.6
Length Wtd. (ft)	229.15	Wetted Per. (ft)	54.35	31.95	56.88
Min Ch El (ft)	2365.30	Shear (lb/sq ft)	2.13	5.77	3.22
Alpha	1.28	Stream Power (lb/ft s)	10.22	58.86	20.39
Frctn Loss (ft)	5.43	Cum Volume (acre-ft)	40.48	45.75	23.07
C & E Loss (ft)	0.06	Cum SA (acres)	29.18	10.57	15.10

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2372.02	Element			
Vel Head (ft)	1.15	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2370.87	Reach Len. (ft)	221.20	227.79	233.24
Crit W.S. (ft)		Flow Area (sq ft)	95.15	129.57	68.03
E.G. Slope (ft/ft)	0.021277	Area (sq ft)	95.15	129.57	68.03
Q Total (cfs)	2280.00	Flow (cfs)	496.81	1298.59	484.60

Top Width (ft)	106.87	Top Width (ft)	54.30	31.44	21.13
Vel Total (ft/s)	7.79	Avg. Vel. (ft/s)	5.22	10.02	7.12
Max Chl Dpth (ft)	5.57	Hydr. Depth (ft)	1.75	4.12	3.22
Conv. Total (cfs)	15630.7	Conv. (cfs)	3405.9	8902.6	3322.2
Length Wtd. (ft)	227.98	Wetted Per. (ft)	54.76	31.95	24.57
Min Ch El (ft)	2365.30	Shear (lb/sq ft)	2.31	5.39	3.68
Alpha	1.22	Stream Power (lb/ft s)	12.05	54.00	26.20
Frctn Loss (ft)	5.05	Cum Volume (acre-ft)	30.33	48.16	15.37
C & E Loss (ft)	0.01	Cum SA (acres)	16.24	10.57	7.33

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9910.67	9928.25	0.04	0.08	1.56	0.00	0.05	0.50
2	LOB	9928.25	9945.84	34.43	12.24	17.62	1.51	0.70	2.81
3	LOB	9945.84	9963.42	130.18	27.17	17.59	5.71	1.55	4.79
4	LOB	9963.42	9981.00	187.53	33.81	17.59	8.23	1.92	5.55
5	Chan	9981.00	9985.49	82.43	10.96	4.55	3.62	2.44	7.52
6	Chan	9985.49	9989.98	125.40	14.09	4.55	5.50	3.14	8.90
7	Chan	9989.98	9994.48	175.22	17.23	4.55	7.69	3.84	10.17
8	Chan	9994.48	9998.97	233.74	20.49	4.55	10.25	4.56	11.41
9	Chan	9998.97	10003.46	262.94	22.04	4.58	11.53	4.91	11.93
10	Chan	10003.46	10007.95	189.97	18.15	4.59	8.33	4.04	10.47
11	Chan	10007.95	10012.44	122.59	13.95	4.59	5.38	3.11	8.79
12	ROB	10012.44	10042.32	599.81	83.34	29.91	26.31	2.79	7.20
13	ROB	10042.32	10072.20	135.69	32.78	26.97	5.95	1.22	4.14

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9910.67	9928.25	1.22	0.71	1.96	0.05	0.45	1.72
2	LOB	9928.25	9945.84	69.85	19.31	17.62	3.06	1.10	3.62
3	LOB	9945.84	9963.42	181.60	34.24	17.59	7.97	1.95	5.30
4	LOB	9963.42	9981.00	244.13	40.89	17.59	10.71	2.33	5.97
5	Chan	9981.00	9985.49	98.04	12.76	4.55	4.30	2.84	7.68
6	Chan	9985.49	9989.98	141.40	15.90	4.55	6.20	3.54	8.89
7	Chan	9989.98	9994.48	190.81	19.03	4.55	8.37	4.24	10.02
8	Chan	9994.48	9998.97	248.15	22.30	4.55	10.88	4.96	11.13
9	Chan	9998.97	10003.46	276.50	23.85	4.58	12.13	5.31	11.59
10	Chan	10003.46	10007.95	205.21	19.96	4.59	9.00	4.44	10.28
11	Chan	10007.95	10012.44	138.48	15.76	4.59	6.07	3.51	8.79
12	ROB	10012.44	10042.32	484.60	68.03	24.57	21.25	3.22	7.12

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: C8
REACH: Reach 1 RS: 2.748

INPUT
Description:
Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9958.408	2367.11	9963.888	2366.51	9967.858	2365.11	9975.25	2362.8	9977.738	2362.03
9986.948	2361.79	9987.738	2361.77	9988.318	2361.67	9988.32	2361.67	10000.05	2360.19
10000.76	2360.4	10001.8	2360.64	10006.29	2361.68	10010.72	2362.71	10013.99	2363.18
10015.32	2363.34	10017.37	2363.45	10027.6	2364.15	10042.69	2363.68	10058.55	2363.11
10063.84	2362.58	10068.66	2362.11	10075.23	2361.42	10092.33	2363.55	10094.1	2363.76
10094.15	2363.77	10094.5	2363.81	10094.72	2363.79	10096.56	2363.84	10097.26	2363.83
10099.1	2363.77	10102.35	2363.71	10106.51	2363.61	10107.43	2363.64	10107.84	2363.69
10110.63	2363.84	10111.88	2363.94	10120.33	2364.37	10124.16	2364.61	10126.58	2364.7
10131.02	2365.12	10132.61	2365.18	10136.73	2365.68	10138.22	2365.62	10138.75	2365.56
10143.71	2365.23	10147.51	2364.14	10147.93	2364.14	10148.55	2364.14	10149.09	2364.14
10149.69	2364.14	10150.14	2364.14	10153.02	2364.89	10153.39	2364.95	10155.06	2364.86
10160.25	2364.95	10161.9	2364.99	10165.34	2365.46	10166.8	2365.55	10169.35	2365.81
10171.24	2365.86	10175.96	2366.25	10178.94	2366.27	10184.91	2367.44		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9958.408	.06	9988.318	.05	10006.29	.06	10063.84	.05	10092.33	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.32	10006.29	189.81	193.36	196.77	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2365.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.060	0.055	0.059
W.S. Elev (ft)	2365.06	Reach Len. (ft)	189.81	193.36	196.77
Crit W.S. (ft)	2365.06	Flow Area (sq ft)	48.18	73.97	216.00
E.G. Slope (ft/ft)	0.022280	Area (sq ft)	48.18	73.97	216.00
Q Total (cfs)	2280.00	Flow (cfs)	312.18	758.65	1209.17
Top Width (ft)	180.36	Top Width (ft)	20.29	17.97	142.11
Vel Total (ft/s)	6.74	Avg. Vel. (ft/s)	6.48	10.26	5.60
Max Chl Dpth (ft)	4.87	Hydr. Depth (ft)	2.37	4.12	1.52
Conv. Total (cfs)	15275.0	Conv. (cfs)	2091.5	5082.6	8100.9
Length Wtd. (ft)	194.83	Wetted Per. (ft)	20.76	18.24	142.84
Min Ch El (ft)	2360.19	Shear (lb/sq ft)	3.23	5.64	2.10
Alpha	1.26	Stream Power (lb/ft s)	20.92	57.85	11.77
Frctn Loss (ft)	3.87	Cum Volume (acre-ft)	40.17	45.25	22.19
C & E Loss (ft)	0.02	Cum SA (acres)	28.99	10.44	14.57

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2366.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.27	Wt. n-Val.	0.060	0.055	0.064
W.S. Elev (ft)	2365.69	Reach Len. (ft)	189.81	193.36	196.77
Crit W.S. (ft)	2365.69	Flow Area (sq ft)	61.13	85.45	140.52
E.G. Slope (ft/ft)	0.023098	Area (sq ft)	61.13	85.45	140.52
Q Total (cfs)	2280.00	Flow (cfs)	463.22	982.26	834.52
Top Width (ft)	98.97	Top Width (ft)	20.29	17.97	60.71
Vel Total (ft/s)	7.94	Avg. Vel. (ft/s)	7.58	11.50	5.94
Max Chl Dpth (ft)	5.50	Hydr. Depth (ft)	3.01	4.76	2.31
Conv. Total (cfs)	15002.1	Conv. (cfs)	3047.9	6463.1	5491.0
Length Wtd. (ft)	194.11	Wetted Per. (ft)	21.40	18.24	64.39
Min Ch El (ft)	2360.19	Shear (lb/sq ft)	4.12	6.76	3.15
Alpha	1.29	Stream Power (lb/ft s)	31.21	77.65	18.69
Frctn Loss (ft)	4.31	Cum Volume (acre-ft)	29.93	47.60	14.81
C & E Loss (ft)	0.00	Cum SA (acres)	16.05	10.44	7.11

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.39	9970.37	1.41	0.85	2.45	0.06	0.36	1.65
2	LOB	9970.37	9976.36	45.12	9.94	6.27	1.98	1.66	4.54
3	LOB	9976.36	9982.34	125.13	18.08	6.05	5.49	3.02	6.92
4	LOB	9982.34	9988.32	140.53	19.31	5.99	6.16	3.23	7.28
5	Chan	9988.32	9990.89	84.52	9.11	2.59	3.71	3.55	9.28
6	Chan	9990.89	9993.45	97.74	9.94	2.59	4.29	3.87	9.84
7	Chan	9993.45	9996.02	111.78	10.77	2.59	4.90	4.20	10.38
8	Chan	9996.02	9998.59	126.53	11.60	2.59	5.55	4.52	10.91
9	Chan	9998.59	10001.16	136.10	12.18	2.62	5.97	4.74	11.17
10	Chan	10001.16	10003.72	113.55	10.95	2.63	4.98	4.27	10.37
11	Chan	10003.72	10006.29	88.42	9.43	2.64	3.88	3.67	9.38
12	ROB	10006.29	10042.01	241.76	54.49	35.92	10.60	1.53	4.44
13	ROB	10042.01	10077.74	560.10	82.42	35.84	24.57	2.31	6.80
14	ROB	10077.74	10113.46	369.36	62.69	35.87	16.20	1.75	5.89
15	ROB	10113.46	10149.19	32.30	12.74	21.91	1.42	0.59	2.54
16	ROB	10149.19	10184.91	5.66	3.67	13.30	0.25	0.28	1.54

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.39	9970.37	6.77	2.35	3.09	0.30	1.00	2.88
2	LOB	9970.37	9976.36	80.53	13.76	6.27	3.53	2.30	5.85
3	LOB	9976.36	9982.34	178.81	21.90	6.05	7.84	3.66	8.17
4	LOB	9982.34	9988.32	197.11	23.13	5.99	8.65	3.87	8.52
5	Chan	9988.32	9990.89	113.55	10.75	2.59	4.98	4.19	10.57

6	Chan	9990.89	9993.45	128.51	11.57	2.59	5.64	4.51	11.10
7	Chan	9993.45	9996.02	144.32	12.41	2.59	6.33	4.83	11.63
8	Chan	9996.02	9998.59	160.79	13.24	2.59	7.05	5.16	12.14
9	Chan	9998.59	10001.16	171.26	13.82	2.62	7.51	5.38	12.39
10	Chan	10001.16	10003.72	146.06	12.59	2.63	6.41	4.91	11.60
11	Chan	10003.72	10006.29	117.76	11.06	2.64	5.16	4.31	10.64
12	ROB	10006.29	10042.01	446.89	77.30	35.92	19.60	2.16	5.78
13	ROB	10042.01	10077.74	387.63	63.22	28.47	17.00	2.53	6.13

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 2.711

INPUT
Description:
Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9948.881	2365.889	952.371	2365.019	956.491		23649965.501	2361.799	973.121	2359.81
9974.621	2359.429	979.161	2358.449	979.471	2358.479	981.311	2358.679	983.031	2358.53
9987.72	2357.301	9995.681	2355.29	998.871	2354.321	0014.09	2357.851	0014.25	2357.88
10015.33	2357.91	10032.5	2358.291	0043.08	2358.891	0050.55	2359.381	0061.33	2358.64
10062.99	2358.531	0065.75	2358.461	0069.92	2357.991	0070.36	2357.941	0078.24	2357.94
10085.59	2357.941	0096.84	2357.991	0101.65	2357.56	10110.9	2356.78	10116.7	2357.93
10120.56	2358.691	0122.59	2359.011	0127.24	2359.891	0130.51	2360.451	0131.72	2360.58
10135.12	2360.871	0135.42	2360.911	0139.63	2361.441	0139.92	2361.471	0139.94	2361.48
10145.73	2361.891	0145.78	2361.91	0146.13	2361.92	10151.3	2362.311	0151.58	2362.32
10157.38	2362.36	10160.5	2362.51	0167.01	2362.891	0167.63	2362.91	0171.07	2362.88
10172.86	2362.931	0174.86	2362.971	0179.27	2363.181	0182.39	2363.271	0192.24	2363.79
10193.99	2363.891	0199.79	2364.091	0200.52	2364.11	10202.1	2364.211	0213.44	2364.89
10216.91	2365.111	0219.94	2365.08						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9948.881	.065	9987.7	.055	10014.09	.06	10101.65	.055	10116.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.71	10014.09	184.92	189.71	196.61	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2360.99	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.065	0.055	0.059
W.S. Elev (ft)	2360.17	Reach Len. (ft)	184.92	189.71	196.61
Crit W.S. (ft)		Flow Area (sq ft)	23.33	110.57	218.87
E.G. Slope (ft/ft)	0.017857	Area (sq ft)	23.33	110.57	218.87
Q Total (cfs)	2280.00	Flow (cfs)	90.44	1017.14	1172.41
Top Width (ft)	157.09	Top Width (ft)	15.94	26.39	114.75
Vel Total (ft/s)	6.46	Avg. Vel. (ft/s)	3.88	9.20	5.36
Max Chl Dpth (ft)	5.84	Hydr. Depth (ft)	1.46	4.19	1.91
Conv. Total (cfs)	17062.0	Conv. (cfs)	676.8	7611.6	8773.5
Length Wtd. (ft)	192.61	Wetted Per. (ft)	16.32	27.18	115.22
Min Ch El (ft)	2354.32	Shear (lb/sq ft)	1.59	4.53	2.12
Alpha	1.27	Stream Power (lb/ft s)	6.18	41.71	11.34
Frctn Loss (ft)	3.73	Cum Volume (acre-ft)	40.02	44.84	21.20
C & E Loss (ft)	0.03	Cum SA (acres)	28.91	10.34	13.99

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2361.86	Element			
Vel Head (ft)	1.25	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2360.61	Reach Len. (ft)	184.92	189.71	196.61
Crit W.S. (ft)		Flow Area (sq ft)	30.41	122.28	138.81
E.G. Slope (ft/ft)	0.021367	Area (sq ft)	30.41	122.28	138.81
Q Total (cfs)	2280.00	Flow (cfs)	151.13	1315.91	812.96
Top Width (ft)	107.02	Top Width (ft)	15.94	26.39	64.69
Vel Total (ft/s)	7.82	Avg. Vel. (ft/s)	4.97	10.76	5.86
Max Chl Dpth (ft)	6.29	Hydr. Depth (ft)	1.91	4.63	2.15
Conv. Total (cfs)	15597.9	Conv. (cfs)	1033.9	9002.4	5561.6
Length Wtd. (ft)	191.45	Wetted Per. (ft)	16.76	27.18	67.46
Min Ch El (ft)	2354.32	Shear (lb/sq ft)	2.42	6.00	2.74
Alpha	1.32	Stream Power (lb/ft s)	12.03	64.57	16.08
Frctn Loss (ft)	3.73	Cum Volume (acre-ft)	29.73	47.13	14.18
C & E Loss (ft)	0.01	Cum SA (acres)	15.98	10.34	6.83

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.41	9972.17	0.01	0.02	0.43	0.00	0.05	0.40
2	LOB	9972.17	9979.94	22.64	7.96	7.95	0.99	1.02	2.85
3	LOB	9979.94	9987.70	67.79	15.35	7.94	2.97	1.98	4.42
4	Chan	9987.70	9991.47	97.68	12.67	3.90	4.28	3.36	7.71
5	Chan	9991.47	9995.24	150.41	16.41	3.90	6.60	4.35	9.16
6	Chan	9995.24	9999.01	212.55	20.21	3.91	9.32	5.36	10.52
7	Chan	9999.01	10002.78	214.85	20.27	3.87	9.42	5.38	10.60
8	Chan	10002.78	10006.55	159.78	16.97	3.87	7.01	4.50	9.42
9	Chan	10006.55	10010.32	111.50	13.67	3.87	4.89	3.63	8.15
10	Chan	10010.32	10014.09	70.37	10.37	3.87	3.09	2.75	6.78
11	ROB	10014.09	10055.26	305.53	67.09	41.22	13.40	1.63	4.55
12	ROB	10055.26	10096.43	427.12	82.02	41.22	18.73	1.99	5.21
13	ROB	10096.43	10137.60	439.75	69.76	32.79	19.29	2.15	6.30

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.41	9972.17	0.25	0.21	0.87	0.01	0.50	1.20
2	LOB	9972.17	9979.94	45.67	11.40	7.95	2.00	1.47	4.01
3	LOB	9979.94	9987.70	105.21	18.80	7.94	4.61	2.42	5.60
4	Chan	9987.70	9991.47	132.03	14.34	3.90	5.79	3.80	9.21
5	Chan	9991.47	9995.24	194.36	18.08	3.90	8.52	4.80	10.75
6	Chan	9995.24	9999.01	266.74	21.89	3.91	11.70	5.81	12.19
7	Chan	9999.01	10002.78	269.55	21.94	3.87	11.82	5.82	12.29
8	Chan	10002.78	10006.55	205.43	18.64	3.87	9.01	4.94	11.02
9	Chan	10006.55	10010.32	148.56	15.35	3.87	6.52	4.07	9.68
10	Chan	10010.32	10014.09	99.24	12.05	3.87	4.35	3.20	8.24
11	ROB	10014.09	10055.26	502.00	85.36	41.22	22.02	2.07	5.88
12	ROB	10055.26	10096.43	310.96	53.45	26.24	13.64	2.27	5.82

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: C8
REACH: Reach 1 RS: 2.675

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9938.844	2362.04	9958.954	2357.89	9962.564	2357.14	9969.124	2355.93	9982.474	2353.61
9986.38	2352.77	9989.524	2352.19	9993.934	2351.39	9999.964	2350.11	10011.96	2353.04
10015.8	2354.01	10032.82	2353.93	10035.94	2353.91	10038.13	2353.91	10039.78	2354.07
10056.68	2356.07	10057.4	2356.16	10057.53	2356.17	10057.66	2356.17	10061.5	2356.1
10091.27	2355.53	10095.77	2354.57	10101.19	2353.52	10105.7	2353.38	10109.83	2353.18
10112.54	2353.52	10126.05	2354.81	10127.56	2354.81	10128.39	2354.81	10131.31	2355.09
10133.03	2354.99	10133.64	2354.94	10159.2	2356.95	10161.79	2357.09	10169.17	2357.42
10180.38	2357.76								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9938.844	.065	9986.38	.05	10011.96	.06	10095.77	.05	10126.05	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.38	10011.96	202.27	185.17	160.66	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2357.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2356.08	Reach Len. (ft)	202.27	185.17	160.66
Crit W.S. (ft)	2356.08	Flow Area (sq ft)	28.90	117.31	175.47
E.G. Slope (ft/ft)	0.021090	Area (sq ft)	28.90	117.31	175.47
Q Total (cfs)	2280.00	Flow (cfs)	129.64	1250.61	899.75
Top Width (ft)	174.31	Top Width (ft)	18.09	25.58	130.64
Vel Total (ft/s)	7.09	Avg. Vel. (ft/s)	4.49	10.66	5.13
Max Chl Dpth (ft)	5.97	Hydr. Depth (ft)	1.60	4.59	1.34
Conv. Total (cfs)	15700.1	Conv. (cfs)	892.7	8611.7	6195.7
Length Wtd. (ft)	180.99	Wetted Per. (ft)	18.39	26.19	131.25
Min Ch El (ft)	2350.11	Shear (lb/sq ft)	2.07	5.90	1.76
Alpha	1.47	Stream Power (lb/ft s)	9.28	62.87	9.03
Frctn Loss (ft)	3.11	Cum Volume (acre-ft)	39.91	44.34	20.31
C & E Loss (ft)	0.02	Cum SA (acres)	28.84	10.23	13.43

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2358.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.31	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2356.81	Reach Len. (ft)	202.27	185.17	160.66
Crit W.S. (ft)	2356.81	Flow Area (sq ft)	42.08	135.96	118.71
E.G. Slope (ft/ft)	0.017850	Area (sq ft)	42.08	135.96	118.71
Q Total (cfs)	2280.00	Flow (cfs)	217.47	1471.27	591.26
Top Width (ft)	99.58	Top Width (ft)	18.09	25.58	55.91
Vel Total (ft/s)	7.68	Avg. Vel. (ft/s)	5.17	10.82	4.98
Max Chl Dpth (ft)	6.70	Hydr. Depth (ft)	2.33	5.32	2.12
Conv. Total (cfs)	17065.3	Conv. (cfs)	1627.7	11012.1	4425.5
Length Wtd. (ft)	184.02	Wetted Per. (ft)	19.12	26.19	57.00
Min Ch El (ft)	2350.11	Shear (lb/sq ft)	2.45	5.78	2.32
Alpha	1.43	Stream Power (lb/ft s)	12.67	62.60	11.56
Frctn Loss (ft)	3.24	Cum Volume (acre-ft)	29.58	46.57	13.60
C & E Loss (ft)	0.02	Cum SA (acres)	15.90	10.23	6.56

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.37	9976.87	15.44	6.47	8.71	0.68	0.75	2.39
2	LOB	9976.87	9986.38	114.20	22.42	9.68	5.01	2.36	5.09
3	Chan	9986.38	9990.03	123.16	13.52	3.73	5.40	3.70	9.11
4	Chan	9990.03	9993.69	165.42	16.11	3.71	7.26	4.41	10.27
5	Chan	9993.69	9997.34	210.30	18.62	3.72	9.22	5.10	11.29
6	Chan	9997.34	10001.00	256.85	21.02	3.74	11.27	5.75	12.22
7	Chan	10001.00	10004.65	221.27	19.28	3.76	9.70	5.27	11.48
8	Chan	10004.65	10008.31	162.46	16.01	3.76	7.13	4.38	10.14
9	Chan	10008.31	10011.96	111.15	12.75	3.76	4.87	3.49	8.72
10	ROB	10011.96	10045.64	368.06	70.55	33.85	16.14	2.09	5.22
11	ROB	10045.64	10079.33	16.32	10.11	28.19	0.72	0.36	1.61
12	ROB	10079.33	10113.01	321.06	53.01	33.92	14.08	1.57	6.06
13	ROB	10113.01	10146.70	194.27	41.71	33.80	8.52	1.24	4.66
14	ROB	10146.70	10180.38	0.05	0.09	1.49	0.00	0.06	0.52

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.37	9976.87	43.85	12.73	9.44	1.92	1.48	3.45
2	LOB	9976.87	9986.38	173.62	29.35	9.68	7.61	3.09	5.91
3	Chan	9986.38	9990.03	153.52	16.19	3.73	6.73	4.43	9.48
4	Chan	9990.03	9993.69	197.20	18.77	3.71	8.65	5.14	10.51
5	Chan	9993.69	9997.34	242.74	21.29	3.72	10.65	5.82	11.40
6	Chan	9997.34	10001.00	289.44	23.68	3.74	12.69	6.48	12.22
7	Chan	10001.00	10004.65	253.60	21.94	3.76	11.12	6.00	11.56
8	Chan	10004.65	10008.31	193.93	18.68	3.76	8.51	5.11	10.38
9	Chan	10008.31	10011.96	140.84	15.42	3.76	6.18	4.22	9.14
10	ROB	10011.96	10045.64	524.98	95.11	33.85	23.03	2.82	5.52
11	ROB	10045.64	10079.33	66.28	23.60	23.15	2.91	1.06	2.81

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 2.640

INPUT
Description:

```
Station Elevation Data     num=       46
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
9894.931 2353.749894.951 2353.749906.971 2352.089914.651 2351.319916.871 2350.91
9935.691 2349.999940.851 2349.739948.491 2349.339968.881  2350.59972.001 2350.67
9976.981 2350.649977.971  2350.6 9982.182349.3819988.501 2347.559997.291 2344.97
9998.521 2345.239998.861 2345.26 10006.7 2346.1410007.09 2346.1910013.01 2345.56
10014.68 2345.8810015.35 2346.0510020.14 2347.25   100242348.19210024.36 2348.28
10025.78 2348.6510033.72 2349.8610039.76 2350.6610042.09 2350.9810045.53 2351.36
10049.67 2351.1410051.47 2351.1510059.55 2351.1910066.86 2351.13 10073.4 2351.15
10075.27 2351.1410076.53 2351.1610081.47 2351.0810084.61 2350.79 10088.7 2350.52
10091.15  2350.710093.25 2350.8110093.29 2350.8110096.64 2351.0910110.05 2352.43
 10114.4 2353.56

Manning's n Values         num=        4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9894.931     .06 9982.18    .05510033.72    .06510110.05     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9982.18   10024           259.24  237.58  219.38             .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2352.45    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               1.07    Wt. n-Val.                0.060      0.055     0.057
  W.S. Elev (ft)           2351.39    Reach Len. (ft)          259.24     237.58    219.38
  Crit W.S. (ft)           2351.39    Flow Area (sq ft)         83.11     202.52     48.72
  E.G. Slope (ft/ft)      0.014247    Area (sq ft)              83.11     202.52     48.72
  Q Total (cfs)            2280.00    Flow (cfs)               279.24    1838.43    162.33
  Top Width (ft)            185.72    Top Width (ft)            68.29      41.82     75.61
  Vel Total (ft/s)            6.82    Avg. Vel. (ft/s)           3.36       9.08      3.33
  Max Chl Dpth (ft)           6.42    Hydr. Depth (ft)           1.22       4.84      0.64
  Conv. Total (cfs)        19101.7    Conv. (cfs)              2339.4    15402.2    1360.0
  Length Wtd. (ft)          237.42    Wetted Per. (ft)          68.58      42.88     75.92
  Min Ch El (ft)           2344.97    Shear (lb/sq ft)           1.08       4.20      0.57
  Alpha                       1.48    Stream Power (lb/ft s)     3.62      38.14      1.90
  Frctn Loss (ft)             4.04    Cum Volume (acre-ft)      39.65      43.66     19.90
  C & E Loss (ft)             0.03    Cum SA (acres)            28.64      10.08     13.05

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2352.68    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               1.26    Wt. n-Val.                0.060      0.055
  W.S. Elev (ft)           2351.42    Reach Len. (ft)          259.24     237.58    219.38
  Crit W.S. (ft)           2351.42    Flow Area (sq ft)         85.52     204.02
  E.G. Slope (ft/ft)      0.017325    Area (sq ft)              85.52     204.02
  Q Total (cfs)            2280.00    Flow (cfs)               324.61    1955.39
  Top Width (ft)            109.49    Top Width (ft)            67.67      41.82
  Vel Total (ft/s)            7.87    Avg. Vel. (ft/s)           3.80       9.58
  Max Chl Dpth (ft)           6.45    Hydr. Depth (ft)           1.26       4.88
  Conv. Total (cfs)        17322.0    Conv. (cfs)              2466.2    14855.8
  Length Wtd. (ft)          238.28    Wetted Per. (ft)          68.06      46.11
  Min Ch El (ft)           2344.97    Shear (lb/sq ft)           1.36       4.79
  Alpha                       1.30    Stream Power (lb/ft s)     5.16      45.87
  Frctn Loss (ft)             4.50    Cum Volume (acre-ft)      29.28      45.85     13.38
  C & E Loss (ft)             0.01    Cum SA (acres)            15.70      10.08      6.45

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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.

  Profile #profile 1
```

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9912.38	9929.83	23.67	10.92	16.00	1.04	0.69	2.17
2	LOB	9929.83	9947.28	100.54	26.95	17.47	4.41	1.54	3.73
3	LOB	9947.28	9964.73	108.90	28.28	17.48	4.78	1.62	3.85
4	LOB	9964.73	9982.18	46.13	16.95	17.64	2.02	0.97	2.72
5	Chan	9982.18	9988.15	105.80	17.15	6.22	4.64	2.87	6.17
6	Chan	9988.15	9994.13	232.91	27.55	6.23	10.22	4.61	8.46
7	Chan	9994.13	10000.10	369.88	36.17	6.14	16.22	6.05	10.23
8	Chan	10000.10	10006.08	334.69	33.77	6.01	14.68	5.65	9.91
9	Chan	10006.08	10012.05	312.81	32.42	6.01	13.72	5.43	9.65
10	Chan	10012.05	10018.03	302.78	32.01	6.11	13.28	5.36	9.46
11	Chan	10018.03	10024.00	179.55	23.46	6.15	7.88	3.93	7.65
12	ROB	10024.00	10042.08	137.21	30.33	18.30	6.02	1.68	4.52
13	ROB	10042.08	10060.16	3.20	3.62	18.11	0.14	0.20	0.89
14	ROB	10060.16	10078.24	4.29	4.31	18.08	0.19	0.24	1.00
15	ROB	10078.24	10096.32	17.22	9.93	18.12	0.76	0.55	1.73

16	ROB	10096.32	10114.40	0.42	0.54	3.30	0.02	0.16	0.77

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9912.38	9929.83	29.06	11.45	15.47	1.27	0.75	2.54
2	LOB	9929.83	9947.28	115.89	27.58	17.47	5.08	1.58	4.20
3	LOB	9947.28	9964.73	125.30	28.91	17.48	5.50	1.66	4.33
4	LOB	9964.73	9982.18	54.37	17.58	17.64	2.38	1.01	3.09
5	Chan	9982.18	9988.15	116.32	17.37	6.22	5.10	2.91	6.70
6	Chan	9988.15	9994.13	254.08	27.76	6.23	11.14	4.65	9.15
7	Chan	9994.13	10000.10	402.27	36.38	6.14	17.64	6.09	11.06
8	Chan	10000.10	10006.08	364.25	33.98	6.01	15.98	5.69	10.72
9	Chan	10006.08	10012.05	340.59	32.63	6.01	14.94	5.46	10.44
10	Chan	10012.05	10018.03	329.71	32.22	6.11	14.46	5.39	10.23
11	Chan	10018.03	10024.00	148.17	23.67	9.38	6.50	3.96	6.26

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 2.595

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9911.361	2348.959	912.481	2348.929	921.611	2348.779	923.091	2348.739	926.951	2348.57
9934.201	2348.39	935.981	2348.29	940.921	2347.959	952.971	2347.29	954.621	2347.1
9956.191	2346.679	968.381	2343.299	974.471	2344.149	975.081	2344.239	975.381	2344.15
9979.892	343.297	989.071	2341.569	996.501	2340.149	996.591	2340.131	000.38	2339.47
10001.98	2340.081	0010.552	343.39	610012.42	2344.121	0016.24	2344.31	0019.95	2344.49
10020.61	2344.531	0030.81	2343.531	0032.07	2343.41	0036.33	2343.761	0036.74	2343.78
10042.38	2344.09	10047.7	2344.071	0048.03	2344.111	0048.56	2344.221	0051.03	2344.74
10053.92	2345.711	0056.43	2346.56	10057.3	2346.621	0073.11	2348.521	0074.63	2348.68
10075.65	2348.741	0077.37	2348.89						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9911.361	.069	952.971	.065	9979.89	.055	10010.55	.065	10057.3	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.89	10010.55	163.61	169.79	193.18	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2347.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2346.19	Reach Len. (ft)	163.61	169.79	193.18
Crit W.S. (ft)	2346.19	Flow Area (sq ft)	43.14	147.32	90.43
E.G. Slope (ft/ft)	0.020636	Area (sq ft)	43.14	147.32	90.43
Q Total (cfs)	2280.00	Flow (cfs)	218.55	1590.74	470.71
Top Width (ft)	97.40	Top Width (ft)	21.96	30.66	44.78
Vel Total (ft/s)	8.12	Avg. Vel. (ft/s)	5.07	10.80	5.21
Max Chl Dpth (ft)	6.72	Hydr. Depth (ft)	1.96	4.81	2.02
Conv. Total (cfs)	15871.7	Conv. (cfs)	1521.4	11073.6	3276.8
Length Wtd. (ft)	170.47	Wetted Per. (ft)	22.51	31.75	45.31
Min Ch El (ft)	2339.47	Shear (lb/sq ft)	2.47	5.98	2.57
Alpha	1.36	Stream Power (lb/ft s)	12.51	64.55	13.38
Frctn Loss (ft)	3.98	Cum Volume (acre-ft)	39.27	42.71	19.55
C & E Loss (ft)	0.09	Cum SA (acres)	28.37	9.89	12.75

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2347.58	Element	Left OB	Channel	Right OB

Vel Head (ft)	1.39	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2346.19	Reach Len. (ft)	163.61	169.79	193.18
Crit W.S. (ft)	2346.19	Flow Area (sq ft)	43.14	147.32	90.43
E.G. Slope (ft/ft)	0.020636	Area (sq ft)	43.14	147.32	90.43
Q Total (cfs)	2280.00	Flow (cfs)	218.55	1590.74	470.71
Top Width (ft)	97.40	Top Width (ft)	21.96	30.66	44.78
Vel Total (ft/s)	8.12	Avg. Vel. (ft/s)	5.07	10.80	5.21
Max Chl Dpth (ft)	6.72	Hydr. Depth (ft)	1.96	4.81	2.02
Conv. Total (cfs)	15871.7	Conv. (cfs)	1521.4	11073.6	3276.8
Length Wtd. (ft)	170.47	Wetted Per. (ft)	22.51	31.75	45.31
Min Ch El (ft)	2339.47	Shear (lb/sq ft)	2.47	5.98	2.57
Alpha	1.36	Stream Power (lb/ft s)	12.51	64.55	13.38
Frctn Loss (ft)	3.98	Cum Volume (acre-ft)	28.90	44.89	13.15
C & E Loss (ft)	0.09	Cum SA (acres)	15.44	9.89	6.34

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9952.48	9966.18	31.14	9.44	8.57	1.37	1.14	3.30
2	LOB	9966.18	9979.89	187.41	33.69	13.95	8.22	2.46	5.56
3	Chan	9979.89	9984.27	119.80	14.48	4.46	5.25	3.31	8.28
4	Chan	9984.27	9988.65	173.93	18.11	4.46	7.63	4.13	9.61
5	Chan	9988.65	9993.03	236.07	21.75	4.46	10.35	4.97	10.85
6	Chan	9993.03	9997.41	306.05	25.41	4.46	13.42	5.80	12.04
7	Chan	9997.41	10001.79	362.09	28.28	4.52	15.88	6.46	12.81
8	Chan	10001.79	10006.17	256.94	23.36	4.70	11.27	5.33	11.00
9	Chan	10006.17	10010.55	135.85	15.94	4.70	5.96	3.64	8.52
10	ROB	10010.55	10023.91	126.55	25.87	13.53	5.55	1.94	4.89
11	ROB	10023.91	10037.28	189.10	32.82	13.42	8.29	2.46	5.76
12	ROB	10037.28	10050.64	145.37	28.04	13.43	6.38	2.10	5.19
13	ROB	10050.64	10064.01	9.69	3.70	4.94	0.42	0.79	2.62

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9952.48	9966.18	31.14	9.44	8.57	1.37	1.14	3.30
2	LOB	9966.18	9979.89	187.41	33.69	13.95	8.22	2.46	5.56
3	Chan	9979.89	9984.27	119.80	14.48	4.46	5.25	3.31	8.28
4	Chan	9984.27	9988.65	173.93	18.11	4.46	7.63	4.13	9.61
5	Chan	9988.65	9993.03	236.07	21.75	4.46	10.35	4.97	10.85
6	Chan	9993.03	9997.41	306.05	25.41	4.46	13.42	5.80	12.04
7	Chan	9997.41	10001.79	362.09	28.28	4.52	15.88	6.46	12.81
8	Chan	10001.79	10006.17	256.94	23.36	4.70	11.27	5.33	11.00
9	Chan	10006.17	10010.55	135.85	15.94	4.70	5.96	3.64	8.52
10	ROB	10010.55	10023.91	126.55	25.87	13.53	5.55	1.94	4.89
11	ROB	10023.91	10037.28	189.10	32.82	13.42	8.29	2.46	5.76
12	ROB	10037.28	10050.64	145.37	28.04	13.43	6.38	2.10	5.19
13	ROB	10050.64	10064.01	9.69	3.70	4.94	0.42	0.79	2.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: C8
REACH: Reach 1 RS: 2.563

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9845.26	2343.97	9850.54	2343.62	9862.72	2343.11	9873.33	2342.67	9878.75	2342.43
9881.02	2342.34	9889.51	2342.01	9891.94	2341.62	9902.98	2340.53	9911.26	2339.61
9916.1	2339.11	9922.35	2339.25	9935.88	2339.57	9949.04	2339.92	9951.39	2339.98
9953.41	2339.75	9954.22	2339.64	9961.02	2338.79	9964.34	2338.2	9972.34	2339.79
9975.44	2340.18	9978.01	2340.23	9978.43	2340.24	9982.08	2340.25	9985.13	2340.27
9987.93	2339.504	9992.88	2338.15	9995.93	2337.29	10000.39	2337.46	10002.67	2337.48
10003.43	2337.41	10013.66	2338.38	10014.91	2338.52	10015.76	2338.29	10016.03	2338.21
10016.66	2338.39	10022.02	2339.88	10026.48	2343.68	10029.49	2346.32		

```
Manning's n Values          num=        4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 9845.26     .06 9951.39    .065 9987.93    .05510022.02     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9987.9310022.02             83.4  193.64  225.04            .1        .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2342.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.08	Wt. n-Val.	0.062	0.055	0.060
W.S. Elev (ft)	2341.64	Reach Len. (ft)	83.40	193.64	225.04
Crit W.S. (ft)	2341.64	Flow Area (sq ft)	181.61	119.10	1.82
E.G. Slope (ft/ft)	0.026563	Area (sq ft)	181.61	119.10	1.82
Q Total (cfs)	2280.00	Flow (cfs)	1081.60	1192.78	5.62
Top Width (ft)	132.27	Top Width (ft)	96.11	34.09	2.07
Vel Total (ft/s)	7.54	Avg. Vel. (ft/s)	5.96	10.01	3.09
Max Chl Dpth (ft)	4.35	Hydr. Depth (ft)	1.89	3.49	0.88
Conv. Total (cfs)	13989.3	Conv. (cfs)	6636.3	7318.5	34.5
Length Wtd. (ft)	139.86	Wetted Per. (ft)	96.67	34.72	2.71
Min Ch El (ft)	2337.29	Shear (lb/sq ft)	3.12	5.69	1.11
Alpha	1.22	Stream Power (lb/ft s)	18.56	56.97	3.43
Frctn Loss (ft)	3.58	Cum Volume (acre-ft)	38.85	42.19	19.35
C & E Loss (ft)	0.03	Cum SA (acres)	28.15	9.76	12.65

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2342.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.08	Wt. n-Val.	0.062	0.055	0.060
W.S. Elev (ft)	2341.64	Reach Len. (ft)	83.40	193.64	225.04
Crit W.S. (ft)	2341.64	Flow Area (sq ft)	181.61	119.10	1.82
E.G. Slope (ft/ft)	0.026563	Area (sq ft)	181.61	119.10	1.82
Q Total (cfs)	2280.00	Flow (cfs)	1081.60	1192.78	5.62
Top Width (ft)	132.27	Top Width (ft)	96.11	34.09	2.07
Vel Total (ft/s)	7.54	Avg. Vel. (ft/s)	5.96	10.01	3.09
Max Chl Dpth (ft)	4.35	Hydr. Depth (ft)	1.89	3.49	0.88
Conv. Total (cfs)	13989.3	Conv. (cfs)	6636.3	7318.5	34.5
Length Wtd. (ft)	139.86	Wetted Per. (ft)	96.67	34.72	2.71
Min Ch El (ft)	2337.29	Shear (lb/sq ft)	3.12	5.69	1.11
Alpha	1.22	Stream Power (lb/ft s)	18.56	56.97	3.43
Frctn Loss (ft)	3.58	Cum Volume (acre-ft)	28.47	44.37	12.94
C & E Loss (ft)	0.03	Cum SA (acres)	15.22	9.76	6.24

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9873.79	9902.33	14.01	5.54	10.56	0.61	0.53	2.53
2	LOB	9902.33	9930.86	378.43	59.60	28.62	16.60	2.09	6.35
3	LOB	9930.86	9959.40	341.14	56.79	28.60	14.96	1.99	6.01
4	LOB	9959.40	9987.93	348.02	59.69	28.88	15.26	2.09	5.83
5	Chan	9987.93	9992.80	114.22	13.65	5.05	5.01	2.80	8.37
6	Chan	9992.80	9997.67	213.00	19.75	4.99	9.34	4.05	10.79
7	Chan	9997.67	10002.54	230.05	20.48	4.87	10.09	4.20	11.23
8	Chan	10002.54	10007.41	217.16	19.81	4.89	9.52	4.07	10.96
9	Chan	10007.41	10012.28	178.91	17.64	4.89	7.85	3.62	10.14
10	Chan	10012.28	10017.15	149.00	15.91	4.97	6.54	3.27	9.37
11	Chan	10017.15	10022.02	90.45	11.87	5.05	3.97	2.44	7.62
12	ROB	10022.02	10023.51	5.46	1.68	1.96	0.24	1.12	3.25
13	ROB	10023.51	10025.01	0.16	0.14	0.75	0.01	0.24	1.17

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9873.79	9902.33	14.01	5.54	10.56	0.61	0.53	2.53
2	LOB	9902.33	9930.86	378.43	59.60	28.62	16.60	2.09	6.35
3	LOB	9930.86	9959.40	341.14	56.79	28.60	14.96	1.99	6.01

4	LOB	9959.40	9987.93	348.02	59.69	28.88	15.26	2.09	5.83
5	Chan	9987.93	9992.80	114.22	13.65	5.05	5.01	2.80	8.37
6	Chan	9992.80	9997.67	213.00	19.75	4.99	9.34	4.05	10.79
7	Chan	9997.67	10002.54	230.05	20.48	4.87	10.09	4.20	11.23
8	Chan	10002.54	10007.41	217.16	19.81	4.89	9.52	4.07	10.96
9	Chan	10007.41	10012.28	178.91	17.64	4.89	7.85	3.62	10.14
10	Chan	10012.28	10017.15	149.00	15.91	4.97	6.54	3.27	9.37
11	Chan	10017.15	10022.02	90.45	11.87	5.05	3.97	2.44	7.62
12	ROB	10022.02	10023.51	5.46	1.68	1.96	0.24	1.12	3.25
13	ROB	10023.51	10025.01	0.16	0.14	0.75	0.01	0.24	1.17

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

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 2.526

INPUT
Description:
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9902.856	2340.719	912.046	2338.29	924.096	2335.089	933.456	2333.259	935.326	2332.86
9936.156	2333.039	941.276	2333.989	946.256	2334.919	948.106	2335.059	950.046	2334.87
9951.316	2335.139	953.636	2334.859	961.366	2333.939	963.726	2333.49	967.886	2332.46
9969.846	2333.239	972.336	2334.139	988.366	2332.77	9988.37	2332.779	988.716	2332.74
9989.096	2332.691	0001.38	2330.82	10004.3	2331.83	10005.07	2332	10006.56	2332.731
10009.55	2334.2	10016.7	2337.81	0019.72	2337.91	0021.64	2337.94	10028.19	2338.1
10028.23	2338.11	0035.36	2338.19	10037.75	2338.25	10040.07	2338.26	10048.08	2338.5
10052.86	2338.44	10054.1	2338.54	10054.82	2338.64	10055.64	2338.75	10060.32	2339.34
10068.33	2340.45								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9902.856	.069	912.046	.065	9988.37	.05	510006.56	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.37	10006.56	142.65	148.22	149.27	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2337.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2336.56	Reach Len. (ft)	142.65	148.22	149.27
Crit W.S. (ft)	2336.56	Flow Area (sq ft)	177.04	86.91	14.78
E.G. Slope (ft/ft)	0.024746	Area (sq ft)	177.04	86.91	14.78
Q Total (cfs)	2280.00	Flow (cfs)	1168.33	1028.90	82.78
Top Width (ft)	95.86	Top Width (ft)	69.99	18.19	7.68
Vel Total (ft/s)	8.18	Avg. Vel. (ft/s)	6.60	11.84	5.60
Max Chl Dpth (ft)	5.74	Hydr. Depth (ft)	2.53	4.78	1.93
Conv. Total (cfs)	14493.7	Conv. (cfs)	7426.9	6540.6	526.2
Length Wtd. (ft)		Wetted Per. (ft)	71.22	18.69	8.58
Min Ch El (ft)	2330.82	Shear (lb/sq ft)	3.84	7.18	2.66
Alpha	1.30	Stream Power (lb/ft s)	25.34	85.03	14.91
Frctn Loss (ft)		Cum Volume (acre-ft)	38.50	41.73	19.30
C & E Loss (ft)		Cum SA (acres)	27.99	9.64	12.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2337.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2336.56	Reach Len. (ft)	142.65	148.22	149.27
Crit W.S. (ft)	2336.56	Flow Area (sq ft)	177.04	86.91	14.78
E.G. Slope (ft/ft)	0.024746	Area (sq ft)	177.04	86.91	14.78
Q Total (cfs)	2280.00	Flow (cfs)	1168.33	1028.90	82.78
Top Width (ft)	95.86	Top Width (ft)	69.99	18.19	7.68
Vel Total (ft/s)	8.18	Avg. Vel. (ft/s)	6.60	11.84	5.60
Max Chl Dpth (ft)	5.74	Hydr. Depth (ft)	2.53	4.78	1.93
Conv. Total (cfs)	14493.7	Conv. (cfs)	7426.9	6540.6	526.2
Length Wtd. (ft)		Wetted Per. (ft)	71.22	18.69	8.58
Min Ch El (ft)	2330.82	Shear (lb/sq ft)	3.84	7.18	2.66
Alpha	1.30	Stream Power (lb/ft s)	25.34	85.03	14.91
Frctn Loss (ft)		Cum Volume (acre-ft)	28.13	43.91	12.90
C & E Loss (ft)		Cum SA (acres)	15.06	9.64	6.21

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9902.86	9919.96	0.38	0.32	1.63	0.02	0.20	1.19
2	LOB	9919.96	9937.06	232.95	39.00	17.49	10.22	2.28	5.97
3	LOB	9937.06	9954.17	201.63	35.62	17.32	8.84	2.08	5.66
4	LOB	9954.17	9971.27	345.04	49.43	17.55	15.13	2.89	6.98
5	LOB	9971.27	9988.37	388.31	52.67	17.23	17.03	3.08	7.37
6	Chan	9988.37	9990.97	107.97	10.29	2.62	4.74	3.96	10.49
7	Chan	9990.97	9993.57	126.27	11.31	2.63	5.54	4.35	11.16
8	Chan	9993.57	9996.17	145.96	12.34	2.63	6.40	4.75	11.83
9	Chan	9996.17	9998.76	166.72	13.36	2.63	7.31	5.14	12.48
10	Chan	9998.76	10001.36	188.70	14.39	2.63	8.28	5.54	13.11
11	Chan	10001.36	10003.96	169.96	13.76	2.75	7.45	5.30	12.35
12	Chan	10003.96	10006.56	123.31	11.45	2.81	5.41	4.41	10.77
13	ROB	10006.56	10018.91	82.78	14.78	8.58	3.63	1.93	5.60

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9902.86	9919.96	0.38	0.32	1.63	0.02	0.20	1.19
2	LOB	9919.96	9937.06	232.95	39.00	17.49	10.22	2.28	5.97
3	LOB	9937.06	9954.17	201.63	35.62	17.32	8.84	2.08	5.66
4	LOB	9954.17	9971.27	345.04	49.43	17.55	15.13	2.89	6.98
5	LOB	9971.27	9988.37	388.31	52.67	17.23	17.03	3.08	7.37
6	Chan	9988.37	9990.97	107.97	10.29	2.62	4.74	3.96	10.49
7	Chan	9990.97	9993.57	126.27	11.31	2.63	5.54	4.35	11.16
8	Chan	9993.57	9996.17	145.96	12.34	2.63	6.40	4.75	11.83
9	Chan	9996.17	9998.76	166.72	13.36	2.63	7.31	5.14	12.48
10	Chan	9998.76	10001.36	188.70	14.39	2.63	8.28	5.54	13.11
11	Chan	10001.36	10003.96	169.96	13.76	2.75	7.45	5.30	12.35
12	Chan	10003.96	10006.56	123.31	11.45	2.81	5.41	4.41	10.77
13	ROB	10006.56	10018.91	82.78	14.78	8.58	3.63	1.93	5.60

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.

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 2.498

INPUT
Description:
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9902.811	2341.929	907.381	2341.559	917.911	2340.69	918.581	2340.559	927.771	2340.24
9937.281	2339.519	938.391	2339.479	938.761	2339.439	939.521	2339.349	940.931	2339.19
9941.691	2339.139	942.811	2339.039	945.581	2338.779	959.541	2337.419	969.431	2336.51
9969.461	2336.529	973.101	2336.049	979.611	2333.579	983.401	2332.15	9989.45	2329.89
9989.451	2329.899	994.061	2328.131	0001.87	2327.51	0003.82	2327.34	10004.5	2327.43
10015.35	2328.851	0020.53	2329.911	0023.15	2330.441	0042.39	2331.831	0045.33	2332.04
10052.9	2332.611	0059.42	2333.021	0075.42	2333.411	0083.99	2333.511	0088.68	2333.48
10102.52	2333.591	0103.35	2333.561	0105.99	2333.641	0107.43	2333.641	0108.67	2333.5
10110.2	2333.321	0115.26	2332.81	0120.13	2333.171	0121.07	2333.251	0122.84	2333.32
10123.89	2333.331	0126.76	2333.49	10136.8	2334.041	0143.35	2334.81	10147.6	2336.08
10157.4	2338.991	0160.79	2340.02						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9902.811	.06	9989.45	.05	10020.53	.06	10105.99	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.45	10020.53	270.58	237.62	211.88	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2335.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2334.10	Reach Len. (ft)	270.58	237.62	211.88
Crit W.S. (ft)	2334.10	Flow Area (sq ft)	23.64	179.10	148.50
E.G. Slope (ft/ft)	0.012392	Area (sq ft)	23.64	179.10	148.50
Q Total (cfs)	2280.00	Flow (cfs)	102.54	1710.75	466.71
Top Width (ft)	159.04	Top Width (ft)	11.22	31.08	116.74
Vel Total (ft/s)	6.49	Avg. Vel. (ft/s)	4.34	9.55	3.14
Max Chl Dpth (ft)	6.75	Hydr. Depth (ft)	2.11	5.76	1.27
Conv. Total (cfs)	20481.7	Conv. (cfs)	921.1	15368.0	4192.6
Length Wtd. (ft)	233.71	Wetted Per. (ft)	11.98	31.64	116.98
Min Ch El (ft)	2327.34	Shear (lb/sq ft)	1.53	4.38	0.98
Alpha	1.69	Stream Power (lb/ft s)	6.62	41.83	3.09
Frctn Loss (ft)	3.19	Cum Volume (acre-ft)	38.18	41.28	19.02
C & E Loss (ft)	0.06	Cum SA (acres)	27.86	9.56	12.41

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

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2335.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2334.07	Reach Len. (ft)	270.58	237.62	211.88
Crit W.S. (ft)	2334.07	Flow Area (sq ft)	23.33	178.23	137.22
E.G. Slope (ft/ft)	0.012884	Area (sq ft)	23.33	178.23	137.22
Q Total (cfs)	2280.00	Flow (cfs)	102.70	1730.24	447.06
Top Width (ft)	141.70	Top Width (ft)	11.15	31.08	99.47
Vel Total (ft/s)	6.73	Avg. Vel. (ft/s)	4.40	9.71	3.26
Max Chl Dpth (ft)	6.73	Hydr. Depth (ft)	2.09	5.73	1.38
Conv. Total (cfs)	20086.8	Conv. (cfs)	904.8	15243.4	3938.6
Length Wtd. (ft)	233.87	Wetted Per. (ft)	11.91	31.64	100.59
Min Ch El (ft)	2327.34	Shear (lb/sq ft)	1.58	4.53	1.10
Alpha	1.64	Stream Power (lb/ft s)	6.94	43.98	3.57
Frctn Loss (ft)	3.48	Cum Volume (acre-ft)	27.80	43.46	12.64
C & E Loss (ft)	0.01	Cum SA (acres)	14.92	9.56	6.03

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.12	9989.45	102.54	23.64	11.98	4.50	2.11	4.34
2	Chan	9989.45	9993.89	188.02	22.43	4.75	8.25	5.05	8.38
3	Chan	9993.89	9998.33	270.39	27.21	4.47	11.86	6.13	9.94
4	Chan	9998.33	10002.77	297.88	28.81	4.45	13.07	6.49	10.34
5	Chan	10002.77	10007.21	303.61	29.19	4.47	13.32	6.57	10.40
6	Chan	10007.21	10011.65	261.96	26.73	4.48	11.49	6.02	9.80
7	Chan	10011.65	10016.09	220.53	24.12	4.49	9.67	5.43	9.14
8	Chan	10016.09	10020.53	168.35	20.60	4.53	7.38	4.64	8.17
9	ROB	10020.53	10048.58	335.20	79.85	28.17	14.70	2.85	4.20
10	ROB	10048.58	10076.63	67.03	30.36	28.08	2.94	1.08	2.21
11	ROB	10076.63	10104.69	23.79	16.30	28.05	1.04	0.58	1.46
12	ROB	10104.69	10132.74	40.24	21.29	28.13	1.77	0.76	1.89
13	ROB	10132.74	10160.79	0.44	0.69	4.54	0.02	0.15	0.65

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.12	9989.45	102.70	23.33	11.91	4.50	2.09	4.40
2	Chan	9989.45	9993.89	189.93	22.31	4.75	8.33	5.02	8.51
3	Chan	9993.89	9998.33	273.58	27.09	4.47	12.00	6.10	10.10
4	Chan	9998.33	10002.77	301.53	28.69	4.45	13.22	6.46	10.51
5	Chan	10002.77	10007.21	307.36	29.06	4.47	13.48	6.55	10.58
6	Chan	10007.21	10011.65	265.01	26.61	4.48	11.62	5.99	9.96
7	Chan	10011.65	10016.09	222.91	24.00	4.49	9.78	5.41	9.29
8	Chan	10016.09	10020.53	169.92	20.48	4.53	7.45	4.61	8.30
9	ROB	10020.53	10048.58	333.80	79.07	28.17	14.64	2.82	4.22
10	ROB	10048.58	10076.63	64.95	29.57	28.08	2.85	1.05	2.20
11	ROB	10076.63	10104.69	22.18	15.51	28.05	0.97	0.55	1.43
12	ROB	10104.69	10132.74	26.13	13.06	16.28	1.15	0.85	2.00

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: C8
REACH: Reach 1 RS: 2.453

INPUT
Description:
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9866.889	2334.079	882.469	2332.049	886.369	2331.759	888.969	2331.939	895.119	2332.54
9895.399	2332.569	898.769	2330.339	899.709	2329.899	900.499	2329.699	907.359	2328.32
9910.299	2328.39	910.789	2328.089	912.049	2327.989	913.639	2327.959	915.629	2327.83
9917.829	2327.739	928.149	2327.269	929.449	2327.239	931.259	2327.239	932.619	2327.22
9934.659	2327.149	941.779	2327.159	949.579	2327.169	951.889	2327.189	968.949	2326.84
9972.709	2326.769	975.939	2326.79	979.129	2326.179	980.599	2325.879	983.499	2325.27
9985.42	2324.879	995.879	2322.699	996.979	2322.551	0000.78	2322.351	0005.06	2323.06
10007.44	2323.41	0014.21	2325.081	0014.78	2325.221	0023.67	2324.761	0027.33	2324.54
10031.9	2324.071	0036.99	2323.571	0044.42	2325.391	0055.94	2328.051	0059.13	2328.26
10060.32	2328.341	0076.43	2329.351	0082.86	2330.211	0090.36	2331.151	0104.51	2332.31
10113.8	2333.071	0121.14	2333.99						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9866.889	.06	9985.42	.05	10014.21	.06	10082.86	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.42	10014.21	196.39	199.85	193.73	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2329.12	Element			
Vel Head (ft)	0.92	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2328.20	Reach Len. (ft)	196.39	199.85	193.73
Crit W.S. (ft)		Flow Area (sq ft)	86.56	136.34	128.17
E.G. Slope (ft/ft)	0.015122	Area (sq ft)	86.56	136.34	128.17
Q Total (cfs)	2280.00	Flow (cfs)	289.72	1262.03	728.25
Top Width (ft)	147.67	Top Width (ft)	74.90	28.79	43.99
Vel Total (ft/s)	6.49	Avg. Vel. (ft/s)	3.35	9.26	5.68
Max Chl Dpth (ft)	5.85	Hydr. Depth (ft)	1.16	4.74	2.91
Conv. Total (cfs)	18541.1	Conv. (cfs)	2356.1	10262.9	5922.2
Length Wtd. (ft)	197.93	Wetted Per. (ft)	75.13	29.32	44.60
Min Ch El (ft)	2322.35	Shear (lb/sq ft)	1.09	4.39	2.71
Alpha	1.40	Stream Power (lb/ft s)	3.64	40.64	15.41
Frctn Loss (ft)	3.55	Cum Volume (acre-ft)	37.83	40.42	18.35
C & E Loss (ft)	0.04	Cum SA (acres)	27.59	9.40	12.02

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2329.54	Element			
Vel Head (ft)	1.21	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2328.33	Reach Len. (ft)	196.39	199.85	193.73
Crit W.S. (ft)		Flow Area (sq ft)	47.90	140.00	96.01
E.G. Slope (ft/ft)	0.017410	Area (sq ft)	47.90	140.00	96.01
Q Total (cfs)	2280.00	Flow (cfs)	226.35	1415.20	638.46
Top Width (ft)	79.82	Top Width (ft)	26.07	28.79	24.96
Vel Total (ft/s)	8.03	Avg. Vel. (ft/s)	4.73	10.11	6.65
Max Chl Dpth (ft)	5.98	Hydr. Depth (ft)	1.84	4.86	3.85
Conv. Total (cfs)	17279.7	Conv. (cfs)	1715.4	10725.5	4838.8
Length Wtd. (ft)	198.10	Wetted Per. (ft)	27.54	29.32	29.33
Min Ch El (ft)	2322.35	Shear (lb/sq ft)	1.89	5.19	3.56
Alpha	1.21	Stream Power (lb/ft s)	8.93	52.47	23.66
Frctn Loss (ft)	3.86	Cum Volume (acre-ft)	27.58	42.60	12.07
C & E Loss (ft)	0.03	Cum SA (acres)	14.81	9.40	5.72

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9890.60	9914.30	0.76	0.78	3.81	0.03	0.21	0.97
2	LOB	9914.30	9938.01	44.15	18.55	23.72	1.94	0.78	2.38
3	LOB	9938.01	9961.71	74.82	25.46	23.71	3.28	1.07	2.94
4	LOB	9961.71	9985.42	170.00	41.77	23.89	7.46	1.76	4.07
5	Chan	9985.42	9989.53	120.43	15.45	4.20	5.28	3.76	7.79
6	Chan	9989.53	9993.65	169.59	18.98	4.20	7.44	4.61	8.94
7	Chan	9993.65	9997.76	223.66	22.34	4.17	9.81	5.43	10.01
8	Chan	9997.76	10001.87	248.59	23.71	4.13	10.90	5.77	10.48
9	Chan	10001.87	10005.98	216.83	21.92	4.17	9.51	5.33	9.89
10	Chan	10005.98	10010.10	169.90	19.01	4.21	7.45	4.62	8.94
11	Chan	10010.10	10014.21	113.01	14.93	4.24	4.96	3.63	7.57
12	ROB	10014.21	10035.60	485.85	76.97	21.46	21.31	3.60	6.31
13	ROB	10035.60	10056.98	242.38	51.14	21.92	10.63	2.39	4.74
14	ROB	10056.98	10078.37	0.02	0.05	1.22	0.00	0.04	0.31

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.01	9961.71	8.94	3.12	3.66	0.39	1.32	2.87
2	LOB	9961.71	9985.42	217.41	44.78	23.89	9.54	1.89	4.85
3	Chan	9985.42	9989.53	136.69	15.98	4.20	6.00	3.88	8.56
4	Chan	9989.53	9993.65	190.54	19.50	4.20	8.36	4.74	9.77
5	Chan	9993.65	9997.76	249.60	22.86	4.17	10.95	5.56	10.92

6	Chan	9997.76	10001.87	276.81	24.23	4.13	12.14	5.89	11.42
7	Chan	10001.87	10005.98	242.16	22.44	4.17	10.62	5.46	10.79
8	Chan	10005.98	10010.10	190.87	19.53	4.21	8.37	4.75	9.77
9	Chan	10010.10	10014.21	128.51	15.45	4.24	5.64	3.76	8.32
10	ROB	10014.21	10035.60	560.58	79.69	21.46	24.59	3.73	7.03
11	ROB	10035.60	10056.98	77.88	16.32	7.87	3.42	4.57	4.77

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

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 2.415

INPUT
Description:
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9793.602	2331.969	796.182	2331.649	797.382	2331.539	798.142	2331.449	806.302	2330.46
9828.282	2326.329	836.222	2324.789	841.632	2324.719	870.822	2324.179	874.562	2324.19
9906.292	2324.029	920.812	2323.889	921.182	2323.89	921.352	2323.779	925.512	2322.91
9935.282	2320.99	935.902	2320.939	940.122	2321.169	955.402	2321.999	958.072	2322.12
9967.652	2321.59	969.522	2321.389	974.872	2321.369	976.652	2321.369	976.972	2321.36
9977.402	2321.3	9983.05	2320.579	983.052	2320.579	993.932	2318.921	0000.61	2317.94
10008.07	2320.661	0024.29	2326.781	0029.41	2327.37	10031.2	2327.471	0044.33	2328.82
10046.18	2328.881	0048.68	2328.91	0050.14	2328.931	0053.96	2329.341	0057.42	2329.71
10059.62	2329.891	0060.06	2329.91	0061.34	2330.021	0062.64	2330.131	0064.64	2330.33
10069.14	2330.661	0072.56	2331.051	0072.58	2331.051	0076.52	2331.181	0078.88	2331.22
10080.82	2331.261	0088.89	2331.621	0089.78	2331.631	0091.06	2331.811	0091.23	2331.85

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9793.602	.069	955.402	.065	9983.05	.055	10008.07	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.05	10008.07	219.54	217.04	215.39	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2325.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.063	0.055	0.060
W.S. Elev (ft)	2324.18	Reach Len. (ft)	219.54	217.04	215.39
Crit W.S. (ft)	2323.81	Flow Area (sq ft)	160.24	122.96	16.38
E.G. Slope (ft/ft)	0.021572	Area (sq ft)	160.24	122.96	16.38
Q Total (cfs)	2280.00	Flow (cfs)	811.60	1385.40	83.00
Top Width (ft)	141.49	Top Width (ft)	107.15	25.02	9.32
Vel Total (ft/s)	7.61	Avg. Vel. (ft/s)	5.06	11.27	5.07
Max Chl Dpth (ft)	6.24	Hydr. Depth (ft)	1.50	4.91	1.76
Conv. Total (cfs)	15523.5	Conv. (cfs)	5525.8	9432.5	565.1
Length Wtd. (ft)	217.82	Wetted Per. (ft)	107.56	25.70	9.96
Min Ch El (ft)	2317.94	Shear (lb/sq ft)	2.01	6.44	2.21
Alpha	1.51	Stream Power (lb/ft s)	10.16	72.61	11.23
Frctn Loss (ft)	4.56	Cum Volume (acre-ft)	37.28	39.82	18.03
C & E Loss (ft)	0.01	Cum SA (acres)	27.18	9.27	11.90

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2325.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.47	Wt. n-Val.	0.063	0.055	0.060
W.S. Elev (ft)	2324.18	Reach Len. (ft)	219.54	217.04	215.39
Crit W.S. (ft)		Flow Area (sq ft)	123.39	123.00	16.40
E.G. Slope (ft/ft)	0.021971	Area (sq ft)	123.39	123.00	16.40
Q Total (cfs)	2280.00	Flow (cfs)	797.00	1399.09	83.91
Top Width (ft)	80.39	Top Width (ft)	46.05	25.02	9.32
Vel Total (ft/s)	8.68	Avg. Vel. (ft/s)	6.46	11.37	5.12
Max Chl Dpth (ft)	6.24	Hydr. Depth (ft)	2.68	4.92	1.76
Conv. Total (cfs)	15381.7	Conv. (cfs)	5376.9	9438.8	566.1
Length Wtd. (ft)	217.78	Wetted Per. (ft)	49.34	25.70	9.96
Min Ch El (ft)	2317.94	Shear (lb/sq ft)	3.43	6.57	2.26
Alpha	1.26	Stream Power (lb/ft s)	22.16	74.68	11.55
Frctn Loss (ft)	4.50	Cum Volume (acre-ft)	27.20	41.99	11.82
C & E Loss (ft)	0.00	Cum SA (acres)	14.65	9.27	5.65

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9869.38	9907.27	1.39	2.42	31.37	0.06	0.08	0.58
2	LOB	9907.27	9945.16	248.13	58.71	38.21	10.88	1.55	4.23
3	LOB	9945.16	9983.05	562.08	99.12	37.98	24.65	2.62	5.67
4	Chan	9983.05	9986.62	132.93	13.85	3.62	5.83	3.88	9.59
5	Chan	9986.62	9990.20	165.34	15.79	3.62	7.25	4.42	10.47
6	Chan	9990.20	9993.77	200.52	17.73	3.62	8.79	4.96	11.31
7	Chan	9993.77	9997.35	237.95	19.64	3.61	10.44	5.49	12.11

8	Chan	9997.35	10000.92	275.55	21.49	3.63	12.09	6.01	12.82
9	Chan	10000.92	10004.50	228.15	19.55	3.80	10.01	5.47	11.67
10	Chan	10004.50	10008.07	144.96	14.89	3.80	6.36	4.17	9.73
11	ROB	10008.07	10024.70	83.00	16.38	9.96	3.64	1.76	5.07

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9907.27	9945.16	146.91	24.20	11.36	6.44	2.97	6.07
2	LOB	9945.16	9983.05	650.09	99.19	37.98	28.51	2.62	6.55
3	Chan	9983.05	9986.62	134.27	13.86	3.62	5.89	3.88	9.69
4	Chan	9986.62	9990.20	166.99	15.80	3.62	7.32	4.42	10.57
5	Chan	9990.20	9993.77	202.50	17.74	3.62	8.88	4.96	11.42
6	Chan	9993.77	9997.35	240.29	19.65	3.61	10.54	5.50	12.23
7	Chan	9997.35	10000.92	278.24	21.50	3.63	12.20	6.01	12.94
8	Chan	10000.92	10004.50	230.39	19.56	3.80	10.10	5.47	11.78
9	Chan	10004.50	10008.07	146.41	14.90	3.80	6.42	4.17	9.83
10	ROB	10008.07	10024.70	83.91	16.40	9.96	3.68	1.76	5.12

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: C8
REACH: Reach 1 RS: 2.374

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9806.449	2326.01	9836.679	2322.04	9837.159	2322.01	9843.949	2321.25	9844.379	2321.2
9845.629	2320.92	9859.559	2317.71	9865.719	2318.29	9876.499	2319.04	9877.789	2319.06
9879.809	2319.19	9904.169	2319.59	9915.839	2319.78	9917.759	2319.66	9919.299	2319.65
9924.129	2319.54	9940.659	2319.05	9943.229	2318.83	9950.259	2318.13	9950.799	2318.06
9952.169	2317.87	9962.219	2316.59	9967.359	2316.19	9973.659	2315.93	9984.439	2315.6
9984.44	2315.69	9996.429	2313.72	10001.01	2312.99	10003.33	2313.71	10004.68	2314.24
10007.05	2315.18	10013.18	2317.37	10020.53	2320.14	10021.45	2320.48	10027.5	2321.18
10029.15	2321.31	10033.35	2321.31	10034.38	2321.38	10035.5	2321.45	10050.97	2322.94
10059.01	2323.84	10059.04	2323.85	10080.44	2325.98				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9806.449	.06	9984.44	.05	10007.05	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.44	10007.05	190.49	189.84	189.86	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2320.96	Element			
Vel Head (ft)	1.41	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2319.55	Reach Len. (ft)	190.49	189.84	189.86
Crit W.S. (ft)	2319.55	Flow Area (sq ft)	154.01	120.37	26.38
E.G. Slope (ft/ft)	0.020359	Area (sq ft)	154.01	120.37	26.38
Q Total (cfs)	2280.00	Flow (cfs)	749.29	1390.60	140.11
Top Width (ft)	149.91	Top Width (ft)	115.39	22.61	11.91
Vel Total (ft/s)	7.58	Avg. Vel. (ft/s)	4.87	11.55	5.31
Max Chl Dpth (ft)	6.56	Hydr. Depth (ft)	1.33	5.32	2.21
Conv. Total (cfs)	15979.3	Conv. (cfs)	5251.4	9746.0	982.0
Length Wtd. (ft)	190.09	Wetted Per. (ft)	115.84	23.20	12.69
Min Ch El (ft)	2312.99	Shear (lb/sq ft)	1.69	6.59	2.64
Alpha	1.58	Stream Power (lb/ft s)	8.22	76.17	14.03
Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	36.48	39.22	17.92
C & E Loss (ft)	0.20	Cum SA (acres)	26.62	9.15	11.85

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2321.15	Element			
Vel Head (ft)	1.46	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2319.69	Reach Len. (ft)	190.49	189.84	189.86
Crit W.S. (ft)		Flow Area (sq ft)	127.65	123.48	28.01
E.G. Slope (ft/ft)	0.019508	Area (sq ft)	127.65	123.48	28.01
Q Total (cfs)	2280.00	Flow (cfs)	709.13	1420.30	150.57
Top Width (ft)	96.96	Top Width (ft)	62.44	22.61	11.91
Vel Total (ft/s)	8.17	Avg. Vel. (ft/s)	5.56	11.50	5.38

Max Chl Dpth (ft)	6.70	Hydr. Depth (ft)	2.04	5.46	2.35
Conv. Total (cfs)	16324.1	Conv. (cfs)	5077.2	10168.9	1078.0
Length Wtd. (ft)	190.09	Wetted Per. (ft)	62.72	23.20	12.83
Min Ch El (ft)	2312.99	Shear (lb/sq ft)	2.48	6.48	2.66
Alpha	1.41	Stream Power (lb/ft s)	13.77	74.55	14.30
Frctn Loss (ft)	3.43	Cum Volume (acre-ft)	26.56	41.38	11.71
C & E Loss (ft)	0.15	Cum SA (acres)	14.37	9.15	5.60

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9842.05	9877.65	81.90	27.76	26.33	3.59	1.06	2.95
2	LOB	9877.65	9913.24	8.08	7.15	28.59	0.35	0.25	1.13
3	LOB	9913.24	9948.84	19.10	11.38	25.18	0.84	0.45	1.68
4	LOB	9948.84	9984.44	640.21	107.72	35.74	28.08	3.03	5.94
5	Chan	9984.44	9987.67	133.86	13.57	3.27	5.87	4.20	9.86
6	Chan	9987.67	9990.90	161.87	15.21	3.27	7.10	4.71	10.64
7	Chan	9990.90	9994.13	191.85	16.84	3.27	8.41	5.22	11.39
8	Chan	9994.13	9997.36	223.97	18.49	3.27	9.82	5.72	12.12
9	Chan	9997.36	10000.59	258.27	20.14	3.27	11.33	6.24	12.83
10	Chan	10000.59	10003.82	248.50	19.94	3.38	10.90	6.17	12.46
11	Chan	10003.82	10007.05	172.28	16.18	3.47	7.56	5.01	10.65
12	ROB	10007.05	10021.73	140.11	26.38	12.69	6.15	2.21	5.31

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9913.24	9948.84	28.63	15.04	26.99	1.26	0.56	1.90
2	LOB	9948.84	9984.44	680.50	112.61	35.74	29.85	3.16	6.04
3	Chan	9984.44	9987.67	138.32	14.02	3.27	6.07	4.34	9.87
4	Chan	9987.67	9990.90	166.31	15.66	3.27	7.29	4.85	10.62
5	Chan	9990.90	9994.13	196.21	17.29	3.27	8.61	5.35	11.35
6	Chan	9994.13	9997.36	228.19	18.93	3.27	10.01	5.86	12.05
7	Chan	9997.36	10000.59	262.30	20.58	3.27	11.50	6.37	12.74
8	Chan	10000.59	10003.82	252.46	20.39	3.38	11.07	6.31	12.38
9	Chan	10003.82	10007.05	176.51	16.62	3.47	7.74	5.15	10.62
10	ROB	10007.05	10021.73	150.57	28.01	12.83	6.60	2.35	5.37

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: C8
REACH: Reach 1 RS: 2.338

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9872.435	2319.569	877.385	2318.789	877.925	2318.699	879.825	2318.389	886.905	2318.12
9888.125	2317.89	895.825	2315.979	904.075	2314.769	916.805	2312.839	917.955	2313
9937.575	2315.419	938.715	2315.329	949.145	2314.79	951.525	2314.559	951.945	2314.52
9952.185	2314.519	952.505	2314.469	956.085	2313.959	965.055	2312.669	978.855	2312.89
9985.93	2313	9985.935	2313	9993.845	2311.73	10000.73	2310.64	10010.34	2311.83
10013.95	2312.33	10025.34	2314.41	0031.33	2315.51	0043.73	2316.54	10047.21	2317.03
10047.8	2317.09	10049.04	2317.24	10056.63	2318.09	10058	2318.12	10061.49	2318.37
10112.73	2322								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9872.435	.06	9904.075	.055	9937.575	.06	5 9985.93	.05	510013.95	.06
5 10061.49	.06								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.93	10013.95	195.86	202.48	210.4	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2316.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.061	0.055	0.065
W.S. Elev (ft)	2316.22	Reach Len. (ft)	195.86	202.48	210.40
Crit W.S. (ft)		Flow Area (sq ft)	204.62	128.06	43.24
E.G. Slope (ft/ft)	0.013509	Area (sq ft)	204.62	128.06	43.24
Q Total (cfs)	2280.00	Flow (cfs)	1020.27	1099.65	160.07
Top Width (ft)	145.16	Top Width (ft)	91.16	28.02	25.98

Vel Total (ft/s)	6.07	Avg. Vel. (ft/s)	4.99	8.59	3.70
Max Chl Dpth (ft)	5.58	Hydr. Depth (ft)	2.24	4.57	1.66
Conv. Total (cfs)	19616.7	Conv. (cfs)	8778.3	9461.2	1377.2
Length Wtd. (ft)	199.22	Wetted Per. (ft)	91.75	28.32	26.29
Min Ch El (ft)	2310.64	Shear (lb/sq ft)	1.88	3.81	1.39
Alpha	1.30	Stream Power (lb/ft s)	9.38	32.75	5.13
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	35.70	38.68	17.77
C & E Loss (ft)	0.01	Cum SA (acres)	26.17	9.04	11.76

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2317.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.063	0.055	
W.S. Elev (ft)	2316.60	Reach Len. (ft)	195.86	202.48	210.40
Crit W.S. (ft)		Flow Area (sq ft)	171.92	138.58	
E.G. Slope (ft/ft)	0.016771	Area (sq ft)	171.92	138.58	
Q Total (cfs)	2280.00	Flow (cfs)	1007.24	1272.76	
Top Width (ft)	91.03	Top Width (ft)	63.01	28.02	
Vel Total (ft/s)	7.34	Avg. Vel. (ft/s)	5.86	9.18	
Max Chl Dpth (ft)	5.96	Hydr. Depth (ft)	2.73	4.95	
Conv. Total (cfs)	17605.8	Conv. (cfs)	7777.8	9828.1	
Length Wtd. (ft)	199.10	Wetted Per. (ft)	66.27	32.58	
Min Ch El (ft)	2310.64	Shear (lb/sq ft)	2.72	4.45	
Alpha	1.15	Stream Power (lb/ft s)	15.91	40.90	
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	25.91	40.81	11.65
C & E Loss (ft)	0.01	Cum SA (acres)	14.10	9.04	5.57

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9872.44	9895.13	0.01	0.02	0.37	0.00	0.04	0.34
2	LOB	9895.13	9917.83	206.19	41.47	22.96	9.04	1.83	4.97
3	LOB	9917.83	9940.53	198.80	42.66	22.85	8.72	1.88	4.66
4	LOB	9940.53	9963.23	170.91	43.48	22.83	7.50	1.92	3.93
5	LOB	9963.23	9985.93	444.36	76.99	22.72	19.49	3.39	5.77
6	Chan	9985.93	9989.93	101.56	14.18	4.05	4.45	3.54	7.16
7	Chan	9989.93	9993.94	134.10	16.75	4.05	5.88	4.18	8.01
8	Chan	9993.94	9997.94	169.93	19.30	4.05	7.45	4.82	8.80
9	Chan	9997.94	10001.94	205.67	21.63	4.05	9.02	5.40	9.51
10	Chan	10001.94	10005.94	192.27	20.75	4.03	8.43	5.18	9.27
11	Chan	10005.94	10009.95	162.60	18.76	4.03	7.13	4.69	8.67
12	Chan	10009.95	10013.95	133.53	16.68	4.04	5.86	4.17	8.00
13	ROB	10013.95	10033.71	158.53	41.62	20.05	6.95	2.11	3.81
14	ROB	10033.71	10053.46	1.55	1.62	6.24	0.07	0.26	0.95

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9917.83	9940.53	160.91	34.40	20.71	7.06	1.95	4.68
2	LOB	9940.53	9963.23	256.60	52.01	22.83	11.25	2.29	4.93
3	LOB	9963.23	9985.93	589.73	85.51	22.72	25.87	3.77	6.90
4	Chan	9985.93	9989.93	128.09	15.68	4.05	5.62	3.92	8.17
5	Chan	9989.93	9993.94	165.00	18.25	4.05	7.24	4.56	9.04
6	Chan	9993.94	9997.94	205.30	20.81	4.05	9.00	5.20	9.87
7	Chan	9997.94	10001.94	245.26	23.14	4.05	10.76	5.78	10.60
8	Chan	10001.94	10005.94	230.34	22.25	4.03	10.10	5.56	10.35
9	Chan	10005.94	10009.95	197.12	20.27	4.03	8.65	5.06	9.73
10	Chan	10009.95	10013.95	101.67	18.19	8.31	4.46	4.54	5.59

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: C8
REACH: Reach 1 RS: 2.300

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9820.79	2315.94	9827.32	2315.57	9844.6	2315.03	9845.27	2315.03	9846.94	2315.03
9852.24	2314.97	9852.38	2314.98	9854.87	2314.93	9869.73	2313.79	9871.4	2313.65
9881.19	2312.93	9891.93	2312.14	9903.47	2311.25	9916.62	2310.18	9919.12	2310.2
9922.45	2310.22	9938.71	2310.5	9943.78	2309.6	9948.39	2308.69	9951.88	2308.99
9953.91	2309.16	9962.37	2309.41	9967.38	2309.57	9967.89	2309.59	9971.09	2309.64
9976.23	2309.59	9985.04	2310	9987.44	2310.14	9988.84	2309.865	9993.51	2308.95
9996.01	2308.56	9998.08	2308.56	10000	2308.54	10000.16	2308.54	10000.66	2308.56
10003.19	2308.56	10007.85	2309.83	10010.81	2310.77	10015.69	2311.14	10027.17	2312.2
10062.78	2315.5	10067.44	2315.98						

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Manning's n Values          num=       4
     Sta   n Val     Sta    n Val     Sta   n Val     Sta   n Val
 9820.79     .06 9922.45    .065 9988.84    .05510007.85    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9988.8410007.85             231.5  232.37  224.59            .1        .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2313.41    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.89    Wt. n-Val.                  0.064      0.055      0.065
  W.S. Elev (ft)           2312.52    Reach Len. (ft)            231.50     232.37     224.59
  Crit W.S. (ft)           2312.33    Flow Area (sq ft)          232.44      67.89      24.51
  E.G. Slope (ft/ft)      0.024413    Area (sq ft)               232.44      67.89      24.51
  Q Total (cfs)            2280.00    Flow (cfs)                1525.74     662.91      91.36
  Top Width (ft)            143.85    Top Width (ft)             102.07      19.01      22.77
  Vel Total (ft/s)            7.02    Avg. Vel. (ft/s)             6.56       9.76       3.73
  Max Chl Dpth (ft)           3.98    Hydr. Depth (ft)             2.28       3.57       1.08
  Conv. Total (cfs)       14592.4     Conv. (cfs)                9765.0     4242.7      584.7
  Length Wtd. (ft)          230.18    Wetted Per. (ft)           102.40      19.30      22.99
  Min Ch El (ft)           2308.54    Shear (lb/sq ft)             3.46       5.36       1.62
  Alpha                       1.16    Stream Power (lb/ft s)      22.71      52.35       6.06
  Frctn Loss (ft)             5.11    Cum Volume (acre-ft)        34.72      38.22      17.61
  C & E Loss (ft)             0.05    Cum SA (acres)              25.73       8.93      11.64

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2313.91    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.94    Wt. n-Val.                  0.065      0.055      0.065
  W.S. Elev (ft)           2312.97    Reach Len. (ft)            231.50     232.37     224.59
  Crit W.S. (ft)           2312.44    Flow Area (sq ft)          209.52      76.40      21.53
  E.G. Slope (ft/ft)      0.020094    Area (sq ft)               209.52      76.40      21.53
  Q Total (cfs)            2280.00    Flow (cfs)                1443.91     732.19     103.90
  Top Width (ft)             93.66    Top Width (ft)              64.60      19.01      10.05
  Vel Total (ft/s)            7.42    Avg. Vel. (ft/s)             6.89       9.58       4.83
  Max Chl Dpth (ft)           4.43    Hydr. Depth (ft)             3.24       4.02       2.14
  Conv. Total (cfs)       16084.4     Conv. (cfs)               10186.2     5165.3      733.0
  Length Wtd. (ft)          230.83    Wetted Per. (ft)            67.55      19.30      11.84
  Min Ch El (ft)           2308.54    Shear (lb/sq ft)             3.89       4.97       2.28
  Alpha                       1.10    Stream Power (lb/ft s)      26.81      47.59      11.01
  Frctn Loss (ft)             4.69    Cum Volume (acre-ft)        25.05      40.31      11.60
  C & E Loss (ft)             0.01    Cum SA (acres)              13.81       8.93       5.54

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth.  The program will try the
         cross section slice/secant method to find critical depth.

  Profile #profile 1

            Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                       (ft)        (ft)           (cfs)      (sq ft)    (ft)       Conv  Depth(ft)    (ft/s)
  1         LOB        9854.40     9888.01        0.03       0.06       1.24       0.00       0.05      0.49
  2         LOB        9888.01     9921.62      216.17      45.77      33.70       9.48       1.36      4.72
  3         LOB        9921.62     9955.23      608.18      89.34      33.80      26.67       2.66      6.81
  4         LOB        9955.23     9988.84      701.36      97.26      33.66      30.76       2.89      7.21
  5         Chan       9988.84     9991.56       67.00       7.93       2.77       2.94       2.92      8.45
  6         Chan       9991.56     9994.27       88.49       9.37       2.76       3.88       3.45      9.45
  7         Chan       9994.27     9996.99      108.03      10.52       2.74       4.74       3.87     10.27
  8         Chan       9996.99     9999.70      112.86      10.76       2.71       4.95       3.96     10.49
  9         Chan       9999.70     10002.42     112.89      10.77       2.72       4.95       3.96     10.49
  10        Chan       10002.42    10005.13     102.05      10.24       2.79       4.48       3.77      9.97
  11        Chan       10005.13    10007.85      71.58       8.31       2.81       3.14       3.06      8.61
  12        ROB        10007.85    10019.77      80.64      19.06      12.09       3.54       1.60      4.23
  13        ROB        10019.77    10031.69      10.72       5.45      10.90       0.47       0.50      1.97

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.

  Profile #profile 2

            Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                       (ft)        (ft)           (cfs)      (sq ft)    (ft)       Conv  Depth(ft)    (ft/s)
  1         LOB        9921.62     9955.23      633.86      97.21      33.90      27.80       3.14      6.52
  2         LOB        9955.23     9988.84      810.05     112.30      33.66      35.53       3.34      7.21
  3         Chan       9988.84     9991.56       77.21       9.15       2.77       3.39       3.37      8.44
  4         Chan       9991.56     9994.27       98.54      10.58       2.76       4.32       3.90      9.31
  5         Chan       9994.27     9996.99      117.79      11.73       2.74       5.17       4.32     10.04
  6         Chan       9996.99     9999.70      122.57      11.98       2.71       5.38       4.41     10.23
  7         Chan       9999.70     10002.42     122.61      11.98       2.72       5.38       4.41     10.23
  8         Chan       10002.42    10005.13     111.80      11.45       2.79       4.90       4.22      9.76
  9         Chan       10005.13    10007.85      81.66       9.52       2.81       3.58       3.51      8.57
  10        ROB        10007.85    10019.77     103.90      21.53      11.84       4.56       2.14      4.83

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
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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: C8
REACH: Reach 1 RS: 2.256

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9836.224	2311.159	845.194	2310.329	846.844	2310.299	848.044	2310.259	848.604	2310.28
9849.334	2310.319	883.934	2308.479	891.324	2308.129	896.804	2307.889	910.464	2307.23
9938.824	2306.129	944.744	2305.819	946.414	2305.729	947.094	2305.719	947.934	2305.7
9965.804	2305.639	973.544	2305.579	987.504	2305.44	9988.512	2305.241	9988.514	2305.24
10000.69	2302.381	0001.72	2302.731	0006.63	2303.861	0011.76	2305.121	0012.97	2305.08
10013.22	2305.071	0019.52	2305.031	0020.75	2305.081	0032.53	2305.521	0033.12	2305.56
10033.49	2305.591	0033.92	2305.641	0034.29	2305.671	0037.42	2306.071	0043.32	2306.58
10044.96	2306.641	0047.87	2306.721	0051.31	2306.731	0055.22	2306.781	0061.68	2306.66
10062.38	2306.661	0065.41	2306.671	0066.16	2306.661	0069.59	2306.661	0076.83	2306.5
10081.11	2306.461	0087.35	2306.251	0099.12	2303.541	0100.89	2303.12	10101.6	2303.31
10109.28	2305.441	0112.69	2306.461	0119.82	2308.91	0123.29	2309.081	0126.23	2310.53
10136.52	2311.81	0144.05	2312.67						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9836.224	.06	9988.51	.05	510011.76	.06	510087.35	.05	510112.69	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.51	10011.76	223.7	217.63	211.44	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2308.24	Element			
Vel Head (ft)	0.71	Wt. n-Val.	0.060	0.055	0.059
W.S. Elev (ft)	2307.53	Reach Len. (ft)	223.70	217.63	211.44
Crit W.S. (ft)	2307.42	Flow Area (sq ft)	119.12	86.87	177.85
E.G. Slope (ft/ft)	0.020270	Area (sq ft)	119.12	86.87	177.85
Q Total (cfs)	2280.00	Flow (cfs)	528.19	789.53	962.28
Top Width (ft)	211.72	Top Width (ft)	84.40	23.25	104.06
Vel Total (ft/s)	5.94	Avg. Vel. (ft/s)	4.43	9.09	5.41
Max Chl Dpth (ft)	5.15	Hydr. Depth (ft)	1.41	3.74	1.71
Conv. Total (cfs)	16014.2	Conv. (cfs)	3709.9	5545.5	6758.9
Length Wtd. (ft)	216.53	Wetted Per. (ft)	84.46	23.92	105.14
Min Ch El (ft)	2302.38	Shear (lb/sq ft)	1.78	4.60	2.14
Alpha	1.29	Stream Power (lb/ft s)	7.91	41.77	11.58
Frctn Loss (ft)	4.38	Cum Volume (acre-ft)	33.78	37.81	17.09
C & E Loss (ft)	0.01	Cum SA (acres)	25.24	8.82	11.32

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2309.21	Element			
Vel Head (ft)	1.04	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2308.17	Reach Len. (ft)	223.70	217.63	211.44
Crit W.S. (ft)		Flow Area (sq ft)	106.83	101.60	98.52
E.G. Slope (ft/ft)	0.020535	Area (sq ft)	106.83	101.60	98.52
Q Total (cfs)	2280.00	Flow (cfs)	685.08	1031.61	563.31
Top Width (ft)	106.00	Top Width (ft)	41.51	23.25	41.24
Vel Total (ft/s)	7.43	Avg. Vel. (ft/s)	6.41	10.15	5.72
Max Chl Dpth (ft)	5.79	Hydr. Depth (ft)	2.57	4.37	2.39
Conv. Total (cfs)	15910.5	Conv. (cfs)	4780.7	7198.9	3930.9
Length Wtd. (ft)	217.38	Wetted Per. (ft)	43.98	23.92	42.72
Min Ch El (ft)	2302.38	Shear (lb/sq ft)	3.11	5.45	2.96
Alpha	1.22	Stream Power (lb/ft s)	19.97	55.29	16.90
Frctn Loss (ft)	4.64	Cum Volume (acre-ft)	24.21	39.83	11.29
C & E Loss (ft)	0.01	Cum SA (acres)	13.53	8.82	5.41

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9897.14	9927.60	24.14	11.89	23.51	1.06	0.51	2.03
2	LOB	9927.60	9958.05	201.70	47.14	30.48	8.85	1.55	4.28
3	LOB	9958.05	9988.51	302.35	60.10	30.48	13.26	1.97	5.03
4	Chan	9988.51	9991.83	63.48	8.91	3.41	2.78	2.68	7.13
5	Chan	9991.83	9995.15	97.16	11.50	3.41	4.26	3.46	8.45
6	Chan	9995.15	9998.47	136.32	14.09	3.41	5.98	4.24	9.68
7	Chan	9998.47	10001.80	173.37	16.33	3.44	7.60	4.92	10.61
8	Chan	10001.80	10005.12	145.14	14.62	3.41	6.37	4.40	9.93
9	Chan	10005.12	10008.44	105.12	12.06	3.41	4.61	3.63	8.72
10	Chan	10008.44	10011.76	68.93	9.37	3.42	3.02	2.82	7.36
11	ROB	10011.76	10038.22	304.83	58.30	26.50	13.37	2.20	5.23
12	ROB	10038.22	10064.68	67.79	23.65	26.48	2.97	0.89	2.87
13	ROB	10064.68	10091.13	105.38	29.53	26.56	4.62	1.12	3.57
14	ROB	10091.13	10117.59	484.29	66.37	25.59	21.24	2.69	7.30

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9927.60	9958.05	155.27	27.45	13.51	6.81	2.48	5.66
2	LOB	9958.05	9988.51	529.82	79.38	30.48	23.24	2.61	6.67
3	Chan	9988.51	9991.83	91.54	11.01	3.41	4.01	3.31	8.31
4	Chan	9991.83	9995.15	130.19	13.60	3.41	5.71	4.10	9.57
5	Chan	9995.15	9998.47	174.09	16.19	3.41	7.64	4.88	10.75
6	Chan	9998.47	10001.80	214.87	18.44	3.44	9.42	5.55	11.65
7	Chan	10001.80	10005.12	183.90	16.73	3.41	8.07	5.04	10.99
8	Chan	10005.12	10008.44	139.18	14.16	3.41	6.10	4.26	9.83
9	Chan	10008.44	10011.76	97.84	11.47	3.42	4.29	3.45	8.53
10	ROB	10011.76	10038.22	469.56	75.06	26.50	20.59	2.84	6.26
11	ROB	10038.22	10064.68	93.75	23.46	16.22	4.11	1.59	4.00

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: C8
REACH: Reach 1 RS: 2.215

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9810.31	2308	9811.98	2307.91	9824.18	2307.24	9829.35	2306.94	9834.7	2306.63
9838.34	2306.4	9840.85	2306.26	9863.78	2304.57	9867.03	2304.39	9868.05	2304.26
9869.58	2304.07	9871.15	2303.89	9872.22	2303.79	9881.79	2302.84	9886.16	2302.78
9889.84	2302.45	9898.59	2302.19	9903.4	2302.05	9909.58	2301.91	9921.2	2301.34
9925.81	2301.36	9934.06	2301.5	9937.49	2301.55	9938.15	2301.57	9951.85	2301.7
9954.56	2301.73	9958.29	2301.8	9967.54	2301.85	9970.27	2301.91	9980.3	2302.04
9983.05	2302.04	9984.35	2301.91	9986	2301.75	9992.272	299.912	9997.7	2298.32
9999.8	2297.6	110007.15	2298.91	0016.86	2300.64	10023.06	2301.21	10030.04	2301.92
10036.72	2301.33	10039.54	2301.11	0040.31	2301.05	10044.6	2300.78	10050.38	2300.42
10053.66	2299.93	10060.69	2298.83	10061.18	2298.91	10064.05	2299.33	10065	2299.44
10080.28	2303.28	10092.68	2306.15	10098.14	2306.51	10106.97	2306.77	10113.16	2306.98
10116.01	2307.08	10134.4	2307.67	10145.88	2308.02	10145.91	2308.02		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9810.31	.062	9992.27	.055	10016.86	.065	10053.66	.055	10065	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.27	10016.86	217.59	208.15	197.53	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
10138.02	10145.91	2312

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2303.84	Element			
Vel Head (ft)	0.84	Wt. n-Val.	0.062	0.055	0.061
W.S. Elev (ft)	2303.00	Reach Len. (ft)	217.59	208.15	197.53
Crit W.S. (ft)	2303.00	Flow Area (sq ft)	131.58	97.83	137.76
E.G. Slope (ft/ft)	0.020205	Area (sq ft)	131.58	97.83	137.76
Q Total (cfs)	2280.00	Flow (cfs)	497.91	927.99	854.10
Top Width (ft)	198.95	Top Width (ft)	112.06	24.59	62.29
Vel Total (ft/s)	6.21	Avg. Vel. (ft/s)	3.78	9.49	6.20
Max Chl Dpth (ft)	5.39	Hydr. Depth (ft)	1.17	3.98	2.21
Conv. Total (cfs)	16040.1	Conv. (cfs)	3502.8	6528.5	6008.7
Length Wtd. (ft)	205.13	Wetted Per. (ft)	112.39	25.20	63.02
Min Ch El (ft)	2297.61	Shear (lb/sq ft)	1.48	4.90	2.76
Alpha	1.40	Stream Power (lb/ft s)	5.59	46.45	17.10
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	33.14	37.35	16.32
C & E Loss (ft)	0.01	Cum SA (acres)	24.73	8.70	10.91

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2304.56	Element			
Vel Head (ft)	1.14	Wt. n-Val.	0.062	0.055	0.062
W.S. Elev (ft)	2303.41	Reach Len. (ft)	217.59	208.15	197.53
Crit W.S. (ft)	2303.41	Flow Area (sq ft)	85.10	108.02	113.18
E.G. Slope (ft/ft)	0.022225	Area (sq ft)	85.10	108.02	113.18
Q Total (cfs)	2280.00	Flow (cfs)	422.24	1147.90	709.86
Top Width (ft)	118.13	Top Width (ft)	49.92	24.59	43.62
Vel Total (ft/s)	7.44	Avg. Vel. (ft/s)	4.96	10.63	6.27
Max Chl Dpth (ft)	5.80	Hydr. Depth (ft)	1.70	4.39	2.59

Conv. Total (cfs)	15293.6	Conv. (cfs)	2832.3	7699.8	4761.5
Length Wtd. (ft)	206.44	Wetted Per. (ft)	52.00	25.20	48.41
Min Ch El (ft)	2297.61	Shear (lb/sq ft)	2.27	5.95	3.24
Alpha	1.33	Stream Power (lb/ft s)	11.27	63.20	20.35
Frctn Loss (ft)	4.34	Cum Volume (acre-ft)	23.72	39.31	10.78
C & E Loss (ft)	0.05	Cum SA (acres)	13.29	8.70	5.21

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9846.70	9883.09	0.27	0.34	2.89	0.01	0.12	0.79
2	LOB	9883.09	9919.49	94.42	31.61	36.43	4.14	0.87	2.99
3	LOB	9919.49	9955.88	224.06	53.08	36.40	9.83	1.46	4.22
4	LOB	9955.88	9992.27	179.16	46.55	36.67	7.86	1.28	3.85
5	Chan	9992.27	9995.78	108.59	12.65	3.66	4.76	3.60	8.59
6	Chan	9995.78	9999.30	165.53	16.32	3.68	7.26	4.65	10.14
7	Chan	9999.30	10002.81	199.85	18.09	3.59	8.77	5.15	11.05
8	Chan	10002.81	10006.32	163.31	15.99	3.57	7.16	4.55	10.22
9	Chan	10006.32	10009.83	127.88	13.81	3.57	5.61	3.93	9.26
10	Chan	10009.83	10013.35	95.63	11.60	3.57	4.19	3.30	8.24
11	Chan	10013.35	10016.86	67.20	9.39	3.57	2.95	2.67	7.16
12	ROB	10016.86	10042.67	193.76	43.28	25.91	8.50	1.68	4.48
13	ROB	10042.67	10068.48	606.09	80.16	26.10	26.58	3.11	7.56
14	ROB	10068.48	10094.29	54.24	14.32	11.01	2.38	1.34	3.79

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9919.49	9955.88	111.37	23.48	15.33	4.88	1.74	4.74
2	LOB	9955.88	9992.27	310.87	61.62	36.67	13.63	1.69	5.05
3	Chan	9992.27	9995.78	137.08	14.10	3.66	6.01	4.01	9.72
4	Chan	9995.78	9999.30	200.94	17.78	3.68	8.81	5.06	11.30
5	Chan	9999.30	10002.81	239.38	19.54	3.59	10.50	5.56	12.25
6	Chan	10002.81	10006.32	198.81	17.44	3.57	8.72	4.96	11.40
7	Chan	10006.32	10009.83	159.11	15.26	3.57	6.98	4.34	10.43
8	Chan	10009.83	10013.35	122.61	13.05	3.57	5.38	3.72	9.39
9	Chan	10013.35	10016.86	89.96	10.84	3.57	3.95	3.09	8.30
10	ROB	10016.86	10042.67	297.05	53.97	25.91	13.03	2.09	5.50
11	ROB	10042.67	10068.48	412.81	59.21	22.49	18.11	3.32	6.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 2.175

INPUT
Description:
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9870.104	2301.139	905.894	2299.529	909.074	2299.359	913.694	2299.059	920.544	2298.77
9922.684	2298.689	924.924	2298.579	930.884	2297.859	935.474	2297.339	940.034	2297.12
9947.094	2296.929	947.844	2296.949	950.444	2297.039	953.524	2297.419	954.754	2297.4
9961.634	2297.379	968.044	2297.449	968.714	2297.439	969.244	2297.429	972.634	2297.56
9976.414	2297.789	978.014	2297.819	986.314	2297.869	986.914	2297.889	989.464	2297.11
9993.56	2295.129	998.004	2292.961	0005.97	2294.551	0010.42	2295.391	0014.39	2295.31
10018.61	2295.511	0020.41	2295.561	0024.01	2295.771	0032.12	2296.541	0032.99	2296.55
10034.97	2296.751	0038.11	2296.71	0040.86	2296.561	0041.12	2296.61	0042.37	2296.74

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10048.08 2297.4810049.53 2297.5710052.51 2297.2610054.76 2297.05 10055.3 2296.97
10055.66  2296.910061.86 2296.8110064.29 2296.78 10066.6 2297.3510072.85 2297.32
10073.88  2297.310075.26 2297.4410081.47 2298.0910082.32 2298.0310087.86 2297.77
10089.23  2297.710093.81 2297.4810110.69 2296.6110116.28 2296.1710118.53 2295.89
10123.63 2295.2510125.94 2295.9310128.56 2296.5110136.13  2299.710138.86 2300.99
10145.79 2301.41   10147 2301.53 10147.2 2301.5310148.06 2301.7610152.48 2302.71
10156.06 2303.25

Manning's n Values          num=        5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9870.104     .06 9993.56    .05510010.42    .06510116.28    .05510128.56     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9993.5610010.42            299.65  264.97  229.97              .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2299.43    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.81    Wt. n-Val.                  0.060      0.055      0.063
  W.S. Elev (ft)           2298.62    Reach Len. (ft)            299.65     264.97     229.97
  Crit W.S. (ft)           2298.62    Flow Area (sq ft)           82.63      75.33     225.99
  E.G. Slope (ft/ft)      0.020815    Area (sq ft)                82.63      75.33     225.99
  Q Total (cfs)            2280.00    Flow (cfs)                 328.78     774.22    1177.00
  Top Width (ft)            209.63    Top Width (ft)              69.63      16.86     123.14
  Vel Total (ft/s)            5.94    Avg. Vel. (ft/s)             3.98      10.28       5.21
  Max Chl Dpth (ft)           5.66    Hydr. Depth (ft)             1.19       4.47       1.84
  Conv. Total (cfs)        15803.1    Conv. (cfs)                2278.8     5366.3     8158.0
  Length Wtd. (ft)          263.09    Wetted Per. (ft)            70.31      17.59     124.12
  Min Ch El (ft)           2292.96    Shear (lb/sq ft)             1.53       5.56       2.37
  Alpha                       1.48    Stream Power (lb/ft s)       6.08      57.19      12.32
  Frctn Loss (ft)             5.35    Cum Volume (acre-ft)        32.61      36.93      15.49
  C & E Loss (ft)             0.05    Cum SA (acres)              24.28       8.60      10.49

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2300.00    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.96    Wt. n-Val.                  0.060      0.055      0.065
  W.S. Elev (ft)           2299.04    Reach Len. (ft)            299.65     264.97     229.97
  Crit W.S. (ft)           2299.04    Flow Area (sq ft)          111.70      82.37     149.49
  E.G. Slope (ft/ft)      0.019916    Area (sq ft)               111.70      82.37     149.49
  Q Total (cfs)            2280.00    Flow (cfs)                 529.39     878.90     871.71
  Top Width (ft)            146.07    Top Width (ft)              69.63      16.86      59.58
  Vel Total (ft/s)            6.64    Avg. Vel. (ft/s)             4.74      10.67       5.83
  Max Chl Dpth (ft)           6.08    Hydr. Depth (ft)             1.60       4.89       2.51
  Conv. Total (cfs)        16155.8    Conv. (cfs)                3751.2     6227.8     6176.9
  Length Wtd. (ft)          270.94    Wetted Per. (ft)            70.74      17.59      61.52
  Min Ch El (ft)           2292.96    Shear (lb/sq ft)             1.96       5.82       3.02
  Alpha                       1.41    Stream Power (lb/ft s)       9.31      62.12      17.62
  Frctn Loss (ft)             5.42    Cum Volume (acre-ft)        23.23      38.85      10.18
  C & E Loss (ft)             0.06    Cum SA (acres)              13.00       8.60       4.97

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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.

  Profile #profile 1

              Pos        Left Sta   Right Sta      Flow      Area      W.P.   Percent      Hydr  Velocity
                          (ft)       (ft)         (cfs)    (sq ft)    (ft)     Conv   Depth(ft)    (ft/s)
  1           LOB       9919.49    9944.18        70.01     19.99    20.32     3.07      0.99      3.50
  2           LOB       9944.18    9968.87       144.55     33.39    24.72     6.34      1.35      4.33
  3           LOB       9968.87    9993.56       114.22     29.25    25.27     5.01      1.18      3.90
  4           Chan      9993.56    9995.97        90.19      9.83     2.68     3.96      4.08      9.17
  5           Chan      9995.97    9998.38       137.65     12.61     2.64     6.04      5.23     10.91
  6           Chan      9998.38   10000.79       149.57     12.87     2.46     6.56      5.34     11.62
  7           Chan     10000.79   10003.19       127.87     11.72     2.46     5.61      4.86     10.91
  8           Chan     10003.19   10005.60       107.46     10.55     2.46     4.71      4.38     10.18
  9           Chan     10005.60   10008.01        89.04      9.42     2.45     3.91      3.91      9.45
  10          Chan     10008.01   10010.42        72.44      8.32     2.45     3.18      3.46      8.70
  11          ROB      10010.42   10039.55       461.63     77.14    29.19    20.25      2.65      5.98
  12          ROB      10039.55   10068.68       192.96     45.78    29.30     8.46      1.57      4.22
  13          ROB      10068.68   10097.80        90.85     29.09    29.19     3.98      1.00      3.12
  14          ROB      10097.80   10126.93       390.44     64.99    29.34    17.12      2.23      6.01
  15          ROB      10126.93   10156.06        41.12      9.00     7.10     1.80      1.36      4.57

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
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assumed values.
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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9919.49	9944.18	121.97	28.44	20.74	5.35	1.40	4.29
2	LOB	9944.18	9968.87	222.07	43.70	24.72	9.74	1.77	5.08
3	LOB	9968.87	9993.56	185.34	39.56	25.27	8.13	1.60	4.69
4	Chan	9993.56	9995.97	103.95	10.84	2.68	4.56	4.50	9.59
5	Chan	9995.97	9998.38	153.30	13.62	2.64	6.72	5.65	11.26
6	Chan	9998.38	10000.79	166.16	13.87	2.46	7.29	5.76	11.98
7	Chan	10000.79	10003.19	143.75	12.72	2.46	6.30	5.28	11.30
8	Chan	10003.19	10005.60	122.56	11.56	2.46	5.38	4.80	10.60
9	Chan	10005.60	10008.01	103.33	10.43	2.45	4.53	4.33	9.91
10	Chan	10008.01	10010.42	85.85	9.33	2.45	3.77	3.87	9.20
11	ROB	10010.42	10039.55	583.16	89.30	29.19	25.58	3.07	6.53
12	ROB	10039.55	10068.68	282.83	57.94	29.30	12.40	1.99	4.88
13	ROB	10068.68	10097.80	5.72	2.25	3.03	0.25	1.70	2.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 2.125

INPUT
Description:
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9712.463	2300.04	9716.223	2298.23	9719.783	2296.67	9728.613	2296.27	9732.343	2296.05
9737.823	2295.69	9740.823	2295.33	9744.183	2295.06	9755.963	2294.08	9773.743	2292.49
9774.003	2292.46	9774.073	2292.46	9775.013	2292.28	9782.263	2290.84	9782.793	2290.81
9787.023	2290.42	9790.813	2290.54	9798.203	2290.72	9807.803	2290.76	9811.113	2290.74
9816.863	2291.27	9818.953	2291.43	9820.253	2291.53	9826.303	2291.84	9843.353	2292.71
9855.083	2290.64	9857.913	2290.16	9859.943	2289.88	9867.593	2288.97	9869.653	2289.13
9870.853	2289.29	9872.453	2289.35	9878.823	2289.87	9879.563	2289.86	9881.063	2290.16
9884.493	2290.39	9892.473	2290.27	9894.413	2290.41	9900.523	2290.81	9901.273	2290.85
9902.613	2290.94	9908.123	2291.41	9909.723	2291.38	9913.263	2291.39	9929.493	2291.28
9931.473	2291.32	9932.073	2291.33	9941.503	2291.14	9943.143	2291.19	9947.863	2291.12
9956.623	2291.34	9956.743	2291.34	9965.683	2291.68	9966.923	2291.76	9969.573	2291.47
9977.463	2290.98	9978.333	2290.97	9985.613	2290.76	9987.093	2290.62	9990.82	2289.57
9990.803	2289.57	9995.653	2288.13	10000.26	2286.76	10010.46	2289.16	10011.24	2289.38
10026.26	2290.69	10034.66	2291.31	10035	2291.19	10035.36	2291.17	10036.1	2291.16
10037.66	2291.25	10041.24	2291.17	10042.37	2291.15	10047.03	2291.07	10057.99	2290.87
10060.84	2290.86	10062.03	2290.87	10064.81	2290.73	10071.77	2290.41	10074.12	2290
10075.57	2289.73	10076.35	2289.61	10081.97	2290.31	10084.21	2290.53	10092.64	2293.68
10094.63	2294.07	10098.18	2295.08	10099.89	2295.26	10102.74	2295.79	10103.9	2295.9
10106.45	2296	10107.96	2296.19	10109.08	2296.18	10112.79	2295.91	10128.57	2297.24
10140.74	2298.39	10142.19	2298.52						

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9712.463	.069	9782.263	.055	9816.863	.065	9857.913	.055	9881.063	.065
9990.8	.055	10011.24	.065						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.81	10011.24	171.63	186.19	198.66	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2292.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.059	0.055	0.065
W.S. Elev (ft)	2292.08	Reach Len. (ft)	171.63	186.19	198.66
Crit W.S. (ft)	2292.08	Flow Area (sq ft)	240.07	81.30	110.81
E.G. Slope (ft/ft)	0.019861	Area (sq ft)	240.07	81.30	110.81
Q Total (cfs)	2280.00	Flow (cfs)	1068.09	759.40	452.51
Top Width (ft)	296.51	Top Width (ft)	198.95	20.44	77.13
Vel Total (ft/s)	5.28	Avg. Vel. (ft/s)	4.45	9.34	4.08
Max Chl Dpth (ft)	5.32	Hydr. Depth (ft)	1.21	3.98	1.44
Conv. Total (cfs)	16178.3	Conv. (cfs)	7578.8	5388.5	3210.9
Length Wtd. (ft)	178.05	Wetted Per. (ft)	199.69	21.16	77.65
Min Ch El (ft)	2286.76	Shear (lb/sq ft)	1.49	4.76	1.77
Alpha	1.50	Stream Power (lb/ft s)	6.63	44.50	7.23
Frctn Loss (ft)	3.97	Cum Volume (acre-ft)	31.50	36.46	14.61
C & E Loss (ft)	0.04	Cum SA (acres)	23.36	8.49	9.97

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2293.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.059	0.055	0.065
W.S. Elev (ft)	2292.25	Reach Len. (ft)	171.63	186.19	198.66
Crit W.S. (ft)	2292.25	Flow Area (sq ft)	274.43	84.79	31.29
E.G. Slope (ft/ft)	0.020079	Area (sq ft)	274.43	84.79	31.29
Q Total (cfs)	2280.00	Flow (cfs)	1299.03	819.01	161.96
Top Width (ft)	237.46	Top Width (ft)	203.26	20.44	13.76
Vel Total (ft/s)	5.84	Avg. Vel. (ft/s)	4.73	9.66	5.18
Max Chl Dpth (ft)	5.49	Hydr. Depth (ft)	1.35	4.15	2.27
Conv. Total (cfs)	16090.2	Conv. (cfs)	9167.4	5779.9	1143.0
Length Wtd. (ft)	176.52	Wetted Per. (ft)	204.20	21.16	15.49
Min Ch El (ft)	2286.76	Shear (lb/sq ft)	1.68	5.02	2.53
Alpha	1.41	Stream Power (lb/ft s)	7.97	48.52	13.11
Frctn Loss (ft)	3.96	Cum Volume (acre-ft)	21.90	38.35	9.70
C & E Loss (ft)	0.03	Cum SA (acres)	12.06	8.49	4.78

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9768.13	9823.80	239.59	55.03	47.98	10.51	1.15	4.35
2	LOB	9823.80	9879.47	430.55	67.94	40.11	18.88	1.71	6.34
3	LOB	9879.47	9935.13	237.18	64.94	55.75	10.40	1.17	3.65
4	LOB	9935.13	9990.80	160.77	52.16	55.87	7.05	0.94	3.08
5	Chan	9990.80	9993.72	64.13	8.60	3.05	2.81	2.95	7.46
6	Chan	9993.72	9996.64	98.58	11.13	3.05	4.32	3.81	8.86
7	Chan	9996.64	9999.56	138.76	13.67	3.05	6.09	4.68	10.15
8	Chan	9999.56	10002.48	161.38	14.89	3.01	7.08	5.10	10.83
9	Chan	10002.48	10005.40	129.21	13.01	3.00	5.67	4.46	9.93
10	Chan	10005.40	10008.32	97.75	11.01	3.00	4.29	3.77	8.88
11	Chan	10008.32	10011.24	69.58	8.99	3.01	3.05	3.08	7.74
12	ROB	10011.24	10037.43	183.90	42.32	26.29	8.07	1.62	4.35
13	ROB	10037.43	10063.62	92.62	28.00	26.20	4.06	1.07	3.31
14	ROB	10063.62	10089.81	175.99	40.49	25.16	7.72	1.64	4.35

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9768.13	9823.80	298.77	63.19	48.14	13.10	1.32	4.73
2	LOB	9823.80	9879.47	487.91	75.12	44.44	21.40	1.70	6.50
3	LOB	9879.47	9935.13	298.59	74.45	55.75	13.10	1.34	4.01
4	LOB	9935.13	9990.80	213.76	61.67	55.87	9.38	1.11	3.47
5	Chan	9990.80	9993.72	70.95	9.10	3.05	3.11	3.12	7.80
6	Chan	9993.72	9996.64	106.81	11.63	3.05	4.68	3.98	9.18
7	Chan	9996.64	9999.56	148.34	14.17	3.05	6.51	4.85	10.47
8	Chan	9999.56	10002.48	171.70	15.39	3.01	7.53	5.27	11.15
9	Chan	10002.48	10005.40	138.55	13.51	3.00	6.08	4.63	10.25
10	Chan	10005.40	10008.32	105.99	11.51	3.00	4.65	3.94	9.21
11	Chan	10008.32	10011.24	76.68	9.49	3.01	3.36	3.25	8.08
12	ROB	10011.24	10037.43	161.96	31.29	15.49	7.10	2.27	5.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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: C8

REACH: Reach 1 RS: 2.090

INPUT
Description:
Station Elevation Data num= 92

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9685.858	2290.019	689.138	2289.649	690.898	2289.419	691.638	2289.49	692.068	2289.4
9693.178	2289.389	708.098	2289.139	735.468	2288.79	763.098	2287.329	763.828	2287.28
9764.128	2287.18	9775.63	2283.399	783.868	2280.679	785.898	2280.729	788.908	2280.87
9790.328	2280.949	790.698	2281.099	794.868	2282.489	801.938	2283.459	804.658	2283.71
9805.678	2283.669	809.048	2283.179	813.938	2282.989	815.468	2282.839	816.988	2282.77
9818.018	2282.699	825.098	2283.299	834.248	2284.339	837.358	2285.969	838.658	2286.23
9840.588	2286.239	843.268	2286.239	845.048	2286.629	847.258	2286.819	847.788	2286.85
9854.348	2286.659	855.858	2286.79	857.488	2286.729	858.178	2286.729	867.528	2286.72
9869.428	2286.699	877.538	2286.539	881.288	2286.449	887.268	2286.39	888.548	2286.33
9891.668	2286.299	896.818	2286.299	899.038	2286.299	901.088	2286.219	901.698	2286.21
9903.028	2286.219	907.298	2286.399	910.668	2286.489	911.798	2286.399	912.938	2286.4
9913.638	2286.219	916.168	2286.239	916.748	2286.229	920.168	2286.169	924.738	2286.14
9930.618	2285.959	939.248	2285.999	942.128	2285.989	943.008	2285.989	944.688	2285.66
9950.028	2284.649	952.368	2284.659	959.858	2285.279	960.358	2285.319	960.818	2285.37
9967.678	2285.419	984.368	2285.589	985.678	2285.53	9985.85	2285.499	988.618	2284.84
9999.618	2282.61	0000.76	2282.63	10003.75	2282.73	10007.96	2283.86	10013.17	2285.17
10016.26	2286.08	10021.59	2287.51	10028.87	2290.28	10036.33	2293.31	10042.37	2293.43
10053.07	2293.96	10066.3	2294.61	10073.33	2295.01	10075.79	2295.12	10078.06	2295.22
10079.65	2295.31	0079.93	2295.31						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9685.858	.06	9775.63	.055	9834.248	.065	9985.678	.055	10013.17	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.85	10013.17	118.45	124.56	131.13	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2286.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.056	0.055	0.065
W.S. Elev (ft)	2285.92	Reach Len. (ft)	118.45	124.56	131.13
Crit W.S. (ft)	2285.92	Flow Area (sq ft)	227.36	58.14	0.96
E.G. Slope (ft/ft)	0.025271	Area (sq ft)	227.36	58.14	0.96
Q Total (cfs)	2280.00	Flow (cfs)	1871.21	407.03	1.76
Top Width (ft)	141.73	Top Width (ft)	111.86	27.32	2.55
Vel Total (ft/s)	7.96	Avg. Vel. (ft/s)	8.23	7.00	1.84
Max Chl Dpth (ft)	5.25	Hydr. Depth (ft)	2.03	2.13	0.38
Conv. Total (cfs)	14342.6	Conv. (cfs)	11771.0	2560.5	11.1
Length Wtd. (ft)	119.80	Wetted Per. (ft)	113.73	27.93	2.66
Min Ch El (ft)	2282.60	Shear (lb/sq ft)	3.15	3.28	0.57
Alpha	1.02	Stream Power (lb/ft s)	25.96	22.99	1.04
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)	30.57	36.16	14.35
C & E Loss (ft)	0.05	Cum SA (acres)	22.74	8.39	9.78

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2286.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.056	0.055	0.065
W.S. Elev (ft)	2285.92	Reach Len. (ft)	118.45	124.56	131.13
Crit W.S. (ft)	2285.92	Flow Area (sq ft)	227.36	58.14	0.96
E.G. Slope (ft/ft)	0.025271	Area (sq ft)	227.36	58.14	0.96
Q Total (cfs)	2280.00	Flow (cfs)	1871.21	407.03	1.76
Top Width (ft)	141.73	Top Width (ft)	111.86	27.32	2.55
Vel Total (ft/s)	7.96	Avg. Vel. (ft/s)	8.23	7.00	1.84
Max Chl Dpth (ft)	5.25	Hydr. Depth (ft)	2.03	2.13	0.38
Conv. Total (cfs)	14342.6	Conv. (cfs)	11771.0	2560.5	11.1
Length Wtd. (ft)	119.80	Wetted Per. (ft)	113.73	27.93	2.66
Min Ch El (ft)	2282.60	Shear (lb/sq ft)	3.15	3.28	0.57
Alpha	1.02	Stream Power (lb/ft s)	25.96	22.99	1.04
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)	20.91	38.04	9.63
C & E Loss (ft)	0.05	Cum SA (acres)	11.44	8.39	4.74

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9745.86	9805.85	1195.74	123.94	39.09	52.44	3.27	9.65

2	LOB	9805.85	9865.85	607.02	77.08	31.95	26.62	2.45	7.88
3	LOB	9865.85	9925.85						
4	LOB	9925.85	9985.85	68.46	26.35	42.69	3.00	0.62	2.60
5	Chan	9985.85	9989.75	12.33	3.45	4.00	0.54	0.88	3.58
6	Chan	9989.75	9993.66	37.13	6.67	3.98	1.63	1.71	5.57
7	Chan	9993.66	9997.56	70.19	9.77	3.98	3.08	2.50	7.18
8	Chan	9997.56	10001.46	106.19	12.48	3.95	4.66	3.20	8.51
9	Chan	10001.46	10005.36	101.86	12.19	3.96	4.47	3.12	8.35
10	Chan	10005.36	10009.27	57.67	8.73	4.03	2.53	2.24	6.61
11	Chan	10009.27	10013.17	21.65	4.85	4.02	0.95	1.24	4.47
12	ROB	10013.17	10026.52	1.76	0.96	2.66	0.08	0.38	1.84

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9745.86	9805.85	1195.74	123.94	39.09	52.44	3.27	9.65
2	LOB	9805.85	9865.85	607.02	77.08	31.95	26.62	2.45	7.88
3	LOB	9865.85	9925.85						
4	LOB	9925.85	9985.85	68.46	26.35	42.69	3.00	0.62	2.60
5	Chan	9985.85	9989.75	12.33	3.45	4.00	0.54	0.88	3.58
6	Chan	9989.75	9993.66	37.13	6.67	3.98	1.63	1.71	5.57
7	Chan	9993.66	9997.56	70.19	9.77	3.98	3.08	2.50	7.18
8	Chan	9997.56	10001.46	106.19	12.48	3.95	4.66	3.20	8.51
9	Chan	10001.46	10005.36	101.86	12.19	3.96	4.47	3.12	8.35
10	Chan	10005.36	10009.27	57.67	8.73	4.03	2.53	2.24	6.61
11	Chan	10009.27	10013.17	21.65	4.85	4.02	0.95	1.24	4.47
12	ROB	10013.17	10026.52	1.76	0.96	2.66	0.08	0.38	1.84

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 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: C8
REACH: Reach 1 RS: 2.066

INPUT
Description:
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9739.651	2285.159	753.321	2284.919	756.141	2284.799	757.251	2284.769	773.101	2284.32
9780.731	2284.099	789.261	2283.459	793.631	2283.099	794.731	2283.019	799.951	2282.63
9806.061	2282.349	813.301	2282.029	824.951	2281.99	825.991	2281.899	826.191	2281.89
9830.201	2280.769	840.551	2277.829	841.391	2277.919	843.161	2278.089	849.831	2278.76
9853.341	2279.029	856.241	2279.69	857.241	2279.719	861.421	2279.829	862.491	2279.88
9864.391	2279.759	872.941	2280.789	876.701	2281.219	879.121	2281.339	886.121	2281.71
9895.101	2282.169	895.261	2282.169	898.701	2282.459	901.471	2282.79	903.201	2282.81
9904.551	2282.929	905.241	2282.919	906.721	2282.89	912.391	2282.299	915.891	2282.4
9919.161	2282.529	926.521	2282.529	926.671	2282.519	926.831	2282.529	926.931	2282.52
9932.581	2282.89	937.851	2283.019	939.271	2283.089	942.001	2283.179	943.801	2283.04
9944.821	2283.089	946.601	2282.949	950.521	2282.779	954.591	2282.599	955.371	2282.51
9956.581	2282.429	960.981	2282.039	964.951	2282.059	969.981	2281.769	974.241	2281.75
9977.111	2281.669	982.551	2281.69	985.49	2281.289	985.491	2281.289	991.071	2280.14
9993.021	2279.79	997.471	2278.849	998.061	2278.769	999.201	2278.471	0001.25	2279.22
10003.2	2279.78	10011.86	2281.65	10012.68	2281.81	10013.33	2282.03	10034.05	2288.81
10042.36	2289.51	10045.3	2289.72	10054.71	2290.53	10057.42	2290.76	10068.47	2291.39
10077.88	2292								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9739.651	.069	830.201	.055	9872.941	.065	9985.49	.055	10011.86	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.49	10011.86	108.74	225.81	250.69	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2283.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.056	0.055	0.065
W.S. Elev (ft)	2282.81	Reach Len. (ft)	108.74	225.81	250.69
Crit W.S. (ft)	2282.81	Flow Area (sq ft)	238.49	72.89	2.38
E.G. Slope (ft/ft)	0.023802	Area (sq ft)	238.49	72.89	2.38
Q Total (cfs)	2280.00	Flow (cfs)	1686.06	588.02	5.92
Top Width (ft)	197.76	Top Width (ft)	167.55	26.37	3.84
Vel Total (ft/s)	7.27	Avg. Vel. (ft/s)	7.07	8.07	2.49

Max Chl Dpth (ft)	4.99	Hydr. Depth (ft)	1.42	2.76	0.62
Conv. Total (cfs)	14778.6	Conv. (cfs)	10928.8	3811.4	38.4
Length Wtd. (ft)	162.07	Wetted Per. (ft)	168.51	27.07	4.02
Min Ch El (ft)	2278.47	Shear (lb/sq ft)	2.10	4.00	0.88
Alpha	1.02	Stream Power (lb/ft s)	14.87	32.28	2.19
Frctn Loss (ft)	3.64	Cum Volume (acre-ft)	29.94	35.97	14.35
C & E Loss (ft)	0.03	Cum SA (acres)	22.36	8.31	9.77

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2283.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.056	0.055	0.065
W.S. Elev (ft)	2282.81	Reach Len. (ft)	108.74	225.81	250.69
Crit W.S. (ft)	2282.81	Flow Area (sq ft)	238.49	72.89	2.38
E.G. Slope (ft/ft)	0.023802	Area (sq ft)	238.49	72.89	2.38
Q Total (cfs)	2280.00	Flow (cfs)	1686.06	588.02	5.92
Top Width (ft)	197.76	Top Width (ft)	167.55	26.37	3.84
Vel Total (ft/s)	7.27	Avg. Vel. (ft/s)	7.07	8.07	2.49
Max Chl Dpth (ft)	4.99	Hydr. Depth (ft)	1.42	2.76	0.62
Conv. Total (cfs)	14778.6	Conv. (cfs)	10928.8	3811.4	38.4
Length Wtd. (ft)	162.07	Wetted Per. (ft)	168.51	27.07	4.02
Min Ch El (ft)	2278.47	Shear (lb/sq ft)	2.10	4.00	0.88
Alpha	1.02	Stream Power (lb/ft s)	14.87	32.28	2.19
Frctn Loss (ft)	3.64	Cum Volume (acre-ft)	20.28	37.85	9.63
C & E Loss (ft)	0.03	Cum SA (acres)	11.06	8.31	4.73

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9788.82	9837.99	285.03	48.20	40.95	12.50	1.19	5.91
2	LOB	9837.99	9887.15	1281.92	144.75	49.50	56.22	2.94	8.86
3	LOB	9887.15	9936.32	31.15	16.57	42.18	1.37	0.39	1.88
4	LOB	9936.32	9985.49	87.97	28.96	35.88	3.86	0.81	3.04
5	Chan	9985.49	9989.26	43.49	7.20	3.85	1.91	1.91	6.04
6	Chan	9989.26	9993.02	76.83	10.14	3.85	3.37	2.69	7.58
7	Chan	9993.02	9996.79	117.76	13.08	3.84	5.16	3.47	9.00
8	Chan	9996.79	10000.56	151.76	15.34	3.91	6.66	4.07	9.89
9	Chan	10000.56	10004.33	104.67	12.29	3.92	4.59	3.26	8.52
10	Chan	10004.33	10008.09	62.44	8.95	3.85	2.74	2.38	6.97
11	Chan	10008.09	10011.86	31.07	5.89	3.85	1.36	1.56	5.27
12	ROB	10011.86	10025.06	5.92	2.38	4.02	0.26	0.62	2.49

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9788.82	9837.99	285.03	48.20	40.95	12.50	1.19	5.91
2	LOB	9837.99	9887.15	1281.92	144.75	49.50	56.22	2.94	8.86
3	LOB	9887.15	9936.32	31.15	16.57	42.18	1.37	0.39	1.88
4	LOB	9936.32	9985.49	87.97	28.96	35.88	3.86	0.81	3.04
5	Chan	9985.49	9989.26	43.49	7.20	3.85	1.91	1.91	6.04
6	Chan	9989.26	9993.02	76.83	10.14	3.85	3.37	2.69	7.58
7	Chan	9993.02	9996.79	117.76	13.08	3.84	5.16	3.47	9.00
8	Chan	9996.79	10000.56	151.76	15.34	3.91	6.66	4.07	9.89
9	Chan	10000.56	10004.33	104.67	12.29	3.92	4.59	3.26	8.52
10	Chan	10004.33	10008.09	62.44	8.95	3.85	2.74	2.38	6.97
11	Chan	10008.09	10011.86	31.07	5.89	3.85	1.36	1.56	5.27
12	ROB	10011.86	10025.06	5.92	2.38	4.02	0.26	0.62	2.49

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 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: C8
REACH: Reach 1 RS: 2.023

INPUT
Description:
Station Elevation Data num= 77

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9826.843	2283.899827.793	2283.819831.593	2283.599837.003	2283.549839.063	2283.45				
9840.393	2283.359844.613	2283.19850.653	2282.759851.293	2282.729851.503	2282.7				
9854.653	2282.469857.443	2282.259861.623	2282.179864.133	2281.999869.553	2281.49				
9870.013	2281.459873.553	2281.29874.633	2281.29875.103	2281.199876.663	2281.06				
9882.053	2279.849885.923	2280.429887.793	2280.759894.953	2279.439899.513	2278.46				
9912.543	2278.139919.193	2277.989925.663	2277.799929.963	2277.679933.633	2277.56				
9945.063	2277.39945.333	2277.299945.423	2277.289952.433	2276.529955.933	2276.13				
9959.413	22769969.743	2275.359972.323	2275.199978.013	2274.869979.123	2274.86				
9982.733	2275.01 9985.23	2274.949985.233	2274.949991.283	2274.579997.333	2274.09				
9999.183	2273.689999.333	2273.3510001.46	2273.5610005.35	2274 10007.1	2274.42				
10008.69	2275.11 10013.5	2275.1110015.14	2275.1210015.91	2275.14 10017.5	2275.64				
10027.75	2278.8510043.62	2280.51 10044.7	2280.6310044.74	2280.6310044.82	2280.64				
10046.8	2280.86 10052.3	2281.4210053.66	2281.5710060.78	2281.9210061.81	2281.97				
10064.28	2282.0210066.95	2282.0410076.17	2282.3210077.11	2282.3610077.74	2282.38				
10081.35	2282.5210082.49	2282.5910082.82	2282.6110099.62	2283.4110104.12	2283.39				
10104.58	2283.410126.56	2284							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9826.843	.06	9985.23	.05	10008.69	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.2	10008.69	204.55	187.52	166.91	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2279.84	Element			
Vel Head (ft)	1.10	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2278.74	Reach Len. (ft)	204.55	187.52	166.91
Crit W.S. (ft)	2278.74	Flow Area (sq ft)	159.64	105.28	46.80
E.G. Slope (ft/ft)	0.021250	Area (sq ft)	159.64	105.28	46.80
Q Total (cfs)	2280.00	Flow (cfs)	862.68	1111.85	305.47
Top Width (ft)	129.18	Top Width (ft)	87.02	23.46	18.70
Vel Total (ft/s)	7.31	Avg. Vel. (ft/s)	5.40	10.56	6.53
Max Chl Dpth (ft)	5.39	Hydr. Depth (ft)	1.83	4.49	2.50
Conv. Total (cfs)	15640.5	Conv. (cfs)	5917.9	7627.2	2095.5
Length Wtd. (ft)	187.61	Wetted Per. (ft)	87.17	23.98	19.25
Min Ch El (ft)	2273.35	Shear (lb/sq ft)	2.43	5.83	3.23
Alpha	1.33	Stream Power (lb/ft s)	13.13	61.52	21.05
Frctn Loss (ft)	2.30	Cum Volume (acre-ft)	29.44	35.51	14.20
C & E Loss (ft)	0.00	Cum SA (acres)	22.05	8.18	9.71

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2279.84	Element			
Vel Head (ft)	1.10	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2278.74	Reach Len. (ft)	204.55	187.52	166.91
Crit W.S. (ft)	2278.74	Flow Area (sq ft)	159.64	105.28	46.80
E.G. Slope (ft/ft)	0.021250	Area (sq ft)	159.64	105.28	46.80
Q Total (cfs)	2280.00	Flow (cfs)	862.68	1111.85	305.47
Top Width (ft)	129.18	Top Width (ft)	87.02	23.46	18.70
Vel Total (ft/s)	7.31	Avg. Vel. (ft/s)	5.40	10.56	6.53
Max Chl Dpth (ft)	5.39	Hydr. Depth (ft)	1.83	4.49	2.50
Conv. Total (cfs)	15640.5	Conv. (cfs)	5917.9	7627.2	2095.5
Length Wtd. (ft)	186.33	Wetted Per. (ft)	87.17	23.98	19.25
Min Ch El (ft)	2273.35	Shear (lb/sq ft)	2.43	5.83	3.23
Alpha	1.33	Stream Power (lb/ft s)	13.13	61.52	21.05
Frctn Loss (ft)	2.54	Cum Volume (acre-ft)	19.78	37.39	9.48
C & E Loss (ft)	0.04	Cum SA (acres)	10.74	8.18	4.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9890.20	9921.88	24.56	12.61	23.70	1.08	0.53	1.95
2	LOB	9921.88	9953.55	154.39	42.71	31.73	6.77	1.35	3.61
3	LOB	9953.55	9985.23	683.72	104.31	31.73	29.99	3.29	6.55
4	Chan	9985.23	9988.58	126.84	13.07	3.36	5.56	3.90	9.71
5	Chan	9988.58	9991.93	138.18	13.76	3.36	6.06	4.11	10.04
6	Chan	9991.93	9995.29	152.16	14.58	3.36	6.67	4.35	10.43
7	Chan	9995.29	9998.64	169.18	15.59	3.39	7.42	4.65	10.85
8	Chan	9998.64	10001.99	196.69	17.47	3.59	8.63	5.21	11.26
9	Chan	10001.99	10005.34	186.80	16.52	3.37	8.19	4.93	11.31
10	Chan	10005.34	10008.69	142.01	14.29	3.54	6.23	4.26	9.94
11	ROB	10008.69	10032.26	305.47	46.80	19.25	13.40	2.50	6.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9890.20	9921.88	24.56	12.61	23.70	1.08	0.53	1.95
2	LOB	9921.88	9953.55	154.39	42.71	31.73	6.77	1.35	3.61
3	LOB	9953.55	9985.23	683.72	104.31	31.73	29.99	3.29	6.55
4	Chan	9985.23	9988.58	126.84	13.07	3.36	5.56	3.90	9.71
5	Chan	9988.58	9991.93	138.18	13.76	3.36	6.06	4.11	10.04
6	Chan	9991.93	9995.29	152.16	14.58	3.36	6.67	4.35	10.43
7	Chan	9995.29	9998.64	169.18	15.59	3.39	7.42	4.65	10.85
8	Chan	9998.64	10001.99	196.69	17.47	3.59	8.63	5.21	11.26
9	Chan	10001.99	10005.34	186.80	16.52	3.37	8.19	4.93	11.31
10	Chan	10005.34	10008.69	142.01	14.29	3.54	6.23	4.26	9.94
11	ROB	10008.69	10032.26	305.47	46.80	19.25	13.40	2.50	6.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.988

INPUT
Description: Private Driveway
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9913.788	2278.179	9917.988	2277.89	9920.328	2277.419	9923.608	2277.09	9925.738	2276.92
9928.328	2276.549	9931.878	2275.749	9934.158	2275.419	9939.168	2274.79	9943.878	2274.23
9949.878	2273.569	9949.918	2273.569	9954.758	2273.149	9958.868	2272.83	9958.87	2272.83
9960	2272.733	9962.608	2272.519	9967.058	2272.189	9970.408	2272.149	9977.848	2272.14
9980.538	2272.19	9988.658	2272.119	9991.068	2272.219	9999.668	2272.411	10008.66	2272.62
10011.01	2272.611	10019.87	2272.841	10021.18	2272.841	10025.63	2272.951	10026.52	2272.98
10030.99	2273.091	10037.13	2273.71	10038.39	2273.811	10044.62	2274.431	10045.66	2274.52
10054.54	2274.931	10054.98	2274.961	10062.39	2275.481	10065.17	2275.671	10065.37	2275.68
10074.48	2276.321	10075.77	2276.421	10076.01	2276.431	10085.87	2277.22	10089.5	2277.49
10094.12	2277.851	10094.63	2277.76						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9913.788	.03	9960	.03	10008.66	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9960	10008.66	17.56	18.19	18.86	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2276.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.12	Wt. n-Val.	0.030	0.030	0.030
W.S. Elev (ft)	2275.46	Reach Len. (ft)	17.56	18.19	18.86
Crit W.S. (ft)	2275.46	Flow Area (sq ft)	39.50	154.58	91.35

E.G. Slope (ft/ft)	0.007951	Area (sq ft)	39.50	154.58	91.35
Q Total (cfs)	2280.00	Flow (cfs)	228.79	1474.81	576.40
Top Width (ft)	128.21	Top Width (ft)	26.16	48.66	53.39
Vel Total (ft/s)	7.99	Avg. Vel. (ft/s)	5.79	9.54	6.31
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)	1.51	3.18	1.71
Conv. Total (cfs)	25568.9	Conv. (cfs)	2565.8	16539.2	6464.0
Length Wtd. (ft)	18.25	Wetted Per. (ft)	26.31	48.69	53.49
Min Ch El (ft)	2272.10	Shear (lb/sq ft)	0.75	1.58	0.85
Alpha	1.13	Stream Power (lb/ft s)	4.32	15.04	5.35
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	28.98	34.95	13.94
C & E Loss (ft)	0.01	Cum SA (acres)	21.78	8.03	9.57

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2277.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.47	Wt. n-Val.		0.030	0.030
W.S. Elev (ft)	2275.53	Reach Len. (ft)	17.56	18.19	18.86
Crit W.S. (ft)	2275.53	Flow Area (sq ft)		157.99	78.25
E.G. Slope (ft/ft)	0.009473	Area (sq ft)		157.99	78.25
Q Total (cfs)	2280.00	Flow (cfs)		1608.46	671.54
Top Width (ft)	80.00	Top Width (ft)		48.66	31.34
Vel Total (ft/s)	9.65	Avg. Vel. (ft/s)		10.18	8.58
Max Chl Dpth (ft)	3.43	Hydr. Depth (ft)		3.25	2.50
Conv. Total (cfs)	23425.0	Conv. (cfs)		16525.5	6899.5
Length Wtd. (ft)	18.31	Wetted Per. (ft)		51.48	32.94
Min Ch El (ft)	2272.10	Shear (lb/sq ft)		1.81	1.40
Alpha	1.02	Stream Power (lb/ft s)		18.48	12.06
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	19.40	36.82	9.25
C & E Loss (ft)	0.00	Cum SA (acres)	10.53	8.03	4.57

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9932.27	9941.52	10.31	4.07	7.74	0.45	0.53	2.54
2	LOB	9941.52	9950.76	68.94	13.68	9.29	3.02	1.48	5.04
3	LOB	9950.76	9960.00	149.54	21.75	9.27	6.56	2.35	6.87
4	Chan	9960.00	9966.95	191.43	20.89	6.97	8.40	3.00	9.16
5	Chan	9966.95	9973.90	224.92	22.98	6.95	9.86	3.31	9.79
6	Chan	9973.90	9980.85	227.15	23.12	6.95	9.96	3.33	9.83
7	Chan	9980.85	9987.81	230.07	23.29	6.95	10.09	3.35	9.88
8	Chan	9987.81	9994.76	218.87	22.61	6.95	9.60	3.25	9.68
9	Chan	9994.76	10001.71	199.82	21.41	6.95	8.76	3.08	9.33
10	Chan	10001.71	10008.66	182.55	20.28	6.95	8.01	2.92	9.00
11	ROB	10008.66	10025.85	341.81	46.26	17.20	14.99	2.69	7.39
12	ROB	10025.85	10043.05	202.82	33.86	17.25	8.90	1.97	5.99
13	ROB	10043.05	10060.24	31.69	11.11	17.23	1.39	0.65	2.85
14	ROB	10060.24	10077.44	0.07	0.11	1.81	0.00	0.06	0.61

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9960.00	9966.95	171.62	21.37	9.77	7.53	3.07	8.03
2	Chan	9966.95	9973.90	251.56	23.47	6.95	11.03	3.38	10.72
3	Chan	9973.90	9980.85	253.99	23.60	6.95	11.14	3.40	10.76
4	Chan	9980.85	9987.81	257.19	23.78	6.95	11.28	3.42	10.81
5	Chan	9987.81	9994.76	244.93	23.10	6.95	10.74	3.32	10.60
6	Chan	9994.76	10001.71	224.05	21.90	6.95	9.83	3.15	10.23
7	Chan	10001.71	10008.66	205.11	20.77	6.95	9.00	2.99	9.88
8	ROB	10008.66	10025.85	443.10	47.46	17.20	19.43	2.76	9.34
9	ROB	10025.85	10043.05	228.44	30.79	15.75	10.02	2.18	7.42

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: 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: C8
REACH: Reach 1 RS: 1.985

INPUT
Description:
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9917.594	2278.84	9924.834	2278.64	9926.024	2278.33	9928.994	2278	9931.554	2277.69
9933.154	2277.36	9935.634	2277.02	9937.864	2276.41	9949.674	2273.89	9951.604	2273.38
9952.854	2273.21	9954.144	2273.07	9955.394	2272.94	9959.754	2272.73	9960.584	2272.7
9969.764	2272.16	9970.564	2272.07	9976.484	2271.71	9976.854	2271.69	9976.924	2271.67
9984.684	2270.31	9986.574	2270.21	9988.96	2270.27	9988.964	2270.27	9996.374	2268.76
9997.954	2268.59	9999.924	2268.01	10001.81	2268.69	10004.68	2270.01	10011.82	2270.96
10012.28	2271.02	10013.04	2271.11	10019.37	2271.92	10025.22	2272.61	10027.46	2272.77
10030.3	227	310035.17	2273.33	10048.61	2273.34	10062.42	2273.75	10062.49	2273.76
10062.74	2273.85	10062.93	2273.93	10065.51	227	510077.24	2275.57	10083.91	2275.91
10090.7	2276.21	10092.61	2276.33						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9917.594	.07	9988.96	.05	10004.68	.065

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9988.96 10004.68 101.61 96 90.64 .1 .3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2275.95	Element			
Vel Head (ft)	1.26	Wt. n-Val.	0.070	0.055	0.065
W.S. Elev (ft)	2274.69	Reach Len. (ft)	101.61	96.00	90.64
Crit W.S. (ft)		Flow Area (sq ft)	107.71	87.83	120.70
E.G. Slope (ft/ft)	0.020752	Area (sq ft)	107.71	87.83	120.70
Q Total (cfs)	2280.00	Flow (cfs)	601.71	1048.01	630.28
Top Width (ft)	119.09	Top Width (ft)	43.29	15.72	60.07
Vel Total (ft/s)	7.21	Avg. Vel. (ft/s)	5.59	11.93	5.22
Max Chl Dpth (ft)	6.68	Hydr. Depth (ft)	2.49	5.59	2.01
Conv. Total (cfs)	15827.3	Conv. (cfs)	4177.0	7275.1	4375.2
Length Wtd. (ft)	94.99	Wetted Per. (ft)	43.62	16.36	60.45
Min Ch El (ft)	2268.01	Shear (lb/sq ft)	3.20	6.95	2.59
Alpha	1.56	Stream Power (lb/ft s)	17.87	82.99	13.51
Frctn Loss (ft)	1.91	Cum Volume (acre-ft)	28.95	34.90	13.89
C & E Loss (ft)	0.10	Cum SA (acres)	21.77	8.01	9.55

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2276.27	Element			
Vel Head (ft)	1.48	Wt. n-Val.	0.070	0.055	0.065
W.S. Elev (ft)	2274.79	Reach Len. (ft)	101.61	96.00	90.64
Crit W.S. (ft)		Flow Area (sq ft)	81.47	89.49	103.22
E.G. Slope (ft/ft)	0.021732	Area (sq ft)	81.47	89.49	103.22
Q Total (cfs)	2280.00	Flow (cfs)	539.61	1106.51	633.88
Top Width (ft)	80.00	Top Width (ft)	23.96	15.72	40.32
Vel Total (ft/s)	8.32	Avg. Vel. (ft/s)	6.62	12.36	6.14
Max Chl Dpth (ft)	6.78	Hydr. Depth (ft)	3.40	5.69	2.56
Conv. Total (cfs)	15466.2	Conv. (cfs)	3660.4	7505.9	4299.9
Length Wtd. (ft)	94.99	Wetted Per. (ft)	26.46	16.36	41.96
Min Ch El (ft)	2268.01	Shear (lb/sq ft)	4.18	7.42	3.34
Alpha	1.37	Stream Power (lb/ft s)	27.67	91.76	20.49
Frctn Loss (ft)	2.03	Cum Volume (acre-ft)	19.39	36.77	9.21
C & E Loss (ft)	0.11	Cum SA (acres)	10.53	8.01	4.56

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9931.87	9946.14	0.01	0.02	0.49	0.00	0.05	0.38
2	LOB	9946.14	9960.41	63.96	19.07	14.43	2.81	1.34	3.35
3	LOB	9960.41	9974.69	172.12	34.40	14.30	7.55	2.41	5.00
4	LOB	9974.69	9988.96	365.62	54.22	14.40	16.04	3.80	6.74
5	Chan	9988.96	9991.21	110.73	10.43	2.29	4.86	4.64	10.62
6	Chan	9991.21	9993.45	129.45	11.45	2.29	5.68	5.10	11.30
7	Chan	9993.45	9995.70	149.44	12.49	2.29	6.55	5.56	11.97
8	Chan	9995.70	9997.94	169.97	13.46	2.28	7.45	6.00	12.63
9	Chan	9997.94	10000.19	189.90	14.49	2.32	8.33	6.45	13.10
10	Chan	10000.19	10002.43	171.70	13.85	2.41	7.53	6.17	12.40
11	Chan	10002.43	10004.68	126.82	11.66	2.47	5.56	5.19	10.87
12	ROB	10004.68	10022.27	414.01	62.03	17.73	18.16	3.53	6.67
13	ROB	10022.27	10039.85	123.65	29.98	17.63	5.42	1.70	4.12
14	ROB	10039.85	10057.44	77.00	22.54	17.59	3.38	1.28	3.42
15	ROB	10057.44	10075.02	15.63	6.16	7.50	0.69	0.84	2.54

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9960.41	9974.69	127.95	25.75	12.06	5.61	2.66	4.97
2	LOB	9974.69	9988.96	411.66	55.73	14.40	18.06	3.90	7.39
3	Chan	9988.96	9991.21	117.68	10.67	2.29	5.16	4.75	11.03
4	Chan	9991.21	9993.45	137.11	11.69	2.29	6.01	5.21	11.73
5	Chan	9993.45	9995.70	157.84	12.72	2.29	6.92	5.66	12.41
6	Chan	9995.70	9997.94	179.12	13.70	2.28	7.86	6.10	13.08
7	Chan	9997.94	10000.19	199.72	14.73	2.32	8.76	6.56	13.56
8	Chan	10000.19	10002.43	180.80	14.08	2.41	7.93	6.27	12.84
9	Chan	10002.43	10004.68	134.25	11.90	2.47	5.89	5.30	11.28
10	ROB	10004.68	10022.27	463.15	63.89	17.73	20.31	3.63	7.25
11	ROB	10022.27	10039.85	145.58	31.84	17.63	6.39	1.81	4.57
12	ROB	10039.85	10057.44	25.16	7.50	6.60	1.10	1.46	3.36

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: C8
REACH: Reach 1 RS: 1.966

INPUT
Description:
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9900.029	2277.339	903.259	2277.329	905.859	2277.319	907.739	2277.39	912.289	2277.33
9914.709	2277.339	917.729	2277.369	923.509	2277.419	924.439	2277.419	932.289	2277.29
9952.009	2276.169	954.409	2276.19	957.129	2275.899	959.259	2275.03	9970.592	2270.496
9972.579	2269.79	973.319	2269.419	973.649	2269.419	982.029	2269.519	992.519	2268.78
9996.269	2268.639	999.969	2268.84	10006.57	2269.271	10010.26	2270.07	10012.97	2270.62
10019.06	2270.37	10022.05	2269.97	10023.57	2269.97	10026.57	2270	10039.55	2270.04
10042.28	2270.11	10045.5	2270.21	10050.69	2270.73	10053.31	2271.08	10055.16	2271.15
10057.46	2271.29	10064.83	2271.74	10065.7	2271.74	10070.84	2271.77	10092.83	2271.92
10095.87	2271.92	10101.86	2273.04	10102.88	2273.21	10103.62	2273.21	10120.67	2273.69
10126.43	2273.91	10150.79	2275.53	10154.81	2275.81	10158.78	2276		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9900.029	.07	9970.59	.055	10010.26	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970.59	10010.26	210.3	196.08	177.17	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2273.94	Element			
Vel Head (ft)	0.92	Wt. n-Val.	0.070	0.055	0.065
W.S. Elev (ft)	2273.02	Reach Len. (ft)	210.30	196.08	177.17
Crit W.S. (ft)		Flow Area (sq ft)	7.93	150.45	178.24
E.G. Slope (ft/ft)	0.019423	Area (sq ft)	7.93	150.45	178.24
Q Total (cfs)	2280.00	Flow (cfs)	26.05	1369.68	884.27
Top Width (ft)	137.44	Top Width (ft)	6.30	39.67	91.47
Vel Total (ft/s)	6.77	Avg. Vel. (ft/s)	3.28	9.10	4.96
Max Chl Dpth (ft)	4.39	Hydr. Depth (ft)	1.26	3.79	1.95
Conv. Total (cfs)	16359.9	Conv. (cfs)	186.9	9828.0	6345.0
Length Wtd. (ft)	191.98	Wetted Per. (ft)	6.78	40.01	91.73
Min Ch El (ft)	2268.63	Shear (lb/sq ft)	1.42	4.56	2.36
Alpha	1.30	Stream Power (lb/ft s)	4.66	41.51	11.69
Frctn Loss (ft)	4.34	Cum Volume (acre-ft)	28.81	34.64	13.58
C & E Loss (ft)	0.05	Cum SA (acres)	21.71	7.95	9.39

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2274.12	Element			
Vel Head (ft)	1.10	Wt. n-Val.	0.070	0.055	0.065
W.S. Elev (ft)	2273.03	Reach Len. (ft)	210.30	196.08	177.17
Crit W.S. (ft)		Flow Area (sq ft)	8.00	150.88	132.04
E.G. Slope (ft/ft)	0.021032	Area (sq ft)	8.00	150.88	132.04
Q Total (cfs)	2280.00	Flow (cfs)	27.43	1432.19	820.38
Top Width (ft)	95.73	Top Width (ft)	6.32	39.67	49.74
Vel Total (ft/s)	7.84	Avg. Vel. (ft/s)	3.43	9.49	6.21
Max Chl Dpth (ft)	4.40	Hydr. Depth (ft)	1.27	3.80	2.65
Conv. Total (cfs)	15721.4	Conv. (cfs)	189.1	9875.5	5656.8
Length Wtd. (ft)	192.16	Wetted Per. (ft)	6.81	40.01	51.47
Min Ch El (ft)	2268.63	Shear (lb/sq ft)	1.54	4.95	3.37
Alpha	1.15	Stream Power (lb/ft s)	5.29	47.00	20.93
Frctn Loss (ft)	4.29	Cum Volume (acre-ft)	19.28	36.51	8.96
C & E Loss (ft)	0.03	Cum SA (acres)	10.49	7.95	4.46

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9956.48	9970.59	26.05	7.93	6.78	1.14	1.26	3.28
2	Chan	9970.59	9976.26	154.49	18.92	5.88	6.78	3.34	8.17
3	Chan	9976.26	9981.92	174.57	20.06	5.67	7.66	3.54	8.70
4	Chan	9981.92	9987.59	187.20	20.94	5.68	8.21	3.70	8.94
5	Chan	9987.59	9993.26	221.59	23.17	5.68	9.72	4.09	9.56
6	Chan	9993.26	9998.93	242.88	24.47	5.67	10.65	4.32	9.92
7	Chan	9998.93	10004.59	218.86	23.00	5.68	9.60	4.06	9.52
8	Chan	10004.59	10010.26	170.09	19.88	5.76	7.46	3.51	8.56
9	ROB	10010.26	10039.96	501.19	84.93	29.79	21.98	2.86	5.90
10	ROB	10039.96	10069.67	277.58	59.57	29.78	12.17	2.01	4.66
11	ROB	10069.67	10099.37	104.95	33.23	29.77	4.60	1.12	3.16
12	ROB	10099.37	10129.08	0.55	0.52	2.40	0.02	0.22	1.06

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9956.48	9970.59	27.43	8.00	6.81	1.20	1.27	3.43
2	Chan	9970.59	9976.26	161.65	18.98	5.88	7.09	3.35	8.52
3	Chan	9976.26	9981.92	182.61	20.13	5.67	8.01	3.55	9.07
4	Chan	9981.92	9987.59	195.77	21.00	5.68	8.59	3.71	9.32
5	Chan	9987.59	9993.26	231.63	23.24	5.68	10.16	4.10	9.97
6	Chan	9993.26	9998.93	253.82	24.53	5.67	11.13	4.33	10.35
7	Chan	9998.93	10004.59	228.78	23.06	5.68	10.03	4.07	9.92
8	Chan	10004.59	10010.26	177.92	19.94	5.76	7.80	3.52	8.92
9	ROB	10010.26	10039.96	563.96	85.26	29.79	24.74	2.87	6.61
10	ROB	10039.96	10069.67	256.42	46.79	21.68	11.25	2.34	5.48

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

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 1.929

INPUT
Description:
Station Elevation Data num= 91

```
     Sta    Elev     Sta     Elev     Sta    Elev     Sta    Elev     Sta    Elev
9819.815 2269.959821.325 2269.959839.975 2269.179842.655 2269.049842.865 2269.05
9844.145    22699850.455 2268.949850.935 2268.949856.345 2268.889858.445 2268.88
9868.475 2269.249868.825 2269.249870.035 2269.279872.585 2269.159890.355 2268.87
9906.795 2268.739908.145 2268.719914.755 2268.299915.655 2268.249916.235  2268.2
9916.865  2268.29917.825 2268.189919.585 2268.169924.925 2268.219928.515 2268.23
9932.235 2268.259941.535 2268.299944.415  2268.39947.515 2267.969951.315  2267.5
9959.305 2265.88 9962.222265.2119962.225 2265.219964.215 2265.039971.355 2264.41
9974.225  2264.99978.305 2265.589981.245 2265.459992.915 2264.949998.005 2263.93
10000.46  2263.510002.29  2263.910007.43 2264.1810011.58 2264.0510016.37 2264.68
10018.95 2265.0110020.26 2265.2410022.52 2265.5710031.33 2267.0910031.88  2267.2
10032.45 2267.2510042.98 2268.5110045.89 2268.77 10046.8 2268.7710050.99 2268.78
10051.14 2268.7810051.45 2268.7710056.51 2268.77 10057.8  2268.810061.43 2268.82
10061.91 2268.8110062.25 2268.8110063.03 2268.8210064.68 2268.8410067.57 2268.86
10067.95 2268.85 10068.8 2268.8310068.98 2268.8210069.12 2268.8210069.42 2268.82
10073.47 2268.8510076.72 2268.95 10082.7 2268.75 10100.1  2268.210102.82 2267.67
10107.15 2266.7210112.36 2266.9710113.71 2267.1410116.45 2267.6310121.83 2268.49
10122.71 2268.6410125.94  2268.910127.07 2269.0310131.27  2270.610131.66 2270.72
10132.67  2270.810139.87 2271.2310149.05 2271.1310149.69 2271.1210153.29 2271.66
10155.41 2271.99
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
9819.815     .06 9962.22    .05510018.95    .065
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9962.2210018.95                 69   76.64   83.89              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2269.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.41	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2268.15	Reach Len. (ft)	69.00	76.64	83.89
Crit W.S. (ft)	2268.15	Flow Area (sq ft)	21.02	197.14	46.61
E.G. Slope (ft/ft)	0.026596	Area (sq ft)	21.02	197.14	46.61
Q Total (cfs)	2280.00	Flow (cfs)	98.89	1983.39	197.72
Top Width (ft)	113.53	Top Width (ft)	16.44	56.73	40.37
Vel Total (ft/s)	8.61	Avg. Vel. (ft/s)	4.71	10.06	4.24
Max Chl Dpth (ft)	4.65	Hydr. Depth (ft)	1.28	3.47	1.15
Conv. Total (cfs)	13980.8	Conv. (cfs)	606.4	12162.0	1212.4
Length Wtd. (ft)	76.26	Wetted Per. (ft)	16.71	57.13	40.86
Min Ch El (ft)	2263.50	Shear (lb/sq ft)	2.09	5.73	1.89
Alpha	1.22	Stream Power (lb/ft s)	9.82	57.64	8.03
Frctn Loss (ft)	1.37	Cum Volume (acre-ft)	28.74	33.85	13.13
C & E Loss (ft)	0.21	Cum SA (acres)	21.65	7.73	9.12

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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2269.80	Element			
Vel Head (ft)	1.42	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2268.38	Reach Len. (ft)	69.00	76.64	83.89
Crit W.S. (ft)	2268.22	Flow Area (sq ft)	6.46	210.04	35.66
E.G. Slope (ft/ft)	0.023745	Area (sq ft)	6.46	210.04	35.66
Q Total (cfs)	2280.00	Flow (cfs)	29.53	2083.05	167.43
Top Width (ft)	81.87	Top Width (ft)	2.22	56.73	22.92
Vel Total (ft/s)	9.04	Avg. Vel. (ft/s)	4.57	9.92	4.69
Max Chl Dpth (ft)	4.88	Hydr. Depth (ft)	2.91	3.70	1.56
Conv. Total (cfs)	14796.2	Conv. (cfs)	191.6	13518.0	1086.5
Length Wtd. (ft)	75.58	Wetted Per. (ft)	4.93	57.13	23.18
Min Ch El (ft)	2263.50	Shear (lb/sq ft)	1.94	5.45	2.28
Alpha	1.12	Stream Power (lb/ft s)	8.87	54.05	10.71
Frctn Loss (ft)	1.44	Cum Volume (acre-ft)	19.25	35.70	8.62
C & E Loss (ft)	0.13	Cum SA (acres)	10.47	7.73	4.31

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9933.74	9962.22	98.89	21.02	16.71	4.34	1.28	4.71
2	Chan	9962.22	9970.32	257.53	26.73	8.14	11.30	3.30	9.64
3	Chan	9970.32	9978.43	245.04	26.03	8.21	10.75	3.21	9.41
4	Chan	9978.43	9986.53	191.07	22.32	8.11	8.38	2.75	8.56
5	Chan	9986.53	9994.64	236.70	25.42	8.14	10.38	3.14	9.31
6	Chan	9994.64	10002.74	381.65	34.03	8.25	16.74	4.20	11.21
7	Chan	10002.74	10010.85	365.85	32.96	8.11	16.05	4.07	11.10
8	Chan	10010.85	10018.95	305.56	29.66	8.17	13.40	3.66	10.30
9	ROB	10018.95	10046.24	145.36	30.66	21.26	6.38	1.46	4.74
10	ROB	10046.24	10073.53						
11	ROB	10073.53	10100.83	0.01	0.02	0.48	0.00	0.05	0.47
12	ROB	10100.83	10128.12	52.35	15.92	19.12	2.30	0.84	3.29

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9933.74	9962.22	29.53	6.46	4.93	1.30	2.91	4.57
2	Chan	9962.22	9970.32	272.30	28.57	8.14	11.94	3.53	9.53
3	Chan	9970.32	9978.43	259.84	27.87	8.21	11.40	3.44	9.32
4	Chan	9978.43	9986.53	206.34	24.16	8.11	9.05	2.98	8.54
5	Chan	9986.53	9994.64	251.66	27.26	8.14	11.04	3.36	9.23
6	Chan	9994.64	10002.74	394.26	35.88	8.25	17.29	4.43	10.99
7	Chan	10002.74	10010.85	379.00	34.80	8.11	16.62	4.29	10.89
8	Chan	10010.85	10018.95	319.65	31.50	8.17	14.02	3.89	10.15
9	ROB	10018.95	10046.24	167.43	35.66	23.18	7.34	1.56	4.69

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: C8
REACH: Reach 1 RS: 1.915

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9825.942	2268.219	827.282	2268.199	830.382	2268.129	834.332	2268.079	837.692	2268.09
9839.392	2268.019	840.902	2268.069	846.832	2268.019	848.312	2267.829	856.162	2266.96
9856.282	2266.949	860.962	2266.989	864.052	2266.939	869.422	2266.829	877.512	2266.77
9896.682	2266.669	899.582	2266.629	901.932	2266.659	910.682	2266.479	932.702	2265.83
9935.552	2265.639	945.242	2265.029	951.742	2264.69	951.892	2264.69	952.092	2264.59
9963.932	2264.279	968.852	2264.139	977.812	2264.199	986.902	2264.189	990.552	2264.11

```
 9993.322263.1419993.322 2263.1410000.45 2260.1810004.56 2260.9910005.85 2261.26
10010.06 2262.6410019.49 2265.7810024.53 2265.8710029.69 2266.0910030.55 2266.13
10041.64 2266.1210046.26 2266.0610047.98 2266.0310048.16 2266.0210051.99 2265.96
10056.31 2265.8410070.94 2265.2310071.76 2265.1210075.68 2264.5910077.87 2264.78
10081.22 2265.0610088.23 2265.5810093.24 2266.3410099.51  2267.110103.54 2268.21
10107.04 2269.3210111.42 2269.9210112.47 2270.0510121.45 2269.91   10122 2269.91
10122.58 2269.9710126.67 2270.4610134.37 2270.7910147.53 2271.5110152.11 2271.74
10152.81 2271.76 10155.3 2271.7810157.18 2271.7710159.55 2271.7510162.29 2271.74
10164.12 2271.73 10170.4 2272.03

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
9825.942     .06 9993.32    .05510010.06    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9993.3210010.06            157.11  167.03  181.16             .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2267.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2267.25	Reach Len. (ft)	157.11	167.03	181.16
Crit W.S. (ft)	2267.25	Flow Area (sq ft)	217.20	97.46	147.13
E.G. Slope (ft/ft)	0.012902	Area (sq ft)	217.20	97.46	147.13
Q Total (cfs)	2280.00	Flow (cfs)	818.62	934.07	527.31
Top Width (ft)	246.54	Top Width (ft)	139.81	16.74	89.99
Vel Total (ft/s)	4.94	Avg. Vel. (ft/s)	3.77	9.58	3.58
Max Chl Dpth (ft)	7.07	Hydr. Depth (ft)	1.55	5.82	1.63
Conv. Total (cfs)	20072.4	Conv. (cfs)	7206.9	8223.2	4642.3
Length Wtd. (ft)	165.13	Wetted Per. (ft)	140.05	17.66	90.73
Min Ch El (ft)	2260.18	Shear (lb/sq ft)	1.25	4.45	1.31
Alpha	1.87	Stream Power (lb/ft s)	4.71	42.61	4.68
Frctn Loss (ft)	2.08	Cum Volume (acre-ft)	28.55	33.60	12.94
C & E Loss (ft)	0.02	Cum SA (acres)	21.53	7.67	9.00

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2268.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.99	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2267.25	Reach Len. (ft)	157.11	167.03	181.16
Crit W.S. (ft)	2267.25	Flow Area (sq ft)	192.35	97.38	65.63
E.G. Slope (ft/ft)	0.015605	Area (sq ft)	192.35	97.38	65.63
Q Total (cfs)	2280.00	Flow (cfs)	1000.54	1025.95	253.51
Top Width (ft)	144.00	Top Width (ft)	87.32	16.74	39.94
Vel Total (ft/s)	6.42	Avg. Vel. (ft/s)	5.20	10.54	3.86
Max Chl Dpth (ft)	7.07	Hydr. Depth (ft)	2.20	5.82	1.64
Conv. Total (cfs)	18251.9	Conv. (cfs)	8009.5	8212.9	2029.4
Length Wtd. (ft)	163.91	Wetted Per. (ft)	88.22	17.66	41.71
Min Ch El (ft)	2260.18	Shear (lb/sq ft)	2.12	5.37	1.53
Alpha	1.54	Stream Power (lb/ft s)	11.05	56.60	5.92
Frctn Loss (ft)	2.32	Cum Volume (acre-ft)	19.09	35.43	8.52
C & E Loss (ft)	0.02	Cum SA (acres)	10.40	7.67	4.25

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9825.94	9859.42	1.12	1.35	5.92	0.05	0.23	0.83
2	LOB	9859.42	9892.89	19.82	15.10	33.48	0.87	0.45	1.31
3	LOB	9892.89	9926.37	53.05	27.26	33.48	2.33	0.81	1.95
4	LOB	9926.37	9959.85	252.97	69.62	33.52	11.10	2.08	3.63
5	LOB	9959.85	9993.32	491.66	103.88	33.64	21.56	3.10	4.73
6	Chan	9993.32	9995.71	87.71	11.02	2.59	3.85	4.61	7.96
7	Chan	9995.71	9998.10	121.39	13.38	2.59	5.32	5.60	9.07
8	Chan	9998.10	10000.49	159.52	15.76	2.59	7.00	6.59	10.12
9	Chan	10000.49	10002.89	175.90	16.32	2.44	7.72	6.83	10.78
10	Chan	10002.89	10005.28	156.00	15.19	2.44	6.84	6.35	10.27
11	Chan	10005.28	10007.67	130.99	13.81	2.50	5.74	5.78	9.48
12	Chan	10007.67	10010.06	102.57	11.96	2.52	4.50	5.00	8.57
13	ROB	10010.06	10042.13	210.91	56.41	32.58	9.25	1.76	3.74
14	ROB	10042.13	10074.20	174.97	50.14	32.11	7.67	1.56	3.49
15	ROB	10074.20	10106.26	141.43	40.58	26.03	6.20	1.57	3.49

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9892.89	9926.37	51.29	19.15	21.06	2.25	0.94	2.68
2	LOB	9926.37	9959.85	322.23	69.47	33.52	14.13	2.08	4.64
3	LOB	9959.85	9993.32	627.01	103.73	33.64	27.50	3.10	6.04
4	Chan	9993.32	9995.71	96.30	11.01	2.59	4.22	4.60	8.75
5	Chan	9995.71	9998.10	133.32	13.37	2.59	5.85	5.59	9.97
6	Chan	9998.10	10000.49	175.23	15.75	2.59	7.69	6.59	11.12
7	Chan	10000.49	10002.89	193.24	16.31	2.44	8.48	6.82	11.85
8	Chan	10002.89	10005.28	171.36	15.18	2.44	7.52	6.35	11.29
9	Chan	10005.28	10007.67	143.87	13.80	2.50	6.31	5.77	10.42
10	Chan	10007.67	10010.06	112.64	11.95	2.52	4.94	5.00	9.42
11	ROB	10010.06	10042.13	226.88	56.27	32.58	9.95	1.75	4.03
12	ROB	10042.13	10074.20	26.63	9.35	9.13	1.17	1.19	2.85

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.883

INPUT
Description:
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9766.272	2266.19	9775.082	2265.51	9780.652	2264.75	9786.152	2264.59	9789.742	2264.3
9798.262	2263.93	9807.372	2263.53	9809.832	2263.41	9812.312	2263.39	9829.442	2262.72
9837.532	2262.43	9842.142	2262.37	9843.622	2262.44	9861.532	2262.41	9868.992	2262.38
9869.712	2262.43	9871.872	2262.53	9875.312	2262.69	9878.592	2262.82	9879.462	2262.8
9880.062	2262.79	9883.222	2262.77	9886.852	2262.79	9890.062	2262.62	9893.962	2262.52
9913.862	2261.97	9917.702	2262.25	9921.312	2262.59	9940.392	2261.57	9943.442	2261.42
9947.062	2261.25	9952.602	2260.06	9952.672	2260.04	9953.402	2260.09	9961.332	2260.57
9962.452	2260.62	9965.602	2260.74	9977.172	2260.32	9986.26	2259.95	9986.262	2259.95
9993.952	2257.92	9999.812	2256.32	10001.95	2256.58	10003.84	2256.81	10008.95	2257.54
10012.62	2259.66	10019.41	2263.61	10019.76	2263.75	10028.15	2264.43	10034.05	2265.17
10037.77	2265.34	10043.52	2265.57	10051.44	2266.4	10051.6	2266.42	10051.94	2266.44
10059.67	2266.79	10079.68	2267.7	10088.7	2267.69	10088.73	2267.69	10097.29	2268

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9766.272	.06	9986.26	.05	10012.62	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.26	10012.62	110.72	192.78	203.57	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2264.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2263.40	Reach Len. (ft)	110.72	192.78	203.57
Crit W.S. (ft)	2263.40	Flow Area (sq ft)	250.63	148.12	12.03
E.G. Slope (ft/ft)	0.012308	Area (sq ft)	250.63	148.12	12.03
Q Total (cfs)	2280.00	Flow (cfs)	870.10	1364.40	45.50
Top Width (ft)	209.00	Top Width (ft)	176.20	26.36	6.44
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)	3.47	9.21	3.78
Max Chl Dpth (ft)	7.08	Hydr. Depth (ft)	1.42	5.62	1.87
Conv. Total (cfs)	20551.3	Conv. (cfs)	7842.8	12298.3	410.1
Length Wtd. (ft)	169.25	Wetted Per. (ft)	176.45	27.49	7.45
Min Ch El (ft)	2256.32	Shear (lb/sq ft)	1.09	4.14	1.24
Alpha	1.81	Stream Power (lb/ft s)	3.79	38.14	4.69
Frctn Loss (ft)	2.42	Cum Volume (acre-ft)	27.71	33.13	12.61
C & E Loss (ft)	0.04	Cum SA (acres)	20.96	7.59	8.79

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2264.27	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.91	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2263.36	Reach Len. (ft)	110.72	192.78	203.57
Crit W.S. (ft)	2263.36	Flow Area (sq ft)	228.41	146.98	11.75
E.G. Slope (ft/ft)	0.012852	Area (sq ft)	228.41	146.98	11.75
Q Total (cfs)	2280.00	Flow (cfs)	858.54	1376.39	45.08
Top Width (ft)	178.99	Top Width (ft)	146.26	26.36	6.37
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)	3.76	9.36	3.84
Max Chl Dpth (ft)	7.04	Hydr. Depth (ft)	1.56	5.58	1.85
Conv. Total (cfs)	20111.9	Conv. (cfs)	7573.2	12141.1	397.6
Length Wtd. (ft)	168.70	Wetted Per. (ft)	147.45	27.49	7.36
Min Ch El (ft)	2256.32	Shear (lb/sq ft)	1.24	4.29	1.28
Alpha	1.69	Stream Power (lb/ft s)	4.67	40.17	4.91
Frctn Loss (ft)	2.17	Cum Volume (acre-ft)	18.33	34.96	8.36
C & E Loss (ft)	0.01	Cum SA (acres)	9.98	7.59	4.16

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9810.27	9854.27	52.84	29.85	44.02	2.32	0.68	1.77
2	LOB	9854.27	9898.27	75.82	37.07	44.01	3.33	0.84	2.05
3	LOB	9898.27	9942.26	155.84	57.13	44.05	6.83	1.30	2.73
4	LOB	9942.26	9986.26	585.60	126.57	44.17	25.68	2.88	4.63
5	Chan	9986.26	9990.03	106.37	14.86	3.89	4.67	3.95	7.16
6	Chan	9990.03	9993.79	154.68	18.60	3.89	6.78	4.94	8.32
7	Chan	9993.79	9997.56	210.58	22.40	3.90	9.24	5.95	9.40
8	Chan	9997.56	10001.32	268.94	25.83	3.86	11.80	6.86	10.41
9	Chan	10001.32	10005.09	259.38	25.11	3.80	11.38	6.67	10.33
10	Chan	10005.09	10008.85	226.09	23.14	3.80	9.92	6.15	9.77
11	Chan	10008.85	10012.62	138.35	18.16	4.34	6.07	4.82	7.62
12	ROB	10012.62	10029.55	45.50	12.03	7.45	2.00	1.87	3.78

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9810.27	9854.27	29.49	13.34	15.23	1.29	0.94	2.21
2	LOB	9854.27	9898.27	73.09	35.17	44.01	3.21	0.80	2.08
3	LOB	9898.27	9942.26	155.01	55.23	44.05	6.80	1.26	2.81
4	LOB	9942.26	9986.26	600.95	124.67	44.17	26.36	2.83	4.82
5	Chan	9986.26	9990.03	106.69	14.70	3.89	4.68	3.90	7.26
6	Chan	9990.03	9993.79	155.72	18.44	3.89	6.83	4.90	8.44
7	Chan	9993.79	9997.56	212.52	22.24	3.90	9.32	5.91	9.55
8	Chan	9997.56	10001.32	271.86	25.67	3.86	11.92	6.82	10.59
9	Chan	10001.32	10005.09	262.11	24.95	3.80	11.50	6.62	10.51
10	Chan	10005.09	10008.85	228.26	22.98	3.80	10.01	6.10	9.93
11	Chan	10008.85	10012.62	139.23	18.00	4.34	6.11	4.78	7.73
12	ROB	10012.62	10029.55	45.08	11.75	7.36	1.98	1.85	3.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: C8
REACH: Reach 1 RS: 1.847

INPUT
Description:
Station Elevation Data num= 67

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9782.245	2266	9785.015	2265.81	9791.045	2265.45	9805.535	2264.06	9819.295	2262.72
9821.895	2262.51	9825.445	2262.18	9838.655	2261.16	9842.965	2260.83	9846.805	2260.38
9849.265	2259.99	9852.575	2259.21	9858.575	2258.89	9860.865	2258.62	9867.815	2257.58
9869.215	2257.37	9869.535	2257.43	9876.345	2258.83	9883.645	2259.29	9885.355	2259.39
9887.525	2259.64	9890.365	2260	9896.745	2260.73	9908.335	2260.66	9909.165	2260.66
9916.065	2260.83	9920.105	2260.85	9923.305	2260.8	9924.285	2260.92	9930.095	2260.58
9938.505	2260.27	9944.265	2259.15	9947.915	2258.49	9958.045	2257.99	9966.465	2257.61
9977.67	2257.09	9977.675	2257.09	9984.235	2255.9	9999.935	2252.99	10005.3	2254.29

```
 10010.5 2255.5310015.252256.80610023.53 2259.0310024.18 2259.2110026.64 2259.49
10044.15 2261.4710046.14 2261.7210059.46 2261.9910069.85  2262.210089.83  2262.6
10097.86 2262.76 10101.1 2262.7910108.37    226310113.91 2263.0610118.71 2263.27
10122.92  2263.410125.97 2263.49 10131.4 2263.5210131.91 2263.5310137.16 2263.57
10137.56 2263.5710142.67 2263.6310147.92 2263.7210150.62  2263.810153.72 2263.87
10159.01 2263.9910160.91 2264.01

Manning's n Values          num=        5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9782.245     .069852.575    .0559883.645     .06 9977.67    .05510015.25     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9977.6710015.25            198.48  195.37  194.01              .1       .3
Blocked Obstructions      num=        1
   Sta L   Sta R    Elev
10041.7610103.19    2270
```

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2260.98	Element			
Vel Head (ft)	1.22	Wt. n-Val.	0.058	0.055	0.060
W.S. Elev (ft)	2259.76	Reach Len. (ft)	198.48	195.37	194.01
Crit W.S. (ft)	2259.76	Flow Area (sq ft)	104.12	180.08	17.03
E.G. Slope (ft/ft)	0.016810	Area (sq ft)	104.12	180.08	17.03
Q Total (cfs)	2280.00	Flow (cfs)	451.63	1766.49	61.88
Top Width (ft)	126.50	Top Width (ft)	75.12	37.58	13.80
Vel Total (ft/s)	7.57	Avg. Vel. (ft/s)	4.34	9.81	3.63
Max Chl Dpth (ft)	6.77	Hydr. Depth (ft)	1.39	4.79	1.23
Conv. Total (cfs)	17585.3	Conv. (cfs)	3483.3	13624.7	477.3
Length Wtd. (ft)	195.47	Wetted Per. (ft)	75.63	38.42	14.15
Min Ch El (ft)	2252.99	Shear (lb/sq ft)	1.44	4.92	1.26
Alpha	1.37	Stream Power (lb/ft s)	6.27	48.25	4.59
Frctn Loss (ft)	2.99	Cum Volume (acre-ft)	27.26	32.40	12.54
C & E Loss (ft)	0.11	Cum SA (acres)	20.64	7.45	8.75

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2261.05	Element			
Vel Head (ft)	0.99	Wt. n-Val.	0.058	0.055	0.060
W.S. Elev (ft)	2260.06	Reach Len. (ft)	198.48	195.37	194.01
Crit W.S. (ft)		Flow Area (sq ft)	117.33	191.26	21.14
E.G. Slope (ft/ft)	0.012854	Area (sq ft)	117.33	191.26	21.14
Q Total (cfs)	2280.00	Flow (cfs)	495.59	1707.92	76.49
Top Width (ft)	120.35	Top Width (ft)	68.97	37.58	13.80
Vel Total (ft/s)	6.91	Avg. Vel. (ft/s)	4.22	8.93	3.62
Max Chl Dpth (ft)	7.07	Hydr. Depth (ft)	1.70	5.09	1.53
Conv. Total (cfs)	20109.8	Conv. (cfs)	4371.2	15064.0	674.6
Length Wtd. (ft)	195.64	Wetted Per. (ft)	70.82	38.42	14.45
Min Ch El (ft)	2252.99	Shear (lb/sq ft)	1.33	3.99	1.17
Alpha	1.34	Stream Power (lb/ft s)	5.62	35.67	4.25
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	17.89	34.21	8.28
C & E Loss (ft)	0.04	Cum SA (acres)	9.71	7.45	4.11

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9821.33	9860.42	20.61	7.18	10.57	0.90	0.68	2.87
2	LOB	9860.42	9899.50	140.33	33.57	28.36	6.15	1.20	4.18
3	LOB	9899.50	9938.59						
4	LOB	9938.59	9977.67	290.69	63.37	36.70	12.75	1.73	4.59
5	Chan	9977.67	9983.04	122.81	16.95	5.46	5.39	3.16	7.24
6	Chan	9983.04	9988.41	192.69	22.22	5.46	8.45	4.14	8.67
7	Chan	9988.41	9993.78	275.82	27.56	5.46	12.10	5.13	10.01
8	Chan	9993.78	9999.15	370.65	32.90	5.46	16.26	6.13	11.26
9	Chan	9999.15	10004.51	384.31	33.76	5.51	16.86	6.29	11.38
10	Chan	10004.51	10009.88	263.89	26.95	5.52	11.57	5.02	9.79
11	Chan	10009.88	10015.25	156.33	19.73	5.55	6.86	3.68	7.92
12	ROB	10015.25	10044.38	61.88	17.03	14.15	2.71	1.23	3.63

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9821.33	9860.42	0.82	0.58	1.79	0.04	1.39	1.43
2	LOB	9860.42	9899.50	171.97	42.28	30.77	7.54	1.39	4.07
3	LOB	9899.50	9938.59						
4	LOB	9938.59	9977.67	322.81	74.48	38.26	14.16	1.96	4.33
5	Chan	9977.67	9983.04	125.20	18.55	5.46	5.49	3.46	6.75
6	Chan	9983.04	9988.41	189.79	23.82	5.46	8.32	4.44	7.97
7	Chan	9988.41	9993.78	265.82	29.15	5.46	11.66	5.43	9.12
8	Chan	9993.78	9999.15	351.93	34.50	5.46	15.44	6.43	10.20
9	Chan	9999.15	10004.51	364.18	35.35	5.51	15.97	6.59	10.30
10	Chan	10004.51	10009.88	254.85	28.55	5.52	11.18	5.32	8.93
11	Chan	10009.88	10015.25	156.15	21.33	5.55	6.85	3.97	7.32
12	ROB	10015.25	10044.38	76.49	21.14	14.45	3.35	1.53	3.62

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: C8
REACH: Reach 1 RS: 1.810

INPUT
Description:
Station Elevation Data num= 61

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9887.619	2264.01	9891.269	2263.39	891.979	2263.29	892.579	2263.11	9896.629	2263.16
9902.599	2262.65	9902.929	2262.63	9903.489	2262.55	9914.729	2261.04	9922.859	2259.37
9927.079	2258.58	9936.009	2257.53	9938.729	2257.26	9939.709	2257.24	9951.059	2256.58
9952.219	2256.53	9955.529	2256.39	9958.899	2256.21	9961.229	2256.19	9962.929	2255.98
9965.389	2255.76	9978.949	2255.65	9982.709	2255.61	9987.149	2253.78	9987.15	2253.78
9997.169	2249.63	9998.869	224	910004.38	2250.39	10019.88	2254.21	10020.2	2254.18
10028.39	2254.26	10050.22	2254.37	10051.33	2254.28	10057.25	2254.29	10058.57	2254.28
10060.55	2254.25	10062.55	2254.23	10063.14	2254.25	10064.17	2254.29	10065.51	2254.29
10076.28	2254.89	10081.38	2255.34	10088.55	2255.37	10106.66	2255.52	10114.89	2255.3
10115.85	2255.28	10116.16	2255.28	10125.28	2255.24	10128.42	2255.27	10138.88	2255.43
10147.73	2255.43	10149.28	2255.41	0153.84	2255.44	10165.23	2255.94	10167.48	2256.12
10173.55	2256.48	10181.53	2257.05	10182.01	2257.06	10190.83	2257.43	10196.2	2257.67
10204.96	2258.01								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9887.619	.06	9987.15	.05	10019.88	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.15	10019.88	200.02	184.36	158.15	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2257.31	Element			
Vel Head (ft)	0.86	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2256.45	Reach Len. (ft)	200.02	184.36	158.15
Crit W.S. (ft)	2256.45	Flow Area (sq ft)	24.25	161.13	213.28
E.G. Slope (ft/ft)	0.013984	Area (sq ft)	24.25	161.13	213.28
Q Total (cfs)	2280.00	Flow (cfs)	57.41	1443.81	778.78
Top Width (ft)	218.82	Top Width (ft)	32.98	32.73	153.12
Vel Total (ft/s)	5.72	Avg. Vel. (ft/s)	2.37	8.96	3.65
Max Chl Dpth (ft)	7.45	Hydr. Depth (ft)	0.74	4.92	1.39
Conv. Total (cfs)	19280.8	Conv. (cfs)	485.5	12209.6	6585.7
Length Wtd. (ft)	176.77	Wetted Per. (ft)	33.36	34.30	153.20
Min Ch El (ft)	2249.00	Shear (lb/sq ft)	0.63	4.10	1.22
Alpha	1.70	Stream Power (lb/ft s)	1.50	36.74	4.44
Frctn Loss (ft)	2.48	Cum Volume (acre-ft)	26.97	31.63	12.03
C & E Loss (ft)	0.01	Cum SA (acres)	20.40	7.29	8.38

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2258.10	Element			
Vel Head (ft)	1.39	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2256.71	Reach Len. (ft)	200.02	184.36	158.15
Crit W.S. (ft)	2256.71	Flow Area (sq ft)	33.04	169.86	73.08
E.G. Slope (ft/ft)	0.017473	Area (sq ft)	33.04	169.86	73.08
Q Total (cfs)	2280.00	Flow (cfs)	106.90	1762.19	410.91
Top Width (ft)	95.83	Top Width (ft)	32.98	32.73	30.12
Vel Total (ft/s)	8.26	Avg. Vel. (ft/s)	3.24	10.37	5.62
Max Chl Dpth (ft)	7.71	Hydr. Depth (ft)	1.00	5.19	2.43
Conv. Total (cfs)	17248.7	Conv. (cfs)	808.7	13331.3	3108.7
Length Wtd. (ft)	180.23	Wetted Per. (ft)	33.63	34.30	32.47
Min Ch El (ft)	2249.00	Shear (lb/sq ft)	1.07	5.40	2.46
Alpha	1.31	Stream Power (lb/ft s)	3.47	56.03	13.81

Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	17.55	33.40	8.07
C & E Loss (ft)	0.01	Cum SA (acres)	9.48	7.29	4.01

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9947.34	9967.24	6.15	4.62	13.09	0.27	0.35	1.33
2	LOB	9967.24	9987.15	51.27	19.63	20.27	2.25	0.99	2.61
3	Chan	9987.15	9991.83	116.47	17.00	5.06	5.11	3.64	6.85
4	Chan	9991.83	9996.50	237.32	26.06	5.06	10.41	5.57	9.11
5	Chan	9996.50	10001.18	360.57	33.10	4.92	15.81	7.08	10.89
6	Chan	10001.18	10005.85	298.88	29.34	4.82	13.11	6.28	10.19
7	Chan	10005.85	10010.53	212.89	23.93	4.82	9.34	5.12	8.90
8	Chan	10010.53	10015.20	139.16	18.54	4.82	6.10	3.97	7.50
9	Chan	10015.20	10019.88	78.53	13.16	4.82	3.44	2.81	5.97
10	ROB	10019.88	10056.90	361.08	79.90	37.02	15.84	2.16	4.52
11	ROB	10056.90	10093.91	218.16	59.08	37.05	9.57	1.60	3.69
12	ROB	10093.91	10130.93	113.87	39.98	37.02	4.99	1.08	2.85
13	ROB	10130.93	10167.94	85.09	33.57	37.04	3.73	0.91	2.53
14	ROB	10167.94	10204.96	0.58	0.76	5.06	0.03	0.15	0.76

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9947.34	9967.24	18.02	8.10	13.36	0.79	0.62	2.22
2	LOB	9967.24	9987.15	88.89	24.94	20.27	3.90	1.25	3.56
3	Chan	9987.15	9991.83	147.14	18.25	5.06	6.45	3.90	8.06
4	Chan	9991.83	9996.50	288.04	27.30	5.06	12.63	5.84	10.55
5	Chan	9996.50	10001.18	430.56	34.35	4.92	18.88	7.35	12.53
6	Chan	10001.18	10005.85	359.66	30.59	4.82	15.77	6.54	11.76
7	Chan	10005.85	10010.53	260.13	25.18	4.82	11.41	5.38	10.33
8	Chan	10010.53	10015.20	174.14	19.79	4.82	7.64	4.23	8.80
9	Chan	10015.20	10019.88	102.53	14.40	4.82	4.50	3.08	7.12
10	ROB	10019.88	10056.90	410.91	73.08	32.47	18.02	2.43	5.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.775

INPUT
Description:
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9923.324	2257.899	953.224	2256.829	954.154	2256.799	959.274	2256.569	959.634	2256.57
9959.714	2256.579	961.694	2256.529	962.534	2256.489	964.304	2256.49	972.194	2256.03
9974.554	2255.989	976.154	2255.879	982.644	2253.14	9991.32	249.4479	999.824	2245.81
10007.92	2246.841	0011.62	2247.531	0026.01	2249.891	0027.71	2250.171	0027.96	2250.2
10033.82	2250.291	0034.89	2250.291	0036.14	2250.291	0039.97	2250.63	10048.5	2250.85
10048.99	2250.88	10049.3	2250.9	10049.5	2250.911	0059.24	2251.531	0065.93	2251.95
10066.14	2251.961	0066.18	2251.961	0067.98	2251.961	0105.31	2251.811	0106.17	2252.11
10107.36	2252.041	0110.14	2251.751	0112.66	2251.751	0116.56	2251.251	0119.63	2250.62
10129.79	2251.221	0136.22	2251.541	0147.41	2251.971	0147.69	2251.981	0163.78	2253.42
10165.73	2253.59	10179.8	2254.1	10181.9	2254.18	10185.4	2254.331	0186.03	2254.36
10186.48	2254.371	0234.13	2256.01						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9923.324	.06	9991.3	.05	510026.01	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.31	10026.01	220.69	213.85	203.02	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2253.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2252.78	Reach Len. (ft)	220.69	213.85	203.02
Crit W.S. (ft)	2252.78	Flow Area (sq ft)	13.04	175.53	172.17
E.G. Slope (ft/ft)	0.014043	Area (sq ft)	13.04	175.53	172.17
Q Total (cfs)	2280.00	Flow (cfs)	50.91	1622.73	606.36
Top Width (ft)	173.18	Top Width (ft)	7.82	34.71	130.65
Vel Total (ft/s)	6.32	Avg. Vel. (ft/s)	3.90	9.24	3.52
Max Chl Dpth (ft)	6.97	Hydr. Depth (ft)	1.67	5.06	1.32
Conv. Total (cfs)	19239.9	Conv. (cfs)	429.6	13693.5	5116.8
Length Wtd. (ft)	211.31	Wetted Per. (ft)	8.50	35.77	130.96
Min Ch El (ft)	2245.81	Shear (lb/sq ft)	1.34	4.30	1.15
Alpha	1.61	Stream Power (lb/ft s)	5.25	39.77	4.06
Frctn Loss (ft)	3.73	Cum Volume (acre-ft)	26.88	30.92	11.33
C & E Loss (ft)	0.02	Cum SA (acres)	20.30	7.15	7.86

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2254.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.37	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2252.82	Reach Len. (ft)	220.69	213.85	203.02
Crit W.S. (ft)	2252.82	Flow Area (sq ft)	13.30	176.68	90.05
E.G. Slope (ft/ft)	0.017201	Area (sq ft)	13.30	176.68	90.05
Q Total (cfs)	2280.00	Flow (cfs)	58.06	1815.50	406.45
Top Width (ft)	96.52	Top Width (ft)	7.82	34.71	53.99
Vel Total (ft/s)	8.14	Avg. Vel. (ft/s)	4.37	10.28	4.51
Max Chl Dpth (ft)	7.01	Hydr. Depth (ft)	1.70	5.09	1.67
Conv. Total (cfs)	17384.3	Conv. (cfs)	442.7	13842.6	3099.0
Length Wtd. (ft)	212.97	Wetted Per. (ft)	8.53	35.77	54.97
Min Ch El (ft)	2245.81	Shear (lb/sq ft)	1.67	5.30	1.76
Alpha	1.33	Stream Power (lb/ft s)	7.31	54.50	7.94
Frctn Loss (ft)	4.17	Cum Volume (acre-ft)	17.44	32.67	7.78
C & E Loss (ft)	0.03	Cum SA (acres)	9.38	7.15	3.86

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.71	9991.30	50.91	13.04	8.50	2.23	1.67	3.90
2	Chan	9991.30	9996.26	172.22	21.79	5.39	7.55	4.39	7.90
3	Chan	9996.26	10001.22	326.85	31.74	5.28	14.34	6.40	10.30
4	Chan	10001.22	10006.18	346.13	32.13	5.00	15.18	6.48	10.77
5	Chan	10006.18	10011.13	285.52	28.69	5.03	12.52	5.79	9.95
6	Chan	10011.13	10016.09	218.38	24.43	5.03	9.58	4.93	8.94
7	Chan	10016.09	10021.05	161.64	20.39	5.02	7.09	4.11	7.93
8	Chan	10021.05	10026.01	111.99	16.36	5.03	4.91	3.30	6.84
9	ROB	10026.01	10067.63	324.21	77.81	41.70	14.22	1.87	4.17
10	ROB	10067.63	10109.26	93.71	36.94	41.69	4.11	0.89	2.54
11	ROB	10109.26	10150.88	186.78	55.92	41.77	8.19	1.34	3.34
12	ROB	10150.88	10192.51	1.66	1.49	5.80	0.07	0.26	1.11

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.71	9991.30	58.06	13.30	8.53	2.55	1.70	4.37
2	Chan	9991.30	9996.26	193.06	21.95	5.39	8.47	4.43	8.80
3	Chan	9996.26	10001.22	364.98	31.90	5.28	16.01	6.43	11.44
4	Chan	10001.22	10006.18	386.47	32.30	5.00	16.95	6.51	11.97
5	Chan	10006.18	10011.13	319.11	28.86	5.03	14.00	5.82	11.06
6	Chan	10011.13	10016.09	244.47	24.59	5.03	10.72	4.96	9.94

7	Chan	10016.09	10021.05	181.35	20.55	5.02	7.95	4.15	8.82
8	Chan	10021.05	10026.01	126.05	16.53	5.03	5.53	3.33	7.63
9	ROB	10026.01	10067.63	376.89	79.18	41.70	16.53	1.90	4.76
10	ROB	10067.63	10109.26	29.55	10.87	13.27	1.30	0.88	2.72

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.734

INPUT
Description:
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9883.885	2252.039	9889.105	2251.299	9889.165	2251.289	9889.475	2251.289	9892.035	2251.27
9892.335	2251.289	9894.295	2251.259	9902.095	2251.699	9904.575	2251.649	9914.875	2251.3
9920.615	2250.659	9921.955	2250.559	9922.775	2250.499	9923.025	2250.489	9923.865	2250.29
9934.855	2249.929	9944.455	2249.619	9961.075	2248.859	9961.675	2248.829	9963.895	2248.7
9973.015	2247.879	9978.265	2247.389	9978.705	2247.369	9978.925	2247.319	9979.595	2247.12
9983.84	2245.969	9995.925	2242.69	10006.3	2243.711	0007.67	2243.851	0009.56	2244.02
10012.61	2244.281	0015.11	2244.451	0017.23	2244.591	0022.61	2244.071	0025.39	2243.83
10026.98	2244.021	0038.26	2245.411	0042.02	2246.281	0049.68	2248.141	0055.31	2248.17
10072.59	2248.261	0079.79	2248.331	0099.09	2247.951	0102.68	2247.891	0116.21	2246.6
10119.2	2246.311	0122.06	2245.81	0126.84	2245.121	0131.19	2244.44	10132.8	2244.22
10135.94	2244.511	0144.47	2245.251	0149.22	2246.421	0160.37	2248.951	0165.58	2249.27
10190.21	2250.871	0192.06	2251.011	0194.44	2251.141	0196.96	2251.371	0198.97	2251.51
10201.97	2251.661	0203.21	2251.871	0205.89	2252.02				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9883.885	.06	9983.84	.05	10042.02	.06	10119.2	.05	10149.22	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.84	10042.02	215.03	208.88	204.49	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2248.65	Element			
Vel Head (ft)	1.25	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2247.41	Reach Len. (ft)	215.03	208.88	204.49
Crit W.S. (ft)	2247.41	Flow Area (sq ft)	3.81	183.86	79.05
E.G. Slope (ft/ft)	0.022918	Area (sq ft)	3.81	183.86	79.05
Q Total (cfs)	2280.00	Flow (cfs)	10.54	1766.00	503.46
Top Width (ft)	114.45	Top Width (ft)	5.84	58.18	50.43
Vel Total (ft/s)	8.55	Avg. Vel. (ft/s)	2.76	9.61	6.37
Max Chl Dpth (ft)	4.72	Hydr. Depth (ft)	0.65	3.16	1.57
Conv. Total (cfs)	15060.9	Conv. (cfs)	69.6	11665.6	3325.7
Length Wtd. (ft)	208.19	Wetted Per. (ft)	6.03	58.93	51.08
Min Ch El (ft)	2242.69	Shear (lb/sq ft)	0.90	4.46	2.21
Alpha	1.10	Stream Power (lb/ft s)	2.50	42.87	14.10
Frctn Loss (ft)	2.72	Cum Volume (acre-ft)	26.84	30.04	10.74
C & E Loss (ft)	0.14	Cum SA (acres)	20.27	6.92	7.44

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2249.59	Element			
Vel Head (ft)	1.68	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2247.91	Reach Len. (ft)	215.03	208.88	204.49
Crit W.S. (ft)	2247.91	Flow Area (sq ft)	6.74	213.04	5.45
E.G. Slope (ft/ft)	0.022503	Area (sq ft)	6.74	213.04	5.45
Q Total (cfs)	2280.00	Flow (cfs)	25.60	2237.09	17.31
Top Width (ft)	70.72	Top Width (ft)	5.84	58.18	6.70
Vel Total (ft/s)	10.12	Avg. Vel. (ft/s)	3.80	10.50	3.18
Max Chl Dpth (ft)	5.22	Hydr. Depth (ft)	1.15	3.66	0.81
Conv. Total (cfs)	15199.0	Conv. (cfs)	170.7	14912.9	115.4
Length Wtd. (ft)	208.99	Wetted Per. (ft)	6.53	58.93	6.89
Min Ch El (ft)	2242.69	Shear (lb/sq ft)	1.45	5.08	1.11
Alpha	1.06	Stream Power (lb/ft s)	5.51	53.33	3.53
Frctn Loss (ft)	3.30	Cum Volume (acre-ft)	17.39	31.71	7.56
C & E Loss (ft)	0.13	Cum SA (acres)	9.35	6.92	3.72

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.85	9983.84	10.54	3.81	6.03	0.46	0.65	2.76
2	Chan	9983.84	9992.15	170.13	21.31	8.61	7.46	2.56	7.98
3	Chan	9992.15	10000.46	417.01	36.25	8.47	18.29	4.36	11.51
4	Chan	10000.46	10008.77	343.47	32.08	8.35	15.06	3.86	10.71
5	Chan	10008.77	10017.08	241.08	25.92	8.33	10.57	3.12	9.30
6	Chan	10017.08	10025.40	251.11	26.58	8.35	11.01	3.20	9.45
7	Chan	10025.40	10033.71	233.78	25.50	8.37	10.25	3.07	9.17
8	Chan	10033.71	10042.02	109.42	16.22	8.45	4.80	1.95	6.75
9	ROB	10042.02	10074.79	6.50	2.61	4.77	0.28	0.56	2.49
10	ROB	10074.79	10107.57						
11	ROB	10107.57	10140.34	386.10	57.22	32.82	16.93	1.76	6.75
12	ROB	10140.34	10173.12	110.86	19.23	13.49	4.86	1.45	5.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.85	9983.84	25.60	6.74	6.53	1.12	1.15	3.80
2	Chan	9983.84	9992.15	228.81	25.48	8.61	10.04	3.07	8.98
3	Chan	9992.15	10000.46	499.21	40.42	8.47	21.90	4.86	12.35
4	Chan	10000.46	10008.77	420.39	36.25	8.35	18.44	4.36	11.60
5	Chan	10008.77	10017.08	308.62	30.09	8.33	13.54	3.62	10.26
6	Chan	10017.08	10025.40	319.64	30.75	8.35	14.02	3.70	10.39
7	Chan	10025.40	10033.71	300.44	29.67	8.37	13.18	3.57	10.13
8	Chan	10033.71	10042.02	159.96	20.39	8.45	7.02	2.45	7.84
9	ROB	10042.02	10074.79	17.31	5.45	6.89	0.76	0.81	3.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: C8
REACH: Reach 1 RS: 1.695

INPUT
Description:
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9872.031	2246.01	9873.781	2245.98	9878.511	2245.95	9879.381	2245.94	9883.001	2245.93
9888.161	2245.78	9889.291	2245.79	9890.391	2245.77	9895.861	2245.64	9899.891	2245.62
9901.721	2245.67	9909.961	2244.21	9910.161	2244.2	9913.991	2244.08	9914.901	2244.07
9939.741	2243.29	9941.121	2243.26	9943.451	2243.23	9944.881	2243.18	9959.741	2242.81
9970.541	2242.55	9973.391	2242.52	9975.791	2242.4	2 9979.63	2240.75	9979.631	2240.75
9983.011	2239.36	9985.611	2238.16	9988.471	2238.12	10003.64	2237.19	10007.48	2238.5
10017.9	2241.29	10018.91	2241.28	10022.46	2241.47	10026.13	2242.04	10032.56	2243.29
10044.61	2243.51	10050.63	2243.57	10051.46	2243.58	10059.04	2243.69	10071.98	2243.77
10074.82	2243.79	10075.9	2243.77	10078.52	2243.79	10079.23	2243.78	10083.84	2243.77
10084.36	2243.76	10087.66	2243.62	10089.79	2243.54	10091.22	2243.46	10117.13	2242.89
10127.93	2242.67	10134.1	2241.71	10134.16	2241.71	10134.26	2241.69	10141.61	2241.27
10147.08	2241.69	10150.59	224	210152.26	2242.44	10157.15	2243.11	10161.08	2243.78
10161.29	2243.82	10162.1	2243.93	10166.69	2244.41	10171.09	2244.92	10172.85	2244.96
10187.7	2246.38	10195.16	2246.87	10196.92	2247.01	10199.46	2247.21	10201.04	2248.04

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9872.031	.04	9979.63	.05	10017.9	.03	510127.93	.05	510152.26	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.63	10017.9	219.3	216.6	218.19	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2244.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.040	0.050	0.045
W.S. Elev (ft)	2243.91	Reach Len. (ft)	219.30	216.60	218.19
Crit W.S. (ft)	2243.91	Flow Area (sq ft)	52.96	203.08	135.74
E.G. Slope (ft/ft)	0.008437	Area (sq ft)	52.96	203.08	135.74
Q Total (cfs)	2280.00	Flow (cfs)	166.07	1653.55	460.38
Top Width (ft)	242.10	Top Width (ft)	59.75	38.27	144.08
Vel Total (ft/s)	5.82	Avg. Vel. (ft/s)	3.14	8.14	3.39
Max Chl Dpth (ft)	6.72	Hydr. Depth (ft)	0.89	5.31	0.94
Conv. Total (cfs)	24821.9	Conv. (cfs)	1808.0	18001.9	5012.0
Length Wtd. (ft)	217.30	Wetted Per. (ft)	60.12	39.42	144.56
Min Ch El (ft)	2237.19	Shear (lb/sq ft)	0.46	2.71	0.49
Alpha	1.51	Stream Power (lb/ft s)	1.45	22.09	1.68
Frctn Loss (ft)	2.48	Cum Volume (acre-ft)	26.70	29.11	10.24
C & E Loss (ft)	0.01	Cum SA (acres)	20.11	6.69	6.98

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2245.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.25	Wt. n-Val.	0.040	0.050	0.035
W.S. Elev (ft)	2243.88	Reach Len. (ft)	219.30	216.60	218.19
Crit W.S. (ft)	2243.88	Flow Area (sq ft)	41.88	201.60	32.91
E.G. Slope (ft/ft)	0.011694	Area (sq ft)	41.88	201.60	32.91
Q Total (cfs)	2280.00	Flow (cfs)	187.19	1923.01	169.80
Top Width (ft)	100.00	Top Width (ft)	34.63	38.27	27.10
Vel Total (ft/s)	8.25	Avg. Vel. (ft/s)	4.47	9.54	5.16
Max Chl Dpth (ft)	6.69	Hydr. Depth (ft)	1.21	5.27	1.21
Conv. Total (cfs)	21084.3	Conv. (cfs)	1731.0	17783.0	1570.3
Length Wtd. (ft)	217.14	Wetted Per. (ft)	35.69	39.42	27.63
Min Ch El (ft)	2237.19	Shear (lb/sq ft)	0.86	3.73	0.87
Alpha	1.18	Stream Power (lb/ft s)	3.83	35.61	4.49
Frctn Loss (ft)	3.46	Cum Volume (acre-ft)	17.27	30.71	7.47
C & E Loss (ft)	0.01	Cum SA (acres)	9.25	6.69	3.64

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9915.07	9936.59	5.28	4.39	16.72	0.23	0.26	1.20
2	LOB	9936.59	9958.11	43.28	17.15	21.53	1.90	0.80	2.52
3	LOB	9958.11	9979.63	117.51	31.43	21.87	5.15	1.46	3.74
4	Chan	9979.63	9985.10	156.45	23.55	5.95	6.86	4.31	6.64
5	Chan	9985.10	9990.56	269.52	31.67	5.52	11.82	5.79	8.51
6	Chan	9990.56	9996.03	294.51	33.29	5.48	12.92	6.09	8.85
7	Chan	9996.03	10001.50	322.08	35.13	5.48	14.13	6.42	9.17
8	Chan	10001.50	10006.97	309.23	34.73	5.66	13.56	6.35	8.90
9	Chan	10006.97	10012.43	195.03	26.36	5.67	8.55	4.82	7.40
10	Chan	10012.43	10017.90	106.73	18.35	5.66	4.68	3.36	5.82
11	ROB	10017.90	10054.53	136.22	37.30	36.80	5.97	1.02	3.65
12	ROB	10054.53	10091.16	8.88	7.23	36.64	0.39	0.20	1.23
13	ROB	10091.16	10127.78	101.68	31.24	36.64	4.46	0.85	3.25
14	ROB	10127.78	10164.41	213.61	59.98	34.48	9.37	1.75	3.56

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9936.59	9958.11	38.39	11.29	13.81	1.68	0.86	3.40
2	LOB	9958.11	9979.63	148.80	30.59	21.87	6.53	1.42	4.86
3	Chan	9979.63	9985.10	181.35	23.34	5.95	7.95	4.27	7.77
4	Chan	9985.10	9990.56	313.65	31.46	5.52	13.76	5.75	9.97
5	Chan	9990.56	9996.03	342.92	33.08	5.48	15.04	6.05	10.37
6	Chan	9996.03	10001.50	375.23	34.92	5.48	16.46	6.39	10.75

7	Chan	10001.50	10006.97	360.22	34.52	5.66	15.80	6.31	10.44
8	Chan	10006.97	10012.43	226.45	26.15	5.67	9.93	4.78	8.66
9	Chan	10012.43	10017.90	123.19	18.13	5.66	5.40	3.32	6.79
10	ROB	10017.90	10054.53	169.80	32.91	27.63	7.45	1.21	5.16

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.654

INPUT
Description:
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9829.489	2240.01	9836.809	2239.52	9837.839	2239.48	9838.489	2239.46	9847.539	2238.99
9869.539	2237.99	9875.909	2237.47	9878.219	2237.82	9880.759	2237.99	9884.029	2238.19
9884.729	2238.29	9884.959	2238.29	9886.589	2238.14	9887.059	2238.08	9888.529	2238.32
9892.969	2238.95	9906.839	2239.52	9907.859	2239.58	9908.689	2239.79	9911.299	2240.21
9917.569	2239.46	9923.169	2238.74	9936.669	2237.65	9937.229	2237.61	9937.359	2237.6
9937.719	2237.59	9953.529	2237.07	9958.359	2236.43	9959.739	2236.26	9965.079	2235.61
9976.779	2235.33	9980.439	2235.2	9980.44	2235.29	9984.759	2234.29	9988.619	2233.48
9990.409	2233.42	10003.52	2233	10004.59	2233.29	10007.6	2234.16	10012.61	2235.17
10020.03	2236.65	10029.77	2236.61	10031.2	2236.61	10032.11	2236.54	10038.21	2236.14
10039.71	2236.34	10047.79	2237.27	10048.44	2237.42	10050.97	2238.04	10052.76	2238.47
10073.09	2239.88	10076.98	2240.11	10077.24	2240.12	10081.39	2240.12	10081.65	2240.12
10085.99	2240.12	10088.9	2240.51	10090.75	2240.95	10092.83	2241.39	10094.13	2241.61

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9829.489	.069	869.539	.059	884.029	.069	980.439	.06	10012.61	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.44	10012.61	130.3	151.26	178.03	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2239.49	Element			
Vel Head (ft)	0.88	Wt. n-Val.	0.059	0.060	0.065
W.S. Elev (ft)	2238.61	Reach Len. (ft)	130.30	151.26	178.03
Crit W.S. (ft)	2238.41	Flow Area (sq ft)	121.44	155.24	79.79
E.G. Slope (ft/ft)	0.016326	Area (sq ft)	121.44	155.24	79.79
Q Total (cfs)	2280.00	Flow (cfs)	535.61	1389.88	354.51
Top Width (ft)	165.29	Top Width (ft)	90.97	32.17	42.15
Vel Total (ft/s)	6.40	Avg. Vel. (ft/s)	4.41	8.95	4.44
Max Chl Dpth (ft)	5.61	Hydr. Depth (ft)	1.33	4.83	1.89
Conv. Total (cfs)	17843.9	Conv. (cfs)	4191.8	10877.6	2774.5
Length Wtd. (ft)	150.07	Wetted Per. (ft)	91.24	32.62	42.53
Min Ch El (ft)	2233.00	Shear (lb/sq ft)	1.36	4.85	1.91
Alpha	1.38	Stream Power (lb/ft s)	5.98	43.43	8.50
Frctn Loss (ft)	2.77	Cum Volume (acre-ft)	26.26	28.22	9.70
C & E Loss (ft)	0.09	Cum SA (acres)	19.73	6.51	6.52

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2239.96	Element			
Vel Head (ft)	1.39	Wt. n-Val.	0.060	0.060	0.065
W.S. Elev (ft)	2238.58	Reach Len. (ft)	130.30	151.26	178.03
Crit W.S. (ft)	2238.58	Flow Area (sq ft)	99.60	154.22	13.03
E.G. Slope (ft/ft)	0.022905	Area (sq ft)	99.60	154.22	13.03
Q Total (cfs)	2280.00	Flow (cfs)	583.53	1628.27	68.20
Top Width (ft)	87.00	Top Width (ft)	50.44	32.17	4.39
Vel Total (ft/s)	8.54	Avg. Vel. (ft/s)	5.86	10.56	5.23
Max Chl Dpth (ft)	5.58	Hydr. Depth (ft)	1.97	4.79	2.97
Conv. Total (cfs)	15065.0	Conv. (cfs)	3855.7	10758.7	450.6
Length Wtd. (ft)	148.16	Wetted Per. (ft)	50.96	32.62	7.01
Min Ch El (ft)	2233.00	Shear (lb/sq ft)	2.79	6.76	2.66
Alpha	1.22	Stream Power (lb/ft s)	16.37	71.38	13.92
Frctn Loss (ft)	3.23	Cum Volume (acre-ft)	16.92	29.83	7.35
C & E Loss (ft)	0.03	Cum SA (acres)	9.03	6.51	3.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9829.49	9859.68	0.32	0.49	4.45	0.01	0.11	0.65
2	LOB	9859.68	9889.87	45.93	18.63	30.30	2.01	0.62	2.47
3	LOB	9889.87	9920.06	0.01	0.03	0.70	0.00	0.05	0.38
4	LOB	9920.06	9950.25	56.55	22.08	25.50	2.48	0.87	2.56
5	LOB	9950.25	9980.44	432.79	80.21	30.29	18.98	2.66	5.40
6	Chan	9980.44	9985.04	136.64	17.89	4.70	5.99	3.89	7.64
7	Chan	9985.04	9989.63	197.01	22.24	4.67	8.64	4.84	8.86
8	Chan	9989.63	9994.23	227.22	24.07	4.60	9.97	5.24	9.44
9	Chan	9994.23	9998.82	237.98	24.75	4.60	10.44	5.38	9.62
10	Chan	9998.82	10003.42	248.92	25.42	4.60	10.92	5.53	9.79
11	Chan	10003.42	10008.01	204.78	22.94	4.77	8.98	4.99	8.93
12	Chan	10008.01	10012.61	137.33	17.93	4.69	6.02	3.90	7.66
13	ROB	10012.61	10028.91	179.76	37.59	16.45	7.88	2.31	4.78
14	ROB	10028.91	10045.22	156.79	34.56	16.37	6.88	2.12	4.54
15	ROB	10045.22	10061.52	17.96	7.64	9.71	0.79	0.80	2.35

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9920.06	9950.25	68.85	20.34	20.67	3.02	1.00	3.38
2	LOB	9950.25	9980.44	514.68	79.25	30.29	22.57	2.63	6.49
3	Chan	9980.44	9985.04	159.64	17.74	4.70	7.00	3.86	9.00
4	Chan	9985.04	9989.63	230.77	22.09	4.67	10.12	4.81	10.45
5	Chan	9989.63	9994.23	266.39	23.92	4.60	11.68	5.21	11.14
6	Chan	9994.23	9998.82	279.08	24.60	4.60	12.24	5.35	11.34
7	Chan	9998.82	10003.42	291.99	25.28	4.60	12.81	5.50	11.55
8	Chan	10003.42	10008.01	239.96	22.79	4.77	10.52	4.96	10.53
9	Chan	10008.01	10012.61	160.45	17.79	4.69	7.04	3.87	9.02
10	ROB	10012.61	10028.91	68.20	13.03	7.01	2.99	2.97	5.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.625

INPUT
Description:
Station Elevation Data num= 76

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9813.63	2238	9814.05	2238.06	9815.8	2237.96	9821.87	2237.94	9828.5	2237.5
9831.6	2237.2	9834.64	2236	9836.42	2236.3	9838.99	2235.9	9857.64	2234.88
9867.8	2235.83	9870.08	2236	9871.34	2236.25	9875.86	2236.75	9877.5	2236.89
9878.8	2236.94	9881.73	2237	9884.16	2236.57	9892.87	2236.28	9899.37	2236.19
9902.96	2236.59	9904.11	2236.5	9905.28	2236.38	9906.78	2236.3	9909.12	2236.05
9911.74	2235.65	9915.64	2235.8	9918.81	2235.94	9920.06	2236	9922.31	2236.14
9926.15	2236.25	9933.2	2236.76	9933.6	2236.8	9934.53	2236.78	9937.12	2236.76
9938.35	2236.75	9939.19	2236.74	9942.99	2236.7	9952.02	2236.83	9953.13	2236.84
9954.63	2236.84	9958.62	2236.24	9959.91	2236	9966.83	2234.8	9969.31	2234.38
9971.92	2234	9977.04	2233.16	9980.53	2232.49	9983.12	2232	9985.8	2231.52
9988.53	2231.115	9988.63	2231.1	9992.35	2230.33	9996.75	2230.18	10006.11	2230.79
10010.89	2230.8	10013.59	2230.71	10025.87	2230.53	10029.87	2230	10030.75	2232.343
10033.38	2233.32	10035.33	2234	10041.24	2236.09	10043.73	2236.05	10048.58	2236
10050.14	2236	10054.33	2235.96	10055.79	2235.78	10057.83	2235.8	10066.61	2236
10071.35	2235.97	10071.98	2235.98	10072.29	2235.98	10073.16	2236	10094.73	2237
10095.12	2237.03								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9813.63	.06	9988.53	.05	10030.75	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.53	10030.75	81.85	82.55	82.49	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2236.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.75	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2234.88	Reach Len. (ft)	81.85	82.55	82.49
Crit W.S. (ft)	2234.88	Flow Area (sq ft)	41.29	182.15	8.86
E.G. Slope (ft/ft)	0.020988	Area (sq ft)	41.29	182.15	8.86
Q Total (cfs)	2280.00	Flow (cfs)	222.14	2022.35	35.51
Top Width (ft)	71.47	Top Width (ft)	22.18	42.22	7.07
Vel Total (ft/s)	9.81	Avg. Vel. (ft/s)	5.38	11.10	4.01
Max Chl Dpth (ft)	4.88	Hydr. Depth (ft)	1.86	4.31	1.25
Conv. Total (cfs)	15738.2	Conv. (cfs)	1533.4	13959.7	245.1
Length Wtd. (ft)	82.50	Wetted Per. (ft)	22.50	43.98	7.51
Min Ch El (ft)	2230.00	Shear (lb/sq ft)	2.40	5.43	1.55
Alpha	1.17	Stream Power (lb/ft s)	12.94	60.25	6.19
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	26.02	27.63	9.52
C & E Loss (ft)	0.03	Cum SA (acres)	19.56	6.38	6.41

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2236.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.73	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2234.90	Reach Len. (ft)	81.85	82.55	82.49
Crit W.S. (ft)	2234.90	Flow Area (sq ft)	41.60	182.75	8.96
E.G. Slope (ft/ft)	0.020733	Area (sq ft)	41.60	182.75	8.96
Q Total (cfs)	2280.00	Flow (cfs)	223.05	2021.04	35.92
Top Width (ft)	71.54	Top Width (ft)	22.25	42.22	7.07
Vel Total (ft/s)	9.77	Avg. Vel. (ft/s)	5.36	11.06	4.01
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)	1.87	4.33	1.27
Conv. Total (cfs)	15834.6	Conv. (cfs)	1549.1	14036.1	249.4
Length Wtd. (ft)	82.50	Wetted Per. (ft)	22.57	43.98	7.53
Min Ch El (ft)	2230.00	Shear (lb/sq ft)	2.39	5.38	1.54
Alpha	1.17	Stream Power (lb/ft s)	12.79	59.48	6.18
Frctn Loss (ft)	1.47	Cum Volume (acre-ft)	16.71	29.24	7.31
C & E Loss (ft)	0.02	Cum SA (acres)	8.92	6.38	3.54

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.55	9988.53	222.14	41.29	22.48	9.74	1.86	5.38
2	Chan	9988.53	9994.56	293.11	26.02	6.11	12.86	4.31	11.27
3	Chan	9994.56	10000.59	329.65	27.79	6.04	14.46	4.61	11.86
4	Chan	10000.59	10006.62	288.65	25.66	6.04	12.66	4.25	11.25
5	Chan	10006.62	10012.66	270.96	24.69	6.03	11.88	4.09	10.97
6	Chan	10012.66	10018.69	283.66	25.38	6.03	12.44	4.21	11.18
7	Chan	10018.69	10024.72	293.31	25.89	6.03	12.86	4.29	11.33
8	Chan	10024.72	10030.75	263.02	26.72	7.69	11.54	4.43	9.84
9	ROB	10030.75	10043.62	35.51	8.86	7.51	1.56	1.25	4.01

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.55	9988.53	223.04	41.60	22.57	9.78	1.87	5.36
2	Chan	9988.53	9994.56	292.92	26.10	6.11	12.85	4.33	11.22
3	Chan	9994.56	10000.59	329.33	27.87	6.04	14.44	4.62	11.82
4	Chan	10000.59	10006.62	288.48	25.75	6.04	12.65	4.27	11.20
5	Chan	10006.62	10012.66	270.86	24.78	6.03	11.88	4.11	10.93
6	Chan	10012.66	10018.69	283.51	25.46	6.03	12.43	4.22	11.13
7	Chan	10018.69	10024.72	293.13	25.98	6.03	12.86	4.31	11.28
8	Chan	10024.72	10030.75	262.81	26.81	7.69	11.53	4.45	9.80
9	ROB	10030.75	10043.62	35.92	8.96	7.53	1.58	1.27	4.01

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

program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: C8
REACH: Reach 1 RS: 1.609

INPUT
Description:
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9828.91	2235.1	9847.32	2234.93	9848.64	2234.78	9850.17	2234.52	9860.18	2233.17
9861.27	2232.2	9880.56	2232.93	9881.42	2232.93	9881.56	2232.94	9881.62	2232.94
9889.4	2233.6	9894.31	2233.41	9897.66	2233.45	9922.63	2233.6	9924.37	2233.61
9925.65	2233.6	9927.14	2233.61	9939.93	2233.64	9941.69	2233.59	9942.92	2233.45
9947.24	2233	9957.29	2233.58	9959.03	2233.67	9959.56	2233.66	9966.02	2233.46
9966.62	2233.5	9976.79	2233.13	9986.04	2229.45	9986.45	2229.29	9991.29	2227.4
9992.16	2227.07	9993.88	2226.4	9994.87	2226.21	10000.62	2225.81	10009.36	2226.74
10014.72	2227.61	10015.06	2227.71	10018.16	2228.55	10027.08	2231.02	10037.75	2232.69
10038.77	2232.85	10039.23	2232.91	10050.89	2233.08	10053.44	2232.89	10057.98	2232.6
10061.04	2232.75	10068.04	2233.21	10084.31	2233.72	10096.56	2234.12	10109.96	2234.81
10112.19	2234.91								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9828.91	.055	9986.45	.05	10018.16	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.45	10018.16	72.4	71.56	71.55	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2234.50	Element			
Vel Head (ft)	2.02	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2232.48	Reach Len. (ft)	72.40	71.56	71.55
Crit W.S. (ft)	2232.48	Flow Area (sq ft)	13.94	175.77	30.90
E.G. Slope (ft/ft)	0.016759	Area (sq ft)	13.94	175.77	30.90
Q Total (cfs)	2280.00	Flow (cfs)	59.47	2082.16	138.37
Top Width (ft)	65.80	Top Width (ft)	15.82	31.71	18.27
Vel Total (ft/s)	10.34	Avg. Vel. (ft/s)	4.27	11.85	4.48
Max Chl Dpth (ft)	6.68	Hydr. Depth (ft)	0.88	5.54	1.69
Conv. Total (cfs)	17612.1	Conv. (cfs)	459.4	16083.9	1068.9
Length Wtd. (ft)	71.58	Wetted Per. (ft)	16.55	32.53	18.72
Min Ch El (ft)	2225.80	Shear (lb/sq ft)	0.88	5.65	1.73
Alpha	1.22	Stream Power (lb/ft s)	3.76	66.96	7.74
Frctn Loss (ft)	1.22	Cum Volume (acre-ft)	25.96	27.30	9.48
C & E Loss (ft)	0.07	Cum SA (acres)	19.52	6.31	6.39

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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2234.60	Element			
Vel Head (ft)	1.96	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2232.64	Reach Len. (ft)	72.40	71.56	71.55
Crit W.S. (ft)		Flow Area (sq ft)	14.11	180.69	21.48
E.G. Slope (ft/ft)	0.015552	Area (sq ft)	14.11	180.69	21.48
Q Total (cfs)	2280.00	Flow (cfs)	63.87	2100.13	116.00
Top Width (ft)	46.97	Top Width (ft)	8.42	31.71	6.84
Vel Total (ft/s)	10.54	Avg. Vel. (ft/s)	4.53	11.62	5.40
Max Chl Dpth (ft)	6.84	Hydr. Depth (ft)	1.68	5.70	3.14
Conv. Total (cfs)	18282.9	Conv. (cfs)	512.1	16840.6	930.2
Length Wtd. (ft)	71.58	Wetted Per. (ft)	9.06	32.53	9.29
Min Ch El (ft)	2225.80	Shear (lb/sq ft)	1.51	5.39	2.24
Alpha	1.14	Stream Power (lb/ft s)	6.84	62.68	12.12
Frctn Loss (ft)	1.16	Cum Volume (acre-ft)	16.65	28.90	7.28
C & E Loss (ft)	0.01	Cum SA (acres)	8.90	6.31	3.52

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9860.42	9891.93	1.03	1.10	7.90	0.05	0.14	0.94
2	LOB	9891.93	9923.44						
3	LOB	9923.44	9954.94						
4	LOB	9954.94	9986.45	58.43	12.84	8.64	2.56	1.60	4.55
5	Chan	9986.45	9990.98	170.06	18.47	4.86	7.46	4.08	9.21

6	Chan	9990.98	9995.51	308.15	26.16	4.76	13.52	5.78	11.78
7	Chan	9995.51	10000.04	385.77	29.38	4.54	16.92	6.48	13.13
8	Chan	10000.04	10004.57	386.02	29.42	4.55	16.93	6.49	13.12
9	Chan	10004.57	10009.10	339.50	27.25	4.56	14.89	6.01	12.46
10	Chan	10009.10	10013.63	283.82	24.53	4.59	12.45	5.42	11.57
11	Chan	10013.63	10018.16	208.85	20.56	4.67	9.16	4.54	10.16
12	ROB	10018.16	10036.97	138.37	30.90	18.72	6.07	1.69	4.48

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.94	9986.45	63.87	14.11	9.06	2.80	1.68	4.53
2	Chan	9986.45	9990.98	174.48	19.17	4.86	7.65	4.23	9.10
3	Chan	9990.98	9995.51	310.49	26.86	4.76	13.62	5.93	11.56
4	Chan	9995.51	10000.04	386.85	30.08	4.54	16.97	6.64	12.86
5	Chan	10000.04	10004.57	387.08	30.13	4.55	16.98	6.65	12.85
6	Chan	10004.57	10009.10	341.49	27.95	4.56	14.98	6.17	12.22
7	Chan	10009.10	10013.63	286.80	25.24	4.59	12.58	5.57	11.36
8	Chan	10013.63	10018.16	212.94	21.26	4.67	9.34	4.69	10.02
9	ROB	10018.16	10036.97	116.00	21.48	9.29	5.09	3.14	5.40

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: C8
REACH: Reach 1 RS: 1.596

INPUT
Description:
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9835.08	2232.7	9851.06	2232.52	9868.24	2232.43	9871.73	2232.42	9872.92	2232.42
9880.38	2232.1	9890.29	2231.56	9894.29	2231.34	9898.58	2231.11	9900.72	2230.98
9904.83	2231.1	9936.38	2232	9942.03	2232.02	9956.53	2232.34	9962.93	2232.37
9964.29	2232.3	9967.2	2232.02	9979.89	2231.24	9982.27	2230.32	9987.58	2228.06
9994.7	2225.03	9998.94	2225.2	10008.58	2225.25	10014.45	2226.48	10017.85	2227.11
10017.91	2227.13	10021.21	2227.6	10022.97	2227.81	10026.77	2228.44	10031.16	2229.15
10032.58	2228.99	10035.48	2229.1	10044.76	2229.86	10050.79	2230.3	10056.35	2230.79
10064.12	2231.12	10078.71	2231.7	10081.57	2231.85	10089.36	2232.3	10097.59	2232.77
10100.53	2232.99	10125.49	2234.7	10133.73	2235.34	10142.95	2236.01	10149.22	2236.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9835.08	.055	9987.58	.05	10022.97	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.58	10022.97	104.71	114.78	102.68	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2232.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.78	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2231.09	Reach Len. (ft)	104.71	114.78	102.68
Crit W.S. (ft)	2231.09	Flow Area (sq ft)	11.18	178.05	55.32
E.G. Slope (ft/ft)	0.017296	Area (sq ft)	11.18	178.05	55.32
Q Total (cfs)	2280.00	Flow (cfs)	47.88	2010.91	221.20
Top Width (ft)	88.83	Top Width (ft)	12.96	35.39	40.48
Vel Total (ft/s)	9.32	Avg. Vel. (ft/s)	4.28	11.29	4.00
Max Chl Dpth (ft)	6.06	Hydr. Depth (ft)	0.86	5.03	1.37
Conv. Total (cfs)	17336.5	Conv. (cfs)	364.1	15290.4	1682.0
Length Wtd. (ft)	112.71	Wetted Per. (ft)	13.57	36.25	40.67
Min Ch El (ft)	2225.03	Shear (lb/sq ft)	0.89	5.30	1.47
Alpha	1.32	Stream Power (lb/ft s)	3.81	59.91	5.87
Frctn Loss (ft)	2.12	Cum Volume (acre-ft)	25.94	27.00	9.41
C & E Loss (ft)	0.08	Cum SA (acres)	19.50	6.26	6.34

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2233.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.03	Wt. n-Val.	0.055	0.050	0.060

W.S. Elev (ft)	2231.41	Reach Len. (ft)	104.71	114.78	102.68
Crit W.S. (ft)	2231.07	Flow Area (sq ft)	13.50	189.23	6.96
E.G. Slope (ft/ft)	0.016884	Area (sq ft)	13.50	189.23	6.96
Q Total (cfs)	2280.00	Flow (cfs)	54.13	2199.06	26.81
Top Width (ft)	47.83	Top Width (ft)	10.42	35.39	2.03
Vel Total (ft/s)	10.87	Avg. Vel. (ft/s)	4.01	11.62	3.85
Max Chl Dpth (ft)	6.38	Hydr. Depth (ft)	1.30	5.35	3.43
Conv. Total (cfs)	17546.8	Conv. (cfs)	416.6	16923.9	206.3
Length Wtd. (ft)	114.24	Wetted Per. (ft)	11.05	36.25	5.32
Min Ch El (ft)	2225.03	Shear (lb/sq ft)	1.29	5.50	1.38
Alpha	1.11	Stream Power (lb/ft s)	5.16	63.95	5.31
Frctn Loss (ft)	1.95	Cum Volume (acre-ft)	16.63	28.60	7.25
C & E Loss (ft)	0.07	Cum SA (acres)	8.88	6.26	3.52

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9896.08	9926.58	0.16	0.32	5.66	0.01	0.06	0.52
2	LOB	9926.58	9957.08						
3	LOB	9957.08	9987.58	47.72	10.87	7.91	2.09	1.49	4.39
4	Chan	9987.58	9992.64	193.08	20.76	5.49	8.47	4.11	9.30
5	Chan	9992.64	9997.69	359.10	29.56	5.24	15.75	5.85	12.15
6	Chan	9997.69	10002.75	372.18	29.78	5.06	16.32	5.89	12.50
7	Chan	10002.75	10007.80	368.91	29.62	5.06	16.18	5.86	12.45
8	Chan	10007.80	10012.86	324.32	27.62	5.15	14.22	5.46	11.74
9	Chan	10012.86	10017.91	229.86	22.47	5.15	10.08	4.44	10.23
10	Chan	10017.91	10022.97	163.46	18.24	5.10	7.17	3.61	8.96
11	ROB	10022.97	10048.22	211.25	48.94	25.41	9.27	1.94	4.32
12	ROB	10048.22	10073.47	9.96	6.38	15.26	0.44	0.42	1.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.08	9987.58	54.13	13.50	11.05	2.37	1.30	4.01
2	Chan	9987.58	9992.64	216.29	22.36	5.49	9.49	4.42	9.67
3	Chan	9992.64	9997.69	388.13	31.16	5.24	17.02	6.16	12.46
4	Chan	9997.69	10002.75	402.02	31.38	5.06	17.63	6.21	12.81
5	Chan	10002.75	10007.80	398.67	31.22	5.06	17.49	6.17	12.77
6	Chan	10007.80	10012.86	352.64	29.21	5.15	15.47	5.78	12.07
7	Chan	10012.86	10017.91	255.17	24.06	5.15	11.19	4.76	10.60
8	Chan	10017.91	10022.97	186.14	19.84	5.10	8.16	3.92	9.38
9	ROB	10022.97	10048.22	26.81	6.96	5.32	1.18	3.43	3.85

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: C8
REACH: Reach 1 RS: 1.574

INPUT
Description:
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9666.102	2232.189668.282	2232.039681.442	2231.149689.702	2231.119694.852	2231.06				
9698.872	2230.989704.362	2230.839706.612	2230.829708.342	2230.729716.462	2230.64				
9720.662	2230.719733.812	2230.779740.132	2230.839742.222	2230.859748.572	2230.84				
9749.802	2230.859751.712	2230.99752.032	2230.99761.462	2230.929766.142	2230.93				
9766.302	2230.939770.062	2230.869776.992	2230.839781.132	2230.89791.492	2230.79				
9795.422	2230.89801.762	2230.779804.892	2230.719807.292	2230.659808.502	2230.63				
9811.512	2230.69816.932	2230.539824.002	2230.619837.312	2230.449845.602	2230.38				
9849.712	2230.329852.132	2230.299856.222	2230.239871.822	2230.229872.602	2230.25				
9873.082	2230.279874.922	2230.19878.242	2229.979889.192	2229.969898.292	2229.96				
9907.332	2229.519922.542	2228.619927.632	2228.079929.172	2227.939937.082	2228.51				
9940.792	2228.749946.732	2229.019951.382	2229.199964.162	2229.479967.462	2229.53				
9973.882	2229.659979.662	2229.089983.322	2228.789985.792	2227.85 9990.462	2226.073				
9996.402	2223.8110009.33	2224.0710015.08	2224.18 10020.9	2225.7510021.44	2225.9				
10022.14	2225.9110029.95	2226.1910035.53	2225.5310040.84	2225.0110046.51	2226.13				
10046.96	2226.2110048.04	2226.4110057.06	2228.2410062.02	2229.25 10075.6	2230.39				
10087.59	2231.3910116.24	2233.7410130.43	2234.5210139.73	2235.0510140.19	2235.09				
10160.17	2236								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9666.102	.055	9990.46	.0510029.95		.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.46	10029.95	131.85	114.63	106.54	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2230.37	Element			
Vel Head (ft)	1.52	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2228.85	Reach Len. (ft)	131.85	114.63	106.54
Crit W.S. (ft)	2228.85	Flow Area (sq ft)	20.54	162.08	72.93
E.G. Slope (ft/ft)	0.020549	Area (sq ft)	20.54	162.08	72.93
Q Total (cfs)	2280.00	Flow (cfs)	66.82	1750.70	462.47
Top Width (ft)	102.36	Top Width (ft)	32.76	39.49	30.11
Vel Total (ft/s)	8.92	Avg. Vel. (ft/s)	3.25	10.80	6.34
Max Chl Dpth (ft)	5.04	Hydr. Depth (ft)	0.63	4.10	2.42
Conv. Total (cfs)	15905.1	Conv. (cfs)	466.2	12212.8	3226.2
Length Wtd. (ft)	115.16	Wetted Per. (ft)	33.33	40.14	30.55
Min Ch El (ft)	2223.81	Shear (lb/sq ft)	0.79	5.18	3.06
Alpha	1.23	Stream Power (lb/ft s)	2.57	55.95	19.42
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	25.90	26.56	9.26
C & E Loss (ft)	0.10	Cum SA (acres)	19.44	6.16	6.26

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2231.42	Element			
Vel Head (ft)	1.81	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2229.61	Reach Len. (ft)	131.85	114.63	106.54
Crit W.S. (ft)	2229.61	Flow Area (sq ft)	31.00	192.03	10.98
E.G. Slope (ft/ft)	0.017344	Area (sq ft)	31.00	192.03	10.98
Q Total (cfs)	2280.00	Flow (cfs)	97.22	2133.75	49.03
Top Width (ft)	90.42	Top Width (ft)	47.88	39.49	3.05
Vel Total (ft/s)	9.74	Avg. Vel. (ft/s)	3.14	11.11	4.47
Max Chl Dpth (ft)	5.80	Hydr. Depth (ft)	0.65	4.86	3.60
Conv. Total (cfs)	17312.5	Conv. (cfs)	738.2	16202.0	372.3
Length Wtd. (ft)	116.57	Wetted Per. (ft)	49.35	40.14	6.85
Min Ch El (ft)	2223.81	Shear (lb/sq ft)	0.68	5.18	1.74
Alpha	1.23	Stream Power (lb/ft s)	2.13	57.55	7.75
Frctn Loss (ft)	1.87	Cum Volume (acre-ft)	16.58	28.09	7.23
C & E Loss (ft)	0.12	Cum SA (acres)	8.81	6.16	3.51

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9860.72	9925.59	2.81	1.72	7.14	0.12	0.24	1.64
2	LOB	9925.59	9990.46	64.02	18.82	26.19	2.81	0.73	3.40
3	Chan	9990.46	9996.10	212.36	21.73	6.04	9.31	3.85	9.77
4	Chan	9996.10	10001.74	340.76	28.13	5.66	14.95	4.99	12.11
5	Chan	10001.74	10007.38	329.10	27.51	5.64	14.43	4.88	11.96
6	Chan	10007.38	10013.03	316.53	26.87	5.64	13.88	4.76	11.78
7	Chan	10013.03	10018.67	270.12	24.66	5.77	11.85	4.37	10.96
8	Chan	10018.67	10024.31	154.28	17.59	5.74	6.77	3.12	8.77
9	Chan	10024.31	10029.95	127.56	15.58	5.65	5.59	2.76	8.19
10	ROB	10029.95	10055.99	459.40	71.25	26.41	20.15	2.74	6.45
11	ROB	10055.99	10082.04	3.07	1.68	4.15	0.13	0.41	1.82

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9925.59	9990.46	97.22	31.00	49.35	4.26	0.65	3.14
2	Chan	9990.46	9996.10	264.99	26.01	6.04	11.62	4.61	10.19
3	Chan	9996.10	10001.74	399.00	32.41	5.66	17.50	5.75	12.31
4	Chan	10001.74	10007.38	387.27	31.79	5.64	16.99	5.64	12.18
5	Chan	10007.38	10013.03	374.45	31.15	5.64	16.42	5.52	12.02

6	Chan	10013.03	10018.67	326.16	28.94	5.77	14.31	5.13	11.27
7	Chan	10018.67	10024.31	205.12	21.87	5.74	9.00	3.88	9.38
8	Chan	10024.31	10029.95	176.76	19.86	5.65	7.75	3.52	8.90
9	ROB	10029.95	10055.99	49.03	10.98	6.85	2.15	3.60	4.47

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: C8
REACH: Reach 1 RS: 1.552

INPUT
Description:
Station Elevation Data num= 80

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9615.42	2229.2	9619.3	2229.19	9621.26	2229.06	9622.88	2228.93	9635.14	2228.84
9656.4	2228.6	9658.13	2228.59	9667.43	2228.56	9668.63	2228.59	9677.31	2228.77
9678.09	2228.8	9681.92	2228.78	9689.01	2228.7	9691.29	2228.61	9692.88	2228.54
9696.25	2228.4	9697.92	2228.37	9700.28	2228.33	9736.52	2227.77	9742.21	2227.67
9744.95	2227.6	9755.14	2227.51	9762.28	2227.42	9766.28	2227.39	9778.23	2227.31
9799.09	2227.3	9801.1	2227.34	9802.05	2227.34	9802.95	2227.33	9816.32	2227.36
9833.78	2227.4	9838.17	2227.52	9841.34	2227.57	9844.08	2227.63	9848.32	2227.75
9848.71	2227.8	9852.74	2227.83	9859.07	2227.77	9862.79	2227.73	9868.1	2227.72
9868.93	2227.7	9871.45	2227.76	9873.69	2227.75	9874.48	2227.73	9908.64	2226.73
9916.38	2226.5	9920.35	2226.28	9934.27	2225.37	9936.42	2225.45	9940.84	2225.69
9948.91	2225.9	9949.44	2225.97	9956.29	2225.84	9956.61	2225.84	9956.71	2225.84
9957.63	2225.8	9958.91	2225.84	9969.94	2225.82	9986.39	2225.87	9987.7	2225.45
9992.95	2223.494	9998.3	2221.51	10008.02	2221.27	10008.45	2221.26	10009.04	2221.29
10009.43	2221.32	10010.47	2221.41	10024.18	2222.24	100252	2222.41	210025.04	2222.42
10029.8	2223.41	10030.35	2223.52	10041.6	2228.41	10042.88	2229.02	10044.01	2229.12
10044.35	2229.15	10059	2230.66	10068.54	2231.51	10075.87	2232.11	10082.94	2232.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9615.42	.055	9992.95	.05	10025	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.95	10025	91.63	84.58	86.15	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2228.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.19	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2227.17	Reach Len. (ft)	91.63	84.58	86.15
Crit W.S. (ft)	2227.17	Flow Area (sq ft)	116.74	172.83	37.84
E.G. Slope (ft/ft)	0.011868	Area (sq ft)	116.74	172.83	37.84
Q Total (cfs)	2280.00	Flow (cfs)	381.55	1706.13	192.32
Top Width (ft)	145.08	Top Width (ft)	99.27	32.05	13.76
Vel Total (ft/s)	6.96	Avg. Vel. (ft/s)	3.27	9.87	5.08
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)	1.18	5.39	2.75
Conv. Total (cfs)	20929.3	Conv. (cfs)	3502.4	15661.4	1765.4
Length Wtd. (ft)	85.82	Wetted Per. (ft)	99.75	32.46	14.63
Min Ch El (ft)	2221.26	Shear (lb/sq ft)	0.87	3.94	1.92
Alpha	1.59	Stream Power (lb/ft s)	2.83	38.94	9.74
Frctn Loss (ft)	1.25	Cum Volume (acre-ft)	25.70	26.12	9.12
C & E Loss (ft)	0.05	Cum SA (acres)	19.24	6.06	6.21

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2228.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.	0.055	0.050	
W.S. Elev (ft)	2227.36	Reach Len. (ft)	91.63	84.58	86.15
Crit W.S. (ft)	2227.36	Flow Area (sq ft)	96.95	178.83	
E.G. Slope (ft/ft)	0.014903	Area (sq ft)	96.95	178.83	
Q Total (cfs)	2280.00	Flow (cfs)	438.62	1841.38	
Top Width (ft)	90.00	Top Width (ft)	57.95	32.05	
Vel Total (ft/s)	8.27	Avg. Vel. (ft/s)	4.52	10.30	
Max Chl Dpth (ft)	6.10	Hydr. Depth (ft)	1.67	5.58	
Conv. Total (cfs)	18676.3	Conv. (cfs)	3592.9	15083.4	
Length Wtd. (ft)	85.90	Wetted Per. (ft)	60.34	37.40	
Min Ch El (ft)	2221.26	Shear (lb/sq ft)	1.49	4.45	
Alpha	1.31	Stream Power (lb/ft s)	6.76	45.80	
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	16.38	27.61	7.22
C & E Loss (ft)	0.01	Cum SA (acres)	8.65	6.06	3.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9841.94	9917.44	11.09	8.30	23.78	0.49	0.35	1.34
2	LOB	9917.44	9992.95	370.46	108.44	75.98	16.25	1.44	3.42
3	Chan	9992.95	9997.53	174.86	20.73	4.89	7.67	4.53	8.44
4	Chan	9997.53	10002.11	264.62	26.01	4.63	11.61	5.68	10.17
5	Chan	10002.11	10006.69	276.88	26.61	4.58	12.14	5.81	10.41
6	Chan	10006.69	10011.26	279.15	26.76	4.59	12.24	5.84	10.43
7	Chan	10011.26	10015.84	258.33	25.54	4.59	11.33	5.58	10.11
8	Chan	10015.84	10020.42	237.10	24.26	4.59	10.40	5.30	9.77
9	Chan	10020.42	10025.00	215.21	22.92	4.60	9.44	5.01	9.39
10	ROB	10025.00	10036.59	190.86	36.81	12.26	8.37	3.18	5.18
11	ROB	10036.59	10048.18	1.46	1.02	2.37	0.06	0.47	1.42

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9917.44	9992.95	438.62	96.95	60.34	19.24	1.67	4.52
2	Chan	9992.95	9997.53	200.59	21.58	4.89	8.80	4.71	9.29
3	Chan	9997.53	10002.11	299.49	26.87	4.63	13.14	5.87	11.14
4	Chan	10002.11	10006.69	312.98	27.47	4.58	13.73	6.00	11.40
5	Chan	10006.69	10011.26	315.46	27.61	4.59	13.84	6.03	11.42
6	Chan	10011.26	10015.84	292.65	26.40	4.59	12.84	5.77	11.09
7	Chan	10015.84	10020.42	269.37	25.12	4.59	11.81	5.49	10.72
8	Chan	10020.42	10025.00	150.84	23.78	9.55	6.62	5.19	6.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.536

INPUT
Description:
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9572.79	2227.8	9574.37	2227.74	9577.06	2227.71	9583.54	2227.59	9590.2	2227.43
9596.54	2227.2	9597.27	2227.23	9600.48	2227.15	9604.48	2227.12	9607.59	2227.08
9609.59	2227.1	9623.7	2227.32	9626.78	2227.23	9628.54	2227.27	9636.07	2227.23
9644.42	2227.1	9647.63	2227.06	9664.25	2226.95	9675.73	2227	9678.59	2227
9680.39	2227.1	9682.48	2226.99	9690.45	2226.61	9691.86	2226.6	9695.57	2226.49
9695.65	2226.5	9696.03	2226.49	9706.65	2226.46	9710.86	2226.33	9730.48	2225.84
9739.5	2225.5	9743.06	2225.37	9744.54	2225.3	9748.16	2225.16	9753.24	2224.74
9764.27	2223.8	9767.63	2224.26	9772.13	2224.87	9784.53	2225.16	9791.46	2225.38
9800.8	2225.6	9803.38	2225.69	9806.16	2225.74	9816.11	2225.96	9819.86	2226.05
9826.52	2225.8	9828.93	2225.69	9836.41	2225.78	9849.33	2225.87	9852.51	2225.88
9853.78	2225.9	9857.49	2225.78	9859.94	2225.82	9865.59	2225.76	9867.64	2225.77
9868.3	2225.8	9870.18	2225.72	9894.81	2225.57	9947.67	2225.3	9959.71	2223.99
9962.42	2223.7	9963.39	2223.65	9969.58	2223.46	9984.07	2223.01	9988.16	2222.86
9990.78	2222.1	9994.34	2221.06	9995.53	2220.73	9996.19	2220.55	9998.16	2220.04
10000.02	222	10013.15	2220.14	10019.16	2220.41	10019.29	2220.39	10019.76	2220.53
10024.95	222	10038.16	2227.37	10041.07	2228.63	10043.15	2228.84	10047.87	2229.28
10056.68	2230.11	10060.25	2230.38	10067.79	2230.64	10079.47	2231.12		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9572.79	.055	9990.78	.051	10024.95	.06

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

9990.78 10024.95 100.96 103.09 100.96 .1 .3

Left Levee Station= 9819.86 Elevation= 2226.05

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2227.00	Element			
Vel Head (ft)	1.70	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2225.29	Reach Len. (ft)	100.96	103.09	100.96
Crit W.S. (ft)	2225.29	Flow Area (sq ft)	70.91	163.77	13.34
E.G. Slope (ft/ft)	0.018419	Area (sq ft)	70.91	163.77	13.34
Q Total (cfs)	2280.00	Flow (cfs)	361.46	1859.12	59.42
Top Width (ft)	85.32	Top Width (ft)	43.05	34.17	8.10
Vel Total (ft/s)	9.19	Avg. Vel. (ft/s)	5.10	11.35	4.45
Max Chl Dpth (ft)	5.29	Hydr. Depth (ft)	1.65	4.79	1.65
Conv. Total (cfs)	16799.6	Conv. (cfs)	2663.3	13698.4	437.8
Length Wtd. (ft)	102.55	Wetted Per. (ft)	43.26	34.68	8.75
Min Ch El (ft)	2220.00	Shear (lb/sq ft)	1.88	5.43	1.75
Alpha	1.30	Stream Power (lb/ft s)	9.61	61.64	7.81
Frctn Loss (ft)	1.37	Cum Volume (acre-ft)	25.50	25.79	9.07
C & E Loss (ft)	0.24	Cum SA (acres)	19.09	6.00	6.18

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

Warning: The 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.

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2226.97	Element			
Vel Head (ft)	1.46	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2225.52	Reach Len. (ft)	100.96	103.09	100.96
Crit W.S. (ft)	2225.52	Flow Area (sq ft)	80.47	171.36	15.14
E.G. Slope (ft/ft)	0.015055	Area (sq ft)	80.47	171.36	15.14
Q Total (cfs)	2280.00	Flow (cfs)	402.13	1812.63	65.24
Top Width (ft)	85.32	Top Width (ft)	43.05	34.17	8.10
Vel Total (ft/s)	8.54	Avg. Vel. (ft/s)	5.00	10.58	4.31
Max Chl Dpth (ft)	5.52	Hydr. Depth (ft)	1.87	5.02	1.87
Conv. Total (cfs)	18582.0	Conv. (cfs)	3277.4	14773.0	531.7
Length Wtd. (ft)		Wetted Per. (ft)	43.48	34.68	8.97
Min Ch El (ft)	2220.00	Shear (lb/sq ft)	1.74	4.64	1.59
Alpha	1.29	Stream Power (lb/ft s)	8.69	49.12	6.84
Frctn Loss (ft)		Cum Volume (acre-ft)	16.20	27.27	7.20
C & E Loss (ft)		Cum SA (acres)	8.54	6.00	3.50

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 cross section had to be extended vertically during the critical depth calculations.

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

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9905.32	9990.78	361.46	70.91	43.26	15.85	1.65	5.10
2	Chan	9990.78	9995.66	183.86	19.06	5.08	8.06	3.90	9.65
3	Chan	9995.66	10000.54	291.28	24.89	4.97	12.78	5.10	11.70
4	Chan	10000.54	10005.42	310.52	25.69	4.88	13.62	5.26	12.09
5	Chan	10005.42	10010.31	305.36	25.43	4.88	13.39	5.21	12.01
6	Chan	10010.31	10015.19	298.95	25.11	4.88	13.11	5.14	11.90
7	Chan	10015.19	10020.07	278.72	24.14	4.92	12.22	4.95	11.54
8	Chan	10020.07	10024.95	190.42	19.45	5.07	8.35	3.98	9.79
9	ROB	10024.95	10035.85	59.42	13.34	8.75	2.61	1.65	4.45

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

Warning: The 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.

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9905.32	9990.78	402.13	80.47	43.48	17.64	1.87	5.00
2	Chan	9990.78	9995.66	182.42	20.14	5.08	8.00	4.13	9.06
3	Chan	9995.66	10000.54	282.94	25.97	4.97	12.41	5.32	10.89
4	Chan	10000.54	10005.42	300.98	26.77	4.88	13.20	5.48	11.24
5	Chan	10005.42	10010.31	296.18	26.51	4.88	12.99	5.43	11.17
6	Chan	10010.31	10015.19	290.21	26.20	4.88	12.73	5.37	11.08
7	Chan	10015.19	10020.07	271.32	25.23	4.92	11.90	5.17	10.75
8	Chan	10020.07	10024.95	188.58	20.54	5.07	8.27	4.21	9.18
9	ROB	10024.95	10035.85	65.24	15.14	8.97	2.86	1.87	4.31

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

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 1.517

INPUT
Description:
Station Elevation Data num= 91

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9520.87	2225.7	9539.27	2224.85	9548.78	2224.59	9550.26	2224.54	9551.25	2224.49
9555.04	2224.6	9575.12	2224.88	9576.59	2224.9	9577.53	2224.93	9578.87	2224.93
9580.31	2224.9	9581.47	2224.94	9582.38	2224.94	9583.65	2224.94	9584.69	2224.95
9585.87	2224.9	9594.45	2224.87	9624.3	2224.44	9626.26	2224.45	9628.91	2224.43
9631.66	2224.5	9633.92	2224.41	9654.98	2224.21	9672.13	2223.73	9678.46	2223.66
9685.28	2223.3	9688.27	2223.22	9692.13	2223.12	9720.57	2222.36	9727.35	2222.19
9728.45	2222.2	9729.76	2222.09	9731.12	2222.01	9749.71	2220.91	9762.71	2221.48
9765.26	2221.6	9769.89	2221.69	9774.78	2221.89	9777.66	2222.15	9780.25	2222.21
9783.96	2222.7	9794.06	2222.67	9802.7	2222.92	9805.53	2223.15	9806.65	2223.14
9814.02	2223.2	9814.6	2223.21	9818.21	2223.23	9818.76	2223.24	9819.08	2223.23
9819.46	2223.2	9829.29	2223.14	9831.15	2223.13	9837.25	2223.01	9844.12	2223.07
9845.75	2223.1	9851.38	2223.17	9914.32	2222.89	9916.23	2222.88	9916.66	2222.92
9921.04	2223.2	9922.33	2223.36	9929.51	2223.65	9931.93	2223.65	9935.35	2223.56
9936.94	2223.5	9937.6	2223.47	9942.09	2222.98	9951.81	2222	9963.17	2221.67
9975.76	2221.2	9980.79	2219.43	9981.94	2219.08	9982.31	2218.96	9982.49	2218.89
9982.81	2218.7	9984.55	2218.67	10001.8	2217.86	10007.82	2220.62	10016.5	2224.6
10017.23	2224.92	10024.03	2225.71	10035.54	2226.94	10040.39	2227.09	10042.46	2227.18
10044.99	2227.28	10056.07	2227.81	10061.52	2228.11	10063.05	2228.14	10067.74	2228.29
10070.11	2228.32								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9520.87	.055	9975.76	.05	10007.82	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.76	10007.82	154.97	150.76	151.13	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
9520.87	9829.29		F

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2225.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2224.22	Reach Len. (ft)	154.97	150.76	151.13
Crit W.S. (ft)	2224.22	Flow Area (sq ft)	203.09	172.31	14.13
E.G. Slope (ft/ft)	0.010107	Area (sq ft)	481.20	172.31	14.13
Q Total (cfs)	2280.00	Flow (cfs)	685.50	1545.65	48.86
Top Width (ft)	361.77	Top Width (ft)	321.86	32.06	7.85
Vel Total (ft/s)	5.85	Avg. Vel. (ft/s)	3.38	8.97	3.46
Max Chl Dpth (ft)	6.36	Hydr. Depth (ft)	1.39	5.37	1.80
Conv. Total (cfs)	22678.9	Conv. (cfs)	6818.5	15374.4	486.0
Length Wtd. (ft)	152.59	Wetted Per. (ft)	146.59	33.12	8.64
Min Ch El (ft)	2217.86	Shear (lb/sq ft)	0.87	3.28	1.03
Alpha	1.70	Stream Power (lb/ft s)	2.95	29.45	3.57
Frctn Loss (ft)	1.86	Cum Volume (acre-ft)	24.86	25.39	9.04
C & E Loss (ft)	0.06	Cum SA (acres)	18.67	5.92	6.17

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2225.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.22	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2224.24	Reach Len. (ft)	154.97	150.76	151.13
Crit W.S. (ft)	2224.24	Flow Area (sq ft)	123.12	172.93	14.28
E.G. Slope (ft/ft)	0.012367	Area (sq ft)	123.12	172.93	14.28

Q Total (cfs)	2280.00	Flow (cfs)	505.09	1719.98	54.94
Top Width (ft)	115.67	Top Width (ft)	75.76	32.06	7.85
Vel Total (ft/s)	7.35	Avg. Vel. (ft/s)	4.10	9.95	3.85
Max Chl Dpth (ft)	6.38	Hydr. Depth (ft)	1.63	5.39	1.82
Conv. Total (cfs)	20502.3	Conv. (cfs)	4541.8	15466.5	494.0
Length Wtd. (ft)	152.17	Wetted Per. (ft)	77.16	33.12	8.66
Min Ch El (ft)	2217.86	Shear (lb/sq ft)	1.23	4.03	1.27
Alpha	1.46	Stream Power (lb/ft s)	5.05	40.09	4.90
Frctn Loss (ft)	2.26	Cum Volume (acre-ft)	15.96	26.86	7.17
C & E Loss (ft)	0.02	Cum SA (acres)	8.41	5.92	3.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9623.68	9726.48	0.00	73.13	72.61	0.00	1.01	0.00
2	LOB	9726.48	9829.29	0.00	204.99	102.93	0.00	1.99	0.00
3	LOB	9829.29	9902.53	249.36	84.64	73.24	10.94	1.16	2.95
4	LOB	9902.53	9975.76	436.13	118.45	73.35	19.13	1.62	3.68
5	Chan	9975.76	9980.34	121.12	17.52	4.86	5.31	3.83	6.91
6	Chan	9980.34	9984.92	209.67	24.13	4.74	9.20	5.27	8.69
7	Chan	9984.92	9989.50	242.76	25.99	4.59	10.65	5.68	9.34
8	Chan	9989.50	9994.08	258.29	26.98	4.59	11.33	5.89	9.57
9	Chan	9994.08	9998.66	274.19	27.96	4.59	12.03	6.11	9.81
10	Chan	9998.66	10003.24	276.06	28.42	4.73	12.11	6.21	9.71
11	Chan	10003.24	10007.82	163.55	21.30	5.04	7.17	4.65	7.68
12	ROB	10007.82	10020.28	48.86	14.13	8.64	2.14	1.80	3.46

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9829.29	9902.53	8.77	3.26	3.81	0.38	1.29	2.69
2	LOB	9902.53	9975.76	496.31	119.86	73.35	21.77	1.64	4.14
3	Chan	9975.76	9980.34	135.12	17.61	4.86	5.93	3.85	7.67
4	Chan	9980.34	9984.92	233.37	24.22	4.74	10.24	5.29	9.64
5	Chan	9984.92	9989.50	270.09	26.08	4.59	11.85	5.69	10.36
6	Chan	9989.50	9994.08	287.30	27.07	4.59	12.60	5.91	10.61
7	Chan	9994.08	9998.66	304.93	28.05	4.59	13.37	6.12	10.87
8	Chan	9998.66	10003.24	306.98	28.51	4.73	13.46	6.23	10.77
9	Chan	10003.24	10007.82	182.19	21.39	5.04	7.99	4.67	8.52
10	ROB	10007.82	10020.28	54.94	14.28	8.66	2.41	1.82	3.85

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need ft 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: C8
REACH: Reach 1 RS: 1.488

INPUT
Description:
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9500.93	2222.9	9504.25	2222.72	9505.36	2222.67	9512.34	2222.41	9517.27	2222.22
9520.05	2222.1	9524.41	2221.94	9525.25	2221.89	9532.37	2221.57	9535.14	2221.57
9538.18	2221.4	9547.43	2220.9	9552.25	2220.71	9571.43	2220.63	9579.34	2220.54
9581.38	2220.5	9587.43	2220.55	9593.93	2220.56	9596	2220.56	9597.01	2220.57
9599.68	2220.6	9601.86	2220.54	9612.72	2220.4	9621.44	2220.33	9622.88	2220.33
9623.47	2220.3	9624.26	2220.36	9626.33	2220.25	9626.93	2220.18	9648.01	2219.68
9694.81	2218.8	9695.47	2218.73	9698.32	2218.68	9710.75	2218.3	9715.5	2218.3
9733.58	2218.2	9775.13	2218.56	9776.72	2218.57	9779.25	2218.59	9799.78	2219.28
9825.76	2220.1	9826.43	2220.08	9842.53	2219.59	9880.5	2218.65	9915.84	2219.1
9944.25	2219.4	9958.98	2218.31	9968.62	2217.56	9977.14	2217.68	9983.41	2217.75
9988.34	2216.9	10000.89	2214.91	10009.4	2217.62	10011.66	2218.34	10022.38	2221.8
10038.66	2222.65	10038.82	2222.71	10052.42	2223.19	10053.19	2223.22	10053.2	2223.22
10061.27	2223.5	10067.5	2223.52	10070.39	2223.51	10070.76	2223.45	10073.3	2223.19
10074.92	2223	10082.78	2223.51	10093.07	2224.12				

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
 9500.93    .055 9983.41     .05 10009.4     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9983.41 10009.4           333.41  308.72  307.05              .1       .3
Ineffective Flow      num=        1
   Sta L   Sta R    Elev  Permanent
 9500.93 9710.76                F
Blocked Obstructions      num=        2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
 9727.79 9766.92    2224 9927.04 9943.43    2224
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2221.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2220.32	Reach Len. (ft)	333.41	308.72	307.05
Crit W.S. (ft)	2220.32	Flow Area (sq ft)	304.25	104.74	11.38
E.G. Slope (ft/ft)	0.014982	Area (sq ft)	391.70	104.74	11.38
Q Total (cfs)	2280.00	Flow (cfs)	1290.13	949.02	40.86
Top Width (ft)	338.03	Top Width (ft)	303.64	25.99	8.40
Vel Total (ft/s)	5.42	Avg. Vel. (ft/s)	4.24	9.06	3.59
Max Chl Dpth (ft)	5.41	Hydr. Depth (ft)	1.40	4.03	1.35
Conv. Total (cfs)	18627.3	Conv. (cfs)	10540.2	7753.4	333.8
Length Wtd. (ft)	323.15	Wetted Per. (ft)	223.21	26.64	8.82
Min Ch El (ft)	2214.91	Shear (lb/sq ft)	1.27	3.68	1.21
Alpha	1.52	Stream Power (lb/ft s)	5.41	33.32	4.33
Frctn Loss (ft)	4.05	Cum Volume (acre-ft)	23.31	24.91	9.00
C & E Loss (ft)	0.07	Cum SA (acres)	17.56	5.82	6.14

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2221.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2220.69	Reach Len. (ft)	333.41	308.72	307.05
Crit W.S. (ft)	2220.69	Flow Area (sq ft)	171.65	114.29	14.46
E.G. Slope (ft/ft)	0.018140	Area (sq ft)	171.65	114.29	14.46
Q Total (cfs)	2280.00	Flow (cfs)	1007.00	1207.73	65.27
Top Width (ft)	116.41	Top Width (ft)	82.02	25.99	8.40
Vel Total (ft/s)	7.59	Avg. Vel. (ft/s)	5.87	10.57	4.51
Max Chl Dpth (ft)	5.78	Hydr. Depth (ft)	2.09	4.40	1.72
Conv. Total (cfs)	16928.3	Conv. (cfs)	7476.7	8967.1	484.6
Length Wtd. (ft)	319.72	Wetted Per. (ft)	86.85	26.64	9.19
Min Ch El (ft)	2214.91	Shear (lb/sq ft)	2.24	4.86	1.78
Alpha	1.30	Stream Power (lb/ft s)	13.13	51.34	8.04
Frctn Loss (ft)	4.58	Cum Volume (acre-ft)	15.44	26.36	7.12
C & E Loss (ft)	0.11	Cum SA (acres)	8.13	5.82	3.45

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9605.85	9710.76	0.00	87.45	86.54	0.00	1.01	0.00
2	LOB	9710.76	9801.64	391.90	87.17	55.69	17.19	1.68	4.50
3	LOB	9801.64	9892.53	283.65	87.35	90.92	12.44	0.96	3.25
4	LOB	9892.53	9983.41	614.57	129.72	76.60	26.95	1.74	4.74
5	Chan	9983.41	9987.12	76.94	10.74	3.77	3.37	2.89	7.17
6	Chan	9987.12	9990.84	106.90	13.07	3.76	4.69	3.52	8.18
7	Chan	9990.84	9994.55	138.54	15.27	3.76	6.08	4.11	9.07
8	Chan	9994.55	9998.26	173.15	17.45	3.76	7.59	4.70	9.92
9	Chan	9998.26	10001.97	204.33	19.36	3.80	8.96	5.21	10.55
10	Chan	10001.97	10005.69	155.76	16.62	3.90	6.83	4.48	9.37
11	Chan	10005.69	10009.40	93.41	12.23	3.90	4.10	3.29	7.64
12	ROB	10009.40	10026.13	40.86	11.38	8.82	1.79	1.35	3.59

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9801.64	9892.53	71.77	14.56	9.51	3.15	1.93	4.93
2	LOB	9892.53	9983.41	935.22	157.09	77.34	41.02	2.11	5.95
3	Chan	9983.41	9987.12	103.67	12.10	3.77	4.55	3.26	8.57
4	Chan	9987.12	9990.84	139.23	14.44	3.76	6.11	3.89	9.64
5	Chan	9990.84	9994.55	176.38	16.63	3.76	7.74	4.48	10.60
6	Chan	9994.55	9998.26	216.69	18.82	3.76	9.50	5.07	11.51
7	Chan	9998.26	10001.97	252.67	20.72	3.80	11.08	5.58	12.19
8	Chan	10001.97	10005.69	196.10	17.98	3.90	8.60	4.84	10.91
9	Chan	10005.69	10009.40	122.99	13.59	3.90	5.39	3.66	9.05
10	ROB	10009.40	10026.13	65.27	14.46	9.19	2.86	1.72	4.51

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: C8
REACH: Reach 1 RS: 1.430

INPUT
Description:
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9531.342	2215.94	9535.252	2215.69	9536.632	2215.67	9546.802	2215.46	9549.512	2215.47
9558.552	2215.18	9559.892	2215.14	9561.242	2215.16	9565.252	2215.14	9567.732	2214.99
9572.062	2215.06	9575.502	2214.99	9578.502	2214.82	9583.922	2214.59	9588.372	2214.44
9589.772	2214.43	9594.562	2214.39	9595.162	2214.39	9598.772	2214.29	9602.562	2214.19
9603.892	2214.15	9604.002	2214.14	9604.432	2214.12	9614.222	2213.64	9626.592	2213.25
9630.342	2213.14	9632.302	2213.09	9633.892	2213.17	9650.802	2213.19	9668.442	2213.15
9669.232	2213.15	9670.002	2213.15	9670.962	2213.12	9686.322	2212.61	9693.552	2212.49
9717.822	2211.78	9720.872	2211.62	9723.862	2211.46	9733.942	2212.17	9745.402	2212.91
9755.342	2213.03	9763.942	2213.13	9768.442	2213.16	9787.752	2213.16	9788.422	2213.17
9852.242	2213.69	9858.362	2213.74	9867.992	2213.78	9877.152	2213.96	9929.262	2213.04
9930.142	2213.11	9936.102	2213.18	9941.672	2213.23	9942.232	2213.25	9946.042	2213.26
9946.572	2213.26	9950.642	2213.24	9952.232	2213.23	9954.742	2213.19	9956.002	2213.21
9958.292	2213.16	9961.752	2213.01	9962.362	2213.01	9962.452	2213.01	9963.112	2213
9966.732	2212.91	9981.19	2212.46	9981.192	2212.46	9989.812	2210.35	10000.56	2207.84
10011.5	2212.51	10017.59	2215.11	10019.83	2216.09				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9531.342	.04	9981.19	.05	10011.5	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.19	10011.5	242.48	239.43	235.3	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2214.57	Element			
Vel Head (ft)	0.47	Wt. n-Val.	0.040	0.050	0.040
W.S. Elev (ft)	2214.10	Reach Len. (ft)	242.48	239.43	235.30
Crit W.S. (ft)	2214.10	Flow Area (sq ft)	366.32	120.01	2.97
E.G. Slope (ft/ft)	0.010649	Area (sq ft)	366.32	120.01	2.97
Q Total (cfs)	2280.00	Flow (cfs)	1378.78	891.99	9.23
Top Width (ft)	410.42	Top Width (ft)	376.38	30.31	3.73
Vel Total (ft/s)	4.66	Avg. Vel. (ft/s)	3.76	7.43	3.11
Max Chl Dpth (ft)	6.26	Hydr. Depth (ft)	0.97	3.96	0.80
Conv. Total (cfs)	22094.5	Conv. (cfs)	13361.1	8643.9	89.5
Length Wtd. (ft)	240.88	Wetted Per. (ft)	376.51	31.81	4.05
Min Ch El (ft)	2207.84	Shear (lb/sq ft)	0.65	2.51	0.49
Alpha	1.39	Stream Power (lb/ft s)	2.43	18.64	1.51
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	20.41	24.12	8.94
C & E Loss (ft)	0.01	Cum SA (acres)	14.95	5.62	6.09

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2215.61	Element			
Vel Head (ft)	0.80	Wt. n-Val.	0.040	0.050	0.040
W.S. Elev (ft)	2214.81	Reach Len. (ft)	242.48	239.43	235.30
Crit W.S. (ft)	2214.81	Flow Area (sq ft)	206.14	141.37	5.59
E.G. Slope (ft/ft)	0.011608	Area (sq ft)	206.14	141.37	5.59
Q Total (cfs)	2280.00	Flow (cfs)	1031.47	1223.59	24.94
Top Width (ft)	180.23	Top Width (ft)	146.19	30.31	3.73
Vel Total (ft/s)	6.46	Avg. Vel. (ft/s)	5.00	8.66	4.46

Max Chl Dpth (ft)	6.97	Hydr. Depth (ft)	1.41	4.66	1.50
Conv. Total (cfs)	21161.7	Conv. (cfs)	9573.5	11356.7	231.5
Length Wtd. (ft)	240.32	Wetted Per. (ft)	147.47	31.81	4.76
Min Ch El (ft)	2207.84	Shear (lb/sq ft)	1.01	3.22	0.85
Alpha	1.24	Stream Power (lb/ft s)	5.07	27.88	3.80
Frctn Loss (ft)	3.13	Cum Volume (acre-ft)	13.99	25.46	7.05
C & E Loss (ft)	0.03	Cum SA (acres)	7.25	5.62	3.41

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9531.34	9621.31	11.59	6.24	16.52	0.51	0.38	1.86
2	LOB	9621.31	9711.28	438.90	108.74	89.99	19.25	1.21	4.04
3	LOB	9711.28	9801.25	552.86	124.92	90.03	24.25	1.39	4.43
4	LOB	9801.25	9891.22	93.87	43.10	89.98	4.12	0.48	2.18
5	LOB	9891.22	9981.19	281.55	83.31	89.99	12.35	0.93	3.38
6	Chan	9981.19	9985.52	44.76	9.40	4.46	1.96	2.17	4.76
7	Chan	9985.52	9989.85	86.82	13.99	4.46	3.81	3.23	6.21
8	Chan	9989.85	9994.18	138.20	18.47	4.45	6.06	4.27	7.48
9	Chan	9994.18	9998.51	196.95	22.85	4.45	8.64	5.28	8.62
10	Chan	9998.51	10002.84	231.94	25.51	4.58	10.17	5.89	9.09
11	Chan	10002.84	10007.17	138.16	18.90	4.71	6.06	4.36	7.31
12	Chan	10007.17	10011.50	55.17	10.89	4.71	2.42	2.52	5.06
13	ROB	10011.50	10013.17	7.43	2.06	1.81	0.33	1.24	3.61
14	ROB	10013.17	10014.83	1.78	0.87	1.81	0.08	0.52	2.04
15	ROB	10014.83	10016.50	0.02	0.03	0.43	0.00	0.08	0.60

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9801.25	9891.22	237.46	59.43	57.48	10.41	1.06	4.00
2	LOB	9891.22	9981.19	794.00	146.71	89.99	34.82	1.63	5.41
3	Chan	9981.19	9985.52	75.83	12.45	4.46	3.33	2.88	6.09
4	Chan	9985.52	9989.85	127.93	17.04	4.46	5.61	3.94	7.51
5	Chan	9989.85	9994.18	189.11	21.52	4.45	8.29	4.97	8.79
6	Chan	9994.18	9998.51	257.41	25.90	4.45	11.29	5.98	9.94
7	Chan	9998.51	10002.84	296.96	28.56	4.58	13.02	6.60	10.40
8	Chan	10002.84	10007.17	188.05	21.95	4.71	8.25	5.07	8.57
9	Chan	10007.17	10011.50	88.30	13.94	4.71	3.87	3.22	6.33
10	ROB	10011.50	10013.17	16.68	3.23	1.81	0.73	1.94	5.16
11	ROB	10013.17	10014.83	7.79	2.05	1.81	0.34	1.23	3.81
12	ROB	10014.83	10016.50	0.47	0.31	1.14	0.02	0.79	1.49

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.384

INPUT
Description:
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9569.436	2211.29	573.196	2211.14	9581.106	2211.02	9626.096	2210.77	9627.006	2210.76
9647.086	2210.43	9656.686	2210.29	9667.846	2210.05	9669.016	2210.02	9670.066	2209.99
9671.086	2209.98	9672.066	2209.96	9685.966	2209.57	9691.526	2209.37	9706.886	2208.89
9711.866	2208.76	9715.966	2208.65	9720.606	2208.76	9729.006	2208.98	9735.876	2208.85
9785.196	2207.76	9787.946	2207.68	9791.036	2207.69	795.426	2207.79	800.846	2207.84
9816.156	2208.21	9822.046	2208.35	9835.806	2208.79	841.556	2208.81	9856.016	2209.13
9870.836	2209.44	9872.416	2209.47	9873.866	2209.46	9881.976	2209.35	9921.786	2208.81
9947.226	2208.48	9954.536	2208.53	9955.496	2208.52	9965.316	2208.99	9969.686	2209.2

```
9973.096 2209.37 9977.822208.1659990.536 2204.929993.556 2204.189993.936 2204.16
9999.446 2203.7510002.36 2203.8910006.05 2204.0910010.21 2205.6510016.79    2208
10022.89 2207.4910024.13 2207.3810026.39 2207.6310030.74 2208.3410032.49 2208.63
10037.77 2209.4710039.62 2209.7810043.82 2210.0910052.88 2210.6510056.47 2210.88
10057.47 2210.9310061.26 2211.0210073.14  2211.310073.53 2211.3110073.99  2211.3
10085.73  2211.210092.12  2212.110093.28  2212.1

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
9569.436    .055 9977.82     .0510030.74    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9977.8210030.74            128.91  119.28   98.49              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2210.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2209.70	Reach Len. (ft)	128.91	119.28	98.49
Crit W.S. (ft)	2209.70	Flow Area (sq ft)	289.07	193.60	5.68
E.G. Slope (ft/ft)	0.011530	Area (sq ft)	289.07	193.60	5.68
Q Total (cfs)	2280.00	Flow (cfs)	824.38	1443.02	12.60
Top Width (ft)	357.62	Top Width (ft)	296.33	52.92	8.38
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)	2.85	7.45	2.22
Max Chl Dpth (ft)	5.95	Hydr. Depth (ft)	0.98	3.66	0.68
Conv. Total (cfs)	21233.8	Conv. (cfs)	7677.5	13438.9	117.4
Length Wtd. (ft)	124.26	Wetted Per. (ft)	296.56	54.23	8.48
Min Ch El (ft)	2203.75	Shear (lb/sq ft)	0.70	2.57	0.48
Alpha	1.75	Stream Power (lb/ft s)	2.00	19.15	1.07
Frctn Loss (ft)	1.68	Cum Volume (acre-ft)	18.58	23.25	8.92
C & E Loss (ft)	0.05	Cum SA (acres)	13.08	5.39	6.06

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2211.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.06	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2210.04	Reach Len. (ft)	128.91	119.28	98.49
Crit W.S. (ft)	2210.04	Flow Area (sq ft)	96.79	211.63	8.53
E.G. Slope (ft/ft)	0.014691	Area (sq ft)	96.79	211.63	8.53
Q Total (cfs)	2280.00	Flow (cfs)	363.13	1889.55	27.32
Top Width (ft)	139.12	Top Width (ft)	77.82	52.92	8.38
Vel Total (ft/s)	7.19	Avg. Vel. (ft/s)	3.75	8.93	3.20
Max Chl Dpth (ft)	6.29	Hydr. Depth (ft)	1.24	4.00	1.02
Conv. Total (cfs)	18811.2	Conv. (cfs)	2996.0	15589.8	225.4
Length Wtd. (ft)	122.31	Wetted Per. (ft)	78.93	54.23	8.83
Min Ch El (ft)	2203.75	Shear (lb/sq ft)	1.12	3.58	0.89
Alpha	1.32	Stream Power (lb/ft s)	4.22	31.96	2.84
Frctn Loss (ft)	1.96	Cum Volume (acre-ft)	13.15	24.49	7.01
C & E Loss (ft)	0.09	Cum SA (acres)	6.63	5.39	3.38

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9651.11	9732.79	66.51	32.99	51.32	2.92	0.64	2.02
2	LOB	9732.79	9814.47	451.15	125.33	81.70	19.79	1.53	3.60
3	LOB	9814.47	9896.14	126.00	58.30	81.69	5.53	0.71	2.16
4	LOB	9896.14	9977.82	180.72	72.44	81.85	7.93	0.89	2.49
5	Chan	9977.82	9985.38	98.89	18.86	7.80	4.34	2.50	5.24
6	Chan	9985.38	9992.94	256.69	33.42	7.80	11.26	4.42	7.68
7	Chan	9992.94	10000.50	402.50	43.32	7.59	17.65	5.73	9.29
8	Chan	10000.50	10008.06	385.37	42.45	7.70	16.90	5.61	9.08
9	Chan	10008.06	10015.62	167.84	26.22	8.04	7.36	3.47	6.40
10	Chan	10015.62	10023.18	66.63	14.77	7.66	2.92	1.95	4.51
11	Chan	10023.18	10030.74	65.10	14.55	7.63	2.86	1.92	4.47
12	ROB	10030.74	10043.25	12.61	5.68	8.48	0.55	0.68	2.22

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9896.14	9977.82	363.13	96.79	78.93	15.93	1.24	3.75
2	Chan	9977.82	9985.38	140.18	21.44	7.80	6.15	2.84	6.54
3	Chan	9985.38	9992.94	332.69	36.00	7.80	14.59	4.76	9.24
4	Chan	9992.94	10000.50	507.52	45.90	7.59	22.26	6.07	11.06
5	Chan	10000.50	10008.06	486.87	45.02	7.70	21.35	5.96	10.81
6	Chan	10008.06	10015.62	224.70	28.80	8.04	9.86	3.81	7.80
7	Chan	10015.62	10023.18	99.76	17.35	7.66	4.38	2.29	5.75
8	Chan	10023.18	10030.74	97.82	17.13	7.63	4.29	2.27	5.71
9	ROB	10030.74	10043.25	27.32	8.53	8.83	1.20	1.02	3.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.362

INPUT
Description:
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9606.851	2208.01	9610.651	2207.92	9614.001	2207.92	9615.381	2207.88	9619.221	2207.83
9621.621	2207.79	9623.141	2207.79	9624.621	2207.71	9636.321	2207.43	9641.361	2207.22
9642.821	2207.15	9649.441	2206.83	9686.741	2206.43	9687.711	2206.42	9688.771	2206.43
9724.551	2206.59	9735.531	2206.08	9738.341	2206.01	9752.001	2205.98	9762.461	2205.9
9763.021	2205.99	9763.511	2205.89	9771.711	2205.53	9775.181	2205.38	9780.721	2205.14
9810.891	2204.72	9815.471	2204.95	9825.961	2205.12	9827.661	2205.15	9829.141	2205.09
9830.491	2205.05	9833.321	2204.95	9836.481	2204.83	9837.321	2204.79	9839.561	2204.72
9851.661	2204.75	9854.021	2204.79	9862.431	2204.61	9869.351	2204.58	9871.331	2204.58
9877.481	2204.42	9881.851	2204.49	8882.761	2204.49	8883.231	2204.43	9892.711	2204.76
9898.451	2204.94	9901.261	2205.01	9902.591	2205.06	9903.691	2205.09	9925.541	2205.52
9927.171	2205.54	9927.681	2205.54	9931.711	2205.61	9932.231	2205.61	9949.281	2205.09
9951.451	2205.12	9955.671	2205.14	9960.111	2205.61	9970.221	2206.67	9970.831	2206.55
9974.221	2205.95	9979.33	2205.33	9979.331	2205.33	9979.841	2205.39	9998.981	2202.78
9999.451	2202.73	10000.63	2202.96	10002.76	2203.36	10013.32	2205.28	10021.43	2206.77
10045.92	2208.49	10049.79	2208.76	10052.88	2208.98	10053.36	2209.02	10054.31	2209.09
10055.43	2209.09	10059.18	2209.09	10062.51	2209.09	10065	2209.29	10066.11	2209.35
10067.02	2209.39	10068.46	2209.43	10070.62	2209.48	10100.34	2210.63		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9606.851	.03	9724.551	.06	9979.33	.05	10013.3	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.33	10013.3	283.18	292.19	301.01	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2207.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.059	0.050	0.060
W.S. Elev (ft)	2206.75	Reach Len. (ft)	283.18	292.19	301.01
Crit W.S. (ft)	2206.53	Flow Area (sq ft)	395.41	92.38	5.89
E.G. Slope (ft/ft)	0.016017	Area (sq ft)	395.41	92.38	5.89
Q Total (cfs)	2280.00	Flow (cfs)	1593.49	671.65	14.85
Top Width (ft)	364.61	Top Width (ft)	322.61	33.97	8.03
Vel Total (ft/s)	4.62	Avg. Vel. (ft/s)	4.03	7.27	2.52
Max Chl Dpth (ft)	4.02	Hydr. Depth (ft)	1.23	2.72	0.73
Conv. Total (cfs)	18015.6	Conv. (cfs)	12591.1	5307.1	117.4
Length Wtd. (ft)	285.93	Wetted Per. (ft)	322.87	34.37	8.16
Min Ch El (ft)	2202.73	Shear (lb/sq ft)	1.22	2.69	0.72
Alpha	1.26	Stream Power (lb/ft s)	4.94	19.54	1.82
Frctn Loss (ft)	5.77	Cum Volume (acre-ft)	17.57	22.86	8.91
C & E Loss (ft)	0.02	Cum SA (acres)	12.17	5.27	6.04

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2208.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2207.42	Reach Len. (ft)	283.18	292.19	301.01
Crit W.S. (ft)	2207.20	Flow Area (sq ft)	228.36	114.92	11.22
E.G. Slope (ft/ft)	0.017575	Area (sq ft)	228.36	114.92	11.22
Q Total (cfs)	2280.00	Flow (cfs)	1224.40	1012.37	43.23
Top Width (ft)	148.33	Top Width (ft)	106.33	33.97	8.03
Vel Total (ft/s)	6.43	Avg. Vel. (ft/s)	5.36	8.81	3.85
Max Chl Dpth (ft)	4.69	Hydr. Depth (ft)	2.15	3.38	1.40
Conv. Total (cfs)	17198.5	Conv. (cfs)	9235.9	7636.5	326.1

Length Wtd. (ft)	287.63	Wetted Per. (ft)	109.42	34.37	8.83
Min Ch El (ft)	2202.73	Shear (lb/sq ft)	2.29	3.67	1.39
Alpha	1.21	Stream Power (lb/ft s)	12.28	32.32	5.37
Frctn Loss (ft)	5.85	Cum Volume (acre-ft)	12.67	24.04	6.99
C & E Loss (ft)	0.01	Cum SA (acres)	6.36	5.27	3.36

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9606.85	9681.35	5.03	3.25	24.62	0.22	0.13	1.55
2	LOB	9681.35	9755.84	69.90	30.83	74.51	3.07	0.41	2.27
3	LOB	9755.84	9830.34	468.49	116.61	74.52	20.55	1.57	4.02
4	LOB	9830.34	9904.83	736.32	152.95	74.52	32.29	2.05	4.81
5	LOB	9904.83	9979.33	313.75	91.76	74.69	13.76	1.23	3.42
6	Chan	9979.33	9984.18	42.56	8.28	4.89	1.87	1.71	5.14
7	Chan	9984.18	9989.04	72.20	11.37	4.90	3.17	2.34	6.35
8	Chan	9989.04	9993.89	107.90	14.47	4.89	4.73	2.98	7.46
9	Chan	9993.89	9998.74	149.12	17.57	4.89	6.54	3.62	8.49
10	Chan	9998.74	10003.59	152.32	17.85	4.93	6.68	3.68	8.53
11	Chan	10003.59	10008.45	96.46	13.57	4.93	4.23	2.80	7.11
12	Chan	10008.45	10013.30	51.09	9.27	4.93	2.24	1.91	5.51
13	ROB	10013.30	10030.71	14.85	5.89	8.16	0.65	0.73	2.52

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9830.34	9904.83	523.01	87.16	34.73	22.94	2.74	6.00
2	LOB	9904.83	9979.33	701.39	141.20	74.69	30.76	1.90	4.97
3	Chan	9979.33	9984.18	78.13	11.50	4.89	3.43	2.37	6.79
4	Chan	9984.18	9989.04	116.16	14.59	4.90	5.09	3.01	7.96
5	Chan	9989.04	9993.89	160.12	17.69	4.89	7.02	3.65	9.05
6	Chan	9993.89	9998.74	209.56	20.79	4.89	9.19	4.28	10.08
7	Chan	9998.74	10003.59	213.21	21.07	4.93	9.35	4.34	10.12
8	Chan	10003.59	10008.45	146.03	16.79	4.93	6.40	3.46	8.70
9	Chan	10008.45	10013.30	89.16	12.49	4.93	3.91	2.57	7.14
10	ROB	10013.30	10030.71	43.23	11.22	8.83	1.90	1.40	3.85

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 1.306

INPUT
Description:
Station Elevation Data num= 110

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9559.812	2203.819	560.712	2203.789	599.662	2203.169	604.752	2203.099	606.132	2203.1
9610.232	2202.969	611.652	2202.939	617.622	2202.719	618.952	2202.639	622.352	2202.63
9638.862	2202.59	642.632	2202.139	644.982	2201.939	649.482	2201.529	655.052	2201.01
9663.092	2200.429	664.452	2200.449	664.842	2200.429	669.272	2200.439	669.822	2200.41
9673.512	2200.329	675.062	2200.29	677.072	2200.119	679.102	2199.959	682.372	2199.67
9688.032	2199.239	690.742	2199.019	692.672	2198.929	696.932	2198.679	699.722	2198.66
9701.962	2198.659	704.882	2198.669	707.512	2198.669	710.432	2198.669	711.352	2198.67
9712.572	2198.679	715.762	2198.639	718.702	2198.669	722.932	2198.769	726.902	2198.98
9731.332	2199.229	733.782	2199.399	741.422	2199.889	742.692	2199.999	746.862	2200.27
9747.632	2200.359	750.842	2200.749	751.612	2200.819	755.412	2200.979	759.202	2200.95
9760.622	2200.979	764.852	2200.939	766.772	2200.939	767.692	2200.939	773.162	2200.97
9802.552	2200.799	847.862	2200.369	851.102	2200.289	851.232	2200.289	851.432	2200.27
9851.672	2200.269	852.612	2200.199	857.582	2199.859	860.522	2199.629	868.622	2198.9
9869.392	2198.899	869.982	2198.889	880.352	2198.699	885.512	2198.669	895.222	2198.75
9903.222	2199	914.862	2199.389	916.552	2199.469	919.292	2199.569	919.592	2199.58
9919.952	2199.69	923.822	2199.749	925.502	2199.629	933.142	2199.039	938.322	2199.13
9942.052	2199.219	944.102	2199.249	949.672	2199.349	964.052	2199.719	966.642	2199.47
9970.01	2199.163	986.062	2197.79	987.792	2198.219	989.412	2198.689	990.182	2198.73
9994.552	2198.739	995.252	2198.819	995.412	2198.859	998.442	2198.819	999.022	2198.8
10001.43	2198.99	1002.54	2199.11	0011.41	2199.93	10017.96	2200.53	10022.25	2200.67
10051.37	2201.57	10053.75	2201.64	10055.65	2201.68	10065.6	2201.68	10066.02	2201.68
10066.34	2201.69	10069.82	2201.74	10075.72	2201.85	10089.64	2202.16	10111.13	2202.65

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9559.812	.049	673.512	.069	746.862	.049	851.432	.062	9970.01	.05
10002.54	.062								

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

```
      9970.0110002.54          193.78  206.31  221.65            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
10039.5810111.13    2204       T
Blocked Obstructions     num=       1
   Sta L   Sta R    Elev
 9805.26 9853.84    2204
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2201.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.061	0.050	0.062
W.S. Elev (ft)	2200.80	Reach Len. (ft)	193.78	206.31	221.65
Crit W.S. (ft)	2200.67	Flow Area (sq ft)	308.69	72.66	16.15
E.G. Slope (ft/ft)	0.026253	Area (sq ft)	308.69	72.66	16.15
Q Total (cfs)	2280.00	Flow (cfs)	1636.54	595.07	48.39
Top Width (ft)	269.53	Top Width (ft)	213.23	32.53	23.77
Vel Total (ft/s)	5.74	Avg. Vel. (ft/s)	5.30	8.19	3.00
Max Chl Dpth (ft)	3.10	Hydr. Depth (ft)	1.45	2.23	0.68
Conv. Total (cfs)	14071.7	Conv. (cfs)	10100.4	3672.7	298.7
Length Wtd. (ft)	197.04	Wetted Per. (ft)	214.24	32.76	23.84
Min Ch El (ft)	2197.70	Shear (lb/sq ft)	2.36	3.64	1.11
Alpha	1.15	Stream Power (lb/ft s)	12.52	29.77	3.33
Frctn Loss (ft)	4.74	Cum Volume (acre-ft)	15.28	22.31	8.83
C & E Loss (ft)	0.00	Cum SA (acres)	10.42	5.05	5.93

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2202.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.062	0.050	0.062
W.S. Elev (ft)	2201.46	Reach Len. (ft)	193.78	206.31	221.65
Crit W.S. (ft)	2201.33	Flow Area (sq ft)	202.84	94.27	31.94
E.G. Slope (ft/ft)	0.023845	Area (sq ft)	202.84	94.27	31.94
Q Total (cfs)	2280.00	Flow (cfs)	1263.84	875.13	141.04
Top Width (ft)	146.31	Top Width (ft)	90.01	32.53	23.77
Vel Total (ft/s)	6.93	Avg. Vel. (ft/s)	6.23	9.28	4.42
Max Chl Dpth (ft)	3.76	Hydr. Depth (ft)	2.25	2.90	1.34
Conv. Total (cfs)	14765.2	Conv. (cfs)	8184.5	5667.3	913.3
Length Wtd. (ft)	199.52	Wetted Per. (ft)	92.85	32.76	24.50
Min Ch El (ft)	2197.70	Shear (lb/sq ft)	3.25	4.28	1.94
Alpha	1.16	Stream Power (lb/ft s)	20.26	39.76	8.57
Frctn Loss (ft)	4.67	Cum Volume (acre-ft)	11.26	23.34	6.84
C & E Loss (ft)	0.01	Cum SA (acres)	5.72	5.05	3.25

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9641.85	9723.89	527.89	93.45	65.99	23.15	1.42	5.65
2	LOB	9723.89	9805.93	142.12	30.86	31.25	6.23	0.99	4.61
3	LOB	9805.93	9887.97	316.84	58.21	34.87	13.90	1.71	5.44
4	LOB	9887.97	9970.01	649.69	126.16	82.12	28.50	1.54	5.15
5	Chan	9970.01	9974.66	61.05	8.57	4.67	2.68	1.84	7.12
6	Chan	9974.66	9979.30	86.15	10.54	4.67	3.78	2.27	8.18
7	Chan	9979.30	9983.95	114.63	12.51	4.67	5.03	2.69	9.16
8	Chan	9983.95	9988.60	124.26	13.24	4.76	5.45	2.85	9.39
9	Chan	9988.60	9993.25	75.58	9.75	4.68	3.31	2.10	7.75
10	Chan	9993.25	9997.89	70.00	9.30	4.66	3.07	2.00	7.53
11	Chan	9997.89	10002.54	63.40	8.76	4.66	2.78	1.89	7.24
12	ROB	10002.54	10021.06	48.12	15.73	18.59	2.11	0.85	3.06
13	ROB	10021.06	10039.58	0.27	0.43	5.25	0.01	0.08	0.64

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9805.93	9887.97	133.29	22.19	10.73	5.85	2.78	6.01
2	LOB	9887.97	9970.01	1130.55	180.64	82.12	49.59	2.20	6.26
3	Chan	9970.01	9974.66	97.69	11.66	4.67	4.28	2.51	8.38
4	Chan	9974.66	9979.30	126.68	13.62	4.67	5.56	2.93	9.30
5	Chan	9979.30	9983.95	158.67	15.59	4.67	6.96	3.36	10.18
6	Chan	9983.95	9988.60	168.90	16.32	4.76	7.41	3.51	10.35
7	Chan	9988.60	9993.25	114.53	12.84	4.68	5.02	2.76	8.92
8	Chan	9993.25	9997.89	108.18	12.38	4.66	4.74	2.66	8.74
9	Chan	9997.89	10002.54	100.47	11.85	4.66	4.41	2.55	8.48
10	ROB	10002.54	10021.06	130.52	28.03	18.59	5.72	1.51	4.66
11	ROB	10021.06	10039.58	10.52	3.91	5.92	0.46	0.75	2.69

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: C8
REACH: Reach 1 RS: 1.267

INPUT
Description:
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9574.53	2197.6	9578.87	2197.48	9583.88	2197.35	9585.61	2197.31	9591.49	2197.28
9594.82	2197.1	9602.21	2196.99	9614.62	2196.79	9624.6	2196.6	9626.44	2196.54
9646.4	2192.7	9650.43	2191.92	9670.82	2194.09	9677.91	2194.91	9747.54	2196.29
9761.7	2196.6	9762.4	2196.6	9801.17	2196.38	9813.28	2196.28	9820.9	2196.36
9827.84	2195.9	9830.29	2195.65	9834.19	2195.2	9839.81	2194.77	9840.18	2194.75
9844.51	2194.8	9845.67	2194.83	9850.98	2194.87	9852.93	2194.88	9854.64	2194.89
9859.14	2194.9	9860.39	2194.93	9866.8	2194.81	9870.44	2194.81	9872.35	2194.8
9874.74	2194.8	9881.06	2194.93	9883.15	2194.5	9891.78	2192.62	9894.05	2192.65
9902.1	2194.4	9906.71	2195.04	9907.38	2195.08	9910.17	2195.34	9911.3	2195.45
9914.07	2195.8	9916.73	2195.85	9923.5	2195.93	9929.44	2195.9	9930.75	2195.86
9943.53	2195.6	9949.75	2195.51	9963.3	2195.22	9975.44	2194.67	9976.26	2194.59
9977.19	2194.5	9979.05	2194.21	9982.59	2194.5	9986.32	2194.65	9991.87	2193.8
9999.44	2192.7	10006.97	2194.28	10012.59	2195.62	10021.9	2195.82	10032.34	2195.95
10038.6	2196	10054.07	2196.33	10076.3	2196.48	10078.81	2196.53	10082.02	2196.6
10129.55	2198								

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9574.53	.055	9626.44	.05	9677.91	.06	9883.15	.05	9907.38	.065
9986.32	.05	10012.59	.065						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.32	10006.97	142.49	140.06	135.5	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
9736.49	9786.95	2198

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2196.64	Element			
Vel Head (ft)	0.58	Wt. n-Val.	0.053	0.050	0.053
W.S. Elev (ft)	2196.06	Reach Len. (ft)	142.49	140.06	135.50
Crit W.S. (ft)	2196.01	Flow Area (sq ft)	325.16	50.83	11.88
E.G. Slope (ft/ft)	0.022160	Area (sq ft)	325.16	50.83	11.88
Q Total (cfs)	2280.00	Flow (cfs)	1838.54	405.91	35.55
Top Width (ft)	323.10	Top Width (ft)	267.96	20.65	34.49
Vel Total (ft/s)	5.88	Avg. Vel. (ft/s)	5.65	7.99	2.99
Max Chl Dpth (ft)	4.14	Hydr. Depth (ft)	1.21	2.46	0.34
Conv. Total (cfs)	15316.0	Conv. (cfs)	12350.5	2726.7	238.8
Length Wtd. (ft)	141.88	Wetted Per. (ft)	269.18	20.96	34.65
Min Ch El (ft)	2192.70	Shear (lb/sq ft)	1.67	3.36	0.47
Alpha	1.08	Stream Power (lb/ft s)	9.45	26.80	1.42
Frctn Loss (ft)	2.92	Cum Volume (acre-ft)	13.87	22.02	8.76
C & E Loss (ft)	0.04	Cum SA (acres)	9.35	4.92	5.79

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2197.64	Element			
Vel Head (ft)	0.83	Wt. n-Val.	0.057	0.050	0.056
W.S. Elev (ft)	2196.81	Reach Len. (ft)	142.49	140.06	135.50
Crit W.S. (ft)	2196.75	Flow Area (sq ft)	244.21	66.31	23.62
E.G. Slope (ft/ft)	0.022955	Area (sq ft)	244.21	66.31	23.62
Q Total (cfs)	2280.00	Flow (cfs)	1521.54	643.41	115.05
Top Width (ft)	170.00	Top Width (ft)	131.32	20.65	18.03
Vel Total (ft/s)	6.82	Avg. Vel. (ft/s)	6.23	9.70	4.87
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)	1.86	3.21	1.31
Conv. Total (cfs)	15048.5	Conv. (cfs)	10042.5	4246.6	759.3
Length Wtd. (ft)	141.42	Wetted Per. (ft)	133.83	20.96	19.14
Min Ch El (ft)	2192.70	Shear (lb/sq ft)	2.62	4.53	1.77
Alpha	1.15	Stream Power (lb/ft s)	16.29	44.00	8.61
Frctn Loss (ft)	3.17	Cum Volume (acre-ft)	10.27	22.96	6.70
C & E Loss (ft)	0.04	Cum SA (acres)	5.23	4.92	3.14

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9574.53	9656.89	548.69	69.00	28.39	24.07	2.47	7.95
2	LOB	9656.89	9739.25	460.33	82.28	79.23	20.19	1.04	5.59
3	LOB	9739.25	9821.60						

4	LOB	9821.60	9903.96	664.29	114.95	79.07	29.14	1.46	5.78
5	LOB	9903.96	9986.32	165.23	58.92	82.49	7.25	0.72	2.80
6	Chan	9986.32	9989.27	28.75	4.83	2.98	1.26	1.64	5.95
7	Chan	9989.27	9992.22	43.14	6.16	2.98	1.89	2.09	7.00
8	Chan	9992.22	9995.17	59.29	7.45	2.98	2.60	2.53	7.96
9	Chan	9995.17	9998.12	77.00	8.72	2.98	3.38	2.95	8.83
10	Chan	9998.12	10001.07	88.66	9.51	3.00	3.89	3.22	9.32
11	Chan	10001.07	10004.02	66.13	7.99	3.01	2.90	2.71	8.28
12	Chan	10004.02	10006.97	42.94	6.17	3.01	1.88	2.09	6.96
13	ROB	10006.97	10031.49	35.13	11.16	24.68	1.54	0.46	3.15
14	ROB	10031.49	10056.00	0.42	0.73	9.98	0.02	0.07	0.58

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9821.60	9903.96	974.76	123.56	51.34	42.75	2.52	7.89
2	LOB	9903.96	9986.32	546.79	120.65	82.49	23.98	1.46	4.53
3	Chan	9986.32	9989.27	55.39	7.04	2.98	2.43	2.39	7.87
4	Chan	9989.27	9992.22	73.92	8.37	2.98	3.24	2.84	8.83
5	Chan	9992.22	9995.17	93.97	9.66	2.98	4.12	3.28	9.72
6	Chan	9995.17	9998.12	115.35	10.93	2.98	5.06	3.70	10.56
7	Chan	9998.12	10001.07	129.11	11.72	3.00	5.66	3.97	11.01
8	Chan	10001.07	10004.02	102.12	10.20	3.01	4.48	3.46	10.01
9	Chan	10004.02	10006.97	73.54	8.38	3.01	3.23	2.84	8.78
10	ROB	10006.97	10031.49	115.05	23.62	19.14	5.05	1.31	4.87

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 1.241

INPUT
Description:
Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9658.29	2193.87	9671.87	2193.66	9677.37	2193.65	9679.31	2193.62	9723.56	2193.35
9745.34	2193.16	9747.31	2193.23	9748.28	2193.28	9748.97	2193.3	9749.58	2193.26
9758.88	2192.39	9763.94	2191.91	9773.45	2191.24	9776.56	2191.05	9783.01	2190.58
9790.99	2190.05	9791.89	2189.98	9793.14	2190.18	9798.61	2191.08	9801.43	2191.02
9816.44	2191.76	9817.2	2191.79	9818.97	2191.89	9819.63	2191.93	9821.98	2192.06
9822.8	2192.11	9823.7	2192.19	9834.99	2192.24	9835.86	2192.29	9839.23	2192.21
9847.79	2192.24	9849.7	2192.19	9857.02	2192.03	9857.15	2192.02	9857.25	2192.01
9866.48	2190.69	9867.68	2190.84	9874.41	2191.61	9879.61	2191.41	9890.87	2191.05
9896.91	2191.29	9907.64	2191.75	9919.87	2192.05	9924.52	2192.15	9934.9	2192.37
9935.53	2192.37	9936.62	2192.36	9945.14	2192.33	9951.65	2192.4	9954.13	2192.25
9957.09	2192.03	9960.68	2191.78	9961.91	2191.67	9965.13	2191.79	9975.21	2192.14
9976.78	2192.04	9998.24	2190.4	10005.5	2191.58	10006.66	2191.76	10021.02	2192.35
10057.45	2193.43	10066.62	2193.71	10093.86	2194.22	10104.8	2194.27		

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9658.29	.05	9723.56	.065	9763.94	.05	9816.44	.065	9857.02	.055
9976.78	.05	10006.66	.06						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9976.78	10006.66	172.98	162.13	138.13	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2193.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.054	0.050	0.060
W.S. Elev (ft)	2193.23	Reach Len. (ft)	172.98	162.13	138.13
Crit W.S. (ft)	2193.00	Flow Area (sq ft)	342.28	61.10	29.78
E.G. Slope (ft/ft)	0.019111	Area (sq ft)	342.28	61.10	29.78
Q Total (cfs)	2280.00	Flow (cfs)	1798.44	402.91	78.65
Top Width (ft)	310.16	Top Width (ft)	236.35	29.88	43.93
Vel Total (ft/s)	5.26	Avg. Vel. (ft/s)	5.25	6.59	2.64
Max Chl Dpth (ft)	3.25	Hydr. Depth (ft)	1.45	2.04	0.68
Conv. Total (cfs)	16492.7	Conv. (cfs)	13009.3	2914.5	568.9
Length Wtd. (ft)	170.40	Wetted Per. (ft)	236.82	30.05	43.95
Min Ch El (ft)	2190.40	Shear (lb/sq ft)	1.72	2.43	0.81
Alpha	1.07	Stream Power (lb/ft s)	9.06	16.00	2.13
Frctn Loss (ft)	3.76	Cum Volume (acre-ft)	12.78	21.84	8.70
C & E Loss (ft)	0.03	Cum SA (acres)	8.53	4.84	5.66

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2194.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2193.74	Reach Len. (ft)	172.98	162.13	138.13
Crit W.S. (ft)	2193.54	Flow Area (sq ft)	245.92	76.29	29.40
E.G. Slope (ft/ft)	0.021941	Area (sq ft)	245.92	76.29	29.40
Q Total (cfs)	2280.00	Flow (cfs)	1513.80	624.99	141.21
Top Width (ft)	175.00	Top Width (ft)	126.78	29.88	18.34
Vel Total (ft/s)	6.48	Avg. Vel. (ft/s)	6.16	8.19	4.80
Max Chl Dpth (ft)	3.33	Hydr. Depth (ft)	1.94	2.55	1.60
Conv. Total (cfs)	15392.5	Conv. (cfs)	10219.8	4219.4	953.3
Length Wtd. (ft)	169.18	Wetted Per. (ft)	128.55	30.05	19.62
Min Ch El (ft)	2190.40	Shear (lb/sq ft)	2.62	3.48	2.05
Alpha	1.07	Stream Power (lb/ft s)	16.13	28.49	9.86
Frctn Loss (ft)	4.17	Cum Volume (acre-ft)	9.47	22.73	6.62
C & E Loss (ft)	0.02	Cum SA (acres)	4.80	4.84	3.09

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9721.99	9785.69	312.15	54.56	45.37	13.69	1.21	5.72
2	LOB	9785.69	9849.38	609.83	105.60	63.84	26.75	1.66	5.78
3	LOB	9849.38	9913.08	603.62	112.33	63.87	26.47	1.76	5.37
4	LOB	9913.08	9976.78	272.84	69.78	63.74	11.97	1.10	3.91
5	Chan	9976.78	9981.05	28.13	5.76	4.28	1.23	1.35	4.88
6	Chan	9981.05	9985.32	40.36	7.15	4.28	1.77	1.68	5.64
7	Chan	9985.32	9989.59	54.29	8.55	4.28	2.38	2.00	6.35
8	Chan	9989.59	9993.85	69.82	9.94	4.28	3.06	2.33	7.03
9	Chan	9993.85	9998.12	86.87	11.33	4.28	3.81	2.65	7.67
10	Chan	9998.12	10002.39	78.01	10.66	4.32	3.42	2.50	7.31
11	Chan	10002.39	10006.66	45.42	7.71	4.32	1.99	1.81	5.89
12	ROB	10006.66	10026.29	64.44	21.03	19.64	2.83	1.07	3.06
13	ROB	10026.29	10045.92	14.04	8.43	19.64	0.62	0.43	1.67
14	ROB	10045.92	10065.54	0.16	0.32	4.67	0.01	0.07	0.49

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9849.38	9913.08	964.71	143.76	64.81	42.31	2.28	6.71
2	LOB	9913.08	9976.78	549.08	102.16	63.74	24.08	1.60	5.37
3	Chan	9976.78	9981.05	51.82	7.93	4.28	2.27	1.86	6.53
4	Chan	9981.05	9985.32	67.86	9.32	4.28	2.98	2.18	7.28
5	Chan	9985.32	9989.59	85.58	10.72	4.28	3.75	2.51	7.99
6	Chan	9989.59	9993.85	104.90	12.11	4.28	4.60	2.84	8.66
7	Chan	9993.85	9998.12	125.77	13.50	4.28	5.52	3.16	9.32
8	Chan	9998.12	10002.39	114.83	12.83	4.32	5.04	3.01	8.95
9	Chan	10002.39	10006.66	74.24	9.88	4.32	3.26	2.31	7.52
10	ROB	10006.66	10026.29	141.21	29.40	19.62	6.19	1.60	4.80

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: C8
REACH: Reach 1 RS: 1.210

INPUT
Description:
Station Elevation Data num= 86

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9703.376	2190.69	734.716	2190.229	738.006	2190.229	739.286	2190.29	741.826	2190.12
9744.086	2190.04	9747.266	2189.899	752.476	2189.659	756.206	2189.479	810.186	2188.84
9816.806	2188.77	9819.926	2188.749	825.716	2188.439	840.046	2187.689	850.616	2187.08
9862.896	2184.97	9864.856	2184.699	866.536	2184.929	876.446	2186.49	881.426	2186.45
9890.766	2186.49	9891.846	2186.59	892.956	2186.559	893.676	2186.59	896.116	2186.59
9896.676	2186.61	9899.096	2186.69	899.486	2186.789	899.686	2186.77	9899.846	2186.59
9901.706	2186.68	9902.186	2186.659	907.186	2187	9910.006	2187.01	9911.826	2187.01
9918.236	2187.31	9918.836	2187.319	919.326	2187.349	923.466	2187.64	9923.866	2187.65
9928.256	2187.96	9928.606	2187.989	933.206	2188.239	934.046	2188.28	9934.776	2188.32
9940.066	2188.54	9940.786	2188.579	941.686	2188.619	942.336	2188.65	9944.176	2188.73
9949.206	2188.96	9951.356	2189.079	964.276	2189.619	967.556	2189.63	9967.866	2189.63
9974.376	2189.59	985.556	2189.17	9988.64	2188.52	19998.666	2186.41	9999.876	2186.12
10008.77	2187.21	0010.24	2187.37	10010.26	2187.37	10010.45	2187.39	10010.5	2187.4
10021.7	2188.46	10034.36	2190.42	10039.47	2190.67	10041.52	2190.77	10043.2	2190.84
10047.59	2191.02	10057.69	2191.48	10059.92	2191.55	10063.51	2191.62	10072.16	2191.79
10077.06	2191.94	10077.43	2191.96	10082.79	2192.11	10084.81	2192.21	10093.23	2192.43
10093.43	2192.43	10098.58	2192.53	10103.56	2192.64	10111	2192.96	10118.3	2193.09
10119.86	2193.19								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9703.376	.06	9850.616	.05	9876.446	.06	9988.64	.05	10021.7	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.64	10021.7	201.35	197.38	198.63	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2189.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2189.16	Reach Len. (ft)	201.35	197.38	198.63
Crit W.S. (ft)	2189.11	Flow Area (sq ft)	268.50	59.70	1.58
E.G. Slope (ft/ft)	0.025744	Area (sq ft)	268.50	59.70	1.58
Q Total (cfs)	2280.00	Flow (cfs)	1857.67	418.96	3.37
Top Width (ft)	211.29	Top Width (ft)	173.71	33.06	4.52
Vel Total (ft/s)	6.91	Avg. Vel. (ft/s)	6.92	7.02	2.13
Max Chl Dpth (ft)	4.47	Hydr. Depth (ft)	1.55	1.81	0.35
Conv. Total (cfs)	14210.2	Conv. (cfs)	11578.0	2611.2	21.0
Length Wtd. (ft)	200.88	Wetted Per. (ft)	174.35	33.44	4.57
Min Ch El (ft)	2186.12	Shear (lb/sq ft)	2.48	2.87	0.56
Alpha	1.01	Stream Power (lb/ft s)	17.12	20.13	1.19
Frctn Loss (ft)	4.48	Cum Volume (acre-ft)	11.57	21.61	8.65
C & E Loss (ft)	0.01	Cum SA (acres)	7.72	4.73	5.59

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2190.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.94	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2189.31	Reach Len. (ft)	201.35	197.38	198.63
Crit W.S. (ft)	2189.24	Flow Area (sq ft)	227.43	64.60	2.25
E.G. Slope (ft/ft)	0.027906	Area (sq ft)	227.43	64.60	2.25
Q Total (cfs)	2280.00	Flow (cfs)	1776.33	497.47	6.19
Top Width (ft)	147.37	Top Width (ft)	109.79	33.06	4.52
Vel Total (ft/s)	7.75	Avg. Vel. (ft/s)	7.81	7.70	2.75
Max Chl Dpth (ft)	4.62	Hydr. Depth (ft)	2.07	1.95	0.50
Conv. Total (cfs)	13648.6	Conv. (cfs)	10633.5	2978.0	37.1
Length Wtd. (ft)	200.81	Wetted Per. (ft)	113.30	33.44	4.72
Min Ch El (ft)	2186.12	Shear (lb/sq ft)	3.50	3.37	0.83
Alpha	1.01	Stream Power (lb/ft s)	27.31	25.92	2.29
Frctn Loss (ft)	4.67	Cum Volume (acre-ft)	8.53	22.47	6.57
C & E Loss (ft)	0.01	Cum SA (acres)	4.33	4.73	3.05

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9760.43	9817.48	8.90	6.98	34.66	0.39	0.20	1.28
2	LOB	9817.48	9874.53	1008.24	122.38	57.40	44.22	2.15	8.24
3	LOB	9874.53	9931.59	813.49	127.20	57.25	35.68	2.23	6.40
4	LOB	9931.59	9988.64	27.03	11.93	25.03	1.19	0.48	2.26
5	Chan	9988.64	9993.36	25.60	5.36	4.83	1.12	1.14	4.77
6	Chan	9993.36	9998.09	73.05	10.06	4.83	3.20	2.13	7.26
7	Chan	9998.09	10002.81	119.13	13.45	4.79	5.23	2.85	8.86
8	Chan	10002.81	10007.53	89.75	11.32	4.76	3.94	2.40	7.93
9	Chan	10007.53	10012.25	57.69	8.68	4.75	2.53	1.84	6.65
10	Chan	10012.25	10016.98	35.41	6.47	4.74	1.55	1.37	5.47
11	Chan	10016.98	10021.70	18.33	4.36	4.74	0.80	0.92	4.21
12	ROB	10021.70	10041.33	3.37	1.58	4.57	0.15	0.35	2.13

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9817.48	9874.53	786.49	75.55	22.75	34.49	3.87	10.41
2	LOB	9874.53	9931.59	950.70	135.66	57.25	41.70	2.38	7.01
3	LOB	9931.59	9988.64	39.14	16.22	33.30	1.72	0.49	2.41
4	Chan	9988.64	9993.36	33.02	6.06	4.83	1.45	1.28	5.45
5	Chan	9993.36	9998.09	85.92	10.76	4.83	3.77	2.28	7.98
6	Chan	9998.09	10002.81	136.31	14.15	4.79	5.98	3.00	9.63
7	Chan	10002.81	10007.53	104.29	12.02	4.76	4.57	2.54	8.68
8	Chan	10007.53	10012.25	69.04	9.38	4.75	3.03	1.99	7.36
9	Chan	10012.25	10016.98	44.19	7.17	4.74	1.94	1.52	6.16
10	Chan	10016.98	10021.70	24.70	5.06	4.74	1.08	1.07	4.88
11	ROB	10021.70	10041.33	6.19	2.25	4.72	0.27	0.50	2.75

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: C8

REACH: Reach 1 RS: 1.173

INPUT
Description:
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9761.728	2186.149	765.488	2186.089	778.298	2185.759	783.608	2185.649	791.608	2185.43
9807.038	2184.869	814.448	2184.659	817.188	2184.659	818.678	2184.659	821.938	2184.65
9837.918	2184.319	844.638	2184.099	856.498	2183.79	865.218	2180.969	874.818	2177.9
9885.988	2180.569	891.128	2181.829	905.968	2182.519	919.458	2183.019	922.928	2183.17
9925.028	2183.289	925.828	2183.269	957.738	2183.469	958.388	2183.479	964.058	2183.51
9978.728	2184.079	984.358	2184.289	986.138	2184.29	988.838	2184.23	988.942	2184.221
9996.068	2183.591	000.84	2182.951	003.02	2183.95	015.5	2184.151	030.74	2185.17
10035.88	2185.341	036.39	2185.331	039.17	2185.321	043.61	2185.361	045.22	2185.39
10047.98	2185.441	050.05	2185.411	053.74	2185.411	056.88	2185.441	058.85	2185.44
10061.97	2185.471	065.23	2185.54	065.9	2185.521	067.89	2185.581	071.65	2185.73
10072.67	2185.781	074.98	2185.851	110.08	2187.51	117.66	2187.71	118.14	2187.71

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9761.728	.069	865.218	.059	891.128	.06	9988.94	.05	10015.5	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.94	10015.5	248.33	266.79	275.28	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2185.42	Element			
Vel Head (ft)	0.81	Wt. n-Val.	0.053	0.050	0.060
W.S. Elev (ft)	2184.61	Reach Len. (ft)	248.33	266.79	275.28
Crit W.S. (ft)	2184.61	Flow Area (sq ft)	294.77	27.00	1.60
E.G. Slope (ft/ft)	0.019511	Area (sq ft)	294.77	27.00	1.60
Q Total (cfs)	2280.00	Flow (cfs)	2164.93	112.98	2.08
Top Width (ft)	198.72	Top Width (ft)	165.25	26.56	6.91
Vel Total (ft/s)	7.05	Avg. Vel. (ft/s)	7.34	4.18	1.30
Max Chl Dpth (ft)	6.71	Hydr. Depth (ft)	1.78	1.02	0.23
Conv. Total (cfs)	16322.8	Conv. (cfs)	15499.1	808.9	14.9
Length Wtd. (ft)	258.18	Wetted Per. (ft)	166.67	26.68	6.93
Min Ch El (ft)	2182.95	Shear (lb/sq ft)	2.15	1.23	0.28
Alpha	1.05	Stream Power (lb/ft s)	15.82	5.16	0.37
Frctn Loss (ft)	5.17	Cum Volume (acre-ft)	10.26	21.42	8.64
C & E Loss (ft)	0.04	Cum SA (acres)	6.93	4.59	5.56

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2185.56	Element			
Vel Head (ft)	0.92	Wt. n-Val.	0.053	0.050	0.060
W.S. Elev (ft)	2184.64	Reach Len. (ft)	248.33	266.79	275.28
Crit W.S. (ft)	2184.64	Flow Area (sq ft)	274.97	27.71	1.78
E.G. Slope (ft/ft)	0.019700	Area (sq ft)	274.97	27.71	1.78
Q Total (cfs)	2280.00	Flow (cfs)	2158.92	118.57	2.51
Top Width (ft)	160.41	Top Width (ft)	126.94	26.56	6.91
Vel Total (ft/s)	7.49	Avg. Vel. (ft/s)	7.85	4.28	1.40
Max Chl Dpth (ft)	6.74	Hydr. Depth (ft)	2.17	1.04	0.26
Conv. Total (cfs)	16244.5	Conv. (cfs)	15381.8	844.8	17.9
Length Wtd. (ft)	258.31	Wetted Per. (ft)	130.75	26.68	6.95
Min Ch El (ft)	2182.95	Shear (lb/sq ft)	2.59	1.28	0.32
Alpha	1.06	Stream Power (lb/ft s)	20.31	5.47	0.44
Frctn Loss (ft)	4.35	Cum Volume (acre-ft)	7.37	22.26	6.56
C & E Loss (ft)	0.00	Cum SA (acres)	3.79	4.59	3.02

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9807.17	9852.61	16.81	10.13	28.93	0.74	0.35	1.66
2	LOB	9852.61	9898.06	1671.61	168.90	46.81	73.32	3.72	9.90
3	LOB	9898.06	9943.50	351.56	75.27	45.47	15.42	1.66	4.67
4	LOB	9943.50	9988.94	124.95	40.46	45.46	5.48	0.89	3.09
5	Chan	9988.94	9992.73	5.61	2.12	3.81	0.25	0.56	2.64
6	Chan	9992.73	9996.53	12.32	3.40	3.81	0.54	0.90	3.62
7	Chan	9996.53	10000.32	23.95	5.08	3.83	1.05	1.34	4.72
8	Chan	10000.32	10004.12	30.40	5.85	3.81	1.33	1.54	5.20
9	Chan	10004.12	10007.91	21.10	4.70	3.81	0.93	1.24	4.49
10	Chan	10007.91	10011.71	13.02	3.52	3.81	0.57	0.93	3.70

11	Chan	10011.71	10015.50	6.59	2.34	3.81	0.29	0.62	2.82
12	ROB	10015.50	10036.03	2.08	1.60	6.93	0.09	0.23	1.30

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9852.61	9898.06	1655.98	156.79	39.83	72.63	4.35	10.56
2	LOB	9898.06	9943.50	368.83	76.49	45.47	16.18	1.68	4.82
3	LOB	9943.50	9988.94	134.11	41.68	45.46	5.88	0.92	3.22
4	Chan	9988.94	9992.73	6.12	2.22	3.81	0.27	0.59	2.75
5	Chan	9992.73	9996.53	13.04	3.50	3.81	0.57	0.92	3.72
6	Chan	9996.53	10000.32	24.95	5.18	3.83	1.09	1.37	4.82
7	Chan	10000.32	10004.12	31.53	5.95	3.81	1.38	1.57	5.30
8	Chan	10004.12	10007.91	22.04	4.80	3.81	0.97	1.26	4.59
9	Chan	10007.91	10011.71	13.76	3.62	3.81	0.60	0.95	3.80
10	Chan	10011.71	10015.50	7.13	2.44	3.81	0.31	0.64	2.93
11	ROB	10015.50	10036.03	2.51	1.78	6.95	0.11	0.26	1.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.122

INPUT
Description: 14th Street
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9844.298	2179.09	9845.758	2179.06	9853.348	2178.82	9863.598	2178.65	9868.028	2178.53
9884.818	2178.3	9885.028	2178.3	9885.178	2178.29	9885.808	2178.29	9900.268	2179.91
9903.998	2180.19	9907.798	2180.4	9910.428	2180.12	9910.608	2180.1	9910.788	2180.09
9914.888	2179.58	9916.708	2179.45	9922.118	2179.07	9925.188	2178.33	9926.238	2178.19
9926.818	2178.11	9944.158	2177.43	9945.338	2177.32	9946.698	2177.2	9950.59	2176.183
9957.068	2174.49	9964.028	2172.69	9965.698	2173.13	9968.678	2173.91	9978.948	2176.6
9985.838	2176.45	9989.738	2176.32	9990.748	2176.31	9992.208	2175.81	10000.07	2172.98
10010.51	2174.76	10016.25	2175.75	10020.64	2176.15	10027.37	2176.65	10033.63	2176.57
10036.3	2176.53	10048.93	2177.61	10051.24	2177.81	10052.55	2177.89	10054.11	2178
10066.14	2178.65	10068.47	2178.74	10078.76	2178.82	10088.59	2179.03	10089.01	2179.05
10090.83	2179.09	10093.5	2179.11	10097.64	2179.17	10105.71	2179.17	10113.52	2179.36
10122.67	2179.56	10123.58	2179.61	10132.27	2180.01	10136.19	2180.29	10142.58	2180.7
10147.89	2180.8	10155.56	2180.98	10167.89	2181.16	10168.58	2181.15	10169.13	2181.12
10176.82	2181.49	10186.71	2181.84	10198.17	2181.65	10205.89	2181.65	10214.36	2182.13

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9844.298	.02	19885.808	.06	9950.59	.05	10020.64	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9950.59	10020.64	307.59	296.11	275.86	.1	.3

Left Levee Station= 9907.8 Elevation= 2180.4

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2179.37	Element			
Vel Head (ft)	1.21	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2178.16	Reach Len. (ft)	307.59	296.11	275.86
Crit W.S. (ft)	2178.16	Flow Area (sq ft)	14.72	226.69	41.85
E.G. Slope (ft/ft)	0.020593	Area (sq ft)	14.72	226.69	41.85
Q Total (cfs)	2280.00	Flow (cfs)	37.42	2079.91	162.67
Top Width (ft)	130.70	Top Width (ft)	24.16	70.05	36.49
Vel Total (ft/s)	8.05	Avg. Vel. (ft/s)	2.54	9.18	3.89
Max Chl Dpth (ft)	5.47	Hydr. Depth (ft)	0.61	3.24	1.15
Conv. Total (cfs)	15888.0	Conv. (cfs)	260.8	14493.7	1133.6
Length Wtd. (ft)	294.82	Wetted Per. (ft)	24.32	71.83	36.58
Min Ch El (ft)	2172.69	Shear (lb/sq ft)	0.78	4.06	1.47
Alpha	1.20	Stream Power (lb/ft s)	1.98	37.22	5.72
Frctn Loss (ft)	4.97	Cum Volume (acre-ft)	9.38	20.64	8.50
C & E Loss (ft)	0.06	Cum SA (acres)	6.39	4.30	5.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2179.44	Element			
Vel Head (ft)	0.96	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2178.48	Reach Len. (ft)	307.59	296.11	275.86
Crit W.S. (ft)	2178.10	Flow Area (sq ft)	9.00	248.83	49.61
E.G. Slope (ft/ft)	0.014542	Area (sq ft)	9.00	248.83	49.61
Q Total (cfs)	2280.00	Flow (cfs)	32.25	2041.58	206.17
Top Width (ft)	105.00	Top Width (ft)	5.59	70.05	29.36
Vel Total (ft/s)	7.42	Avg. Vel. (ft/s)	3.58	8.20	4.16
Max Chl Dpth (ft)	5.79	Hydr. Depth (ft)	1.61	3.55	1.69
Conv. Total (cfs)	18906.9	Conv. (cfs)	267.4	16929.8	1709.7
Length Wtd. (ft)	295.41	Wetted Per. (ft)	6.86	71.83	30.22
Min Ch El (ft)	2172.69	Shear (lb/sq ft)	1.19	3.14	1.49
Alpha	1.13	Stream Power (lb/ft s)	4.27	25.80	6.19
Frctn Loss (ft)	4.80	Cum Volume (acre-ft)	6.56	21.41	6.39
C & E Loss (ft)	0.05	Cum SA (acres)	3.41	4.30	2.91

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9907.80	9929.20	0.17	0.25	2.77	0.01	0.09	0.67
2	LOB	9929.20	9950.59	37.26	14.47	21.55	1.63	0.68	2.57
3	Chan	9950.59	9960.60	289.20	32.88	10.34	12.68	3.29	8.79
4	Chan	9960.60	9970.60	535.15	47.58	10.34	23.47	4.75	11.25
5	Chan	9970.60	9980.61	181.20	24.79	10.29	7.95	2.48	7.31
6	Chan	9980.61	9990.62	100.53	17.22	10.01	4.41	1.72	5.84
7	Chan	9990.62	10000.63	328.43	35.83	10.59	14.40	3.58	9.17
8	Chan	10000.63	10010.63	446.99	42.39	10.15	19.60	4.24	10.54
9	Chan	10010.63	10020.64	198.41	25.99	10.11	8.70	2.60	7.63
10	ROB	10020.64	10059.38	162.67	41.85	36.58	7.13	1.15	3.89

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9929.20	9950.59	32.25	9.00	6.86	1.41	1.61	3.58
2	Chan	9950.59	9960.60	285.55	36.05	10.34	12.52	3.60	7.92
3	Chan	9960.60	9970.60	504.75	50.74	10.34	22.14	5.07	9.95
4	Chan	9970.60	9980.61	187.54	27.95	10.29	8.23	2.79	6.71
5	Chan	9980.61	9990.62	112.82	20.38	10.01	4.95	2.04	5.54
6	Chan	9990.62	10000.63	320.39	39.00	10.59	14.05	3.90	8.22
7	Chan	10000.63	10010.63	426.97	45.55	10.15	18.73	4.55	9.37
8	Chan	10010.63	10020.64	203.56	29.16	10.11	8.93	2.91	6.98
9	ROB	10020.64	10059.38	206.17	49.61	30.22	9.04	1.69	4.16

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

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 1.066

INPUT
Description:
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9824.31	2174	9826.6	2173.96	9829.89	2173.95	9832.66	2173.92	9834.94	2173.9
9836.1	2173.88	9839.99	2173.85	9851.69	2173.81	9853.79	2173.79	9858.32	2173.85
9859.98	2173.84	9912.5	2173.4	9922.63	2173.26	9927.78	2173.2	9929.81	2173.18
9943.7	2172.5	9948.83	2172.25	9957.4	2171.83	9957.48	2171.83	9958.2	2171.87

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 9959.03 2171.89 9964.21 2171.84  9970.5 2171.96 9975.93    2172 9980.942171.005
 9990.58 2169.09 9998.79 2167.4110009.44 2168.4910012.06 2168.82 10012.6 2168.78
10015.23 2168.5410025.61 2170.2310032.132171.209   10035 2171.6410062.34 2171.85
10066.03 2171.88 10073.9 2171.9310082.51  2172.310089.47 2172.69 10092.8 2172.72
10119.34 2173.7310127.54 2174.02 10128.5 2174.0210130.78 2173.9910131.79    2174
10132.27 2173.9710134.58  2174.110137.06 2174.1510157.39 2174.71 10162.8 2174.95
10167.53  2175.210170.57 2175.1910174.71  2175.410191.85 2175.99

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9824.31     .04 9980.94     .0510032.13     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9980.9410032.13            218.11  213.39  176.28             .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2174.14    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.01    Wt. n-Val.                  0.040      0.050     0.050
  W.S. Elev (ft)          2173.13    Reach Len. (ft)           218.11     213.39    176.28
  Crit W.S. (ft)          2173.13    Flow Area (sq ft)          47.90     205.24     73.69
  E.G. Slope (ft/ft)     0.014067    Area (sq ft)               47.90     205.24     73.69
  Q Total (cfs)           2280.00    Flow (cfs)                204.59    1810.27    265.14
  Top Width (ft)           172.64    Top Width (ft)             50.06      51.19     71.38
  Vel Total (ft/s)           6.98    Avg. Vel. (ft/s)            4.27       8.82      3.60
  Max Chl Dpth (ft)          5.72    Hydr. Depth (ft)            0.96       4.01      1.03
  Conv. Total (cfs)      19223.6     Conv. (cfs)               1724.9    15263.1    2235.5
  Length Wtd. (ft)         209.45    Wetted Per. (ft)           50.20      51.85     71.44
  Min Ch El (ft)          2167.41    Shear (lb/sq ft)            0.84       3.48      0.91
  Alpha                      1.33    Stream Power (lb/ft s)      3.58      30.66      3.26
  Frctn Loss (ft)            2.40    Cum Volume (acre-ft)        9.16      19.17      8.14
  C & E Loss (ft)            0.09    Cum SA (acres)              6.13       3.88      5.08

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2174.59    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.47    Wt. n-Val.                  0.040      0.050     0.050
  W.S. Elev (ft)          2173.13    Reach Len. (ft)           218.11     213.39    176.28
  Crit W.S. (ft)          2173.13    Flow Area (sq ft)          27.39     205.12     12.21
  E.G. Slope (ft/ft)     0.018309    Area (sq ft)               27.39     205.12     12.21
  Q Total (cfs)           2280.00    Flow (cfs)                157.94    2063.36     58.70
  Top Width (ft)            80.00    Top Width (ft)             20.94      51.19      7.87
  Vel Total (ft/s)           9.32    Avg. Vel. (ft/s)            5.77      10.06      4.81
  Max Chl Dpth (ft)          5.72    Hydr. Depth (ft)            1.31       4.01      1.55
  Conv. Total (cfs)      16850.2     Conv. (cfs)               1167.3    15249.2     433.8
  Length Wtd. (ft)         211.46    Wetted Per. (ft)           22.28      51.85      9.35
  Min Ch El (ft)          2167.41    Shear (lb/sq ft)            1.40       4.52      1.49
  Alpha                      1.09    Stream Power (lb/ft s)      8.10      45.49      7.18
  Frctn Loss (ft)            3.44    Cum Volume (acre-ft)        6.43      19.87      6.20
  C & E Loss (ft)            0.06    Cum SA (acres)              3.32       3.88      2.79

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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.

  Profile #profile 1

            Pos        Left Sta   Right Sta     Flow      Area      W.P.   Percent      Hydr   Velocity
                        (ft)       (ft)        (cfs)    (sq ft)    (ft)     Conv  Depth(ft)    (ft/s)
  1         LOB       9918.29    9949.61       20.57      8.59    18.76     0.90       0.46      2.40
  2         LOB       9949.61    9980.94      184.01     39.31    31.44     8.07       1.26      4.68
  3         Chan      9980.94    9988.25      140.65     20.83     7.46     6.17       2.85      6.75
  4         Chan      9988.25    9995.57      280.48     31.54     7.46    12.30       4.31      8.89
  5         Chan      9995.57   10002.88      417.47     39.90     7.40    18.31       5.46     10.46
  6         Chan     10002.88   10010.19      354.23     36.06     7.35    15.54       4.93      9.82
  7         Chan     10010.19   10017.50      295.37     32.37     7.37    12.95       4.43      9.13
  8         Chan     10017.50   10024.82      210.76     26.49     7.41     9.24       3.62      7.96
  9         Chan     10024.82   10032.13      111.33     18.05     7.40     4.88       2.47      6.17
  10        ROB      10032.13   10064.07      182.46     44.89    31.98     8.00       1.41      4.06
  11        ROB      10064.07   10096.02       81.73     27.72    31.96     3.58       0.87      2.95
  12        ROB      10096.02   10127.96        0.95      1.07     7.50     0.04       0.14      0.88

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9949.61	9980.94	157.94	27.39	22.28	6.93	1.31	5.77
2	Chan	9980.94	9988.25	160.25	20.82	7.46	7.03	2.85	7.70
3	Chan	9988.25	9995.57	319.71	31.52	7.46	14.02	4.31	10.14
4	Chan	9995.57	10002.88	475.93	39.88	7.40	20.87	5.45	11.93
5	Chan	10002.88	10010.19	403.80	36.04	7.35	17.71	4.93	11.20
6	Chan	10010.19	10017.50	336.68	32.35	7.37	14.77	4.42	10.41
7	Chan	10017.50	10024.82	240.19	26.47	7.41	10.53	3.62	9.07
8	Chan	10024.82	10032.13	126.81	18.03	7.40	5.56	2.47	7.03
9	ROB	10032.13	10064.07	58.70	12.21	9.35	2.57	1.55	4.81

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 1.026

INPUT
Description:
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9792.07	2169.9	9814.28	2169.57	9845.89	2168.83	9852.19	2168.68	9856.68	2168.64
9864.93	2168.7	9876.68	2168.71	9882.71	2168.73	9888.27	2168.68	9901.53	2168.32
9910.57	2168.1	9924.67	2167.91	9924.78	2167.87	9944.1	2168.04	9956.65	2168.19
9970.66	2168.5	9972.2	2168.48	9973.97	2168.51	9977.32	2168.56	9977.42	2168.56
9977.96	2168.4	9979.25	2168.1	9984.69	2166.76	10000.15	2162.98	10010.99	2164.77
10012.62	2164.97	10016.79	2165	10024.92	2165.21	10031.59	2166.31	10044.74	2168.04
10044.95	2168.07	10045.01	2168.11	10045.08	2168.08	10045.35	2168.09	10064.9	2168.55
10075.57	2168.72	10083.28	2168.81	10087.03	2168.65	10108.3	2167.77	10112.11	2167.64
10120.36	2168.43	10129.75	2169.31	10136.91	2169.98	10142.41	2170.51	10159.49	2171.11
10176.9	2171.75								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9792.07	.045	9984.69	.05	10031.59	.05	10129.75	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.69	10031.59	209.4	159.41	139.66	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2169.94	Element			
Vel Head (ft)	0.70	Wt. n-Val.	0.045	0.050	0.050
W.S. Elev (ft)	2169.25	Reach Len. (ft)	209.40	159.41	139.66
Crit W.S. (ft)	2169.25	Flow Area (sq ft)	131.66	207.61	99.70
E.G. Slope (ft/ft)	0.009543	Area (sq ft)	131.66	207.61	99.70
Q Total (cfs)	2280.00	Flow (cfs)	378.07	1608.76	293.17
Top Width (ft)	300.97	Top Width (ft)	156.51	46.90	97.56
Vel Total (ft/s)	5.19	Avg. Vel. (ft/s)	2.87	7.75	2.94
Max Chl Dpth (ft)	6.26	Hydr. Depth (ft)	0.84	4.43	1.02
Conv. Total (cfs)	23339.3	Conv. (cfs)	3870.1	16468.1	3001.0
Length Wtd. (ft)	168.92	Wetted Per. (ft)	156.76	47.61	97.80
Min Ch El (ft)	2162.98	Shear (lb/sq ft)	0.50	2.60	0.61
Alpha	1.66	Stream Power (lb/ft s)	1.44	20.13	1.79
Frctn Loss (ft)	1.71	Cum Volume (acre-ft)	8.71	18.16	7.78
C & E Loss (ft)	0.00	Cum SA (acres)	5.61	3.64	4.74

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2170.53	Element			
Vel Head (ft)	1.28	Wt. n-Val.	0.045	0.050	0.050
W.S. Elev (ft)	2169.25	Reach Len. (ft)	209.40	159.41	139.66
Crit W.S. (ft)	2169.25	Flow Area (sq ft)	19.45	207.85	49.60
E.G. Slope (ft/ft)	0.014578	Area (sq ft)	19.45	207.85	49.60
Q Total (cfs)	2280.00	Flow (cfs)	79.47	1992.18	208.35
Top Width (ft)	103.00	Top Width (ft)	17.69	46.90	38.41
Vel Total (ft/s)	8.23	Avg. Vel. (ft/s)	4.09	9.58	4.20
Max Chl Dpth (ft)	6.27	Hydr. Depth (ft)	1.10	4.43	1.29
Conv. Total (cfs)	18883.8	Conv. (cfs)	658.2	16499.9	1725.6
Length Wtd. (ft)	159.12	Wetted Per. (ft)	18.74	47.61	39.16

Min Ch El (ft)	2162.98	Shear (lb/sq ft)	0.94	3.97	1.15
Alpha	1.22	Stream Power (lb/ft s)	3.86	38.08	4.84
Frctn Loss (ft)	2.27	Cum Volume (acre-ft)	6.31	18.85	6.07
C & E Loss (ft)	0.00	Cum SA (acres)	3.22	3.64	2.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9792.07	9830.60	0.02	0.07	2.41	0.00	0.03	0.27
2	LOB	9830.60	9869.12	27.25	16.33	38.53	1.20	0.42	1.67
3	LOB	9869.12	9907.64	59.98	26.21	38.53	2.63	0.68	2.29
4	LOB	9907.64	9946.17	165.85	48.25	38.53	7.27	1.25	3.44
5	LOB	9946.17	9984.69	124.95	40.80	38.75	5.48	1.06	3.06
6	Chan	9984.69	9991.39	136.66	22.10	6.90	5.99	3.30	6.18
7	Chan	9991.39	9998.09	267.87	33.09	6.90	11.75	4.94	8.09
8	Chan	9998.09	10004.79	365.10	39.68	6.82	16.01	5.92	9.20
9	Chan	10004.79	10011.49	271.41	33.14	6.79	11.90	4.95	8.19
10	Chan	10011.49	10018.19	213.84	28.59	6.71	9.38	4.27	7.48
11	Chan	10018.19	10024.89	201.97	27.61	6.70	8.86	4.12	7.31
12	Chan	10024.89	10031.59	151.92	23.40	6.79	6.66	3.49	6.49
13	ROB	10031.59	10060.65	148.45	42.91	29.19	6.51	1.48	3.46
14	ROB	10060.65	10089.71	32.12	17.10	29.07	1.41	0.59	1.88
15	ROB	10089.71	10118.78	104.41	34.70	29.11	4.58	1.19	3.01
16	ROB	10118.78	10147.84	8.18	4.99	10.42	0.36	0.48	1.64

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9946.17	9984.69	79.47	19.45	18.74	3.49	1.10	4.09
2	Chan	9984.69	9991.39	169.35	22.13	6.90	7.43	3.30	7.65
3	Chan	9991.39	9998.09	331.65	33.12	6.90	14.55	4.94	10.01
4	Chan	9998.09	10004.79	451.91	39.71	6.82	19.82	5.93	11.38
5	Chan	10004.79	10011.49	336.04	33.17	6.79	14.74	4.95	10.13
6	Chan	10011.49	10018.19	264.84	28.62	6.71	11.62	4.27	9.25
7	Chan	10018.19	10024.89	250.16	27.65	6.70	10.97	4.13	9.05
8	Chan	10024.89	10031.59	188.24	23.43	6.79	8.26	3.50	8.03
9	ROB	10031.59	10060.65	191.38	43.06	29.19	8.39	1.48	4.44
10	ROB	10060.65	10089.71	16.96	6.55	9.97	0.74	0.70	2.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.995

INPUT
Description:
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9768.65	2165.8	9779.44	2165.15	9820.31	2162.58	9820.35	2162.58	9825.1	2162.77
9868.5	2164.5	9871.79	2164.55	9876.88	2164.67	9884.08	2164.9	9884.25	2164.9
9885.19	2164.9	9894.92	2164.92	9906.18	2164.93	9913	2164.99	9916.87	2164.99
9934.05	2165.2	9938.99	2165.18	9952.35	2165.36	9954.19	2165.37	9957.29	2165.39
9961.51	2165.4	9975.48	2165.13	9977.85	2164.41	9983.29	2162.88	9997.41	2158.91
10004.7	2160.171	10011.74	2161.51	10013.69	2161.821	10024.28	2163.141	10026.41	2163.41
10028.77	2163.611	10029.49	2163.61	10030.75	2163.69	10035.5	2163.831	10043.53	2164.05
10053.8	2164.431	10059.39	2165.41	10063.01	2165.981	10070.57	2167.31	10077.83	2168.4
10085.09	2168.741	10092.47	2169	10096.77	2169.121	10099.51	2169.221	10103.63	2169.38
10117.75	2169.88								

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Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
 9768.65     .05 9983.29     .0510024.28     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9983.2910024.28             68.52  154.72  192.89            .1        .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2166.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.050	0.050	0.060
W.S. Elev (ft)	2165.46	Reach Len. (ft)	68.52	154.72	192.89
Crit W.S. (ft)	2165.46	Flow Area (sq ft)	213.20	179.16	48.76
E.G. Slope (ft/ft)	0.010807	Area (sq ft)	213.20	179.16	48.76
Q Total (cfs)	2280.00	Flow (cfs)	666.47	1458.75	154.79
Top Width (ft)	285.48	Top Width (ft)	209.00	40.99	35.49
Vel Total (ft/s)	5.17	Avg. Vel. (ft/s)	3.13	8.14	3.17
Max Chl Dpth (ft)	6.55	Hydr. Depth (ft)	1.02	4.37	1.37
Conv. Total (cfs)	21931.9	Conv. (cfs)	6410.9	14032.0	1488.9
Length Wtd. (ft)	130.16	Wetted Per. (ft)	209.46	41.88	35.62
Min Ch El (ft)	2158.91	Shear (lb/sq ft)	0.69	2.89	0.92
Alpha	1.72	Stream Power (lb/ft s)	2.15	23.50	2.93
Frctn Loss (ft)	1.32	Cum Volume (acre-ft)	7.88	17.45	7.55
C & E Loss (ft)	0.01	Cum SA (acres)	4.73	3.48	4.53

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2167.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.31	Wt. n-Val.	0.050	0.050	0.060
W.S. Elev (ft)	2165.87	Reach Len. (ft)	68.52	154.72	192.89
Crit W.S. (ft)		Flow Area (sq ft)	23.86	195.93	63.27
E.G. Slope (ft/ft)	0.013994	Area (sq ft)	23.86	195.93	63.27
Q Total (cfs)	2280.00	Flow (cfs)	83.38	1926.77	269.84
Top Width (ft)	99.77	Top Width (ft)	23.29	40.99	35.49
Vel Total (ft/s)	8.05	Avg. Vel. (ft/s)	3.49	9.83	4.26
Max Chl Dpth (ft)	6.96	Hydr. Depth (ft)	1.02	4.78	1.78
Conv. Total (cfs)	19273.5	Conv. (cfs)	704.9	16287.6	2281.1
Length Wtd. (ft)	151.27	Wetted Per. (ft)	24.08	41.88	36.03
Min Ch El (ft)	2158.91	Shear (lb/sq ft)	0.87	4.09	1.53
Alpha	1.30	Stream Power (lb/ft s)	3.02	40.20	6.54
Frctn Loss (ft)	2.06	Cum Volume (acre-ft)	6.21	18.12	5.89
C & E Loss (ft)	0.02	Cum SA (acres)	3.12	3.48	2.58

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9768.65	9811.58	117.68	43.25	37.36	5.16	1.16	2.72
2	LOB	9811.58	9854.51	418.89	97.98	42.97	18.37	2.28	4.28
3	LOB	9854.51	9897.44	82.49	36.95	42.95	3.62	0.86	2.23
4	LOB	9897.44	9940.36	24.64	17.90	42.93	1.08	0.42	1.38
5	LOB	9940.36	9983.29	22.77	17.12	43.25	1.00	0.40	1.33
6	Chan	9983.29	9989.15	130.65	19.93	6.08	5.73	3.40	6.56
7	Chan	9989.15	9995.00	252.22	29.58	6.08	11.06	5.05	8.53
8	Chan	9995.00	10000.86	361.69	36.51	6.00	15.86	6.24	9.91
9	Chan	10000.86	10006.71	290.01	31.87	5.95	12.72	5.44	9.10
10	Chan	10006.71	10012.57	200.08	25.52	5.96	8.78	4.36	7.84
11	Chan	10012.57	10018.42	134.28	20.03	5.91	5.89	3.42	6.71
12	Chan	10018.42	10024.28	89.81	15.72	5.90	3.94	2.69	5.71
13	ROB	10024.28	10042.97	115.15	32.38	18.73	5.05	1.73	3.56
14	ROB	10042.97	10061.67	39.63	16.38	16.89	1.74	0.98	2.42

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9940.36	9983.29	83.38	23.86	24.08	3.66	1.02	3.49
2	Chan	9983.29	9989.15	180.77	22.32	6.08	7.93	3.81	8.10
3	Chan	9989.15	9995.00	328.86	31.97	6.08	14.42	5.46	10.29
4	Chan	9995.00	10000.86	460.45	38.91	6.00	20.20	6.64	11.83
5	Chan	10000.86	10006.71	374.74	34.27	5.95	16.44	5.85	10.94
6	Chan	10006.71	10012.57	266.07	27.92	5.96	11.67	4.77	9.53
7	Chan	10012.57	10018.42	185.63	22.42	5.91	8.14	3.83	8.28

8	Chan	10018.42	10024.28	130.26	18.12	5.90	5.71	3.09	7.19
9	ROB	10024.28	10042.97	189.17	40.02	18.73	8.30	2.14	4.73
10	ROB	10042.97	10061.67	80.67	23.25	17.30	3.54	1.38	3.47

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: C8
REACH: Reach 1 RS: 0.966

INPUT
Description:
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9737.71	2164.78	9737.73	2164.78	9737.77	2164.78	9738.54	2164.73	9748.05	2164.2
9754.18	2163.81	9759.94	2163.46	9783.69	2162.03	9788.1	2161.59	9795.9	2160.9
9799.61	2160.66	9824.5	2161.76	9842	2162.42	9851.27	2162.77	9860.67	2162.5
9871.01	2162.31	9874.91	2162.21	9876.32	2162.18	9880.95	2162.17	9881.82	2162.3
9885	2162.33	9886.52	2162.35	9894.98	2162.53	9899.54	2162.58	9902.77	2162.6
9908.85	2162.63	9909.55	2162.63	9909.67	2162.63	9910.08	2162.64	9910.4	2162.6
9912.01	2162.63	9916.61	2162.62	9944.23	2162.56	9947.53	2162.65	9962.21	2162.8
9964.69	2162.13	9974.44	2159.96	9974.96	2159.91	9975.16	2159.89	9975.86	2159.8
9987.74	2158.35	9999.75	2156.05	10000.64	2155.86	10001.05	2156.05	10007	2158.8
10009.72	2160.342	10011.12	2161.14	110012.69	2162.05	10015.38	2163.33	10019.55	2163.58
10025.41	2163.84	10031.61	2164.21	0037.44	2164.38	10051.94	2165.73		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9737.71	.05	9974.44	.05	10009.7	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.44	10009.7	135.92	187.53	175.08	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2164.09	Element			
Vel Head (ft)	0.80	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2163.29	Reach Len. (ft)	135.92	187.53	175.08
Crit W.S. (ft)	2163.29	Flow Area (sq ft)	231.44	182.49	7.87
E.G. Slope (ft/ft)	0.009535	Area (sq ft)	231.44	182.49	7.87
Q Total (cfs)	2280.00	Flow (cfs)	711.71	1544.26	24.03
Top Width (ft)	252.52	Top Width (ft)	211.67	35.26	5.59
Vel Total (ft/s)	5.41	Avg. Vel. (ft/s)	3.08	8.46	3.05
Max Chl Dpth (ft)	7.43	Hydr. Depth (ft)	1.09	5.18	1.41
Conv. Total (cfs)	23348.8	Conv. (cfs)	7288.4	15814.3	246.1
Length Wtd. (ft)	171.53	Wetted Per. (ft)	212.16	36.65	6.33
Min Ch El (ft)	2155.86	Shear (lb/sq ft)	0.65	2.96	0.74
Alpha	1.76	Stream Power (lb/ft s)	2.00	25.08	2.26
Frctn Loss (ft)	1.65	Cum Volume (acre-ft)	7.53	16.81	7.42
C & E Loss (ft)	0.01	Cum SA (acres)	4.40	3.35	4.44

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2165.10	Element			
Vel Head (ft)	1.50	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2163.60	Reach Len. (ft)	135.92	187.53	175.08
Crit W.S. (ft)	2163.60	Flow Area (sq ft)	58.46	193.47	9.61
E.G. Slope (ft/ft)	0.013249	Area (sq ft)	58.46	193.47	9.61
Q Total (cfs)	2280.00	Flow (cfs)	235.38	2006.35	38.27
Top Width (ft)	85.29	Top Width (ft)	44.44	35.26	5.59
Vel Total (ft/s)	8.72	Avg. Vel. (ft/s)	4.03	10.37	3.98
Max Chl Dpth (ft)	7.74	Hydr. Depth (ft)	1.32	5.49	1.72
Conv. Total (cfs)	19808.4	Conv. (cfs)	2044.9	17431.0	332.5
Length Wtd. (ft)	179.33	Wetted Per. (ft)	45.78	36.65	6.64
Min Ch El (ft)	2155.86	Shear (lb/sq ft)	1.06	4.37	1.20
Alpha	1.27	Stream Power (lb/ft s)	4.25	45.28	4.77
Frctn Loss (ft)	2.24	Cum Volume (acre-ft)	6.14	17.42	5.73
C & E Loss (ft)	0.06	Cum SA (acres)	3.07	3.35	2.49

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9737.71	9785.06	30.31	14.98	22.33	1.33	0.67	2.02
2	LOB	9785.06	9832.40	381.95	92.63	47.43	16.75	1.96	4.12
3	LOB	9832.40	9879.75	99.01	41.18	47.37	4.34	0.87	2.40
4	LOB	9879.75	9927.10	79.11	35.99	47.36	3.47	0.76	2.20
5	LOB	9927.10	9974.44	121.33	46.65	47.68	5.32	0.99	2.60
6	Chan	9974.44	9979.48	121.14	18.25	5.07	5.31	3.62	6.64
7	Chan	9979.48	9984.52	157.24	21.35	5.07	6.90	4.24	7.37
8	Chan	9984.52	9989.55	198.10	24.56	5.09	8.69	4.88	8.07
9	Chan	9989.55	9994.59	261.01	29.06	5.13	11.45	5.77	8.98
10	Chan	9994.59	9999.63	337.74	33.92	5.13	14.81	6.73	9.96
11	Chan	9999.63	10004.66	318.13	33.57	5.47	13.95	6.66	9.48
12	Chan	10004.66	10009.70	150.90	21.79	5.68	6.62	4.33	6.92
13	ROB	10009.70	10018.15	24.03	7.87	6.33	1.05	1.41	3.05

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9927.10	9974.44	235.38	58.46	45.78	10.32	1.32	4.03
2	Chan	9974.44	9979.48	164.28	19.82	5.07	7.21	3.93	8.29
3	Chan	9979.48	9984.52	209.18	22.92	5.07	9.17	4.55	9.13
4	Chan	9984.52	9989.55	259.61	26.13	5.09	11.39	5.19	9.94
5	Chan	9989.55	9994.59	336.77	30.62	5.13	14.77	6.08	11.00
6	Chan	9994.59	9999.63	430.47	35.48	5.13	18.88	7.04	12.13
7	Chan	9999.63	10004.66	405.77	35.14	5.47	17.80	6.98	11.55
8	Chan	10004.66	10009.70	200.27	23.36	5.68	8.78	4.64	8.57
9	ROB	10009.70	10018.15	38.27	9.61	6.64	1.68	1.72	3.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.931

INPUT
Description:
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9814.28	2162	9818.65	2161.78	9821.51	2161.63	9826.16	2161.4	9834.53	2160.95
9841.17	2161	9857.86	2161.04	9872.16	2159.73	9889.19	2158.21	9926.63	2158.72
9930.22	2158.8	9931.91	2158.78	9940.18	2158.84	9946.35	2158.87	9949.64	2158.89
9950.74	2158.9	9952.05	2158.91	9958.52	2158.73	9960.15	2158.6	9964.04	2158.25
9967.12	2158	9981.73	2155.63	9994.75	2153.57	9995.74	2153.5	110001.94	2153.33
10003.45	2153.3	10005.99	2154.18	10010.45	2155.74	10020.37	2159.21	10030.37	2159.17
10032.06	2159.19	10032.56	2159.21	10041.16	2159.13	10048.94	2159.63	10050.88	2159.76
10061.24	2159.4	10075.07	2159	10077.2	2159.13	10084.83	2159.83	10099.79	2159.94
10102.12	2159.97	10103.35	2160	10104.44	2160	10114.48	2159.98	10119.27	2159.94
10129.18	2159.84	10134.84	2160	10140.33	2160.14	10143.47	2160.19	10146.53	2160.26
10148.24	2160.29	10153.71	2160.3	10153.91	2160.36	10154.12	2160.36		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9814.28	.045	9981.73	.05	10010.45	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.73	10010.45	219.03	213.09	175.14	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2160.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.	0.045	0.050	0.060
W.S. Elev (ft)	2159.89	Reach Len. (ft)	219.03	213.09	175.14
Crit W.S. (ft)	2159.89	Flow Area (sq ft)	161.02	162.80	61.09
E.G. Slope (ft/ft)	0.009665	Area (sq ft)	161.02	162.80	61.09
Q Total (cfs)	2280.00	Flow (cfs)	667.34	1492.04	120.62
Top Width (ft)	229.13	Top Width (ft)	111.31	28.72	89.10
Vel Total (ft/s)	5.92	Avg. Vel. (ft/s)	4.14	9.17	1.97
Max Chl Dpth (ft)	6.59	Hydr. Depth (ft)	1.45	5.67	0.69
Conv. Total (cfs)	23192.2	Conv. (cfs)	6788.2	15177.1	1226.9
Length Wtd. (ft)	203.48	Wetted Per. (ft)	111.62	29.30	89.76
Min Ch El (ft)	2153.30	Shear (lb/sq ft)	0.87	3.35	0.41
Alpha	1.72	Stream Power (lb/ft s)	3.61	30.73	0.81
Frctn Loss (ft)	2.52	Cum Volume (acre-ft)	6.92	16.07	7.28

C & E Loss (ft)	0.08	Cum SA (acres)	3.90	3.21	4.25

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2161.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.32	Wt. n-Val.	0.045	0.050	0.060
W.S. Elev (ft)	2160.00	Reach Len. (ft)	219.03	213.09	175.14
Crit W.S. (ft)	2160.00	Flow Area (sq ft)	81.67	165.85	40.98
E.G. Slope (ft/ft)	0.011781	Area (sq ft)	81.67	165.85	40.98
Q Total (cfs)	2280.00	Flow (cfs)	448.17	1699.11	132.72
Top Width (ft)	100.00	Top Width (ft)	41.73	28.72	29.55
Vel Total (ft/s)	7.90	Avg. Vel. (ft/s)	5.49	10.25	3.24
Max Chl Dpth (ft)	6.70	Hydr. Depth (ft)	1.96	5.77	1.39
Conv. Total (cfs)	21005.7	Conv. (cfs)	4128.9	15653.9	1222.8
Length Wtd. (ft)	203.63	Wetted Per. (ft)	43.11	29.30	31.00
Min Ch El (ft)	2153.30	Shear (lb/sq ft)	1.39	4.16	0.97
Alpha	1.36	Stream Power (lb/ft s)	7.65	42.65	3.15
Frctn Loss (ft)	2.88	Cum Volume (acre-ft)	5.92	16.65	5.63
C & E Loss (ft)	0.06	Cum SA (acres)	2.93	3.21	2.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9847.77	9881.26	9.99	5.29	10.88	0.44	0.49	1.89
2	LOB	9881.26	9914.75	192.91	48.99	33.52	8.46	1.46	3.94
3	LOB	9914.75	9948.24	126.35	37.99	33.49	5.54	1.13	3.33
4	LOB	9948.24	9981.73	338.10	68.75	33.71	14.83	2.05	4.92
5	Chan	9981.73	9985.83	148.87	18.81	4.15	6.53	4.58	7.92
6	Chan	9985.83	9989.94	185.68	21.47	4.15	8.14	5.23	8.65
7	Chan	9989.94	9994.04	225.58	24.13	4.15	9.89	5.88	9.35
8	Chan	9994.04	9998.14	259.40	26.14	4.11	11.38	6.37	9.92
9	Chan	9998.14	10002.24	269.14	26.70	4.10	11.80	6.51	10.08
10	Chan	10002.24	10006.35	243.78	25.57	4.27	10.69	6.23	9.53
11	Chan	10006.35	10010.45	159.59	19.97	4.35	7.00	4.87	7.99
12	ROB	10010.45	10039.18	91.77	37.24	29.32	4.02	1.30	2.46
13	ROB	10039.18	10067.92	15.98	12.95	28.76	0.70	0.45	1.23
14	ROB	10067.92	10096.65	12.84	10.74	25.03	0.56	0.43	1.20
15	ROB	10096.65	10125.39	0.00	0.01	1.10	0.00	0.01	0.07
16	ROB	10125.39	10154.12	0.03	0.16	5.54	0.00	0.03	0.20

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9914.75	9948.24	32.29	9.36	9.40	1.42	1.14	3.45
2	LOB	9948.24	9981.73	415.87	72.31	33.71	18.24	2.16	5.75
3	Chan	9981.73	9985.83	170.82	19.24	4.15	7.49	4.69	8.88
4	Chan	9985.83	9989.94	212.07	21.91	4.15	9.30	5.34	9.68
5	Chan	9989.94	9994.04	256.69	24.57	4.15	11.26	5.99	10.45
6	Chan	9994.04	9998.14	294.50	26.58	4.11	12.92	6.48	11.08
7	Chan	9998.14	10002.24	305.38	27.14	4.10	13.39	6.61	11.25
8	Chan	10002.24	10006.35	276.93	26.01	4.27	12.15	6.34	10.65
9	Chan	10006.35	10010.45	182.72	20.40	4.35	8.01	4.97	8.96
10	ROB	10010.45	10039.18	131.70	40.29	29.32	5.78	1.40	3.27
11	ROB	10039.18	10067.92	1.03	0.70	1.67	0.04	0.85	1.47

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

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.890

INPUT
Description:
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9864.77	2158	9866.9	2157.97	9889.38	2157.3	9910.87	2156.72	9933.46	2154.87
9945.81	2153.8	9946.22	2153.81	9946.27	2153.8	9950.41	2153.88	9981.68	2154.39
9990.27	2152.939	9994.05	2152.3	9998.97	2151.38	9999.49	2151.41	10000.23	2151.44
10005.87	2151.71	10007.74	2152.41	10010.26	2153.29	10011.68	2153.81	10018.37	2153.92
10022.52	2153.96	10033.83	2154.11	10035.22	2154.11	10037.56	2154.17	10047.24	2154.35
10060.84	2154.62	10076.5	2154.45	10095.18	2154.11	10098.13	2154.09	10100.11	2154.06
10103.13	2154.11	10136.81	2154.67	10143.17	2154.71	10167.99	2155.21	10171.09	2155.28
10173.78	2155.31	10175.66	2155.38	10177.14	2155.51	10180.75	2155.61	10207.02	2156.61
10211.58	2156.62	10211.66	2156.62	10211.89	2156.61	10214.47	2156.65		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9864.77	.06	9990.27	.05	10010.26	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.27	10010.26	220.55	198.91	127.55	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2156.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.060	0.050	0.040
W.S. Elev (ft)	2155.75	Reach Len. (ft)	220.55	198.91	127.55
Crit W.S. (ft)	2155.75	Flow Area (sq ft)	99.36	74.30	217.54
E.G. Slope (ft/ft)	0.016465	Area (sq ft)	99.36	74.30	217.54
Q Total (cfs)	2280.00	Flow (cfs)	407.53	670.31	1202.15
Top Width (ft)	261.67	Top Width (ft)	67.54	19.99	174.14
Vel Total (ft/s)	5.83	Avg. Vel. (ft/s)	4.10	9.02	5.53
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	1.47	3.72	1.25
Conv. Total (cfs)	17768.9	Conv. (cfs)	3176.1	5224.0	9368.8
Length Wtd. (ft)	156.11	Wetted Per. (ft)	67.75	20.41	174.26
Min Ch El (ft)	2151.38	Shear (lb/sq ft)	1.51	3.74	1.28
Alpha	1.27	Stream Power (lb/ft s)	6.18	33.75	7.09
Frctn Loss (ft)	2.97	Cum Volume (acre-ft)	6.27	15.49	6.72
C & E Loss (ft)	0.02	Cum SA (acres)	3.45	3.09	3.72

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2157.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.060	0.050	0.040
W.S. Elev (ft)	2156.29	Reach Len. (ft)	220.55	198.91	127.55
Crit W.S. (ft)	2156.29	Flow Area (sq ft)	56.53	85.13	145.69
E.G. Slope (ft/ft)	0.017305	Area (sq ft)	56.53	85.13	145.69
Q Total (cfs)	2280.00	Flow (cfs)	297.30	862.14	1120.56
Top Width (ft)	117.00	Top Width (ft)	25.27	19.99	71.74
Vel Total (ft/s)	7.93	Avg. Vel. (ft/s)	5.26	10.13	7.69
Max Chl Dpth (ft)	4.91	Hydr. Depth (ft)	2.24	4.26	2.03
Conv. Total (cfs)	17332.2	Conv. (cfs)	2260.0	6553.8	8518.4
Length Wtd. (ft)	160.56	Wetted Per. (ft)	27.57	20.41	73.78
Min Ch El (ft)	2151.38	Shear (lb/sq ft)	2.22	4.50	2.13
Alpha	1.14	Stream Power (lb/ft s)	11.65	45.62	16.41
Frctn Loss (ft)	3.20	Cum Volume (acre-ft)	5.58	16.04	5.25
C & E Loss (ft)	0.03	Cum SA (acres)	2.76	3.09	2.21

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9914.97	9940.07	29.92	12.42	17.40	1.31	0.72	2.41
2	LOB	9940.07	9965.17	195.57	44.37	25.13	8.58	1.77	4.41
3	LOB	9965.17	9990.27	182.04	42.57	25.22	7.98	1.70	4.28
4	Chan	9990.27	9993.13	68.41	8.71	2.90	3.00	3.05	7.85
5	Chan	9993.13	9995.98	87.78	10.13	2.90	3.85	3.55	8.67
6	Chan	9995.98	9998.84	110.67	11.64	2.90	4.85	4.08	9.51
7	Chan	9998.84	10001.69	122.53	12.30	2.86	5.37	4.31	9.96
8	Chan	10001.69	10004.55	116.16	11.91	2.86	5.09	4.17	9.75
9	Chan	10004.55	10007.40	101.64	11.15	2.96	4.46	3.90	9.12
10	Chan	10007.40	10010.26	63.13	8.46	3.03	2.77	2.96	7.46
11	ROB	10010.26	10051.10	432.99	68.45	40.93	18.99	1.68	6.33
12	ROB	10051.10	10091.94	285.25	53.24	40.85	12.51	1.30	5.36
13	ROB	10091.94	10132.79	347.47	59.93	40.85	15.24	1.47	5.80
14	ROB	10132.79	10173.63	132.92	33.67	40.85	5.83	0.82	3.95
15	ROB	10173.63	10214.47	3.52	2.24	10.78	0.15	0.21	1.57

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9940.07	9965.17	0.33	0.37	2.34	0.01	2.17	0.90
2	LOB	9965.17	9990.27	296.97	56.17	25.22	13.02	2.24	5.29
3	Chan	9990.27	9993.13	92.34	10.26	2.90	4.05	3.59	9.00
4	Chan	9993.13	9995.98	114.35	11.68	2.90	5.02	4.09	9.79
5	Chan	9995.98	9998.84	140.05	13.19	2.90	6.14	4.62	10.62
6	Chan	9998.84	10001.69	153.44	13.85	2.86	6.73	4.85	11.08
7	Chan	10001.69	10004.55	146.35	13.46	2.86	6.42	4.71	10.88
8	Chan	10004.55	10007.40	129.76	12.69	2.96	5.69	4.44	10.22
9	Chan	10007.40	10010.26	85.86	10.00	3.03	3.77	3.50	8.58
10	ROB	10010.26	10051.10	744.07	90.58	40.93	32.63	2.22	8.21
11	ROB	10051.10	10091.94	376.50	55.11	32.85	16.51	1.78	6.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.853

INPUT
Description:
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9873.96	2153.4	9916.74	2152.86	9920.55	2152.8	9920.8	2152.79	9939.19	2152.37
9984.97	2151.5	9991.16	2149.8	9993.69	2149.04	9998.58	2147.57	10008.01	2148.68
10009.64	2148.94	10017.76	2148.81	10020.95	2148.84	10023.41	2148.64	10024.74	2148.82
10027.45	2149.05	10031.15	2149.51	10034.12	2149.87	10035.11	2149.97	10035.84	2150.05
10036.89	2150.05	10039.17	2149.61	10040.67	2149.48	10044.8	2147.99	10048.61	2148.04
10051.96	2148.16	10055.44	2149	10060.34	2150.16	10074.7	2150.35	10074.93	2150.35
10075.26	2150.34	10085.11	2149.91	10092.99	2151.11	10093.72	2151.22	10095	2151.17
10106.34	2150.62	10108.71	2150.41	10109.43	2150.34	10114.55	2150.41	10146.86	2150.89
10152.62	2150.96	10175.25	2153.51	10183.18	2154.34	10189.99	2154.74	10193.1	2155.06
10193.5	2155.05	10193.75	2155	10194.3	2155.03	10200.61	2154.91	10202.99	2154.58
10204.57	2154.36	10207.67	2153.91	10213.67	2153.06	10216.5	2153.16	10239.72	2153.54

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9873.96	.06	9993.69	.05	10009.64	.05	10092.99	.06	10108.71	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.69	10009.64	186.45	217.91	285.2	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
10152.62	10189.7	2160

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2152.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.060	0.050	0.052
W.S. Elev (ft)	2151.78	Reach Len. (ft)	186.45	217.91	285.20
Crit W.S. (ft)	2151.78	Flow Area (sq ft)	14.94	56.24	254.44

E.G. Slope (ft/ft)	0.022245	Area (sq ft)	14.94	56.24	254.44
Q Total (cfs)	2280.00	Flow (cfs)	40.70	570.33	1668.98
Top Width (ft)	182.19	Top Width (ft)	23.26	15.95	142.98
Vel Total (ft/s)	7.00	Avg. Vel. (ft/s)	2.72	10.14	6.56
Max Chl Dpth (ft)	4.21	Hydr. Depth (ft)	0.64	3.53	1.78
Conv. Total (cfs)	15286.9	Conv. (cfs)	272.9	3823.9	11190.1
Length Wtd. (ft)	250.06	Wetted Per. (ft)	23.60	16.25	144.58
Min Ch El (ft)	2147.57	Shear (lb/sq ft)	0.88	4.81	2.44
Alpha	1.17	Stream Power (lb/ft s)	2.39	48.74	16.03
Frctn Loss (ft)	1.64	Cum Volume (acre-ft)	5.98	15.19	6.03
C & E Loss (ft)	0.13	Cum SA (acres)	3.22	3.01	3.25

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2153.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.40	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2152.26	Reach Len. (ft)	186.45	217.91	285.20
Crit W.S. (ft)	2152.26	Flow Area (sq ft)	26.27	64.00	165.51
E.G. Slope (ft/ft)	0.023211	Area (sq ft)	26.27	64.00	165.51
Q Total (cfs)	2280.00	Flow (cfs)	104.99	722.71	1452.30
Top Width (ft)	89.57	Top Width (ft)	23.26	15.95	50.36
Vel Total (ft/s)	8.91	Avg. Vel. (ft/s)	4.00	11.29	8.77
Max Chl Dpth (ft)	4.69	Hydr. Depth (ft)	1.13	4.01	3.29
Conv. Total (cfs)	14965.4	Conv. (cfs)	689.1	4743.7	9532.6
Length Wtd. (ft)	241.89	Wetted Per. (ft)	24.09	16.25	53.17
Min Ch El (ft)	2147.57	Shear (lb/sq ft)	1.58	5.71	4.51
Alpha	1.14	Stream Power (lb/ft s)	6.32	64.44	39.58
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	5.37	15.70	4.80
C & E Loss (ft)	0.30	Cum SA (acres)	2.64	3.01	2.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.74	9993.69	40.70	14.94	23.60	1.78	0.64	2.72
2	Chan	9993.69	9995.97	63.49	7.01	2.38	2.78	3.08	9.05
3	Chan	9995.97	9998.25	88.74	8.57	2.38	3.89	3.76	10.35
4	Chan	9998.25	10000.53	104.54	9.34	2.31	4.58	4.10	11.19
5	Chan	10000.53	10002.80	94.18	8.76	2.30	4.13	3.84	10.75
6	Chan	10002.80	10005.08	83.45	8.14	2.29	3.66	3.57	10.25
7	Chan	10005.08	10007.36	73.28	7.53	2.29	3.21	3.31	9.73
8	Chan	10007.36	10009.64	62.63	6.87	2.30	2.75	3.01	9.12
9	ROB	10009.64	10055.66	1021.03	131.39	46.52	44.78	2.86	7.77
10	ROB	10055.66	10101.67	329.96	65.51	46.27	14.47	1.42	5.04
11	ROB	10101.67	10147.69	299.95	53.37	46.04	13.16	1.16	5.62
12	ROB	10147.69	10193.70	18.04	4.18	5.75	0.79	0.85	4.32

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.74	9993.69	104.99	26.27	24.09	4.60	1.13	4.00
2	Chan	9993.69	9995.97	82.96	8.12	2.38	3.64	3.57	10.21
3	Chan	9995.97	9998.25	111.19	9.68	2.38	4.88	4.25	11.48
4	Chan	9998.25	10000.53	128.92	10.45	2.31	5.65	4.59	12.33
5	Chan	10000.53	10002.80	117.54	9.87	2.30	5.16	4.33	11.91
6	Chan	10002.80	10005.08	105.61	9.25	2.29	4.63	4.06	11.41
7	Chan	10005.08	10007.36	94.25	8.64	2.29	4.13	3.79	10.90

8	Chan	10007.36	10009.64	82.23	7.98	2.30	3.61	3.50	10.31
9	ROB	10009.64	10055.66	1382.97	153.79	46.52	60.66	3.34	8.99
10	ROB	10055.66	10101.67	69.33	11.72	6.65	3.04	2.70	5.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.811

INPUT
Description: Upstream cross section at 12th Street.
Cross section geometry
provided by Flood Control District of Maricopa County survey. See TDN, Section 3.

Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9818.7	2151.67	9832.28	2151.59	9883.55	2150.99	9932.1	2149.78	9974.24	2147.77
9980.68	2146.313	9990.51	2144.09	9995.77	2143.37	10000.81	2143.38	10013.63	2146.04
10032.53	2146.64	10045.46	2145.71	10048.26	2145	10051.93	2142.61	10055.24	2144.2
10065.47	2146.54	10069.13	2147.38	10095.63	2147.14	10133.3	2146.55	10168.89	2146.06
10203.44	2146.92	10216.11	2148.69	10227.09	2149.12	10231.01	2148.18	10284.29	2149.02

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9818.7	.04	9980.68	.03	10065.47	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.68	10065.47	35.71	32.81	29.82	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2149.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.040	0.030	0.060
W.S. Elev (ft)	2148.56	Reach Len. (ft)	35.71	32.81	29.82
Crit W.S. (ft)	2147.88	Flow Area (sq ft)	16.41	283.13	271.85
E.G. Slope (ft/ft)	0.003082	Area (sq ft)	16.41	283.13	271.85
Q Total (cfs)	2280.00	Flow (cfs)	26.81	1712.09	541.10
Top Width (ft)	283.55	Top Width (ft)	23.08	84.79	175.68
Vel Total (ft/s)	3.99	Avg. Vel. (ft/s)	1.63	6.05	1.99
Max Chl Dpth (ft)	5.95	Hydr. Depth (ft)	0.71	3.34	1.55
Conv. Total (cfs)	41067.3	Conv. (cfs)	482.9	30838.1	9746.3
Length Wtd. (ft)	32.81	Wetted Per. (ft)	23.26	86.83	175.96
Min Ch El (ft)	2142.61	Shear (lb/sq ft)	0.14	0.63	0.30
Alpha	1.79	Stream Power (lb/ft s)	0.22	3.79	0.59
Frctn Loss (ft)		Cum Volume (acre-ft)	5.91	14.34	4.31
C & E Loss (ft)		Cum SA (acres)	3.12	2.76	2.21

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2149.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.040	0.030	0.060
W.S. Elev (ft)	2149.45	Reach Len. (ft)	35.71	32.81	29.82
Crit W.S. (ft)	2148.06	Flow Area (sq ft)	36.83	358.15	141.66
E.G. Slope (ft/ft)	0.001816	Area (sq ft)	36.83	358.15	141.66
Q Total (cfs)	2280.00	Flow (cfs)	77.25	1944.49	258.27
Top Width (ft)	167.40	Top Width (ft)	23.08	84.79	59.53
Vel Total (ft/s)	4.25	Avg. Vel. (ft/s)	2.10	5.43	1.82
Max Chl Dpth (ft)	6.84	Hydr. Depth (ft)	1.60	4.22	2.38
Conv. Total (cfs)	53499.1	Conv. (cfs)	1812.6	45626.4	6060.1
Length Wtd. (ft)	32.81	Wetted Per. (ft)	24.15	86.83	62.40
Min Ch El (ft)	2142.61	Shear (lb/sq ft)	0.17	0.47	0.26
Alpha	1.42	Stream Power (lb/ft s)	0.36	2.54	0.47
Frctn Loss (ft)		Cum Volume (acre-ft)	5.23	14.64	3.79
C & E Loss (ft)		Cum SA (acres)	2.54	2.76	1.67

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9948.28	9980.68	26.81	16.41	23.26	1.18	0.71	1.63
2	Chan	9980.68	9992.79	267.43	43.62	12.38	11.73	3.60	6.13
3	Chan	9992.79	10004.91	465.13	60.50	12.23	20.40	4.99	7.69
4	Chan	10004.91	10017.02	216.11	38.28	12.30	9.48	3.16	5.64
5	Chan	10017.02	10029.13	121.49	26.94	12.12	5.33	2.22	4.51
6	Chan	10029.13	10041.24	116.01	26.22	12.14	5.09	2.16	4.42
7	Chan	10041.24	10053.36	280.16	45.85	13.08	12.29	3.79	6.11
8	Chan	10053.36	10065.47	245.76	41.73	12.58	10.78	3.45	5.89

9	ROB	10065.47	10109.23	102.92	61.24	43.86	4.51	1.40	1.68
10	ROB	10109.23	10153.00	182.45	86.26	43.77	8.00	1.97	2.12
11	ROB	10153.00	10196.76	226.29	98.17	43.77	9.93	2.24	2.31
12	ROB	10196.76	10240.53	28.88	24.45	29.73	1.27	0.83	1.18
13	ROB	10240.53	10284.29	0.56	1.73	14.83	0.02	0.12	0.32

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9948.28	9980.68	77.25	36.83	24.15	3.39	1.60	2.10
2	Chan	9980.68	9992.79	300.32	54.34	12.38	13.17	4.49	5.53
3	Chan	9992.79	10004.91	475.31	71.21	12.23	20.85	5.88	6.67
4	Chan	10004.91	10017.02	253.91	49.00	12.30	11.14	4.05	5.18
5	Chan	10017.02	10029.13	165.31	37.65	12.12	7.25	3.11	4.39
6	Chan	10029.13	10041.24	159.93	36.94	12.14	7.01	3.05	4.33
7	Chan	10041.24	10053.36	309.60	56.56	13.08	13.58	4.67	5.47
8	Chan	10053.36	10065.47	280.10	52.45	12.58	12.29	4.33	5.34
9	ROB	10065.47	10109.23	182.69	99.96	43.86	8.01	2.28	1.83
10	ROB	10109.23	10153.00	75.57	41.70	18.54	3.31	2.65	1.81

CULVERT

RIVER: C8
REACH: Reach 1 RS: 0.807

INPUT
Description: Culverts at 12th Street
Distance from Upstream XS = 15.83
Deck/Roadway Width = 16.08
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 14

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9814.37	2151.5	2131	9828.12	2151.37	2131	9879.42	2150.34	2130
9930.6	2148.41	2128	9977.57	2146.93	2127	9997.66	2146.79	2127
10005.1	2146.58	212710048.31		2146.69	212710073.86		2146.87	2127
10094.71	2146.81	212710130.53		2146.37	212610176.86		2145.76	2126
10228.3	2146.69	212710280.34		2147.53	2128			

Upstream Bridge Cross Section Data
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9818.7	2151.67	9832.28	2151.59	9883.55	2150.99	9932.1	2149.78	9974.24	2147.77
9980.68	2146.313	9990.51	2144.09	9995.77	2143.37	10000.81	2143.38	10013.63	2146.04
10032.53	2146.64	10045.46	2145.71	10048.26	214510051.93		2142.61	10055.24	2144.2
10065.47	2146.54	210069.13	2147.38	10095.63	2147.14	10133.3	2146.55	10168.89	2146.06
10203.44	2146.92	10216.11	2148.69	10227.09	2149.12	10231.01	2148.18	10284.29	2149.02

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9818.7	.04	9980.68	.03	10065.47	.06

Bank Sta: Left	Right	Coeff Contr.	Expan.
9980.68	10065.47	.1	.3

Downstream Deck/Roadway Coordinates
num= 14

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9814.37	2151.5	2131	9828.12	2151.37	2131	9879.42	2150.34	2130
9930.6	2148.41	2128	9977.57	2146.93	2127	9997.66	2146.79	2127
10005.1	2146.58	212710048.31		2146.69	212710073.86		2146.87	2127
10094.71	2146.81	212710130.53		2146.37	212610176.86		2145.76	2126
10228.3	2146.69	212710280.34		2147.53	2128			

Downstream Bridge Cross Section Data
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9805.41	2151.34	9820.13	2151.03	9872.49	2150.29	9923.34	2149.15	9970.14	2146.99
9978.66	2146.85	9990.52	2144.17	9993.62	214210001.33		214210006.26		2142.6
10016.21	2144.61	10031.02	2144.74	10037.08	2143.23	10044.03	2144.05	10058.78	2147.41
10067.28	214810088.36		2147.29	10122.42	2147.51	10158.38	2146.36	10166.41	2144.57
10175.43	2146.11	10200.82	2146.54	10212.72	2149.14	10221.47	2148.32	10271.3	2148.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9805.41	.04	9990.52	.04	10044.03	.05

Bank Sta: Left	Right	Coeff Contr.	Expan.
9990.52	10044.03	.1	.3

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 2

Culvert Name	Shape	Rise	Span
Culvert #1	Ellipse	3.3	4.5

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FHWA Chart # 29- Horizontal Ellipse; Concrete
FHWA Scale # 1 - Square edge with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
              1.05   29.67     .026     .026        0                  .9                 1
Upstream   Elevation =  2143.22
           Centerline Station =  9995.53
Downstream Elevation =  2142.15
           Centerline Station =  9997.3

Culvert Name     Shape      Rise    Span
Culvert #2      Circular    3.25
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 3 - Pipe projecting from fill
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
              1.25   27.75      .02      .02        0                  .9                 1
Upstream   Elevation =  2143.21
           Centerline Station =  10000.93
Downstream Elevation =  2142.36
           Centerline Station =  10002.31

CULVERT OUTPUT  Profile #profile 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)          59.90    Culv Full Len (ft)          29.67
  # Barrels                       1    Culv Vel US (ft/s)           5.14
  Q Barrel (cfs)              59.90    Culv Vel DS (ft/s)           5.14
  E.G. US. (ft)            2149.01    Culv Inv El Up (ft)       2143.22
  W.S. US. (ft)            2148.56    Culv Inv El Dn (ft)       2142.15
  E.G. DS (ft)             2148.38    Culv Frctn Ls (ft)           0.26
  W.S. DS (ft)             2147.29    Culv Exit Loss (ft)
  Delta EG (ft)               0.63    Culv Entr Loss (ft)          0.37
  Delta WS (ft)               1.27    Q Weir (cfs)              2174.08
  E.G. IC (ft)             2146.43    Weir Sta Lft (ft)         9948.59
  E.G. OC (ft)             2149.00    Weir Sta Rgt (ft)        10282.62
  Culvert Control           Outlet    Weir Submerg                 0.25
  Culv WS Inlet (ft)       2146.52    Weir Max Depth (ft)          2.93
  Culv WS Outlet (ft)      2145.45    Weir Avg Depth (ft)          1.75
  Culv Nml Depth (ft)                 Weir Flow Area (sq ft)     576.42
  Culv Crt Depth (ft)          2.11   Min El Weir Flow (ft)     2146.07


CULVERT OUTPUT  Profile #profile 2  Culv Group:  Culvert #1

  Q Culv Group (cfs)          78.12    Culv Full Len (ft)          29.67
  # Barrels                       1    Culv Vel US (ft/s)           6.70
  Q Barrel (cfs)              78.12    Culv Vel DS (ft/s)           6.70
  E.G. US. (ft)            2149.85    Culv Inv El Up (ft)       2143.22
  W.S. US. (ft)            2149.45    Culv Inv El Dn (ft)       2142.15
  E.G. DS (ft)             2148.78    Culv Frctn Ls (ft)           0.44
  W.S. DS (ft)             2147.49    Culv Exit Loss (ft)
  Delta EG (ft)               1.07    Culv Entr Loss (ft)          0.63
  Delta WS (ft)               1.96    Q Weir (cfs)              2142.01
  E.G. IC (ft)             2147.16    Weir Sta Lft (ft)         9957.60
  E.G. OC (ft)             2149.84    Weir Sta Rgt (ft)        10125.00
  Culvert Control           Outlet    Weir Submerg                 0.20
  Culv WS Inlet (ft)       2146.52    Weir Max Depth (ft)          3.29
  Culv WS Outlet (ft)      2145.45    Weir Avg Depth (ft)          2.88
  Culv Nml Depth (ft)                 Weir Flow Area (sq ft)     481.31
  Culv Crt Depth (ft)          2.40   Min El Weir Flow (ft)     2146.59


CULVERT OUTPUT  Profile #profile 1  Culv Group:  Culvert #2

  Q Culv Group (cfs)          46.02    Culv Full Len (ft)          27.75
  # Barrels                       1    Culv Vel US (ft/s)           5.55
  Q Barrel (cfs)              46.02    Culv Vel DS (ft/s)           5.55
  E.G. US. (ft)            2149.01    Culv Inv El Up (ft)       2143.21
  W.S. US. (ft)            2148.56    Culv Inv El Dn (ft)       2142.36
  E.G. DS (ft)             2148.38    Culv Frctn Ls (ft)           0.20
  W.S. DS (ft)             2147.29    Culv Exit Loss (ft)
  Delta EG (ft)               0.63    Culv Entr Loss (ft)          0.43
  Delta WS (ft)               1.27    Q Weir (cfs)              2174.08
  E.G. IC (ft)             2146.88    Weir Sta Lft (ft)         9948.59
  E.G. OC (ft)             2149.01    Weir Sta Rgt (ft)        10282.62
  Culvert Control           Outlet    Weir Submerg                 0.25
  Culv WS Inlet (ft)       2146.46    Weir Max Depth (ft)          2.93
  Culv WS Outlet (ft)      2145.61    Weir Avg Depth (ft)          1.75
  Culv Nml Depth (ft)                 Weir Flow Area (sq ft)     576.42
  Culv Crt Depth (ft)          2.16   Min El Weir Flow (ft)     2146.07


CULVERT OUTPUT  Profile #profile 2  Culv Group:  Culvert #2

  Q Culv Group (cfs)          59.88    Culv Full Len (ft)          27.75
  # Barrels                       1    Culv Vel US (ft/s)           7.22
  Q Barrel (cfs)              59.88    Culv Vel DS (ft/s)           7.22
  E.G. US. (ft)            2149.85    Culv Inv El Up (ft)       2143.21
  W.S. US. (ft)            2149.45    Culv Inv El Dn (ft)       2142.36
  E.G. DS (ft)             2148.78    Culv Frctn Ls (ft)           0.34
  W.S. DS (ft)             2147.49    Culv Exit Loss (ft)
  Delta EG (ft)               1.07    Culv Entr Loss (ft)          0.73
  Delta WS (ft)               1.96    Q Weir (cfs)              2142.01
  E.G. IC (ft)             2147.80    Weir Sta Lft (ft)         9957.60
  E.G. OC (ft)             2149.85    Weir Sta Rgt (ft)        10125.00
  Culvert Control           Outlet    Weir Submerg                 0.20
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Culv WS Inlet (ft)	2146.46	Weir Max Depth (ft)	3.29
Culv WS Outlet (ft)	2145.61	Weir Avg Depth (ft)	2.88
Culv Nml Depth (ft)		Weir Flow Area (sq ft)	481.31
Culv Crt Depth (ft)	2.47	Min El Weir Flow (ft)	2146.59

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 0.805

INPUT
Description: Downstream cross section at 12th Street.
Cross section geometry
provided by Flood Control District of Maricopa County survey. See TDN, Section 3.

Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9805.41	2151.34	9820.13	2151.03	9872.49	2150.29	9923.34	2149.15	9970.14	2146.99
9978.66	2146.85	9990.52	2144.17	9993.62	214210001.33		214210006.26		2142.6
10016.21	2144.6110031.02		2144.7410037.08		2143.2310044.03		2144.0510058.78		2147.41
10067.28	214810088.36		2147.2910122.42		2147.5110158.38		2146.3610166.41		2144.57
10175.43	2146.110200.82		2146.5410212.72		2149.1410221.47		2148.32	10271.3	2148.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9805.41	.04	9990.52	.04510044.03		.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.52	10044.03	230.91	199.02	118.47	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2148.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.	0.040	0.045	0.050
W.S. Elev (ft)	2147.29	Reach Len. (ft)	230.91	199.02	118.47
Crit W.S. (ft)	2147.29	Flow Area (sq ft)	25.29	199.32	94.94
E.G. Slope (ft/ft)	0.013694	Area (sq ft)	25.29	199.32	94.94
Q Total (cfs)	2280.00	Flow (cfs)	104.65	1824.51	350.83
Top Width (ft)	170.05	Top Width (ft)	26.92	53.51	89.62
Vel Total (ft/s)	7.14	Avg. Vel. (ft/s)	4.14	9.15	3.70
Max Chl Dpth (ft)	5.29	Hydr. Depth (ft)	0.94	3.72	1.06
Conv. Total (cfs)	19483.8	Conv. (cfs)	894.3	15591.5	2998.1
Length Wtd. (ft)	189.13	Wetted Per. (ft)	27.23	54.67	90.41
Min Ch El (ft)	2142.00	Shear (lb/sq ft)	0.79	3.12	0.90
Alpha	1.37	Stream Power (lb/ft s)	3.29	28.53	3.32
Frctn Loss (ft)	2.45	Cum Volume (acre-ft)	5.89	14.16	4.18
C & E Loss (ft)	0.02	Cum SA (acres)	3.10	2.70	2.12

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2148.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.29	Wt. n-Val.	0.040	0.045	0.050
W.S. Elev (ft)	2147.49	Reach Len. (ft)	230.91	199.02	118.47
Crit W.S. (ft)	2147.49	Flow Area (sq ft)	30.55	209.77	29.44
E.G. Slope (ft/ft)	0.013990	Area (sq ft)	30.55	209.77	29.44
Q Total (cfs)	2280.00	Flow (cfs)	144.24	2008.13	127.63
Top Width (ft)	126.79	Top Width (ft)	26.92	53.51	46.36
Vel Total (ft/s)	8.45	Avg. Vel. (ft/s)	4.72	9.57	4.33
Max Chl Dpth (ft)	5.49	Hydr. Depth (ft)	1.13	3.92	0.64
Conv. Total (cfs)	19276.2	Conv. (cfs)	1219.5	16977.7	1079.0
Length Wtd. (ft)	197.63	Wetted Per. (ft)	27.42	54.67	46.78
Min Ch El (ft)	2142.00	Shear (lb/sq ft)	0.97	3.35	0.55
Alpha	1.16	Stream Power (lb/ft s)	4.59	32.08	2.38
Frctn Loss (ft)	2.82	Cum Volume (acre-ft)	5.21	14.43	3.73
C & E Loss (ft)	0.02	Cum SA (acres)	2.52	2.70	1.64

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.50	9990.52	104.65	25.29	27.23	4.59	0.94	4.14
2	Chan	9990.52	9998.16	376.31	37.09	8.33	16.50	4.85	10.15

3	Chan	9998.16	10005.81	436.28	39.23	7.68	19.14	5.13	11.12
4	Chan	10005.81	10013.45	286.29	30.65	7.79	12.56	4.01	9.34
5	Chan	10013.45	10021.10	155.63	21.16	7.70	6.83	2.77	7.35
6	Chan	10021.10	10028.74	141.35	19.92	7.64	6.20	2.61	7.10
7	Chan	10028.74	10036.39	178.66	23.12	7.81	7.84	3.02	7.73
8	Chan	10036.39	10044.03	249.97	28.14	7.71	10.96	3.68	8.88
9	ROB	10044.03	10089.48	103.92	23.07	14.96	4.56	1.58	4.50
10	ROB	10089.48	10134.94	0.36	0.52	5.70	0.02	0.09	0.68
11	ROB	10134.94	10180.39	185.38	51.08	45.79	8.13	1.12	3.63
12	ROB	10180.39	10225.85	61.19	20.27	23.95	2.68	0.85	3.02

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.50	9990.52	144.24	30.55	27.42	6.33	1.13	4.72
2	Chan	9990.52	9998.16	407.47	38.58	8.33	17.87	5.05	10.56
3	Chan	9998.16	10005.81	470.74	40.73	7.68	20.65	5.33	11.56
4	Chan	10005.81	10013.45	314.20	32.15	7.79	13.78	4.21	9.77
5	Chan	10013.45	10021.10	176.77	22.65	7.70	7.75	2.96	7.80
6	Chan	10021.10	10028.74	161.66	21.41	7.64	7.09	2.80	7.55
7	Chan	10028.74	10036.39	201.05	24.61	7.81	8.82	3.22	8.17
8	Chan	10036.39	10044.03	276.24	29.64	7.71	12.12	3.88	9.32
9	ROB	10044.03	10089.48	124.95	26.76	23.23	5.48	1.17	4.67
10	ROB	10089.48	10134.94	2.68	2.68	23.55	0.12	0.11	1.00

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 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: C8
REACH: Reach 1 RS: 0.767

INPUT
Description:
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9855.11	2145.94	9868.05	2145.87	9911.02	2145.66	9913.72	2145.08	9928.92	2141.88
9937.69	2142.14	9942.79	2142.37	9945.24	2142.48	9948.92	2142.139	9961.11	2141.01
9965.7	2140.64	9978.66	2142.18	9984.52	2142.76	9989.93	2140.551	9997.01	2137.66
9998.78	2136.97	9999.62	2137.171	0015.08	2140.991	0015.46	2141.021	0015.63	2141.03
10033.38	2142.231	0035.51	2142.281	0038.98	2142.31	0039.92	2142.35	10043.7	2142.3
10047.75	2141.761	0049.43	2141.521	0056.56	2140.871	0059.19	2141.341	0061.89	2141.76
10065.27	2142.31	0073.57	2143.661	0077.19	2144.22	10086.9	2144.331	0087.73	2144.31
10092.6	2144.391	0105.73	2144.581	0107.78	2144.561	0131.18	2144.921	0134.72	2144.86
10139.02	2144.82	10146.5	2144.851	0164.33	2144.831	0165.65	2144.821	0166.27	2144.78
10169.38	2145.121	0178.09	2146.08						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9855.11	.055	9989.93	.045	10015.08	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.93	10015.08	230.75	225.69	220.36	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2144.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.01	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2143.73	Reach Len. (ft)	230.75	225.69	220.36
Crit W.S. (ft)	2143.73	Flow Area (sq ft)	127.74	121.69	107.03
E.G. Slope (ft/ft)	0.012306	Area (sq ft)	127.74	121.69	107.03
Q Total (cfs)	2280.00	Flow (cfs)	568.11	1236.54	475.35
Top Width (ft)	153.94	Top Width (ft)	69.82	25.15	58.97
Vel Total (ft/s)	6.40	Avg. Vel. (ft/s)	4.45	10.16	4.44
Max Chl Dpth (ft)	6.76	Hydr. Depth (ft)	1.83	4.84	1.81
Conv. Total (cfs)	20553.2	Conv. (cfs)	5121.3	11146.9	4285.0
Length Wtd. (ft)	225.67	Wetted Per. (ft)	70.66	26.34	59.33
Min Ch El (ft)	2136.97	Shear (lb/sq ft)	1.39	3.55	1.39
Alpha	1.59	Stream Power (lb/ft s)	6.18	36.07	6.16
Frctn Loss (ft)	3.05	Cum Volume (acre-ft)	5.49	13.42	3.91
C & E Loss (ft)	0.02	Cum SA (acres)	2.84	2.52	1.92

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

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2145.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.51	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2144.03	Reach Len. (ft)	230.75	225.69	220.36
Crit W.S. (ft)	2144.03	Flow Area (sq ft)	98.58	129.18	41.75
E.G. Slope (ft/ft)	0.014560	Area (sq ft)	98.58	129.18	41.75
Q Total (cfs)	2280.00	Flow (cfs)	562.79	1485.99	231.22
Top Width (ft)	82.00	Top Width (ft)	39.93	25.15	16.92
Vel Total (ft/s)	8.46	Avg. Vel. (ft/s)	5.71	11.50	5.54
Max Chl Dpth (ft)	7.06	Hydr. Depth (ft)	2.47	5.14	2.47
Conv. Total (cfs)	18895.1	Conv. (cfs)	4664.0	12314.9	1916.2
Length Wtd. (ft)	225.94	Wetted Per. (ft)	42.54	26.34	18.85
Min Ch El (ft)	2136.97	Shear (lb/sq ft)	2.11	4.46	2.01
Alpha	1.36	Stream Power (lb/ft s)	12.03	51.29	11.15
Frctn Loss (ft)	3.33	Cum Volume (acre-ft)	4.86	13.65	3.64
C & E Loss (ft)	0.08	Cum SA (acres)	2.34	2.52	1.55

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9909.04	9936.00	71.40	20.55	16.09	3.13	1.29	3.47
2	LOB	9936.00	9962.97	224.03	50.25	27.05	9.83	1.86	4.46
3	LOB	9962.97	9989.93	272.68	56.93	27.53	11.96	2.11	4.79
4	Chan	9989.93	9993.52	118.36	14.07	3.88	5.19	3.92	8.41
5	Chan	9993.52	9997.12	201.16	19.34	3.88	8.82	5.38	10.40
6	Chan	9997.12	10000.71	279.89	23.31	3.77	12.28	6.49	12.00
7	Chan	10000.71	10004.30	238.59	21.03	3.70	10.46	5.85	11.35
8	Chan	10004.30	10007.89	181.30	17.83	3.70	7.95	4.96	10.17
9	Chan	10007.89	10011.49	130.55	14.64	3.70	5.73	4.08	8.92
10	Chan	10011.49	10015.08	86.69	11.45	3.70	3.80	3.19	7.57
11	ROB	10015.08	10047.68	272.69	60.42	32.68	11.96	1.85	4.51
12	ROB	10047.68	10080.28	202.66	46.60	26.65	8.89	1.77	4.35

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9936.00	9962.97	187.44	33.61	15.01	8.22	2.59	5.58
2	LOB	9962.97	9989.93	375.36	64.97	27.53	16.46	2.41	5.78
3	Chan	9989.93	9993.52	145.94	15.14	3.88	6.40	4.21	9.64
4	Chan	9993.52	9997.12	240.11	20.41	3.88	10.53	5.68	11.76
5	Chan	9997.12	10000.71	329.12	24.39	3.77	14.44	6.79	13.50
6	Chan	10000.71	10004.30	282.80	22.10	3.70	12.40	6.15	12.80
7	Chan	10004.30	10007.89	218.01	18.90	3.70	9.56	5.26	11.53
8	Chan	10007.89	10011.49	160.22	15.71	3.70	7.03	4.37	10.20
9	Chan	10011.49	10015.08	109.78	12.52	3.70	4.81	3.49	8.77
10	ROB	10015.08	10047.68	231.22	41.75	18.85	10.14	2.47	5.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.725

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9865.172	2141.01	9868.412	2140.98	9879.132	2140.88	9892.772	2140.62	9894.492	2140.59
9897.172	2140.53	9937.132	2140.22	9941.932	2140.19	9943.552	2139.79	9944.652	2139.54
9950.332	2138.24	9955.68	2136.96	9961.022	2135.79	9962.092	2135.48	9967.052	2135.66
9976.602	2136.38	9980.452	2136.79	9984.972	2137.25	9997.472	2134.06	9999.122	2133.65
10003.66	2134.31	10014.82	2135.95	10022.66	2136.99	10029.83	2137.89	10043.97	2139.87
10057.34	2140.42	10058.03	2140.45	10061.54	2140.42	10063.55	2140.41	10064.12	2140.42
10066.21	2140.52	10066.47	2140.52	10068.01	2140.58	10072.19	2140.71	10079.51	2140.92
10133.92	2142.67	10149.47	2143.26	10157.48	2143.73	10162.25	2144.01		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9865.172	.05	9955.68	.04	10022.66	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9955.68	10022.66	74.88	83.46	84.39	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2140.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.	0.050	0.045	0.030
W.S. Elev (ft)	2139.21	Reach Len. (ft)	74.88	83.46	84.39
Crit W.S. (ft)	2139.05	Flow Area (sq ft)	10.61	231.58	18.86
E.G. Slope (ft/ft)	0.014916	Area (sq ft)	10.61	231.58	18.86
Q Total (cfs)	2280.00	Flow (cfs)	40.53	2115.81	123.65
Top Width (ft)	93.13	Top Width (ft)	9.57	66.98	16.58
Vel Total (ft/s)	8.73	Avg. Vel. (ft/s)	3.82	9.14	6.55
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)	1.11	3.46	1.14
Conv. Total (cfs)	18668.8	Conv. (cfs)	331.9	17324.4	1012.5
Length Wtd. (ft)	83.32	Wetted Per. (ft)	9.83	67.91	16.72
Min Ch El (ft)	2133.65	Shear (lb/sq ft)	1.01	3.18	1.05
Alpha	1.05	Stream Power (lb/ft s)	3.84	29.01	6.89
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	5.12	12.51	3.59
C & E Loss (ft)	0.11	Cum SA (acres)	2.63	2.29	1.72

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2140.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.	0.050	0.045	0.030
W.S. Elev (ft)	2139.21	Reach Len. (ft)	74.88	83.46	84.39
Crit W.S. (ft)	2139.05	Flow Area (sq ft)	10.61	231.58	18.86
E.G. Slope (ft/ft)	0.014916	Area (sq ft)	10.61	231.58	18.86
Q Total (cfs)	2280.00	Flow (cfs)	40.53	2115.81	123.65
Top Width (ft)	93.13	Top Width (ft)	9.57	66.98	16.58
Vel Total (ft/s)	8.73	Avg. Vel. (ft/s)	3.82	9.14	6.55
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)	1.11	3.46	1.14
Conv. Total (cfs)	18668.8	Conv. (cfs)	331.9	17324.4	1012.5
Length Wtd. (ft)	83.32	Wetted Per. (ft)	9.83	67.91	16.72
Min Ch El (ft)	2133.65	Shear (lb/sq ft)	1.01	3.18	1.05
Alpha	1.05	Stream Power (lb/ft s)	3.84	29.01	6.89
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	4.57	12.72	3.48
C & E Loss (ft)	0.11	Cum SA (acres)	2.21	2.29	1.47

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9937.58	9955.68	40.53	10.61	9.83	1.78	1.11	3.82
2	Chan	9955.68	9965.25	259.83	30.80	9.74	11.40	3.22	8.44
3	Chan	9965.25	9974.82	275.88	31.73	9.59	12.10	3.32	8.69
4	Chan	9974.82	9984.39	172.73	23.98	9.62	7.58	2.51	7.20
5	Chan	9984.39	9993.95	233.68	29.04	9.86	10.25	3.03	8.05
6	Chan	9993.95	10003.52	550.67	48.40	9.78	24.15	5.06	11.38
7	Chan	10003.52	10013.09	409.14	40.33	9.67	17.94	4.21	10.15
8	Chan	10013.09	10022.66	213.89	27.31	9.66	9.38	2.85	7.83
9	ROB	10022.66	10050.58	123.65	18.86	16.72	5.42	1.14	6.55

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9937.58	9955.68	40.53	10.61	9.83	1.78	1.11	3.82
2	Chan	9955.68	9965.25	259.83	30.80	9.74	11.40	3.22	8.44
3	Chan	9965.25	9974.82	275.88	31.73	9.59	12.10	3.32	8.69
4	Chan	9974.82	9984.39	172.73	23.98	9.62	7.58	2.51	7.20
5	Chan	9984.39	9993.95	233.68	29.04	9.86	10.25	3.03	8.05
6	Chan	9993.95	10003.52	550.67	48.40	9.78	24.15	5.06	11.38
7	Chan	10003.52	10013.09	409.14	40.33	9.67	17.94	4.21	10.15
8	Chan	10013.09	10022.66	213.89	27.31	9.66	9.38	2.85	7.83
9	ROB	10022.66	10050.58	123.65	18.86	16.72	5.42	1.14	6.55

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 0.709

INPUT
Description:

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9884.56	2138.9	9893.98	2138.84	9900.07	2138.85	9901.32	2138.86	9907.51	2138.86
9924.55	2138.8	9941.78	2138.61	9943.46	2138.63	9946.96	2138.47	9947.92	2138.47
9950.15	2138.2	9952.21	2137.7	9954.53	2137.19	9960.63	2135.75	9968.24	2134
9971.29	2133.6	9974.3	2133.67	9985	2133.89	9986.27	2133.76	9996.69	2132.7
9997.56	2132.8	9998.33	2132.93	10020.2	2136	10027.47	2137.1	10039.87	2139.02
10050.8	2139.9	10071.57	2141.68	10071.82	2141.71	10081.65	2142.38		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9884.56	.04	9960.63	.045	10020.2	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9960.63	10020.2	89.41	96.06	96.8	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2139.50	Element			
Vel Head (ft)	0.88	Wt. n-Val.	0.040	0.045	0.030
W.S. Elev (ft)	2138.61	Reach Len. (ft)	89.41	96.06	96.80
Crit W.S. (ft)		Flow Area (sq ft)	18.10	272.13	22.36
E.G. Slope (ft/ft)	0.007340	Area (sq ft)	18.10	272.13	22.36
Q Total (cfs)	2280.00	Flow (cfs)	59.90	2107.24	112.86
Top Width (ft)	93.53	Top Width (ft)	16.93	59.57	17.03
Vel Total (ft/s)	7.29	Avg. Vel. (ft/s)	3.31	7.74	5.05
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)	1.07	4.57	1.31
Conv. Total (cfs)	26612.8	Conv. (cfs)	699.2	24596.2	1317.3
Length Wtd. (ft)	95.76	Wetted Per. (ft)	17.23	60.09	17.23
Min Ch El (ft)	2132.70	Shear (lb/sq ft)	0.48	2.08	0.59
Alpha	1.07	Stream Power (lb/ft s)	1.59	16.07	3.00
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	5.10	12.03	3.55
C & E Loss (ft)	0.07	Cum SA (acres)	2.61	2.16	1.69

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2139.50	Element			
Vel Head (ft)	0.88	Wt. n-Val.	0.040	0.045	0.030
W.S. Elev (ft)	2138.61	Reach Len. (ft)	89.41	96.06	96.80
Crit W.S. (ft)		Flow Area (sq ft)	18.10	272.13	22.36
E.G. Slope (ft/ft)	0.007340	Area (sq ft)	18.10	272.13	22.36
Q Total (cfs)	2280.00	Flow (cfs)	59.90	2107.24	112.86
Top Width (ft)	93.53	Top Width (ft)	16.93	59.57	17.03
Vel Total (ft/s)	7.29	Avg. Vel. (ft/s)	3.31	7.74	5.05
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)	1.07	4.57	1.31
Conv. Total (cfs)	26612.8	Conv. (cfs)	699.2	24596.2	1317.3
Length Wtd. (ft)	95.76	Wetted Per. (ft)	17.23	60.09	17.23
Min Ch El (ft)	2132.70	Shear (lb/sq ft)	0.48	2.08	0.59
Alpha	1.07	Stream Power (lb/ft s)	1.59	16.07	3.00
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	4.55	12.24	3.44
C & E Loss (ft)	0.07	Cum SA (acres)	2.19	2.16	1.44

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9930.20	9945.42	0.02	0.05	1.72	0.00	0.03	0.30
2	LOB	9945.42	9960.63	59.88	18.04	15.51	2.63	1.19	3.32
3	Chan	9960.63	9969.14	219.04	32.63	8.72	9.61	3.83	6.71
4	Chan	9969.14	9977.65	336.90	41.89	8.53	14.78	4.92	8.04
5	Chan	9977.65	9986.16	322.76	40.80	8.52	14.16	4.79	7.91
6	Chan	9986.16	9994.67	377.11	44.87	8.55	16.54	5.27	8.40
7	Chan	9994.67	10003.18	408.73	47.16	8.58	17.93	5.54	8.67
8	Chan	10003.18	10011.69	278.43	37.47	8.59	12.21	4.40	7.43
9	Chan	10011.69	10020.20	164.27	27.30	8.59	7.20	3.21	6.02
10	ROB	10020.20	10032.49	109.51	20.62	12.43	4.80	1.68	5.31
11	ROB	10032.49	10044.78	3.35	1.74	4.79	0.15	0.37	1.93

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9930.20	9945.42	0.02	0.05	1.72	0.00	0.03	0.30
2	LOB	9945.42	9960.63	59.88	18.04	15.51	2.63	1.19	3.32
3	Chan	9960.63	9969.14	219.04	32.63	8.72	9.61	3.83	6.71
4	Chan	9969.14	9977.65	336.90	41.89	8.53	14.78	4.92	8.04
5	Chan	9977.65	9986.16	322.76	40.80	8.52	14.16	4.79	7.91
6	Chan	9986.16	9994.67	377.11	44.87	8.55	16.54	5.27	8.40
7	Chan	9994.67	10003.18	408.73	47.16	8.58	17.93	5.54	8.67
8	Chan	10003.18	10011.69	278.43	37.47	8.59	12.21	4.40	7.43
9	Chan	10011.69	10020.20	164.27	27.30	8.59	7.20	3.21	6.02
10	ROB	10020.20	10032.49	109.51	20.62	12.43	4.80	1.68	5.31
11	ROB	10032.49	10044.78	3.35	1.74	4.79	0.15	0.37	1.93

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: C8
REACH: Reach 1 RS: 0.691

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9944.84	2137.6	9947.21	2137.22	9970.89	2133.461	9978.71	2132.22	9979.02	2132.2
9988.47	2132.43	9997.68	2131.51	9998.75	2131.42	9999.61	2131.51	10005.36	2132.1
10009.95	2133.61	10009.97	2133.61	10010.2	2133.68	10010.67	2133.79	10034.45	2139.1
10034.75	2139.16	10042.86	2139.56	10068.7	2141.11	10071.09	2141.24		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9944.84	.05	9970.89	.045	10009.95	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970.89	10009.95	136.8	149.73	143.35	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2138.46	Element			
Vel Head (ft)	1.63	Wt. n-Val.	0.050	0.045	0.030
W.S. Elev (ft)	2136.83	Reach Len. (ft)	136.80	149.73	143.35
Crit W.S. (ft)	2136.83	Flow Area (sq ft)	35.72	177.52	22.92
E.G. Slope (ft/ft)	0.014421	Area (sq ft)	35.72	177.52	22.92
Q Total (cfs)	2280.00	Flow (cfs)	178.95	1917.59	183.46
Top Width (ft)	74.60	Top Width (ft)	21.21	39.06	14.33
Vel Total (ft/s)	9.65	Avg. Vel. (ft/s)	5.01	10.80	8.00
Max Chl Dpth (ft)	5.41	Hydr. Depth (ft)	1.68	4.54	1.60
Conv. Total (cfs)	18985.9	Conv. (cfs)	1490.1	15968.0	1527.7
Length Wtd. (ft)	147.82	Wetted Per. (ft)	21.48	39.49	14.69
Min Ch El (ft)	2131.42	Shear (lb/sq ft)	1.50	4.05	1.41
Alpha	1.13	Stream Power (lb/ft s)	7.50	43.72	11.25
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	5.04	11.53	3.50
C & E Loss (ft)	0.05	Cum SA (acres)	2.57	2.06	1.66

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2138.46	Element			
Vel Head (ft)	1.63	Wt. n-Val.	0.050	0.045	0.030
W.S. Elev (ft)	2136.83	Reach Len. (ft)	136.80	149.73	143.35
Crit W.S. (ft)	2136.83	Flow Area (sq ft)	35.72	177.52	22.92
E.G. Slope (ft/ft)	0.014421	Area (sq ft)	35.72	177.52	22.92
Q Total (cfs)	2280.00	Flow (cfs)	178.95	1917.59	183.46
Top Width (ft)	74.60	Top Width (ft)	21.21	39.06	14.33
Vel Total (ft/s)	9.65	Avg. Vel. (ft/s)	5.01	10.80	8.00
Max Chl Dpth (ft)	5.41	Hydr. Depth (ft)	1.68	4.54	1.60
Conv. Total (cfs)	18985.9	Conv. (cfs)	1490.1	15968.0	1527.7
Length Wtd. (ft)	147.82	Wetted Per. (ft)	21.48	39.49	14.69
Min Ch El (ft)	2131.42	Shear (lb/sq ft)	1.50	4.05	1.41
Alpha	1.13	Stream Power (lb/ft s)	7.50	43.72	11.25
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	4.49	11.74	3.39
C & E Loss (ft)	0.05	Cum SA (acres)	2.15	2.06	1.40

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.84	9950.05	0.00	0.01	0.38	0.00	0.03	0.29
2	LOB	9950.05	9955.26	4.49	2.46	5.28	0.20	0.47	1.82
3	LOB	9955.26	9960.47	24.23	6.77	5.28	1.06	1.30	3.58
4	LOB	9960.47	9965.68	55.05	11.08	5.28	2.41	2.13	4.97
5	LOB	9965.68	9970.89	95.17	15.39	5.28	4.17	2.95	6.18
6	Chan	9970.89	9976.47	202.72	21.26	5.65	8.89	3.81	9.53
7	Chan	9976.47	9982.05	271.62	25.27	5.61	11.91	4.53	10.75
8	Chan	9982.05	9987.63	268.36	25.04	5.58	11.77	4.49	10.72
9	Chan	9987.63	9993.21	279.11	25.68	5.60	12.24	4.60	10.87
10	Chan	9993.21	9998.79	336.55	28.73	5.61	14.76	5.15	11.71
11	Chan	9998.79	10004.37	332.90	28.55	5.61	14.60	5.12	11.66
12	Chan	10004.37	10009.95	226.33	22.99	5.82	9.93	4.12	9.84
13	ROB	10009.95	10022.18	182.46	22.43	12.54	8.00	1.83	8.13
14	ROB	10022.18	10034.41	1.02	0.49	2.15	0.04	0.23	2.06

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.84	9950.05	0.00	0.01	0.38	0.00	0.03	0.29
2	LOB	9950.05	9955.26	4.49	2.46	5.28	0.20	0.47	1.82
3	LOB	9955.26	9960.47	24.23	6.77	5.28	1.06	1.30	3.58
4	LOB	9960.47	9965.68	55.05	11.08	5.28	2.41	2.13	4.97
5	LOB	9965.68	9970.89	95.17	15.39	5.28	4.17	2.95	6.18
6	Chan	9970.89	9976.47	202.72	21.26	5.65	8.89	3.81	9.53
7	Chan	9976.47	9982.05	271.62	25.27	5.61	11.91	4.53	10.75
8	Chan	9982.05	9987.63	268.36	25.04	5.58	11.77	4.49	10.72
9	Chan	9987.63	9993.21	279.11	25.68	5.60	12.24	4.60	10.87
10	Chan	9993.21	9998.79	336.55	28.73	5.61	14.76	5.15	11.71
11	Chan	9998.79	10004.37	332.90	28.55	5.61	14.60	5.12	11.66
12	Chan	10004.37	10009.95	226.33	22.99	5.82	9.93	4.12	9.84
13	ROB	10009.95	10022.18	182.46	22.43	12.54	8.00	1.83	8.13
14	ROB	10022.18	10034.41	1.02	0.49	2.15	0.04	0.23	2.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: C8
REACH: Reach 1 RS: 0.662

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9929.17	2134.78	9931.19	2134.73	9942.97	2134.3	9946.03	2133.99	9950.49	2133.5
9953.21	2133.02	9966.49	2130.51	9967.17	2130.48	9969.09	2130.38	9979.45	2129.9
9985.13	2129.54	9988.79	2129.26	9998.88	2128.32	10000.59	2128.35	10006.97	2128.7
10011.32	2128.91	10012.37	2129	10020.56	2129.89	10024.41	2130.31	10025.36	2130
10029.7	2128.65	10030.83	2128.41	10036.24	2130.28	10049.58	2134.93	10055.45	2136.84
10058.33	2137.91	10060.85	2138.84	10093.16	2138.81	10103.14	2138.8		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9929.17	.055	9946.03	.05	9985.13	.04	10036.24	.06	10060.85	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.13	10036.24	143.61	159.62	156.58	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2134.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.46	Wt. n-Val.	0.050	0.045	0.060
W.S. Elev (ft)	2132.66	Reach Len. (ft)	143.61	159.62	156.58
Crit W.S. (ft)	2132.66	Flow Area (sq ft)	60.64	180.83	8.07
E.G. Slope (ft/ft)	0.018389	Area (sq ft)	60.64	180.83	8.07
Q Total (cfs)	2280.00	Flow (cfs)	388.82	1861.95	29.23
Top Width (ft)	87.91	Top Width (ft)	29.99	51.11	6.81
Vel Total (ft/s)	9.14	Avg. Vel. (ft/s)	6.41	10.30	3.62
Max Chl Dpth (ft)	4.33	Hydr. Depth (ft)	2.02	3.54	1.19
Conv. Total (cfs)	16813.6	Conv. (cfs)	2867.3	13730.8	215.5

Length Wtd. (ft)	155.54	Wetted Per. (ft)	30.22	51.86	7.21
Min Ch El (ft)	2128.32	Shear (lb/sq ft)	2.30	4.00	1.29
Alpha	1.12	Stream Power (lb/ft s)	14.77	41.22	4.65
Frctn Loss (ft)	2.12	Cum Volume (acre-ft)	4.89	10.91	3.45
C & E Loss (ft)	0.00	Cum SA (acres)	2.49	1.90	1.62

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2134.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.46	Wt. n-Val.	0.050	0.045	0.060
W.S. Elev (ft)	2132.66	Reach Len. (ft)	143.61	159.62	156.58
Crit W.S. (ft)	2132.66	Flow Area (sq ft)	60.64	180.83	8.07
E.G. Slope (ft/ft)	0.018389	Area (sq ft)	60.64	180.83	8.07
Q Total (cfs)	2280.00	Flow (cfs)	388.82	1861.95	29.23
Top Width (ft)	87.91	Top Width (ft)	29.99	51.11	6.81
Vel Total (ft/s)	9.14	Avg. Vel. (ft/s)	6.41	10.30	3.62
Max Chl Dpth (ft)	4.33	Hydr. Depth (ft)	2.02	3.54	1.19
Conv. Total (cfs)	16813.6	Conv. (cfs)	2867.3	13730.8	215.5
Length Wtd. (ft)	155.54	Wetted Per. (ft)	30.22	51.86	7.21
Min Ch El (ft)	2128.32	Shear (lb/sq ft)	2.30	4.00	1.29
Alpha	1.12	Stream Power (lb/ft s)	14.77	41.22	4.65
Frctn Loss (ft)	2.12	Cum Volume (acre-ft)	4.34	11.12	3.34
C & E Loss (ft)	0.00	Cum SA (acres)	2.07	1.90	1.37

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9951.55	9962.75	15.94	5.47	7.74	0.70	0.72	2.92
2	LOB	9962.75	9973.94	146.35	24.02	11.27	6.42	2.15	6.09
3	LOB	9973.94	9985.13	226.52	31.15	11.21	9.94	2.78	7.27
4	Chan	9985.13	9992.43	249.32	24.90	7.33	10.94	3.41	10.01
5	Chan	9992.43	9999.73	334.67	29.71	7.33	14.68	4.07	11.27
6	Chan	9999.73	10007.03	346.47	30.30	7.31	15.20	4.15	11.43
7	Chan	10007.03	10014.34	291.87	27.35	7.32	12.80	3.75	10.67
8	Chan	10014.34	10021.64	206.15	22.23	7.34	9.04	3.04	9.27
9	Chan	10021.64	10028.94	181.20	20.79	7.54	7.95	2.85	8.72
10	Chan	10028.94	10036.24	252.28	25.55	7.68	11.06	3.50	9.87
11	ROB	10036.24	10049.62	29.23	8.07	7.21	1.28	1.19	3.62

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9951.55	9962.75	15.94	5.47	7.74	0.70	0.72	2.92
2	LOB	9962.75	9973.94	146.35	24.02	11.27	6.42	2.15	6.09
3	LOB	9973.94	9985.13	226.52	31.15	11.21	9.94	2.78	7.27
4	Chan	9985.13	9992.43	249.32	24.90	7.33	10.94	3.41	10.01
5	Chan	9992.43	9999.73	334.67	29.71	7.33	14.68	4.07	11.27
6	Chan	9999.73	10007.03	346.47	30.30	7.31	15.20	4.15	11.43
7	Chan	10007.03	10014.34	291.87	27.35	7.32	12.80	3.75	10.67
8	Chan	10014.34	10021.64	206.15	22.23	7.34	9.04	3.04	9.27
9	Chan	10021.64	10028.94	181.20	20.79	7.54	7.95	2.85	8.72
10	Chan	10028.94	10036.24	252.28	25.55	7.68	11.06	3.50	9.87
11	ROB	10036.24	10049.62	29.23	8.07	7.21	1.28	1.19	3.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: C8

REACH: Reach 1 RS: 0.632

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9913.45	2132.43	9936.16	2129.04	9941.33	2128.2	9952.08	2127.9	9957.33	2127.87
9963.96	2127.86	9968.44	2127.85	9974.29	2126.71	9977.18	2126.3	9989.18	2123.96
9990.22	2123.77	9991.17	2123.55	9991.32	2123.51	9993.94	2122.8	9995.82	2122.61
9998.24	2122.38	10003.63	2123.44	10005.21	2123.76	10006.72	2124.34	210022.98	2130.7
10024.75	2131.44	10024.9	2131.45	10030.74	2131.85	10035.95	2132.25	10051.01	2133.5

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9913.45	.055	9936.16	.05	9989.18	.045	10006.7	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.18	10006.7	82.01	98.44	102.85	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2131.14	Element			
Vel Head (ft)	1.45	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2129.69	Reach Len. (ft)	82.01	98.44	102.85
Crit W.S. (ft)	2129.69	Flow Area (sq ft)	132.60	115.01	36.67
E.G. Slope (ft/ft)	0.010524	Area (sq ft)	132.60	115.01	36.67
Q Total (cfs)	2280.00	Flow (cfs)	729.40	1345.10	205.50
Top Width (ft)	88.62	Top Width (ft)	57.40	17.52	13.70
Vel Total (ft/s)	8.02	Avg. Vel. (ft/s)	5.50	11.70	5.60
Max Chl Dpth (ft)	7.31	Hydr. Depth (ft)	2.31	6.56	2.68
Conv. Total (cfs)	22224.7	Conv. (cfs)	7109.9	13111.6	2003.1
Length Wtd. (ft)	93.87	Wetted Per. (ft)	57.88	17.93	14.71
Min Ch El (ft)	2122.38	Shear (lb/sq ft)	1.51	4.21	1.64
Alpha	1.45	Stream Power (lb/ft s)	8.28	49.30	9.18
Frctn Loss (ft)	1.03	Cum Volume (acre-ft)	4.57	10.37	3.37
C & E Loss (ft)	0.01	Cum SA (acres)	2.35	1.77	1.59

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2131.14	Element			
Vel Head (ft)	1.45	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2129.69	Reach Len. (ft)	82.01	98.44	102.85
Crit W.S. (ft)	2129.69	Flow Area (sq ft)	132.60	115.01	36.67
E.G. Slope (ft/ft)	0.010524	Area (sq ft)	132.60	115.01	36.67
Q Total (cfs)	2280.00	Flow (cfs)	729.40	1345.10	205.50
Top Width (ft)	88.62	Top Width (ft)	57.40	17.52	13.70
Vel Total (ft/s)	8.02	Avg. Vel. (ft/s)	5.50	11.70	5.60
Max Chl Dpth (ft)	7.31	Hydr. Depth (ft)	2.31	6.56	2.68
Conv. Total (cfs)	22224.7	Conv. (cfs)	7109.9	13111.6	2003.1
Length Wtd. (ft)	93.87	Wetted Per. (ft)	57.88	17.93	14.71
Min Ch El (ft)	2122.38	Shear (lb/sq ft)	1.51	4.21	1.64
Alpha	1.45	Stream Power (lb/ft s)	8.28	49.30	9.18
Frctn Loss (ft)	1.03	Cum Volume (acre-ft)	4.02	10.58	3.26
C & E Loss (ft)	0.01	Cum SA (acres)	1.93	1.77	1.33

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9928.60	9943.74	30.26	10.67	12.08	1.33	0.89	2.84
2	LOB	9943.74	9958.89	103.89	26.32	15.15	4.56	1.74	3.95
3	LOB	9958.89	9974.03	134.95	30.88	15.25	5.92	2.04	4.37
4	LOB	9974.03	9989.18	460.30	64.73	15.41	20.19	4.27	7.11
5	Chan	9989.18	9991.68	163.94	14.98	2.56	7.19	5.99	10.94
6	Chan	9991.68	9994.19	192.78	16.57	2.59	8.46	6.62	11.64
7	Chan	9994.19	9996.69	217.82	17.63	2.52	9.55	7.04	12.35
8	Chan	9996.69	9999.19	226.84	18.10	2.53	9.95	7.23	12.53
9	Chan	9999.19	10001.69	207.51	17.22	2.55	9.10	6.88	12.05
10	Chan	10001.69	10004.20	183.31	15.99	2.55	8.04	6.39	11.47
11	Chan	10004.20	10006.70	152.90	14.52	2.63	6.71	5.80	10.53
12	ROB	10006.70	10015.56	194.20	32.09	9.51	8.52	3.62	6.05
13	ROB	10015.56	10024.42	11.31	4.58	5.20	0.50	0.95	2.47

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9928.60	9943.74	30.26	10.67	12.08	1.33	0.89	2.84
2	LOB	9943.74	9958.89	103.89	26.32	15.15	4.56	1.74	3.95
3	LOB	9958.89	9974.03	134.95	30.88	15.25	5.92	2.04	4.37
4	LOB	9974.03	9989.18	460.30	64.73	15.41	20.19	4.27	7.11
5	Chan	9989.18	9991.68	163.94	14.98	2.56	7.19	5.99	10.94
6	Chan	9991.68	9994.19	192.78	16.57	2.59	8.46	6.62	11.64
7	Chan	9994.19	9996.69	217.82	17.63	2.52	9.55	7.04	12.35
8	Chan	9996.69	9999.19	226.84	18.10	2.53	9.95	7.23	12.53
9	Chan	9999.19	10001.69	207.51	17.22	2.55	9.10	6.88	12.05
10	Chan	10001.69	10004.20	183.31	15.99	2.55	8.04	6.39	11.47
11	Chan	10004.20	10006.70	152.90	14.52	2.63	6.71	5.80	10.53
12	ROB	10006.70	10015.56	194.20	32.09	9.51	8.52	3.62	6.05
13	ROB	10015.56	10024.42	11.31	4.58	5.20	0.50	0.95	2.47

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: C8
REACH: Reach 1 RS: 0.613

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9926.64	2130.4	9927.17	2130.29	9927.86	2130.17	9944.63	2127.12	9951.45	2125.73
9962.23	2126.4	9965.54	2126.62	9966.03	2126.58	9967.66	2126.37	9987.95	2122.87
9993.45	2121.9	9994.45	2121.73	9999.47	2121.16	10003.07	2121.36	10004.9	2121.52
10008.97	2123.23	10020.72	2128.21	10021.83	2128.71	10022.56	2128.75	10053.37	2131.25
10053.68	2131.26	10054.35	2131.31	10066.02	2131.74				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9926.64	.055	9944.63	.05	9987.95	.045	10008.97	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.95	10008.97	166.24	158.59	155.17	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2129.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.56	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2128.00	Reach Len. (ft)	166.24	158.59	155.17
Crit W.S. (ft)	2128.00	Flow Area (sq ft)	110.41	129.12	26.85
E.G. Slope (ft/ft)	0.011410	Area (sq ft)	110.41	129.12	26.85
Q Total (cfs)	2280.00	Flow (cfs)	631.96	1504.16	143.88
Top Width (ft)	80.45	Top Width (ft)	48.16	21.02	11.28
Vel Total (ft/s)	8.56	Avg. Vel. (ft/s)	5.72	11.65	5.36
Max Chl Dpth (ft)	6.84	Hydr. Depth (ft)	2.29	6.14	2.38
Conv. Total (cfs)	21344.6	Conv. (cfs)	5916.2	14081.4	1347.0
Length Wtd. (ft)	160.76	Wetted Per. (ft)	48.72	21.51	12.24
Min Ch El (ft)	2121.16	Shear (lb/sq ft)	1.61	4.28	1.56
Alpha	1.37	Stream Power (lb/ft s)	9.24	49.81	8.37
Frctn Loss (ft)	1.67	Cum Volume (acre-ft)	4.34	10.10	3.29
C & E Loss (ft)	0.16	Cum SA (acres)	2.25	1.73	1.56

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2129.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.56	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2128.00	Reach Len. (ft)	166.24	158.59	155.17
Crit W.S. (ft)	2128.00	Flow Area (sq ft)	110.41	129.12	26.85
E.G. Slope (ft/ft)	0.011410	Area (sq ft)	110.41	129.12	26.85
Q Total (cfs)	2280.00	Flow (cfs)	631.96	1504.16	143.88
Top Width (ft)	80.45	Top Width (ft)	48.16	21.02	11.28
Vel Total (ft/s)	8.56	Avg. Vel. (ft/s)	5.72	11.65	5.36
Max Chl Dpth (ft)	6.84	Hydr. Depth (ft)	2.29	6.14	2.38
Conv. Total (cfs)	21344.6	Conv. (cfs)	5916.2	14081.4	1347.0
Length Wtd. (ft)	160.78	Wetted Per. (ft)	48.72	21.51	12.24

Min Ch El (ft)	2121.16	Shear (lb/sq ft)	1.61	4.28	1.56
Alpha	1.37	Stream Power (lb/ft s)	9.24	49.81	8.37
Frctn Loss (ft)	1.55	Cum Volume (acre-ft)	3.80	10.31	3.19
C & E Loss (ft)	0.19	Cum SA (acres)	1.83	1.73	1.30

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.90	9951.16	42.22	12.23	11.59	1.85	1.08	3.45
2	LOB	9951.16	9963.43	104.93	23.37	12.29	4.60	1.91	4.49
3	LOB	9963.43	9975.69	115.82	24.88	12.40	5.08	2.03	4.65
4	LOB	9975.69	9987.95	368.98	49.93	12.44	16.18	4.07	7.39
5	Chan	9987.95	9990.95	172.92	16.20	3.05	7.58	5.39	10.67
6	Chan	9990.95	9993.96	202.15	17.79	3.05	8.87	5.92	11.36
7	Chan	9993.96	9996.96	229.99	19.17	3.03	10.09	6.38	12.00
8	Chan	9996.96	9999.96	250.82	20.17	3.02	11.00	6.72	12.44
9	Chan	9999.96	10002.96	252.25	20.21	3.01	11.06	6.73	12.48
10	Chan	10002.96	10005.97	230.56	19.38	3.10	10.11	6.45	11.90
11	Chan	10005.97	10008.97	165.46	16.20	3.26	7.26	5.40	10.21
12	ROB	10008.97	10020.38	143.88	26.85	12.24	6.31	2.38	5.36

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.90	9951.16	42.22	12.23	11.59	1.85	1.08	3.45
2	LOB	9951.16	9963.43	104.93	23.37	12.29	4.60	1.91	4.49
3	LOB	9963.43	9975.69	115.82	24.88	12.40	5.08	2.03	4.65
4	LOB	9975.69	9987.95	368.98	49.93	12.44	16.18	4.07	7.39
5	Chan	9987.95	9990.95	172.92	16.20	3.05	7.58	5.39	10.67
6	Chan	9990.95	9993.96	202.15	17.79	3.05	8.87	5.92	11.36
7	Chan	9993.96	9996.96	229.99	19.17	3.03	10.09	6.38	12.00
8	Chan	9996.96	9999.96	250.82	20.17	3.02	11.00	6.72	12.44
9	Chan	9999.96	10002.96	252.25	20.21	3.01	11.06	6.73	12.48
10	Chan	10002.96	10005.97	230.56	19.38	3.10	10.11	6.45	11.90
11	Chan	10005.97	10008.97	165.46	16.20	3.26	7.26	5.40	10.21
12	ROB	10008.97	10020.38	143.88	26.85	12.24	6.31	2.38	5.36

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: C8
REACH: Reach 1 RS: 0.583

INPUT
Description:
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9893.88	2126.42	9896.8	2125.9	9897.61	2125.81	9898.27	2125.68	9898.96	2125.6
9915.9	2124.81	9922.18	2124.2	9926.79	2123.74	9927.84	2123.59	9930.98	2123.26
9933.86	2123.01	9938.46	2122.6	9944.99	2121.97	9949.6	2121.59	9955.05	2121.28
9956.32	2121.14	9960.85	2120.3	9961.97	2120.13	9962.4	2120.07	9965.14	2120.02
9966.22	2119.94	9969	2119.9	9970.49	2119.84	9971.74	2119.82	9973.8	2119.78
9974.93	2119.72	9978.06	2119.5	9978.54	2119.44	9980.07	2119.34	9980.24	2119.34
9982.59	2119.22	9986.94	2118.9	9993.03	2118.35	9998.14	2118.2	9998.4	2118.19
9998.66	2118.191	10002.37	2118.11	10007.24	2119.431	10012.95	2120.991	10021.52	2123.29
10032.07	2124.38	10032.3	2124.41	10032.39	2124.41	10032.52	2124.451	10038.76	2125.66
10041.23	2126.111	10045.55	2126.93						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9893.88	.055	9982.59	.045	10007.24	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.59	10007.24	181.48	168.28	157.18	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2125.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.04	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2124.01	Reach Len. (ft)	181.48	168.28	157.18
Crit W.S. (ft)		Flow Area (sq ft)	156.78	133.87	40.15
E.G. Slope (ft/ft)	0.009525	Area (sq ft)	156.78	133.87	40.15
Q Total (cfs)	2280.00	Flow (cfs)	795.57	1325.16	159.27
Top Width (ft)	104.33	Top Width (ft)	58.47	24.65	21.21
Vel Total (ft/s)	6.89	Avg. Vel. (ft/s)	5.07	9.90	3.97
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)	2.68	5.43	1.89
Conv. Total (cfs)	23361.4	Conv. (cfs)	8151.6	13577.9	1631.9
Length Wtd. (ft)	169.87	Wetted Per. (ft)	58.72	24.87	21.76
Min Ch El (ft)	2118.10	Shear (lb/sq ft)	1.59	3.20	1.10
Alpha	1.41	Stream Power (lb/ft s)	8.06	31.69	4.35
Frctn Loss (ft)	1.65	Cum Volume (acre-ft)	3.83	9.62	3.17
C & E Loss (ft)	0.01	Cum SA (acres)	2.04	1.65	1.50

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2125.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2124.19	Reach Len. (ft)	181.48	168.28	157.18
Crit W.S. (ft)		Flow Area (sq ft)	167.89	138.48	44.29
E.G. Slope (ft/ft)	0.008229	Area (sq ft)	167.89	138.48	44.29
Q Total (cfs)	2280.00	Flow (cfs)	811.58	1303.19	165.23
Top Width (ft)	108.02	Top Width (ft)	60.34	24.65	23.02
Vel Total (ft/s)	6.50	Avg. Vel. (ft/s)	4.83	9.41	3.73
Max Chl Dpth (ft)	6.09	Hydr. Depth (ft)	2.78	5.62	1.92
Conv. Total (cfs)	25134.1	Conv. (cfs)	8946.6	14366.0	1821.4
Length Wtd. (ft)	170.08	Wetted Per. (ft)	60.60	24.87	23.58
Min Ch El (ft)	2118.10	Shear (lb/sq ft)	1.42	2.86	0.96
Alpha	1.42	Stream Power (lb/ft s)	6.88	26.92	3.60
Frctn Loss (ft)	1.59	Cum Volume (acre-ft)	3.26	9.82	3.06
C & E Loss (ft)	0.04	Cum SA (acres)	1.62	1.65	1.24

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9911.62	9929.36	1.44	1.47	5.28	0.06	0.28	0.98
2	LOB	9929.36	9947.11	71.05	24.84	17.82	3.12	1.40	2.86
3	LOB	9947.11	9964.85	257.55	53.84	17.86	11.30	3.03	4.78
4	LOB	9964.85	9982.59	465.52	76.63	17.77	20.42	4.32	6.07
5	Chan	9982.59	9986.11	160.58	17.31	3.53	7.04	4.92	9.28
6	Chan	9986.11	9989.63	175.78	18.28	3.53	7.71	5.19	9.61
7	Chan	9989.63	9993.15	193.96	19.40	3.54	8.51	5.51	10.00
8	Chan	9993.15	9996.68	206.51	20.11	3.52	9.06	5.71	10.27
9	Chan	9996.68	10000.20	212.55	20.46	3.52	9.32	5.81	10.39
10	Chan	10000.20	10003.72	211.12	20.49	3.57	9.26	5.82	10.30
11	Chan	10003.72	10007.24	164.66	17.81	3.65	7.22	5.06	9.25
12	ROB	10007.24	10014.90	127.66	27.05	7.94	5.60	3.53	4.72
13	ROB	10014.90	10022.56	29.93	11.31	7.90	1.31	1.48	2.65
14	ROB	10022.56	10030.23	1.68	1.79	5.92	0.07	0.30	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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9911.62	9929.36	2.86	2.63	7.16	0.13	0.37	1.09
2	LOB	9929.36	9947.11	81.24	28.15	17.82	3.56	1.59	2.89
3	LOB	9947.11	9964.85	263.98	57.16	17.86	11.58	3.22	4.62
4	LOB	9964.85	9982.59	463.49	79.95	17.77	20.33	4.51	5.80
5	Chan	9982.59	9986.11	158.86	17.97	3.53	6.97	5.10	8.84
6	Chan	9986.11	9989.63	173.34	18.94	3.53	7.60	5.38	9.15
7	Chan	9989.63	9993.15	190.62	20.06	3.54	8.36	5.70	9.50
8	Chan	9993.15	9996.68	202.57	20.77	3.52	8.88	5.90	9.75
9	Chan	9996.68	10000.20	208.30	21.12	3.52	9.14	6.00	9.86
10	Chan	10000.20	10003.72	206.89	21.15	3.57	9.07	6.01	9.78
11	Chan	10003.72	10007.24	162.62	18.47	3.65	7.13	5.24	8.81
12	ROB	10007.24	10014.90	128.36	28.49	7.94	5.63	3.72	4.51
13	ROB	10014.90	10022.56	33.69	12.74	7.90	1.48	1.66	2.64
14	ROB	10022.56	10030.23	3.18	3.06	7.70	0.14	0.40	1.04

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: C8
REACH: Reach 1 RS: 0.552

INPUT
Description: 125 Feet Upstream of 10th Street
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9912.924	2126.389	916.454	2126.923	9.924	2125.489	924.414	2125.449	924.604	2125.44
9925.814	2125.349	926.204	2125.319	926.614	2125.269	940.084	2123.839	942.714	2123.55
9959.244	2122.479	966.664	2121.999	969.294	2121.429	979.364	2118.99	985.054	2118.5
9987.84	2118.189	987.844	2118.189	998.594	2115.849	999.004	2115.769	999.504	2115.8
10009.74	2116.591	0012.33	2117.19	10018.72	2118.60	610022.81	2119.521	0026.26	2119.57
10035.73	2119.481	0038.39	2119.651	0058.58	2121.041	0062.34	2121.521	0064.58	2121.81
10082.45	2124.031	0084.56	2124.37	10085.9	2124.551	0088.41	2124.451	0090.07	2124.47
10090.79	2124.561	0128.48	2126.41						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9912.924	.055	9987.84	.045	10018.7	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.84	10018.7	255.21	247.1	238.91	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2123.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2122.20	Reach Len. (ft)	255.21	247.10	238.91
Crit W.S. (ft)		Flow Area (sq ft)	52.96	164.39	97.32
E.G. Slope (ft/ft)	0.009930	Area (sq ft)	52.96	164.39	97.32
Q Total (cfs)	2280.00	Flow (cfs)	235.79	1631.82	412.39
Top Width (ft)	104.40	Top Width (ft)	24.49	30.86	49.05
Vel Total (ft/s)	7.25	Avg. Vel. (ft/s)	4.45	9.93	4.24
Max Chl Dpth (ft)	6.44	Hydr. Depth (ft)	2.16	5.33	1.98
Conv. Total (cfs)	22880.3	Conv. (cfs)	2366.2	16375.6	4138.4
Length Wtd. (ft)	247.34	Wetted Per. (ft)	24.90	31.38	49.28
Min Ch El (ft)	2115.76	Shear (lb/sq ft)	1.32	3.25	1.22
Alpha	1.44	Stream Power (lb/ft s)	5.87	32.24	5.19
Frctn Loss (ft)	3.17	Cum Volume (acre-ft)	3.40	9.04	2.93
C & E Loss (ft)	0.02	Cum SA (acres)	1.87	1.54	1.37

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2123.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.31	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2122.19	Reach Len. (ft)	255.21	247.10	238.91
Crit W.S. (ft)		Flow Area (sq ft)	52.68	164.05	69.56
E.G. Slope (ft/ft)	0.010662	Area (sq ft)	52.68	164.05	69.56
Q Total (cfs)	2280.00	Flow (cfs)	243.36	1684.97	351.67
Top Width (ft)	81.47	Top Width (ft)	24.31	30.86	26.30
Vel Total (ft/s)	7.96	Avg. Vel. (ft/s)	4.62	10.27	5.06
Max Chl Dpth (ft)	6.43	Hydr. Depth (ft)	2.17	5.32	2.64
Conv. Total (cfs)	22080.7	Conv. (cfs)	2356.8	16318.1	3405.7
Length Wtd. (ft)	247.47	Wetted Per. (ft)	24.72	31.38	28.51
Min Ch El (ft)	2115.76	Shear (lb/sq ft)	1.42	3.48	1.62
Alpha	1.33	Stream Power (lb/ft s)	6.55	35.75	8.21
Frctn Loss (ft)	3.30	Cum Volume (acre-ft)	2.80	9.23	2.86
C & E Loss (ft)	0.01	Cum SA (acres)	1.44	1.54	1.15

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.87	9972.86	10.05	6.05	9.68	0.44	0.64	1.66
2	LOB	9972.86	9987.84	225.75	46.91	15.22	9.90	3.13	4.81
3	Chan	9987.84	9992.25	173.24	19.85	4.51	7.60	4.50	8.73
4	Chan	9992.25	9996.66	239.10	24.09	4.51	10.49	5.46	9.93
5	Chan	9996.66	10001.07	303.13	27.66	4.47	13.30	6.27	10.96
6	Chan	10001.07	10005.47	292.32	26.95	4.42	12.82	6.11	10.84
7	Chan	10005.47	10009.88	265.49	25.45	4.42	11.64	5.77	10.43
8	Chan	10009.88	10014.29	211.16	22.37	4.52	9.26	5.07	9.44
9	Chan	10014.29	10018.70	147.36	18.02	4.52	6.46	4.09	8.18
10	ROB	10018.70	10040.66	289.47	60.09	22.07	12.70	2.74	4.82
11	ROB	10040.66	10062.61	121.01	35.58	22.03	5.31	1.62	3.40
12	ROB	10062.61	10084.57	1.90	1.65	5.18	0.08	0.32	1.15

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.87	9972.86	10.26	5.94	9.51	0.45	0.64	1.73
2	LOB	9972.86	9987.84	233.11	46.74	15.22	10.22	3.12	4.99
3	Chan	9987.84	9992.25	178.76	19.80	4.51	7.84	4.49	9.03

4	Chan	9992.25	9996.66	246.90	24.04	4.51	10.83	5.45	10.27
5	Chan	9996.66	10001.07	313.16	27.61	4.47	13.73	6.26	11.34
6	Chan	10001.07	10005.47	301.96	26.91	4.42	13.24	6.10	11.22
7	Chan	10005.47	10009.88	274.20	25.40	4.42	12.03	5.76	10.80
8	Chan	10009.88	10014.29	217.99	22.32	4.52	9.56	5.06	9.76
9	Chan	10014.29	10018.70	151.99	17.97	4.52	6.67	4.08	8.46
10	ROB	10018.70	10040.66	316.85	59.84	22.07	13.90	2.73	5.30
11	ROB	10040.66	10062.61	34.81	9.72	6.44	1.53	2.24	3.58

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: C8
REACH: Reach 1 RS: 0.505

INPUT
Description:
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9925.428	2123.119	9928.848	2122.339	9930.588	2121.979	9932.668	2121.489	9935.028	2120.97
9935.908	2120.79	9940.208	2119.779	9941.728	2119.459	9954.558	2116.579	9964.858	2115.97
9973.018	2115.499	9988.528	2115.39	9989.608	2115.28	9989.61	2115.289	9989.738	2115.25
9994.008	2114.089	9997.198	2114.041	0001.23	2113.961	0007.69	2114.881	0009.41	2115.1
10011.29	2115.19	10019	2115.531	0028.41	2117.821	0034.85	2119.331	0037.25	2119.35
10039.73	2119.371	0041.39	2119.23	10044.7	2119.21	0059.05	2119.091	0061.02	2119.07
10063.97	2119.061	0067.25	2119.021	0073.62	2118.861	0095.61	2118.851	0097.03	2118.84
10112.05	2119.291	0114.91	2119.351	0117.72	2119.561	0119.15	2119.63	10122.9	2119.95
10127.08	2120.371	0130.17	2120.491	0131.18	2120.511	0136.35	2120.931	0139.27	2121.19
10139.32	2121.19	10139.5	2121.21	0147.58	2121.441	0163.42	2122		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9925.428	.055	9989.61	.045	10009.41	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.61	10009.41	219.58	216.5	213.06	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
10042.76	10088.18	2124

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2120.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.40	Wt. n-Val.	0.055	0.045	0.040
W.S. Elev (ft)	2118.80	Reach Len. (ft)	219.58	216.50	213.06
Crit W.S. (ft)	2118.80	Flow Area (sq ft)	118.58	87.34	55.32
E.G. Slope (ft/ft)	0.017140	Area (sq ft)	118.58	87.34	55.32
Q Total (cfs)	2280.00	Flow (cfs)	797.28	1007.30	475.42
Top Width (ft)	87.92	Top Width (ft)	44.97	19.80	23.16
Vel Total (ft/s)	8.73	Avg. Vel. (ft/s)	6.72	11.53	8.59
Max Chl Dpth (ft)	4.84	Hydr. Depth (ft)	2.64	4.41	2.39
Conv. Total (cfs)	17415.3	Conv. (cfs)	6089.8	7694.0	3631.4
Length Wtd. (ft)	216.29	Wetted Per. (ft)	45.25	20.04	23.56
Min Ch El (ft)	2113.96	Shear (lb/sq ft)	2.80	4.66	2.51
Alpha	1.18	Stream Power (lb/ft s)	18.86	53.78	21.60
Frctn Loss (ft)	3.30	Cum Volume (acre-ft)	2.89	8.33	2.51
C & E Loss (ft)	0.00	Cum SA (acres)	1.67	1.40	1.17

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2120.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.40	Wt. n-Val.	0.055	0.045	0.040
W.S. Elev (ft)	2118.80	Reach Len. (ft)	219.58	216.50	213.06
Crit W.S. (ft)	2118.80	Flow Area (sq ft)	118.58	87.34	55.32
E.G. Slope (ft/ft)	0.017140	Area (sq ft)	118.58	87.34	55.32
Q Total (cfs)	2280.00	Flow (cfs)	797.28	1007.30	475.42
Top Width (ft)	87.92	Top Width (ft)	44.97	19.80	23.16
Vel Total (ft/s)	8.73	Avg. Vel. (ft/s)	6.72	11.53	8.59
Max Chl Dpth (ft)	4.84	Hydr. Depth (ft)	2.64	4.41	2.39
Conv. Total (cfs)	17415.3	Conv. (cfs)	6089.8	7694.0	3631.4
Length Wtd. (ft)	216.29	Wetted Per. (ft)	45.25	20.04	23.56
Min Ch El (ft)	2113.96	Shear (lb/sq ft)	2.80	4.66	2.51
Alpha	1.18	Stream Power (lb/ft s)	18.86	53.78	21.60
Frctn Loss (ft)	3.30	Cum Volume (acre-ft)	2.30	8.52	2.51
C & E Loss (ft)	0.00	Cum SA (acres)	1.24	1.40	1.01

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.27	9951.10	12.26	4.68	6.62	0.54	0.72	2.62
2	LOB	9951.10	9963.94	171.53	29.78	12.94	7.52	2.32	5.76
3	LOB	9963.94	9976.77	282.68	40.09	12.85	12.40	3.12	7.05
4	LOB	9976.77	9989.61	330.79	44.03	12.84	14.51	3.43	7.51
5	Chan	9989.61	9992.44	114.72	11.02	2.93	5.03	3.90	10.41
6	Chan	9992.44	9995.27	152.79	13.01	2.89	6.70	4.60	11.74
7	Chan	9995.27	9998.10	163.33	13.43	2.83	7.16	4.75	12.16
8	Chan	9998.10	10000.92	166.33	13.58	2.83	7.29	4.80	12.25
9	Chan	10000.92	10003.75	158.11	13.22	2.85	6.93	4.67	11.96
10	Chan	10003.75	10006.58	136.16	12.09	2.86	5.97	4.27	11.26
11	Chan	10006.58	10009.41	115.87	10.97	2.85	5.08	3.88	10.56
12	ROB	10009.41	10040.21	475.42	55.32	23.56	20.85	2.39	8.59

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.27	9951.10	12.26	4.68	6.62	0.54	0.72	2.62
2	LOB	9951.10	9963.94	171.53	29.78	12.94	7.52	2.32	5.76
3	LOB	9963.94	9976.77	282.68	40.09	12.85	12.40	3.12	7.05
4	LOB	9976.77	9989.61	330.79	44.03	12.84	14.51	3.43	7.51
5	Chan	9989.61	9992.44	114.72	11.02	2.93	5.03	3.90	10.41
6	Chan	9992.44	9995.27	152.79	13.01	2.89	6.70	4.60	11.74
7	Chan	9995.27	9998.10	163.33	13.43	2.83	7.16	4.75	12.16
8	Chan	9998.10	10000.92	166.33	13.58	2.83	7.29	4.80	12.25
9	Chan	10000.92	10003.75	158.11	13.22	2.85	6.93	4.67	11.96
10	Chan	10003.75	10006.58	136.16	12.09	2.86	5.97	4.27	11.26
11	Chan	10006.58	10009.41	115.87	10.97	2.85	5.08	3.88	10.56
12	ROB	10009.41	10040.21	475.42	55.32	23.56	20.85	2.39	8.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: C8
REACH: Reach 1 RS: 0.464

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9946.661	2118.639	951.291	2117.719	963.051	2115.59	973.721	2112.659	983.201	2109.92
9984.82	2110	9984.821	2110	9995.771	2109.139	999.681	2108.121	0002.93	2108.72
10008.87	2110.341	0014.17	2110.741	0018.08	2111.051	0018.19	2111.061	0043.76	2113.04
10051.63	2113.621	0053.66	2113.77	10060.4	2114.281	0065.43	2114.651	0076.29	2115.27
10086.42	2115.82								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9946.661	.06	9984.82	.045	10008.87	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.82	10008.87	291.04	283.58	284.19	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2115.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.44	Wt. n-Val.	0.060	0.045	0.040
W.S. Elev (ft)	2114.32	Reach Len. (ft)	291.04	283.58	284.19
Crit W.S. (ft)	2114.32	Flow Area (sq ft)	41.05	121.95	102.86
E.G. Slope (ft/ft)	0.013653	Area (sq ft)	41.05	121.95	102.86
Q Total (cfs)	2280.00	Flow (cfs)	206.12	1372.27	701.61
Top Width (ft)	93.47	Top Width (ft)	17.35	24.05	52.07
Vel Total (ft/s)	8.58	Avg. Vel. (ft/s)	5.02	11.25	6.82
Max Chl Dpth (ft)	6.20	Hydr. Depth (ft)	2.37	5.07	1.98
Conv. Total (cfs)	19512.6	Conv. (cfs)	1764.0	11744.1	6004.5
Length Wtd. (ft)	284.25	Wetted Per. (ft)	17.96	24.48	52.22
Min Ch El (ft)	2108.12	Shear (lb/sq ft)	1.95	4.25	1.68
Alpha	1.26	Stream Power (lb/ft s)	9.78	47.77	11.45

Frctn Loss (ft)	3.62	Cum Volume (acre-ft)	2.49	7.81	2.12
C & E Loss (ft)	0.03	Cum SA (acres)	1.51	1.29	0.99

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2115.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.44	Wt. n-Val.	0.060	0.045	0.040
W.S. Elev (ft)	2114.32	Reach Len. (ft)	291.04	283.58	284.19
Crit W.S. (ft)	2114.32	Flow Area (sq ft)	41.05	121.95	102.86
E.G. Slope (ft/ft)	0.013653	Area (sq ft)	41.05	121.95	102.86
Q Total (cfs)	2280.00	Flow (cfs)	206.12	1372.27	701.61
Top Width (ft)	93.47	Top Width (ft)	17.35	24.05	52.07
Vel Total (ft/s)	8.58	Avg. Vel. (ft/s)	5.02	11.25	6.82
Max Chl Dpth (ft)	6.20	Hydr. Depth (ft)	2.37	5.07	1.98
Conv. Total (cfs)	19512.6	Conv. (cfs)	1764.0	11744.1	6004.5
Length Wtd. (ft)	284.25	Wetted Per. (ft)	17.96	24.48	52.22
Min Ch El (ft)	2108.12	Shear (lb/sq ft)	1.95	4.25	1.68
Alpha	1.26	Stream Power (lb/ft s)	9.78	47.77	11.45
Frctn Loss (ft)	3.62	Cum Volume (acre-ft)	1.90	8.00	2.13
C & E Loss (ft)	0.03	Cum SA (acres)	1.08	1.29	0.83

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9961.93	9969.56	0.60	0.58	2.16	0.03	0.28	1.04
2	LOB	9969.56	9977.19	40.26	12.16	7.92	1.77	1.59	3.31
3	LOB	9977.19	9984.82	165.25	28.31	7.88	7.25	3.71	5.84
4	Chan	9984.82	9988.26	158.68	15.31	3.45	6.96	4.46	10.37
5	Chan	9988.26	9991.69	175.22	16.25	3.45	7.68	4.73	10.78
6	Chan	9991.69	9995.13	192.39	17.18	3.45	8.44	5.00	11.20
7	Chan	9995.13	9998.56	220.41	18.82	3.53	9.67	5.48	11.71
8	Chan	9998.56	10002.00	257.90	20.64	3.51	11.31	6.01	12.49
9	Chan	10002.00	10005.43	212.87	18.46	3.54	9.34	5.37	11.53
10	Chan	10005.43	10008.87	154.79	15.28	3.56	6.79	4.45	10.13
11	ROB	10008.87	10024.38	434.69	52.47	15.56	19.07	3.38	8.28
12	ROB	10024.38	10039.89	208.92	33.81	15.56	9.16	2.18	6.18
13	ROB	10039.89	10055.40	56.52	15.43	15.55	2.48	0.99	3.66
14	ROB	10055.40	10070.91	1.49	1.15	5.55	0.07	0.21	1.29

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9961.93	9969.56	0.60	0.58	2.16	0.03	0.28	1.04
2	LOB	9969.56	9977.19	40.26	12.16	7.92	1.77	1.59	3.31
3	LOB	9977.19	9984.82	165.25	28.31	7.88	7.25	3.71	5.84
4	Chan	9984.82	9988.26	158.68	15.31	3.45	6.96	4.46	10.37
5	Chan	9988.26	9991.69	175.22	16.25	3.45	7.68	4.73	10.78
6	Chan	9991.69	9995.13	192.39	17.18	3.45	8.44	5.00	11.20
7	Chan	9995.13	9998.56	220.41	18.82	3.53	9.67	5.48	11.71
8	Chan	9998.56	10002.00	257.90	20.64	3.51	11.31	6.01	12.49
9	Chan	10002.00	10005.43	212.87	18.46	3.54	9.34	5.37	11.53
10	Chan	10005.43	10008.87	154.79	15.28	3.56	6.79	4.45	10.13
11	ROB	10008.87	10024.38	434.69	52.47	15.56	19.07	3.38	8.28
12	ROB	10024.38	10039.89	208.92	33.81	15.56	9.16	2.18	6.18
13	ROB	10039.89	10055.40	56.52	15.43	15.55	2.48	0.99	3.66
14	ROB	10055.40	10070.91	1.49	1.15	5.55	0.07	0.21	1.29

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

LATERAL STRUCTURE

RIVER: C8
REACH: Reach 1 RS: 0.413

INPUT
Description: Circle Mountain Road Overflow.
Lateral structure position = Right overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 20
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2115.82	3.74	2115.63	4.78	2115.6	27.05	2114.85	29.49	2114.78
50.4	2114.1	53.64	2114.04	71.94	2113.5	75.4	2113.41	95.04	2112.97
98.14	2112.9	118.63	2112.52	120.74	2112.48	142.82	2112.16	143.24	2112.15
148.35	2112.1	150.84	2112.04	154.92	2111.98	165.83	2111.72	166.57	2111.71
188.5	2111.3	190.07	2111.26	211.66	2110.93	213.39	2110.9	224.2	2110.76
224.75	2110.8	284.19	2109.35						

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 0.410

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9956.647	2115.19	9956.697	2115.19	9956.757	2115.08	9975.317	2110.52	9980.21	2108.496
9986.967	2105.7	9986.972	2105.698	9992.307	2103.28	9994.687	2103.48	9996.067	2103.59
9997.837	2103.59	9998.387	2103.29	9999.467	2103.07	10001.39	2103.34	10001.81	2103.59
10002.82	2103.59	10005.05	2103.73	10007.55	2103.96	10017.32	2106.14	10027.27	2108.33
10030.2	2108.49	10042.67	2109.35						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9956.647	.06	9980.21	.045	10027.27	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.97	10017.32	189	162.22	94.38	.3	.5

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2111.52	Element			
Vel Head (ft)	1.71	Wt. n-Val.	0.045	0.045	0.040
W.S. Elev (ft)	2109.80	Reach Len. (ft)	189.00	162.22	94.38
Crit W.S. (ft)	2109.80	Flow Area (sq ft)	20.36	170.61	40.65
E.G. Slope (ft/ft)	0.011937	Area (sq ft)	20.36	170.61	40.65
Q Total (cfs)	2280.00	Flow (cfs)	125.54	1905.33	249.13
Top Width (ft)	65.62	Top Width (ft)	9.92	30.35	25.35
Vel Total (ft/s)	9.84	Avg. Vel. (ft/s)	6.17	11.17	6.13
Max Chl Dpth (ft)	6.73	Hydr. Depth (ft)	2.05	5.62	1.60
Conv. Total (cfs)	20868.3	Conv. (cfs)	1149.1	17439.0	2280.2
Length Wtd. (ft)	159.30	Wetted Per. (ft)	10.74	31.33	26.07
Min Ch El (ft)	2103.07	Shear (lb/sq ft)	1.41	4.06	1.16
Alpha	1.14	Stream Power (lb/ft s)	8.71	45.33	7.12
Frctn Loss (ft)	1.34	Cum Volume (acre-ft)	2.29	6.86	1.65
C & E Loss (ft)	0.45	Cum SA (acres)	1.42	1.11	0.74

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 cross-section end points had to be extended vertically for the computed water surface.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2111.52	Element			
Vel Head (ft)	1.71	Wt. n-Val.	0.045	0.045	0.040
W.S. Elev (ft)	2109.80	Reach Len. (ft)	189.00	162.22	94.38
Crit W.S. (ft)	2109.80	Flow Area (sq ft)	20.36	170.61	40.65
E.G. Slope (ft/ft)	0.011937	Area (sq ft)	20.36	170.61	40.65
Q Total (cfs)	2280.00	Flow (cfs)	125.54	1905.33	249.13
Top Width (ft)	65.62	Top Width (ft)	9.92	30.35	25.35
Vel Total (ft/s)	9.84	Avg. Vel. (ft/s)	6.17	11.17	6.13
Max Chl Dpth (ft)	6.73	Hydr. Depth (ft)	2.05	5.62	1.60
Conv. Total (cfs)	20868.3	Conv. (cfs)	1149.1	17439.0	2280.2
Length Wtd. (ft)	159.30	Wetted Per. (ft)	10.74	31.33	26.07
Min Ch El (ft)	2103.07	Shear (lb/sq ft)	1.41	4.06	1.16
Alpha	1.14	Stream Power (lb/ft s)	8.71	45.33	7.12

Frctn Loss (ft)	1.34	Cum Volume (acre-ft)	1.70	7.05	1.66
C & E Loss (ft)	0.45	Cum SA (acres)	0.99	1.11	0.58

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: The cross-section end points had to be extended vertically for the computed water surface.
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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9974.84	9980.91	8.30	3.07	4.17	0.36	0.80	2.70
2	LOB	9980.91	9986.97	117.25	17.28	6.56	5.14	2.85	6.78
3	Chan	9986.97	9991.31	218.38	22.06	4.76	9.58	5.09	9.90
4	Chan	9991.31	9995.64	331.91	27.59	4.45	14.56	6.36	12.03
5	Chan	9995.64	9999.98	334.69	27.72	4.44	14.68	6.39	12.07
6	Chan	9999.98	10004.31	329.48	27.41	4.42	14.45	6.32	12.02
7	Chan	10004.31	10008.65	297.53	25.68	4.37	13.05	5.92	11.59
8	Chan	10008.65	10012.98	230.69	22.18	4.44	10.12	5.11	10.40
9	Chan	10012.98	10017.32	162.65	17.98	4.44	7.13	4.15	9.05
10	ROB	10017.32	10022.39	114.88	15.74	5.19	5.04	3.11	7.30
11	ROB	10022.39	10027.46	55.43	10.09	5.19	2.43	1.99	5.50
12	ROB	10027.46	10032.53	41.84	6.68	5.08	1.84	1.32	6.27
13	ROB	10032.53	10037.60	25.46	4.96	5.08	1.12	0.98	5.14
14	ROB	10037.60	10042.67	11.50	3.18	5.54	0.50	0.63	3.61

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 cross-section end points had to be extended vertically for the computed water surface.
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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9974.84	9980.91	8.30	3.07	4.17	0.36	0.80	2.70
2	LOB	9980.91	9986.97	117.25	17.28	6.56	5.14	2.85	6.78
3	Chan	9986.97	9991.31	218.38	22.06	4.76	9.58	5.09	9.90
4	Chan	9991.31	9995.64	331.91	27.59	4.45	14.56	6.36	12.03
5	Chan	9995.64	9999.98	334.69	27.72	4.44	14.68	6.39	12.07
6	Chan	9999.98	10004.31	329.48	27.41	4.42	14.45	6.32	12.02
7	Chan	10004.31	10008.65	297.53	25.68	4.37	13.05	5.92	11.59
8	Chan	10008.65	10012.98	230.69	22.18	4.44	10.12	5.11	10.40
9	Chan	10012.98	10017.32	162.65	17.98	4.44	7.13	4.15	9.05
10	ROB	10017.32	10022.39	114.88	15.74	5.19	5.04	3.11	7.30
11	ROB	10022.39	10027.46	55.43	10.09	5.19	2.43	1.99	5.50
12	ROB	10027.46	10032.53	41.84	6.68	5.08	1.84	1.32	6.27
13	ROB	10032.53	10037.60	25.46	4.96	5.08	1.12	0.98	5.14
14	ROB	10037.60	10042.67	11.50	3.18	5.54	0.50	0.63	3.61

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 cross-section end points had to be extended vertically for the computed water surface.
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.

LATERAL STRUCTURE

RIVER: C8
REACH: Reach 1 RS: 0.395

INPUT
Description: Circle Mountain Road Overflow
Lateral structure position = Right overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 20
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2109.35	8.77	2109.06	13.55	2108.98	70.14	2107.64	83.97	2107.33
94.38	2107.341								

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 0.379

INPUT
Description: Upstream cross section at Circle Mountain Road.
Cross section
geometry provided by Flood Control District of Maricopa County survey. See TDN, Section 3.

40 degree skew projection using COS
40=0.809 was applied manually and horizontal adjustment of +1910 feet made to each station so station 10,000 is on hydraulic base line shown on work map.

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9851.1	2120.07	9881.82	2113.81	9904.36	2110.18	9935.77	2108.55	9947.91	2106.77
9963.97	2105.65	9972.06	2104.24	9977.81	2104.63	9977.81	2098.26	9988.91	2098.33
9998.76	2098.12	10011.03	2098.19	10020.32	2098.09	10020.32	2104.79	10029.63	2105.33
10046.99	2106.66	10067.22	2107.34						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9851.1	.055	9904.36	.035	9977.81	.05	10020.32	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.81	10020.32	232	234.77	241	.3	.5

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2106.24	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.035	0.050	0.025
W.S. Elev (ft)	2105.41	Reach Len. (ft)	232.00	234.77	241.00
Crit W.S. (ft)	2102.66	Flow Area (sq ft)	9.54	306.34	3.31
E.G. Slope (ft/ft)	0.006253	Area (sq ft)	9.54	306.34	3.31
Q Total (cfs)	2280.00	Flow (cfs)	26.64	2246.11	7.25
Top Width (ft)	65.34	Top Width (ft)	12.47	42.51	10.36
Vel Total (ft/s)	7.14	Avg. Vel. (ft/s)	2.79	7.33	2.19
Max Chl Dpth (ft)	7.32	Hydr. Depth (ft)	0.77	7.21	0.32
Conv. Total (cfs)	28833.3	Conv. (cfs)	336.9	28404.8	91.6
Length Wtd. (ft)	234.77	Wetted Per. (ft)	12.58	55.58	10.38
Min Ch El (ft)	2098.09	Shear (lb/sq ft)	0.30	2.15	0.12
Alpha	1.04	Stream Power (lb/ft s)	0.83	15.77	0.27
Frctn Loss (ft)		Cum Volume (acre-ft)	2.22	5.97	1.61
C & E Loss (ft)		Cum SA (acres)	1.37	0.98	0.70

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2106.24	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.035	0.050	0.025
W.S. Elev (ft)	2105.41	Reach Len. (ft)	232.00	234.77	241.00
Crit W.S. (ft)	2102.66	Flow Area (sq ft)	9.55	306.36	3.31
E.G. Slope (ft/ft)	0.006251	Area (sq ft)	9.55	306.36	3.31
Q Total (cfs)	2280.00	Flow (cfs)	26.66	2246.08	7.26
Top Width (ft)	65.35	Top Width (ft)	12.47	42.51	10.37
Vel Total (ft/s)	7.14	Avg. Vel. (ft/s)	2.79	7.33	2.19
Max Chl Dpth (ft)	7.32	Hydr. Depth (ft)	0.77	7.21	0.32
Conv. Total (cfs)	28837.1	Conv. (cfs)	337.2	28408.0	91.8
Length Wtd. (ft)	234.77	Wetted Per. (ft)	12.58	55.58	10.39
Min Ch El (ft)	2098.09	Shear (lb/sq ft)	0.30	2.15	0.12
Alpha	1.04	Stream Power (lb/ft s)	0.83	15.77	0.27
Frctn Loss (ft)		Cum Volume (acre-ft)	1.63	6.16	1.61
C & E Loss (ft)		Cum SA (acres)	0.94	0.98	0.54

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9952.47	9977.81	26.64	9.54	12.58	1.17	0.77	2.79
2	Chan	9977.81	9983.88	219.72	43.31	12.44	9.64	7.13	5.07
3	Chan	9983.88	9989.96	351.41	43.09	6.07	15.41	7.10	8.16
4	Chan	9989.96	9996.03	357.39	43.53	6.07	15.67	7.17	8.21
5	Chan	9996.03	10002.10	366.15	44.17	6.07	16.06	7.27	8.29
6	Chan	10002.10	10008.17	364.67	44.06	6.07	15.99	7.25	8.28
7	Chan	10008.17	10014.25	362.89	43.93	6.07	15.92	7.23	8.26
8	Chan	10014.25	10020.32	223.87	44.26	12.77	9.82	7.29	5.06
9	ROB	10020.32	10029.70	7.23	3.27	9.40	0.32	0.35	2.21
10	ROB	10029.70	10039.08	0.02	0.04	0.98	0.00	0.04	0.50

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9952.47	9977.81	26.66	9.55	12.58	1.17	0.77	2.79
2	Chan	9977.81	9983.88	219.72	43.31	12.44	9.64	7.13	5.07
3	Chan	9983.88	9989.96	351.41	43.09	6.07	15.41	7.10	8.16
4	Chan	9989.96	9996.03	357.38	43.53	6.07	15.67	7.17	8.21
5	Chan	9996.03	10002.10	366.15	44.17	6.07	16.06	7.27	8.29
6	Chan	10002.10	10008.17	364.67	44.06	6.07	15.99	7.25	8.28

7	Chan	10008.17	10014.25	362.88	43.93	6.07	15.92	7.23	8.26
8	Chan	10014.25	10020.32	223.87	44.26	12.77	9.82	7.29	5.06
9	ROB	10020.32	10029.70	7.24	3.27	9.40	0.32	0.35	2.21
10	ROB	10029.70	10039.08	0.02	0.04	0.99	0.00	0.04	0.50

CULVERT

RIVER: C8
REACH: Reach 1 RS: 0.357

INPUT
Description: Con-Arch at Circle Mountain Road, Average maximum surveyed arch height = 4.9 feet. Average span = 24.7 feet measured across head walls (at skew angle). Average surveyed length = 230.75'. Skew = 40 degrees. Skew applied to culvert and upstream and downstream cross sections. Equals Cos 40 degrees (0.809) multiplied by stationing.
Distance from Upstream XS = 3.74
Deck/Roadway Width = 228
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 23

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9889.89	2108	2088	9892.21	2107.65	2088	9893.84	2107.46	2087
9899.06	2107.35	2087	9906.12	2106.9	2087	9910.16	2106.8	2087
9913.02	2106.75	2087	9924.47	2105.93	2086	9925.98	2105.83	2086
9932.47	2105.5	2086	9932.6	2105.5	2086	9932.66	2105.49	2085
9933.68	2105.42	2085	9938.77	2104.74	2085	9940.72	2104.47	2084
9945.47	2103.9	2084	9946.04	2103.79	2084	9947.6	2103.59	2084
9973.02	2103.85	2084	9977.45	2103.89	2084	9977.81	2104.89	2084
10022.75	2104.97	2084	10148.31	2107.17	2087			

Upstream Bridge Cross Section Data
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9851.1	2120.07	9881.82	2113.81	9904.36	2110.18	9935.77	2108.55	9947.91	2106.77
9963.97	2105.65	9972.06	2104.24	9977.81	2104.63	9977.81	2098.26	9988.91	2098.33
9998.76	2098.12	10011.03	2098.19	10020.32	2098.09	10020.32	2104.79	10029.63	2105.33
10046.99	2106.66	10067.22	2107.34						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9851.1	.055	9904.36	.035	9977.81	.05	10020.32	.025

Bank Sta: Left	Right	Coeff Contr.	Expan.
9977.81	10020.32	.3	.5

Downstream Deck/Roadway Coordinates
num= 24

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9862.7	2111	2086	9889.89	2108	2088	9892.21	2107.65	2088
9893.84	2107.46	2087	9899.06	2107.35	2087	9906.12	2106.9	2087
9910.16	2106.8	2087	9913.02	2106.75	2087	9924.47	2105.93	2086
9925.98	2105.83	2086	9932.47	2105.5	2086	9932.6	2105.5	2086
9932.66	2105.49	2085	9933.68	2105.42	2085	9938.77	2104.74	2085
9940.72	2104.47	2084	9945.47	2103.9	2084	9946.04	2103.79	2084
9947.6	2103.59	2084	9973.02	2103.85	2084	9977.45	2103.55	2084
9977.81	2103.44	2084	10022.75	2103.59	2084	10148.31	2107.17	2087

Downstream Bridge Cross Section Data
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9862.7	2105.89	9889.83	2103.67	9903.86	2102.23	9912.24	2101.11	9923.28	2101.02
9933.09	2101.53	9946.02	2102.15	9959.2	2102.67	9980.16	2103.44	9980.16	2096.76
9991.77	2096.61	10000.74	2096.48	10013.53	2096.93	10023.07	2097.13	10023.07	2103.58
10041.93	2105.82	10050.67	2106.42	10069.42	2109.55	10081.34	2111.18	10107.97	2113.31
10145.71	2114.21								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9862.7	.055	9980.16	.02	10023.07	.06

Bank Sta: Left	Right	Coeff Contr.	Expan.
9980.16	10023.07	.3	.5

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 2

Culvert Name	Shape	Rise	Span
Culvert #1	Conspan Arch	4.9	20

FHWA Chart # 61- Span/Rise ratio approximate 4:1
FHWA Scale # 2 - 45 degree wing wall angle
Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
	3.71	230.75	.011	.011	0	.2	1

Upstream Elevation = 2098.17
Centerline Station = 9988.45

```
Downstream Elevation =  2096.81
           Centerline Station =  9991.22

Culvert Name      Shape       Rise     Span
Culvert #2  Conspan Arch      4.9       20
FHWA Chart # 61- Span/Rise ratio approximate 4:1
FHWA Scale # 2 - 45 degree wing wall angle
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length     Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
               3.41  230.75     .011     .011         0                .2                  1
Upstream   Elevation =  2098.21
           Centerline Station =  10010
Downstream Elevation =  2096.93
           Centerline Station =  10012.3

CULVERT OUTPUT  Profile #profile 1  Culv Group:  Culvert #1

  Q Culv Group (cfs)        1004.53    Culv Full Len (ft)
  # Barrels                       1    Culv Vel US (ft/s)          12.14
  Q Barrel (cfs)            1004.53    Culv Vel DS (ft/s)          17.34
  E.G. US. (ft)             2106.24    Culv Inv El Up (ft)       2098.17
  W.S. US. (ft)             2105.41    Culv Inv El Dn (ft)       2096.81
  E.G. DS (ft)              2103.40    Culv Frctn Ls (ft)           1.34
  W.S. DS (ft)              2101.23    Culv Exit Loss (ft)          1.05
  Delta EG (ft)                2.84    Culv Entr Loss (ft)          0.46
  Delta WS (ft)                4.18    Q Weir (cfs)               273.56
  E.G. IC (ft)              2106.23    Weir Sta Lft (ft)         9955.63
  E.G. OC (ft)              2105.54    Weir Sta Rgt (ft)        10041.40
  Culvert Control             Inlet    Weir Submerg                 0.00
  Culv WS Inlet (ft)        2103.07    Weir Max Depth (ft)          1.99
  Culv WS Outlet (ft)       2099.77    Weir Avg Depth (ft)          1.10
  Culv Nml Depth (ft)          2.94    Weir Flow Area (sq ft)      94.54
  Culv Crt Depth (ft)          4.00    Min El Weir Flow (ft)     2104.25


Note:    The flow in the culvert is entirely supercritical.

CULVERT OUTPUT  Profile #profile 2  Culv Group:  Culvert #1

  Q Culv Group (cfs)        1004.53    Culv Full Len (ft)
  # Barrels                       1    Culv Vel US (ft/s)          12.14
  Q Barrel (cfs)            1004.53    Culv Vel DS (ft/s)          17.34
  E.G. US. (ft)             2106.24    Culv Inv El Up (ft)       2098.17
  W.S. US. (ft)             2105.41    Culv Inv El Dn (ft)       2096.81
  E.G. DS (ft)              2103.41    Culv Frctn Ls (ft)           1.34
  W.S. DS (ft)              2101.46    Culv Exit Loss (ft)          1.03
  Delta EG (ft)                2.83    Culv Entr Loss (ft)          0.46
  Delta WS (ft)                3.95    Q Weir (cfs)               273.56
  E.G. IC (ft)              2106.23    Weir Sta Lft (ft)         9955.63
  E.G. OC (ft)              2105.54    Weir Sta Rgt (ft)        10041.40
  Culvert Control             Inlet    Weir Submerg                 0.00
  Culv WS Inlet (ft)        2103.07    Weir Max Depth (ft)          1.99
  Culv WS Outlet (ft)       2099.77    Weir Avg Depth (ft)          1.10
  Culv Nml Depth (ft)          2.94    Weir Flow Area (sq ft)      94.54
  Culv Crt Depth (ft)          4.00    Min El Weir Flow (ft)     2104.25


Note:    The flow in the culvert is entirely supercritical.

CULVERT OUTPUT  Profile #profile 1  Culv Group:  Culvert #2

  Q Culv Group (cfs)        1001.92    Culv Full Len (ft)
  # Barrels                       1    Culv Vel US (ft/s)          12.11
  Q Barrel (cfs)            1001.92    Culv Vel DS (ft/s)          17.16
  E.G. US. (ft)             2106.24    Culv Inv El Up (ft)       2098.21
  W.S. US. (ft)             2105.41    Culv Inv El Dn (ft)       2096.93
  E.G. DS (ft)              2103.40    Culv Frctn Ls (ft)           1.29
  W.S. DS (ft)              2101.23    Culv Exit Loss (ft)          1.09
  Delta EG (ft)                2.84    Culv Entr Loss (ft)          0.46
  Delta WS (ft)                4.18    Q Weir (cfs)               273.56
  E.G. IC (ft)              2106.24    Weir Sta Lft (ft)         9955.63
  E.G. OC (ft)              2105.56    Weir Sta Rgt (ft)        10041.40
  Culvert Control             Inlet    Weir Submerg                 0.00
  Culv WS Inlet (ft)        2103.11    Weir Max Depth (ft)          1.99
  Culv WS Outlet (ft)       2099.92    Weir Avg Depth (ft)          1.10
  Culv Nml Depth (ft)          3.00    Weir Flow Area (sq ft)      94.54
  Culv Crt Depth (ft)          3.99    Min El Weir Flow (ft)     2104.25


Note:    The flow in the culvert is entirely supercritical.

CULVERT OUTPUT  Profile #profile 2  Culv Group:  Culvert #2

  Q Culv Group (cfs)        1001.91    Culv Full Len (ft)
  # Barrels                       1    Culv Vel US (ft/s)          12.11
  Q Barrel (cfs)            1001.91    Culv Vel DS (ft/s)          17.16
  E.G. US. (ft)             2106.24    Culv Inv El Up (ft)       2098.21
  W.S. US. (ft)             2105.41    Culv Inv El Dn (ft)       2096.93
  E.G. DS (ft)              2103.41    Culv Frctn Ls (ft)           1.29
  W.S. DS (ft)              2101.46    Culv Exit Loss (ft)          1.08
  Delta EG (ft)                2.83    Culv Entr Loss (ft)          0.46
  Delta WS (ft)                3.95    Q Weir (cfs)               273.56
  E.G. IC (ft)              2106.24    Weir Sta Lft (ft)         9955.63
  E.G. OC (ft)              2105.56    Weir Sta Rgt (ft)        10041.40
  Culvert Control             Inlet    Weir Submerg                 0.00
  Culv WS Inlet (ft)        2103.11    Weir Max Depth (ft)          1.99
```

Culv WS Outlet (ft)	2099.92	Weir Avg Depth (ft)	1.10
Culv Nml Depth (ft)	3.00	Weir Flow Area (sq ft)	94.54
Culv Crt Depth (ft)	3.99	Min El Weir Flow (ft)	2104.25

Note: The flow in the culvert is entirely supercritical.

CROSS SECTION

RIVER: C8
REACH: Reach 1 RS: 0.334

INPUT
Description: Downstream cross section at Circle Mountain Road.
Cross section
geometry provided by Flood Control District of Maricopa County survey. See TDN, Section 3.

40 degree skew projection using COS
40=0.809 was applied manually and horizontal adjustment of +1910 feet made to each station so station 10,000 is on hydraulic base line shown on work map.

Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9862.7	2105.89	9889.83	2103.67	9903.86	2102.23	9912.24	2101.11	9923.28	2101.02
9933.09	2101.53	9946.02	2102.15	9959.2	2102.67	9980.16	2103.44	9980.16	2096.76
9991.77	2096.61	10000.74	2096.48	10013.53	2096.93	10023.07	2097.13	10023.07	2103.58
10041.93	2105.82	10050.67	2106.42	10069.42	2109.55	10081.34	2111.18	10107.97	2113.31
10145.71	2114.21								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9862.7	.055	9980.16	.02	10023.07	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.16	10023.07	232	250.58	281	.3	.5

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2103.40	Element			
Vel Head (ft)	2.17	Wt. n-Val.	0.055	0.025	
W.S. Elev (ft)	2101.23	Reach Len. (ft)	232.00	250.58	281.00
Crit W.S. (ft)	2101.23	Flow Area (sq ft)	2.26	192.74	
E.G. Slope (ft/ft)	0.006806	Area (sq ft)	2.26	192.74	
Q Total (cfs)	2280.00	Flow (cfs)	1.37	2278.63	
Top Width (ft)	58.83	Top Width (ft)	15.92	42.91	
Vel Total (ft/s)	11.69	Avg. Vel. (ft/s)	0.61	11.82	
Max Chl Dpth (ft)	4.75	Hydr. Depth (ft)	0.14	4.49	
Conv. Total (cfs)	27636.4	Conv. (cfs)	16.6	27619.7	
Length Wtd. (ft)	248.82	Wetted Per. (ft)	15.93	51.49	
Min Ch El (ft)	2096.48	Shear (lb/sq ft)	0.06	1.59	
Alpha	1.02	Stream Power (lb/ft s)	0.04	18.80	
Frctn Loss (ft)	1.75	Cum Volume (acre-ft)	2.19	4.62	1.60
C & E Loss (ft)	0.52	Cum SA (acres)	1.30	0.75	0.67

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2103.41	Element			
Vel Head (ft)	1.94	Wt. n-Val.	0.055	0.025	
W.S. Elev (ft)	2101.46	Reach Len. (ft)	232.00	250.58	281.00
Crit W.S. (ft)	2101.23	Flow Area (sq ft)	6.77	202.88	
E.G. Slope (ft/ft)	0.005782	Area (sq ft)	6.77	202.88	
Q Total (cfs)	2280.00	Flow (cfs)	6.29	2273.71	
Top Width (ft)	65.14	Top Width (ft)	22.23	42.91	
Vel Total (ft/s)	10.87	Avg. Vel. (ft/s)	0.93	11.21	
Max Chl Dpth (ft)	4.98	Hydr. Depth (ft)	0.30	4.73	
Conv. Total (cfs)	29983.9	Conv. (cfs)	82.7	29901.2	
Length Wtd. (ft)	249.74	Wetted Per. (ft)	22.27	51.96	
Min Ch El (ft)	2096.48	Shear (lb/sq ft)	0.11	1.41	
Alpha	1.06	Stream Power (lb/ft s)	0.10	15.80	
Frctn Loss (ft)	1.65	Cum Volume (acre-ft)	1.59	4.79	1.60
C & E Loss (ft)	0.30	Cum SA (acres)	0.85	0.75	0.51

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9909.69	9933.18	1.37	2.26	15.93	0.06	0.14	0.61
2	LOB	9933.18	9956.67						
3	LOB	9956.67	9980.16						
4	Chan	9980.16	9986.29	247.17	27.65	10.60	10.84	4.51	8.94
5	Chan	9986.29	9992.42	367.21	28.16	6.13	16.11	4.59	13.04
6	Chan	9992.42	9998.55	378.34	28.67	6.13	16.59	4.68	13.20
7	Chan	9998.55	10004.68	381.09	28.80	6.13	16.71	4.70	13.23
8	Chan	10004.68	10010.81	354.77	27.59	6.13	15.56	4.50	12.86
9	Chan	10010.81	10016.94	328.66	26.35	6.13	14.42	4.30	12.47
10	Chan	10016.94	10023.07	221.39	25.51	10.23	9.71	4.16	8.68

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9909.69	9933.18	6.29	6.77	22.17	0.28	0.31	0.93
2	LOB	9933.18	9956.67						
3	LOB	9956.67	9980.16						
4	Chan	9980.16	9986.29	243.79	29.09	10.83	10.69	4.75	8.38
5	Chan	9986.29	9992.42	366.98	29.61	6.13	16.10	4.83	12.39
6	Chan	9992.42	9998.55	377.56	30.12	6.13	16.56	4.91	12.53
7	Chan	9998.55	10004.68	380.17	30.25	6.13	16.67	4.93	12.57
8	Chan	10004.68	10010.81	355.15	29.04	6.13	15.58	4.74	12.23
9	Chan	10010.81	10016.94	330.30	27.80	6.13	14.49	4.54	11.88
10	Chan	10016.94	10023.07	219.76	26.96	10.47	9.64	4.40	8.15

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: C8
REACH: Reach 1 RS: 0.287

INPUT
Description: Circle Mountain Road
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9858.465	2104	9862.195	2103.47	9862.355	2103.48	9862.745	2103.48	9864.485	2103.36
9890.085	2101.49	9899.425	2099.03	9907.055	2097.03	9908.285	2097.14	9912.185	2097.51
9915.655	2097.76	9922.885	2098.29	9924.605	2098.32	9938.865	2099.29	9944.535	2099.55
9945.915	2099.59	9953.545	2099.41	9956.975	2099.32	9967.785	2098.19	9971.975	2097.77
9973.385	2097.51	9981.81	2096.07	9995.025	2093.83	10003.82	2093.81	10007.99	2093.7
10012.24	2095.23	10015.08	2096.28	10020.57	2098.21	10022.85	2099.07	10025.42	2099.3
10032.65	2100.13	10037.29	2100.61	10039.29	2100.78	10051.85	2101.47	10052.86	2101.52
10053.02	2101.55	10059.15	2101.56	10060.79	2101.65	10086.17	2103.04	10114.43	2104.51
10114.65	2104.51	10115.08	2104.52	10118.75	2104.62	10123.8	2104.72	10124.16	2104.77
10129.84	2104.92	10133.06	2104.91	10138.16	2104.89	10139.84	2104.88	10143.34	2104.91
10146.09	2104.93	10146.61	2104.94	10147.91	2105	10151.37	2105.08	10152.42	2105.1

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9858.465	.055	9912.185	.025	9956.975	.055	9981.81	.041	10015.08	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.81	10015.08	207.7	214.73	221.56	.3	.5

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2100.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.	0.041	0.040	0.055
W.S. Elev (ft)	2099.86	Reach Len. (ft)	207.70	214.73	221.56
Crit W.S. (ft)	2099.86	Flow Area (sq ft)	124.85	177.91	20.23
E.G. Slope (ft/ft)	0.007285	Area (sq ft)	124.85	177.91	20.23
Q Total (cfs)	2280.00	Flow (cfs)	521.87	1702.94	55.19
Top Width (ft)	133.99	Top Width (ft)	85.52	33.27	15.19
Vel Total (ft/s)	7.06	Avg. Vel. (ft/s)	4.18	9.57	2.73
Max Chl Dpth (ft)	6.16	Hydr. Depth (ft)	1.46	5.35	1.33
Conv. Total (cfs)	26712.5	Conv. (cfs)	6114.2	19951.6	646.7
Length Wtd. (ft)	213.04	Wetted Per. (ft)	86.20	33.92	15.72
Min Ch El (ft)	2093.70	Shear (lb/sq ft)	0.66	2.39	0.59
Alpha	1.46	Stream Power (lb/ft s)	2.75	22.84	1.60
Frctn Loss (ft)	1.69	Cum Volume (acre-ft)	1.85	3.56	1.53
C & E Loss (ft)	0.06	Cum SA (acres)	1.03	0.53	0.62

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2101.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.045	0.040	0.055
W.S. Elev (ft)	2100.11	Reach Len. (ft)	207.70	214.73	221.56
Crit W.S. (ft)	2100.11	Flow Area (sq ft)	78.01	186.32	24.07
E.G. Slope (ft/ft)	0.007631	Area (sq ft)	78.01	186.32	24.07
Q Total (cfs)	2280.00	Flow (cfs)	322.90	1882.42	74.68
Top Width (ft)	100.27	Top Width (ft)	51.81	33.27	15.19
Vel Total (ft/s)	7.91	Avg. Vel. (ft/s)	4.14	10.10	3.10
Max Chl Dpth (ft)	6.41	Hydr. Depth (ft)	1.51	5.60	1.58
Conv. Total (cfs)	26100.6	Conv. (cfs)	3696.4	21549.2	855.0
Length Wtd. (ft)	214.09	Wetted Per. (ft)	53.52	33.92	15.97
Min Ch El (ft)	2093.70	Shear (lb/sq ft)	0.69	2.62	0.72
Alpha	1.39	Stream Power (lb/ft s)	2.87	26.44	2.23
Frctn Loss (ft)	1.77	Cum Volume (acre-ft)	1.36	3.67	1.52
C & E Loss (ft)	0.02	Cum SA (acres)	0.65	0.53	0.46

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9883.13	9907.80	47.38	17.33	11.89	2.08	1.50	2.73
2	LOB	9907.80	9932.47	270.83	45.40	24.73	11.88	1.84	5.97
3	LOB	9932.47	9957.14	42.06	13.50	24.70	1.84	0.55	3.12
4	LOB	9957.14	9981.81	161.59	48.62	24.89	7.09	1.97	3.32
5	Chan	9981.81	9986.56	160.19	19.89	4.82	7.03	4.18	8.05
6	Chan	9986.56	9991.32	215.00	23.73	4.82	9.43	4.99	9.06
7	Chan	9991.32	9996.07	275.13	27.48	4.81	12.07	5.78	10.01
8	Chan	9996.07	10000.82	297.74	28.68	4.75	13.06	6.03	10.38
9	Chan	10000.82	10005.57	299.25	28.77	4.75	13.12	6.05	10.40
10	Chan	10005.57	10010.33	283.66	28.20	4.90	12.44	5.93	10.06
11	Chan	10010.33	10015.08	171.98	21.16	5.06	7.54	4.45	8.13
12	ROB	10015.08	10042.55	55.19	20.23	15.72	2.42	1.33	2.73

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9907.80	9932.47	16.10	3.41	3.93	0.71	1.38	4.72
2	LOB	9932.47	9957.14	87.82	19.74	24.70	3.85	0.80	4.45
3	LOB	9957.14	9981.81	218.98	54.86	24.89	9.60	2.22	3.99
4	Chan	9981.81	9986.56	180.97	21.09	4.82	7.94	4.44	8.58
5	Chan	9986.56	9991.32	239.18	24.93	4.82	10.49	5.25	9.59
6	Chan	9991.32	9996.07	302.71	28.68	4.81	13.28	6.03	10.56
7	Chan	9996.07	10000.82	326.63	29.88	4.75	14.33	6.29	10.93
8	Chan	10000.82	10005.57	328.22	29.97	4.75	14.40	6.31	10.95
9	Chan	10005.57	10010.33	311.54	29.41	4.90	13.66	6.19	10.59
10	Chan	10010.33	10015.08	193.18	22.36	5.06	8.47	4.70	8.64
11	ROB	10015.08	10042.55	74.68	24.07	15.97	3.28	1.58	3.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.247

INPUT
Description: Circle Mountain Road
Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9870.788	2102.01	9877.298	2101.29	9894.408	2099.37	9905.688	2095.55	9911.278	2093.68
9914.008	2093.94	9916.918	2094.21	9920.008	2094.49	9937.828	2095.58	9940.998	2095.78
9943.648	2095.95	9946.648	2096.14	9947.908	2096.21	9948.708	2096.21	9949.128	2096.18
9950.688	2096.15	9960.278	2095.98	9977.448	2094.57	9979.938	2094.36	9979.94	2094.36
9992.368	2091.89	9993.798	2091.53	9994.408	2091.53	10004.7	2091.65	10016.58	2094.12
10023.36	2095.53	10023.4	2095.54	10023.45	2095.55	10028.03	2096.08	10034.49	2096.22
10036.72	2096.33	10040.3	2096.46	10042.73	2096.49	10054.08	2096.66	10058.86	2096.75
10064.94	2096.86	10079.39	2097.15	10093.82	2097.41	10101.74	2097.62	10112.27	2098.5
10119.15	2099.13	10122.49	2099.37	10133.51	2100.29	10148.12	2100.57	10160.28	2100.76

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9870.788	.05	9916.918	.05	9960.278	.05	9979.94	.04	10016.58	.06
10036.72	.05	10101.74	.055						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.94	10016.58	247.21	253.66	259.74	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2097.94	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.035	0.040	0.059
W.S. Elev (ft)	2096.92	Reach Len. (ft)	247.21	253.66	259.74
Crit W.S. (ft)	2096.92	Flow Area (sq ft)	129.10	161.43	34.65
E.G. Slope (ft/ft)	0.008717	Area (sq ft)	129.10	161.43	34.65
Q Total (cfs)	2280.00	Flow (cfs)	709.25	1490.08	80.67
Top Width (ft)	166.45	Top Width (ft)	78.31	36.64	51.50
Vel Total (ft/s)	7.01	Avg. Vel. (ft/s)	5.49	9.23	2.33
Max Chl Dpth (ft)	5.39	Hydr. Depth (ft)	1.65	4.41	0.67
Conv. Total (cfs)	24420.6	Conv. (cfs)	7596.6	15959.9	864.1
Length Wtd. (ft)	252.66	Wetted Per. (ft)	79.00	37.18	51.69
Min Ch El (ft)	2091.53	Shear (lb/sq ft)	0.89	2.36	0.36
Alpha	1.33	Stream Power (lb/ft s)	4.89	21.81	0.85
Frctn Loss (ft)	2.15	Cum Volume (acre-ft)	1.25	2.72	1.39
C & E Loss (ft)	0.05	Cum SA (acres)	0.64	0.35	0.45

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2098.73	Element			
Vel Head (ft)	1.32	Wt. n-Val.	0.042	0.040	0.058
W.S. Elev (ft)	2097.41	Reach Len. (ft)	247.21	253.66	259.74
Crit W.S. (ft)	2097.41	Flow Area (sq ft)	60.30	179.39	49.58
E.G. Slope (ft/ft)	0.009010	Area (sq ft)	60.30	179.39	49.58
Q Total (cfs)	2280.00	Flow (cfs)	316.11	1806.14	157.74
Top Width (ft)	104.00	Top Width (ft)	31.94	36.64	35.42
Vel Total (ft/s)	7.88	Avg. Vel. (ft/s)	5.24	10.07	3.18
Max Chl Dpth (ft)	5.88	Hydr. Depth (ft)	1.89	4.90	1.40
Conv. Total (cfs)	24020.2	Conv. (cfs)	3330.3	19028.0	1661.9
Length Wtd. (ft)	253.36	Wetted Per. (ft)	33.21	37.18	36.39
Min Ch El (ft)	2091.53	Shear (lb/sq ft)	1.02	2.71	0.77
Alpha	1.37	Stream Power (lb/ft s)	5.35	27.32	2.44
Frctn Loss (ft)	2.19	Cum Volume (acre-ft)	1.03	2.77	1.34
C & E Loss (ft)	0.02	Cum SA (acres)	0.45	0.35	0.33

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9892.62	9914.45	94.09	25.49	13.36	4.13	1.99	3.69
2	LOB	9914.45	9936.28	367.53	46.42	21.88	16.12	2.13	7.92
3	LOB	9936.28	9958.11	105.91	20.76	21.86	4.65	0.95	5.10
4	LOB	9958.11	9979.94	141.72	36.43	21.90	6.22	1.67	3.89
5	Chan	9979.94	9985.18	115.56	16.24	5.34	5.07	3.10	7.12

6	Chan	9985.18	9990.41	189.99	21.88	5.34	8.33	4.18	8.68
7	Chan	9990.41	9995.64	272.88	27.10	5.30	11.97	5.18	10.07
8	Chan	9995.64	10000.88	290.36	27.99	5.23	12.74	5.35	10.37
9	Chan	10000.88	10006.11	280.50	27.48	5.26	12.30	5.25	10.21
10	Chan	10006.11	10011.35	209.65	23.22	5.35	9.20	4.44	9.03
11	Chan	10011.35	10016.58	131.13	17.52	5.35	5.75	3.35	7.48
12	ROB	10016.58	10045.32	76.11	29.91	28.93	3.34	1.04	2.54
13	ROB	10045.32	10074.06	4.56	4.74	22.76	0.20	0.21	0.96

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9936.28	9958.11	82.20	13.18	11.32	3.61	1.30	6.24
2	LOB	9958.11	9979.94	233.92	47.13	21.90	10.26	2.16	4.96
3	Chan	9979.94	9985.18	150.64	18.80	5.34	6.61	3.59	8.01
4	Chan	9985.18	9990.41	233.31	24.45	5.34	10.23	4.67	9.54
5	Chan	9990.41	9995.64	323.89	29.67	5.30	14.21	5.67	10.92
6	Chan	9995.64	10000.88	343.06	30.55	5.23	15.05	5.84	11.23
7	Chan	10000.88	10006.11	332.28	30.05	5.26	14.57	5.74	11.06
8	Chan	10006.11	10011.35	254.87	25.78	5.35	11.18	4.93	9.88
9	Chan	10011.35	10016.58	168.11	20.09	5.35	7.37	3.84	8.37
10	ROB	10016.58	10045.32	144.82	44.00	28.93	6.35	1.53	3.29
11	ROB	10045.32	10074.06	12.92	5.57	7.47	0.57	0.83	2.32

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: C8
REACH: Reach 1 RS: 0.199

INPUT
Description: Circle Mountain Road
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9840.342	2099.959	845.082	2098.969	866.712	2094.929	869.482	2094.529	869.882	2094.47
9870.872	2094.259	880.902	2092.019	889.672	2092.869	890.912	2092.989	892.932	2093.1
9910.642	2094.129	919.322	2094.69	926.082	2094.279	931.472	2093.999	931.602	2093.98
9931.932	2093.949	932.152	2093.919	937.672	2093.279	959.162	2090.789	973.012	2090.55
9974.972	2090.59	975.552	2090.34	981.762	2088.53	19981.762	2088.539	990.582	2085.67
9994.102	2085.76	10000.08	2085.48	10010.742	2088.68	10013.64	2089.56	10014.53	2089.77
10017.66	2089.81	10031.39	2091.51	10034.28	2091.83	10055.26	2092.51	10057.54	2092.6
10066.9	2092.97	10071.97	2093.11	10075.32	2093.21	10077.96	2093.29	10090.15	2093.75
10096.05	2093.72	10096.81	2093.73	10099.72	2093.72	10100.5	2093.69	10102.15	2093.64
10105.12	2093.54	10113.97	2093.33	10130.44	2093.58	10143.72	2093.78	10155.23	2093.96
10161.22	2094.01								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9840.342	.055	9889.672	.025	9937.672	.055	9981.76	.041	10010.74	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.76	10010.74	248.67	254.19	259.62	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2094.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.55	Wt. n-Val.	0.055	0.040	0.055
W.S. Elev (ft)	2092.58	Reach Len. (ft)	248.67	254.19	259.62
Crit W.S. (ft)	2092.58	Flow Area (sq ft)	67.52	172.59	58.81
E.G. Slope (ft/ft)	0.008310	Area (sq ft)	67.52	172.59	58.81
Q Total (cfs)	2280.00	Flow (cfs)	230.41	1880.12	169.47
Top Width (ft)	121.64	Top Width (ft)	46.47	28.98	46.19
Vel Total (ft/s)	7.63	Avg. Vel. (ft/s)	3.41	10.89	2.88
Max Chl Dpth (ft)	7.10	Hydr. Depth (ft)	1.45	5.96	1.27
Conv. Total (cfs)	25010.5	Conv. (cfs)	2527.5	20624.0	1859.0
Length Wtd. (ft)	253.77	Wetted Per. (ft)	46.95	29.91	46.48
Min Ch El (ft)	2085.48	Shear (lb/sq ft)	0.75	2.99	0.66
Alpha	1.71	Stream Power (lb/ft s)	2.55	32.61	1.89
Frctn Loss (ft)	2.18	Cum Volume (acre-ft)	0.69	1.75	1.11
C & E Loss (ft)	0.02	Cum SA (acres)	0.28	0.16	0.16

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2094.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.54	Wt. n-Val.	0.055	0.040	0.055
W.S. Elev (ft)	2092.55	Reach Len. (ft)	248.67	254.19	259.62
Crit W.S. (ft)	2092.55	Flow Area (sq ft)	64.30	171.94	55.61
E.G. Slope (ft/ft)	0.008319	Area (sq ft)	64.30	171.94	55.61
Q Total (cfs)	2280.00	Flow (cfs)	223.83	1869.30	186.87
Top Width (ft)	101.14	Top Width (ft)	37.90	28.98	34.26
Vel Total (ft/s)	7.81	Avg. Vel. (ft/s)	3.48	10.87	3.36
Max Chl Dpth (ft)	7.07	Hydr. Depth (ft)	1.70	5.93	1.62
Conv. Total (cfs)	24997.4	Conv. (cfs)	2454.1	20494.5	2048.8
Length Wtd. (ft)	253.80	Wetted Per. (ft)	38.29	29.91	34.92
Min Ch El (ft)	2085.48	Shear (lb/sq ft)	0.87	2.99	0.83
Alpha	1.62	Stream Power (lb/ft s)	3.04	32.46	2.78
Frctn Loss (ft)	2.18	Cum Volume (acre-ft)	0.68	1.74	1.02
C & E Loss (ft)	0.02	Cum SA (acres)	0.26	0.16	0.12

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9868.63	9896.91	2.29	2.37	8.46	0.10	0.28	0.97
2	LOB	9896.91	9925.19						
3	LOB	9925.19	9953.48	8.62	5.58	9.88	0.38	0.57	1.54
4	LOB	9953.48	9981.76	219.51	59.57	28.60	9.63	2.11	3.68
5	Chan	9981.76	9985.90	176.87	19.52	4.35	7.76	4.72	9.06
6	Chan	9985.90	9990.04	268.57	25.09	4.35	11.78	6.06	10.71
7	Chan	9990.04	9994.18	339.40	28.38	4.17	14.89	6.85	11.96
8	Chan	9994.18	9998.32	345.96	28.64	4.15	15.17	6.92	12.08
9	Chan	9998.32	10002.46	336.67	28.45	4.25	14.77	6.87	11.83
10	Chan	10002.46	10006.60	247.71	23.84	4.32	10.86	5.76	10.39
11	Chan	10006.60	10010.74	164.94	18.67	4.32	7.23	4.51	8.83
12	ROB	10010.74	10040.84	165.68	54.44	30.37	7.27	1.81	3.04
13	ROB	10040.84	10070.93	3.79	4.38	16.10	0.17	0.27	0.87

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9925.19	9953.48	8.17	5.36	9.68	0.36	0.56	1.52
2	LOB	9953.48	9981.76	215.67	58.93	28.60	9.46	2.08	3.66
3	Chan	9981.76	9985.90	175.54	19.43	4.35	7.70	4.69	9.03
4	Chan	9985.90	9990.04	267.02	24.99	4.35	11.71	6.04	10.68
5	Chan	9990.04	9994.18	337.68	28.28	4.17	14.81	6.83	11.94
6	Chan	9994.18	9998.32	344.23	28.55	4.15	15.10	6.89	12.06
7	Chan	9998.32	10002.46	334.98	28.36	4.25	14.69	6.85	11.81
8	Chan	10002.46	10006.60	246.20	23.74	4.32	10.80	5.73	10.37
9	Chan	10006.60	10010.74	163.64	18.58	4.32	7.18	4.49	8.81
10	ROB	10010.74	10040.84	184.49	53.76	30.37	8.09	1.79	3.43
11	ROB	10040.84	10070.93	2.38	1.85	4.54	0.10	0.44	1.29

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: C8
REACH: Reach 1 RS: 0.151

INPUT

```
Description:
Station Elevation Data     num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9889.509 2094.359895.689 2093.699899.379 2093.379910.949  2092.39924.909 2089.22
9936.009 2086.759936.789 2086.589954.649 2086.389966.269 2086.349968.879 2086.31
9971.679 2086.319971.869 2086.359973.899 2086.599975.309 2086.199981.369 2084.16
 9981.37 2084.169990.199 2081.589992.499  2081.210001.88 2081.0910006.04 2083.03
10006.95 2083.2110008.122084.02810011.61 2086.47 10014.7 2087.85   10016 2088.42
10018.75  2088.510020.19 2088.54 10028.6 2088.7510030.69 2088.9110032.54 2089.03
10040.13  2089.210042.73 2089.2310049.12 2089.4210051.49 2089.49

Manning's n Values         num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9889.509     .039910.949     .06 9981.37     .0410008.12    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9981.3710008.12                 0       0       0              .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2089.98    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.74    Wt. n-Val.                  0.060      0.040     0.055
  W.S. Elev (ft)          2088.24    Reach Len. (ft)            205.16     205.16    205.16
  Crit W.S. (ft)          2088.24    Flow Area (sq ft)           94.95     165.45     13.94
  E.G. Slope (ft/ft)     0.008905    Area (sq ft)                94.95     165.45     13.94
  Q Total (cfs)           2280.00    Flow (cfs)                 328.83    1902.19     48.98
  Top Width (ft)            86.27    Top Width (ft)              52.05      26.75      7.47
  Vel Total (ft/s)           8.31    Avg. Vel. (ft/s)             3.46      11.50      3.51
  Max Chl Dpth (ft)          7.15    Hydr. Depth (ft)             1.82       6.19      1.87
  Conv. Total (cfs)       24161.4    Conv. (cfs)                3484.6    20157.7     519.0
  Length Wtd. (ft)         205.16    Wetted Per. (ft)            52.64      27.86      8.61
  Min Ch El (ft)          2081.09    Shear (lb/sq ft)             1.00       3.30      0.90
  Alpha                      1.63    Stream Power (lb/ft s)       3.47      37.96      3.16
  Frctn Loss (ft)            2.04    Cum Volume (acre-ft)         0.22       0.76      0.90
  C & E Loss (ft)            0.20    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 velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2089.98    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.74    Wt. n-Val.                  0.060      0.040     0.055
  W.S. Elev (ft)          2088.24    Reach Len. (ft)            205.16     205.16    205.16
  Crit W.S. (ft)          2088.24    Flow Area (sq ft)           94.95     165.45     13.94
  E.G. Slope (ft/ft)     0.008905    Area (sq ft)                94.95     165.45     13.94
  Q Total (cfs)           2280.00    Flow (cfs)                 328.83    1902.19     48.98
  Top Width (ft)            86.27    Top Width (ft)              52.05      26.75      7.47
  Vel Total (ft/s)           8.31    Avg. Vel. (ft/s)             3.46      11.50      3.51
  Max Chl Dpth (ft)          7.15    Hydr. Depth (ft)             1.82       6.19      1.87
  Conv. Total (cfs)       24161.4    Conv. (cfs)                3484.6    20157.7     519.0
  Length Wtd. (ft)         205.16    Wetted Per. (ft)            52.64      27.86      8.61
  Min Ch El (ft)          2081.09    Shear (lb/sq ft)             1.00       3.30      0.90
  Alpha                      1.63    Stream Power (lb/ft s)       3.47      37.96      3.16
  Frctn Loss (ft)            2.07    Cum Volume (acre-ft)         0.22       0.76      0.82
  C & E Loss (ft)            0.15    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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                         (ft)        (ft)           (cfs)      (sq ft)    (ft)       Conv  Depth(ft)    (ft/s)
  1           LOB        9926.25     9944.63        52.00      19.54      15.49      2.28       1.28      2.66
  2           LOB        9944.63     9963.00       115.05      33.70      18.37      5.05       1.83      3.41
  3           LOB        9963.00     9981.37       161.79      41.71      18.78      7.10       2.27      3.88
  4           Chan       9981.37     9985.19       165.28      17.72       3.98      7.25       4.64      9.33
  5           Chan       9985.19     9989.01       236.81      21.98       3.98     10.39       5.75     10.77
  6           Chan       9989.01     9992.83       313.41      25.80       3.90     13.75       6.75     12.15
  7           Chan       9992.83     9996.66       342.76      27.00       3.82     15.03       7.06     12.69
  8           Chan       9996.66     10000.48      346.30      27.17       3.82     15.19       7.11     12.75
  9           Chan       10000.48    10004.30      307.37      25.94       4.07     13.48       6.79     11.85
  10          Chan       10004.30    10008.12      190.25      19.84       4.28      8.34       5.19      9.59
  11          ROB        10008.12    10016.79       48.98      13.94       8.61      2.15       1.87      3.51

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9926.25	9944.63	52.00	19.54	15.49	2.28	1.28	2.66
2	LOB	9944.63	9963.00	115.05	33.70	18.37	5.05	1.83	3.41
3	LOB	9963.00	9981.37	161.79	41.71	18.78	7.10	2.27	3.88
4	Chan	9981.37	9985.19	165.28	17.72	3.98	7.25	4.64	9.33
5	Chan	9985.19	9989.01	236.81	21.98	3.98	10.39	5.75	10.77
6	Chan	9989.01	9992.83	313.41	25.80	3.90	13.75	6.75	12.15
7	Chan	9992.83	9996.66	342.76	27.00	3.82	15.03	7.06	12.69
8	Chan	9996.66	10000.48	346.30	27.17	3.82	15.19	7.11	12.75
9	Chan	10000.48	10004.30	307.37	25.94	4.07	13.48	6.79	11.85
10	Chan	10004.30	10008.12	190.25	19.84	4.28	8.34	5.19	9.59
11	ROB	10008.12	10016.79	48.98	13.94	8.61	2.15	1.87	3.51

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: C8
REACH: Reach 2 RS: 0.112

INPUT
Description:
Station Elevation Data num= 93

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9953.12	2094.1	9954.36	2094.13	9962.27	2090.15	9976.87	2082.798	9984.69	2078.86
9984.75	2078.86	9988.18	2078.6	9990.71	2078.43	9992.3	2078.34	9993.45	2078.02
10001.15	2078.07	10001.89	2078	10005.19	2077.95	10010.3	2078.25	10023.11	2081.51
10027.47	2082.69	10034.13	2084.3	10035.2	2084.55	10035.61	2084.47	10041.55	2083.2
10042.99	2082.91	10050.55	2083	10059.71	2083.12	10062.19	2083.16	10063.12	2083.15
10100.36	2082.93	10140.75	2082.51	10157.59	2082.21	10157.89	2082.21	10163.29	2082.24
10164.79	2082.28	10169.71	2082.4	10172.1	2082.53	10175.91	2082.65	10179.71	2082.78
10189.97	2082.71	10191.34	2082.8	10194.87	2082.94	10199.61	2083.03	10200.45	2083.07
10201.05	2083.08	10203.95	2083.1	10207.6	2083.13	10208.34	2083.14	10215.59	2083.2
10216.96	2083.23	10220.85	2083.2	10221.98	2083.26	10223.99	2083.25	10228.42	2083.21
10228.83	2083.2	10232.76	2083	10245.39	2082.7	10247.51	2081.72	10254.7	2078.37
10258.75	2076.54	10264.01	2074	10266.13	2073.91	10267.46	2073.88	10269.38	2073.81
10270.63	2073.93	10273.54	2074.2	10274.56	2074.31	10276.57	2074.45	10279.56	2075.52
10288.74	2078.7	10292.62	2080.1	10298.96	2080.45	10307.6	2080.93	10322.49	2081.76
10322.71	2081.76	10327.95	2081.8	10329.55	2081.86	10333.45	2081.89	10336.89	2081.9
10342.62	2081.96	10351.78	2082	10354.9	2081.92	10363.18	2081.77	10369.27	2081.68
10371.7	2081.61	10384.37	2081.9	10392.11	2082.04	10403.6	2082.24	10408.32	2083.22
10412.67	2084.11	10414.68	2084.5	10427.82	2086.43	10429.58	2086.8	10430.75	2087
10432.9	2087.32	10436.73	2087.8	10439.18	2088.04				

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9953.12	.05	9976.87	.04	510027.47	.05	10063.12	.03	10157.59	.06
10264.01	.04	10292.62	.065						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9976.87	10027.47	81	80.07	48	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2083.56	Element			
Vel Head (ft)	1.08	Wt. n-Val.		0.045	0.045
W.S. Elev (ft)	2082.49	Reach Len. (ft)	81.00	80.07	48.00
Crit W.S. (ft)	2082.49	Flow Area (sq ft)		157.74	366.37
E.G. Slope (ft/ft)	0.010541	Area (sq ft)		157.74	366.37
Q Total (cfs)	4320.00	Flow (cfs)		1139.42	3180.58
Top Width (ft)	238.13	Top Width (ft)		49.24	188.89
Vel Total (ft/s)	8.24	Avg. Vel. (ft/s)		7.22	8.68
Max Chl Dpth (ft)	8.68	Hydr. Depth (ft)		3.20	1.94
Conv. Total (cfs)	42077.3	Conv. (cfs)		11098.1	30979.2
Length Wtd. (ft)	58.48	Wetted Per. (ft)		50.72	191.87
Min Ch El (ft)	2077.95	Shear (lb/sq ft)		2.05	1.26
Alpha	1.02	Stream Power (lb/ft s)		14.78	10.91
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	0.00	0.32	0.48
C & E Loss (ft)	0.10	Cum SA (acres)	0.00	0.08	0.24

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2083.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.26	Wt. n-Val.		0.045	0.044
W.S. Elev (ft)	2082.48	Reach Len. (ft)	81.00	80.07	48.00
Crit W.S. (ft)	2082.48	Flow Area (sq ft)		157.40	332.46
E.G. Slope (ft/ft)	0.010811	Area (sq ft)		157.40	332.46
Q Total (cfs)	4320.00	Flow (cfs)		1150.47	3169.53
Top Width (ft)	180.81	Top Width (ft)		49.20	131.61
Vel Total (ft/s)	8.82	Avg. Vel. (ft/s)		7.31	9.53
Max Chl Dpth (ft)	8.67	Hydr. Depth (ft)		3.20	2.53
Conv. Total (cfs)	41547.6	Conv. (cfs)		11064.7	30482.9
Length Wtd. (ft)	58.35	Wetted Per. (ft)		50.68	135.04
Min Ch El (ft)	2077.95	Shear (lb/sq ft)		2.10	1.66
Alpha	1.04	Stream Power (lb/ft s)		15.32	15.84
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	0.00	0.32	0.46
C & E Loss (ft)	0.16	Cum SA (acres)	0.00	0.08	0.19

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9976.87	9984.10	43.87	11.01	7.41	1.02	1.67	3.98
2	Chan	9984.10	9991.33	206.14	27.74	7.32	4.77	3.84	7.43
3	Chan	9991.33	9998.56	258.46	31.70	7.27	5.98	4.38	8.15
4	Chan	9998.56	10005.78	268.60	32.36	7.23	6.22	4.48	8.30
5	Chan	10005.78	10013.01	238.73	30.30	7.32	5.53	4.19	7.88
6	Chan	10013.01	10020.24	108.33	19.00	7.46	2.51	2.63	5.70
7	Chan	10020.24	10027.47	15.29	5.63	6.71	0.35	0.87	2.72
8	ROB	10027.47	10109.81						
9	ROB	10109.81	10192.15	5.20	4.91	29.95	0.12	0.16	1.06
10	ROB	10192.15	10274.50	1842.66	165.85	30.56	42.65	5.79	11.11
11	ROB	10274.50	10356.84	1287.08	167.24	83.36	29.79	2.03	7.70
12	ROB	10356.84	10439.18	45.64	28.36	47.99	1.06	0.59	1.61

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9976.87	9984.10	44.19	10.97	7.39	1.02	1.66	4.03
2	Chan	9984.10	9991.33	208.16	27.69	7.32	4.82	3.83	7.52
3	Chan	9991.33	9998.56	261.09	31.65	7.27	6.04	4.38	8.25
4	Chan	9998.56	10005.78	271.34	32.31	7.23	6.28	4.47	8.40
5	Chan	10005.78	10013.01	241.13	30.25	7.32	5.58	4.19	7.97
6	Chan	10013.01	10020.24	109.24	18.95	7.46	2.53	2.62	5.76
7	Chan	10020.24	10027.47	15.33	5.58	6.68	0.35	0.86	2.75
8	ROB	10027.47	10109.81						
9	ROB	10109.81	10192.15	4.96	4.71	29.42	0.11	0.16	1.05
10	ROB	10192.15	10274.50	1866.88	165.65	30.55	43.21	5.78	11.27
11	ROB	10274.50	10356.84	1297.69	162.10	75.07	30.04	2.20	8.01

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 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: C8
REACH: Reach 2 RS: 0.097

INPUT
Description:
Station Elevation Data num= 143

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9946.25	2095.8	9953.21	2096.02	9959.99	2093.34	9968.12	2090.22	9973.09	2086.93
9983.13	2080.308	9989.51	2076.1	9997.9	2076.05	9998.79	2076.03	10000.33	2076.09
10009.86	2076.31	10021.97	2080.11	10035.11	2081.79	10036.59	2081.63	10042.29	2082

```
10043.96 2082.1410044.91  2082.210056.27 2082.3410056.56 2082.3510058.41 2082.39
10058.45 2082.3910058.48  2082.410061.56 2082.4410062.43 2082.4410062.89 2082.43
10066.46 2082.4710070.32  2082.510071.49 2082.5110076.01 2082.4810081.44 2082.41
10083.77 2082.3910085.19  2082.410090.35 2082.3610095.76 2082.3510100.92 2082.31
10106.61 2082.2410111.25  2082.210111.34 2082.1710111.72 2082.1710116.77 2082.15
 10117.1 2082.1510117.53  2082.110123.27    208210125.34  2081.910128.83 2081.78
10129.26  2081.810131.48 2081.7710134.17 2081.6710134.38 2081.6610138.37 2081.55
10138.75  2081.510143.34 2081.3810144.33 2081.3410162.54 2080.7910163.96 2080.81
10165.48  2080.810167.43  2080.810169.23 2080.82 10171.9 2080.8410176.86 2080.88
10198.81  2080.610221.42 2080.4110225.16 2080.23 10225.2 2080.2310225.47 2080.22
10233.67    207610235.41 2075.1310237.83 2073.7410238.57 2073.7210238.87 2073.71
10239.71  2073.710243.55 2073.5310245.16 2073.4510245.57 2073.5110251.32 2074.17
10253.54    207510254.75 2075.3810255.81 2075.8610261.08 2076.7810261.17  2076.8
10265.58  2077.610266.13 2077.5710267.69 2077.7710269.02 2077.7910271.25 2078.09
10272.18  2078.310275.38 2078.8610276.31 2079.0610278.15 2079.4210278.59 2079.49
10279.79  2079.710280.44 2079.73 10283.3 2079.7710286.24 2079.8910290.15 2080.01
10292.44  2080.110298.61 2080.41 10302.7 2080.5310305.79  2080.510307.28 2080.56
10309.98  2080.610311.36 2080.6610313.25 2080.8110315.19 2081.0410317.67 2081.06
10320.11  2081.310321.76  2081.410322.79 2081.42 10326.3 2081.6610326.98 2081.67
10328.49  2081.710332.41 2081.7610337.28 2081.7810337.66 2081.7810341.18 2081.78
10344.13  2081.810345.79 2081.8810346.71 2081.9110352.69    208210378.14 2082.09
10386.75  2082.210387.31 2082.1810387.91 2082.1910389.17 2082.2110392.31 2082.27
10396.76  2082.510400.59 2082.5210401.34 2082.5610405.06 2082.61 10406.6 2082.82
10406.84  2082.910411.47 2083.5410412.34 2083.7810415.57 2084.1810416.72 2084.48
10419.02  2084.810420.02 2084.9410421.99 2085.2710422.25 2085.2510422.31 2085.25
10422.44  2085.210423.46 2085.2710426.76  2085.1

Manning's n Values          num=       8
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 9946.25     .05 9983.13     .0410021.97     .0510056.27     .0310111.25     .05
10221.42     .0610225.47    .04510251.32    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9983.1310021.97                0       0       0              .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2082.73    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.73    Wt. n-Val.                  0.050      0.040      0.051
  W.S. Elev (ft)           2082.00    Reach Len. (ft)
  Crit W.S. (ft)           2081.18    Flow Area (sq ft)            2.17     189.61     504.44
  E.G. Slope (ft/ft)      0.007310    Area (sq ft)                 2.17     189.61     504.44
  Q Total (cfs)            4320.00    Flow (cfs)                   4.37    1680.18    2635.45
  Top Width (ft)            291.15    Top Width (ft)               2.57      38.84     249.74
  Vel Total (ft/s)            6.20    Avg. Vel. (ft/s)             2.01       8.86       5.22
  Max Chl Dpth (ft)           8.55    Hydr. Depth (ft)             0.85       4.88       2.02
  Conv. Total (cfs)        50528.6    Conv. (cfs)                 51.1    19652.1    30825.3
  Length Wtd. (ft)                    Wetted Per. (ft)             3.07      40.69     252.27
  Min Ch El (ft)           2076.03    Shear (lb/sq ft)             0.32       2.13       0.91
  Alpha                       1.23    Stream Power (lb/ft s)       0.65      18.85       4.77
  Frctn Loss (ft)                     Cum Volume (acre-ft)
  C & E Loss (ft)                     Cum SA (acres)


Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2082.72    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.72    Wt. n-Val.                  0.050      0.040      0.051
  W.S. Elev (ft)           2082.00    Reach Len. (ft)
  Crit W.S. (ft)           2081.17    Flow Area (sq ft)            2.17     189.61     497.28
  E.G. Slope (ft/ft)      0.006907    Area (sq ft)                 2.17     189.61     497.28
  Q Total (cfs)            4320.00    Flow (cfs)                   4.25    1633.26    2682.49
  Top Width (ft)            260.30    Top Width (ft)               2.57      38.84     218.89
  Vel Total (ft/s)            6.27    Avg. Vel. (ft/s)             1.96       8.61       5.39
  Max Chl Dpth (ft)           8.55    Hydr. Depth (ft)             0.85       4.88       2.27
  Conv. Total (cfs)        51980.2    Conv. (cfs)                 51.1    19652.1    32277.0
  Length Wtd. (ft)                    Wetted Per. (ft)             3.07      40.69     222.00
  Min Ch El (ft)           2076.03    Shear (lb/sq ft)             0.30       2.01       0.97
  Alpha                       1.17    Stream Power (lb/ft s)       0.60      17.31       5.21
  Frctn Loss (ft)                     Cum Volume (acre-ft)
  C & E Loss (ft)                     Cum SA (acres)


Warning: Divided flow computed for this cross-section.

  Profile #profile 1

              Pos        Left Sta    Right Sta       Flow       Area       W.P.    Percent       Hydr   Velocity
                         (ft)        (ft)            (cfs)    (sq ft)      (ft)       Conv  Depth(ft)     (ft/s)
  1           LOB        9975.75     9983.13         4.37       2.17       3.07       0.10       0.85       2.01
  2           Chan       9983.13     9988.68       121.68      19.54       6.65       2.82       3.52       6.23
  3           Chan       9988.68     9994.23       315.38      32.57       5.71       7.30       5.87       9.68
  4           Chan       9994.23     9999.78       328.35      32.98       5.55       7.60       5.94       9.95
  5           Chan       9999.78     10005.32      320.51      32.51       5.55       7.42       5.86       9.86
  6           Chan       10005.32    10010.87      304.73      31.65       5.60       7.05       5.70       9.63
  7           Chan       10010.87    10016.42      200.47      24.99       5.81       4.64       4.50       8.02
  8           Chan       10016.42    10021.97       89.06      15.36       5.81       2.06       2.77       5.80
  9           ROB        10021.97    10102.93       29.98      15.35      20.45       0.69       0.76       1.95
  10          ROB        10102.93    10183.89      100.56      49.00      60.64       2.33       0.81       2.05
  11          ROB        10183.89    10264.84     2195.25     313.14      83.07      50.82       3.87       7.01
  12          ROB        10264.84    10345.80      309.58     126.58      81.22       7.17       1.56       2.45
  13          ROB        10345.80    10426.76        0.09       0.36       6.89       0.00       0.05       0.26
```

Warning: Divided flow computed for this cross-section.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.75	9983.13	4.25	2.17	3.07	0.10	0.85	1.96
2	Chan	9983.13	9988.68	118.28	19.54	6.65	2.74	3.52	6.05
3	Chan	9988.68	9994.23	306.57	32.57	5.71	7.10	5.87	9.41
4	Chan	9994.23	9999.78	319.18	32.98	5.55	7.39	5.94	9.68
5	Chan	9999.78	10005.32	311.56	32.51	5.55	7.21	5.86	9.58
6	Chan	10005.32	10010.87	296.22	31.65	5.60	6.86	5.70	9.36
7	Chan	10010.87	10016.42	194.87	24.99	5.81	4.51	4.50	7.80
8	Chan	10016.42	10021.97	86.57	15.36	5.81	2.00	2.77	5.64
9	ROB	10021.97	10102.93	30.01	15.35	20.45	0.69	0.76	1.96
10	ROB	10102.93	10183.89	100.66	49.00	60.64	2.33	0.81	2.05
11	ROB	10183.89	10264.84	2197.44	313.14	83.07	50.87	3.87	7.02
12	ROB	10264.84	10345.80	354.40	119.78	57.85	8.20	2.10	2.96

Warning: Divided flow computed for this cross-section.

CROSS SECTION

RIVER: X1
REACH: Reach 1 RS: 1.270

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9979.44	2432.02	9991.68	2426.9	9996.58	2425.81	10003.96	2424.22	10007.64	2423.91
10011.54	2423.58	10017.72	2426.51	10022.82	2428.98	10028.45	2431.44	10030.33	2431.93

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9979.44	.065	9996.58	.055	10017.72	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9996.58	10017.72	112.54	125.97	134.14	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2429.26	Element			
Vel Head (ft)	1.37	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2427.89	Reach Len. (ft)	112.54	125.97	134.14
Crit W.S. (ft)	2427.89	Flow Area (sq ft)	8.67	69.01	1.98
E.G. Slope (ft/ft)	0.027770	Area (sq ft)	8.67	69.01	1.98
Q Total (cfs)	708.00	Flow (cfs)	36.14	665.90	5.96
Top Width (ft)	31.25	Top Width (ft)	7.26	21.14	2.85
Vel Total (ft/s)	8.89	Avg. Vel. (ft/s)	4.17	9.65	3.01
Max Chl Dpth (ft)	4.31	Hydr. Depth (ft)	1.19	3.26	0.69
Conv. Total (cfs)	4248.6	Conv. (cfs)	216.9	3996.0	35.8
Length Wtd. (ft)	125.65	Wetted Per. (ft)	7.58	21.99	3.17
Min Ch El (ft)	2423.58	Shear (lb/sq ft)	1.98	5.44	1.08
Alpha	1.12	Stream Power (lb/ft s)	8.27	52.50	3.26
Frctn Loss (ft)	3.85	Cum Volume (acre-ft)	2.75	7.56	2.27
C & E Loss (ft)	0.08	Cum SA (acres)	3.20	2.73	2.08

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2429.26	Element			
Vel Head (ft)	1.37	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2427.89	Reach Len. (ft)	112.54	125.97	134.14
Crit W.S. (ft)	2427.89	Flow Area (sq ft)	8.67	69.01	1.98
E.G. Slope (ft/ft)	0.027770	Area (sq ft)	8.67	69.01	1.98
Q Total (cfs)	708.00	Flow (cfs)	36.14	665.90	5.96
Top Width (ft)	31.25	Top Width (ft)	7.26	21.14	2.85
Vel Total (ft/s)	8.89	Avg. Vel. (ft/s)	4.17	9.65	3.01
Max Chl Dpth (ft)	4.31	Hydr. Depth (ft)	1.19	3.26	0.69
Conv. Total (cfs)	4248.6	Conv. (cfs)	216.9	3996.0	35.8
Length Wtd. (ft)	125.65	Wetted Per. (ft)	7.58	21.99	3.17
Min Ch El (ft)	2423.58	Shear (lb/sq ft)	1.98	5.44	1.08
Alpha	1.12	Stream Power (lb/ft s)	8.27	52.50	3.26
Frctn Loss (ft)	3.85	Cum Volume (acre-ft)	1.88	7.75	1.76
C & E Loss (ft)	0.08	Cum SA (acres)	1.92	2.73	1.55

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.30	9989.73	0.02	0.03	0.44	0.00	0.08	0.63
2	LOB	9989.73	9993.15	8.21	2.83	3.63	1.16	0.82	2.90
3	LOB	9993.15	9996.58	27.92	5.81	3.51	3.94	1.70	4.80
4	Chan	9996.58	9999.60	55.84	7.25	3.09	7.89	2.40	7.70
5	Chan	9999.60	10002.62	83.29	9.22	3.09	11.76	3.05	9.03
6	Chan	10002.62	10005.64	112.54	11.00	3.06	15.90	3.64	10.23
7	Chan	10005.64	10008.66	128.82	11.89	3.03	18.20	3.94	10.84
8	Chan	10008.66	10011.68	142.44	12.65	3.04	20.12	4.19	11.26
9	Chan	10011.68	10014.70	100.59	10.65	3.34	14.21	3.53	9.44
10	Chan	10014.70	10017.72	42.38	6.34	3.34	5.99	2.10	6.68
11	ROB	10017.72	10020.24	5.94	1.95	2.80	0.84	0.77	3.04
12	ROB	10020.24	10022.76	0.02	0.03	0.37	0.00	0.08	0.67

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.30	9989.73	0.02	0.03	0.44	0.00	0.08	0.63
2	LOB	9989.73	9993.15	8.21	2.83	3.63	1.16	0.82	2.90
3	LOB	9993.15	9996.58	27.92	5.81	3.51	3.94	1.70	4.80
4	Chan	9996.58	9999.60	55.84	7.25	3.09	7.89	2.40	7.70
5	Chan	9999.60	10002.62	83.29	9.22	3.09	11.76	3.05	9.03
6	Chan	10002.62	10005.64	112.54	11.00	3.06	15.90	3.64	10.23
7	Chan	10005.64	10008.66	128.82	11.89	3.03	18.20	3.94	10.84
8	Chan	10008.66	10011.68	142.44	12.65	3.04	20.12	4.19	11.26
9	Chan	10011.68	10014.70	100.59	10.65	3.34	14.21	3.53	9.44
10	Chan	10014.70	10017.72	42.38	6.34	3.34	5.99	2.10	6.68
11	ROB	10017.72	10020.24	5.94	1.95	2.80	0.84	0.77	3.04
12	ROB	10020.24	10022.76	0.02	0.03	0.37	0.00	0.08	0.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X1
REACH: Reach 1 RS: 1.247

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9979.456	2427.28	9988.472	2422.516	9991.886	2420.71	10000.5	2420.35	10000.94	2420.33
10001.18	2420.41	10007.57	2421.83	10009.89	2421.56	10017.72	2420.76	10024.63	2422.817
10027.8	2423.76	10033.7	2425.45	10035.6	2425.96	10043.02	2427.97		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9979.456	.065	9988.47	.055	10024.63	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.47	10024.63	133.02	126.66	116.43	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2424.59	Element			
Vel Head (ft)	1.12	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2423.48	Reach Len. (ft)	133.02	126.66	116.43
Crit W.S. (ft)	2423.48	Flow Area (sq ft)	0.87	82.87	0.73
E.G. Slope (ft/ft)	0.033954	Area (sq ft)	0.87	82.87	0.73
Q Total (cfs)	708.00	Flow (cfs)	2.07	704.39	1.54
Top Width (ft)	40.19	Top Width (ft)	1.82	36.16	2.21
Vel Total (ft/s)	8.38	Avg. Vel. (ft/s)	2.38	8.50	2.12
Max Chl Dpth (ft)	3.15	Hydr. Depth (ft)	0.48	2.29	0.33
Conv. Total (cfs)	3842.3	Conv. (cfs)	11.2	3822.6	8.4
Length Wtd. (ft)	126.65	Wetted Per. (ft)	2.05	37.14	2.31
Min Ch El (ft)	2420.33	Shear (lb/sq ft)	0.90	4.73	0.67
Alpha	1.02	Stream Power (lb/ft s)	2.14	40.20	1.42
Frctn Loss (ft)	4.23	Cum Volume (acre-ft)	2.74	7.34	2.26
C & E Loss (ft)	0.02	Cum SA (acres)	3.19	2.65	2.07

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2424.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.12	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2423.48	Reach Len. (ft)	133.02	126.66	116.43
Crit W.S. (ft)	2423.48	Flow Area (sq ft)	0.87	82.87	0.73
E.G. Slope (ft/ft)	0.033954	Area (sq ft)	0.87	82.87	0.73
Q Total (cfs)	708.00	Flow (cfs)	2.07	704.39	1.54
Top Width (ft)	40.19	Top Width (ft)	1.82	36.16	2.21
Vel Total (ft/s)	8.38	Avg. Vel. (ft/s)	2.38	8.50	2.12
Max Chl Dpth (ft)	3.15	Hydr. Depth (ft)	0.48	2.29	0.33
Conv. Total (cfs)	3842.3	Conv. (cfs)	11.2	3822.6	8.4
Length Wtd. (ft)	126.65	Wetted Per. (ft)	2.05	37.14	2.31
Min Ch El (ft)	2420.33	Shear (lb/sq ft)	0.90	4.73	0.67
Alpha	1.02	Stream Power (lb/ft s)	2.14	40.20	1.42
Frctn Loss (ft)	4.23	Cum Volume (acre-ft)	1.87	7.53	1.76
C & E Loss (ft)	0.02	Cum SA (acres)	1.91	2.65	1.54

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.67	9988.47	2.07	0.87	2.04	0.29	0.48	2.38
2	Chan	9988.47	9993.64	86.60	11.27	5.62	12.23	2.18	7.69
3	Chan	9993.64	9998.80	151.06	15.22	5.17	21.34	2.95	9.93
4	Chan	9998.80	10003.97	147.28	15.08	5.25	20.80	2.92	9.77
5	Chan	10003.97	10009.13	75.29	10.10	5.27	10.63	1.95	7.46
6	Chan	10009.13	10014.30	85.74	10.86	5.19	12.11	2.10	7.90
7	Chan	10014.30	10019.46	114.49	12.98	5.26	16.17	2.51	8.82
8	Chan	10019.46	10024.63	43.92	7.38	5.39	6.20	1.43	5.96
9	ROB	10024.63	10028.31	1.54	0.73	2.31	0.22	0.33	2.12

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.67	9988.47	2.07	0.87	2.04	0.29	0.48	2.38
2	Chan	9988.47	9993.64	86.60	11.27	5.62	12.23	2.18	7.69
3	Chan	9993.64	9998.80	151.06	15.22	5.17	21.34	2.95	9.93
4	Chan	9998.80	10003.97	147.28	15.08	5.25	20.80	2.92	9.77
5	Chan	10003.97	10009.13	75.29	10.10	5.27	10.63	1.95	7.46
6	Chan	10009.13	10014.30	85.74	10.86	5.19	12.11	2.10	7.90
7	Chan	10014.30	10019.46	114.49	12.98	5.26	16.17	2.51	8.82
8	Chan	10019.46	10024.63	43.92	7.38	5.39	6.20	1.43	5.96
9	ROB	10024.63	10028.31	1.54	0.73	2.31	0.22	0.33	2.12

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: X1
REACH: Reach 1 RS: 1.223

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9979.716	2423.16	9981.016	2422.71	9981.216	2422.59	9989.156	2417.91	9989.16	2417.908
9995.616	2414.11	9995.916	2414.08	10000.84	2413.79	10005.61	2414.99	10016.47	2417.66
10023.22	2419.32	10032.24	2420.85	10038.58	2421.91	10041.95	2422.82		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9979.716	.065	9989.16	.055	10016.47	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.16	10016.47	161.37	166.25	177.37	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2419.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2418.23	Reach Len. (ft)	161.37	166.25	177.37
Crit W.S. (ft)	2418.23	Flow Area (sq ft)	0.09	75.81	0.67
E.G. Slope (ft/ft)	0.032797	Area (sq ft)	0.09	75.81	0.67
Q Total (cfs)	708.00	Flow (cfs)	0.10	706.63	1.27
Top Width (ft)	30.19	Top Width (ft)	0.55	27.31	2.33
Vel Total (ft/s)	9.25	Avg. Vel. (ft/s)	1.12	9.32	1.91
Max Chl Dpth (ft)	4.44	Hydr. Depth (ft)	0.16	2.78	0.29
Conv. Total (cfs)	3909.5	Conv. (cfs)	0.6	3901.9	7.0
Length Wtd. (ft)	166.30	Wetted Per. (ft)	0.64	28.83	2.40
Min Ch El (ft)	2413.79	Shear (lb/sq ft)	0.29	5.38	0.57
Alpha	1.01	Stream Power (lb/ft s)	0.32	50.19	1.09
Frctn Loss (ft)	4.69	Cum Volume (acre-ft)	2.74	7.11	2.26
C & E Loss (ft)	0.07	Cum SA (acres)	3.19	2.55	2.07

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2419.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2418.23	Reach Len. (ft)	161.37	166.25	177.37
Crit W.S. (ft)	2418.23	Flow Area (sq ft)	0.09	75.81	0.67
E.G. Slope (ft/ft)	0.032797	Area (sq ft)	0.09	75.81	0.67
Q Total (cfs)	708.00	Flow (cfs)	0.10	706.63	1.27
Top Width (ft)	30.19	Top Width (ft)	0.55	27.31	2.33
Vel Total (ft/s)	9.25	Avg. Vel. (ft/s)	1.12	9.32	1.91
Max Chl Dpth (ft)	4.44	Hydr. Depth (ft)	0.16	2.78	0.29
Conv. Total (cfs)	3909.5	Conv. (cfs)	0.6	3901.9	7.0
Length Wtd. (ft)	166.30	Wetted Per. (ft)	0.64	28.83	2.40
Min Ch El (ft)	2413.79	Shear (lb/sq ft)	0.29	5.38	0.57
Alpha	1.01	Stream Power (lb/ft s)	0.32	50.19	1.09
Frctn Loss (ft)	4.69	Cum Volume (acre-ft)	1.87	7.30	1.76
C & E Loss (ft)	0.07	Cum SA (acres)	1.91	2.55	1.54

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.27	9989.16	0.10	0.09	0.64	0.01	0.16	1.12
2	Chan	9989.16	9993.06	29.61	5.74	4.53	4.18	1.47	5.16
3	Chan	9993.06	9996.96	138.72	14.23	4.31	19.59	3.65	9.75
4	Chan	9996.96	10000.86	197.07	16.89	3.91	27.84	4.33	11.67
5	Chan	10000.86	10004.77	165.64	15.39	4.02	23.40	3.95	10.76
6	Chan	10004.77	10008.67	103.32	11.59	4.02	14.59	2.97	8.91
7	Chan	10008.67	10012.57	53.94	7.85	4.02	7.62	2.01	6.87
8	Chan	10012.57	10016.47	18.32	4.11	4.02	2.59	1.05	4.46
9	ROB	10016.47	10021.57	1.27	0.67	2.40	0.18	0.29	1.91

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.27	9989.16	0.10	0.09	0.64	0.01	0.16	1.12
2	Chan	9989.16	9993.06	29.61	5.74	4.53	4.18	1.47	5.16
3	Chan	9993.06	9996.96	138.72	14.23	4.31	19.59	3.65	9.75
4	Chan	9996.96	10000.86	197.07	16.89	3.91	27.84	4.33	11.67
5	Chan	10000.86	10004.77	165.64	15.39	4.02	23.40	3.95	10.76
6	Chan	10004.77	10008.67	103.32	11.59	4.02	14.59	2.97	8.91
7	Chan	10008.67	10012.57	53.94	7.85	4.02	7.62	2.01	6.87
8	Chan	10012.57	10016.47	18.32	4.11	4.02	2.59	1.05	4.46
9	ROB	10016.47	10021.57	1.27	0.67	2.40	0.18	0.29	1.91

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: X1
REACH: Reach 1 RS: 1.191

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9954.276	2419.49	9969.426	2416.24	9971.596	2415.99	9979.006	2412.43	9983.436	2410.36
9984.656	2409.78	9984.66	2409.78	9985.236	2409.71	9990.956	2409.06	9993.136	2408.58
9999.916	2407.14	10006.04	2408.71	10007.48	2409.01	10008.75	2409.29	10011.97	2409.93
10020.83	2413.81	10033.44	2419.47						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9954.276	.065	9984.66	.05	10011.97	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.66	10011.97	198.91	215.69	241.71	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2412.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2411.57	Reach Len. (ft)	198.91	215.69	241.71
Crit W.S. (ft)	2411.41	Flow Area (sq ft)	3.41	80.34	3.08
E.G. Slope (ft/ft)	0.024465	Area (sq ft)	3.41	80.34	3.08
Q Total (cfs)	708.00	Flow (cfs)	10.58	687.57	9.85
Top Width (ft)	34.87	Top Width (ft)	3.82	27.31	3.75
Vel Total (ft/s)	8.15	Avg. Vel. (ft/s)	3.10	8.56	3.20
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	0.89	2.94	0.82
Conv. Total (cfs)	4526.5	Conv. (cfs)	67.7	4395.9	63.0
Length Wtd. (ft)	215.80	Wetted Per. (ft)	4.22	27.88	4.09
Min Ch El (ft)	2407.14	Shear (lb/sq ft)	1.24	4.40	1.15
Alpha	1.07	Stream Power (lb/ft s)	3.83	37.67	3.68
Frctn Loss (ft)	6.12	Cum Volume (acre-ft)	2.73	6.81	2.25
C & E Loss (ft)	0.01	Cum SA (acres)	3.18	2.45	2.05

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2412.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2411.57	Reach Len. (ft)	198.91	215.69	241.71
Crit W.S. (ft)	2411.41	Flow Area (sq ft)	3.41	80.34	3.08
E.G. Slope (ft/ft)	0.024465	Area (sq ft)	3.41	80.34	3.08
Q Total (cfs)	708.00	Flow (cfs)	10.58	687.57	9.85
Top Width (ft)	34.87	Top Width (ft)	3.82	27.31	3.75
Vel Total (ft/s)	8.15	Avg. Vel. (ft/s)	3.10	8.56	3.20
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	0.89	2.94	0.82
Conv. Total (cfs)	4526.5	Conv. (cfs)	67.7	4395.9	63.0
Length Wtd. (ft)	215.80	Wetted Per. (ft)	4.22	27.88	4.09
Min Ch El (ft)	2407.14	Shear (lb/sq ft)	1.24	4.40	1.15
Alpha	1.07	Stream Power (lb/ft s)	3.83	37.67	3.68
Frctn Loss (ft)	6.12	Cum Volume (acre-ft)	1.86	7.00	1.75
C & E Loss (ft)	0.01	Cum SA (acres)	1.90	2.45	1.52

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.58	9984.66	10.58	3.41	4.22	1.49	0.89	3.10
2	Chan	9984.66	9988.56	51.02	7.87	3.93	7.21	2.02	6.48
3	Chan	9988.56	9992.46	72.24	9.72	3.95	10.20	2.49	7.43
4	Chan	9992.46	9996.36	112.49	12.73	3.99	15.89	3.26	8.84
5	Chan	9996.36	10000.27	163.51	15.93	3.99	23.10	4.08	10.26
6	Chan	10000.27	10004.17	146.79	14.99	4.03	20.73	3.84	9.79
7	Chan	10004.17	10008.07	90.40	11.18	4.01	12.77	2.87	8.08
8	Chan	10008.07	10011.97	51.11	7.92	3.98	7.22	2.03	6.45
9	ROB	10011.97	10016.26	9.85	3.08	4.09	1.39	0.82	3.20

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.58	9984.66	10.58	3.41	4.22	1.49	0.89	3.10
2	Chan	9984.66	9988.56	51.02	7.87	3.93	7.21	2.02	6.48
3	Chan	9988.56	9992.46	72.24	9.72	3.95	10.20	2.49	7.43
4	Chan	9992.46	9996.36	112.49	12.73	3.99	15.89	3.26	8.84
5	Chan	9996.36	10000.27	163.51	15.93	3.99	23.10	4.08	10.26
6	Chan	10000.27	10004.17	146.79	14.99	4.03	20.73	3.84	9.79
7	Chan	10004.17	10008.07	90.40	11.18	4.01	12.77	2.87	8.08
8	Chan	10008.07	10011.97	51.11	7.92	3.98	7.22	2.03	6.45
9	ROB	10011.97	10016.26	9.85	3.08	4.09	1.39	0.82	3.20

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: X1
REACH: Reach 1 RS: 1.150

INPUT
Description:
Station Elevation Data num= 17

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9978.2 2410.369987.327 2407.839987.827  2407.79990.117 2407.11 9994.972404.675
9998.647 2402.83   10000 2402.1710005.39 2403.47   10020 2402.9410024.27 2402.48
10031.912404.58710035.44 2405.5610040.32    240710042.08 2407.5610044.34 2408.21
10050.55 2409.9310050.87 2410.02
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
  9978.2    .065 9994.97    .05510031.91     .06
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9994.9710031.91 182.13 171.46 144.86 .1 .3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2406.54	Element			
Vel Head (ft)	1.08	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2405.46	Reach Len. (ft)	182.13	171.46	144.86
Crit W.S. (ft)	2405.46	Flow Area (sq ft)	0.62	84.04	1.39
E.G. Slope (ft/ft)	0.033297	Area (sq ft)	0.62	84.04	1.39
Q Total (cfs)	708.00	Flow (cfs)	1.29	703.17	3.54
Top Width (ft)	41.69	Top Width (ft)	1.57	36.94	3.18
Vel Total (ft/s)	8.23	Avg. Vel. (ft/s)	2.08	8.37	2.54
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)	0.39	2.27	0.44
Conv. Total (cfs)	3880.0	Conv. (cfs)	7.1	3853.5	19.4
Length Wtd. (ft)	171.38	Wetted Per. (ft)	1.76	38.00	3.30
Min Ch El (ft)	2402.17	Shear (lb/sq ft)	0.73	4.60	0.88
Alpha	1.03	Stream Power (lb/ft s)	1.52	38.46	2.23
Frctn Loss (ft)	5.66	Cum Volume (acre-ft)	2.72	6.40	2.24
C & E Loss (ft)	0.02	Cum SA (acres)	3.17	2.29	2.03

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2406.54	Element			
Vel Head (ft)	1.08	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2405.46	Reach Len. (ft)	182.13	171.46	144.86
Crit W.S. (ft)	2405.46	Flow Area (sq ft)	0.62	84.04	1.39
E.G. Slope (ft/ft)	0.033297	Area (sq ft)	0.62	84.04	1.39
Q Total (cfs)	708.00	Flow (cfs)	1.29	703.17	3.54
Top Width (ft)	41.69	Top Width (ft)	1.57	36.94	3.18
Vel Total (ft/s)	8.23	Avg. Vel. (ft/s)	2.08	8.37	2.54
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)	0.39	2.27	0.44
Conv. Total (cfs)	3880.0	Conv. (cfs)	7.1	3853.5	19.4
Length Wtd. (ft)	171.38	Wetted Per. (ft)	1.76	38.00	3.30
Min Ch El (ft)	2402.17	Shear (lb/sq ft)	0.73	4.60	0.88
Alpha	1.03	Stream Power (lb/ft s)	1.52	38.46	2.23
Frctn Loss (ft)	5.66	Cum Volume (acre-ft)	1.85	6.60	1.74
C & E Loss (ft)	0.02	Cum SA (acres)	1.89	2.29	1.50

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.

Profile #profile 1

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	9991.62	9994.97	1.29	0.62	1.76	0.18	0.39	2.08
2	Chan	9994.97	10000.25	82.38	11.11	5.87	11.64	2.10	7.42
3	Chan	10000.25	10005.52	123.39	13.71	5.42	17.43	2.60	9.00
4	Chan	10005.52	10010.80	87.70	11.05	5.28	12.39	2.09	7.94
5	Chan	10010.80	10016.08	101.45	12.06	5.28	14.33	2.29	8.41
6	Chan	10016.08	10021.36	116.89	13.14	5.29	16.51	2.49	8.90
7	Chan	10021.36	10026.63	136.45	14.52	5.38	19.27	2.75	9.40
8	Chan	10026.63	10031.91	54.91	8.46	5.47	7.76	1.60	6.49
9	ROB	10031.91	10035.70	3.54	1.39	3.30	0.50	0.44	2.54

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9991.62	9994.97	1.29	0.62	1.76	0.18	0.39	2.08
2	Chan	9994.97	10000.25	82.38	11.11	5.87	11.64	2.10	7.42
3	Chan	10000.25	10005.52	123.39	13.71	5.42	17.43	2.60	9.00
4	Chan	10005.52	10010.80	87.70	11.05	5.28	12.39	2.09	7.94
5	Chan	10010.80	10016.08	101.45	12.06	5.28	14.33	2.29	8.41
6	Chan	10016.08	10021.36	116.89	13.14	5.29	16.51	2.49	8.90
7	Chan	10021.36	10026.63	136.45	14.52	5.38	19.27	2.75	9.40
8	Chan	10026.63	10031.91	54.91	8.46	5.47	7.76	1.60	6.49
9	ROB	10031.91	10035.70	3.54	1.39	3.30	0.50	0.44	2.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: X1
REACH: Reach 1 RS: 1.118

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9983.57	2403.5	9994.92	2397.53	10000.07	2394.82	10002.62	2395.24	10007.99	2395.89
10008.98	2395.92	10011.2	2396.07	10011.23	2396.07	10011.27	2396.06	10015.15	2394.97
10022.04	2396.84	10025	2397.75	10034.38	2400.67	10035.35	2401.04	10037.27	2401.53
10040.07	2401.59	10049.12	2401.65	10052.89	2401.84	10054.25	2401.91	10073.13	2402.56
10081.2	2403.79								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9983.57	.065	9994.92	.055	10025	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.92	10025	123.57	130.05	141.11	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2399.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.25	Wt. n-Val.	0.065	0.055	0.055
W.S. Elev (ft)	2398.51	Reach Len. (ft)	123.57	130.05	141.11
Crit W.S. (ft)	2398.51	Flow Area (sq ft)	0.92	78.27	0.91
E.G. Slope (ft/ft)	0.032716	Area (sq ft)	0.92	78.27	0.91
Q Total (cfs)	708.00	Flow (cfs)	2.18	703.57	2.26
Top Width (ft)	34.37	Top Width (ft)	1.87	30.08	2.43
Vel Total (ft/s)	8.84	Avg. Vel. (ft/s)	2.37	8.99	2.47
Max Chl Dpth (ft)	3.69	Hydr. Depth (ft)	0.49	2.60	0.38
Conv. Total (cfs)	3914.3	Conv. (cfs)	12.0	3889.7	12.5
Length Wtd. (ft)	130.11	Wetted Per. (ft)	2.11	31.37	2.54
Min Ch El (ft)	2394.82	Shear (lb/sq ft)	0.89	5.10	0.73
Alpha	1.03	Stream Power (lb/ft s)	2.11	45.81	1.82
Frctn Loss (ft)	3.60	Cum Volume (acre-ft)	2.72	6.08	2.24
C & E Loss (ft)	0.02	Cum SA (acres)	3.16	2.16	2.03

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2399.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.25	Wt. n-Val.	0.065	0.055	0.055

W.S. Elev (ft)	2398.51	Reach Len. (ft)	123.57	130.05	141.11
Crit W.S. (ft)	2398.51	Flow Area (sq ft)	0.92	78.27	0.91
E.G. Slope (ft/ft)	0.032716	Area (sq ft)	0.92	78.27	0.91
Q Total (cfs)	708.00	Flow (cfs)	2.18	703.57	2.26
Top Width (ft)	34.37	Top Width (ft)	1.87	30.08	2.43
Vel Total (ft/s)	8.84	Avg. Vel. (ft/s)	2.37	8.99	2.47
Max Chl Dpth (ft)	3.69	Hydr. Depth (ft)	0.49	2.60	0.38
Conv. Total (cfs)	3914.3	Conv. (cfs)	12.0	3889.7	12.5
Length Wtd. (ft)	130.11	Wetted Per. (ft)	2.11	31.37	2.54
Min Ch El (ft)	2394.82	Shear (lb/sq ft)	0.89	5.10	0.73
Alpha	1.03	Stream Power (lb/ft s)	2.11	45.81	1.82
Frctn Loss (ft)	3.60	Cum Volume (acre-ft)	1.85	6.28	1.73
C & E Loss (ft)	0.02	Cum SA (acres)	1.88	2.16	1.50

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9992.65	9994.92	2.18	0.92	2.11	0.31	0.49	2.37
2	Chan	9994.92	9999.22	64.90	9.08	4.86	9.17	2.11	7.15
3	Chan	9999.22	10003.51	153.91	14.72	4.45	21.74	3.42	10.46
4	Chan	10003.51	10007.81	119.08	12.48	4.33	16.82	2.90	9.54
5	Chan	10007.81	10012.11	95.86	10.97	4.34	13.54	2.55	8.74
6	Chan	10012.11	10016.41	136.50	13.71	4.46	19.28	3.19	9.96
7	Chan	10016.41	10020.70	98.35	11.25	4.45	13.89	2.62	8.74
8	Chan	10020.70	10025.00	34.96	6.07	4.48	4.94	1.41	5.76
9	ROB	10025.00	10036.24	2.26	0.91	2.54	0.32	0.38	2.47

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9992.65	9994.92	2.18	0.92	2.11	0.31	0.49	2.37
2	Chan	9994.92	9999.22	64.90	9.08	4.86	9.17	2.11	7.15
3	Chan	9999.22	10003.51	153.91	14.72	4.45	21.74	3.42	10.46
4	Chan	10003.51	10007.81	119.08	12.48	4.33	16.82	2.90	9.54
5	Chan	10007.81	10012.11	95.86	10.97	4.34	13.54	2.55	8.74
6	Chan	10012.11	10016.41	136.50	13.71	4.46	19.28	3.19	9.96
7	Chan	10016.41	10020.70	98.35	11.25	4.45	13.89	2.62	8.74
8	Chan	10020.70	10025.00	34.96	6.07	4.48	4.94	1.41	5.76
9	ROB	10025.00	10036.24	2.26	0.91	2.54	0.32	0.38	2.47

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: X1
REACH: Reach 1 RS: 1.093

INPUT
Description:
Station Elevation Data num= 17

```
     Sta    Elev     Sta    Elev    Sta    Elev     Sta    Elev     Sta    Elev
9951.369 2399.179959.809 2397.349962.259 2396.769970.909 2396.249975.639 2395.95
9977.229 2395.859979.919 2394.96 9986.272392.754 9993.372390.2889999.899 2388.02
10006.76 2390.9510007.08 2391.0810007.25 2391.1110011.53 2392.5210023.13  2396.3
   10024 2396.5110029.14 2397.62
```

Manning's n Values num= 4

```
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9951.369    .0559979.919    .065 9993.37    .05510006.76    .055
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9993.3710006.76 202.31 209.85 224.04 .1 .3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2394.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.44	Wt. n-Val.	0.065	0.055	0.055
W.S. Elev (ft)	2393.55	Reach Len. (ft)	202.31	209.85	224.04

Crit W.S. (ft)	2393.55	Flow Area (sq ft)	15.34	56.62	10.30
E.G. Slope (ft/ft)	0.023657	Area (sq ft)	15.34	56.62	10.30
Q Total (cfs)	708.00	Flow (cfs)	71.97	586.83	49.20
Top Width (ft)	30.73	Top Width (ft)	9.40	13.39	7.94
Vel Total (ft/s)	8.61	Avg. Vel. (ft/s)	4.69	10.36	4.78
Max Chl Dpth (ft)	5.53	Hydr. Depth (ft)	1.63	4.23	1.30
Conv. Total (cfs)	4603.1	Conv. (cfs)	467.9	3815.3	319.9
Length Wtd. (ft)	211.08	Wetted Per. (ft)	9.95	14.37	8.36
Min Ch El (ft)	2388.02	Shear (lb/sq ft)	2.28	5.82	1.82
Alpha	1.25	Stream Power (lb/ft s)	10.68	60.31	8.70
Frctn Loss (ft)	5.11	Cum Volume (acre-ft)	2.70	5.88	2.22
C & E Loss (ft)	0.18	Cum SA (acres)	3.14	2.09	2.01

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2394.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.44	Wt. n-Val.	0.065	0.055	0.055
W.S. Elev (ft)	2393.55	Reach Len. (ft)	202.31	209.85	224.04
Crit W.S. (ft)	2393.55	Flow Area (sq ft)	15.34	56.62	10.30
E.G. Slope (ft/ft)	0.023657	Area (sq ft)	15.34	56.62	10.30
Q Total (cfs)	708.00	Flow (cfs)	71.97	586.83	49.20
Top Width (ft)	30.73	Top Width (ft)	9.40	13.39	7.94
Vel Total (ft/s)	8.61	Avg. Vel. (ft/s)	4.69	10.36	4.78
Max Chl Dpth (ft)	5.53	Hydr. Depth (ft)	1.63	4.23	1.30
Conv. Total (cfs)	4603.1	Conv. (cfs)	467.9	3815.3	319.9
Length Wtd. (ft)	210.23	Wetted Per. (ft)	9.95	14.37	8.36
Min Ch El (ft)	2388.02	Shear (lb/sq ft)	2.28	5.82	1.82
Alpha	1.25	Stream Power (lb/ft s)	10.68	60.31	8.70
Frctn Loss (ft)	5.73	Cum Volume (acre-ft)	1.83	6.08	1.72
C & E Loss (ft)	0.08	Cum SA (acres)	1.86	2.09	1.48

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.57	9984.97	0.17	0.17	1.06	0.02	0.17	0.99
2	LOB	9984.97	9993.37	71.80	15.17	8.89	10.14	1.81	4.73
3	Chan	9993.37	9995.28	63.45	6.88	2.03	8.96	3.60	9.22
4	Chan	9995.28	9997.20	84.13	8.15	2.02	11.88	4.26	10.33
5	Chan	9997.20	9999.11	107.17	9.42	2.03	15.14	4.93	11.37
6	Chan	9999.11	10001.02	121.15	10.21	2.06	17.11	5.33	11.87
7	Chan	10001.02	10002.93	95.46	8.88	2.08	13.48	4.64	10.74
8	Chan	10002.93	10004.85	69.12	7.32	2.08	9.76	3.83	9.44
9	Chan	10004.85	10006.76	46.35	5.76	2.08	6.55	3.01	8.05
10	ROB	10006.76	10011.24	44.50	8.35	4.71	6.29	1.86	5.33
11	ROB	10011.24	10015.71	4.70	1.95	3.64	0.66	0.56	2.40

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.57	9984.97	0.17	0.17	1.06	0.02	0.17	0.99
2	LOB	9984.97	9993.37	71.80	15.17	8.89	10.14	1.81	4.73
3	Chan	9993.37	9995.28	63.45	6.88	2.03	8.96	3.60	9.22
4	Chan	9995.28	9997.20	84.13	8.15	2.02	11.88	4.26	10.33
5	Chan	9997.20	9999.11	107.17	9.42	2.03	15.14	4.93	11.37
6	Chan	9999.11	10001.02	121.15	10.21	2.06	17.11	5.33	11.87
7	Chan	10001.02	10002.93	95.46	8.88	2.08	13.48	4.64	10.74
8	Chan	10002.93	10004.85	69.12	7.32	2.08	9.76	3.83	9.44
9	Chan	10004.85	10006.76	46.35	5.76	2.08	6.55	3.01	8.05
10	ROB	10006.76	10011.24	44.50	8.35	4.71	6.29	1.86	5.33
11	ROB	10011.24	10015.71	4.70	1.95	3.64	0.66	0.56	2.40

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

program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: X1
REACH: Reach 1 RS: 1.053

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9974.154	2390.59	9981.194	2388.36	9990.28	2385.57	29992.144	23859	997.714	2384.03
10000.05	2383.82	10004.08	2383.89	10012.22	2384.37	10014.86	2384.89	10017.94	2385.72
10019.15	2386.03	10022.56	2386.03	10043.65	2385.8	10050.2	2387.45	10059.73	2389.86
10063.73	2390.81	0064.69	2390.95	10065.15	2390.91	10065.42	2390.91	10067.08	2391.18
10067.3	2391.23								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9974.154	.065	9990.28	.055	10019.15	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.28	10019.15	43.41	34.9	22.04	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2387.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2387.02	Reach Len. (ft)	43.41	34.90	22.04
Crit W.S. (ft)	2387.02	Flow Area (sq ft)	3.43	73.79	29.75
E.G. Slope (ft/ft)	0.024807	Area (sq ft)	3.43	73.79	29.75
Q Total (cfs)	708.00	Flow (cfs)	9.69	581.65	116.66
Top Width (ft)	62.96	Top Width (ft)	4.73	28.87	29.36
Vel Total (ft/s)	6.62	Avg. Vel. (ft/s)	2.82	7.88	3.92
Max Chl Dpth (ft)	3.20	Hydr. Depth (ft)	0.73	2.56	1.01
Conv. Total (cfs)	4495.1	Conv. (cfs)	61.6	3692.9	740.7
Length Wtd. (ft)	32.80	Wetted Per. (ft)	4.95	29.26	29.51
Min Ch El (ft)	2383.82	Shear (lb/sq ft)	1.07	3.90	1.56
Alpha	1.23	Stream Power (lb/ft s)	3.03	30.78	6.12
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	2.65	5.57	2.11
C & E Loss (ft)	0.00	Cum SA (acres)	3.11	1.99	1.91

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2388.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.		0.055	0.060
W.S. Elev (ft)	2387.13	Reach Len. (ft)	43.41	34.90	22.04
Crit W.S. (ft)	2387.13	Flow Area (sq ft)		76.92	6.37
E.G. Slope (ft/ft)	0.031760	Area (sq ft)		76.92	6.37
Q Total (cfs)	708.00	Flow (cfs)		681.30	26.70
Top Width (ft)	34.62	Top Width (ft)		28.87	5.75
Vel Total (ft/s)	8.50	Avg. Vel. (ft/s)		8.86	4.19
Max Chl Dpth (ft)	3.31	Hydr. Depth (ft)		2.66	1.11
Conv. Total (cfs)	3972.7	Conv. (cfs)		3822.9	149.8
Length Wtd. (ft)	34.30	Wetted Per. (ft)		30.82	6.88
Min Ch El (ft)	2383.82	Shear (lb/sq ft)		4.95	1.84
Alpha	1.05	Stream Power (lb/ft s)		43.83	7.70
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	1.79	5.75	1.67
C & E Loss (ft)	0.00	Cum SA (acres)	1.84	1.99	1.44

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9983.83	9987.06	0.41	0.35	1.58	0.06	0.23	1.17
2	LOB	9987.06	9990.28	9.29	3.09	3.37	1.31	0.96	3.01
3	Chan	9990.28	9994.40	53.21	8.26	4.24	7.52	2.00	6.44
4	Chan	9994.40	9998.53	92.37	11.43	4.18	13.05	2.77	8.08
5	Chan	9998.53	10002.65	116.15	13.05	4.13	16.41	3.16	8.90

6	Chan	10002.65	10006.78	111.44	12.73	4.13	15.74	3.09	8.76
7	Chan	10006.78	10010.90	97.74	11.77	4.13	13.81	2.85	8.31
8	Chan	10010.90	10015.03	76.65	10.22	4.18	10.83	2.48	7.50
9	Chan	10015.03	10019.15	34.07	6.33	4.27	4.81	1.54	5.38
10	ROB	10019.15	10028.78	38.09	9.78	9.63	5.38	1.02	3.89
11	ROB	10028.78	10038.41	44.44	10.73	9.63	6.28	1.11	4.14
12	ROB	10038.41	10048.04	34.12	9.21	9.77	4.82	0.96	3.71
13	ROB	10048.04	10057.67	0.02	0.03	0.48	0.00	0.06	0.57

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9990.28	9994.40	52.58	8.71	5.80	7.43	2.11	6.04
2	Chan	9994.40	9998.53	109.79	11.87	4.18	15.51	2.88	9.25
3	Chan	9998.53	10002.65	136.99	13.50	4.13	19.35	3.27	10.15
4	Chan	10002.65	10006.78	131.62	13.17	4.13	18.59	3.19	9.99
5	Chan	10006.78	10010.90	115.97	12.21	4.13	16.38	2.96	9.49
6	Chan	10010.90	10015.03	91.79	10.67	4.18	12.96	2.59	8.60
7	Chan	10015.03	10019.15	42.57	6.78	4.27	6.01	1.64	6.28
8	ROB	10019.15	10028.78	26.70	6.37	6.88	3.77	1.11	4.19

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 *RS: 1.047*

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9987.788	2389.279	9991.188	2388.37	9995.59	2383.8029	9997.268	2382.069	9999.268	2379.6
10007.05	2381.84	10017.01	2384.61	10017.87	2384.691	10022.29	2384.721	10028.68	2384.67
10028.83	2384.661	10031.77	2384.62	10053.3	2384.161	10054.77	2384.511	10058.58	2385.43
10061.87	2386.271	10063.32	2386.411	10066.49	2387.781	10070.01	2388.521	10070.52	2388.72
10072.1	2389.17								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9987.788	.065	9995.59	.055	10017.01	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.59	10017.01	96.67	96.63	87.86	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2386.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2385.44	Reach Len. (ft)	96.67	96.63	87.86
Crit W.S. (ft)	2385.44	Flow Area (sq ft)	1.30	72.32	37.27
E.G. Slope (ft/ft)	0.020465	Area (sq ft)	1.30	72.32	37.27
Q Total (cfs)	708.00	Flow (cfs)	2.91	582.72	122.37
Top Width (ft)	64.62	Top Width (ft)	1.58	21.42	41.62
Vel Total (ft/s)	6.38	Avg. Vel. (ft/s)	2.25	8.06	3.28
Max Chl Dpth (ft)	5.84	Hydr. Depth (ft)	0.82	3.38	0.90
Conv. Total (cfs)	4949.1	Conv. (cfs)	20.3	4073.4	855.4
Length Wtd. (ft)	94.15	Wetted Per. (ft)	2.28	24.02	41.78
Min Ch El (ft)	2379.60	Shear (lb/sq ft)	0.73	3.85	1.14
Alpha	1.36	Stream Power (lb/ft s)	1.63	30.99	3.74
Frctn Loss (ft)	2.18	Cum Volume (acre-ft)	2.65	5.51	2.10
C & E Loss (ft)	0.01	Cum SA (acres)	3.11	1.97	1.89

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2386.70	Element	Left OB	Channel	Right OB

Vel Head (ft)	1.18	Wt. n-Val.	0.065	0.055	0.060
W.S. Elev (ft)	2385.52	Reach Len. (ft)	96.67	96.63	87.86
Crit W.S. (ft)	2385.52	Flow Area (sq ft)	1.41	73.87	12.47
E.G. Slope (ft/ft)	0.024690	Area (sq ft)	1.41	73.87	12.47
Q Total (cfs)	708.00	Flow (cfs)	3.61	663.12	41.28
Top Width (ft)	37.99	Top Width (ft)	1.58	21.42	14.99
Vel Total (ft/s)	8.07	Avg. Vel. (ft/s)	2.56	8.98	3.31
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)	0.89	3.45	0.83
Conv. Total (cfs)	4505.8	Conv. (cfs)	22.9	4220.2	262.7
Length Wtd. (ft)	95.03	Wetted Per. (ft)	2.35	24.02	15.90
Min Ch El (ft)	2379.60	Shear (lb/sq ft)	0.93	4.74	1.21
Alpha	1.17	Stream Power (lb/ft s)	2.36	42.55	4.00
Frctn Loss (ft)	2.46	Cum Volume (acre-ft)	1.79	5.69	1.67
C & E Loss (ft)	0.02	Cum SA (acres)	1.84	1.97	1.44

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9994.03	9995.59	2.91	1.30	2.25	0.41	0.83	2.25
2	Chan	9995.59	9998.65	59.92	10.06	4.61	8.46	3.29	5.96
3	Chan	9998.65	10001.71	168.30	16.79	3.52	23.77	5.48	10.03
4	Chan	10001.71	10004.77	139.01	14.38	3.18	19.63	4.70	9.67
5	Chan	10004.77	10007.83	98.48	11.69	3.18	13.91	3.82	8.43
6	Chan	10007.83	10010.89	64.55	9.06	3.17	9.12	2.96	7.12
7	Chan	10010.89	10013.95	36.80	6.47	3.18	5.20	2.11	5.69
8	Chan	10013.95	10017.01	15.65	3.87	3.17	2.21	1.27	4.04
9	ROB	10017.01	10028.03	23.65	8.22	11.02	3.34	0.75	2.88
10	ROB	10028.03	10039.05	30.26	9.52	11.02	4.27	0.86	3.18
11	ROB	10039.05	10050.06	44.89	12.07	11.02	6.34	1.10	3.72
12	ROB	10050.06	10061.08	23.57	7.46	8.72	3.33	0.87	3.16

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9992.47	9994.03	0.00	0.00	0.10	0.00	0.08	0.22
2	LOB	9994.03	9995.59	3.60	1.41	2.25	0.51	0.90	2.56
3	Chan	9995.59	9998.65	68.49	10.28	4.61	9.67	3.36	6.66
4	Chan	9998.65	10001.71	189.58	17.01	3.52	26.78	5.56	11.15
5	Chan	10001.71	10004.77	157.16	14.60	3.18	22.20	4.77	10.77
6	Chan	10004.77	10007.83	111.99	11.91	3.18	15.82	3.89	9.40
7	Chan	10007.83	10010.89	74.06	9.28	3.17	10.46	3.03	7.98
8	Chan	10010.89	10013.95	42.91	6.69	3.18	6.06	2.19	6.41
9	Chan	10013.95	10017.01	18.93	4.10	3.17	2.67	1.34	4.62
10	ROB	10017.01	10028.03	30.61	9.02	11.02	4.32	0.82	3.40
11	ROB	10028.03	10039.05	10.67	3.45	4.87	1.51	0.87	3.09

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 1.028

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9935.796	2387.72	9943.066	2386.69	9949.146	2385.83	9952.156	2385.47	9955.926	2384.36
9965.766	2382.51	9966.296	2382.35	9966.316	2382.36	9968.616	2381.94	9981.256	2380.69
9987.806	2380.29	9989.08	2380.02	19994.196	2378.94	10000.09	2377.84	10004.77	2379.24
10006.59	2379.77	10010007.98	2380.19	10016.88	2378.59	10019.06	2378.21	10021.85	2379.11
10036.38	2384.26	10039.68	2385.21	10044.76	2386.05	10048.05	2386.05	10052.26	2386.05

10053.01 2386.0710057.59 2386.7510058.26 2386.86

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9935.796	.06	9989.08	.0510006.59		.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.08	10006.59	129.83	137.38	138.71	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2382.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2381.42	Reach Len. (ft)	129.83	137.38	138.71
Crit W.S. (ft)	2381.42	Flow Area (sq ft)	10.41	44.75	41.92
E.G. Slope (ft/ft)	0.026476	Area (sq ft)	10.41	44.75	41.92
Q Total (cfs)	708.00	Flow (cfs)	32.47	397.03	278.50
Top Width (ft)	54.50	Top Width (ft)	15.22	17.51	21.78
Vel Total (ft/s)	7.29	Avg. Vel. (ft/s)	3.12	8.87	6.64
Max Chl Dpth (ft)	3.58	Hydr. Depth (ft)	0.68	2.56	1.92
Conv. Total (cfs)	4351.2	Conv. (cfs)	199.5	2440.0	1711.6
Length Wtd. (ft)	136.18	Wetted Per. (ft)	15.29	18.01	22.56
Min Ch El (ft)	2377.84	Shear (lb/sq ft)	1.13	4.11	3.07
Alpha	1.16	Stream Power (lb/ft s)	3.51	36.44	20.41
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	2.64	5.38	2.02
C & E Loss (ft)	0.02	Cum SA (acres)	3.09	1.93	1.83

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2382.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2381.59	Reach Len. (ft)	129.83	137.38	138.71
Crit W.S. (ft)	2381.57	Flow Area (sq ft)	10.11	47.76	31.86
E.G. Slope (ft/ft)	0.027191	Area (sq ft)	10.11	47.76	31.86
Q Total (cfs)	708.00	Flow (cfs)	41.87	448.52	217.61
Top Width (ft)	40.00	Top Width (ft)	9.08	17.51	13.41
Vel Total (ft/s)	7.89	Avg. Vel. (ft/s)	4.14	9.39	6.83
Max Chl Dpth (ft)	3.75	Hydr. Depth (ft)	1.11	2.73	2.38
Conv. Total (cfs)	4293.6	Conv. (cfs)	253.9	2720.0	1319.7
Length Wtd. (ft)	136.62	Wetted Per. (ft)	9.91	18.01	16.78
Min Ch El (ft)	2377.84	Shear (lb/sq ft)	1.73	4.50	3.22
Alpha	1.14	Stream Power (lb/ft s)	7.18	42.28	22.01
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	1.78	5.56	1.62
C & E Loss (ft)	0.01	Cum SA (acres)	1.83	1.93	1.41

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.77	9978.42	1.37	1.03	4.58	0.19	0.23	1.34
2	LOB	9978.42	9989.08	31.09	9.38	10.71	4.39	0.88	3.31
3	Chan	9989.08	9991.58	27.07	4.16	2.56	3.82	1.66	6.50
4	Chan	9991.58	9994.08	42.88	5.49	2.56	6.06	2.19	7.82
5	Chan	9994.08	9996.58	60.56	6.74	2.54	8.55	2.69	8.99
6	Chan	9996.58	9999.09	79.09	7.91	2.55	11.17	3.16	10.00
7	Chan	9999.09	10001.59	88.80	8.53	2.58	12.54	3.41	10.41
8	Chan	10001.59	10004.09	62.00	6.90	2.61	8.76	2.76	8.98
9	Chan	10004.09	10006.59	36.65	5.03	2.61	5.18	2.01	7.28
10	ROB	10006.59	10016.92	133.16	20.20	10.54	18.81	1.95	6.59
11	ROB	10016.92	10027.26	145.03	21.50	10.84	20.49	2.08	6.75
12	ROB	10027.26	10037.59	0.30	0.22	1.18	0.04	0.20	1.39

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.42	9989.08	41.87	10.11	9.91	5.91	1.11	4.14
2	Chan	9989.08	9991.58	32.43	4.59	2.56	4.58	1.84	7.06
3	Chan	9991.58	9994.08	49.46	5.92	2.56	6.99	2.36	8.36

4	Chan	9994.08	9996.58	68.28	7.17	2.54	9.64	2.87	9.53
5	Chan	9996.58	9999.09	87.86	8.34	2.55	12.41	3.33	10.54
6	Chan	9999.09	10001.59	98.03	8.96	2.58	13.85	3.58	10.94
7	Chan	10001.59	10004.09	69.74	7.33	2.61	9.85	2.93	9.51
8	Chan	10004.09	10006.59	42.73	5.46	2.61	6.04	2.18	7.82
9	ROB	10006.59	10016.92	158.34	21.97	10.54	22.36	2.13	7.21
10	ROB	10016.92	10027.26	59.27	9.89	6.25	8.37	3.21	6.00

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X1
REACH: Reach 1 RS: 1.002

INPUT
Description:
Station Elevation Data num= 41

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9861.071 2384.019861.881 2383.869863.671  2383.59877.361 2380.649878.491  2380.4
9878.571 2380.389878.641 2380.369881.941 2379.879882.481  2379.89886.371 2378.97
9894.951 2377.579895.971  2377.49897.251 2377.269902.131 2377.529904.011 2377.67
9907.881 2378.089908.631 2378.139913.861 2378.359914.191 2378.369915.251 2378.36
9924.271 2377.869929.921 2377.879933.511 2377.749934.791 2377.699940.081 2377.71
9945.901 2377.159952.081 2376.69 9967.57  2376.49967.571  2376.49980.391 2375.81
9984.421 2375.859985.131 2375.86 9986.72  2375.79986.721  2375.79998.861 2374.28
 10006.12376.13810017.83 2379.1510019.33 2379.5610022.26 2380.0910032.37 2381.94
10035.22 2382.28
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
9861.071     .06 9986.72     .05 10006.1    .055
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9986.72 10006.1            135.7  126.19  116.46             .1       .3
Left Levee      Station= 9915.25      Elevation= 2378.36
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2378.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2377.67	Reach Len. (ft)	135.70	126.19	116.46
Crit W.S. (ft)	2377.67	Flow Area (sq ft)	55.13	50.31	4.56
E.G. Slope (ft/ft)	0.025554	Area (sq ft)	55.13	50.31	4.56
Q Total (cfs)	708.00	Flow (cfs)	245.33	446.56	16.11
Top Width (ft)	71.54	Top Width (ft)	46.20	19.38	5.96
Vel Total (ft/s)	6.44	Avg. Vel. (ft/s)	4.45	8.88	3.54
Max Chl Dpth (ft)	3.39	Hydr. Depth (ft)	1.19	2.60	0.76
Conv. Total (cfs)	4429.0	Conv. (cfs)	1534.7	2793.5	100.8
Length Wtd. (ft)	128.09	Wetted Per. (ft)	46.27	19.70	6.15
Min Ch El (ft)	2374.28	Shear (lb/sq ft)	1.90	4.07	1.18
Alpha	1.37	Stream Power (lb/ft s)	8.46	36.17	4.18
Frctn Loss (ft)	3.50	Cum Volume (acre-ft)	2.54	5.23	1.94
C & E Loss (ft)	0.04	Cum SA (acres)	3.00	1.87	1.79

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2379.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.17	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2378.00	Reach Len. (ft)	135.70	126.19	116.46
Crit W.S. (ft)	2378.00	Flow Area (sq ft)	24.91	56.71	6.53
E.G. Slope (ft/ft)	0.024666	Area (sq ft)	24.91	56.71	6.53
Q Total (cfs)	708.00	Flow (cfs)	144.51	535.68	27.81
Top Width (ft)	37.06	Top Width (ft)	11.72	19.38	5.96
Vel Total (ft/s)	8.03	Avg. Vel. (ft/s)	5.80	9.45	4.26
Max Chl Dpth (ft)	3.72	Hydr. Depth (ft)	2.13	2.93	1.09
Conv. Total (cfs)	4508.0	Conv. (cfs)	920.1	3410.8	177.1
Length Wtd. (ft)	126.79	Wetted Per. (ft)	13.67	19.70	6.48
Min Ch El (ft)	2374.28	Shear (lb/sq ft)	2.81	4.43	1.55
Alpha	1.16	Stream Power (lb/ft s)	16.27	41.88	6.61
Frctn Loss (ft)	3.67	Cum Volume (acre-ft)	1.73	5.39	1.56
C & E Loss (ft)	0.06	Cum SA (acres)	1.80	1.87	1.38

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9939.07	9962.90	56.38	17.69	22.42	7.96	0.79	3.19
2	LOB	9962.90	9986.72	188.95	37.45	23.85	26.69	1.57	5.05
3	Chan	9986.72	9989.49	45.36	5.90	2.79	6.41	2.13	7.69
4	Chan	9989.49	9992.26	57.43	6.79	2.79	8.11	2.45	8.45
5	Chan	9992.26	9995.03	70.61	7.69	2.79	9.97	2.78	9.18
6	Chan	9995.03	9997.79	84.85	8.59	2.79	11.99	3.10	9.88
7	Chan	9997.79	10000.56	89.86	8.94	2.83	12.69	3.23	10.05
8	Chan	10000.56	10003.33	62.04	7.19	2.86	8.76	2.60	8.63
9	Chan	10003.33	10006.10	36.40	5.22	2.86	5.14	1.89	6.98
10	ROB	10006.10	10011.92	16.12	4.56	6.01	2.28	0.78	3.54
11	ROB	10011.92	10017.75	0.00	0.00	0.14	0.00	0.02	0.28

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9962.90	9986.72	144.51	24.91	13.67	20.41	2.13	5.80
2	Chan	9986.72	9989.49	56.88	6.81	2.79	8.03	2.46	8.35
3	Chan	9989.49	9992.26	69.90	7.71	2.79	9.87	2.78	9.07
4	Chan	9992.26	9995.03	83.96	8.60	2.79	11.86	3.11	9.76
5	Chan	9995.03	9997.79	99.05	9.50	2.79	13.99	3.43	10.43
6	Chan	9997.79	10000.56	104.22	9.86	2.83	14.72	3.56	10.58
7	Chan	10000.56	10003.33	74.69	8.10	2.86	10.55	2.93	9.22
8	Chan	10003.33	10006.10	46.98	6.13	2.86	6.64	2.22	7.66
9	ROB	10006.10	10011.92	27.77	6.48	6.01	3.92	1.11	4.29
10	ROB	10011.92	10017.75	0.04	0.05	0.47	0.01	0.35	0.88

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: X1
REACH: Reach 1 RS: 0.979

INPUT
Description:
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9888.165	2380.72	9888.985	2380.56	9895.195	2378.08	9904.375	2375.16	9905.135	2375.12
9905.905	2375.08	9915.075	2374.79	9921.365	2374.47	9921.665	2374.46	9928.975	2374.19
9931.685	2374.19	9932.765	2374.07	9936.415	2373.99	9942.465	2373.8	9955.38	2372.61
9955.385	2372.61	9957.185	2372.38	9959.455	2372.12	9962.075	2371.4	9962.08	2371.39
9966	2370.41	9970.235	2369.36	9977.705	2371.11	9981.495	2371.95	9986.515	2372.16
9991.515	2372.45	9991.705	2372.4	9991.835	2372.38	9993.065	2372.13	9998.915	2370.94
9999.345	2370.86	9999.785	2370.8	10000.6	2370.95	10004.25	2372.06	10006.42	2372.71
10007.04	2372.91	10018.6	2372.65	10023.11	2372.7	10031.1	2374.87	10036.49	2376.22
10036.98	2376.28	10037.27	2376.31	10051.8	2378.31	10054.28	2378.56	10062.57	2379.46
10067.59	2380.07								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9888.165	.06	9966	.05	10004.25	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9966	10004.25	127.74	120.17	119.73	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2374.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.060	0.055	0.060
W.S. Elev (ft)	2373.32	Reach Len. (ft)	127.74	120.17	119.73
Crit W.S. (ft)	2373.32	Flow Area (sq ft)	20.25	78.70	12.27
E.G. Slope (ft/ft)	0.029330	Area (sq ft)	20.25	78.70	12.27
Q Total (cfs)	708.00	Flow (cfs)	90.81	581.22	35.97

Top Width (ft)	77.76	Top Width (ft)	18.36	38.25	21.16
Vel Total (ft/s)	6.37	Avg. Vel. (ft/s)	4.48	7.38	2.93
Max Chl Dpth (ft)	3.96	Hydr. Depth (ft)	1.10	2.06	0.58
Conv. Total (cfs)	4134.1	Conv. (cfs)	530.3	3393.8	210.1
Length Wtd. (ft)	121.83	Wetted Per. (ft)	18.64	39.03	21.37
Min Ch El (ft)	2369.36	Shear (lb/sq ft)	1.99	3.69	1.05
Alpha	1.18	Stream Power (lb/ft s)	8.92	27.27	3.08
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	2.42	5.04	1.92
C & E Loss (ft)	0.00	Cum SA (acres)	2.90	1.79	1.75

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2374.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.		0.055	0.060
W.S. Elev (ft)	2373.49	Reach Len. (ft)	127.74	120.17	119.73
Crit W.S. (ft)	2373.49	Flow Area (sq ft)		85.05	7.39
E.G. Slope (ft/ft)	0.034422	Area (sq ft)		85.05	7.39
Q Total (cfs)	708.00	Flow (cfs)		681.30	26.70
Top Width (ft)	48.00	Top Width (ft)		38.25	9.75
Vel Total (ft/s)	7.66	Avg. Vel. (ft/s)		8.01	3.61
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)		2.22	0.76
Conv. Total (cfs)	3816.1	Conv. (cfs)		3672.2	143.9
Length Wtd. (ft)	121.06	Wetted Per. (ft)		42.10	10.61
Min Ch El (ft)	2369.36	Shear (lb/sq ft)		4.34	1.50
Alpha	1.06	Stream Power (lb/ft s)		34.78	5.41
Frctn Loss (ft)	2.75	Cum Volume (acre-ft)	1.69	5.19	1.54
C & E Loss (ft)	0.01	Cum SA (acres)	1.78	1.79	1.36

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9934.87	9950.43	0.35	0.36	2.80	0.05	0.13	0.99
2	LOB	9950.43	9966.00	90.45	19.90	15.84	12.78	1.28	4.55
3	Chan	9966.00	9971.46	185.33	19.23	5.63	26.18	3.52	9.64
4	Chan	9971.46	9976.93	145.04	16.59	5.61	20.49	3.04	8.74
5	Chan	9976.93	9982.39	60.60	9.80	5.58	8.56	1.79	6.18
6	Chan	9982.39	9987.86	32.25	6.66	5.47	4.55	1.22	4.84
7	Chan	9987.86	9993.32	23.34	5.50	5.51	3.30	1.01	4.24
8	Chan	9993.32	9998.79	61.05	9.84	5.58	8.62	1.80	6.20
9	Chan	9998.79	10004.25	73.61	11.08	5.66	10.40	2.03	6.65
10	ROB	10004.25	10016.92	22.44	7.53	12.80	3.17	0.59	2.98
11	ROB	10016.92	10029.59	13.54	4.74	8.57	1.91	0.56	2.86

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9966.00	9971.46	169.13	20.14	8.70	23.89	3.69	8.40
2	Chan	9971.46	9976.93	179.06	17.49	5.61	25.29	3.20	10.24
3	Chan	9976.93	9982.39	79.34	10.71	5.58	11.21	1.96	7.41
4	Chan	9982.39	9987.86	45.07	7.57	5.47	6.37	1.38	5.96
5	Chan	9987.86	9993.32	34.00	6.41	5.51	4.80	1.17	5.31
6	Chan	9993.32	9998.79	79.88	10.75	5.58	11.28	1.97	7.43
7	Chan	9998.79	10004.25	94.82	11.98	5.66	13.39	2.19	7.91
8	ROB	10004.25	10016.92	26.70	7.39	10.61	3.77	0.76	3.61

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1            RS: 0.956

INPUT
Description:
Station Elevation Data    num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9900.414 2377.979910.334 2371.539916.274 2371.459922.374 2371.099929.004 2369.25
9933.194 2368.499940.474 2367.189942.404 2367.789946.184  2368.59948.684 2368.45
9949.944 2368.439956.124 2368.339960.534 2368.349962.844 2368.349969.444 2368.26
9970.594 2368.239972.154 2368.249973.404 2368.22  9978.9 2367.679978.904 2367.67
9981.984 2367.289985.884 2366.86    99922365.5519992.004 2365.559993.104 2365.36
9998.114 2364.5310000.41 2364.0110001.27 2364.4910004.28 2365.5910004.36 2365.65
10006.662367.42210009.89 2369.9110009.95 2369.9710010.09 2370.0310010.75 2370.24
10012.08 2371.0510016.37 2372.5710017.23 2373.3110018.04 2373.6610018.96  2374.2
10019.37  2374.310020.68 2374.6310023.54 2375.79

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9900.414    .0359929.004    .065    9992     .0510004.36    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          999210004.36            125.71  131.05  158.06             .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2369.92    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.79    Wt. n-Val.                0.065      0.050     0.055
  W.S. Elev (ft)          2369.13    Reach Len. (ft)          125.71     131.05    158.06
  Crit W.S. (ft)          2369.13    Flow Area (sq ft)         76.27      52.92      7.84
  E.G. Slope (ft/ft)     0.012676    Area (sq ft)              76.27      52.92      7.84
  Q Total (cfs)            708.00    Flow (cfs)               223.32     455.16     29.52
  Top Width (ft)            79.19    Top Width (ft)            62.31      12.36      4.51
  Vel Total (ft/s)           5.17    Avg. Vel. (ft/s)           2.93       8.60      3.76
  Max Chl Dpth (ft)          5.12    Hydr. Depth (ft)           1.22       4.28      1.74
  Conv. Total (cfs)         6288.5   Conv. (cfs)              1983.5     4042.8     262.2
  Length Wtd. (ft)          130.35   Wetted Per. (ft)          62.86      12.84      5.70
  Min Ch El (ft)          2364.01    Shear (lb/sq ft)           0.96       3.26      1.09
  Alpha                      1.90    Stream Power (lb/ft s)     2.81      28.05      4.10
  Frctn Loss (ft)            1.96    Cum Volume (acre-ft)       2.28       4.86      1.89
  C & E Loss (ft)            0.01    Cum SA (acres)             2.78       1.72      1.72


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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2370.19    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              1.10    Wt. n-Val.                0.065      0.050     0.055
  W.S. Elev (ft)          2369.09    Reach Len. (ft)          125.71     131.05    158.06
  Crit W.S. (ft)          2369.09    Flow Area (sq ft)         43.61      52.41      7.66
  E.G. Slope (ft/ft)     0.016146    Area (sq ft)              43.61      52.41      7.66
  Q Total (cfs)            708.00    Flow (cfs)               170.24     505.49     32.27
  Top Width (ft)            43.82    Top Width (ft)            27.00      12.36      4.46
  Vel Total (ft/s)           6.83    Avg. Vel. (ft/s)           3.90       9.64      4.22
  Max Chl Dpth (ft)          5.07    Hydr. Depth (ft)           1.62       4.24      1.72
  Conv. Total (cfs)         5571.8   Conv. (cfs)              1339.8     3978.1     254.0
  Length Wtd. (ft)          131.22   Wetted Per. (ft)          27.99      12.84      5.63
  Min Ch El (ft)          2364.01    Shear (lb/sq ft)           1.57       4.11      1.37
  Alpha                      1.52    Stream Power (lb/ft s)     6.13      39.68      5.78
  Frctn Loss (ft)            2.36    Cum Volume (acre-ft)       1.62       5.00      1.52
  C & E Loss (ft)            0.02    Cum SA (acres)             1.74       1.72      1.34


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.

  Profile #profile 1

            Pos          Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                         (ft)        (ft)           (cfs)    (sq ft)      (ft)       Conv  Depth(ft)     (ft/s)
```

1	LOB	9918.73	9937.05	8.65	4.90	7.48	1.22	0.67	1.76
2	LOB	9937.05	9955.37	45.20	19.02	18.53	6.38	1.04	2.38
3	LOB	9955.37	9973.68	31.13	15.14	18.32	4.40	0.83	2.06
4	LOB	9973.68	9992.00	138.33	37.21	18.53	19.54	2.03	3.72
5	Chan	9992.00	9993.77	52.16	6.58	1.79	7.37	3.73	7.93
6	Chan	9993.77	9995.53	59.25	7.10	1.79	8.37	4.02	8.34
7	Chan	9995.53	9997.30	66.61	7.62	1.79	9.41	4.31	8.74
8	Chan	9997.30	9999.06	74.46	8.17	1.80	10.52	4.62	9.12
9	Chan	9999.06	10000.83	82.22	8.78	1.86	11.61	4.97	9.37
10	Chan	10000.83	10002.59	67.91	7.92	1.92	9.59	4.49	8.58
11	Chan	10002.59	10004.36	52.55	6.76	1.89	7.42	3.83	7.77
12	ROB	10004.36	10008.20	29.35	7.67	4.84	4.15	2.00	3.83
13	ROB	10008.20	10012.03	0.17	0.18	0.85	0.02	0.26	0.98

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9955.37	9973.68	16.00	7.15	9.46	2.26	0.82	2.24
2	LOB	9973.68	9992.00	154.24	36.45	18.53	21.79	1.99	4.23
3	Chan	9992.00	9993.77	57.79	6.51	1.79	8.16	3.69	8.88
4	Chan	9993.77	9995.53	65.73	7.03	1.79	9.28	3.98	9.35
5	Chan	9995.53	9997.30	73.97	7.54	1.79	10.45	4.27	9.80
6	Chan	9997.30	9999.06	82.78	8.09	1.80	11.69	4.58	10.23
7	Chan	9999.06	10000.83	91.51	8.71	1.86	12.92	4.93	10.51
8	Chan	10000.83	10002.59	75.47	7.85	1.92	10.66	4.44	9.62
9	Chan	10002.59	10004.36	58.25	6.69	1.89	8.23	3.79	8.71
10	ROB	10004.36	10008.20	32.12	7.51	4.84	4.54	1.96	4.28
11	ROB	10008.20	10012.03	0.16	0.15	0.79	0.02	0.24	1.06

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: X1
REACH: Reach 1 RS: 0.931

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9932.712	2365.72	9938.382	2365.68	9947.112	2365.78	9955.382	2361.95	9519955.382	2361.95
9958.542	2360.39	9959.352	2360.58	9961.242	2360.91	9968.102	2362.11	9976.792	2362.99
9976.832	2363.99	83.722	2361.73	9989.032	2361.12	9991.752	2360.61	19991.752	2360.61
9996.932	2359.31	9998.082	2359.17	9998.912	2359.26	9999.882	2359.28	10000.06	2359.29
10000.34	2359.41	10005.4	2360.85	10005.5	2360.88	10005.53	2360.91	0007.422	361.923
10010	2363.32	10012.47	2365.02	10015.51	2366.82				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9932.712	.035	9947.112	.065	9991.75	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.75	10005.4	157.38	196.9	251.07	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2364.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2363.37	Reach Len. (ft)	157.38	196.90	251.07
Crit W.S. (ft)	2363.37	Flow Area (sq ft)	60.47	48.12	5.97
E.G. Slope (ft/ft)	0.018213	Area (sq ft)	60.47	48.12	5.97
Q Total (cfs)	708.00	Flow (cfs)	243.64	438.51	25.86
Top Width (ft)	57.76	Top Width (ft)	39.44	13.65	4.67
Vel Total (ft/s)	6.18	Avg. Vel. (ft/s)	4.03	9.11	4.33
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)	1.53	3.53	1.28
Conv. Total (cfs)	5246.2	Conv. (cfs)	1805.3	3249.2	191.6
Length Wtd. (ft)	193.53	Wetted Per. (ft)	40.51	14.05	5.31
Min Ch El (ft)	2359.17	Shear (lb/sq ft)	1.70	3.89	1.28
Alpha	1.51	Stream Power (lb/ft s)	6.84	35.49	5.53
Frctn Loss (ft)	3.80	Cum Volume (acre-ft)	2.08	4.71	1.87
C & E Loss (ft)	0.02	Cum SA (acres)	2.63	1.68	1.70

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

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2364.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.29	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2363.68	Reach Len. (ft)	157.38	196.90	251.07
Crit W.S. (ft)	2363.68	Flow Area (sq ft)	30.15	52.35	7.42
E.G. Slope (ft/ft)	0.020192	Area (sq ft)	30.15	52.35	7.42
Q Total (cfs)	708.00	Flow (cfs)	138.97	531.36	37.67
Top Width (ft)	35.08	Top Width (ft)	16.75	13.65	4.68
Vel Total (ft/s)	7.87	Avg. Vel. (ft/s)	4.61	10.15	5.08
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	1.80	3.84	1.59
Conv. Total (cfs)	4982.5	Conv. (cfs)	978.0	3739.4	265.1
Length Wtd. (ft)	196.95	Wetted Per. (ft)	17.83	14.05	5.63
Min Ch El (ft)	2359.17	Shear (lb/sq ft)	2.13	4.70	1.66
Alpha	1.34	Stream Power (lb/ft s)	9.82	47.67	8.44
Frctn Loss (ft)	3.94	Cum Volume (acre-ft)	1.52	4.84	1.50
C & E Loss (ft)	0.06	Cum SA (acres)	1.68	1.68	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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.52	9956.33	9.50	3.75	4.44	1.34	0.93	2.53
2	LOB	9956.33	9968.14	118.25	25.51	12.22	16.70	2.16	4.64
3	LOB	9968.14	9979.94	21.84	9.17	11.91	3.09	0.78	2.38
4	LOB	9979.94	9991.75	94.03	22.04	11.95	13.28	1.87	4.27
5	Chan	9991.75	9993.70	47.46	5.86	2.01	6.70	3.01	8.09
6	Chan	9993.70	9995.65	61.03	6.82	2.01	8.62	3.50	8.95
7	Chan	9995.65	9997.60	75.85	7.74	1.99	10.71	3.97	9.80
8	Chan	9997.60	9999.55	82.42	8.08	1.96	11.64	4.14	10.20
9	Chan	9999.55	10001.50	73.19	7.62	2.02	10.34	3.91	9.61
10	Chan	10001.50	10003.45	56.65	6.54	2.03	8.00	3.35	8.66
11	Chan	10003.45	10005.40	41.91	5.46	2.03	5.92	2.80	7.68
12	ROB	10005.40	10007.42	20.35	4.03	2.29	2.87	1.99	5.05
13	ROB	10007.42	10009.44	5.40	1.82	2.30	0.76	0.90	2.96
14	ROB	10009.44	10011.47	0.12	0.11	0.72	0.02	0.18	1.01

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9968.14	9979.94	11.02	4.44	5.88	1.56	0.90	2.48
2	LOB	9979.94	9991.75	127.95	25.70	11.95	18.07	2.18	4.98
3	Chan	9991.75	9993.70	58.95	6.47	2.01	8.33	3.32	9.11
4	Chan	9993.70	9995.65	74.15	7.42	2.01	10.47	3.81	9.99
5	Chan	9995.65	9997.60	90.68	8.35	1.99	12.81	4.28	10.86
6	Chan	9997.60	9999.55	98.03	8.68	1.96	13.85	4.45	11.29
7	Chan	9999.55	10001.50	87.67	8.22	2.02	12.38	4.22	10.66
8	Chan	10001.50	10003.45	69.23	7.15	2.03	9.78	3.66	9.69
9	Chan	10003.45	10005.40	52.66	6.06	2.03	7.44	3.11	8.68
10	ROB	10005.40	10007.42	27.70	4.66	2.29	3.91	2.30	5.94
11	ROB	10007.42	10009.44	9.45	2.45	2.30	1.34	1.21	3.86
12	ROB	10009.44	10011.47	0.52	0.31	1.04	0.07	0.49	1.66

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 0.894

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9959.632	2360.559963.582	2359.549969.232	2357.369973.262	2356.969976.352	2356.63				
9981.552	2355.58 9988.09	2354.269988.092	2354.269992.962	2353.2410000.28	2351.75				
10005.58	2353.6610008.08	2354.5210008.59	2354.3810014.45	2354.5710015.27	2354.61				
10016.42	2354.710017.16	2354.7510017.59	2354.8710025.55	2356.9710030.76	2358.06				
10031.06	2358.1210043.44	2358.2810045.48	2358.2610048.87	2358.2210049.22	2358.23				
10055.7	2358.4610057.83	2358.710059.64	2359.0610063.13	2359.6510067.93	2359.79				
10076.74	2360								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9959.632	.039973.262		.065 9988.09		.0510008.08		.0610031.06		.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.0910008.08		189.39	189.42	190.05	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2357.39	Element			
Vel Head (ft)	1.13	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2356.26	Reach Len. (ft)	189.39	189.42	190.05
Crit W.S. (ft)	2356.26	Flow Area (sq ft)	9.91	64.06	20.03
E.G. Slope (ft/ft)	0.021184	Area (sq ft)	9.91	64.06	20.03
Q Total (cfs)	708.00	Flow (cfs)	32.54	587.95	87.50
Top Width (ft)	44.68	Top Width (ft)	9.91	19.99	14.78
Vel Total (ft/s)	7.53	Avg. Vel. (ft/s)	3.28	9.18	4.37
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	1.00	3.20	1.35
Conv. Total (cfs)	4864.4	Conv. (cfs)	223.6	4039.6	601.2
Length Wtd. (ft)	189.50	Wetted Per. (ft)	10.11	20.72	15.01
Min Ch El (ft)	2351.75	Shear (lb/sq ft)	1.30	4.09	1.77
Alpha	1.28	Stream Power (lb/ft s)	4.26	37.52	7.71
Frctn Loss (ft)	3.57	Cum Volume (acre-ft)	1.96	4.45	1.79
C & E Loss (ft)	0.05	Cum SA (acres)	2.54	1.60	1.64

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2357.39	Element			
Vel Head (ft)	1.08	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2356.31	Reach Len. (ft)	189.39	189.42	190.05
Crit W.S. (ft)	2356.31	Flow Area (sq ft)	10.42	65.08	20.78
E.G. Slope (ft/ft)	0.019833	Area (sq ft)	10.42	65.08	20.78
Q Total (cfs)	708.00	Flow (cfs)	34.09	584.06	89.84
Top Width (ft)	44.68	Top Width (ft)	9.91	19.99	14.78
Vel Total (ft/s)	7.35	Avg. Vel. (ft/s)	3.27	8.97	4.32
Max Chl Dpth (ft)	4.56	Hydr. Depth (ft)	1.05	3.26	1.41
Conv. Total (cfs)	5027.4	Conv. (cfs)	242.1	4147.3	638.0
Length Wtd. (ft)	189.49	Wetted Per. (ft)	10.16	20.72	15.06
Min Ch El (ft)	2351.75	Shear (lb/sq ft)	1.27	3.89	1.71
Alpha	1.28	Stream Power (lb/ft s)	4.15	34.90	7.39
Frctn Loss (ft)	4.22	Cum Volume (acre-ft)	1.44	4.58	1.41
C & E Loss (ft)	0.02	Cum SA (acres)	1.63	1.60	1.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.71	9982.40	2.93	1.79	4.30	0.41	0.43	1.63
2	LOB	9982.40	9988.09	29.62	8.12	5.81	4.18	1.43	3.65
3	Chan	9988.09	9990.95	47.39	6.57	2.92	6.69	2.30	7.22
4	Chan	9990.95	9993.80	69.68	8.27	2.92	9.84	2.90	8.42
5	Chan	9993.80	9996.66	94.73	9.94	2.91	13.38	3.48	9.53
6	Chan	9996.66	9999.51	122.53	11.60	2.91	17.31	4.06	10.56
7	Chan	9999.51	10002.37	127.63	12.03	3.00	18.03	4.21	10.61
8	Chan	10002.37	10005.22	81.93	9.26	3.04	11.57	3.24	8.84
9	Chan	10005.22	10008.08	44.06	6.37	3.02	6.22	2.23	6.91
10	ROB	10008.08	10021.81	87.37	19.88	13.92	12.34	1.45	4.39
11	ROB	10021.81	10035.54	0.13	0.14	1.08	0.02	0.14	0.91

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.71	9982.40	3.42	2.01	4.35	0.48	0.48	1.70
2	LOB	9982.40	9988.09	30.67	8.41	5.81	4.33	1.48	3.65
3	Chan	9988.09	9990.95	47.60	6.71	2.92	6.72	2.35	7.09
4	Chan	9990.95	9993.80	69.47	8.42	2.92	9.81	2.95	8.25
5	Chan	9993.80	9996.66	93.99	10.09	2.91	13.28	3.53	9.32
6	Chan	9996.66	9999.51	121.16	11.75	2.91	17.11	4.11	10.31
7	Chan	9999.51	10002.37	126.10	12.18	3.00	17.81	4.27	10.35
8	Chan	10002.37	10005.22	81.43	9.41	3.04	11.50	3.29	8.65
9	Chan	10005.22	10008.08	44.31	6.52	3.02	6.26	2.28	6.80
10	ROB	10008.08	10021.81	89.63	20.58	13.92	12.66	1.50	4.35
11	ROB	10021.81	10035.54	0.21	0.20	1.13	0.03	0.19	1.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 0.858

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9975.082	2352.67	9981.122	2348.744	9983.82	2347.001	9983.802	2347	9985	2346.919
9992.582	2346.411	10000.21	2345.921	10005.46	2347.281	10012.46	2349.071	10019.38	2348.93
10021.94	2348.831	10022.94	2348.871	10030.84	2349	10035	2349.421	10043.86	2350.33
10046.73	2350.631	10050.76	2350.721	10058.51	2350.861	10065.31	2350.991	10068.59	2351.05
10068.73	2351.051	10069.39	2351.09						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9975.082	.065	9985	.051	10005.46	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985	10005.46	165.85	162.58	142.38	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2350.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.95	Wt. n-Val.	0.065	0.050	0.055
W.S. Elev (ft)	2349.78	Reach Len. (ft)	165.85	162.58	142.38
Crit W.S. (ft)	2349.78	Flow Area (sq ft)	9.30	67.81	29.42
E.G. Slope (ft/ft)	0.016826	Area (sq ft)	9.30	67.81	29.42
Q Total (cfs)	708.00	Flow (cfs)	35.79	577.27	94.95
Top Width (ft)	58.94	Top Width (ft)	5.47	20.46	33.01
Vel Total (ft/s)	6.65	Avg. Vel. (ft/s)	3.85	8.51	3.23
Max Chl Dpth (ft)	3.86	Hydr. Depth (ft)	1.70	3.31	0.89
Conv. Total (cfs)	5458.1	Conv. (cfs)	275.9	4450.2	732.0
Length Wtd. (ft)	158.74	Wetted Per. (ft)	6.29	20.67	33.28
Min Ch El (ft)	2345.92	Shear (lb/sq ft)	1.55	3.45	0.93
Alpha	1.39	Stream Power (lb/ft s)	5.97	29.34	3.00
Frctn Loss (ft)	2.39	Cum Volume (acre-ft)	1.92	4.17	1.69
C & E Loss (ft)	0.03	Cum SA (acres)	2.51	1.51	1.54

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2351.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.32	Wt. n-Val.		0.050	0.055
W.S. Elev (ft)	2349.76	Reach Len. (ft)	165.85	162.58	142.38
Crit W.S. (ft)	2349.76	Flow Area (sq ft)		67.54	12.94
E.G. Slope (ft/ft)	0.025226	Area (sq ft)		67.54	12.94
Q Total (cfs)	708.00	Flow (cfs)		644.23	63.77
Top Width (ft)	30.00	Top Width (ft)		20.46	9.54
Vel Total (ft/s)	8.80	Avg. Vel. (ft/s)		9.54	4.93
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)		3.30	1.36

Conv. Total (cfs)	4457.7	Conv. (cfs)		4056.2	401.5
Length Wtd. (ft)	160.39	Wetted Per. (ft)		23.51	10.51
Min Ch El (ft)	2345.92	Shear (lb/sq ft)		4.52	1.94
Alpha	1.10	Stream Power (lb/ft s)		43.16	9.56
Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	1.42	4.29	1.34
C & E Loss (ft)	0.04	Cum SA (acres)	1.61	1.51	1.21

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.05	9981.03	1.02	0.73	1.79	0.14	0.49	1.39
2	LOB	9981.03	9983.02	9.92	3.21	2.37	1.40	1.62	3.09
3	LOB	9983.02	9985.00	24.85	5.35	2.14	3.51	2.70	4.64
4	Chan	9985.00	9987.92	68.12	8.64	2.93	9.62	2.96	7.89
5	Chan	9987.92	9990.85	75.83	9.21	2.93	10.71	3.15	8.23
6	Chan	9990.85	9993.77	83.83	9.78	2.93	11.84	3.35	8.57
7	Chan	9993.77	9996.69	91.89	10.34	2.93	12.98	3.54	8.89
8	Chan	9996.69	9999.61	100.16	10.88	2.93	14.15	3.72	9.20
9	Chan	9999.61	10002.54	93.68	10.56	3.00	13.23	3.61	8.87
10	Chan	10002.54	10005.46	63.76	8.40	3.02	9.01	2.87	7.59
11	ROB	10005.46	10018.25	57.78	15.63	13.01	8.16	1.22	3.70
12	ROB	10018.25	10031.03	32.33	10.96	12.79	4.57	0.86	2.95
13	ROB	10031.03	10043.82	4.83	2.83	7.47	0.68	0.38	1.71

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9985.00	9987.92	50.49	8.60	5.77	7.13	2.94	5.87
2	Chan	9987.92	9990.85	88.39	9.17	2.93	12.48	3.14	9.64
3	Chan	9990.85	9993.77	97.76	9.74	2.93	13.81	3.33	10.03
4	Chan	9993.77	9996.69	107.18	10.30	2.93	15.14	3.52	10.41
5	Chan	9996.69	9999.61	116.87	10.85	2.93	16.51	3.71	10.78
6	Chan	9999.61	10002.54	109.28	10.52	3.00	15.44	3.60	10.39
7	Chan	10002.54	10005.46	74.26	8.36	3.02	10.49	2.86	8.88
8	ROB	10005.46	10018.25	63.77	12.94	10.51	9.01	1.36	4.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 0.827

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9974.391	2348.769	986.921	2346.429	987.431	2346.329	987.711	2346.16	9991	2344.052
9993.832	2342.238	9996.791	2340.349	997.351	2340.211	0000.32	2339.871	0008.24	2342.129
10014.8	2344	10015.46	2344.181	0016.82	2344.221	0029.34	2344.561	0039.47	2342.8
10041.46	2342.461	0042.88	2342.751	0061.63	2346.661	0062.99	2346.661	0068.13	2346.72
10069.93	2346.721	0073.47	2346.721	0074.77	2346.751	0075.89	2346.75	10075.9	2346.76
10092.43	2347.03								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9974.391	.055	9993.83	.05	10008.24	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.83	10008.24	178.77	163.21	144.18	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2345.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2344.94	Reach Len. (ft)	178.77	163.21	144.18
Crit W.S. (ft)	2344.94	Flow Area (sq ft)	5.69	59.18	52.93
E.G. Slope (ft/ft)	0.013598	Area (sq ft)	5.69	59.18	52.93
Q Total (cfs)	708.00	Flow (cfs)	19.55	504.99	183.46
Top Width (ft)	63.77	Top Width (ft)	4.22	14.41	45.14
Vel Total (ft/s)	6.01	Avg. Vel. (ft/s)	3.43	8.53	3.47
Max Chl Dpth (ft)	5.07	Hydr. Depth (ft)	1.35	4.11	1.17
Conv. Total (cfs)	6071.4	Conv. (cfs)	167.6	4330.5	1573.2
Length Wtd. (ft)	159.47	Wetted Per. (ft)	5.01	15.32	45.87
Min Ch El (ft)	2339.87	Shear (lb/sq ft)	0.97	3.28	0.98
Alpha	1.53	Stream Power (lb/ft s)	3.31	27.99	3.40
Frctn Loss (ft)	2.16	Cum Volume (acre-ft)	1.89	3.93	1.55
C & E Loss (ft)	0.05	Cum SA (acres)	2.49	1.45	1.41

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2346.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2345.16	Reach Len. (ft)	178.77	163.21	144.18
Crit W.S. (ft)	2345.16	Flow Area (sq ft)	6.63	62.37	25.23
E.G. Slope (ft/ft)	0.015475	Area (sq ft)	6.63	62.37	25.23
Q Total (cfs)	708.00	Flow (cfs)	26.10	588.05	93.85
Top Width (ft)	39.39	Top Width (ft)	4.22	14.41	20.76
Vel Total (ft/s)	7.51	Avg. Vel. (ft/s)	3.94	9.43	3.72
Max Chl Dpth (ft)	5.29	Hydr. Depth (ft)	1.57	4.33	1.22
Conv. Total (cfs)	5691.3	Conv. (cfs)	209.8	4727.1	754.4
Length Wtd. (ft)	161.64	Wetted Per. (ft)	5.23	15.32	21.66
Min Ch El (ft)	2339.87	Shear (lb/sq ft)	1.22	3.93	1.13
Alpha	1.35	Stream Power (lb/ft s)	4.82	37.09	4.19
Frctn Loss (ft)	2.78	Cum Volume (acre-ft)	1.41	4.04	1.28
C & E Loss (ft)	0.02	Cum SA (acres)	1.60	1.45	1.16

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.06	9989.94	0.02	0.03	0.39	0.00	0.11	0.60
2	LOB	9989.94	9993.83	19.53	5.66	4.62	2.76	1.46	3.45
3	Chan	9993.83	9995.89	47.02	6.92	2.45	6.64	3.36	6.79
4	Chan	9995.89	9997.95	82.03	9.34	2.25	11.59	4.54	8.78
5	Chan	9997.95	10000.01	98.93	10.12	2.07	13.97	4.92	9.78
6	Chan	10000.01	10002.06	95.16	10.00	2.13	13.44	4.86	9.52
7	Chan	10002.06	10004.12	76.81	8.81	2.14	10.85	4.28	8.72
8	Chan	10004.12	10006.18	60.06	7.60	2.14	8.48	3.69	7.90
9	Chan	10006.18	10008.24	45.00	6.39	2.14	6.36	3.10	7.04
10	ROB	10008.24	10025.08	63.48	18.89	17.13	8.97	1.12	3.36
11	ROB	10025.08	10041.92	72.06	20.34	17.03	10.18	1.21	3.54
12	ROB	10041.92	10058.75	47.91	13.70	11.71	6.77	1.20	3.50

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.06	9989.94	0.11	0.11	0.61	0.02	0.33	0.99
2	LOB	9989.94	9993.83	25.99	6.52	4.62	3.67	1.68	3.98
3	Chan	9993.83	9995.89	55.88	7.38	2.45	7.89	3.58	7.58
4	Chan	9995.89	9997.95	94.91	9.80	2.25	13.41	4.76	9.69
5	Chan	9997.95	10000.01	113.77	10.58	2.07	16.07	5.14	10.76
6	Chan	10000.01	10002.06	109.54	10.45	2.13	15.47	5.08	10.48
7	Chan	10002.06	10004.12	89.28	9.26	2.14	12.61	4.50	9.64
8	Chan	10004.12	10006.18	70.73	8.06	2.14	9.99	3.91	8.78

9	Chan	10006.18	10008.24	53.94	6.85	2.14	7.62	3.33	7.88
10	ROB	10008.24	10025.08	88.03	22.62	17.13	12.43	1.34	3.89
11	ROB	10025.08	10041.92	5.82	2.60	4.53	0.82	0.66	2.23

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 0.796

INPUT
Description:
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9889.41	2341.789	896.621	2340.179	899.291	2340.139	905.651	2340.079	915.921	2339.94
9926.091	2339.969	930.291	2339.999	932.421		23409936.071	2340.019	938.451	2340.02
9941.731	2339.919	947.111	2339.719	949.771	2339.629	951.581	2339.589	953.991	2339.65
9979.441	2339.939	984.081	2340.12	9985.372	339.585	9988.972	338.0919	988.971	2338.09
9992.781	2336.349	996.951	2336.161	0000.04	2336.031	0010.252	338.165	10011.66	2338.46
10011.68	2338.471	0011.81	2338.481	0024.34	2339.191	0027.64	2338.821	0033.69	2338.26
10039.78	2339.615	10044.34	2340.631	0048.58	2341.62				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9889.41	.05	9988.97	.05	10010.25	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.97	10010.25		55.34	106.78	111.87	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2340.80	Element			
Vel Head (ft)	0.69	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2340.11	Reach Len. (ft)	55.34	106.78	111.87
Crit W.S. (ft)	2340.11	Flow Area (sq ft)	22.81	70.23	39.50
E.G. Slope (ft/ft)	0.013478	Area (sq ft)	22.81	70.23	39.50
Q Total (cfs)	708.00	Flow (cfs)	38.51	527.04	142.45
Top Width (ft)	139.94	Top Width (ft)	86.92	21.28	31.74
Vel Total (ft/s)	5.34	Avg. Vel. (ft/s)	1.69	7.50	3.61
Max Chl Dpth (ft)	4.08	Hydr. Depth (ft)	0.26	3.30	1.24
Conv. Total (cfs)	6098.5	Conv. (cfs)	331.7	4539.8	1227.0
Length Wtd. (ft)	101.63	Wetted Per. (ft)	87.33	21.89	32.04
Min Ch El (ft)	2336.03	Shear (lb/sq ft)	0.22	2.70	1.04
Alpha	1.57	Stream Power (lb/ft s)	0.37	20.26	3.74
Frctn Loss (ft)	1.61	Cum Volume (acre-ft)	1.83	3.69	1.40
C & E Loss (ft)	0.03	Cum SA (acres)	2.30	1.38	1.28

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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2341.21	Element			
Vel Head (ft)	1.12	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2340.09	Reach Len. (ft)	55.34	106.78	111.87
Crit W.S. (ft)	2340.09	Flow Area (sq ft)	7.17	69.92	14.06
E.G. Slope (ft/ft)	0.019176	Area (sq ft)	7.17	69.92	14.06
Q Total (cfs)	708.00	Flow (cfs)	21.83	624.02	62.15
Top Width (ft)	49.26	Top Width (ft)	18.23	21.28	9.75
Vel Total (ft/s)	7.77	Avg. Vel. (ft/s)	3.04	8.93	4.42
Max Chl Dpth (ft)	4.06	Hydr. Depth (ft)	0.39	3.29	1.44
Conv. Total (cfs)	5112.7	Conv. (cfs)	157.7	4506.3	448.8
Length Wtd. (ft)	101.94	Wetted Per. (ft)	18.90	21.89	10.94
Min Ch El (ft)	2336.03	Shear (lb/sq ft)	0.45	3.82	1.54
Alpha	1.20	Stream Power (lb/ft s)	1.38	34.13	6.80
Frctn Loss (ft)	1.94	Cum Volume (acre-ft)	1.38	3.80	1.21
C & E Loss (ft)	0.04	Cum SA (acres)	1.55	1.38	1.11

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9889.41	9909.32	0.12	0.30	7.62	0.02	0.04	0.42
2	LOB	9909.32	9929.23	2.84	2.85	19.91	0.40	0.14	0.99
3	LOB	9929.23	9949.15	4.77	3.90	19.92	0.67	0.20	1.22
4	LOB	9949.15	9969.06	15.94	8.04	19.91	2.25	0.40	1.98
5	LOB	9969.06	9988.97	14.84	7.71	19.97	2.10	0.39	1.92
6	Chan	9988.97	9992.01	50.77	8.25	3.35	7.17	2.71	6.15
7	Chan	9992.01	9995.05	91.50	11.43	3.12	12.92	3.76	8.01
8	Chan	9995.05	9998.09	100.22	11.95	3.04	14.16	3.93	8.39
9	Chan	9998.09	10001.13	103.12	12.19	3.07	14.56	4.01	8.46
10	Chan	10001.13	10004.17	82.71	10.74	3.11	11.68	3.53	7.70
11	Chan	10004.17	10007.21	59.42	8.80	3.11	8.39	2.90	6.75
12	Chan	10007.21	10010.25	39.31	6.87	3.11	5.55	2.26	5.72
13	ROB	10010.25	10017.92	46.60	11.65	7.71	6.58	1.52	4.00
14	ROB	10017.92	10025.58	26.46	8.29	7.68	3.74	1.08	3.19
15	ROB	10025.58	10033.25	42.89	11.09	7.70	6.06	1.45	3.87
16	ROB	10033.25	10040.91	26.40	8.35	7.84	3.73	1.09	3.16
17	ROB	10040.91	10048.58	0.09	0.13	1.10	0.01	0.12	0.73

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.06	9988.97	21.83	7.17	18.90	3.08	0.39	3.04
2	Chan	9988.97	9992.01	60.01	8.21	3.35	8.48	2.70	7.31
3	Chan	9992.01	9995.05	108.41	11.38	3.12	15.31	3.74	9.52
4	Chan	9995.05	9998.09	118.78	11.90	3.04	16.78	3.92	9.98
5	Chan	9998.09	10001.13	122.23	12.15	3.07	17.26	4.00	10.06
6	Chan	10001.13	10004.17	97.96	10.69	3.11	13.84	3.52	9.16
7	Chan	10004.17	10007.21	70.26	8.76	3.11	9.92	2.88	8.02
8	Chan	10007.21	10010.25	46.37	6.83	3.11	6.55	2.25	6.79
9	ROB	10010.25	10017.92	54.48	11.54	7.71	7.69	1.51	4.72
10	ROB	10017.92	10025.58	7.67	2.52	3.24	1.08	1.21	3.05

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: X1
REACH: Reach 1 RS: 0.776

INPUT
Description:
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9842.48	2341.7	9848.1	2339.79	9852.75	2338.09	9864.23	2337.36	9869.37	2336.38
9886.76	2337.7	9888	2337.78	9888.22	2337.78	9888.31	2337.78	9888.43	2337.78
9888.58	2337.8	9908.84	2336.4	9915.35	2337.19	9924.68	2337.26	9926.78	2337.31
9928.15	2337.3	9942.38	2335.83	9943.86	2335.68	9944.95	2335.57	9952.6	2335.66
9956.36	2335.7	9957.92	2335.87	9958.37	2335.91	9961.87	2336.33	9964.99	2336.68
9967.22	2337	9969.38	2337.16	9970.94	2337.27	9972.66	2337.33	9974.03	2337.4
9975.69	2337.5	9981.29	2336.35	9988.39	2333.77	9990.69	2333.38	9997.56	2332.39
9998.28	2332.3	9998.58	2332.24	9998.73	2332.24	10003.63	2332.36	10006.34	2333.37
10016.11	2337.3	10029.14	2337.83	10037.54	2338.29	10041.36	2338.45		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9842.48	.055	9990.69	.055	10006.34	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.69	10006.34	53.33	69.62	79.65	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2337.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	2336.44	Reach Len. (ft)	53.33	69.62	79.65
Crit W.S. (ft)	2336.44	Flow Area (sq ft)	31.80	59.24	11.72
E.G. Slope (ft/ft)	0.019004	Area (sq ft)	31.80	59.24	11.72
Q Total (cfs)	708.00	Flow (cfs)	122.90	529.84	55.26
Top Width (ft)	61.56	Top Width (ft)	38.27	15.65	7.63
Vel Total (ft/s)	6.89	Avg. Vel. (ft/s)	3.86	8.94	4.71
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)	0.83	3.79	1.54

Conv. Total (cfs)	5135.8	Conv. (cfs)	891.5	3843.4	400.8
Length Wtd. (ft)	67.60	Wetted Per. (ft)	38.87	15.92	8.23
Min Ch El (ft)	2332.24	Shear (lb/sq ft)	0.97	4.42	1.69
Alpha	1.35	Stream Power (lb/ft s)	3.75	39.50	7.97
Frctn Loss (ft)	1.15	Cum Volume (acre-ft)	1.79	3.53	1.33
C & E Loss (ft)	0.08	Cum SA (acres)	2.22	1.34	1.23

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2337.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.99	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	2336.44	Reach Len. (ft)	53.33	69.62	79.65
Crit W.S. (ft)	2336.44	Flow Area (sq ft)	31.88	59.29	11.75
E.G. Slope (ft/ft)	0.018918	Area (sq ft)	31.88	59.29	11.75
Q Total (cfs)	708.00	Flow (cfs)	123.16	529.49	55.35
Top Width (ft)	59.59	Top Width (ft)	36.31	15.65	7.63
Vel Total (ft/s)	6.88	Avg. Vel. (ft/s)	3.86	8.93	4.71
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)	0.88	3.79	1.54
Conv. Total (cfs)	5147.5	Conv. (cfs)	895.5	3849.6	402.4
Length Wtd. (ft)	67.94	Wetted Per. (ft)	36.90	15.92	8.23
Min Ch El (ft)	2332.24	Shear (lb/sq ft)	1.02	4.40	1.69
Alpha	1.35	Stream Power (lb/ft s)	3.94	39.29	7.94
Frctn Loss (ft)	1.24	Cum Volume (acre-ft)	1.36	3.64	1.18
C & E Loss (ft)	0.04	Cum SA (acres)	1.52	1.34	1.09

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9842.48	9872.12	0.01	0.03	1.13	0.00	0.03	0.38
2	LOB	9872.12	9901.77						
3	LOB	9901.77	9931.41	0.01	0.02	0.93	0.00	0.02	0.29
4	LOB	9931.41	9961.05	42.87	15.15	24.65	6.05	0.62	2.83
5	LOB	9961.05	9990.69	80.02	16.60	12.16	11.30	1.43	4.82
6	Chan	9990.69	9992.93	57.79	7.20	2.26	8.16	3.22	8.02
7	Chan	9992.93	9995.16	67.77	7.93	2.26	9.57	3.54	8.55
8	Chan	9995.16	9997.40	78.31	8.64	2.26	11.06	3.87	9.06
9	Chan	9997.40	9999.63	88.25	9.27	2.25	12.46	4.15	9.52
10	Chan	9999.63	10001.87	88.74	9.28	2.24	12.53	4.15	9.56
11	Chan	10001.87	10004.10	85.41	9.12	2.27	12.06	4.08	9.36
12	Chan	10004.10	10006.34	63.57	7.79	2.39	8.98	3.49	8.15
13	ROB	10006.34	10013.34	55.19	11.64	7.55	7.80	1.66	4.74
14	ROB	10013.34	10020.35	0.07	0.08	0.68	0.01	0.13	0.85

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9931.41	9961.05	43.17	15.24	24.69	6.10	0.62	2.83
2	LOB	9961.05	9990.69	79.99	16.64	12.21	11.30	1.42	4.81
3	Chan	9990.69	9992.93	57.77	7.21	2.26	8.16	3.23	8.01
4	Chan	9992.93	9995.16	67.73	7.93	2.26	9.57	3.55	8.54
5	Chan	9995.16	9997.40	78.26	8.65	2.26	11.05	3.87	9.05
6	Chan	9997.40	9999.63	88.18	9.28	2.25	12.45	4.15	9.50
7	Chan	9999.63	10001.87	88.67	9.29	2.24	12.52	4.15	9.55
8	Chan	10001.87	10004.10	85.35	9.13	2.27	12.05	4.08	9.35
9	Chan	10004.10	10006.34	63.53	7.80	2.39	8.97	3.49	8.14
10	ROB	10006.34	10013.34	55.28	11.67	7.55	7.81	1.67	4.74
11	ROB	10013.34	10020.35	0.07	0.08	0.68	0.01	0.13	0.87

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 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: X1
REACH: Reach 1 RS: 0.763

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9872.77	2340.3	9876.92	2339.44	9881.84	2336.85	9884	2335.72	9894.21	2335.2
9902.81	2334.7	9904.68	2334.72	9906.54	2334.76	9912.29	2334.69	9928.6	2334.7
9933.36	2335.6	9944.97	2337.26	9946.32	2337.44	9951.02	2336.24	9953.02	2335.7
9955.16	2335.2	9955.5	2335.11	9956.37	2334.88	9957.14	2334.68	9963.35	2334.25
9964.58	2334	9968.01	2334.36	9970.99	2334.91	9971.4	2334.86	9976.94	2334.49
9978.39	2334.6	9985.55	2332.52	9988.32	2331.89	9998.34	2332.61	10006.42	2331.92
10009.09	2332.71	310015.11	2334.51	0016.73	2335.11	0020.46	2336.2		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9872.77	.065	9985.55	.05	10009.09	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.55	10009.09	29.09	20.8	22.17	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2336.02	Element			
Vel Head (ft)	0.73	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2335.29	Reach Len. (ft)	29.09	20.80	22.17
Crit W.S. (ft)	2335.29	Flow Area (sq ft)	49.04	71.47	10.99
E.G. Slope (ft/ft)	0.015203	Area (sq ft)	49.04	71.47	10.99
Q Total (cfs)	708.00	Flow (cfs)	115.42	545.45	47.13
Top Width (ft)	101.87	Top Width (ft)	70.05	23.54	8.28
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	2.35	7.63	4.29
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)	0.70	3.04	1.33
Conv. Total (cfs)	5742.2	Conv. (cfs)	936.1	4423.8	382.2
Length Wtd. (ft)	22.44	Wetted Per. (ft)	70.62	23.78	8.68
Min Ch El (ft)	2331.89	Shear (lb/sq ft)	0.66	2.85	1.20
Alpha	1.62	Stream Power (lb/ft s)	1.55	21.77	5.15
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	1.74	3.43	1.31
C & E Loss (ft)	0.00	Cum SA (acres)	2.16	1.30	1.22

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2336.11	Element			
Vel Head (ft)	0.87	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2335.25	Reach Len. (ft)	29.09	20.80	22.17
Crit W.S. (ft)	2335.25	Flow Area (sq ft)	31.46	70.43	10.63
E.G. Slope (ft/ft)	0.017587	Area (sq ft)	31.46	70.43	10.63
Q Total (cfs)	708.00	Flow (cfs)	86.98	572.50	48.52
Top Width (ft)	68.74	Top Width (ft)	37.07	23.54	8.13
Vel Total (ft/s)	6.29	Avg. Vel. (ft/s)	2.76	8.13	4.57
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)	0.85	2.99	1.31
Conv. Total (cfs)	5338.8	Conv. (cfs)	655.9	4317.0	365.8
Length Wtd. (ft)	22.21	Wetted Per. (ft)	38.17	23.78	8.52
Min Ch El (ft)	2331.89	Shear (lb/sq ft)	0.91	3.25	1.37
Alpha	1.41	Stream Power (lb/ft s)	2.50	26.43	6.25
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	1.32	3.53	1.16
C & E Loss (ft)	0.02	Cum SA (acres)	1.47	1.30	1.08

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9872.77	9895.33	0.11	0.22	2.88	0.01	0.07	0.49
2	LOB	9895.33	9917.88	20.14	11.49	22.57	2.84	0.51	1.75
3	LOB	9917.88	9940.44	13.01	7.28	13.89	1.84	0.53	1.79
4	LOB	9940.44	9962.99	11.38	5.47	8.31	1.61	0.67	2.08
5	LOB	9962.99	9985.55	70.79	24.59	22.97	10.00	1.09	2.88
6	Chan	9985.55	9988.91	81.55	10.55	3.44	11.52	3.14	7.73
7	Chan	9988.91	9992.28	87.08	10.89	3.37	12.30	3.24	8.00

8	Chan	9992.28	9995.64	76.68	10.09	3.37	10.83	3.00	7.60
9	Chan	9995.64	9999.00	67.18	9.32	3.37	9.49	2.77	7.21
10	Chan	9999.00	10002.36	71.87	9.71	3.38	10.15	2.89	7.40
11	Chan	10002.36	10005.73	83.97	10.66	3.37	11.86	3.17	7.88
12	Chan	10005.73	10009.09	77.12	10.26	3.48	10.89	3.05	7.52
13	ROB	10009.09	10011.36	26.57	5.09	2.37	3.75	2.24	5.22
14	ROB	10011.36	10013.64	14.61	3.56	2.37	2.06	1.56	4.11
15	ROB	10013.64	10015.91	5.56	2.00	2.39	0.79	0.88	2.78
16	ROB	10015.91	10018.19	0.39	0.34	1.54	0.05	0.23	1.14

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9917.88	9940.44	4.37	2.76	7.08	0.62	0.42	1.58
2	LOB	9940.44	9962.99	11.16	5.11	8.12	1.58	0.64	2.18
3	LOB	9962.99	9985.55	71.45	23.60	22.97	10.09	1.05	3.03
4	Chan	9985.55	9988.91	85.66	10.40	3.44	12.10	3.09	8.24
5	Chan	9988.91	9992.28	91.54	10.74	3.37	12.93	3.19	8.52
6	Chan	9992.28	9995.64	80.46	9.94	3.37	11.36	2.96	8.09
7	Chan	9995.64	9999.00	70.34	9.17	3.37	9.94	2.73	7.67
8	Chan	9999.00	10002.36	75.33	9.56	3.38	10.64	2.84	7.88
9	Chan	10002.36	10005.73	88.22	10.51	3.37	12.46	3.13	8.39
10	Chan	10005.73	10009.09	80.95	10.11	3.48	11.43	3.00	8.01
11	ROB	10009.09	10011.36	27.69	4.99	2.37	3.91	2.20	5.55
12	ROB	10011.36	10013.64	15.01	3.46	2.37	2.12	1.52	4.34
13	ROB	10013.64	10015.91	5.50	1.90	2.39	0.78	0.83	2.90
14	ROB	10015.91	10018.19	0.32	0.28	1.39	0.05	0.21	1.16

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: 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: X1
REACH: Reach 1 RS: 0.759

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9893.92	2338.8	9896.48	2338.16	9903.27	2334.88	9903.9	2334.59	9908.77	2334.01
9914.92	2333.7	9916.54	2333.77	9919.28	2333.77	9924.15	2333.88	9927.85	2333.98
9934.8	2334.3	9935.01	2334.33	9940.6	2334.1	9950.49	2333.58	9954.57	2334.31
9964.56	2335.3	9965.99	2335.14	9967.54	2334.6	9967.74	2334.55	9967.76	2334.54
9967.77	2334.5	9970.06	2334.11	9989.98	2331.79	9991.44	2331.59	9999.32	2329.82
10000.39	2329.7	10007.91	2331.52	10012.35	2332.6	10020.62	2334.64	10022.35	2334.65
10040.07	2334.88	10040.66	2334.9						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9893.92	.06	9991.44	.05	10007.91	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.44	10007.91	157.65	147.2	126.51	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2335.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2334.37	Reach Len. (ft)	157.65	147.20	126.51
Crit W.S. (ft)	2334.37	Flow Area (sq ft)	52.82	62.14	16.64
E.G. Slope (ft/ft)	0.012839	Area (sq ft)	52.82	62.14	16.64
Q Total (cfs)	708.00	Flow (cfs)	145.92	498.63	63.45
Top Width (ft)	100.53	Top Width (ft)	72.43	16.47	11.63
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	2.76	8.02	3.81
Max Chl Dpth (ft)	4.67	Hydr. Depth (ft)	0.73	3.77	1.43
Conv. Total (cfs)	6248.4	Conv. (cfs)	1287.8	4400.6	560.0
Length Wtd. (ft)	148.28	Wetted Per. (ft)	72.73	16.89	11.98
Min Ch El (ft)	2329.70	Shear (lb/sq ft)	0.58	2.95	1.11
Alpha	1.67	Stream Power (lb/ft s)	1.61	23.66	4.25
Frctn Loss (ft)	1.94	Cum Volume (acre-ft)	1.71	3.39	1.30
C & E Loss (ft)	0.05	Cum SA (acres)	2.11	1.30	1.21

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there

is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2335.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2334.35	Reach Len. (ft)	157.65	147.20	126.51
Crit W.S. (ft)	2334.35	Flow Area (sq ft)	45.42	61.66	16.31
E.G. Slope (ft/ft)	0.013737	Area (sq ft)	45.42	61.66	16.31
Q Total (cfs)	708.00	Flow (cfs)	134.97	509.16	63.87
Top Width (ft)	87.67	Top Width (ft)	59.68	16.47	11.51
Vel Total (ft/s)	5.74	Avg. Vel. (ft/s)	2.97	8.26	3.92
Max Chl Dpth (ft)	4.65	Hydr. Depth (ft)	0.76	3.74	1.42
Conv. Total (cfs)	6040.8	Conv. (cfs)	1151.6	4344.3	544.9
Length Wtd. (ft)	148.09	Wetted Per. (ft)	60.52	16.89	11.86
Min Ch El (ft)	2329.70	Shear (lb/sq ft)	0.64	3.13	1.18
Alpha	1.58	Stream Power (lb/ft s)	1.91	25.85	4.62
Frctn Loss (ft)	2.02	Cum Volume (acre-ft)	1.29	3.50	1.15
C & E Loss (ft)	0.06	Cum SA (acres)	1.44	1.30	1.07

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9893.92	9913.42	3.76	2.80	7.74	0.53	0.36	1.34
2	LOB	9913.42	9932.93	15.20	9.37	19.52	2.15	0.48	1.62
3	LOB	9932.93	9952.43	10.73	7.61	19.56	1.51	0.39	1.41
4	LOB	9952.43	9971.94	1.48	1.47	6.28	0.21	0.24	1.01
5	LOB	9971.94	9991.44	114.76	31.58	19.64	16.21	1.62	3.63
6	Chan	9991.44	9993.79	49.38	7.17	2.41	6.97	3.05	6.89
7	Chan	9993.79	9996.15	64.49	8.42	2.41	9.11	3.58	7.66
8	Chan	9996.15	9998.50	81.11	9.66	2.41	11.46	4.11	8.40
9	Chan	9998.50	10000.85	97.17	10.73	2.39	13.73	4.56	9.06
10	Chan	10000.85	10003.20	86.61	10.06	2.42	12.23	4.28	8.61
11	Chan	10003.20	10005.56	68.24	8.72	2.42	9.64	3.71	7.82
12	Chan	10005.56	10007.91	51.62	7.38	2.42	7.29	3.14	7.00
13	ROB	10007.91	10014.46	57.31	13.46	6.74	8.09	2.05	4.26
14	ROB	10014.46	10021.01	6.14	3.18	5.23	0.87	0.63	1.93

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9913.42	9932.93	8.87	6.06	15.51	1.25	0.41	1.46
2	LOB	9932.93	9952.43	9.74	7.04	19.56	1.38	0.36	1.38
3	LOB	9952.43	9971.94	1.31	1.30	5.82	0.18	0.23	1.01
4	LOB	9971.94	9991.44	115.05	31.02	19.64	16.25	1.59	3.71
5	Chan	9991.44	9993.79	50.26	7.10	2.41	7.10	3.02	7.08
6	Chan	9993.79	9996.15	65.79	8.35	2.41	9.29	3.55	7.88
7	Chan	9996.15	9998.50	82.90	9.59	2.41	11.71	4.08	8.64
8	Chan	9998.50	10000.85	99.43	10.66	2.39	14.04	4.53	9.32
9	Chan	10000.85	10003.20	88.56	9.99	2.42	12.51	4.25	8.86
10	Chan	10003.20	10005.56	69.66	8.65	2.42	9.84	3.68	8.05
11	Chan	10005.56	10007.91	52.57	7.31	2.42	7.42	3.11	7.19
12	ROB	10007.91	10014.46	57.90	13.27	6.74	8.18	2.03	4.36
13	ROB	10014.46	10021.01	5.97	3.04	5.11	0.84	0.61	1.96

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: X1
REACH: Reach 1 RS: 0.731

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9876.308	2330.59	881.278	2328.09	9887.818	2328.01	9892.908	2327.93	9895.058	2327.93
9914.258	2328.25	9917.758	2328.32	9921.488	2328.49	9932.188	2328.46	9933.118	2328.47
9933.938	2328.44	9934.108	2328.43	9934.308	2328.42	9936.698	2328.33	9946.498	2328.07
9954.008	2327.76	9959.038	2327.55	9965.588	2327.22	9969.868	2326.87	9974.358	2326.53
9974.36	2326.53	9982.298	2326.22	9985.318	2326.19	9993.508	2325.73	9996.078	2325.21
10000.19	2324.28	10002.01	2325.46	10003.84	2326.61	10004.79	2327.21	10008.59	2329.61
10014.16	2329.8	10036.4	2330.42	10036.85	2330.46	10037.17	2330.48	10039.97	2330.79

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9876.308	.06	9892.908	.045	9917.758	.06	9974.36	.051	10003.84	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.36	10003.84	219.69	223.83	228.11	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2329.19	Element			
Vel Head (ft)	0.57	Wt. n-Val.	0.057	0.050	0.060
W.S. Elev (ft)	2328.62	Reach Len. (ft)	219.69	223.83	228.11
Crit W.S. (ft)	2328.62	Flow Area (sq ft)	61.73	82.96	3.19
E.G. Slope (ft/ft)	0.013352	Area (sq ft)	61.73	82.96	3.19
Q Total (cfs)	708.00	Flow (cfs)	142.73	557.10	8.17
Top Width (ft)	126.83	Top Width (ft)	94.17	29.48	3.18
Vel Total (ft/s)	4.79	Avg. Vel. (ft/s)	2.31	6.72	2.56
Max Chl Dpth (ft)	4.34	Hydr. Depth (ft)	0.66	2.81	1.00
Conv. Total (cfs)	6127.3	Conv. (cfs)	1235.2	4821.3	70.7
Length Wtd. (ft)	221.93	Wetted Per. (ft)	94.35	30.33	3.76
Min Ch El (ft)	2324.28	Shear (lb/sq ft)	0.55	2.28	0.71
Alpha	1.60	Stream Power (lb/ft s)	1.26	15.31	1.81
Frctn Loss (ft)	4.27	Cum Volume (acre-ft)	1.50	3.15	1.28
C & E Loss (ft)	0.03	Cum SA (acres)	1.81	1.22	1.19

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2329.24	Element			
Vel Head (ft)	0.60	Wt. n-Val.	0.057	0.050	0.060
W.S. Elev (ft)	2328.65	Reach Len. (ft)	219.69	223.83	228.11
Crit W.S. (ft)	2328.65	Flow Area (sq ft)	53.69	83.74	3.27
E.G. Slope (ft/ft)	0.013564	Area (sq ft)	53.69	83.74	3.27
Q Total (cfs)	708.00	Flow (cfs)	129.04	570.40	8.57
Top Width (ft)	110.02	Top Width (ft)	77.36	29.48	3.18
Vel Total (ft/s)	5.03	Avg. Vel. (ft/s)	2.40	6.81	2.62
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	0.69	2.84	1.03
Conv. Total (cfs)	6079.0	Conv. (cfs)	1107.9	4897.5	73.6
Length Wtd. (ft)	222.94	Wetted Per. (ft)	78.10	30.33	3.79
Min Ch El (ft)	2324.28	Shear (lb/sq ft)	0.58	2.34	0.73
Alpha	1.52	Stream Power (lb/ft s)	1.40	15.92	1.92
Frctn Loss (ft)	2.97	Cum Volume (acre-ft)	1.11	3.26	1.12
C & E Loss (ft)	0.01	Cum SA (acres)	1.19	1.22	1.05

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9876.31	9895.92	17.37	9.38	15.85	2.45	0.60	1.85
2	LOB	9895.92	9915.53	20.69	10.03	19.61	2.92	0.51	2.06
3	LOB	9915.53	9935.14	4.02	4.23	19.61	0.57	0.22	0.95
4	LOB	9935.14	9954.75	16.62	10.45	19.62	2.35	0.53	1.59
5	LOB	9954.75	9974.36	84.03	27.64	19.65	11.87	1.41	3.04
6	Chan	9974.36	9978.57	51.86	9.14	4.21	7.33	2.17	5.67
7	Chan	9978.57	9982.78	58.59	9.84	4.22	8.28	2.34	5.96
8	Chan	9982.78	9986.99	65.76	10.54	4.21	9.29	2.50	6.24
9	Chan	9986.99	9991.21	74.11	11.33	4.22	10.47	2.69	6.54
10	Chan	9991.21	9995.42	85.83	12.42	4.25	12.12	2.95	6.91
11	Chan	9995.42	9999.63	126.24	15.74	4.31	17.83	3.74	8.02
12	Chan	9999.63	10003.84	94.70	13.95	4.91	13.38	3.31	6.79
13	ROB	10003.84	10011.07	8.17	3.19	3.76	1.15	1.00	2.56

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9895.92	9915.53	20.08	9.80	19.21	2.84	0.53	2.05
2	LOB	9915.53	9935.14	4.82	4.76	19.61	0.68	0.24	1.01
3	LOB	9935.14	9954.75	17.93	10.97	19.62	2.53	0.56	1.63
4	LOB	9954.75	9974.36	86.21	28.16	19.65	12.18	1.44	3.06
5	Chan	9974.36	9978.57	53.36	9.26	4.21	7.54	2.20	5.77
6	Chan	9978.57	9982.78	60.20	9.95	4.22	8.50	2.36	6.05
7	Chan	9982.78	9986.99	67.48	10.66	4.21	9.53	2.53	6.33
8	Chan	9986.99	9991.21	75.96	11.44	4.22	10.73	2.72	6.64
9	Chan	9991.21	9995.42	87.85	12.53	4.25	12.41	2.97	7.01
10	Chan	9995.42	9999.63	128.79	15.85	4.31	18.19	3.76	8.12
11	Chan	9999.63	10003.84	96.77	14.06	4.91	13.67	3.34	6.88
12	ROB	10003.84	10011.07	8.57	3.27	3.79	1.21	1.03	2.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 0.688

INPUT
Description: 22nd Street
Station Elevation Data num= 70

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9845.1	2324.01	9847.47	2323.83	9848.6	2323.64	9854.49	2323.43	9855.38	2323.27
9855.65	2323.25	9861.75	2322.91	9862.88	2322.79	9868.13	2322.23	9868.36	2322.23
9870.99	2322.05	9874.01	2321.82	9878.86	2321.12	9881.15	2321	9888.74	2320.5
9891.63	2320.46	9901.05	2320.9	9904.05	2320.86	9907.67	2320.83	9910.73	2320.79
9912.83	2320.8	9922.02	2320.77	9922.94	2320.79	9923.74	2320.81	9925.61	2320.84
9932.89	2321.03	9935.49	2321.09	9935.83	2321.06	9936.53	2321.03	9943.5	2321.16
9944.06	2321.16	9949.85	2321.19	9953.13	2321.24	9953.35	2321.23	9963.91	2321.47
9965.39	2321.44	9974.15	2321.38	9976.15	2321.35	9980.41	2321.31	9986.72	2321.29
9990.56	2321.3	9994.39	2321.41	10003.72	2321.47	10005.61	2321.51	10012.94	2321.89
10013.24	2321.9	10014.7	2322	10023.62	2322.09	10027.59	2322.81	10035.42	2323.28
10037.83	2323.84	10039.51	2323.98	10040.58	2323.73	10043.19	2323.11	10043.48	2323.03
10043.63	2323	10043.76	2322.96	10051.3	2324.57	10054.07	2324.71	10055.37	2324.9
10056.8	2325.12	10058.2	2325.26	10058.68	2325.31	10061.54	2325.4	10062	2325.43
10062.27	2325.45	10065.19	2325.58	10071.33	2325.69	10077.66	2325.84	10081.2	2326.03

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9845.1	.055	9949.85	.03	10035.42	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9965.39	10012.94	21.33	25.9	29.98	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2322.53	Element			
Vel Head (ft)	0.48	Wt. n-Val.	0.051	0.030	0.030
W.S. Elev (ft)	2322.06	Reach Len. (ft)	21.33	25.90	29.98
Crit W.S. (ft)	2322.06	Flow Area (sq ft)	98.80	30.04	0.36
E.G. Slope (ft/ft)	0.030127	Area (sq ft)	98.80	30.04	0.36
Q Total (cfs)	708.00	Flow (cfs)	517.54	190.06	0.41
Top Width (ft)	149.30	Top Width (ft)	94.48	47.55	7.27
Vel Total (ft/s)	5.48	Avg. Vel. (ft/s)	5.24	6.33	1.15
Max Chl Dpth (ft)	1.60	Hydr. Depth (ft)	1.05	0.63	0.05
Conv. Total (cfs)	4079.0	Conv. (cfs)	2981.7	1095.0	2.4
Length Wtd. (ft)	24.27	Wetted Per. (ft)	94.58	47.56	7.28
Min Ch El (ft)	2321.29	Shear (lb/sq ft)	1.96	1.19	0.09
Alpha	1.03	Stream Power (lb/ft s)	10.29	7.52	0.11
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	1.10	2.86	1.27
C & E Loss (ft)	0.02	Cum SA (acres)	1.33	1.02	1.16

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2323.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.035	0.030	0.030
W.S. Elev (ft)	2322.82	Reach Len. (ft)	21.33	25.90	29.98
Crit W.S. (ft)	2322.82	Flow Area (sq ft)	34.40	66.29	5.90
E.G. Slope (ft/ft)	0.013063	Area (sq ft)	34.40	66.29	5.90
Q Total (cfs)	708.00	Flow (cfs)	212.60	468.23	27.17
Top Width (ft)	77.21	Top Width (ft)	22.39	47.55	7.27
Vel Total (ft/s)	6.64	Avg. Vel. (ft/s)	6.18	7.06	4.61
Max Chl Dpth (ft)	1.67	Hydr. Depth (ft)	1.54	1.39	0.81
Conv. Total (cfs)	6194.7	Conv. (cfs)	1860.2	4096.7	237.7
Length Wtd. (ft)	25.18	Wetted Per. (ft)	24.06	47.56	8.04
Min Ch El (ft)	2321.29	Shear (lb/sq ft)	1.17	1.14	0.60
Alpha	1.03	Stream Power (lb/ft s)	7.21	8.03	2.76
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	0.89	2.87	1.10
C & E Loss (ft)	0.02	Cum SA (acres)	0.94	1.02	1.02

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9869.16	9893.22	104.59	22.42	22.39	14.77	1.01	4.66
2	LOB	9893.22	9917.27	166.17	30.47	24.07	23.47	1.27	5.45
3	LOB	9917.27	9941.33	136.22	27.04	24.07	19.24	1.12	5.04
4	LOB	9941.33	9965.39	110.55	18.87	24.06	15.61	0.78	5.86
5	Chan	9965.39	9972.18	27.04	4.34	6.79	3.82	0.64	6.23
6	Chan	9972.18	9978.98	31.18	4.73	6.79	4.40	0.70	6.59
7	Chan	9978.98	9985.77	35.38	5.10	6.79	5.00	0.75	6.94
8	Chan	9985.77	9992.56	35.46	5.11	6.79	5.01	0.75	6.94
9	Chan	9992.56	9999.35	27.71	4.41	6.79	3.91	0.65	6.29
10	Chan	9999.35	10006.15	23.57	4.00	6.79	3.33	0.59	5.89
11	Chan	10006.15	10012.94	9.74	2.35	6.80	1.38	0.35	4.14
12	ROB	10012.94	10026.59	0.41	0.36	7.28	0.06	0.05	1.15

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9941.33	9965.39	212.60	34.40	24.06	30.03	1.54	6.18
2	Chan	9965.39	9972.18	67.17	9.52	6.79	9.49	1.40	7.06
3	Chan	9972.18	9978.98	71.79	9.91	6.79	10.14	1.46	7.25
4	Chan	9978.98	9985.77	76.34	10.28	6.79	10.78	1.51	7.43
5	Chan	9985.77	9992.56	76.42	10.29	6.79	10.79	1.51	7.43
6	Chan	9992.56	9999.35	67.92	9.58	6.79	9.59	1.41	7.09
7	Chan	9999.35	10006.15	63.17	9.18	6.79	8.92	1.35	6.88
8	Chan	10006.15	10012.94	45.42	7.53	6.80	6.42	1.11	6.03
9	ROB	10012.94	10026.59	27.17	5.90	8.04	3.84	0.81	4.61

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: X1
REACH: Reach 1 RS: 0.684

INPUT
Description: 22nd Street
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9847.213	2323.229	850.223	2323.129	853.403	2322.939	857.783	2322.499	862.963	2322.02
9865.753	2321.929	869.663	2321.479	874.113	2321.439	880.013	2321.039	883.493	2320.83
9890.283	2320.629	896.433	2320.629	899.173	2320.579	903.473	2320.619	905.723	2320.61
9910.203	2320.849	911.883	2320.859	919.733	2320.939	927.073	2321.029	927.903	2321.02
9932.893	2321.29	935.203	2321.229	938.953	2321.269	943.883	2321.429	944.063	2321.42
9947.173	2321.429	947.773	2321.399	954.833	2321.279	955.753	2321.229	958.773	2321.01
9967.073	2320.529	968.803	2320.419	972.993	2320.189	981.443	2319.979	981.703	2319.98
9982.033	2319.989	983.563	2319.68	9986.99	2319.053	9999.243	2316.811	0014.23	2319.35
10014.4	2319.381	0014.84	2319.371	0024.76	2319.221	0025.73	2319.581	0029.22	2320.4
10033.51	2321.54	10036.6	2322.31	0041.55	2323.151	0041.74	2323.141	0054.89	2323.51

10078.6 2324.17 10083.3 2324.29

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9847.213	.039	967.073	.06	9986.99	.05	10014.23	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.99	10014.23	96.77	118.45	136.94	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2321.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.053	0.050	0.055
W.S. Elev (ft)	2320.90	Reach Len. (ft)	96.77	118.45	136.94
Crit W.S. (ft)	2320.90	Flow Area (sq ft)	25.46	78.53	21.89
E.G. Slope (ft/ft)	0.014359	Area (sq ft)	25.46	78.53	21.89
Q Total (cfs)	708.00	Flow (cfs)	63.61	560.79	83.60
Top Width (ft)	104.46	Top Width (ft)	60.37	27.24	16.86
Vel Total (ft/s)	5.62	Avg. Vel. (ft/s)	2.50	7.14	3.82
Max Chl Dpth (ft)	4.09	Hydr. Depth (ft)	0.42	2.88	1.30
Conv. Total (cfs)	5908.5	Conv. (cfs)	530.9	4679.9	697.7
Length Wtd. (ft)	118.19	Wetted Per. (ft)	60.49	27.66	17.08
Min Ch El (ft)	2316.81	Shear (lb/sq ft)	0.38	2.55	1.15
Alpha	1.35	Stream Power (lb/ft s)	0.94	18.18	4.39
Frctn Loss (ft)	1.49	Cum Volume (acre-ft)	1.07	2.83	1.26
C & E Loss (ft)	0.03	Cum SA (acres)	1.29	1.00	1.16

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2321.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.059	0.050	0.055
W.S. Elev (ft)	2320.89	Reach Len. (ft)	96.77	118.45	136.94
Crit W.S. (ft)	2320.89	Flow Area (sq ft)	18.53	78.23	5.79
E.G. Slope (ft/ft)	0.018350	Area (sq ft)	18.53	78.23	5.79
Q Total (cfs)	708.00	Flow (cfs)	55.71	629.94	22.35
Top Width (ft)	56.67	Top Width (ft)	25.66	27.24	3.77
Vel Total (ft/s)	6.90	Avg. Vel. (ft/s)	3.01	8.05	3.86
Max Chl Dpth (ft)	4.08	Hydr. Depth (ft)	0.72	2.87	1.53
Conv. Total (cfs)	5226.5	Conv. (cfs)	411.3	4650.2	165.0
Length Wtd. (ft)	117.51	Wetted Per. (ft)	25.79	27.66	5.34
Min Ch El (ft)	2316.81	Shear (lb/sq ft)	0.82	3.24	1.24
Alpha	1.23	Stream Power (lb/ft s)	2.47	26.09	4.80
Frctn Loss (ft)	2.16	Cum Volume (acre-ft)	0.88	2.83	1.10
C & E Loss (ft)	0.02	Cum SA (acres)	0.93	1.00	1.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9875.17	9903.12	11.15	4.94	20.79	1.57	0.24	2.26
2	LOB	9903.12	9931.08	2.54	1.70	13.30	0.36	0.13	1.49
3	LOB	9931.08	9959.04						
4	LOB	9959.04	9986.99	49.92	18.82	26.40	7.05	0.72	2.65
5	Chan	9986.99	9990.88	49.49	8.56	3.96	6.99	2.20	5.78
6	Chan	9990.88	9994.77	78.99	11.33	3.96	11.16	2.91	6.97
7	Chan	9994.77	9998.67	113.76	14.10	3.96	16.07	3.62	8.07
8	Chan	9998.67	10002.56	125.37	14.94	3.95	17.71	3.84	8.39
9	Chan	10002.56	10006.45	92.35	12.43	3.95	13.04	3.20	7.43
10	Chan	10006.45	10010.34	62.82	9.87	3.95	8.87	2.54	6.37
11	Chan	10010.34	10014.23	38.02	7.30	3.95	5.37	1.88	5.21
12	ROB	10014.23	10028.04	81.66	20.68	13.94	11.53	1.50	3.95
13	ROB	10028.04	10041.86	1.94	1.21	3.14	0.27	0.40	1.61

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9959.04	9986.99	55.71	18.53	25.79	7.87	0.72	3.01
2	Chan	9986.99	9990.88	55.47	8.52	3.96	7.83	2.19	6.51
3	Chan	9990.88	9994.77	88.72	11.29	3.96	12.53	2.90	7.86
4	Chan	9994.77	9998.67	127.93	14.06	3.96	18.07	3.61	9.10
5	Chan	9998.67	10002.56	141.02	14.89	3.95	19.92	3.83	9.47
6	Chan	10002.56	10006.45	103.78	12.39	3.95	14.66	3.18	8.37
7	Chan	10006.45	10010.34	70.48	9.82	3.95	9.96	2.52	7.17
8	Chan	10010.34	10014.23	42.55	7.26	3.95	6.01	1.86	5.86
9	ROB	10014.23	10028.04	22.35	5.79	5.34	3.16	1.53	3.86

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 0.661

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9858.386	2319.05	9861.346	2318.66	9863.086	2318.29	9865.676	2318.29	9867.786	2317.62
9873.896	2316.29	9886.026	2316.49	9887.746	2316.53	9899.736	2316.49	9906.136	2316.3
9911.316	2316.29	9914.156	2316.16	9927.216	2315.71	9928.196	2315.75	9930.536	2315.75
9940.836	2315.94	9977.656	2316.62	9978.876	2316.53	9982.446	2316.29	9984.426	2316.17
9987	2315.46	9987.976	2315.2	9987.98	2315.19	10000.45	2311.65	10008	2313.92
10011.81	2315.04	10019.68	2314.94	10021.5	2314.96	10025.4	2315.55	10041.9	2318.23
10051.1	2318.24	10056.7	2318.24						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9858.386	.06	9987.98	.05	10011.81	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.98	10011.81	148.33	174	198.62	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2317.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2316.70	Reach Len. (ft)	148.33	174.00	198.62
Crit W.S. (ft)	2316.70	Flow Area (sq ft)	57.25	78.88	26.36
E.G. Slope (ft/ft)	0.011119	Area (sq ft)	57.25	78.88	26.36
Q Total (cfs)	708.00	Flow (cfs)	93.12	534.30	80.58
Top Width (ft)	160.74	Top Width (ft)	116.24	23.83	20.67
Vel Total (ft/s)	4.36	Avg. Vel. (ft/s)	1.63	6.77	3.06
Max Chl Dpth (ft)	5.05	Hydr. Depth (ft)	0.49	3.31	1.28
Conv. Total (cfs)	6714.4	Conv. (cfs)	883.1	5067.0	764.2
Length Wtd. (ft)	172.61	Wetted Per. (ft)	116.46	24.82	20.81
Min Ch El (ft)	2311.65	Shear (lb/sq ft)	0.34	2.21	0.88
Alpha	1.90	Stream Power (lb/ft s)	0.56	14.94	2.69
Frctn Loss (ft)	2.43	Cum Volume (acre-ft)	0.98	2.61	1.18
C & E Loss (ft)	0.03	Cum SA (acres)	1.10	0.93	1.10

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2317.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.07	Wt. n-Val.	0.060	0.050	
W.S. Elev (ft)	2316.78	Reach Len. (ft)	148.33	174.00	198.62
Crit W.S. (ft)	2316.78	Flow Area (sq ft)	12.79	80.80	
E.G. Slope (ft/ft)	0.018378	Area (sq ft)	12.79	80.80	
Q Total (cfs)	708.00	Flow (cfs)	24.52	683.48	
Top Width (ft)	52.81	Top Width (ft)	28.98	23.83	
Vel Total (ft/s)	7.56	Avg. Vel. (ft/s)	1.92	8.46	
Max Chl Dpth (ft)	5.13	Hydr. Depth (ft)	0.44	3.39	
Conv. Total (cfs)	5222.6	Conv. (cfs)	180.9	5041.8	
Length Wtd. (ft)	172.32	Wetted Per. (ft)	29.64	26.56	
Min Ch El (ft)	2311.65	Shear (lb/sq ft)	0.50	3.49	
Alpha	1.21	Stream Power (lb/ft s)	0.95	29.52	
Frctn Loss (ft)	3.50	Cum Volume (acre-ft)	0.84	2.61	1.09
C & E Loss (ft)	0.01	Cum SA (acres)	0.87	0.93	1.01

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9858.39	9884.31	5.36	4.45	12.62	0.76	0.35	1.20
2	LOB	9884.31	9910.22	8.07	7.59	25.92	1.14	0.29	1.06
3	LOB	9910.22	9936.14	41.31	20.23	25.93	5.84	0.78	2.04
4	LOB	9936.14	9962.06	27.25	15.75	25.92	3.85	0.61	1.73
5	LOB	9962.06	9987.98	11.14	9.23	26.07	1.57	0.36	1.21
6	Chan	9987.98	9991.39	31.16	6.76	3.54	4.40	1.99	4.61
7	Chan	9991.39	9994.79	60.40	10.06	3.54	8.53	2.96	6.00
8	Chan	9994.79	9998.19	96.88	13.36	3.54	13.68	3.92	7.25
9	Chan	9998.19	10001.60	134.42	16.27	3.54	18.99	4.78	8.26
10	Chan	10001.60	10005.00	107.93	14.28	3.55	15.24	4.19	7.56
11	Chan	10005.00	10008.41	67.72	10.79	3.55	9.57	3.17	6.27
12	Chan	10008.41	10011.81	35.78	7.36	3.55	5.05	2.16	4.86
13	ROB	10011.81	10020.79	52.95	15.41	8.98	7.48	1.72	3.44
14	ROB	10020.79	10029.77	27.11	10.35	9.08	3.83	1.15	2.62
15	ROB	10029.77	10038.74	0.52	0.60	2.75	0.07	0.22	0.87

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9936.14	9962.06	2.71	1.46	3.57	0.38	0.48	1.85
2	LOB	9962.06	9987.98	21.81	11.33	26.07	3.08	0.44	1.93
3	Chan	9987.98	9991.39	41.68	7.04	3.54	5.89	2.07	5.92
4	Chan	9991.39	9994.79	79.07	10.34	3.54	11.17	3.04	7.65
5	Chan	9994.79	9998.19	125.44	13.63	3.54	17.72	4.00	9.20
6	Chan	9998.19	10001.60	172.99	16.54	3.54	24.43	4.86	10.46
7	Chan	10001.60	10005.00	139.44	14.55	3.55	19.69	4.27	9.58
8	Chan	10005.00	10008.41	88.38	11.07	3.55	12.48	3.25	7.99
9	Chan	10008.41	10011.81	36.48	7.63	5.29	5.15	2.24	4.78

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1 RS: 0.628

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9957.28	2312.75	9962.12	2310.6	9965.73	2309.03	9968.48	2309.1	9970.81	2309.15
9972.46	2309.21	9981.84	2308.82	9985.08	2308.69	9986.08	2308.5	9989.28	2307.85
9996.58	2306.51	10008.29	2307.24	10010.41	2307.32	10012.61	2307.84	10014.59	2308.266
10021.53	2309.76	10029.08	2311.39	10031.25	2311.82				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9957.28	.055	9989.28	.05	10012.61	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.28	10012.61	245.17	215.57	185.65	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2310.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.055	0.050	0.050
W.S. Elev (ft)	2310.00	Reach Len. (ft)	245.17	215.57	185.65
Crit W.S. (ft)	2310.00	Flow Area (sq ft)	27.42	68.14	10.78

E.G. Slope (ft/ft)	0.018452	Area (sq ft)	27.42	68.14	10.78
Q Total (cfs)	708.00	Flow (cfs)	104.12	558.82	45.07
Top Width (ft)	59.10	Top Width (ft)	25.77	23.33	10.01
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)	3.80	8.20	4.18
Max Chl Dpth (ft)	3.48	Hydr. Depth (ft)	1.06	2.92	1.08
Conv. Total (cfs)	5212.0	Conv. (cfs)	766.5	4113.8	331.8
Length Wtd. (ft)	216.86	Wetted Per. (ft)	26.06	23.54	10.24
Min Ch El (ft)	2306.51	Shear (lb/sq ft)	1.21	3.34	1.21
Alpha	1.27	Stream Power (lb/ft s)	4.60	27.35	5.07
Frctn Loss (ft)	4.29	Cum Volume (acre-ft)	0.83	2.32	1.10
C & E Loss (ft)	0.03	Cum SA (acres)	0.86	0.83	1.03

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2311.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.14	Wt. n-Val.	0.055	0.050	0.050
W.S. Elev (ft)	2309.99	Reach Len. (ft)	245.17	215.57	185.65
Crit W.S. (ft)	2309.99	Flow Area (sq ft)	17.55	67.97	3.10
E.G. Slope (ft/ft)	0.022499	Area (sq ft)	17.55	67.97	3.10
Q Total (cfs)	708.00	Flow (cfs)	80.53	614.48	12.99
Top Width (ft)	38.46	Top Width (ft)	13.56	23.33	1.57
Vel Total (ft/s)	7.99	Avg. Vel. (ft/s)	4.59	9.04	4.18
Max Chl Dpth (ft)	3.48	Hydr. Depth (ft)	1.29	2.91	1.98
Conv. Total (cfs)	4720.1	Conv. (cfs)	536.9	4096.6	86.6
Length Wtd. (ft)	216.94	Wetted Per. (ft)	14.56	23.54	3.41
Min Ch El (ft)	2306.51	Shear (lb/sq ft)	1.69	4.06	1.28
Alpha	1.15	Stream Power (lb/ft s)	7.77	36.67	5.34
Frctn Loss (ft)	4.84	Cum Volume (acre-ft)	0.79	2.32	1.08
C & E Loss (ft)	0.01	Cum SA (acres)	0.80	0.83	1.01

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.28	9963.68	0.00	0.01	0.18	0.00	0.04	0.36
2	LOB	9963.68	9970.08	14.67	5.02	6.59	2.07	0.79	2.92
3	LOB	9970.08	9976.48	17.16	5.46	6.41	2.42	0.85	3.14
4	LOB	9976.48	9982.88	25.62	6.94	6.40	3.62	1.08	3.69
5	LOB	9982.88	9989.28	46.66	10.00	6.49	6.59	1.56	4.67
6	Chan	9989.28	9992.61	58.82	8.17	3.39	8.31	2.45	7.20
7	Chan	9992.61	9995.95	85.29	10.21	3.39	12.05	3.06	8.36
8	Chan	9995.95	9999.28	102.61	11.35	3.35	14.49	3.41	9.04
9	Chan	9999.28	10002.61	93.25	10.70	3.34	13.17	3.21	8.71
10	Chan	10002.61	10005.94	83.44	10.01	3.34	11.79	3.00	8.33
11	Chan	10005.94	10009.28	74.23	9.33	3.34	10.48	2.80	7.95
12	Chan	10009.28	10012.61	61.16	8.37	3.39	8.64	2.51	7.31
13	ROB	10012.61	10016.34	32.38	6.54	3.81	4.57	1.75	4.95
14	ROB	10016.34	10020.07	11.68	3.55	3.81	1.65	0.95	3.29
15	ROB	10020.07	10023.79	1.01	0.70	2.61	0.14	0.28	1.44

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9970.08	9976.48	1.53	0.71	1.67	0.22	0.93	2.17
2	LOB	9976.48	9982.88	27.94	6.89	6.40	3.95	1.08	4.05
3	LOB	9982.88	9989.28	51.06	9.95	6.49	7.21	1.55	5.13
4	Chan	9989.28	9992.61	64.63	8.14	3.39	9.13	2.44	7.94
5	Chan	9992.61	9995.95	93.80	10.18	3.39	13.25	3.05	9.21
6	Chan	9995.95	9999.28	112.89	11.33	3.35	15.95	3.40	9.97
7	Chan	9999.28	10002.61	102.58	10.68	3.34	14.49	3.21	9.60
8	Chan	10002.61	10005.94	91.76	9.99	3.34	12.96	3.00	9.19
9	Chan	10005.94	10009.28	81.60	9.31	3.34	11.53	2.79	8.77
10	Chan	10009.28	10012.61	67.21	8.34	3.39	9.49	2.50	8.06
11	ROB	10012.61	10016.34	12.99	3.10	3.41	1.83	1.98	4.18

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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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 1            RS: 0.587

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9920.445 2307.739926.925  2307.49944.355 2306.519954.005 2306.049958.515 2305.87
9959.215 2306.319959.985 2306.259962.375 2305.839964.655 2305.839965.815 2305.83
9971.905  2304.6 9975.232304.013 9983.962302.4739990.435 2301.339992.815 2301.25
   10000 2301.1210001.88 2301.2610006.462302.35310011.822303.63210018.85 2305.31
10028.96 2307.69

Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9920.445     .039954.005     .065 9983.96     .0510006.46     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9983.9610006.46            113.51  139.18  165.48              .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2305.74    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               1.15    Wt. n-Val.                0.065      0.050     0.060
  W.S. Elev (ft)           2304.59    Reach Len. (ft)          113.51     139.18    165.48
  Crit W.S. (ft)           2304.59    Flow Area (sq ft)         12.68      68.82     10.47
  E.G. Slope (ft/ft)      0.021292    Area (sq ft)              12.68      68.82     10.47
  Q Total (cfs)             708.00    Flow (cfs)                43.46     624.54     39.99
  Top Width (ft)             43.85    Top Width (ft)            11.99      22.50      9.37
  Vel Total (ft/s)            7.70    Avg. Vel. (ft/s)           3.43       9.07      3.82
  Max Chl Dpth (ft)           3.47    Hydr. Depth (ft)           1.06       3.06      1.12
  Conv. Total (cfs)         4852.0    Conv. (cfs)               297.9     4280.1     274.1
  Length Wtd. (ft)          140.05    Wetted Per. (ft)          12.17      22.74      9.63
  Min Ch El (ft)           2301.12    Shear (lb/sq ft)           1.38       4.02      1.45
  Alpha                       1.25    Stream Power (lb/ft s)     4.75      36.51      5.52
  Frctn Loss (ft)             2.94    Cum Volume (acre-ft)       0.72       1.98      1.05
  C & E Loss (ft)             0.02    Cum SA (acres)             0.75       0.72      0.99


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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2305.77    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               1.20    Wt. n-Val.                0.065      0.050     0.060
  W.S. Elev (ft)           2304.57    Reach Len. (ft)          113.51     139.18    165.48
  Crit W.S. (ft)           2304.57    Flow Area (sq ft)          9.36      68.38     10.28
  E.G. Slope (ft/ft)      0.022134    Area (sq ft)               9.36      68.38     10.28
  Q Total (cfs)             708.00    Flow (cfs)                38.26     629.92     39.82
  Top Width (ft)             37.74    Top Width (ft)             5.96      22.50      9.28
  Vel Total (ft/s)            8.04    Avg. Vel. (ft/s)           4.09       9.21      3.87
  Max Chl Dpth (ft)           3.45    Hydr. Depth (ft)           1.57       3.04      1.11
  Conv. Total (cfs)         4758.9    Conv. (cfs)               257.1     4234.1     267.7
  Length Wtd. (ft)          140.14    Wetted Per. (ft)           7.10      22.74      9.54
  Min Ch El (ft)           2301.12    Shear (lb/sq ft)           1.82       4.16      1.49
  Alpha                       1.19    Stream Power (lb/ft s)     7.45      38.28      5.77
  Frctn Loss (ft)             3.00    Cum Volume (acre-ft)       0.72       1.98      1.05
  C & E Loss (ft)             0.02    Cum SA (acres)             0.74       0.72      0.99


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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent      Hydr   Velocity
                         (ft)        (ft)           (cfs)    (sq ft)      (ft)       Conv  Depth(ft)    (ft/s)
  1           LOB        9971.26     9983.96        43.46      12.68     12.17       6.14       1.06      3.43
  2           Chan       9983.96     9987.17        58.73       7.71      3.26       8.30       2.40      7.62
  3           Chan       9987.17     9990.39        83.69       9.54      3.26      11.82       2.97      8.78
```

4	Chan	9990.39	9993.60	101.37	10.63	3.22	14.32	3.31	9.53
5	Chan	9993.60	9996.82	105.16	10.87	3.22	14.85	3.38	9.67
6	Chan	9996.82	10000.03	108.16	11.05	3.21	15.28	3.44	9.78
7	Chan	10000.03	10003.25	100.01	10.60	3.26	14.13	3.30	9.43
8	Chan	10003.25	10006.46	67.41	8.42	3.30	9.52	2.62	8.01
9	ROB	10006.46	10010.96	33.64	7.64	4.63	4.75	1.70	4.40
10	ROB	10010.96	10015.46	6.35	2.81	4.63	0.90	0.62	2.26
11	ROB	10015.46	10019.96	0.01	0.02	0.38	0.00	0.04	0.38

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9971.26	9983.96	38.26	9.36	7.10	5.40	1.57	4.09
2	Chan	9983.96	9987.17	59.06	7.65	3.26	8.34	2.38	7.72
3	Chan	9987.17	9990.39	84.37	9.47	3.26	11.92	2.95	8.91
4	Chan	9990.39	9993.60	102.32	10.57	3.22	14.45	3.29	9.68
5	Chan	9993.60	9996.82	106.17	10.81	3.22	15.00	3.36	9.82
6	Chan	9996.82	10000.03	109.21	10.99	3.21	15.42	3.42	9.94
7	Chan	10000.03	10003.25	100.94	10.54	3.26	14.26	3.28	9.58
8	Chan	10003.25	10006.46	67.86	8.35	3.30	9.58	2.60	8.12
9	ROB	10006.46	10010.96	33.68	7.55	4.63	4.76	1.68	4.46
10	ROB	10010.96	10015.46	6.14	2.72	4.63	0.87	0.60	2.26
11	ROB	10015.46	10019.96	0.00	0.01	0.29	0.00	0.03	0.33

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: X1
REACH: Reach 1 RS: 0.561

INPUT
Description:
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9983.202	2304.59	9989.012	2300.35	9992.65	2298.01	79996.232	2295.72	9999.202	2295.69
10000.88	2295.67	10010.07	2297.78	10037.24	2303.93				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9983.202	.065	9992.65	.05	10010.07	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.65	10010.07	188.04	173.12	162.64	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2301.57	Element			
Vel Head (ft)	1.40	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2300.18	Reach Len. (ft)	188.04	173.12	162.64
Crit W.S. (ft)	2300.18	Flow Area (sq ft)	3.64	64.39	12.69
E.G. Slope (ft/ft)	0.020722	Area (sq ft)	3.64	64.39	12.69
Q Total (cfs)	708.00	Flow (cfs)	11.23	636.55	60.22
Top Width (ft)	31.38	Top Width (ft)	3.37	17.42	10.59
Vel Total (ft/s)	8.77	Avg. Vel. (ft/s)	3.09	9.89	4.75
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	1.08	3.70	1.20
Conv. Total (cfs)	4918.3	Conv. (cfs)	78.0	4422.0	418.3
Length Wtd. (ft)	171.31	Wetted Per. (ft)	4.00	18.33	10.86
Min Ch El (ft)	2295.67	Shear (lb/sq ft)	1.18	4.54	1.51
Alpha	1.17	Stream Power (lb/ft s)	3.63	44.92	7.18
Frctn Loss (ft)	3.95	Cum Volume (acre-ft)	0.70	1.77	1.01
C & E Loss (ft)	0.09	Cum SA (acres)	0.73	0.66	0.95

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2301.57	Element			
Vel Head (ft)	1.40	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2300.18	Reach Len. (ft)	188.04	173.12	162.64
Crit W.S. (ft)	2300.18	Flow Area (sq ft)	3.64	64.39	12.69

E.G. Slope (ft/ft)	0.020722	Area (sq ft)	3.64	64.39	12.69
Q Total (cfs)	708.00	Flow (cfs)	11.23	636.55	60.22
Top Width (ft)	31.38	Top Width (ft)	3.37	17.42	10.59
Vel Total (ft/s)	8.77	Avg. Vel. (ft/s)	3.09	9.89	4.75
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	1.08	3.70	1.20
Conv. Total (cfs)	4918.3	Conv. (cfs)	78.0	4422.0	418.3
Length Wtd. (ft)	171.31	Wetted Per. (ft)	4.00	18.33	10.86
Min Ch El (ft)	2295.67	Shear (lb/sq ft)	1.18	4.54	1.51
Alpha	1.17	Stream Power (lb/ft s)	3.63	44.92	7.18
Frctn Loss (ft)	3.95	Cum Volume (acre-ft)	0.70	1.77	1.01
C & E Loss (ft)	0.09	Cum SA (acres)	0.73	0.66	0.95

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9988.87	9990.76	1.10	0.70	1.76	0.15	0.47	1.56
2	LOB	9990.76	9992.65	10.13	2.94	2.24	1.43	1.55	3.45
3	Chan	9992.65	9995.14	56.42	7.36	2.96	7.97	2.96	7.67
4	Chan	9995.14	9997.63	112.34	10.72	2.69	15.87	4.31	10.48
5	Chan	9997.63	10000.12	126.63	11.16	2.49	17.89	4.48	11.35
6	Chan	10000.12	10002.60	119.80	10.87	2.53	16.92	4.37	11.02
7	Chan	10002.60	10005.09	95.52	9.52	2.55	13.49	3.82	10.04
8	Chan	10005.09	10007.58	72.97	8.10	2.55	10.31	3.25	9.01
9	Chan	10007.58	10010.07	52.87	6.67	2.55	7.47	2.68	7.92
10	ROB	10010.07	10015.50	52.47	9.68	5.57	7.41	1.78	5.42
11	ROB	10015.50	10020.94	7.74	3.01	5.28	1.09	0.58	2.57

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9988.87	9990.76	1.10	0.70	1.76	0.15	0.47	1.56
2	LOB	9990.76	9992.65	10.13	2.94	2.24	1.43	1.55	3.45
3	Chan	9992.65	9995.14	56.42	7.36	2.96	7.97	2.96	7.67
4	Chan	9995.14	9997.63	112.34	10.72	2.69	15.87	4.31	10.48
5	Chan	9997.63	10000.12	126.63	11.16	2.49	17.89	4.48	11.35
6	Chan	10000.12	10002.60	119.80	10.87	2.53	16.92	4.37	11.02
7	Chan	10002.60	10005.09	95.52	9.52	2.55	13.49	3.82	10.04
8	Chan	10005.09	10007.58	72.97	8.10	2.55	10.31	3.25	9.01
9	Chan	10007.58	10010.07	52.87	6.67	2.55	7.47	2.68	7.92
10	ROB	10010.07	10015.50	52.47	9.68	5.57	7.41	1.78	5.42
11	ROB	10015.50	10020.94	7.74	3.01	5.28	1.09	0.58	2.57

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.

LATERAL STRUCTURE

RIVER: X1
REACH: Reach 1 RS: 0.545

INPUT
Description:
Lateral structure position = Right overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 20
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2303.93	.05	2303.93	4.86	2303.71	4.98	2303.72	9.46	2303.43
11.19	2303.4	16.94	2303.05	21.61	2302.78	25.46	2302.66	32.9	2302.41
36.59	2302.3	36.88	2302.32	38.35	2302.25	41.27	2302.07	42.55	2302.03
48.27	2301.7	53.32	2301.74	59.8	2301.59	60.15	2301.58	64.22	2301.31
69.29	2301.1	73.06	2300.84	76.14	2300.69	78.46	2300.65	79.78	2300.52
81.36	2300.5	82.77	2300.53	86.86	2300.48	88.73	2300.48	92.99	2300.43
93.55	2300.4	98.89	2300.38	100.57	2300.38	107.15	2300.32	111.31	2300.32
116.49	2300.3	120.56	2300.34	126.8	2300.36	131.77	2300.33	137.73	2300.21
143.92	2300.1	144.53	2300.12	147.37	2300.09	147.79	2300.11	160.9	2299.64
161.32	2299.6	161.32	2299.63	161.34	2299.62	162.64	2299.55		

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: X1
REACH: Reach 1 RS: 0.528

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9969.676	2299.89	9982.776	2294.32	9984.81	2293.468	9987.12	2292.59	9987.646	2292.28
9994.796	2292.19	9996.916	2292.171	10000.87	2292.351	10004.33	2292.491	10014.78	2292.95
10016.96	2292.99	10017.72	2293.011	10020.22	2294.013	10026.42	2296.51	10031.97	2298.42
10033.48	2299.02	10035.3	2299.55						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9969.676	.06	9987.12	.051	10004.33	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.12	10004.33	49.02	33.33	13.99	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2296.08	Element			
Vel Head (ft)	1.10	Wt. n-Val.	0.060	0.050	0.050
W.S. Elev (ft)	2294.98	Reach Len. (ft)	49.02	33.33	13.99
Crit W.S. (ft)	2294.98	Flow Area (sq ft)	7.33	46.53	34.33
E.G. Slope (ft/ft)	0.025807	Area (sq ft)	7.33	46.53	34.33
Q Total (cfs)	708.00	Flow (cfs)	31.93	430.24	245.83
Top Width (ft)	41.40	Top Width (ft)	5.89	17.21	18.30
Vel Total (ft/s)	8.03	Avg. Vel. (ft/s)	4.36	9.25	7.16
Max Chl Dpth (ft)	2.81	Hydr. Depth (ft)	1.24	2.70	1.88
Conv. Total (cfs)	4407.2	Conv. (cfs)	198.8	2678.2	1530.3
Length Wtd. (ft)	28.07	Wetted Per. (ft)	6.39	17.26	18.69
Min Ch El (ft)	2292.17	Shear (lb/sq ft)	1.85	4.34	2.96
Alpha	1.10	Stream Power (lb/ft s)	8.05	40.16	21.19
Frctn Loss (ft)	0.62	Cum Volume (acre-ft)	0.67	1.55	0.92
C & E Loss (ft)	0.03	Cum SA (acres)	0.71	0.59	0.89

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2296.08	Element			
Vel Head (ft)	1.10	Wt. n-Val.	0.060	0.050	0.050
W.S. Elev (ft)	2294.98	Reach Len. (ft)	49.02	33.33	13.99
Crit W.S. (ft)	2294.98	Flow Area (sq ft)	7.33	46.53	34.33
E.G. Slope (ft/ft)	0.025807	Area (sq ft)	7.33	46.53	34.33
Q Total (cfs)	708.00	Flow (cfs)	31.93	430.24	245.83
Top Width (ft)	41.40	Top Width (ft)	5.89	17.21	18.30
Vel Total (ft/s)	8.03	Avg. Vel. (ft/s)	4.36	9.25	7.16
Max Chl Dpth (ft)	2.81	Hydr. Depth (ft)	1.24	2.70	1.88
Conv. Total (cfs)	4407.2	Conv. (cfs)	198.8	2678.2	1530.3
Length Wtd. (ft)	28.07	Wetted Per. (ft)	6.39	17.26	18.69
Min Ch El (ft)	2292.17	Shear (lb/sq ft)	1.85	4.34	2.96
Alpha	1.10	Stream Power (lb/ft s)	8.05	40.16	21.19
Frctn Loss (ft)	0.62	Cum Volume (acre-ft)	0.67	1.55	0.92
C & E Loss (ft)	0.03	Cum SA (acres)	0.71	0.59	0.89

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.14	9983.63	2.60	1.23	2.61	0.37	0.51	2.11
2	LOB	9983.63	9987.12	29.34	6.10	3.78	4.14	1.75	4.81
3	Chan	9987.12	9989.58	60.16	6.60	2.50	8.50	2.69	9.11
4	Chan	9989.58	9992.04	62.90	6.73	2.46	8.88	2.74	9.34
5	Chan	9992.04	9994.50	64.11	6.81	2.46	9.06	2.77	9.41
6	Chan	9994.50	9996.95	65.17	6.88	2.46	9.20	2.80	9.47
7	Chan	9996.95	9999.41	63.36	6.77	2.46	8.95	2.75	9.36
8	Chan	9999.41	10001.87	59.14	6.49	2.46	8.35	2.64	9.11
9	Chan	10001.87	10004.33	55.42	6.24	2.46	7.83	2.54	8.88
10	ROB	10004.33	10010.52	117.12	14.58	6.20	16.54	2.35	8.04
11	ROB	10010.52	10016.72	95.99	12.93	6.20	13.56	2.09	7.42
12	ROB	10016.72	10022.91	32.71	6.82	6.29	4.62	1.15	4.80

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.14	9983.63	2.60	1.23	2.61	0.37	0.51	2.11
2	LOB	9983.63	9987.12	29.34	6.10	3.78	4.14	1.75	4.81
3	Chan	9987.12	9989.58	60.16	6.60	2.50	8.50	2.69	9.11
4	Chan	9989.58	9992.04	62.90	6.73	2.46	8.88	2.74	9.34
5	Chan	9992.04	9994.50	64.11	6.81	2.46	9.06	2.77	9.41
6	Chan	9994.50	9996.95	65.17	6.88	2.46	9.20	2.80	9.47
7	Chan	9996.95	9999.41	63.36	6.77	2.46	8.95	2.75	9.36
8	Chan	9999.41	10001.87	59.14	6.49	2.46	8.35	2.64	9.11
9	Chan	10001.87	10004.33	55.42	6.24	2.46	7.83	2.54	8.88
10	ROB	10004.33	10010.52	117.12	14.58	6.20	16.54	2.35	8.04
11	ROB	10010.52	10016.72	95.99	12.93	6.20	13.56	2.09	7.42
12	ROB	10016.72	10022.91	32.71	6.82	6.29	4.62	1.15	4.80

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: X1
REACH: Reach 1 RS: 0.522

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9979.396	2298.21	9988.906	2292.59	9991.106	2291.17	9991.112	2291.169	9992.856	2290.79
9992.862	2290.789	9999.646	2289.67	10007.19	2290.89	10010.95	2291.511	10013.47	2292
10018.93	2292.241	10020.38	2292.31	10027.21	2292.591	10029.51	2292.681	10029.72	2292.7
10034.71	2294.541	10046.08	2298.74						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9979.396	.06	9992.86	.05	10007.19	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.86	10007.19	203.79	234.92	265.68	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2294.73	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.060	0.050	0.050
W.S. Elev (ft)	2293.72	Reach Len. (ft)	203.79	234.92	265.68
Crit W.S. (ft)	2293.72	Flow Area (sq ft)	10.18	49.62	38.06
E.G. Slope (ft/ft)	0.018889	Area (sq ft)	10.18	49.62	38.06
Q Total (cfs)	708.00	Flow (cfs)	45.68	459.78	202.54
Top Width (ft)	45.61	Top Width (ft)	5.98	14.33	25.29
Vel Total (ft/s)	7.23	Avg. Vel. (ft/s)	4.49	9.27	5.32
Max Chl Dpth (ft)	4.05	Hydr. Depth (ft)	1.70	3.46	1.50
Conv. Total (cfs)	5151.4	Conv. (cfs)	332.4	3345.4	1473.7
Length Wtd. (ft)	238.04	Wetted Per. (ft)	6.73	14.52	25.59
Min Ch El (ft)	2289.67	Shear (lb/sq ft)	1.78	4.03	1.75
Alpha	1.24	Stream Power (lb/ft s)	8.00	37.34	9.33
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	0.66	1.51	0.91
C & E Loss (ft)	0.01	Cum SA (acres)	0.70	0.58	0.89

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2294.73	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.060	0.050	0.050
W.S. Elev (ft)	2293.72	Reach Len. (ft)	203.79	234.92	265.68
Crit W.S. (ft)	2293.72	Flow Area (sq ft)	10.18	49.62	38.06
E.G. Slope (ft/ft)	0.018889	Area (sq ft)	10.18	49.62	38.06
Q Total (cfs)	708.00	Flow (cfs)	45.68	459.78	202.54
Top Width (ft)	45.61	Top Width (ft)	5.98	14.33	25.29
Vel Total (ft/s)	7.23	Avg. Vel. (ft/s)	4.49	9.27	5.32
Max Chl Dpth (ft)	4.05	Hydr. Depth (ft)	1.70	3.46	1.50

Conv. Total (cfs)	5151.4	Conv. (cfs)	332.4	3345.4	1473.7
Length Wtd. (ft)	238.04	Wetted Per. (ft)	6.73	14.52	25.59
Min Ch El (ft)	2289.67	Shear (lb/sq ft)	1.78	4.03	1.75
Alpha	1.24	Stream Power (lb/ft s)	8.00	37.34	9.33
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	0.66	1.51	0.91
C & E Loss (ft)	0.01	Cum SA (acres)	0.70	0.58	0.89

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.78	9987.48	0.09	0.11	0.70	0.01	0.18	0.84
2	LOB	9987.48	9990.17	9.23	3.15	3.14	1.30	1.17	2.93
3	LOB	9990.17	9992.86	36.36	6.93	2.89	5.14	2.57	5.25
4	Chan	9992.86	9994.91	54.29	6.34	2.07	7.67	3.10	8.56
5	Chan	9994.91	9996.96	64.54	7.04	2.08	9.12	3.44	9.17
6	Chan	9996.96	9999.00	75.41	7.72	2.07	10.65	3.77	9.76
7	Chan	9999.00	10001.05	81.54	8.09	2.07	11.52	3.95	10.07
8	Chan	10001.05	10003.10	71.57	7.48	2.07	10.11	3.66	9.56
9	Chan	10003.10	10005.14	61.13	6.81	2.07	8.63	3.33	8.98
10	Chan	10005.14	10007.19	51.30	6.13	2.07	7.25	2.99	8.37
11	ROB	10007.19	10014.97	107.47	16.94	7.88	15.18	2.18	6.34
12	ROB	10014.97	10022.75	57.11	11.54	7.78	8.07	1.48	4.95
13	ROB	10022.75	10030.52	36.66	8.87	7.84	5.18	1.14	4.13
14	ROB	10030.52	10038.30	1.31	0.71	2.09	0.18	0.36	1.85

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.78	9987.48	0.09	0.11	0.70	0.01	0.18	0.84
2	LOB	9987.48	9990.17	9.23	3.15	3.14	1.30	1.17	2.93
3	LOB	9990.17	9992.86	36.36	6.93	2.89	5.14	2.57	5.25
4	Chan	9992.86	9994.91	54.29	6.34	2.07	7.67	3.10	8.56
5	Chan	9994.91	9996.96	64.54	7.04	2.08	9.12	3.44	9.17
6	Chan	9996.96	9999.00	75.41	7.72	2.07	10.65	3.77	9.76
7	Chan	9999.00	10001.05	81.54	8.09	2.07	11.52	3.95	10.07
8	Chan	10001.05	10003.10	71.57	7.48	2.07	10.11	3.66	9.56
9	Chan	10003.10	10005.14	61.13	6.81	2.07	8.63	3.33	8.98
10	Chan	10005.14	10007.19	51.30	6.13	2.07	7.25	2.99	8.37
11	ROB	10007.19	10014.97	107.47	16.94	7.88	15.18	2.18	6.34
12	ROB	10014.97	10022.75	57.11	11.54	7.78	8.07	1.48	4.95
13	ROB	10022.75	10030.52	36.66	8.87	7.84	5.18	1.14	4.13
14	ROB	10030.52	10038.30	1.31	0.71	2.09	0.18	0.36	1.85

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: X1
REACH: Reach 1 RS: 0.476

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9945.99	2290	9951.34	2289.74	9964.07	2287.32	9965.67	2287.03	9970.76	2286.52
9975.84	2286.033	9985.57	2285.1	9988.88	2284.76	10002.17	2283.74	10004.96	2284.47
10006.64	2284.89	10010.83	2285.98	10014.53	2286.94	10023.16	2289.21	10023.22	2289.23

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9945.99	.06	9975.84	.05	10010.83	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.84	10010.83	90.47	93.3	94.92	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2288.21	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.98	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2287.23	Reach Len. (ft)	90.47	93.30	94.92
Crit W.S. (ft)	2287.21	Flow Area (sq ft)	7.31	84.05	3.00
E.G. Slope (ft/ft)	0.023329	Area (sq ft)	7.31	84.05	3.00
Q Total (cfs)	708.00	Flow (cfs)	20.61	679.27	8.12
Top Width (ft)	51.08	Top Width (ft)	11.29	34.99	4.79
Vel Total (ft/s)	7.50	Avg. Vel. (ft/s)	2.82	8.08	2.71
Max Chl Dpth (ft)	3.49	Hydr. Depth (ft)	0.65	2.40	0.63
Conv. Total (cfs)	4635.3	Conv. (cfs)	135.0	4447.2	53.1
Length Wtd. (ft)	92.64	Wetted Per. (ft)	11.36	35.38	4.96
Min Ch El (ft)	2283.74	Shear (lb/sq ft)	0.94	3.46	0.88
Alpha	1.12	Stream Power (lb/ft s)	2.64	27.97	2.39
Frctn Loss (ft)	1.93	Cum Volume (acre-ft)	0.62	1.15	0.78
C & E Loss (ft)	0.08	Cum SA (acres)	0.66	0.44	0.80

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2288.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.98	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2287.23	Reach Len. (ft)	90.47	93.30	94.92
Crit W.S. (ft)	2287.21	Flow Area (sq ft)	7.31	84.05	3.00
E.G. Slope (ft/ft)	0.023329	Area (sq ft)	7.31	84.05	3.00
Q Total (cfs)	708.00	Flow (cfs)	20.61	679.27	8.12
Top Width (ft)	51.08	Top Width (ft)	11.29	34.99	4.79
Vel Total (ft/s)	7.50	Avg. Vel. (ft/s)	2.82	8.08	2.71
Max Chl Dpth (ft)	3.49	Hydr. Depth (ft)	0.65	2.40	0.63
Conv. Total (cfs)	4635.3	Conv. (cfs)	135.0	4447.2	53.1
Length Wtd. (ft)	92.64	Wetted Per. (ft)	11.36	35.38	4.96
Min Ch El (ft)	2283.74	Shear (lb/sq ft)	0.94	3.46	0.88
Alpha	1.12	Stream Power (lb/ft s)	2.64	27.97	2.39
Frctn Loss (ft)	1.93	Cum Volume (acre-ft)	0.62	1.15	0.78
C & E Loss (ft)	0.08	Cum SA (acres)	0.66	0.44	0.80

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.90	9969.87	3.12	1.85	5.36	0.44	0.35	1.68
2	LOB	9969.87	9975.84	17.50	5.46	6.00	2.47	0.91	3.21
3	Chan	9975.84	9980.84	40.03	7.20	5.02	5.65	1.44	5.56
4	Chan	9980.84	9985.84	64.59	9.59	5.02	9.12	1.92	6.73
5	Chan	9985.84	9990.84	94.27	12.04	5.02	13.31	2.41	7.83
6	Chan	9990.84	9995.83	122.44	14.07	5.01	17.29	2.82	8.70
7	Chan	9995.83	10000.83	151.52	15.99	5.01	21.40	3.20	9.47
8	Chan	10000.83	10005.83	143.97	15.64	5.12	20.33	3.13	9.20
9	Chan	10005.83	10010.83	62.45	9.51	5.16	8.82	1.90	6.57
10	ROB	10010.83	10013.31	7.09	2.30	2.56	1.00	0.93	3.09
11	ROB	10013.31	10015.79	1.02	0.70	2.39	0.14	0.30	1.46

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.90	9969.87	3.12	1.85	5.36	0.44	0.35	1.68
2	LOB	9969.87	9975.84	17.50	5.46	6.00	2.47	0.91	3.21
3	Chan	9975.84	9980.84	40.03	7.20	5.02	5.65	1.44	5.56
4	Chan	9980.84	9985.84	64.59	9.59	5.02	9.12	1.92	6.73
5	Chan	9985.84	9990.84	94.27	12.04	5.02	13.31	2.41	7.83
6	Chan	9990.84	9995.83	122.44	14.07	5.01	17.29	2.82	8.70
7	Chan	9995.83	10000.83	151.52	15.99	5.01	21.40	3.20	9.47
8	Chan	10000.83	10005.83	143.97	15.64	5.12	20.33	3.13	9.20
9	Chan	10005.83	10010.83	62.45	9.51	5.16	8.82	1.90	6.57
10	ROB	10010.83	10013.31	7.09	2.30	2.56	1.00	0.93	3.09
11	ROB	10013.31	10015.79	1.02	0.70	2.39	0.14	0.30	1.46

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: X1
REACH: Reach 1 RS: 0.459

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9937.59	2286.7	9955.45	2286.34	9962.07	2284.66	9966.45	2283.49	9980.08	2283.21
9986.91	2283.2	9988.96	2283.13	9990.27	2283.01	10000	2282.25	10003.93	2283.091
10011.45	2284.71	10019.31	2286.31	10021.91	2286.35	10025.08	2286.41		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9937.59	.055	9990.27	.051	10003.93	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.27	10003.93	108.45	109.95	105.09	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2286.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2285.49	Reach Len. (ft)	108.45	109.95	105.09
Crit W.S. (ft)		Flow Area (sq ft)	60.25	38.90	13.52
E.G. Slope (ft/ft)	0.018718	Area (sq ft)	60.25	38.90	13.52
Q Total (cfs)	708.00	Flow (cfs)	341.46	315.96	50.58
Top Width (ft)	56.53	Top Width (ft)	31.47	13.66	11.40
Vel Total (ft/s)	6.28	Avg. Vel. (ft/s)	5.67	8.12	3.74
Max Chl Dpth (ft)	3.24	Hydr. Depth (ft)	1.91	2.85	1.19
Conv. Total (cfs)	5174.9	Conv. (cfs)	2495.8	2309.4	369.7
Length Wtd. (ft)	108.49	Wetted Per. (ft)	31.73	13.78	11.65
Min Ch El (ft)	2282.25	Shear (lb/sq ft)	2.22	3.30	1.36
Alpha	1.16	Stream Power (lb/ft s)	12.57	26.80	5.07
Frctn Loss (ft)	2.39	Cum Volume (acre-ft)	0.55	1.02	0.77
C & E Loss (ft)	0.01	Cum SA (acres)	0.62	0.39	0.78

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2286.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2285.49	Reach Len. (ft)	108.45	109.95	105.09
Crit W.S. (ft)		Flow Area (sq ft)	60.25	38.90	13.52
E.G. Slope (ft/ft)	0.018718	Area (sq ft)	60.25	38.90	13.52
Q Total (cfs)	708.00	Flow (cfs)	341.46	315.96	50.58
Top Width (ft)	56.53	Top Width (ft)	31.47	13.66	11.40
Vel Total (ft/s)	6.28	Avg. Vel. (ft/s)	5.67	8.12	3.74
Max Chl Dpth (ft)	3.24	Hydr. Depth (ft)	1.91	2.85	1.19
Conv. Total (cfs)	5174.9	Conv. (cfs)	2495.8	2309.4	369.7
Length Wtd. (ft)	108.49	Wetted Per. (ft)	31.73	13.78	11.65
Min Ch El (ft)	2282.25	Shear (lb/sq ft)	2.22	3.30	1.36
Alpha	1.16	Stream Power (lb/ft s)	12.57	26.80	5.07
Frctn Loss (ft)	2.39	Cum Volume (acre-ft)	0.55	1.02	0.77
C & E Loss (ft)	0.01	Cum SA (acres)	0.62	0.39	0.78

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9958.66	9969.20	53.80	13.12	10.65	7.60	1.26	4.10
2	LOB	9969.20	9979.73	136.10	22.80	10.54	19.22	2.16	5.97
3	LOB	9979.73	9990.27	151.56	24.33	10.54	21.41	2.31	6.23
4	Chan	9990.27	9992.22	37.70	4.99	1.96	5.32	2.56	7.56
5	Chan	9992.22	9994.17	41.54	5.29	1.96	5.87	2.71	7.86
6	Chan	9994.17	9996.12	45.49	5.58	1.96	6.43	2.86	8.15
7	Chan	9996.12	9998.08	49.60	5.88	1.96	7.01	3.01	8.44
8	Chan	9998.08	10000.03	53.84	6.18	1.96	7.60	3.17	8.72
9	Chan	10000.03	10001.98	49.32	5.91	2.00	6.97	3.03	8.35
10	Chan	10001.98	10003.93	38.48	5.09	2.00	5.43	2.61	7.56
11	ROB	10003.93	10008.16	36.55	8.23	4.33	5.16	1.95	4.44
12	ROB	10008.16	10012.39	12.91	4.41	4.32	1.82	1.04	2.93
13	ROB	10012.39	10016.62	1.12	0.88	3.00	0.16	0.30	1.28

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9958.66	9969.20	53.80	13.12	10.65	7.60	1.26	4.10
2	LOB	9969.20	9979.73	136.10	22.80	10.54	19.22	2.16	5.97
3	LOB	9979.73	9990.27	151.56	24.33	10.54	21.41	2.31	6.23
4	Chan	9990.27	9992.22	37.70	4.99	1.96	5.32	2.56	7.56
5	Chan	9992.22	9994.17	41.54	5.29	1.96	5.87	2.71	7.86
6	Chan	9994.17	9996.12	45.49	5.58	1.96	6.43	2.86	8.15
7	Chan	9996.12	9998.08	49.60	5.88	1.96	7.01	3.01	8.44
8	Chan	9998.08	10000.03	53.84	6.18	1.96	7.60	3.17	8.72
9	Chan	10000.03	10001.98	49.32	5.91	2.00	6.97	3.03	8.35
10	Chan	10001.98	10003.93	38.48	5.09	2.00	5.43	2.61	7.56
11	ROB	10003.93	10008.16	36.55	8.23	4.33	5.16	1.95	4.44
12	ROB	10008.16	10012.39	12.91	4.41	4.32	1.82	1.04	2.93
13	ROB	10012.39	10016.62	1.12	0.88	3.00	0.16	0.30	1.28

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: X1
REACH: Reach 1            RS: 0.438

INPUT
Description:
Station Elevation Data    num=      48
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9988.49 2283.68 9994.25 2281.97 9997.35 2281.0510000.16 2280.1710002.63 2280.42
 10012.5  2281.310021.29  2281.610025.29 2281.7610034.39 2281.9310034.99 2281.91
10036.21  2281.810041.22 2281.6610054.09 2281.47   10056  2281.710061.07 2282.33
10064.46  2282.710073.24 2282.8510074.69 2282.8910090.98 2283.2710091.73 2283.27
10102.63  2282.910109.47 2282.8610110.84  2282.810114.08  2282.810115.16 2282.77
 10117.4  2282.810119.26 2282.7610120.24 2282.7610121.41 2282.7610125.16  2282.8
10125.74  2282.810138.46 2282.9110140.27 2282.9310144.96 2282.9810147.19 2282.87
10158.25  2282.410163.73  2282.210164.24 2282.1810165.62 2282.1310173.44 2282.21
10176.52  2282.310184.54 2282.5910190.26 2282.99 10193.6 2283.1210196.15 2283.36
10196.28  2283.3 10197.1 2283.42 10207.4 2283.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9988.49     .06 9994.25     .0510021.29    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9994.2510021.29           197.63  188.15   169.4              .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
10090.98 10207.4 2283.44       F
Right Levee     Station=10090.98      Elevation= 2283.27
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2283.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2283.12	Reach Len. (ft)	197.63	188.15	169.40
Crit W.S. (ft)	2283.12	Flow Area (sq ft)	2.24	56.06	61.85
E.G. Slope (ft/ft)	0.026278	Area (sq ft)	2.24	56.06	61.85
Q Total (cfs)	708.00	Flow (cfs)	6.04	435.66	266.29
Top Width (ft)	94.27	Top Width (ft)	3.88	27.04	63.35
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)	2.70	7.77	4.31
Max Chl Dpth (ft)	2.95	Hydr. Depth (ft)	0.58	2.07	0.98
Conv. Total (cfs)	4367.6	Conv. (cfs)	37.3	2687.6	1642.7
Length Wtd. (ft)	178.89	Wetted Per. (ft)	4.05	27.37	63.44
Min Ch El (ft)	2280.17	Shear (lb/sq ft)	0.91	3.36	1.60
Alpha	1.27	Stream Power (lb/ft s)	2.45	26.12	6.89
Frctn Loss (ft)	4.63	Cum Volume (acre-ft)	0.48	0.90	0.68
C & E Loss (ft)	0.03	Cum SA (acres)	0.57	0.34	0.69

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2283.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2283.12	Reach Len. (ft)	197.63	188.15	169.40
Crit W.S. (ft)	2283.12	Flow Area (sq ft)	2.24	56.06	61.85
E.G. Slope (ft/ft)	0.026278	Area (sq ft)	2.24	56.06	61.85
Q Total (cfs)	708.00	Flow (cfs)	6.04	435.66	266.29
Top Width (ft)	94.27	Top Width (ft)	3.88	27.04	63.35
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)	2.70	7.77	4.31
Max Chl Dpth (ft)	2.95	Hydr. Depth (ft)	0.58	2.07	0.98
Conv. Total (cfs)	4367.6	Conv. (cfs)	37.3	2687.6	1642.7
Length Wtd. (ft)	178.89	Wetted Per. (ft)	4.05	27.37	63.44
Min Ch El (ft)	2280.17	Shear (lb/sq ft)	0.91	3.36	1.60
Alpha	1.27	Stream Power (lb/ft s)	2.45	26.12	6.89
Frctn Loss (ft)	4.63	Cum Volume (acre-ft)	0.48	0.90	0.68
C & E Loss (ft)	0.03	Cum SA (acres)	0.57	0.34	0.69

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9989.64	9990.79	0.01	0.03	0.44	0.00	0.06	0.53
2	LOB	9990.79	9991.95	0.51	0.34	1.20	0.07	0.30	1.48

3	LOB	9991.95	9993.10	1.81	0.74	1.20	0.26	0.64	2.46
4	LOB	9993.10	9994.25	3.71	1.13	1.20	0.52	0.98	3.28
5	Chan	9994.25	9998.11	43.95	6.67	4.03	6.21	1.73	6.59
6	Chan	9998.11	10001.98	95.81	10.58	3.97	13.53	2.74	9.06
7	Chan	10001.98	10005.84	88.60	10.00	3.88	12.51	2.59	8.86
8	Chan	10005.84	10009.70	69.79	8.67	3.88	9.86	2.24	8.05
9	Chan	10009.70	10013.56	53.29	7.37	3.88	7.53	1.91	7.23
10	Chan	10013.56	10017.43	44.90	6.64	3.86	6.34	1.72	6.76
11	Chan	10017.43	10021.29	39.32	6.13	3.87	5.55	1.59	6.41
12	ROB	10021.29	10056.13	240.49	49.80	34.87	33.97	1.43	4.83
13	ROB	10056.13	10090.98	25.80	12.05	28.57	3.64	0.42	2.14

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9989.64	9990.79	0.01	0.03	0.44	0.00	0.06	0.53
2	LOB	9990.79	9991.95	0.51	0.34	1.20	0.07	0.30	1.48
3	LOB	9991.95	9993.10	1.81	0.74	1.20	0.26	0.64	2.46
4	LOB	9993.10	9994.25	3.71	1.13	1.20	0.52	0.98	3.28
5	Chan	9994.25	9998.11	43.95	6.67	4.03	6.21	1.73	6.59
6	Chan	9998.11	10001.98	95.81	10.58	3.97	13.53	2.74	9.06
7	Chan	10001.98	10005.84	88.60	10.00	3.88	12.51	2.59	8.86
8	Chan	10005.84	10009.70	69.79	8.67	3.88	9.86	2.24	8.05
9	Chan	10009.70	10013.56	53.29	7.37	3.88	7.53	1.91	7.23
10	Chan	10013.56	10017.43	44.90	6.64	3.86	6.34	1.72	6.76
11	Chan	10017.43	10021.29	39.32	6.13	3.87	5.55	1.59	6.41
12	ROB	10021.29	10056.13	240.49	49.80	34.87	33.97	1.43	4.83
13	ROB	10056.13	10090.98	25.80	12.05	28.57	3.64	0.42	2.14

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

LATERAL STRUCTURE

RIVER: X1
REACH: Reach 1 RS: 0.420

INPUT
Description:
Lateral structure position = Left overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 10
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 56

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2283.7	1.61	2283.63	9.99	2283.09	14.56	2282.72	18.32	2282.37
21.9	2282	29.82	2281.69	30.34	2281.68	37.18	2281.49	45.73	2281.2
45.97	2281.2	46.28	2281.18	49.88	2281.09	54.54	2280.89	54.74	2280.88
60.76	2280.5	64.24	2280.05	64.35	2280.04	64.54	2280.04	70.19	2279.76
70.68	2279.7	77.42	2279.58	78.52	2279.54	85.58	2279.36	86.54	2279.33
87.38	2279.3	91.29	2279.25	92.06	2279.23	96.07	2279.17	101.68	2279.06
102.14	2279	109.1	2278.93	116.02	2278.75	116.03	2278.75	122.69	2278.63
122.73	2278.6	122.77	2278.63	132.28	2278.56	132.71	2278.55	141.49	2278.36
142.08	2278.3	148.11	2278.01	148.92	2277.99	154.69	2277.46	156.31	2277.41
160.91	2277	162.32	2276.98	168.83	2276.95	188.98	2276.93	189.87	2276.93
190.57	2276.9	190.89	2276.91	191.06	2276.91	191.43	2276.9	197.56	2276.67
197.63	2276.7								

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: X1
REACH: Reach 1 RS: 0.403

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9967.622	2276.67	9977.262	2276.55	9986.472	2276.31	9990.22	2275.65	29999.102	2274.08

```
9999.432 2274.02 10002.2 2274.5110007.722275.47310009.48 2275.7810018.11 2275.72
10048.17 2275.5110051.25 2275.0610056.85 2274.0610069.35 2276.4110070.71 2276.64
 10071.8 2276.6710077.36 2276.7710089.66 2277.1510090.82 2277.2110092.69 2277.22
 10094.1 2277.2410101.78  2277.310120.31 2277.4610123.89  2277.510130.62 2277.74

Manning's n Values          num=        5
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9967.622    .055  9990.2     .0510007.72     .0610051.25    .04510069.35    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9990.210007.72            156.19  136.86  123.63              .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2277.34    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.59    Wt. n-Val.                  0.055      0.050      0.052
  W.S. Elev (ft)           2276.75    Reach Len. (ft)            156.19     136.86     123.63
  Crit W.S. (ft)           2276.75    Flow Area (sq ft)            7.09      34.19      80.79
  E.G. Slope (ft/ft)      0.025460    Area (sq ft)                 7.09      34.19      80.79
  Q Total (cfs)             708.00    Flow (cfs)                  14.05     250.58     443.37
  Top Width (ft)            108.44    Top Width (ft)              22.58      17.52      68.34
  Vel Total (ft/s)            5.80    Avg. Vel. (ft/s)             1.98       7.33       5.49
  Max Chl Dpth (ft)           2.73    Hydr. Depth (ft)             0.31       1.95       1.18
  Conv. Total (cfs)         4437.1    Conv. (cfs)                  88.1     1570.4     2778.6
  Length Wtd. (ft)          132.99    Wetted Per. (ft)            22.72      17.79      68.73
  Min Ch El (ft)          2274.02     Shear (lb/sq ft)             0.50       3.05       1.87
  Alpha                       1.13    Stream Power (lb/ft s)       0.98      22.39      10.25
  Frctn Loss (ft)             2.35    Cum Volume (acre-ft)         0.45       0.70       0.40
  C & E Loss (ft)             0.02    Cum SA (acres)               0.51       0.24       0.43

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2277.34    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.59    Wt. n-Val.                  0.055      0.050      0.052
  W.S. Elev (ft)           2276.75    Reach Len. (ft)            156.19     136.86     123.63
  Crit W.S. (ft)           2276.75    Flow Area (sq ft)            7.09      34.19      80.79
  E.G. Slope (ft/ft)      0.025460    Area (sq ft)                 7.09      34.19      80.79
  Q Total (cfs)             708.00    Flow (cfs)                  14.05     250.58     443.37
  Top Width (ft)            108.44    Top Width (ft)              22.58      17.52      68.34
  Vel Total (ft/s)            5.80    Avg. Vel. (ft/s)             1.98       7.33       5.49
  Max Chl Dpth (ft)           2.73    Hydr. Depth (ft)             0.31       1.95       1.18
  Conv. Total (cfs)         4437.1    Conv. (cfs)                  88.1     1570.4     2778.6
  Length Wtd. (ft)          132.99    Wetted Per. (ft)            22.72      17.79      68.73
  Min Ch El (ft)          2274.02     Shear (lb/sq ft)             0.50       3.05       1.87
  Alpha                       1.13    Stream Power (lb/ft s)       0.98      22.39      10.25
  Frctn Loss (ft)             2.35    Cum Volume (acre-ft)         0.45       0.70       0.40
  C & E Loss (ft)             0.02    Cum SA (acres)               0.51       0.24       0.43

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 cross-section end points had to be extended vertically for the computed water surface.
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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                         (ft)        (ft)           (cfs)      (sq ft)    (ft)    Conv  Depth(ft)       (ft/s)
  1           LOB        9967.62     9972.14        0.36       0.47       4.59    0.05      0.10        0.76
  2           LOB        9972.14     9976.65        0.74       0.73       4.52    0.11      0.16        1.02
  3           LOB        9976.65     9981.17        1.45       1.08       4.52    0.20      0.24        1.34
  4           LOB        9981.17     9985.69        2.81       1.61       4.52    0.40      0.36        1.74
  5           LOB        9985.69     9990.20        8.69       3.19       4.57    1.23      0.71        2.72
  6           Chan       9990.20     9992.70       18.06       3.29       2.54    2.55      1.32        5.49
  7           Chan       9992.70     9995.21       29.27       4.40       2.54    4.13      1.76        6.65
  8           Chan       9995.21     9997.71       42.54       5.51       2.54    6.01      2.20        7.73
  9           Chan       9997.71     10000.21      56.16       6.50       2.54    7.93      2.60        8.64
  10          Chan       10000.21    10002.71      48.08       5.93       2.54    6.79      2.37        8.12
  11          Chan       10002.71    10005.22      34.18       4.83       2.54    4.83      1.93        7.08
  12          Chan       10005.22    10007.72      22.28       3.73       2.54    3.15      1.49        5.97
  13          ROB        10007.72    10032.30     104.33      25.84      24.61   14.74      1.05        4.04
  14          ROB        10032.30    10056.88     211.11      35.57      24.70   29.82      1.45        5.93
  15          ROB        10056.88    10081.46     127.92      19.38      19.42   18.07      1.01        6.60

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 cross-section end points had to be extended vertically for the computed water surface.
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
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is not a valid subcritical answer. The program defaulted to critical depth.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.62	9972.14	0.36	0.47	4.59	0.05	0.10	0.76
2	LOB	9972.14	9976.65	0.74	0.73	4.52	0.11	0.16	1.02
3	LOB	9976.65	9981.17	1.45	1.08	4.52	0.20	0.24	1.34
4	LOB	9981.17	9985.69	2.81	1.61	4.52	0.40	0.36	1.74
5	LOB	9985.69	9990.20	8.69	3.19	4.57	1.23	0.71	2.72
6	Chan	9990.20	9992.70	18.06	3.29	2.54	2.55	1.32	5.49
7	Chan	9992.70	9995.21	29.27	4.40	2.54	4.13	1.76	6.65
8	Chan	9995.21	9997.71	42.54	5.51	2.54	6.01	2.20	7.73
9	Chan	9997.71	10000.21	56.16	6.50	2.54	7.93	2.60	8.64
10	Chan	10000.21	10002.71	48.08	5.93	2.54	6.79	2.37	8.12
11	Chan	10002.71	10005.22	34.18	4.83	2.54	4.83	1.93	7.08
12	Chan	10005.22	10007.72	22.28	3.73	2.54	3.15	1.49	5.97
13	ROB	10007.72	10032.30	104.33	25.84	24.61	14.74	1.05	4.04
14	ROB	10032.30	10056.88	211.11	35.57	24.70	29.82	1.45	5.93
15	ROB	10056.88	10081.46	127.92	19.38	19.42	18.07	1.01	6.60

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 cross-section end points had to be extended vertically for the computed water surface.
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.

LATERAL STRUCTURE

RIVER: X1
REACH: Reach 1 RS: 0.390

INPUT
Description:
Lateral structure position = Left overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 10
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2276.7	.03	2276.66	14.95	2275.99	16.31	2275.96	32.2	2275.73
33.33	2275.7	34.39	2275.66	37.49	2275.5	57.41	2274.5	58.88	2274.46
62.49	2274.4	68.21	2274.24	69.01	2274.23	73.14	2274.19	80.75	2274.52
81.61	2274.5	82.28	2274.55	89.65	2274.9	95.97	2275.19	106.33	2277
144.48	2277	150.29	2274.72	154.5	2274.24	156.19	2274		

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: X1
REACH: Reach 1 RS: 0.377

INPUT
Description:
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9902.34	2274	9903.75	2274.01	9908.73	2273.86	9913.1	2273.77	9915.53	2273.73
9917.53	2273.7	9919.24	2273.65	9920.3	2273.61	9922.28	2273.55	9924.39	2273.48
9925.81	2273.4	9927.38	2273.32	9929.16	2273.19	9930.63	2273.07	9934.03	2272.72
9934.94	2272.7	9936.95	2272.48	9946.53	2271.56	9947.98	2271.64	9966.17	2272.36
9979.79	2271.9	9985.28	2271.69	9988.89	2270.92	9995.94	2269.44	9999.31	2268.71
10002.88	2269.2	10008.18	2269.93	10017.47	2270.81	10025.48	2271.57	10035.03	2272.46
10048.18	2272.35	10051.58	2272.31	10063.29	2271.63	10069.69	2271.44	10074.63	2271.98
10085.02	2273.32	10096.89	2273.71	10099.19	2273.78	10106.29	2273.83	10122.08	2273.96
10128.25	2274								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9902.34	.06	9988.89	.05	10017.47	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.89	10017.47	169.24	184.26	196.28	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2273.17	Element			
Vel Head (ft)	0.54	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2272.64	Reach Len. (ft)	169.24	184.26	196.28
Crit W.S. (ft)	2272.64	Flow Area (sq ft)	35.32	79.74	42.66
E.G. Slope (ft/ft)	0.012977	Area (sq ft)	35.32	79.74	42.66
Q Total (cfs)	708.00	Flow (cfs)	75.53	530.59	101.88
Top Width (ft)	144.17	Top Width (ft)	53.35	28.58	62.23
Vel Total (ft/s)	4.49	Avg. Vel. (ft/s)	2.14	6.65	2.39
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)	0.66	2.79	0.69
Conv. Total (cfs)	6215.0	Conv. (cfs)	663.0	4657.6	894.3
Length Wtd. (ft)	182.85	Wetted Per. (ft)	53.51	28.94	62.41

Min Ch El (ft)	2268.71	Shear (lb/sq ft)	0.53	2.23	0.55
Alpha	1.71	Stream Power (lb/ft s)	1.14	14.86	1.32
Frctn Loss (ft)	2.64	Cum Volume (acre-ft)	0.38	0.52	0.22
C & E Loss (ft)	0.02	Cum SA (acres)	0.38	0.17	0.25

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2273.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2272.64	Reach Len. (ft)	169.24	184.26	196.28
Crit W.S. (ft)	2272.64	Flow Area (sq ft)	35.32	79.74	42.66
E.G. Slope (ft/ft)	0.012977	Area (sq ft)	35.32	79.74	42.66
Q Total (cfs)	708.00	Flow (cfs)	75.53	530.59	101.88
Top Width (ft)	144.17	Top Width (ft)	53.35	28.58	62.23
Vel Total (ft/s)	4.49	Avg. Vel. (ft/s)	2.14	6.65	2.39
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)	0.66	2.79	0.69
Conv. Total (cfs)	6215.0	Conv. (cfs)	663.0	4657.6	894.3
Length Wtd. (ft)	182.85	Wetted Per. (ft)	53.51	28.94	62.41
Min Ch El (ft)	2268.71	Shear (lb/sq ft)	0.53	2.23	0.55
Alpha	1.71	Stream Power (lb/ft s)	1.14	14.86	1.32
Frctn Loss (ft)	2.64	Cum Volume (acre-ft)	0.38	0.52	0.22
C & E Loss (ft)	0.02	Cum SA (acres)	0.38	0.17	0.25

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9919.65	9936.96	0.05	0.11	1.43	0.01	0.08	0.49
2	LOB	9936.96	9954.27	28.47	12.86	17.36	4.02	0.74	2.21
3	LOB	9954.27	9971.58	13.06	8.05	17.32	1.84	0.46	1.62
4	LOB	9971.58	9988.89	33.95	14.30	17.40	4.79	0.83	2.37
5	Chan	9988.89	9992.97	47.37	8.75	4.17	6.69	2.14	5.41
6	Chan	9992.97	9997.06	83.01	12.25	4.17	11.72	3.00	6.77
7	Chan	9997.06	10001.14	119.86	15.24	4.15	16.93	3.73	7.86
8	Chan	10001.14	10005.22	102.69	13.85	4.12	14.50	3.39	7.41
9	Chan	10005.22	10009.30	76.31	11.59	4.12	10.78	2.84	6.59
10	Chan	10009.30	10013.39	58.04	9.82	4.10	8.20	2.40	5.91
11	Chan	10013.39	10017.47	43.31	8.24	4.10	6.12	2.02	5.26
12	ROB	10017.47	10039.63	47.77	18.37	22.23	6.75	0.83	2.60
13	ROB	10039.63	10061.78	16.14	9.57	22.17	2.28	0.43	1.69
14	ROB	10061.78	10083.94	37.98	14.72	18.00	5.36	0.82	2.58

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9919.65	9936.96	0.05	0.11	1.43	0.01	0.08	0.49
2	LOB	9936.96	9954.27	28.47	12.86	17.36	4.02	0.74	2.21
3	LOB	9954.27	9971.58	13.06	8.05	17.32	1.84	0.46	1.62
4	LOB	9971.58	9988.89	33.95	14.30	17.40	4.79	0.83	2.37
5	Chan	9988.89	9992.97	47.37	8.75	4.17	6.69	2.14	5.41
6	Chan	9992.97	9997.06	83.01	12.25	4.17	11.72	3.00	6.77
7	Chan	9997.06	10001.14	119.86	15.24	4.15	16.93	3.73	7.86
8	Chan	10001.14	10005.22	102.69	13.85	4.12	14.50	3.39	7.41
9	Chan	10005.22	10009.30	76.31	11.59	4.12	10.78	2.84	6.59
10	Chan	10009.30	10013.39	58.04	9.82	4.10	8.20	2.40	5.91
11	Chan	10013.39	10017.47	43.31	8.24	4.10	6.12	2.02	5.26
12	ROB	10017.47	10039.63	47.77	18.37	22.23	6.75	0.83	2.60
13	ROB	10039.63	10061.78	16.14	9.57	22.17	2.28	0.43	1.69
14	ROB	10061.78	10083.94	37.98	14.72	18.00	5.36	0.82	2.58

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: 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: X1
REACH: Reach 1 RS: 0.342

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9917.819	2268.49	9922.709	2267.42	9924.309	2267.29	9927.559	2267.29	9930.489	2267
9932.579	2266.89	9935.359	2266.79	9943.939	2266.01	9945.119	2265.91	9948.679	2265.57
9948.879	2265.57	9950.489	2265.61	9959.209	2265.85	9960.439	2265.91	9962.959	2265.84
9978.329	2264.92	9983.899	2264.59	9987.639	2264.36	9987.64	2264.36	9990.929	2263.76
9997.549	2262.49	10007.91	2264.49	10013.55	2265.45	10021.86	2265.99	10029.49	2266.47
10030.65	2266.52	10036.11	2266.72	10038.29	2266.87	10038.43	2266.88		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9917.819	.055	9987.64	.05	10007.91	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.64	10007.91	106.74	104.71	94	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2267.23	Element			
Vel Head (ft)	0.71	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2266.52	Reach Len. (ft)	106.74	104.71	94.00
Crit W.S. (ft)	2266.52	Flow Area (sq ft)	50.87	61.89	17.55
E.G. Slope (ft/ft)	0.016102	Area (sq ft)	50.87	61.89	17.55
Q Total (cfs)	708.00	Flow (cfs)	176.22	485.40	46.38
Top Width (ft)	92.93	Top Width (ft)	50.00	20.27	22.66
Vel Total (ft/s)	5.43	Avg. Vel. (ft/s)	3.46	7.84	2.64
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)	1.02	3.05	0.77
Conv. Total (cfs)	5579.4	Conv. (cfs)	1388.7	3825.2	365.5
Length Wtd. (ft)	104.83	Wetted Per. (ft)	50.09	20.64	22.78
Min Ch El (ft)	2262.49	Shear (lb/sq ft)	1.02	3.01	0.77
Alpha	1.55	Stream Power (lb/ft s)	3.54	23.64	2.05
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	0.21	0.22	0.09
C & E Loss (ft)	0.08	Cum SA (acres)	0.18	0.07	0.05

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2267.23	Element			
Vel Head (ft)	0.71	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2266.52	Reach Len. (ft)	106.74	104.71	94.00
Crit W.S. (ft)	2266.52	Flow Area (sq ft)	50.87	61.89	17.55
E.G. Slope (ft/ft)	0.016102	Area (sq ft)	50.87	61.89	17.55
Q Total (cfs)	708.00	Flow (cfs)	176.22	485.40	46.38
Top Width (ft)	92.93	Top Width (ft)	50.00	20.27	22.66
Vel Total (ft/s)	5.43	Avg. Vel. (ft/s)	3.46	7.84	2.64
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)	1.02	3.05	0.77
Conv. Total (cfs)	5579.4	Conv. (cfs)	1388.7	3825.2	365.5
Length Wtd. (ft)	104.83	Wetted Per. (ft)	50.09	20.64	22.78
Min Ch El (ft)	2262.49	Shear (lb/sq ft)	1.02	3.01	0.77
Alpha	1.55	Stream Power (lb/ft s)	3.54	23.64	2.05
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	0.21	0.22	0.09
C & E Loss (ft)	0.08	Cum SA (acres)	0.18	0.07	0.05

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9931.78	9945.75	3.82	2.65	8.13	0.54	0.33	1.44
2	LOB	9945.75	9959.71	29.54	11.23	13.98	4.17	0.80	2.63
3	LOB	9959.71	9973.68	36.52	12.76	13.98	5.16	0.91	2.86
4	LOB	9973.68	9987.64	106.34	24.23	13.99	15.02	1.74	4.39
5	Chan	9987.64	9990.54	46.33	7.01	2.94	6.54	2.42	6.61
6	Chan	9990.54	9993.43	64.71	8.57	2.95	9.14	2.96	7.55
7	Chan	9993.43	9996.33	86.15	10.18	2.95	12.17	3.51	8.47
8	Chan	9996.33	9999.22	101.75	11.25	2.95	14.37	3.88	9.05
9	Chan	9999.22	10002.12	82.48	9.91	2.95	11.65	3.42	8.32
10	Chan	10002.12	10005.01	61.30	8.30	2.95	8.66	2.86	7.39
11	Chan	10005.01	10007.91	42.68	6.68	2.95	6.03	2.31	6.39
12	ROB	10007.91	10014.01	30.51	9.21	6.19	4.31	1.51	3.31
13	ROB	10014.01	10020.12	11.54	5.12	6.12	1.63	0.84	2.26

14	ROB	10020.12	10026.22	4.01	2.71	6.12	0.57	0.44	1.48
15	ROB	10026.22	10032.33	0.31	0.51	4.36	0.04	0.12	0.61

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9931.78	9945.75	3.82	2.65	8.13	0.54	0.33	1.44
2	LOB	9945.75	9959.71	29.54	11.23	13.98	4.17	0.80	2.63
3	LOB	9959.71	9973.68	36.52	12.76	13.98	5.16	0.91	2.86
4	LOB	9973.68	9987.64	106.34	24.23	13.99	15.02	1.74	4.39
5	Chan	9987.64	9990.54	46.33	7.01	2.94	6.54	2.42	6.61
6	Chan	9990.54	9993.43	64.71	8.57	2.95	9.14	2.96	7.55
7	Chan	9993.43	9996.33	86.15	10.18	2.95	12.17	3.51	8.47
8	Chan	9996.33	9999.22	101.75	11.25	2.95	14.37	3.88	9.05
9	Chan	9999.22	10002.12	82.48	9.91	2.95	11.65	3.42	8.32
10	Chan	10002.12	10005.01	61.30	8.30	2.95	8.66	2.86	7.39
11	Chan	10005.01	10007.91	42.68	6.68	2.95	6.03	2.31	6.39
12	ROB	10007.91	10014.01	30.51	9.21	6.19	4.31	1.51	3.31
13	ROB	10014.01	10020.12	11.54	5.12	6.12	1.63	0.84	2.26
14	ROB	10020.12	10026.22	4.01	2.71	6.12	0.57	0.44	1.48
15	ROB	10026.22	10032.33	0.31	0.51	4.36	0.04	0.12	0.61

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: X1
REACH: Reach 1 RS: 0.322

INPUT
Description: 20th Street
Station Elevation Data num= 65

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9833	2266	9833.81	2265.96	9837.11	2265.71	9840.98	2265.5	9842.25	2265.42
9843.7	2265.3	9844.81	2265.27	9848.64	2265.15	9851.14	2265.01	9851.4	2265.01
9858.33	2264.8	9859.57	2264.82	9878.46	2264.58	9878.82	2264.56	9878.85	2264.56
9887.35	2264	9890.75	2263.77	9894.97	2263.35	9898.05	2263.1	9909.32	2262.34
9910.26	2262.3	9924.78	2262.03	9925.15	2262.04	9949.52	2263.15	9955.52	2263.06
9956.48	2263	9978.55	2263.32	9980.32	2263.37	9980.62	2263.38	9986.07	2263.14
9987.1	2263.1	9987.76	2262.94	9988.49	2262.741	9993.3	2261.43	9999.41	2261.7
10003.05	2261.73	10010.07	2261.81	10010.73	2261.81	10016.67	2261.97	10020.7	2262.27
10024.24	2262.53	10025.65	2262.51	10026.68	2262.44	10030.31	2262.55	10049.88	2263.42
10052.18	2263.47	10055.07	2263.61	10057.58	2263.71	10061.05	2263.77	10066.18	2264.01
10068.18	2264.11	10069.52	2264.21	10076.62	2264.39	10078.4	2264.48	10083.14	2264.55
10084.04	2264.56	10089.45	2264.81	10089.83	2264.82	10092.8	2264.93	10093.14	2264.96
10096.41	2265.19	10098.7	2265.41	10100.62	2265.36	10106	2265.39	10108.45	2265.38

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9833	.05	9898.05	.03	9949.52	.055	9988.49	.05	10024.24	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.49	10024.24	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2263.94	Element			
Vel Head (ft)	0.46	Wt. n-Val.	0.032	0.050	0.055
W.S. Elev (ft)	2263.48	Reach Len. (ft)			
Crit W.S. (ft)	2263.48	Flow Area (sq ft)	63.96	56.72	15.71
E.G. Slope (ft/ft)	0.018356	Area (sq ft)	63.96	56.72	15.71
Q Total (cfs)	708.00	Flow (cfs)	359.59	309.44	38.97
Top Width (ft)	158.70	Top Width (ft)	94.81	35.75	28.13
Vel Total (ft/s)	5.19	Avg. Vel. (ft/s)	5.62	5.46	2.48
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)	0.67	1.59	0.56
Conv. Total (cfs)	5225.8	Conv. (cfs)	2654.2	2284.0	287.7
Length Wtd. (ft)		Wetted Per. (ft)	94.94	35.96	28.16
Min Ch El (ft)	2261.43	Shear (lb/sq ft)	0.77	1.81	0.64
Alpha	1.09	Stream Power (lb/ft s)	4.34	9.86	1.59
Frctn Loss (ft)	2.06	Cum Volume (acre-ft)	0.07	0.08	0.05
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: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2263.94	Element			
Vel Head (ft)	0.46	Wt. n-Val.	0.032	0.050	0.055
W.S. Elev (ft)	2263.48	Reach Len. (ft)			
Crit W.S. (ft)	2263.48	Flow Area (sq ft)	63.96	56.72	15.71
E.G. Slope (ft/ft)	0.018356	Area (sq ft)	63.96	56.72	15.71
Q Total (cfs)	708.00	Flow (cfs)	359.59	309.44	38.97
Top Width (ft)	158.70	Top Width (ft)	94.81	35.75	28.13
Vel Total (ft/s)	5.19	Avg. Vel. (ft/s)	5.62	5.46	2.48
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)	0.67	1.59	0.56
Conv. Total (cfs)	5225.8	Conv. (cfs)	2654.2	2284.0	287.7
Length Wtd. (ft)		Wetted Per. (ft)	94.94	35.96	28.16
Min Ch El (ft)	2261.43	Shear (lb/sq ft)	0.77	1.81	0.64
Alpha	1.09	Stream Power (lb/ft s)	4.34	9.86	1.59
Frctn Loss (ft)	2.06	Cum Volume (acre-ft)	0.07	0.08	0.05
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: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9864.10	9895.20	0.08	0.11	1.53	0.01	0.08	0.71
2	LOB	9895.20	9926.29	219.01	31.61	31.14	30.93	1.02	6.93
3	LOB	9926.29	9957.39	125.68	23.03	31.13	17.75	0.74	5.46
4	LOB	9957.39	9988.49	14.82	9.20	31.15	2.09	0.30	1.61
5	Chan	9988.49	9993.60	36.05	7.31	5.28	5.09	1.43	4.93
6	Chan	9993.60	9998.70	60.27	9.82	5.11	8.51	1.92	6.14
7	Chan	9998.70	10003.81	52.30	9.02	5.11	7.39	1.77	5.80
8	Chan	10003.81	10008.92	49.89	8.76	5.11	7.05	1.72	5.69
9	Chan	10008.92	10014.03	46.72	8.43	5.11	6.60	1.65	5.54
10	Chan	10014.03	10019.13	39.13	7.58	5.11	5.53	1.48	5.16
11	Chan	10019.13	10024.24	25.07	5.80	5.12	3.54	1.14	4.32
12	ROB	10024.24	10041.08	36.42	13.39	16.86	5.14	0.80	2.72
13	ROB	10041.08	10057.92	2.55	2.32	11.30	0.36	0.21	1.10

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: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9864.10	9895.20	0.08	0.11	1.53	0.01	0.08	0.71
2	LOB	9895.20	9926.29	219.01	31.61	31.14	30.93	1.02	6.93
3	LOB	9926.29	9957.39	125.68	23.03	31.13	17.75	0.74	5.46
4	LOB	9957.39	9988.49	14.82	9.20	31.15	2.09	0.30	1.61
5	Chan	9988.49	9993.60	36.05	7.31	5.28	5.09	1.43	4.93
6	Chan	9993.60	9998.70	60.27	9.82	5.11	8.51	1.92	6.14
7	Chan	9998.70	10003.81	52.30	9.02	5.11	7.39	1.77	5.80
8	Chan	10003.81	10008.92	49.89	8.76	5.11	7.05	1.72	5.69
9	Chan	10008.92	10014.03	46.72	8.43	5.11	6.60	1.65	5.54
10	Chan	10014.03	10019.13	39.13	7.58	5.11	5.53	1.48	5.16
11	Chan	10019.13	10024.24	25.07	5.80	5.12	3.54	1.14	4.32
12	ROB	10024.24	10041.08	36.42	13.39	16.86	5.14	0.80	2.72
13	ROB	10041.08	10057.92	2.55	2.32	11.30	0.36	0.21	1.10

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: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
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: X1
REACH: Overflow 1 RS: 0.174

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9944.6	2276.5	9946.02	2276.51	9953.73	2276.48	9980.33	2276.32	9984.87	2276.35
9989.02	2276.4	9990.48	2276.37	9993.22	2275.62	9995.78	2275.07	10003.18	2275.74
10009.7	2276.31	10019.93	2276.31	10026.49	2276.29	10032.92	2276.26	10046	2276.12
10052.66	2276.31	10052.68	2276.31	10052.7	2276.31	10052.74	2276.31	10052.8	2276.31
10059.46	2276.31	10066.41	2276.32	10066.46	2276.32	10066.5	2276.32	10067.86	2276.33
10072.14	2276.31	10074.97	2276.33	10076.45	2276.37	10079.53	2276.43	10079.86	2276.43
10080.1	2276.41	10085.46	2276.55	10085.94	2276.54	10091.92	2276.55	10095.25	2276.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9944.6	.04	9990.48	.045	10009.7	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.48	10009.7	60	119.3	130	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2276.77	Element			
Vel Head (ft)	0.09	Wt. n-Val.	0.040	0.045	0.040
W.S. Elev (ft)	2276.68	Reach Len. (ft)	60.00	119.30	130.00
Crit W.S. (ft)	2276.61	Flow Area (sq ft)	12.53	19.09	30.68
E.G. Slope (ft/ft)	0.008972	Area (sq ft)	12.53	19.09	30.68
Q Total (cfs)	132.00	Flow (cfs)	18.50	59.01	54.49
Top Width (ft)	150.65	Top Width (ft)	45.88	19.22	85.55
Vel Total (ft/s)	2.12	Avg. Vel. (ft/s)	1.48	3.09	1.78
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)	0.27	0.99	0.36
Conv. Total (cfs)	1393.5	Conv. (cfs)	195.3	623.0	575.2
Length Wtd. (ft)	117.49	Wetted Per. (ft)	46.07	19.43	85.59
Min Ch El (ft)	2275.07	Shear (lb/sq ft)	0.15	0.55	0.20
Alpha	1.31	Stream Power (lb/ft s)	0.22	1.70	0.36
Frctn Loss (ft)	2.06	Cum Volume (acre-ft)	0.15	0.54	0.26
C & E Loss (ft)	0.01	Cum SA (acres)	0.25	0.64	0.56

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2276.77	Element			
Vel Head (ft)	0.09	Wt. n-Val.	0.040	0.045	0.040
W.S. Elev (ft)	2276.68	Reach Len. (ft)	60.00	119.30	130.00
Crit W.S. (ft)	2276.61	Flow Area (sq ft)	12.53	19.09	30.68
E.G. Slope (ft/ft)	0.008972	Area (sq ft)	12.53	19.09	30.68
Q Total (cfs)	132.00	Flow (cfs)	18.50	59.01	54.49
Top Width (ft)	150.65	Top Width (ft)	45.88	19.22	85.55
Vel Total (ft/s)	2.12	Avg. Vel. (ft/s)	1.48	3.09	1.78
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)	0.27	0.99	0.36
Conv. Total (cfs)	1393.5	Conv. (cfs)	195.3	623.0	575.2
Length Wtd. (ft)	117.49	Wetted Per. (ft)	46.07	19.43	85.59
Min Ch El (ft)	2275.07	Shear (lb/sq ft)	0.15	0.55	0.20
Alpha	1.31	Stream Power (lb/ft s)	0.22	1.70	0.36
Frctn Loss (ft)	2.06	Cum Volume (acre-ft)	0.15	0.54	0.26
C & E Loss (ft)	0.01	Cum SA (acres)	0.25	0.64	0.56

Warning: The cross-section end points had to be extended vertically for the computed water surface.
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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.60	9953.78	1.89	1.71	9.36	1.43	0.19	1.11
2	LOB	9953.78	9962.95	2.74	2.12	9.18	2.07	0.23	1.29
3	LOB	9962.95	9972.13	3.91	2.63	9.18	2.96	0.29	1.49
4	LOB	9972.13	9981.31	5.23	3.13	9.18	3.96	0.34	1.67
5	LOB	9981.31	9990.48	4.73	2.94	9.18	3.58	0.32	1.61
6	Chan	9990.48	9993.23	4.22	1.89	2.85	3.20	0.69	2.23
7	Chan	9993.23	9995.97	13.21	3.73	2.80	10.00	1.36	3.54
8	Chan	9995.97	9998.72	15.29	4.04	2.76	11.58	1.47	3.78
9	Chan	9998.72	10001.46	11.23	3.36	2.76	8.51	1.22	3.34
10	Chan	10001.46	10004.21	7.70	2.68	2.76	5.84	0.98	2.88
11	Chan	10004.21	10006.95	4.83	2.02	2.76	3.66	0.74	2.39
12	Chan	10006.95	10009.70	2.54	1.38	2.76	1.92	0.50	1.85
13	ROB	10009.70	10026.81	11.45	6.51	17.11	8.68	0.38	1.76
14	ROB	10026.81	10043.92	15.49	7.80	17.11	11.74	0.46	1.99
15	ROB	10043.92	10061.03	14.40	7.47	17.12	10.91	0.44	1.93
16	ROB	10061.03	10078.14	10.36	6.12	17.11	7.85	0.36	1.69
17	ROB	10078.14	10095.25	2.78	2.79	17.14	2.11	0.16	1.00

Warning: The cross-section end points had to be extended vertically for the computed water surface.
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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.60	9953.78	1.89	1.71	9.36	1.43	0.19	1.11
2	LOB	9953.78	9962.95	2.74	2.12	9.18	2.07	0.23	1.29
3	LOB	9962.95	9972.13	3.91	2.63	9.18	2.96	0.29	1.49
4	LOB	9972.13	9981.31	5.23	3.13	9.18	3.96	0.34	1.67
5	LOB	9981.31	9990.48	4.73	2.94	9.18	3.58	0.32	1.61
6	Chan	9990.48	9993.23	4.22	1.89	2.85	3.20	0.69	2.23
7	Chan	9993.23	9995.97	13.21	3.73	2.80	10.00	1.36	3.54
8	Chan	9995.97	9998.72	15.29	4.04	2.76	11.58	1.47	3.78
9	Chan	9998.72	10001.46	11.23	3.36	2.76	8.51	1.22	3.34
10	Chan	10001.46	10004.21	7.70	2.68	2.76	5.84	0.98	2.88
11	Chan	10004.21	10006.95	4.83	2.02	2.76	3.66	0.74	2.39
12	Chan	10006.95	10009.70	2.54	1.38	2.76	1.92	0.50	1.85
13	ROB	10009.70	10026.81	11.45	6.51	17.11	8.68	0.38	1.76
14	ROB	10026.81	10043.92	15.49	7.80	17.11	11.74	0.46	1.99
15	ROB	10043.92	10061.03	14.40	7.47	17.12	10.91	0.44	1.93
16	ROB	10061.03	10078.14	10.36	6.12	17.11	7.85	0.36	1.69
17	ROB	10078.14	10095.25	2.78	2.79	17.14	2.11	0.16	1.00

Warning: The cross-section end points had to be extended vertically for the computed water surface.
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.

LATERAL STRUCTURE

RIVER: X1
REACH: Overflow 1 RS: 0.173

INPUT
Description:
Lateral structure position = Left overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 10
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2276.5	4.46	2276.34	7.95	2276.33	12.97	2276.27	23.62	2276.08
23.99	2276.1	30.68	2275.9	32.75	2275.82	33.25	2275.8	33.34	2275.8
44.41	2275.4	45.13	2275.38	45.76	2275.38	51.59	2275.29	53.16	2275.28
54.82	2275.3	58.17	2275.17	59.19	2275.04	60	2275		

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: X1
REACH: Overflow 1 RS: 0.151

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9928.97	2275	9933.69	2274.85	9957.1	2274.44	9966.71	2273.88	9967.86	2273.87
9969.53	2273.9	9981.82	2273.89	9982.57	2273.87	9987.69	2273.9	9992.36	2273.87
10014.27	2273.9	10014.9	2273.87	10015.43	2273.86	10017.62	2273.86	10028.49	2274.25
10035.99	2274.5	10045.38	2274.39						

Manning's n Values num= 1

Sta	n Val
9928.97	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9957.11	10028.49	155	159.19	140	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
10035.99	10045.38	2274.5

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2274.70	Element			
Vel Head (ft)	0.24	Wt. n-Val.	0.050	0.050	0.050
W.S. Elev (ft)	2274.46	Reach Len. (ft)	155.00	159.19	140.00
Crit W.S. (ft)	2274.46	Flow Area (sq ft)	0.02	36.72	0.68
E.G. Slope (ft/ft)	0.042880	Area (sq ft)	0.02	36.72	0.68
Q Total (cfs)	146.00	Flow (cfs)	0.00	145.06	0.94
Top Width (ft)	79.09	Top Width (ft)	1.31	71.39	6.39
Vel Total (ft/s)	3.90	Avg. Vel. (ft/s)	0.31	3.95	1.38
Max Chl Dpth (ft)	0.60	Hydr. Depth (ft)	0.01	0.51	0.11

Conv. Total (cfs)	705.1	Conv. (cfs)	0.0	700.5	4.5
Length Wtd. (ft)	156.80	Wetted Per. (ft)	1.31	71.42	6.39
Min Ch El (ft)	2273.86	Shear (lb/sq ft)	0.03	1.38	0.28
Alpha	1.02	Stream Power (lb/ft s)	0.01	5.44	0.39
Frctn Loss (ft)	5.08	Cum Volume (acre-ft)	0.14	0.47	0.21
C & E Loss (ft)	0.01	Cum SA (acres)	0.22	0.52	0.43

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2274.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.050	0.050	0.050
W.S. Elev (ft)	2274.46	Reach Len. (ft)	155.00	159.19	140.00
Crit W.S. (ft)	2274.46	Flow Area (sq ft)	0.02	36.72	0.68
E.G. Slope (ft/ft)	0.042880	Area (sq ft)	0.02	36.72	0.68
Q Total (cfs)	146.00	Flow (cfs)	0.00	145.06	0.94
Top Width (ft)	79.09	Top Width (ft)	1.31	71.39	6.39
Vel Total (ft/s)	3.90	Avg. Vel. (ft/s)	0.31	3.95	1.38
Max Chl Dpth (ft)	0.60	Hydr. Depth (ft)	0.01	0.51	0.11
Conv. Total (cfs)	705.1	Conv. (cfs)	0.0	700.5	4.5
Length Wtd. (ft)	156.80	Wetted Per. (ft)	1.31	71.42	6.39
Min Ch El (ft)	2273.86	Shear (lb/sq ft)	0.03	1.38	0.28
Alpha	1.02	Stream Power (lb/ft s)	0.01	5.44	0.39
Frctn Loss (ft)	5.08	Cum Volume (acre-ft)	0.14	0.47	0.21
C & E Loss (ft)	0.01	Cum SA (acres)	0.22	0.52	0.43

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9951.47	9957.10	0.00	0.02	1.31	0.00	0.01	0.31
2	Chan	9957.10	9967.30	9.15	3.26	10.21	6.26	0.32	2.81
3	Chan	9967.30	9977.50	24.02	5.81	10.20	16.46	0.57	4.14
4	Chan	9977.50	9987.70	24.44	5.87	10.20	16.74	0.58	4.16
5	Chan	9987.70	9997.90	25.05	5.96	10.20	17.15	0.58	4.21
6	Chan	9997.90	10008.09	24.64	5.90	10.20	16.88	0.58	4.18
7	Chan	10008.09	10018.29	24.67	5.90	10.20	16.89	0.58	4.18
8	Chan	10018.29	10028.49	13.09	4.04	10.20	8.97	0.40	3.24
9	ROB	10028.49	10031.87	0.83	0.53	3.38	0.57	0.16	1.57
10	ROB	10031.87	10035.25	0.11	0.15	3.01	0.08	0.05	0.73

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9951.47	9957.10	0.00	0.02	1.31	0.00	0.01	0.31
2	Chan	9957.10	9967.30	9.15	3.26	10.21	6.26	0.32	2.81
3	Chan	9967.30	9977.50	24.02	5.81	10.20	16.46	0.57	4.14
4	Chan	9977.50	9987.70	24.44	5.87	10.20	16.74	0.58	4.16
5	Chan	9987.70	9997.90	25.05	5.96	10.20	17.15	0.58	4.21
6	Chan	9997.90	10008.09	24.64	5.90	10.20	16.88	0.58	4.18
7	Chan	10008.09	10018.29	24.67	5.90	10.20	16.89	0.58	4.18
8	Chan	10018.29	10028.49	13.09	4.04	10.20	8.97	0.40	3.24
9	ROB	10028.49	10031.87	0.83	0.53	3.38	0.57	0.16	1.57
10	ROB	10031.87	10035.25	0.11	0.15	3.01	0.08	0.05	0.73

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: X1
REACH: Overflow 1 RS: 0.121

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9813.93	2270.13	9814.54	2270.12	9836.83	2269.98	9840.15	2270	9842.34	2270.01
9846.37	2270.01	9853.18	2269.9	9861.64	2269.8	9892.33	2269.6	9898.01	2269.4
9900.44	2269.33	9900.78	2269.33	9904.09	2269.25	9904.38	2269.3	9904.77	2269.25
9907.53	2269.21	9907.67	2269.2	9910.01	2269.25	9913.83	2269.3	9914.05	2269.25
9917.94	2269.21	9921.43	2269.25	9924.64	2269.32	9926	2269.3	9927.33	2269.35
9928.06	2269.37	9928.59	2269.37	9970.98	2268.23	9972.65	2268.2	9974.06	2268.08
9983.29	2267.52	9989.73	2267.25	9997.33	2266.89	9998.05	2266.8	10015.63	2267.29
10018.11	2267.35	10021.6	2267.39	10047.03	2267.72	10051.54	2267.71	10058.42	2267.7
10061.16	2267.7	10069.5	2267.81	10075.77	2267.94	10077.33	2268.11	10077.88	2268.14
10078.95	2268.24	10079.18	2268.26	10086.41	2268.88	10090.66	2269.21	10092.99	2269.4
10095.77	2269.61	10097.16	2269.71	10099.09	2269.81	10100.87	2269.91	10105.85	2269.92
10109.64	2270.16	10110.25	2270.12	10111.09	2270.03	10111.39	2270		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9813.93	.06	9989.73	.05	10018.11	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.73	10018.11	140	147.35	120	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2268.14	Element			
Vel Head (ft)	0.22	Wt. n-Val.	0.060	0.050	0.050
W.S. Elev (ft)	2267.92	Reach Len. (ft)	140.00	147.35	120.00
Crit W.S. (ft)	2267.92	Flow Area (sq ft)	4.82	24.22	16.24
E.G. Slope (ft/ft)	0.025323	Area (sq ft)	4.82	24.22	16.24
Q Total (cfs)	146.00	Flow (cfs)	9.74	103.00	33.27
Top Width (ft)	98.43	Top Width (ft)	13.10	28.38	56.95
Vel Total (ft/s)	3.22	Avg. Vel. (ft/s)	2.02	4.25	2.05
Max Chl Dpth (ft)	1.12	Hydr. Depth (ft)	0.37	0.85	0.29
Conv. Total (cfs)	917.5	Conv. (cfs)	61.2	647.2	209.1
Length Wtd. (ft)	140.79	Wetted Per. (ft)	13.12	28.40	56.95
Min Ch El (ft)	2266.80	Shear (lb/sq ft)	0.58	1.35	0.45
Alpha	1.35	Stream Power (lb/ft s)	1.17	5.73	0.92
Frctn Loss (ft)	2.97	Cum Volume (acre-ft)	0.13	0.36	0.18
C & E Loss (ft)	0.02	Cum SA (acres)	0.19	0.34	0.32

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2268.14	Element			
Vel Head (ft)	0.22	Wt. n-Val.	0.060	0.050	0.050
W.S. Elev (ft)	2267.92	Reach Len. (ft)	140.00	147.35	120.00
Crit W.S. (ft)	2267.92	Flow Area (sq ft)	4.82	24.22	16.24
E.G. Slope (ft/ft)	0.025323	Area (sq ft)	4.82	24.22	16.24
Q Total (cfs)	146.00	Flow (cfs)	9.74	103.00	33.27
Top Width (ft)	98.43	Top Width (ft)	13.10	28.38	56.95
Vel Total (ft/s)	3.22	Avg. Vel. (ft/s)	2.02	4.25	2.05
Max Chl Dpth (ft)	1.12	Hydr. Depth (ft)	0.37	0.85	0.29
Conv. Total (cfs)	917.5	Conv. (cfs)	61.2	647.2	209.1
Length Wtd. (ft)	140.79	Wetted Per. (ft)	13.12	28.40	56.95
Min Ch El (ft)	2266.80	Shear (lb/sq ft)	0.58	1.35	0.45
Alpha	1.35	Stream Power (lb/ft s)	1.17	5.73	0.92
Frctn Loss (ft)	2.97	Cum Volume (acre-ft)	0.13	0.36	0.18
C & E Loss (ft)	0.02	Cum SA (acres)	0.19	0.34	0.32

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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.57	9989.73	9.73	4.82	13.12	6.67	0.37	2.02
2	Chan	9989.73	9993.79	12.20	3.12	4.06	8.36	0.77	3.91
3	Chan	9993.79	9997.84	17.75	3.91	4.06	12.16	0.96	4.54
4	Chan	9997.84	10001.89	21.20	4.35	4.06	14.52	1.07	4.88
5	Chan	10001.89	10005.95	17.63	3.89	4.06	12.08	0.96	4.53
6	Chan	10005.95	10010.00	14.32	3.44	4.06	9.81	0.85	4.17
7	Chan	10010.00	10014.06	11.28	2.98	4.06	7.73	0.73	3.79
8	Chan	10014.06	10018.11	8.60	2.53	4.06	5.89	0.62	3.40
9	ROB	10018.11	10036.77	21.60	8.54	18.66	14.80	0.46	2.53
10	ROB	10036.77	10055.42	7.74	4.61	18.66	5.30	0.25	1.68
11	ROB	10055.42	10074.08	3.93	3.07	18.66	2.69	0.16	1.28
12	ROB	10074.08	10092.73	0.00	0.01	0.98	0.00	0.01	0.21

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.57	9989.73	9.73	4.82	13.12	6.67	0.37	2.02
2	Chan	9989.73	9993.79	12.20	3.12	4.06	8.36	0.77	3.91
3	Chan	9993.79	9997.84	17.75	3.91	4.06	12.16	0.96	4.54
4	Chan	9997.84	10001.89	21.20	4.35	4.06	14.52	1.07	4.88
5	Chan	10001.89	10005.95	17.63	3.89	4.06	12.08	0.96	4.53
6	Chan	10005.95	10010.00	14.32	3.44	4.06	9.81	0.85	4.17
7	Chan	10010.00	10014.06	11.28	2.98	4.06	7.73	0.73	3.79
8	Chan	10014.06	10018.11	8.60	2.53	4.06	5.89	0.62	3.40
9	ROB	10018.11	10036.77	21.60	8.54	18.66	14.80	0.46	2.53
10	ROB	10036.77	10055.42	7.74	4.61	18.66	5.30	0.25	1.68
11	ROB	10055.42	10074.08	3.93	3.07	18.66	2.69	0.16	1.28
12	ROB	10074.08	10092.73	0.00	0.01	0.98	0.00	0.01	0.21

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: 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: X1
REACH: Overflow 1 RS: 0.092

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9900.88	2264.1	9927.43	2264.33	9934.52	2263.91	9948.41	2263.64	9950.93	2263.6
9956.42	2263.4	9967.57	2263.57	9969.3	2263.39	9972.47	2263.23	9974.78	2263.14
9977.12	2263	9987.77	2262.13	9996.43	2261.38	9999.24	2261.63	10003.72	2261.74
10011.75	2261.9	10013.81	2261.98	10014.59	2262	10014.8	2262.01	10015	2262.01
10016.09	2262	10018.94	2262.06	10037.14	2262.35	10056.52	2262.68	10059.22	2262.88
10059.92	2262.9	10060.21	2262.92	10064.6	2263.12	10070.17	2263.33	10074.07	2263.5
10075.97	2263.5	10078.48	2263.62	10079.68	2263.64	10084.28	2263.84	10087.27	2263.79
10088.92	2263.8	10090.6	2263.86	10092.43	2263.84	10101.93	2263.94	10106.59	2264.01

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9900.88	.05	9987.77	.05	10018.94	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.77	10018.94	245	240.57	215	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2262.94	Element			
Vel Head (ft)	0.16	Wt. n-Val.	0.050	0.055	0.050
W.S. Elev (ft)	2262.77	Reach Len. (ft)	245.00	240.57	215.00
Crit W.S. (ft)	2262.63	Flow Area (sq ft)	2.53	30.49	15.37
E.G. Slope (ft/ft)	0.017870	Area (sq ft)	2.53	30.49	15.37
Q Total (cfs)	146.00	Flow (cfs)	4.70	108.38	32.92
Top Width (ft)	77.86	Top Width (ft)	7.86	31.17	38.83
Vel Total (ft/s)	3.02	Avg. Vel. (ft/s)	1.86	3.55	2.14
Max Chl Dpth (ft)	1.39	Hydr. Depth (ft)	0.32	0.98	0.40
Conv. Total (cfs)	1092.2	Conv. (cfs)	35.1	810.7	246.3
Length Wtd. (ft)	237.41	Wetted Per. (ft)	7.89	31.22	38.84
Min Ch El (ft)	2261.38	Shear (lb/sq ft)	0.36	1.09	0.44
Alpha	1.16	Stream Power (lb/ft s)	0.66	3.87	0.95
Frctn Loss (ft)	4.17	Cum Volume (acre-ft)	0.12	0.26	0.14
C & E Loss (ft)	0.01	Cum SA (acres)	0.16	0.23	0.19

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2262.94	Element			
Vel Head (ft)	0.16	Wt. n-Val.	0.050	0.055	0.050
W.S. Elev (ft)	2262.77	Reach Len. (ft)	245.00	240.57	215.00
Crit W.S. (ft)	2262.63	Flow Area (sq ft)	2.53	30.49	15.37
E.G. Slope (ft/ft)	0.017870	Area (sq ft)	2.53	30.49	15.37
Q Total (cfs)	146.00	Flow (cfs)	4.70	108.38	32.92
Top Width (ft)	77.86	Top Width (ft)	7.86	31.17	38.83
Vel Total (ft/s)	3.02	Avg. Vel. (ft/s)	1.86	3.55	2.14
Max Chl Dpth (ft)	1.39	Hydr. Depth (ft)	0.32	0.98	0.40
Conv. Total (cfs)	1092.2	Conv. (cfs)	35.1	810.7	246.3
Length Wtd. (ft)	237.41	Wetted Per. (ft)	7.89	31.22	38.84

Min Ch El (ft)	2261.38	Shear (lb/sq ft)	0.36	1.09	0.44
Alpha	1.16	Stream Power (lb/ft s)	0.66	3.87	0.95
Frctn Loss (ft)	4.17	Cum Volume (acre-ft)	0.12	0.26	0.14
C & E Loss (ft)	0.01	Cum SA (acres)	0.16	0.23	0.19

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9970.39	9987.77	4.70	2.53	7.89	3.22	0.32	1.86
2	Chan	9987.77	9992.22	11.70	3.72	4.47	8.01	0.84	3.14
3	Chan	9992.22	9996.68	21.98	5.43	4.47	15.06	1.22	4.05
4	Chan	9996.68	10001.13	21.36	5.34	4.46	14.63	1.20	4.00
5	Chan	10001.13	10005.58	16.97	4.64	4.45	11.62	1.04	3.65
6	Chan	10005.58	10010.03	14.55	4.24	4.45	9.97	0.95	3.44
7	Chan	10010.03	10014.49	12.00	3.77	4.46	8.22	0.85	3.18
8	Chan	10014.49	10018.94	9.82	3.35	4.45	6.73	0.75	2.94
9	ROB	10018.94	10036.47	24.91	10.04	17.53	17.06	0.57	2.48
10	ROB	10036.47	10054.00	7.77	4.99	17.53	5.32	0.28	1.56
11	ROB	10054.00	10071.53	0.25	0.35	3.77	0.17	0.09	0.73

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9970.39	9987.77	4.70	2.53	7.89	3.22	0.32	1.86
2	Chan	9987.77	9992.22	11.70	3.72	4.47	8.01	0.84	3.14
3	Chan	9992.22	9996.68	21.98	5.43	4.47	15.06	1.22	4.05
4	Chan	9996.68	10001.13	21.36	5.34	4.46	14.63	1.20	4.00
5	Chan	10001.13	10005.58	16.97	4.64	4.45	11.62	1.04	3.65
6	Chan	10005.58	10010.03	14.55	4.24	4.45	9.97	0.95	3.44
7	Chan	10010.03	10014.49	12.00	3.77	4.46	8.22	0.85	3.18
8	Chan	10014.49	10018.94	9.82	3.35	4.45	6.73	0.75	2.94
9	ROB	10018.94	10036.47	24.91	10.04	17.53	17.06	0.57	2.48
10	ROB	10036.47	10054.00	7.77	4.99	17.53	5.32	0.28	1.56
11	ROB	10054.00	10071.53	0.25	0.35	3.77	0.17	0.09	0.73

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: X1
REACH: Overflow 1 RS: 0.047

INPUT
Description:
Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9883.7	2260.3	9888.37	2260.08	9890.8	2259.91	9896.17	2259.58	9899.51	2259.43
9904.8	2259.2	9909.19	2259.1	9911.39	2258.91	9913.66	2258.9	9917.99	2258.87
9921.14	2258.8	9922.79	2258.75	9923.8	2258.73	9924.09	2258.72	9924.57	2258.8
9925.08	2259.1	9951.56	2258.83	9952.98	2258.78	9953.03	2258.72	9953.15	2258.72
9953.85	2258.7	9956.2	2258.58	9967.04	2257.92	9971.51	2257.85	9977.52	2257.88
9978.65	2257.9	9980.35	2257.86	9985.44	2257.78	9987.72	2257.76	9988.47	2257.75
9989.61	2257.7	9998.43	2257.66	9998.53	2257.66	9998.67	2257.66	10002.23	2257.69
10006.99	2257.8	10007.11	2257.8	10007.22	2257.8	10007.66	2257.82	10019.29	2258.18
10021.47	2258.3	10028.2	2258.41	10029.77	2258.51	10033.21	2258.65	10039.57	2258.84
10042.57	2258.9	10046.23	2258.93	10051.14	2259.09	10055.51	2259.13	10058.93	2259.19
10064.84	2259.4	10069.95	2259.82	10071.84	2259.87	10076.57	2260.11	10082.5	2260.27
10082.58	2260.3	10083.34	2260.29	10089.91	2260.26	10096.89	2260.3	10104.27	2260.27
10110.87	2260.2	10111.81	2260.25						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9883.7	.03	9987.72	.05	10006.99	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.72	10006.99	150	154.4	145	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2258.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.030	0.050	0.050
W.S. Elev (ft)	2258.53	Reach Len. (ft)	150.00	154.40	145.00
Crit W.S. (ft)	2258.48	Flow Area (sq ft)	16.96	15.89	8.46
E.G. Slope (ft/ft)	0.017296	Area (sq ft)	16.96	15.89	8.46
Q Total (cfs)	146.00	Flow (cfs)	74.49	54.62	16.89
Top Width (ft)	73.04	Top Width (ft)	30.62	19.27	23.15
Vel Total (ft/s)	3.53	Avg. Vel. (ft/s)	4.39	3.44	2.00
Max Chl Dpth (ft)	0.87	Hydr. Depth (ft)	0.55	0.82	0.37
Conv. Total (cfs)	1110.1	Conv. (cfs)	566.4	415.3	128.4
Length Wtd. (ft)	152.73	Wetted Per. (ft)	30.64	19.27	23.17
Min Ch El (ft)	2257.66	Shear (lb/sq ft)	0.60	0.89	0.39
Alpha	1.18	Stream Power (lb/ft s)	2.63	3.06	0.79
Frctn Loss (ft)	4.19	Cum Volume (acre-ft)	0.06	0.13	0.08

C & E Loss (ft)	0.01	Cum SA (acres)	0.05	0.10	0.04

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2258.75	Element			
Vel Head (ft)	0.23	Wt. n-Val.	0.030	0.050	0.050
W.S. Elev (ft)	2258.53	Reach Len. (ft)	150.00	154.40	145.00
Crit W.S. (ft)	2258.48	Flow Area (sq ft)	16.96	15.89	8.46
E.G. Slope (ft/ft)	0.017296	Area (sq ft)	16.96	15.89	8.46
Q Total (cfs)	146.00	Flow (cfs)	74.49	54.62	16.89
Top Width (ft)	73.04	Top Width (ft)	30.62	19.27	23.15
Vel Total (ft/s)	3.53	Avg. Vel. (ft/s)	4.39	3.44	2.00
Max Chl Dpth (ft)	0.87	Hydr. Depth (ft)	0.55	0.82	0.37
Conv. Total (cfs)	1110.1	Conv. (cfs)	566.4	415.3	128.4
Length Wtd. (ft)	152.73	Wetted Per. (ft)	30.64	19.27	23.17
Min Ch El (ft)	2257.66	Shear (lb/sq ft)	0.60	0.89	0.39
Alpha	1.18	Stream Power (lb/ft s)	2.63	3.06	0.79
Frctn Loss (ft)	4.19	Cum Volume (acre-ft)	0.06	0.13	0.08
C & E Loss (ft)	0.01	Cum SA (acres)	0.05	0.10	0.04

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9946.11	9966.92	8.06	2.93	9.83	5.52	0.30	2.75
2	LOB	9966.92	9987.72	66.43	14.03	20.81	45.50	0.67	4.74
3	Chan	9987.72	9990.47	7.42	2.20	2.75	5.08	0.80	3.37
4	Chan	9990.47	9993.23	7.96	2.30	2.75	5.46	0.84	3.46
5	Chan	9993.23	9995.98	8.16	2.33	2.75	5.59	0.85	3.50
6	Chan	9995.98	9998.73	8.36	2.37	2.75	5.73	0.86	3.53
7	Chan	9998.73	10001.48	8.25	2.35	2.75	5.65	0.85	3.51
8	Chan	10001.48	10004.24	7.71	2.26	2.75	5.28	0.82	3.42
9	Chan	10004.24	10006.99	6.76	2.08	2.75	4.63	0.76	3.24
10	ROB	10006.99	10027.95	16.81	8.32	20.97	11.51	0.40	2.02
11	ROB	10027.95	10048.92	0.08	0.13	2.19	0.05	0.06	0.58

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9946.11	9966.92	8.06	2.93	9.83	5.52	0.30	2.75
2	LOB	9966.92	9987.72	66.43	14.03	20.81	45.50	0.67	4.74
3	Chan	9987.72	9990.47	7.42	2.20	2.75	5.08	0.80	3.37
4	Chan	9990.47	9993.23	7.96	2.30	2.75	5.46	0.84	3.46
5	Chan	9993.23	9995.98	8.16	2.33	2.75	5.59	0.85	3.50
6	Chan	9995.98	9998.73	8.36	2.37	2.75	5.73	0.86	3.53
7	Chan	9998.73	10001.48	8.25	2.35	2.75	5.65	0.85	3.51
8	Chan	10001.48	10004.24	7.71	2.26	2.75	5.28	0.82	3.42
9	Chan	10004.24	10006.99	6.76	2.08	2.75	4.63	0.76	3.24
10	ROB	10006.99	10027.95	16.81	8.32	20.97	11.51	0.40	2.02
11	ROB	10027.95	10048.92	0.08	0.13	2.19	0.05	0.06	0.58

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: X1
REACH: Overflow 1 RS: 0.018

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9890.87	2260.9	9899.39	2260.21	9901.63	2260.08	9901.97	2260.05	9902.41	2259.94
9902.44	2259.9	9902.56	2259.92	9902.6	2259.91	9903.92	2259.85	9906.5	2259.68
9926.32	2258.4	9928.31	2258.28	9932.4	2258.08	9934.91	2258.04	9936.55	2258.06
9937.38	2258.1	9946.17	2257.35	9960.4	2256.75	9973.05	2256.08	9976.95	2255.82
9977.4	2255.8	9978.08	2255.83	9978.77	2255.81	9979.77	2255.8	9981.24	2255.79
9983.39	2255.8	9986.17	2255.56	9986.64	2255.51	9988.79	2255.03	10000.64	2252.09
10008.57	2253.11	0011.19	2253.38	10014.77	2253.56	10021.67	2253.93	10031.25	2254.47
10038.63	2254.81	0042.76	2255.02	10048.14	2255.34	10055.32	2255.81	10055.97	2255.85
10056.58	2255.91	0070.87	2256.18	10073.82	2256.25				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9890.87	.05	9937.38	.025	9988.79	.06	10031.25	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.79	10031.25	95	95.39	95	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2254.56	Element			
Vel Head (ft)	0.35	Wt. n-Val.		0.065	
W.S. Elev (ft)	2254.21	Reach Len. (ft)	95.00	95.00	95.00
Crit W.S. (ft)	2254.10	Flow Area (sq ft)		30.94	
E.G. Slope (ft/ft)	0.050015	Area (sq ft)		30.94	
Q Total (cfs)	146.00	Flow (cfs)		146.00	
Top Width (ft)	34.53	Top Width (ft)		34.53	
Vel Total (ft/s)	4.72	Avg. Vel. (ft/s)		4.72	
Max Chl Dpth (ft)	2.12	Hydr. Depth (ft)		0.90	
Conv. Total (cfs)	652.8	Conv. (cfs)		652.8	
Length Wtd. (ft)	95.00	Wetted Per. (ft)		34.89	
Min Ch El (ft)	2252.09	Shear (lb/sq ft)		2.77	
Alpha	1.00	Stream Power (lb/ft s)		13.07	
Frctn Loss (ft)	3.19	Cum Volume (acre-ft)	0.03	0.05	0.07
C & E Loss (ft)	0.01	Cum SA (acres)			

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2254.56	Element			
Vel Head (ft)	0.35	Wt. n-Val.		0.065	
W.S. Elev (ft)	2254.21	Reach Len. (ft)	95.00	95.00	95.00
Crit W.S. (ft)	2254.10	Flow Area (sq ft)		30.94	
E.G. Slope (ft/ft)	0.050015	Area (sq ft)		30.94	
Q Total (cfs)	146.00	Flow (cfs)		146.00	
Top Width (ft)	34.53	Top Width (ft)		34.53	
Vel Total (ft/s)	4.72	Avg. Vel. (ft/s)		4.72	
Max Chl Dpth (ft)	2.12	Hydr. Depth (ft)		0.90	
Conv. Total (cfs)	652.8	Conv. (cfs)		652.8	
Length Wtd. (ft)	95.00	Wetted Per. (ft)		34.89	
Min Ch El (ft)	2252.09	Shear (lb/sq ft)		2.77	
Alpha	1.00	Stream Power (lb/ft s)		13.07	
Frctn Loss (ft)	3.19	Cum Volume (acre-ft)	0.03	0.05	0.07
C & E Loss (ft)	0.01	Cum SA (acres)			

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9988.79	9994.86	1.90	0.94	2.84	1.30	0.34	2.02
2	Chan	9994.86	10000.92	45.66	8.70	6.24	31.27	1.43	5.25
3	Chan	10000.92	10006.99	61.27	10.29	6.11	41.97	1.70	5.95
4	Chan	10006.99	10013.05	24.37	5.91	6.10	16.69	0.97	4.12
5	Chan	10013.05	10019.12	10.22	3.51	6.07	7.00	0.58	2.92
6	Chan	10019.12	10025.18	2.54	1.52	6.08	1.74	0.25	1.67
7	Chan	10025.18	10031.25	0.03	0.06	1.45	0.02	0.04	0.50

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9988.79	9994.86	1.90	0.94	2.84	1.30	0.34	2.02
2	Chan	9994.86	10000.92	45.66	8.70	6.24	31.27	1.43	5.25
3	Chan	10000.92	10006.99	61.27	10.29	6.11	41.97	1.70	5.95
4	Chan	10006.99	10013.05	24.37	5.91	6.10	16.69	0.97	4.12
5	Chan	10013.05	10019.12	10.22	3.51	6.07	7.00	0.58	2.92
6	Chan	10019.12	10025.18	2.54	1.52	6.08	1.74	0.25	1.67
7	Chan	10025.18	10031.25	0.03	0.06	1.45	0.02	0.04	0.50

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: X1
REACH: Split 1 Upper RS: 0.161

INPUT
Description: 20th Street
Both CWSEL and Energy Grade Balance with River
Station 0.309 of River X1, Reach 2.
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9953.24	2261.19	9957.84	2260.84	9958.16	2260.8	9958.77	2260.75	9965.59	2260.65

```
 9978.19 2260.44 9985.13 2260.42 9995.91  2259.910001.97 2259.6310022.72 2260.14
10030.91 2260.4510045.11 2260.5510046.62  2260.610049.29 2260.5910050.52 2260.54
10070.67 2259.9310072.64 2259.8710073.13  2259.810073.38 2259.8310074.31 2259.78
 10085.3 2259.1710094.01  2259.6 10101.9  2259.9 10117.9 2260.5810133.33  2261.4

Manning's n Values          num=        4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
 9953.24    .025 9978.19    .05510070.67     .05 10101.9    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9985.1310022.72           216.33  190.82  154.26             .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2261.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.034	0.055	0.051
W.S. Elev (ft)	2260.80	Reach Len. (ft)	216.33	190.82	154.26
Crit W.S. (ft)	2260.80	Flow Area (sq ft)	6.56	32.27	69.26
E.G. Slope (ft/ft)	0.031969	Area (sq ft)	6.56	32.27	69.26
Q Total (cfs)	485.00	Flow (cfs)	20.82	140.77	323.42
Top Width (ft)	163.96	Top Width (ft)	26.99	37.59	99.38
Vel Total (ft/s)	4.49	Avg. Vel. (ft/s)	3.17	4.36	4.67
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.24	0.86	0.70
Conv. Total (cfs)	2712.5	Conv. (cfs)	116.4	787.3	1808.8
Length Wtd. (ft)	172.92	Wetted Per. (ft)	27.00	37.61	99.46
Min Ch El (ft)	2259.63	Shear (lb/sq ft)	0.48	1.71	1.39
Alpha	1.02	Stream Power (lb/ft s)	1.54	7.47	6.49
Frctn Loss (ft)	4.84	Cum Volume (acre-ft)	0.06	0.29	0.35
C & E Loss (ft)	0.00	Cum SA (acres)	0.07	0.20	0.37

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2261.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.034	0.055	0.051
W.S. Elev (ft)	2260.80	Reach Len. (ft)	216.33	190.82	154.26
Crit W.S. (ft)	2260.80	Flow Area (sq ft)	6.56	32.27	69.26
E.G. Slope (ft/ft)	0.031969	Area (sq ft)	6.56	32.27	69.26
Q Total (cfs)	485.00	Flow (cfs)	20.82	140.77	323.42
Top Width (ft)	163.96	Top Width (ft)	26.99	37.59	99.38
Vel Total (ft/s)	4.49	Avg. Vel. (ft/s)	3.17	4.36	4.67
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.24	0.86	0.70
Conv. Total (cfs)	2712.5	Conv. (cfs)	116.4	787.3	1808.8
Length Wtd. (ft)	172.92	Wetted Per. (ft)	27.00	37.61	99.46
Min Ch El (ft)	2259.63	Shear (lb/sq ft)	0.48	1.71	1.39
Alpha	1.02	Stream Power (lb/ft s)	1.54	7.47	6.49
Frctn Loss (ft)	4.84	Cum Volume (acre-ft)	0.06	0.29	0.35
C & E Loss (ft)	0.00	Cum SA (acres)	0.07	0.20	0.37

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.24	9959.62	0.08	0.07	1.48	0.02	0.05	1.25
2	LOB	9959.62	9966.00	1.64	0.72	6.38	0.34	0.11	2.29
3	LOB	9966.00	9972.37	4.77	1.36	6.38	0.98	0.21	3.51
4	LOB	9972.37	9978.75	8.79	2.03	6.38	1.81	0.32	4.32
5	LOB	9978.75	9985.13	5.54	2.38	6.38	1.14	0.37	2.32
6	Chan	9985.13	9990.50	8.28	2.75	5.38	1.71	0.51	3.01
7	Chan	9990.50	9995.87	16.36	4.14	5.38	3.37	0.77	3.95
8	Chan	9995.87	10001.24	26.10	5.48	5.38	5.38	1.02	4.76
9	Chan	10001.24	10006.61	30.54	6.02	5.37	6.30	1.12	5.07
10	Chan	10006.61	10011.98	24.93	5.33	5.37	5.14	0.99	4.68
11	Chan	10011.98	10017.35	19.66	4.62	5.37	4.05	0.86	4.25
12	Chan	10017.35	10022.72	14.90	3.92	5.37	3.07	0.73	3.81
13	ROB	10022.72	10044.84	20.89	8.40	22.13	4.31	0.38	2.49
14	ROB	10044.84	10066.96	26.46	9.68	22.13	5.46	0.44	2.73
15	ROB	10066.96	10089.09	160.36	26.88	22.15	33.06	1.22	5.97
16	ROB	10089.09	10111.21	109.97	21.39	22.14	22.67	0.97	5.14
17	ROB	10111.21	10133.33	5.73	2.91	10.90	1.18	0.27	1.97

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.24	9959.62	0.08	0.07	1.48	0.02	0.05	1.25
2	LOB	9959.62	9966.00	1.64	0.72	6.38	0.34	0.11	2.29
3	LOB	9966.00	9972.37	4.77	1.36	6.38	0.98	0.21	3.51
4	LOB	9972.37	9978.75	8.79	2.03	6.38	1.81	0.32	4.32
5	LOB	9978.75	9985.13	5.54	2.38	6.38	1.14	0.37	2.32
6	Chan	9985.13	9990.50	8.28	2.75	5.38	1.71	0.51	3.01
7	Chan	9990.50	9995.87	16.36	4.14	5.38	3.37	0.77	3.95
8	Chan	9995.87	10001.24	26.10	5.48	5.38	5.38	1.02	4.76
9	Chan	10001.24	10006.61	30.54	6.02	5.37	6.30	1.12	5.07
10	Chan	10006.61	10011.98	24.93	5.33	5.37	5.14	0.99	4.68
11	Chan	10011.98	10017.35	19.66	4.62	5.37	4.05	0.86	4.25
12	Chan	10017.35	10022.72	14.90	3.92	5.37	3.07	0.73	3.81
13	ROB	10022.72	10044.84	20.89	8.40	22.13	4.31	0.38	2.49
14	ROB	10044.84	10066.96	26.46	9.68	22.13	5.46	0.44	2.73
15	ROB	10066.96	10089.09	160.36	26.88	22.15	33.06	1.22	5.97
16	ROB	10089.09	10111.21	109.97	21.39	22.14	22.67	0.97	5.14
17	ROB	10111.21	10133.33	5.73	2.91	10.90	1.18	0.27	1.97

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: X1
REACH: Split 1 Upper RS: 0.125

INPUT
Description:
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9951.83	2256.41	9956.61	2255.34	9959.46	2254.697	9962.55	2254	9968.29	2254.14
9991.57	2254.71	9992.02	2254.73	9992.11	2254.73	9992.22	2254.7	9992.59	2254.69
9999.52	2253.96	10000.24	2253.87	10001.3	2253.94	10005.23	2254.21	10011.31	2254.49
10012.8	2254.61	10031.11	2255.39	10031.67	2255.42	10032.06	2255.41	10038.63	2255.54
10042.66	2255.63	10042.81	2255.63	10046.33	2255.71	10049.68	2255.81	10055.48	2255.74
10058.02	2255.75	10065.09	2255.67	10066.2	2255.61	10072.08	2255.31	10075.46	2255.09
10075.92	2255.06	10077.56	2254.97	10086.14	2254.46	10086.23	2254.51	10100.93	2254.74
10111.46	2254.93	10115.91	2254.82	10116.79	2254.79	10120.79	2254.71	10122.42	2254.68
10128.09	2254.83	10148.2	2255.43	10152.25	2255.41	10158.47	2255.31	10166.61	2255.56
10180.8	2256.02								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9951.83	.055	9959.46	.045	10012.8	.055	10077.56	.045	10128.09	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9959.46	10012.8	117	109.39	106	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2255.77	Element			
Vel Head (ft)	0.36	Wt. n-Val.	0.055	0.045	0.047
W.S. Elev (ft)	2255.41	Reach Len. (ft)	109.39	109.39	109.39
Crit W.S. (ft)	2255.41	Flow Area (sq ft)	1.12	57.72	49.39
E.G. Slope (ft/ft)	0.024693	Area (sq ft)	1.12	57.72	49.39
Q Total (cfs)	485.00	Flow (cfs)	2.34	315.03	167.62
Top Width (ft)	163.78	Top Width (ft)	3.15	53.34	107.29
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)	2.09	5.46	3.39
Max Chl Dpth (ft)	1.54	Hydr. Depth (ft)	0.36	1.08	0.46
Conv. Total (cfs)	3086.4	Conv. (cfs)	14.9	2004.8	1066.7
Length Wtd. (ft)	109.39	Wetted Per. (ft)	3.23	53.50	107.36
Min Ch El (ft)	2253.87	Shear (lb/sq ft)	0.53	1.66	0.71
Alpha	1.16	Stream Power (lb/ft s)	1.12	9.08	2.41
Frctn Loss (ft)	2.98	Cum Volume (acre-ft)	0.04	0.09	0.14
C & E Loss (ft)	0.01	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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2255.77	Element			
Vel Head (ft)	0.36	Wt. n-Val.	0.055	0.045	0.047
W.S. Elev (ft)	2255.41	Reach Len. (ft)	109.39	109.39	109.39
Crit W.S. (ft)	2255.41	Flow Area (sq ft)	1.12	57.72	49.39
E.G. Slope (ft/ft)	0.024693	Area (sq ft)	1.12	57.72	49.39
Q Total (cfs)	485.00	Flow (cfs)	2.34	315.03	167.62

Top Width (ft)	163.78	Top Width (ft)	3.15	53.34	107.29
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)	2.09	5.46	3.39
Max Chl Dpth (ft)	1.54	Hydr. Depth (ft)	0.36	1.08	0.46
Conv. Total (cfs)	3086.4	Conv. (cfs)	14.9	2004.8	1066.7
Length Wtd. (ft)	109.39	Wetted Per. (ft)	3.23	53.50	107.36
Min Ch El (ft)	2253.87	Shear (lb/sq ft)	0.53	1.66	0.71
Alpha	1.16	Stream Power (lb/ft s)	1.12	9.08	2.41
Frctn Loss (ft)	2.98	Cum Volume (acre-ft)	0.04	0.09	0.14
C & E Loss (ft)	0.01	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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.88	9956.41	0.00	0.00	0.10	0.00	0.01	0.18
2	LOB	9956.41	9957.93	0.36	0.30	1.56	0.07	0.19	1.22
3	LOB	9957.93	9959.46	1.98	0.82	1.56	0.41	0.54	2.41
4	Chan	9959.46	9967.08	54.86	9.40	7.70	11.31	1.23	5.84
5	Chan	9967.08	9974.70	53.05	9.18	7.62	10.94	1.20	5.78
6	Chan	9974.70	9982.32	40.07	7.75	7.62	8.26	1.02	5.17
7	Chan	9982.32	9989.94	28.59	6.33	7.62	5.89	0.83	4.52
8	Chan	9989.94	9997.56	31.70	6.75	7.65	6.54	0.89	4.70
9	Chan	9997.56	10005.18	66.27	10.50	7.65	13.66	1.38	6.31
10	Chan	10005.18	10012.80	40.50	7.81	7.63	8.35	1.02	5.19
11	ROB	10012.80	10046.40	17.25	7.56	19.18	3.56	0.39	2.28
12	ROB	10046.40	10080.00	6.59	2.87	10.05	1.36	0.29	2.29
13	ROB	10080.00	10113.60	95.77	23.47	33.62	19.75	0.70	4.08
14	ROB	10113.60	10147.20	47.65	14.94	33.61	9.82	0.44	3.19
15	ROB	10147.20	10180.80	0.35	0.55	10.90	0.07	0.05	0.64

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.88	9956.41	0.00	0.00	0.10	0.00	0.01	0.18
2	LOB	9956.41	9957.93	0.36	0.30	1.56	0.07	0.19	1.22
3	LOB	9957.93	9959.46	1.98	0.82	1.56	0.41	0.54	2.41
4	Chan	9959.46	9967.08	54.86	9.40	7.70	11.31	1.23	5.84
5	Chan	9967.08	9974.70	53.05	9.18	7.62	10.94	1.20	5.78
6	Chan	9974.70	9982.32	40.07	7.75	7.62	8.26	1.02	5.17
7	Chan	9982.32	9989.94	28.59	6.33	7.62	5.89	0.83	4.52
8	Chan	9989.94	9997.56	31.70	6.75	7.65	6.54	0.89	4.70
9	Chan	9997.56	10005.18	66.27	10.50	7.65	13.66	1.38	6.31
10	Chan	10005.18	10012.80	40.50	7.81	7.63	8.35	1.02	5.19
11	ROB	10012.80	10046.40	17.25	7.56	19.18	3.56	0.39	2.28
12	ROB	10046.40	10080.00	6.59	2.87	10.05	1.36	0.29	2.29
13	ROB	10080.00	10113.60	95.77	23.47	33.62	19.75	0.70	4.08
14	ROB	10113.60	10147.20	47.65	14.94	33.61	9.82	0.44	3.19
15	ROB	10147.20	10180.80	0.35	0.55	10.90	0.07	0.05	0.64

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: X1
REACH: Split 1 Lower RS: 0.104

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9933.47	2253.4	9941.72	2250.9	9943.67	2250.31	9948.1	2248.88	9952.53	2249.6
9958.71	2250.59	9967.95	2250.6	9971.64	2250.6	9988.73	2251.17	9990.25	2251.2
9990.85	2251.09	9993.97	2250.5	9998.93	2249.41	10007.28	2250.48	10012.03	2250.99
10014.09	2251.23	10019.46	2251.31	10034.98	2251.28	10037.5	2251.27	10037.78	2251.27
10037.99	2251.28	10038.11	2251.3	10038.8	2251.29	10038.94	2251.29	10039.05	2251.29
10039.17	2251.28	10070.69	2250.51	10076.12	2250.22	10076.19	2250.22	10088.77	2250.41

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10095.65 2250.47   10105  2250.710111.65 2250.8410119.18 2249.1910122.91 2248.36
   10126 2249.0410135.69    225110138.81 2250.9610157.81 2251.1610158.73 2251.17

Manning's n Values          num=        6
      Sta   n Val     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
 9933.47    .055 9990.85    .04510012.03    .05510070.69    .05510119.18    .045
   10126    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9990.8510012.03           185.64  179.73  138.78             .1        .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2251.36    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.33    Wt. n-Val.                  0.055      0.045     0.050
  W.S. Elev (ft)           2251.03    Reach Len. (ft)           185.64     179.73    138.78
  Crit W.S. (ft)           2251.03    Flow Area (sq ft)          29.32      16.55     61.80
  E.G. Slope (ft/ft)      0.030215    Area (sq ft)               29.32      16.55     61.80
  Q Total (cfs)             485.00    Flow (cfs)                105.47      80.70    298.83
  Top Width (ft)            160.73    Top Width (ft)             43.26      20.87     96.61
  Vel Total (ft/s)            4.50    Avg. Vel. (ft/s)            3.60       4.88      4.84
  Max Chl Dpth (ft)           2.67    Hydr. Depth (ft)            0.68       0.79      0.64
  Conv. Total (cfs)         2790.1    Conv. (cfs)                606.8      464.3    1719.1
  Length Wtd. (ft)          166.92    Wetted Per. (ft)           43.74      21.13     97.17
  Min Ch El (ft)           2249.41    Shear (lb/sq ft)            1.26       1.48      1.20
  Alpha                       1.04    Stream Power (lb/ft s)      4.55       7.20      5.80
  Frctn Loss (ft)             3.88    Cum Volume (acre-ft)        0.11       0.65      0.53
  C & E Loss (ft)             0.06    Cum SA (acres)              0.12       0.15      0.22

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2251.36    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.33    Wt. n-Val.                  0.055      0.045     0.050
  W.S. Elev (ft)           2251.03    Reach Len. (ft)           185.64     179.73    138.78
  Crit W.S. (ft)           2251.03    Flow Area (sq ft)          29.32      16.55     61.80
  E.G. Slope (ft/ft)      0.030215    Area (sq ft)               29.32      16.55     61.80
  Q Total (cfs)             485.00    Flow (cfs)                105.47      80.70    298.83
  Top Width (ft)            160.73    Top Width (ft)             43.26      20.87     96.61
  Vel Total (ft/s)            4.50    Avg. Vel. (ft/s)            3.60       4.88      4.84
  Max Chl Dpth (ft)           2.67    Hydr. Depth (ft)            0.68       0.79      0.64
  Conv. Total (cfs)         2790.1    Conv. (cfs)                606.8      464.3    1719.1
  Length Wtd. (ft)          166.92    Wetted Per. (ft)           43.74      21.13     97.17
  Min Ch El (ft)           2249.41    Shear (lb/sq ft)            1.26       1.48      1.20
  Alpha                       1.04    Stream Power (lb/ft s)      4.55       7.20      5.80
  Frctn Loss (ft)             3.88    Cum Volume (acre-ft)        0.14       0.72      0.30
  C & E Loss (ft)             0.06    Cum SA (acres)              0.12       0.15      0.22

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 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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent      Hydr   Velocity
                         (ft)        (ft)           (cfs)      (sq ft)    (ft)      Conv   Depth(ft)   (ft/s)
  1           LOB        9933.47     9944.95        4.81       2.04       3.83      0.99       0.56      2.36
  2           LOB        9944.95     9956.42       81.62      17.46      11.74     16.83       1.52      4.67
  3           LOB        9956.42     9967.90       11.80       5.43      11.50      2.43       0.47      2.17
  4           LOB        9967.90     9979.37        6.94       3.94      11.48      1.43       0.34      1.76
  5           LOB        9979.37     9990.85        0.31       0.45       5.18      0.06       0.09      0.70
  6           Chan       9990.85     9993.88        1.35       0.69       2.76      0.28       0.26      1.94
  7           Chan       9993.88     9996.90       10.90       2.55       3.10      2.25       0.84      4.28
  8           Chan       9996.90     9999.93       27.04       4.39       3.08      5.58       1.45      6.16
  9           Chan       9999.93     10002.95      22.67       3.93       3.05      4.67       1.30      5.77
  10          Chan       10002.95    10005.98      12.55       2.76       3.05      2.59       0.91      4.55
  11          Chan       10005.98    10009.00       5.15       1.62       3.05      1.06       0.53      3.19
  12          Chan       10009.00    10012.03       1.03       0.61       3.04      0.21       0.20      1.68
  13          ROB        10012.03    10041.37       0.00       0.01       0.35      0.00       0.02      0.33
  14          ROB        10041.37    10070.71      10.53       5.70      21.46      2.17       0.27      1.85
  15          ROB        10070.71    10100.05      63.52      18.98      29.35     13.10       0.65      3.35
  16          ROB        10100.05    10129.39     215.89      32.52      29.76     44.51       1.11      6.64
  17          ROB        10129.39    10158.73       8.87       4.60      16.25      1.83       0.29      1.93

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

Warning: 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.
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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9933.47	9944.95	4.81	2.04	3.83	0.99	0.56	2.36
2	LOB	9944.95	9956.42	81.62	17.46	11.74	16.83	1.52	4.67
3	LOB	9956.42	9967.90	11.80	5.43	11.50	2.43	0.47	2.17
4	LOB	9967.90	9979.37	6.94	3.94	11.48	1.43	0.34	1.76
5	LOB	9979.37	9990.85	0.31	0.45	5.18	0.06	0.09	0.70
6	Chan	9990.85	9993.88	1.35	0.69	2.76	0.28	0.26	1.94
7	Chan	9993.88	9996.90	10.90	2.55	3.10	2.25	0.84	4.28
8	Chan	9996.90	9999.93	27.04	4.39	3.08	5.58	1.45	6.16
9	Chan	9999.93	10002.95	22.67	3.93	3.05	4.67	1.30	5.77
10	Chan	10002.95	10005.98	12.55	2.76	3.05	2.59	0.91	4.55
11	Chan	10005.98	10009.00	5.15	1.62	3.05	1.06	0.53	3.19
12	Chan	10009.00	10012.03	1.03	0.61	3.04	0.21	0.20	1.68
13	ROB	10012.03	10041.37	0.00	0.01	0.35	0.00	0.02	0.33
14	ROB	10041.37	10070.71	10.53	5.70	21.46	2.17	0.27	1.85
15	ROB	10070.71	10100.05	63.52	18.98	29.35	13.10	0.65	3.35
16	ROB	10100.05	10129.39	215.89	32.52	29.76	44.51	1.11	6.64
17	ROB	10129.39	10158.73	8.87	4.60	16.25	1.83	0.29	1.93

Warning: The energy equation could not be balanced within the specified number of iterations: The program used critical depth for the water surface and continued on with the calculations.
Warning: 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.
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: X1
REACH: Split 1 Lower RS: 0.070

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9968.4	2249.22	9978.49	2247.05	9988.51	2244.871	9993.52	2243.78	9996.77	2243.22
9999.96	2242.68	10005.05	2243.55	10011.32	2244.67	10014.94	2245.32	10018.88	2245.64
10020.46	2245.71	10023.09	2246.05	10026.28	2246.31	10028.64	2246.34	10030.48	2246.33
10032.9	2246.31	10035.93	2246.45	10038.46	2246.58	10039.82	2246.61	10046.22	2246.95
10046.97	2247	10047.8	2247.05						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9968.4	.065	9988.51	.045	10011.32	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.51	10011.32	145	126	119	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2247.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.065	0.045	0.060
W.S. Elev (ft)	2246.15	Reach Len. (ft)	145.00	126.00	119.00
Crit W.S. (ft)	2246.15	Flow Area (sq ft)	3.78	56.27	8.40
E.G. Slope (ft/ft)	0.018431	Area (sq ft)	3.78	56.27	8.40
Q Total (cfs)	485.00	Flow (cfs)	8.59	455.43	20.97
Top Width (ft)	41.75	Top Width (ft)	5.90	22.81	13.04
Vel Total (ft/s)	7.09	Avg. Vel. (ft/s)	2.27	8.09	2.50
Max Chl Dpth (ft)	3.47	Hydr. Depth (ft)	0.64	2.47	0.64
Conv. Total (cfs)	3572.4	Conv. (cfs)	63.3	3354.6	154.5
Length Wtd. (ft)	125.63	Wetted Per. (ft)	6.04	23.20	13.14
Min Ch El (ft)	2242.68	Shear (lb/sq ft)	0.72	2.79	0.74
Alpha	1.23	Stream Power (lb/ft s)	1.64	22.59	1.84
Frctn Loss (ft)	2.96	Cum Volume (acre-ft)	0.04	0.50	0.42
C & E Loss (ft)	0.03	Cum SA (acres)	0.02	0.06	0.05

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2247.11	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.96	Wt. n-Val.	0.065	0.045	0.060
W.S. Elev (ft)	2246.15	Reach Len. (ft)	145.00	126.00	119.00
Crit W.S. (ft)	2246.15	Flow Area (sq ft)	3.78	56.27	8.40
E.G. Slope (ft/ft)	0.018431	Area (sq ft)	3.78	56.27	8.40
Q Total (cfs)	485.00	Flow (cfs)	8.59	455.43	20.97
Top Width (ft)	41.75	Top Width (ft)	5.90	22.81	13.04
Vel Total (ft/s)	7.09	Avg. Vel. (ft/s)	2.27	8.09	2.50
Max Chl Dpth (ft)	3.47	Hydr. Depth (ft)	0.64	2.47	0.64
Conv. Total (cfs)	3572.4	Conv. (cfs)	63.3	3354.6	154.5
Length Wtd. (ft)	125.63	Wetted Per. (ft)	6.04	23.20	13.14
Min Ch El (ft)	2242.68	Shear (lb/sq ft)	0.72	2.79	0.74
Alpha	1.23	Stream Power (lb/ft s)	1.64	22.59	1.84
Frctn Loss (ft)	2.96	Cum Volume (acre-ft)	0.07	0.56	0.19
C & E Loss (ft)	0.03	Cum SA (acres)	0.02	0.06	0.05

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.47	9984.49	0.36	0.38	1.92	0.07	0.20	0.94
2	LOB	9984.49	9988.51	8.23	3.40	4.12	1.70	0.85	2.42
3	Chan	9988.51	9991.77	31.72	5.34	3.34	6.54	1.64	5.94
4	Chan	9991.77	9995.03	57.30	7.60	3.32	11.82	2.33	7.54
5	Chan	9995.03	9998.29	83.34	9.49	3.31	17.18	2.91	8.78
6	Chan	9998.29	10001.54	104.40	10.86	3.30	21.52	3.33	9.61
7	Chan	10001.54	10004.80	83.88	9.53	3.31	17.29	2.92	8.80
8	Chan	10004.80	10008.06	58.45	7.68	3.31	12.05	2.36	7.61
9	Chan	10008.06	10011.32	36.35	5.77	3.31	7.49	1.77	6.30
10	ROB	10011.32	10018.62	18.73	6.70	7.37	3.86	0.92	2.79
11	ROB	10018.62	10025.91	2.24	1.70	5.77	0.46	0.30	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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.47	9984.49	0.36	0.38	1.92	0.07	0.20	0.94
2	LOB	9984.49	9988.51	8.23	3.40	4.12	1.70	0.85	2.42
3	Chan	9988.51	9991.77	31.72	5.34	3.34	6.54	1.64	5.94
4	Chan	9991.77	9995.03	57.30	7.60	3.32	11.82	2.33	7.54
5	Chan	9995.03	9998.29	83.34	9.49	3.31	17.18	2.91	8.78
6	Chan	9998.29	10001.54	104.40	10.86	3.30	21.52	3.33	9.61
7	Chan	10001.54	10004.80	83.88	9.53	3.31	17.29	2.92	8.80
8	Chan	10004.80	10008.06	58.45	7.68	3.31	12.05	2.36	7.61
9	Chan	10008.06	10011.32	36.35	5.77	3.31	7.49	1.77	6.30
10	ROB	10011.32	10018.62	18.73	6.70	7.37	3.86	0.92	2.79
11	ROB	10018.62	10025.91	2.24	1.70	5.77	0.46	0.30	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 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: X1
REACH: Split 1 Lower RS: 0.046

INPUT
Description: Joins X1, Reach 2
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9975.12	2246.72	9989.08	2240.43	9989.08	2240.429	9989.93	2240.06	9993.57	2239.5
9999.04	2238.6410009.26		2240.3210010.31		2240.510015.55		2240.6310019.02		2240.88
10027.58	2241.4910040.86		2243.1510040.97		2243.1710041.32		2243.210041.54		2243.21
10041.66	2243.2210042.25		2243.29	10042.4	2243.29				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9975.12	.07	9989.08	.06	10009.26	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.08	10009.26	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2242.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.070	0.060	0.070
W.S. Elev (ft)	2241.96	Reach Len. (ft)	242.78	242.78	242.78
Crit W.S. (ft)	2241.96	Flow Area (sq ft)	2.61	50.61	20.70
E.G. Slope (ft/ft)	0.031058	Area (sq ft)	2.61	50.61	20.70
Q Total (cfs)	485.00	Flow (cfs)	7.68	403.36	73.96
Top Width (ft)	45.69	Top Width (ft)	3.40	20.18	22.10
Vel Total (ft/s)	6.56	Avg. Vel. (ft/s)	2.95	7.97	3.57
Max Chl Dpth (ft)	3.32	Hydr. Depth (ft)	0.77	2.51	0.94
Conv. Total (cfs)	2752.0	Conv. (cfs)	43.6	2288.8	419.7
Length Wtd. (ft)	242.78	Wetted Per. (ft)	3.73	20.50	22.18
Min Ch El (ft)	2238.64	Shear (lb/sq ft)	1.35	4.79	1.81
Alpha	1.28	Stream Power (lb/ft s)	3.99	38.14	6.47
Frctn Loss (ft)	2.69	Cum Volume (acre-ft)	0.03	0.34	0.38
C & E Loss (ft)	0.19	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 velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2242.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.070	0.060	0.070
W.S. Elev (ft)	2241.96	Reach Len. (ft)	242.78	242.78	242.78
Crit W.S. (ft)	2241.96	Flow Area (sq ft)	2.61	50.61	20.70
E.G. Slope (ft/ft)	0.031058	Area (sq ft)	2.61	50.61	20.70
Q Total (cfs)	485.00	Flow (cfs)	7.68	403.36	73.96
Top Width (ft)	45.69	Top Width (ft)	3.40	20.18	22.10
Vel Total (ft/s)	6.56	Avg. Vel. (ft/s)	2.95	7.97	3.57
Max Chl Dpth (ft)	3.32	Hydr. Depth (ft)	0.77	2.51	0.94
Conv. Total (cfs)	2752.0	Conv. (cfs)	43.6	2288.8	419.7
Length Wtd. (ft)	242.78	Wetted Per. (ft)	3.73	20.50	22.18
Min Ch El (ft)	2238.64	Shear (lb/sq ft)	1.35	4.79	1.81
Alpha	1.28	Stream Power (lb/ft s)	3.99	38.14	6.47
Frctn Loss (ft)	3.04	Cum Volume (acre-ft)	0.06	0.41	0.15
C & E Loss (ft)	0.13	Cum SA (acres)			

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9983.50	9986.29	0.07	0.08	0.67	0.01	0.14	0.86
2	LOB	9986.29	9989.08	7.61	2.52	3.06	1.57	0.90	3.02
3	Chan	9989.08	9991.96	36.99	5.65	2.98	7.63	1.96	6.55
4	Chan	9991.96	9994.85	54.10	7.03	2.92	11.15	2.44	7.70
5	Chan	9994.85	9997.73	71.80	8.33	2.92	14.80	2.89	8.62
6	Chan	9997.73	10000.61	85.30	9.24	2.92	17.59	3.21	9.23
7	Chan	10000.61	10003.49	69.19	8.15	2.92	14.27	2.83	8.49
8	Chan	10003.49	10006.38	50.96	6.79	2.92	10.51	2.35	7.51
9	Chan	10006.38	10009.26	35.03	5.42	2.92	7.22	1.88	6.46
10	ROB	10009.26	10015.89	39.71	9.40	6.65	8.19	1.42	4.22
11	ROB	10015.89	10022.52	24.84	7.10	6.64	5.12	1.07	3.50
12	ROB	10022.52	10029.14	9.14	3.90	6.65	1.88	0.59	2.35
13	ROB	10029.14	10035.77	0.27	0.31	2.24	0.06	0.14	0.89

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9983.50	9986.29	0.07	0.08	0.67	0.01	0.14	0.86
2	LOB	9986.29	9989.08	7.61	2.52	3.06	1.57	0.90	3.02
3	Chan	9989.08	9991.96	36.99	5.65	2.98	7.63	1.96	6.55
4	Chan	9991.96	9994.85	54.10	7.03	2.92	11.15	2.44	7.70
5	Chan	9994.85	9997.73	71.80	8.33	2.92	14.80	2.89	8.62
6	Chan	9997.73	10000.61	85.30	9.24	2.92	17.59	3.21	9.23

7	Chan	10000.61	10003.49	69.19	8.15	2.92	14.27	2.83	8.49
8	Chan	10003.49	10006.38	50.96	6.79	2.92	10.51	2.35	7.51
9	Chan	10006.38	10009.26	35.03	5.42	2.92	7.22	1.88	6.46
10	ROB	10009.26	10015.89	39.71	9.40	6.65	8.19	1.42	4.22
11	ROB	10015.89	10022.52	24.84	7.10	6.64	5.12	1.07	3.50
12	ROB	10022.52	10029.14	9.14	3.90	6.65	1.88	0.59	2.35
13	ROB	10029.14	10035.77	0.27	0.31	2.24	0.06	0.14	0.89

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X1
REACH: Reach 2 RS: 0.309

INPUT
Description: Both CWSEL and Energy Grade Balance with River Station 0.161 of River X1, Split 1.
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9940.05	2261.4	9940.55	2261.4	9952.75	2260.71	9958.98	2260.34	9971.67	2260.08
9986.98	2259.7	9993.12	2259.35	9993.36	2259.33	9993.46	2259.32	10001.16	2258.57
10007.29	2260.11	0010.86	2261	10014.33	2261.23	10029.29	2261.85		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9940.05	.06	9986.98	.05	10007.29	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.98	10007.29	146.43	175.57	219.49	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2261.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2260.68	Reach Len. (ft)	146.43	175.57	219.49
Crit W.S. (ft)	2260.68	Flow Area (sq ft)	19.09	29.18	0.67
E.G. Slope (ft/ft)	0.024446	Area (sq ft)	19.09	29.18	0.67
Q Total (cfs)	223.00	Flow (cfs)	50.52	171.36	1.12
Top Width (ft)	56.37	Top Width (ft)	33.75	20.31	2.31
Vel Total (ft/s)	4.56	Avg. Vel. (ft/s)	2.65	5.87	1.66
Max Chl Dpth (ft)	2.11	Hydr. Depth (ft)	0.57	1.44	0.29
Conv. Total (cfs)	1426.3	Conv. (cfs)	323.1	1096.0	7.1
Length Wtd. (ft)	173.23	Wetted Per. (ft)	33.77	20.55	2.38
Min Ch El (ft)	2258.57	Shear (lb/sq ft)	0.86	2.17	0.43
Alpha	1.35	Stream Power (lb/ft s)	2.28	12.73	0.72
Frctn Loss (ft)	4.15	Cum Volume (acre-ft)	0.08	0.59	0.46
C & E Loss (ft)	0.03	Cum SA (acres)	0.09	0.17	0.13

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2261.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2260.68	Reach Len. (ft)	146.43	175.57	219.49
Crit W.S. (ft)	2260.68	Flow Area (sq ft)	19.09	29.18	0.67
E.G. Slope (ft/ft)	0.024446	Area (sq ft)	19.09	29.18	0.67
Q Total (cfs)	223.00	Flow (cfs)	50.52	171.36	1.12
Top Width (ft)	56.37	Top Width (ft)	33.75	20.31	2.31
Vel Total (ft/s)	4.56	Avg. Vel. (ft/s)	2.65	5.87	1.66
Max Chl Dpth (ft)	2.11	Hydr. Depth (ft)	0.57	1.44	0.29
Conv. Total (cfs)	1426.3	Conv. (cfs)	323.1	1096.0	7.1
Length Wtd. (ft)	173.23	Wetted Per. (ft)	33.77	20.55	2.38
Min Ch El (ft)	2258.57	Shear (lb/sq ft)	0.86	2.17	0.43
Alpha	1.35	Stream Power (lb/ft s)	2.28	12.73	0.72
Frctn Loss (ft)	4.15	Cum Volume (acre-ft)	0.11	0.71	0.14
C & E Loss (ft)	0.03	Cum SA (acres)	0.09	0.17	0.07

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9949.44	9958.82	0.98	0.93	5.60	0.44	0.17	1.06
2	LOB	9958.82	9968.21	8.21	4.08	9.39	3.68	0.43	2.01
3	LOB	9968.21	9977.60	15.45	5.96	9.39	6.93	0.63	2.59
4	LOB	9977.60	9986.98	25.88	8.12	9.39	11.60	0.87	3.19
5	Chan	9986.98	9989.88	14.45	3.09	2.91	6.48	1.06	4.68
6	Chan	9989.88	9992.78	18.38	3.57	2.91	8.24	1.23	5.15
7	Chan	9992.78	9995.69	23.83	4.17	2.91	10.68	1.44	5.71
8	Chan	9995.69	9998.59	32.08	4.99	2.92	14.39	1.72	6.43
9	Chan	9998.59	10001.49	41.04	5.79	2.92	18.40	2.00	7.09
10	Chan	10001.49	10004.39	29.98	4.84	2.99	13.44	1.67	6.19
11	Chan	10004.39	10007.29	11.60	2.74	2.99	5.20	0.94	4.24
12	ROB	10007.29	10011.69	1.12	0.67	2.38	0.50	0.29	1.66

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9949.44	9958.82	0.98	0.93	5.60	0.44	0.17	1.06
2	LOB	9958.82	9968.21	8.21	4.08	9.39	3.68	0.43	2.01
3	LOB	9968.21	9977.60	15.45	5.96	9.39	6.93	0.63	2.59
4	LOB	9977.60	9986.98	25.88	8.12	9.39	11.60	0.87	3.19
5	Chan	9986.98	9989.88	14.45	3.09	2.91	6.48	1.06	4.68
6	Chan	9989.88	9992.78	18.38	3.57	2.91	8.24	1.23	5.15
7	Chan	9992.78	9995.69	23.83	4.17	2.91	10.68	1.44	5.71
8	Chan	9995.69	9998.59	32.08	4.99	2.92	14.39	1.72	6.43
9	Chan	9998.59	10001.49	41.04	5.79	2.92	18.40	2.00	7.09
10	Chan	10001.49	10004.39	29.98	4.84	2.99	13.44	1.67	6.19
11	Chan	10004.39	10007.29	11.60	2.74	2.99	5.20	0.94	4.24
12	ROB	10007.29	10011.69	1.12	0.67	2.38	0.50	0.29	1.66

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: X1
REACH: Reach 2 RS: 0.276

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9965.516	2256.19	9966.686	2256.15	9979.756	2255.73	9987.256	2255.57	9987.656	2255.56
9992.042	2254.40	1 9993.572	253.9969	997.146	2253.05	9998.436	2252.71	10001.05	2253.14
10006.49	2253.88	10007.72	254.0591	0019.57	2255.82	10021.28	2255.8	10049.9	2256.05
10051.32	2256.06	10056.47	2256.11						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9965.516	.055	9993.57	.05	10007.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.57	10007.7	181.13	182.29	174.87	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2256.05	Element			
Vel Head (ft)	0.70	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2255.35	Reach Len. (ft)	181.13	182.29	174.87
Crit W.S. (ft)	2255.35	Flow Area (sq ft)	3.48	27.81	5.65
E.G. Slope (ft/ft)	0.023431	Area (sq ft)	3.48	27.81	5.65
Q Total (cfs)	223.00	Flow (cfs)	10.88	196.21	15.91
Top Width (ft)	27.99	Top Width (ft)	5.13	14.13	8.73
Vel Total (ft/s)	6.04	Avg. Vel. (ft/s)	3.12	7.06	2.82
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)	0.68	1.97	0.65
Conv. Total (cfs)	1456.8	Conv. (cfs)	71.1	1281.8	103.9
Length Wtd. (ft)	181.76	Wetted Per. (ft)	5.31	14.40	8.82
Min Ch El (ft)	2252.70	Shear (lb/sq ft)	0.96	2.83	0.94
Alpha	1.23	Stream Power (lb/ft s)	3.00	19.93	2.64
Frctn Loss (ft)	4.57	Cum Volume (acre-ft)	0.04	0.47	0.44
C & E Loss (ft)	0.01	Cum SA (acres)	0.03	0.10	0.10

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2256.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2255.35	Reach Len. (ft)	181.13	182.29	174.87
Crit W.S. (ft)	2255.35	Flow Area (sq ft)	3.48	27.81	5.65
E.G. Slope (ft/ft)	0.023431	Area (sq ft)	3.48	27.81	5.65
Q Total (cfs)	223.00	Flow (cfs)	10.88	196.21	15.91
Top Width (ft)	27.99	Top Width (ft)	5.13	14.13	8.73
Vel Total (ft/s)	6.04	Avg. Vel. (ft/s)	3.12	7.06	2.82
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)	0.68	1.97	0.65
Conv. Total (cfs)	1456.8	Conv. (cfs)	71.1	1281.8	103.9
Length Wtd. (ft)	181.71	Wetted Per. (ft)	5.31	14.40	8.82
Min Ch El (ft)	2252.70	Shear (lb/sq ft)	0.96	2.83	0.94
Alpha	1.23	Stream Power (lb/ft s)	3.00	19.93	2.64
Frctn Loss (ft)	3.83	Cum Volume (acre-ft)	0.07	0.59	0.12
C & E Loss (ft)	0.02	Cum SA (acres)	0.03	0.10	0.04

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.96	9993.57	10.88	3.48	5.31	4.88	0.68	3.12
2	Chan	9993.57	9995.59	19.79	3.28	2.09	8.87	1.62	6.03
3	Chan	9995.59	9997.61	31.77	4.36	2.09	14.25	2.16	7.29
4	Chan	9997.61	9999.63	42.21	5.14	2.07	18.93	2.55	8.21
5	Chan	9999.63	10001.64	35.47	4.62	2.04	15.91	2.29	7.69
6	Chan	10001.64	10003.66	28.34	4.03	2.04	12.71	2.00	7.04
7	Chan	10003.66	10005.68	22.14	3.47	2.04	9.93	1.72	6.37
8	Chan	10005.68	10007.70	16.48	2.91	2.04	7.39	1.44	5.66
9	ROB	10007.70	10017.45	15.91	5.65	8.82	7.13	0.65	2.82

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.96	9993.57	10.88	3.48	5.31	4.88	0.68	3.12
2	Chan	9993.57	9995.59	19.79	3.28	2.09	8.87	1.62	6.03
3	Chan	9995.59	9997.61	31.77	4.36	2.09	14.25	2.16	7.29
4	Chan	9997.61	9999.63	42.21	5.14	2.07	18.93	2.55	8.21
5	Chan	9999.63	10001.64	35.47	4.62	2.04	15.91	2.29	7.69
6	Chan	10001.64	10003.66	28.34	4.03	2.04	12.71	2.00	7.04
7	Chan	10003.66	10005.68	22.14	3.47	2.04	9.93	1.72	6.37
8	Chan	10005.68	10007.70	16.48	2.91	2.04	7.39	1.44	5.66
9	ROB	10007.70	10017.45	15.91	5.65	8.82	7.13	0.65	2.82

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: X1
REACH: Reach 2 RS: 0.241

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9985.66	2250	9985.88	2250.05	9986.59	2249.76	9994.84	2246.03	10000.22	2243.61
10002.57	2244.63	10004.98	2245.69	10013.86	2249.61	10018.73	2249.54	10036.41	2249.59
10040.34	2249.38	10043.67	2249.18	10045.6	2249.1	10051.2	2248.43	10062.2	2247.31
10063.29	2247.61	10064.36	2247.69	10072.51	2248.21	10074.64	2248.01	10075.66	2247.35
10087.48	2248.16	10090.34	2248.38	10090.72	2248.41	10100.72	2249.26	10103.67	2249.32
10116.47	2249.54	10121.74	2249.55	10132.8	2249.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9985.66	.065	9994.84	.06	10004.98	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.84	10004.98	174.7	173.04	146.42	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2248.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.065	0.060	0.055
W.S. Elev (ft)	2247.44	Reach Len. (ft)	174.70	173.04	146.42
Crit W.S. (ft)	2247.23	Flow Area (sq ft)	2.18	27.36	3.65
E.G. Slope (ft/ft)	0.027078	Area (sq ft)	2.18	27.36	3.65
Q Total (cfs)	223.00	Flow (cfs)	6.07	203.52	13.41
Top Width (ft)	20.41	Top Width (ft)	3.11	10.14	7.16
Vel Total (ft/s)	6.72	Avg. Vel. (ft/s)	2.79	7.44	3.68
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)	0.70	2.70	0.51
Conv. Total (cfs)	1355.2	Conv. (cfs)	36.9	1236.8	81.5
Length Wtd. (ft)	166.52	Wetted Per. (ft)	3.41	11.10	7.58
Min Ch El (ft)	2243.61	Shear (lb/sq ft)	1.08	4.17	0.81
Alpha	1.14	Stream Power (lb/ft s)	3.01	31.00	2.99
Frctn Loss (ft)	4.77	Cum Volume (acre-ft)	0.03	0.36	0.42
C & E Loss (ft)	0.11	Cum SA (acres)	0.01	0.05	0.07

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2248.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.065	0.060	0.055
W.S. Elev (ft)	2247.70	Reach Len. (ft)	174.70	173.04	146.42
Crit W.S. (ft)	2247.24	Flow Area (sq ft)	2.98	29.95	4.56
E.G. Slope (ft/ft)	0.019107	Area (sq ft)	2.98	29.95	4.56
Q Total (cfs)	223.00	Flow (cfs)	8.16	198.77	16.07
Top Width (ft)	17.83	Top Width (ft)	3.14	10.14	4.55
Vel Total (ft/s)	5.95	Avg. Vel. (ft/s)	2.74	6.64	3.52
Max Chl Dpth (ft)	4.08	Hydr. Depth (ft)	0.95	2.95	1.00
Conv. Total (cfs)	1613.3	Conv. (cfs)	59.0	1438.0	116.3
Length Wtd. (ft)	172.03	Wetted Per. (ft)	3.68	11.10	4.97
Min Ch El (ft)	2243.61	Shear (lb/sq ft)	0.96	3.22	1.09
Alpha	1.14	Stream Power (lb/ft s)	2.64	21.36	3.85
Frctn Loss (ft)	4.03	Cum Volume (acre-ft)	0.06	0.47	0.10
C & E Loss (ft)	0.02	Cum SA (acres)	0.01	0.05	0.01

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9991.17	9993.00	0.49	0.36	1.39	0.22	0.29	1.35
2	LOB	9993.00	9994.84	5.58	1.81	2.01	2.50	0.99	3.08
3	Chan	9994.84	9996.29	13.39	2.50	1.59	6.00	1.73	5.35
4	Chan	9996.29	9997.74	22.87	3.45	1.59	10.25	2.38	6.63
5	Chan	9997.74	9999.19	34.24	4.40	1.59	15.35	3.04	7.79
6	Chan	9999.19	10000.63	46.36	5.27	1.59	20.79	3.64	8.80
7	Chan	10000.63	10002.08	40.22	4.83	1.58	18.04	3.33	8.33
8	Chan	10002.08	10003.53	28.35	3.92	1.58	12.71	2.70	7.23
9	Chan	10003.53	10004.98	18.09	2.99	1.58	8.11	2.07	6.04
10	ROB	10004.98	10030.54	13.30	3.47	4.34	5.96	0.87	3.83
11	ROB	10030.54	10056.11						
12	ROB	10056.11	10081.67	0.12	0.18	3.25	0.05	0.06	0.65

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9991.17	9993.00	1.11	0.70	1.67	0.50	0.53	1.59
2	LOB	9993.00	9994.84	7.06	2.28	2.01	3.16	1.24	3.09
3	Chan	9994.84	9996.29	14.22	2.87	1.59	6.38	1.98	4.95
4	Chan	9996.29	9997.74	22.88	3.82	1.59	10.26	2.64	5.99
5	Chan	9997.74	9999.19	33.07	4.77	1.59	14.83	3.29	6.94
6	Chan	9999.19	10000.63	43.83	5.64	1.59	19.65	3.89	7.77
7	Chan	10000.63	10002.08	38.40	5.20	1.58	17.22	3.59	7.39
8	Chan	10002.08	10003.53	27.82	4.29	1.58	12.48	2.96	6.49
9	Chan	10003.53	10004.98	18.55	3.36	1.58	8.32	2.32	5.52
10	ROB	10004.98	10030.54	16.07	4.56	4.97	7.21	1.00	3.52

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: X1
REACH: Reach 2 RS: 0.209

INPUT
Description: Joins X1, Split 1
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9976.4	2243.7	9977.21	2243.63	9986.41	2243.44	9989.91	2242.66	9995.99	2241.32
9999.33	2240.58	10006.63	2242.81	10009.39	2243.63	10041.18	2244.13	10047.84	2244.25
10051.62	2244.26	10060.77	2243.61	10073.85	2242.67	10081.76	2242.08	10084.6	2241.96
10091.33	2241.65	10099.57	2242.61	10107.45	2243.71	10128.94	2243.91	10136.01	2244

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9976.4	.06	9989.91	.05	10006.63	.05	10073.85	.05	10099.57	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.91	10006.63	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2243.37	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.060	0.050	0.050
W.S. Elev (ft)	2242.93	Reach Len. (ft)	241.90	241.90	241.90
Crit W.S. (ft)	2242.93	Flow Area (sq ft)	0.15	21.28	21.91
E.G. Slope (ft/ft)	0.030341	Area (sq ft)	0.15	21.28	21.91
Q Total (cfs)	223.00	Flow (cfs)	0.16	126.55	96.28
Top Width (ft)	49.92	Top Width (ft)	1.17	16.72	32.03
Vel Total (ft/s)	5.15	Avg. Vel. (ft/s)	1.09	5.95	4.39
Max Chl Dpth (ft)	2.34	Hydr. Depth (ft)	0.13	1.27	0.68
Conv. Total (cfs)	1280.2	Conv. (cfs)	0.9	726.5	552.8
Length Wtd. (ft)	241.90	Wetted Per. (ft)	1.20	17.28	32.17
Min Ch El (ft)	2240.58	Shear (lb/sq ft)	0.24	2.33	1.29
Alpha	1.07	Stream Power (lb/ft s)	0.26	13.87	5.67
Frctn Loss (ft)	2.16	Cum Volume (acre-ft)	0.02	0.26	0.38
C & E Loss (ft)	0.07	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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2244.27	Element			
Vel Head (ft)	0.83	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2243.44	Reach Len. (ft)	241.90	241.90	241.90
Crit W.S. (ft)	2243.44	Flow Area (sq ft)	0.74	29.92	0.68
E.G. Slope (ft/ft)	0.029385	Area (sq ft)	0.74	29.92	0.68
Q Total (cfs)	223.00	Flow (cfs)	1.81	219.74	1.44
Top Width (ft)	19.99	Top Width (ft)	1.14	16.72	2.13
Vel Total (ft/s)	7.12	Avg. Vel. (ft/s)	2.45	7.35	2.11
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)	0.65	1.79	0.32
Conv. Total (cfs)	1300.9	Conv. (cfs)	10.6	1281.9	8.4
Length Wtd. (ft)	241.90	Wetted Per. (ft)	1.69	17.28	2.23
Min Ch El (ft)	2240.58	Shear (lb/sq ft)	0.80	3.18	0.56
Alpha	1.05	Stream Power (lb/ft s)	1.97	23.33	1.19
Frctn Loss (ft)	2.47	Cum Volume (acre-ft)	0.05	0.35	0.09
C & E Loss (ft)	0.13	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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.21	9989.91	0.16	0.15	1.20	0.07	0.13	1.09
2	Chan	9989.91	9992.30	3.68	1.25	2.45	1.65	0.52	2.95
3	Chan	9992.30	9994.69	11.80	2.51	2.45	5.29	1.05	4.69
4	Chan	9994.69	9997.08	23.25	3.78	2.45	10.43	1.58	6.16
5	Chan	9997.08	9999.46	37.51	5.03	2.45	16.82	2.11	7.45
6	Chan	9999.46	10001.85	32.29	4.64	2.50	14.48	1.94	6.96
7	Chan	10001.85	10004.24	14.78	2.90	2.50	6.63	1.21	5.09
8	Chan	10004.24	10006.63	3.24	1.17	2.50	1.45	0.49	2.77
9	ROB	10006.63	10032.51	0.02	0.03	0.43	0.01	0.06	0.71
10	ROB	10032.51	10058.38						
11	ROB	10058.38	10084.26	25.20	7.05	14.03	11.30	0.50	3.57
12	ROB	10084.26	10110.13	71.06	14.83	17.70	31.87	0.84	4.79

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.21	9989.91	1.81	0.74	1.69	0.81	0.65	2.45
2	Chan	9989.91	9992.30	12.04	2.48	2.45	5.40	1.04	4.85
3	Chan	9992.30	9994.69	23.89	3.75	2.45	10.71	1.57	6.37
4	Chan	9994.69	9997.08	38.77	5.01	2.45	17.38	2.10	7.74
5	Chan	9997.08	9999.46	56.26	6.27	2.45	25.23	2.62	8.98
6	Chan	9999.46	10001.85	49.80	5.87	2.50	22.33	2.46	8.48
7	Chan	10001.85	10004.24	27.77	4.14	2.50	12.45	1.73	6.72
8	Chan	10004.24	10006.63	11.21	2.40	2.50	5.03	1.00	4.67
9	ROB	10006.63	10032.51	1.44	0.68	2.23	0.65	0.32	2.11

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: 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: X1
REACH: Reach 3 RS: 0.163

INPUT
Description: Junction 1
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9911.538	2241.99	9941.678	2239.96	9975.028	2237.72	9975.678	2237.69	9979.468	2237.38
9987.758	2236.3	9987.76	2236.31	10000.14	2234.68	10006.18	2235.21	10012.98	2235.83
10019.86	2236.11	10026.17	2236.42	10030.04	2236.61	10030.95	2236.66	10033.67	2236.43
10034.85	2236.26	10039.79	2235.56	10041.34	2235.59	10043.4	2235.74	10051.06	2236.38
10052.78	2236.75	10055.76	2237.08	10058.55	2236.93	10070.94	2236.19	10072.13	2236.12
10072.42	2236.11	10073.82	2235.96	10082.68	2235.04	10083.9	2234.96	10085.93	2235.5
10089.41	2236.42	10096.65	2238.33	10097.5	2238.35	10119.5	2239.26	10128.61	2239.49
10129.76	2239.49	10130.78	2239.51	10132.66	2239.51	10145.03	2240.47	10155.82	2241.22
10156.12	2241.24	10156.42	2241.26	10161.93	2241.39				

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9911.538	.06	9987.76	.05	10019.86	.05	10034.85	.05	10051.06	.055
10072.13	.05	10089.41	.06						

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.76	10019.86	249.82	261.89	269.1	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2237.99	Element			
Vel Head (ft)	0.22	Wt. n-Val.	0.060	0.050	0.052
W.S. Elev (ft)	2237.77	Reach Len. (ft)	249.82	261.89	269.10
Crit W.S. (ft)		Flow Area (sq ft)	8.71	73.14	115.67
E.G. Slope (ft/ft)	0.006813	Area (sq ft)	8.71	73.14	115.67
Q Total (cfs)	708.00	Flow (cfs)	13.22	309.62	385.16
Top Width (ft)	120.30	Top Width (ft)	13.52	32.10	74.68
Vel Total (ft/s)	3.58	Avg. Vel. (ft/s)	1.52	4.23	3.33
Max Chl Dpth (ft)	3.09	Hydr. Depth (ft)	0.64	2.28	1.55
Conv. Total (cfs)	8577.5	Conv. (cfs)	160.1	3751.1	4666.3
Length Wtd. (ft)	259.37	Wetted Per. (ft)	13.61	32.26	75.31
Min Ch El (ft)	2234.68	Shear (lb/sq ft)	0.27	0.96	0.65
Alpha	1.08	Stream Power (lb/ft s)	0.41	4.08	2.18
Frctn Loss (ft)	2.30	Cum Volume (acre-ft)	0.78	1.38	0.60
C & E Loss (ft)	0.02	Cum SA (acres)	0.75	0.53	0.58

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2238.91	Element			
Vel Head (ft)	0.41	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2238.51	Reach Len. (ft)	249.82	261.89	269.10
Crit W.S. (ft)		Flow Area (sq ft)	18.35	96.63	32.33
E.G. Slope (ft/ft)	0.008007	Area (sq ft)	18.35	96.63	32.33
Q Total (cfs)	708.00	Flow (cfs)	48.65	533.90	125.46
Top Width (ft)	60.66	Top Width (ft)	13.18	32.10	15.38
Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)	2.65	5.53	3.88
Max Chl Dpth (ft)	3.82	Hydr. Depth (ft)	1.39	3.01	2.10
Conv. Total (cfs)	7912.4	Conv. (cfs)	543.7	5966.7	1402.1
Length Wtd. (ft)	258.17	Wetted Per. (ft)	14.02	32.26	17.72
Min Ch El (ft)	2234.68	Shear (lb/sq ft)	0.65	1.50	0.91
Alpha	1.13	Stream Power (lb/ft s)	1.73	8.27	3.54
Frctn Loss (ft)	2.50	Cum Volume (acre-ft)	0.54	1.54	0.25
C & E Loss (ft)	0.03	Cum SA (acres)	0.36	0.53	0.18

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.52	9987.76	13.22	8.71	13.61	1.87	0.64	1.52
2	Chan	9987.76	9992.35	28.49	8.13	4.63	4.02	1.77	3.50
3	Chan	9992.35	9996.93	46.31	10.88	4.63	6.54	2.37	4.26
4	Chan	9996.93	10001.52	65.81	13.43	4.62	9.30	2.93	4.90
5	Chan	10001.52	10006.10	60.36	12.73	4.60	8.53	2.78	4.74
6	Chan	10006.10	10010.69	46.27	10.86	4.61	6.54	2.37	4.26
7	Chan	10010.69	10015.27	34.17	9.05	4.60	4.83	1.97	3.78
8	Chan	10015.27	10019.86	28.19	8.06	4.59	3.98	1.76	3.50
9	ROB	10019.86	10048.27	153.63	46.34	28.52	21.70	1.63	3.31
10	ROB	10048.27	10076.69	102.17	36.48	28.53	14.43	1.28	2.80
11	ROB	10076.69	10105.10	129.37	32.84	18.25	18.27	1.84	3.94

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.52	9987.76	48.65	18.35	14.02	6.87	1.39	2.65
2	Chan	9987.76	9992.35	55.40	11.49	4.63	7.82	2.50	4.82
3	Chan	9992.35	9996.93	79.24	14.24	4.63	11.19	3.10	5.56
4	Chan	9996.93	10001.52	104.33	16.79	4.62	14.74	3.66	6.22
5	Chan	10001.52	10006.10	97.44	16.09	4.60	13.76	3.51	6.06
6	Chan	10006.10	10010.69	79.23	14.21	4.61	11.19	3.10	5.57
7	Chan	10010.69	10015.27	63.20	12.40	4.60	8.93	2.70	5.10
8	Chan	10015.27	10019.86	55.06	11.41	4.59	7.78	2.49	4.83
9	ROB	10019.86	10048.27	125.46	32.33	17.72	17.72	2.10	3.88

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: X1
REACH: Reach 3 RS: 0.113

INPUT
Description: Private Drive Way
Station Elevation Data num= 67

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9870.451 2235.749872.731  2235.79876.581 2235.619877.581 2235.599883.701 2235.37
9886.941 2235.249887.681 2235.239893.391 2235.059896.791 2234.989902.091 2234.75
9906.391 2234.619911.521 2234.519915.181 2234.42 9919.21 2234.269919.211 2234.26
9922.341 2234.169922.481 2234.149923.021 2234.13 9930.45 2234.079930.451 2234.07
9933.081 2234.029935.681 2233.999941.181 2234.019943.211 2234.029948.611 2233.99
9954.981    22349959.261 2234.089963.651 2234.089967.861  2234.19972.421 2234.16
9979.701 2234.219984.521 2234.289990.611 2234.38 9994.56 2234.439994.561 2234.43
10001.36 2234.4410004.36 2234.4410012.23 2234.4210014.26 2234.4110018.27 2234.43
10026.23 2234.4910026.79 2234.4710033.25 2234.5210035.17 2234.5910036.47 2234.63
10039.18 2234.7210048.05 2234.9510050.79    223510058.25 2235.0910061.47 2235.09
10064.16  2235.110068.94 2235.2710073.39 2235.3410078.15  2235.410082.66 2235.32
10085.12 2235.3710092.85 2235.4510094.43 2235.4510095.37 2235.4510101.08 2235.48
10101.63 2235.4710107.77 2235.5310108.55 2235.5610118.57 2235.7110118.99 2235.71
10119.82 2235.7310121.12 2235.75
```

Manning's n Values num= 2

```
     Sta   n Val     Sta   n Val
9870.451    .0559896.791     .03
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9994.5610026.23            15.54   15.56   15.56              .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   1004810121.12              F
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2235.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.030	0.030	0.030
W.S. Elev (ft)	2235.24	Reach Len. (ft)	15.54	15.56	15.56
Crit W.S. (ft)	2235.24	Flow Area (sq ft)	100.05	25.48	12.52
E.G. Slope (ft/ft)	0.012053	Area (sq ft)	100.05	25.48	15.91
Q Total (cfs)	708.00	Flow (cfs)	541.01	119.89	47.10
Top Width (ft)	181.26	Top Width (ft)	107.67	31.67	41.92
Vel Total (ft/s)	5.13	Avg. Vel. (ft/s)	5.41	4.70	3.76
Max Chl Dpth (ft)	1.25	Hydr. Depth (ft)	0.93	0.80	0.58
Conv. Total (cfs)	6448.8	Conv. (cfs)	4927.8	1092.0	429.0
Length Wtd. (ft)	15.55	Wetted Per. (ft)	107.69	31.67	21.78
Min Ch El (ft)	2234.41	Shear (lb/sq ft)	0.70	0.61	0.43
Alpha	1.03	Stream Power (lb/ft s)	3.78	2.85	1.63
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	0.47	1.09	0.20
C & E Loss (ft)	0.04	Cum SA (acres)	0.40	0.34	0.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2236.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.030	0.030	
W.S. Elev (ft)	2235.70	Reach Len. (ft)	15.54	15.56	15.56
Crit W.S. (ft)	2235.70	Flow Area (sq ft)	66.31	39.91	
E.G. Slope (ft/ft)	0.011916	Area (sq ft)	66.31	39.91	
Q Total (cfs)	708.00	Flow (cfs)	462.50	245.50	
Top Width (ft)	75.23	Top Width (ft)	43.56	31.67	
Vel Total (ft/s)	6.67	Avg. Vel. (ft/s)	6.97	6.15	
Max Chl Dpth (ft)	1.70	Hydr. Depth (ft)	1.52	1.26	
Conv. Total (cfs)	6485.8	Conv. (cfs)	4236.8	2248.9	
Length Wtd. (ft)	15.55	Wetted Per. (ft)	45.27	32.88	
Min Ch El (ft)	2234.41	Shear (lb/sq ft)	1.09	0.90	
Alpha	1.01	Stream Power (lb/ft s)	7.60	5.55	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	0.29	1.13	0.15
C & E Loss (ft)	0.03	Cum SA (acres)	0.20	0.34	0.13

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9870.45	9895.27	0.68	0.98	8.38	0.10	0.12	0.69
2	LOB	9895.27	9920.10	61.45	15.65	24.84	8.68	0.63	3.93
3	LOB	9920.10	9944.92	174.02	29.36	24.82	24.58	1.18	5.93
4	LOB	9944.92	9969.74	177.83	29.75	24.82	25.12	1.20	5.98
5	LOB	9969.74	9994.56	127.03	24.31	24.82	17.94	0.98	5.23
6	Chan	9994.56	9999.08	17.27	3.66	4.52	2.44	0.81	4.72
7	Chan	9999.08	10003.61	17.06	3.63	4.52	2.41	0.80	4.70
8	Chan	10003.61	10008.13	17.17	3.65	4.52	2.43	0.81	4.71
9	Chan	10008.13	10012.66	17.58	3.70	4.52	2.48	0.82	4.75
10	Chan	10012.66	10017.18	17.88	3.74	4.52	2.53	0.83	4.79
11	Chan	10017.18	10021.71	17.06	3.63	4.52	2.41	0.80	4.70
12	Chan	10021.71	10026.23	15.88	3.48	4.52	2.24	0.77	4.56
13	ROB	10026.23	10048.00	47.10	12.52	21.78	6.65	0.58	3.76
14	ROB	10048.00	10066.28	0.00	3.32	18.28	0.00	0.18	0.00
15	ROB	10066.28	10084.56	0.00	0.06	1.87	0.00	0.03	0.00

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.92	9969.74	217.65	30.70	20.44	30.74	1.64	7.09
2	LOB	9969.74	9994.56	244.84	35.61	24.82	34.58	1.43	6.88
3	Chan	9994.56	9999.08	35.97	5.72	4.52	5.08	1.26	6.29
4	Chan	9999.08	10003.61	35.69	5.69	4.52	5.04	1.26	6.27
5	Chan	10003.61	10008.13	35.84	5.71	4.52	5.06	1.26	6.28
6	Chan	10008.13	10012.66	36.38	5.76	4.52	5.14	1.27	6.32
7	Chan	10012.66	10017.18	36.79	5.80	4.52	5.20	1.28	6.35
8	Chan	10017.18	10021.71	35.69	5.69	4.52	5.04	1.26	6.27
9	Chan	10021.71	10026.23	29.13	5.54	5.73	4.11	1.22	5.26

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: X1
REACH: Reach 3 RS: 0.110

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9868.841	2235.46	9876.021	2235.22	9876.451	2235.29	9877.411	2235.16	9880.591	2234.98
9888.781	2234.54	9889.311	2234.53	9898.361	2234.33	9900.671	2234.25	9904.651	2234.18

```
9907.631 2234.079912.201 2233.899913.591 2233.889915.231 2233.859917.171 2233.86
9917.471 2233.859919.071 2233.849919.201 2233.849919.231 2233.849921.331 2233.84
9921.471 2233.849922.821 2233.919923.411  2233.99926.371 2233.799928.711 2233.71
9937.571 2231.749941.001 2231.839942.151 2231.869948.251 2233.059952.421 2233.06
9955.391 2233.069962.771 2232.639963.651 2232.639964.901 2232.669968.631 2232.65
9975.271 2233.649979.261 2233.869982.831 2233.899985.401 2234.02 9989.57 2232.26
9989.571 2232.269996.871 2228.889999.311 2228.4510009.74 2231.82 10016.7 2233.67
10019.14 2233.82   10025 2234.5910028.56  2234.610033.68 2234.7110035.16 2234.66
10039.56 2234.4910040.95 2234.4510043.24 2234.3810044.75 2234.3410046.21 2234.34
10055.09 2234.4510055.55 2234.4710066.85 2234.57 10073.5 2234.6710080.54 2234.77
10088.01 2235.4910093.78 2235.5610097.39 2235.5910107.79 2235.55   10117 2235.73
10119.51 2235.77

Manning's n Values          num=       7
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9868.841     .039888.781    .0559928.711     .059975.271     .55 9989.57     .05
10009.74    .06510035.16     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9989.5710009.74            136.68  147.12  153.14              .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2234.40    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.81    Wt. n-Val.                0.052      0.050     0.065
  W.S. Elev (ft)          2233.59    Reach Len. (ft)          136.68     147.12    153.14
  Crit W.S. (ft)          2233.59    Flow Area (sq ft)         42.60      70.06      5.88
  E.G. Slope (ft/ft)     0.014856    Area (sq ft)              42.60      70.06      5.88
  Q Total (cfs)            708.00    Flow (cfs)               135.20     558.05     14.75
  Top Width (ft)            75.63    Top Width (ft)            48.81      20.17      6.65
  Vel Total (ft/s)           5.97    Avg. Vel. (ft/s)           3.17       7.97      2.51
  Max Chl Dpth (ft)          5.14    Hydr. Depth (ft)           0.87       3.47      0.88
  Conv. Total (cfs)         5808.8   Conv. (cfs)              1109.2     4578.6     121.0
  Length Wtd. (ft)          146.18   Wetted Per. (ft)          49.48      21.48      6.88
  Min Ch El (ft)          2228.45    Shear (lb/sq ft)           0.80       3.02      0.79
  Alpha                      1.46    Stream Power (lb/ft s)     2.53      24.09      1.99
  Frctn Loss (ft)            2.37    Cum Volume (acre-ft)       0.44       1.07      0.19
  C & E Loss (ft)            0.01    Cum SA (acres)             0.37       0.33      0.21


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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2234.78    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              1.04    Wt. n-Val.                0.055      0.050     0.065
  W.S. Elev (ft)          2233.74    Reach Len. (ft)          136.68     147.12    153.14
  Crit W.S. (ft)          2233.74    Flow Area (sq ft)         22.70      73.17      3.91
  E.G. Slope (ft/ft)     0.016388    Area (sq ft)              22.70      73.17      3.91
  Q Total (cfs)            708.00    Flow (cfs)                66.18     630.16     11.66
  Top Width (ft)            52.26    Top Width (ft)            29.64      20.17      2.45
  Vel Total (ft/s)           7.10    Avg. Vel. (ft/s)           2.92       8.61      2.98
  Max Chl Dpth (ft)          5.29    Hydr. Depth (ft)           0.77       3.63      1.60
  Conv. Total (cfs)         5530.6   Conv. (cfs)               517.0     4922.5      91.1
  Length Wtd. (ft)          146.68   Wetted Per. (ft)          30.72      21.48      3.81
  Min Ch El (ft)          2228.45    Shear (lb/sq ft)           0.76       3.48      1.05
  Alpha                      1.33    Stream Power (lb/ft s)     2.20      30.01      3.13
  Frctn Loss (ft)            2.32    Cum Volume (acre-ft)       0.28       1.11      0.15
  C & E Loss (ft)            0.05    Cum SA (acres)             0.18       0.33      0.13


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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent      Hydr   Velocity
                         (ft)        (ft)           (cfs)      (sq ft)    (ft)       Conv  Depth(ft)   (ft/s)
  1           LOB        9917.13     9941.28        56.34      14.35      12.22      7.96      1.19      3.93
  2           LOB        9941.28     9965.43        63.11      20.21      24.27      8.91      0.84      3.12
  3           LOB        9965.43     9989.57        15.76       8.04      12.98      2.23      0.64      1.96
  4           Chan       9989.57     9992.45        29.34       5.75       3.18      4.14      1.99      5.10
  5           Chan       9992.45     9995.33        68.87       9.59       3.17      9.73      3.33      7.18
  6           Chan       9995.33     9998.22       119.90      13.18       3.06     16.94      4.57      9.10
  7           Chan       9998.22     10001.10      137.60      14.18       2.99     19.44      4.92      9.70
  8           Chan       10001.10    10003.98      100.44      11.80       3.03     14.19      4.10      8.51
  9           Chan       10003.98    10006.86       65.33       9.12       3.03      9.23      3.16      7.17
  10          Chan       10006.86    10009.74       36.56       6.44       3.03      5.16      2.23      5.68
  11          ROB        10009.74    10031.69       14.75       5.88       6.88      2.08      0.88      2.51


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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9941.28	9965.43	42.14	12.54	15.12	5.95	0.87	3.36
2	LOB	9965.43	9989.57	24.04	10.16	15.59	3.40	0.67	2.37
3	Chan	9989.57	9992.45	35.04	6.19	3.18	4.95	2.15	5.66
4	Chan	9992.45	9995.33	78.33	10.04	3.17	11.06	3.48	7.81
5	Chan	9995.33	9998.22	133.65	13.62	3.06	18.88	4.73	9.81
6	Chan	9998.22	10001.10	152.79	14.63	2.99	21.58	5.08	10.45
7	Chan	10001.10	10003.98	112.67	12.25	3.03	15.91	4.25	9.20
8	Chan	10003.98	10006.86	74.59	9.56	3.03	10.53	3.32	7.80
9	Chan	10006.86	10009.74	43.10	6.88	3.03	6.09	2.39	6.26
10	ROB	10009.74	10031.69	11.66	3.91	3.81	1.65	1.60	2.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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: X1
REACH: Reach 3 RS: 0.082

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9920.728	2231.059	934.338	2228.989	937.908	2228.949	939.938	2228.959	946.048	2228.86
9946.408	2228.859	950.678	2228.779	964.468	2228.679	973.898	2228.599	979.788	2227.94
9986.332	2227.144	9990.558	2226.639	996.788	2225.19	998.678	2224.591	000.74	2224.81
10002.68	2225.091	0014.53	2226.661	0018.05	2227.111	0023.51	2227.711	0027.39	2227.75
10030.24	2227.941	0058.81	2229.861	0073.36	2231.04				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9920.728	.055	9986.33	.045	10018.05	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.33	10018.05	216.42	181.85	161.31	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2229.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2228.47	Reach Len. (ft)	216.42	181.85	161.31
Crit W.S. (ft)	2228.47	Flow Area (sq ft)	7.32	80.65	12.50
E.G. Slope (ft/ft)	0.017791	Area (sq ft)	7.32	80.65	12.50
Q Total (cfs)	708.00	Flow (cfs)	19.64	655.57	32.79
Top Width (ft)	63.10	Top Width (ft)	11.33	31.72	20.05
Vel Total (ft/s)	7.05	Avg. Vel. (ft/s)	2.68	8.13	2.62
Max Chl Dpth (ft)	3.88	Hydr. Depth (ft)	0.65	2.54	0.62
Conv. Total (cfs)	5308.0	Conv. (cfs)	147.3	4914.9	245.8
Length Wtd. (ft)	184.72	Wetted Per. (ft)	11.41	32.17	20.11
Min Ch El (ft)	2224.59	Shear (lb/sq ft)	0.71	2.78	0.69
Alpha	1.24	Stream Power (lb/ft s)	1.91	22.64	1.81
Frctn Loss (ft)	2.75	Cum Volume (acre-ft)	0.36	0.82	0.16
C & E Loss (ft)	0.06	Cum SA (acres)	0.28	0.24	0.16

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2229.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2228.56	Reach Len. (ft)	216.42	181.85	161.31
Crit W.S. (ft)	2228.56	Flow Area (sq ft)	8.41	83.69	14.42
E.G. Slope (ft/ft)	0.015302	Area (sq ft)	8.41	83.69	14.42
Q Total (cfs)	708.00	Flow (cfs)	22.81	646.70	38.48
Top Width (ft)	63.10	Top Width (ft)	11.33	31.72	20.05
Vel Total (ft/s)	6.65	Avg. Vel. (ft/s)	2.71	7.73	2.67
Max Chl Dpth (ft)	3.97	Hydr. Depth (ft)	0.74	2.64	0.72
Conv. Total (cfs)	5723.4	Conv. (cfs)	184.4	5227.9	311.1
Length Wtd. (ft)	181.85	Wetted Per. (ft)	11.50	32.17	20.20
Min Ch El (ft)	2224.59	Shear (lb/sq ft)	0.70	2.49	0.68

Alpha	1.25	Stream Power (lb/ft s)	1.89	19.21	1.82
Frctn Loss (ft)	2.82	Cum Volume (acre-ft)	0.23	0.84	0.12
C & E Loss (ft)	0.02	Cum SA (acres)	0.12	0.24	0.09

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.21	9986.33	19.64	7.32	11.41	2.77	0.65	2.68
2	Chan	9986.33	9990.86	41.62	7.25	4.57	5.88	1.60	5.74
3	Chan	9990.86	9995.39	84.52	11.19	4.67	11.94	2.47	7.55
4	Chan	9995.39	9999.92	154.74	16.06	4.65	21.86	3.54	9.64
5	Chan	9999.92	10004.46	149.66	15.64	4.57	21.14	3.45	9.57
6	Chan	10004.46	10008.99	108.36	12.88	4.57	15.30	2.84	8.41
7	Chan	10008.99	10013.52	72.98	10.16	4.57	10.31	2.24	7.18
8	Chan	10013.52	10018.05	43.71	7.47	4.57	6.17	1.65	5.85
9	ROB	10018.05	10029.11	28.87	9.78	11.10	4.08	0.88	2.95
10	ROB	10029.11	10040.17	3.92	2.71	9.01	0.55	0.30	1.44

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.21	9986.33	22.81	8.41	11.50	3.22	0.74	2.71
2	Chan	9986.33	9990.86	42.66	7.69	4.57	6.03	1.70	5.55
3	Chan	9990.86	9995.39	83.78	11.62	4.67	11.83	2.57	7.21
4	Chan	9995.39	9999.92	150.50	16.49	4.65	21.26	3.64	9.13
5	Chan	9999.92	10004.46	145.74	16.07	4.57	20.58	3.55	9.07
6	Chan	10004.46	10008.99	106.54	13.32	4.57	15.05	2.94	8.00
7	Chan	10008.99	10013.52	72.80	10.60	4.57	10.28	2.34	6.87
8	Chan	10013.52	10018.05	44.68	7.90	4.57	6.31	1.74	5.65
9	ROB	10018.05	10029.11	32.62	10.84	11.10	4.61	0.98	3.01
10	ROB	10029.11	10040.17	5.86	3.58	9.10	0.83	0.40	1.64

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 3 RS: 0.048

INPUT
Description: 18th Street
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9935.128 2227.749944.838 2226.489950.428 2225.759951.218 2225.689966.068 2224.19
9978.728 2223.12 9985.03 2222.659987.708 2222.459998.938 2222.44   10000 2222.47
10014.33 2222.8710014.59 2222.8910021.91 2222.4710022.04 2222.4610023.11 2222.38
10027.682223.01510034.54 2223.9710036.76 2224.2710038.23 2224.5110053.05 2225.35
10056.61 2225.5410066.57 2226.2210070.43 2226.6210070.66 2226.6310070.92 2226.66
10076.54 2226.5710076.89 2226.5910077.89 2226.6410078.48 2226.6810087.79  2227.5
10095.93 2228.23
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
9935.128    .0259998.938    .04510027.68     .06
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9985.0310027.68             46.39   42.02    39.3              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

```
  E.G. Elev (ft)            2225.19    Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.76    Wt. n-Val.                  0.025      0.035      0.060
```

W.S. Elev (ft)	2224.44	Reach Len. (ft)	46.39	42.02	39.30
Crit W.S. (ft)	2224.44	Flow Area (sq ft)	19.98	78.47	7.27
E.G. Slope (ft/ft)	0.012610	Area (sq ft)	19.98	78.47	7.27
Q Total (cfs)	708.00	Flow (cfs)	127.01	564.87	16.12
Top Width (ft)	74.17	Top Width (ft)	21.42	42.65	10.10
Vel Total (ft/s)	6.70	Avg. Vel. (ft/s)	6.36	7.20	2.22
Max Chl Dpth (ft)	2.06	Hydr. Depth (ft)	0.93	1.84	0.72
Conv. Total (cfs)	6304.7	Conv. (cfs)	1131.0	5030.2	143.5
Length Wtd. (ft)	42.26	Wetted Per. (ft)	21.50	42.72	10.20
Min Ch El (ft)	2222.38	Shear (lb/sq ft)	0.73	1.45	0.56
Alpha	1.09	Stream Power (lb/ft s)	4.65	10.41	1.24
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	0.30	0.48	0.12
C & E Loss (ft)	0.03	Cum SA (acres)	0.19	0.09	0.11

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2225.67	Element			
Vel Head (ft)	1.02	Wt. n-Val.		0.035	
W.S. Elev (ft)	2224.65	Reach Len. (ft)	46.39	42.02	39.30
Crit W.S. (ft)	2224.65	Flow Area (sq ft)		87.44	
E.G. Slope (ft/ft)	0.015755	Area (sq ft)		87.44	
Q Total (cfs)	708.00	Flow (cfs)		708.00	
Top Width (ft)	42.65	Top Width (ft)		42.65	
Vel Total (ft/s)	8.10	Avg. Vel. (ft/s)		8.10	
Max Chl Dpth (ft)	2.27	Hydr. Depth (ft)		2.05	
Conv. Total (cfs)	5640.6	Conv. (cfs)		5640.6	
Length Wtd. (ft)	41.83	Wetted Per. (ft)		46.35	
Min Ch El (ft)	2222.38	Shear (lb/sq ft)		1.86	
Alpha	1.00	Stream Power (lb/ft s)		15.02	
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	0.21	0.49	0.10
C & E Loss (ft)	0.00	Cum SA (acres)	0.09	0.09	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9955.09	9965.07	0.11	0.11	1.47	0.02	0.07	1.02
2	LOB	9965.07	9975.05	23.74	5.82	10.02	3.35	0.58	4.08
3	LOB	9975.05	9985.03	103.15	14.05	10.01	14.57	1.41	7.34
4	Chan	9985.03	9991.12	122.91	11.84	6.10	17.36	1.94	10.38
5	Chan	9991.12	9997.22	128.20	12.14	6.09	18.11	1.99	10.56
6	Chan	9997.22	10003.31	85.01	11.90	6.09	12.01	1.95	7.15
7	Chan	10003.31	10009.40	59.52	10.90	6.10	8.41	1.79	5.46
8	Chan	10009.40	10015.49	50.57	9.89	6.10	7.14	1.62	5.11
9	Chan	10015.49	10021.59	58.59	10.81	6.10	8.28	1.77	5.42
10	Chan	10021.59	10027.68	60.07	11.00	6.14	8.48	1.80	5.46
11	ROB	10027.68	10041.33	16.12	7.27	10.20	2.28	0.72	2.22

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9985.03	9991.12	133.82	13.12	8.10	18.90	2.15	10.20
2	Chan	9991.12	9997.22	167.92	13.42	6.09	23.72	2.20	12.51
3	Chan	9997.22	10003.31	111.64	13.18	6.09	15.77	2.16	8.47
4	Chan	10003.31	10009.40	79.37	12.18	6.10	11.21	2.00	6.52
5	Chan	10009.40	10015.49	68.65	11.17	6.10	9.70	1.83	6.15
6	Chan	10015.49	10021.59	78.25	12.09	6.10	11.05	1.98	6.47
7	Chan	10021.59	10027.68	68.36	12.28	7.77	9.65	2.01	5.57

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
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: X1
REACH: Reach 3 RS: 0.040

INPUT
Description: 18th Street
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9934.557	2226.99938.697	2226.629939.667	2226.489941.587	2226.29941.677	2226.18				
9941.837	2226.169942.037	2226.139942.607	2226.079949.447	2225.199960.707	2223.74				
9965.497	2223.539973.107	2223.019977.597	2222.459985.087	2221.869985.847	2221.87				
9988.217	2221.99989.817	2221.96 9989.822221.9599991.677	2221.54 9991.682221.539						
9994.527	2220.939998.147	2220.139999.917	2219.6510004.43	222110006.73	2221.64				
10010.22	2222.6110019.32	2222.4310021.69	2222.3710022.58	2222.39 10024.1	2222.44				
10031.7	2222.82 10044.6	2223.4610058.77	2223.92 10065.4	2224.0810070.32	2224.29				
10079.99	2225.5710083.95	2226.1910091.57	2227.1210092.23	2227.1210092.48	2227.13				
10095.54	2227.17								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9934.557	.069949.447	.059991.677	.04510006.73	.02510079.99	.06				

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.6810006.73		131.49	130.36	129.7	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2224.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.050	0.045	0.025
W.S. Elev (ft)	2223.75	Reach Len. (ft)	131.49	130.36	129.70
Crit W.S. (ft)	2223.75	Flow Area (sq ft)	33.19	46.68	40.94
E.G. Slope (ft/ft)	0.012020	Area (sq ft)	33.19	46.68	40.94
Q Total (cfs)	708.00	Flow (cfs)	112.77	351.69	243.55
Top Width (ft)	92.87	Top Width (ft)	31.04	15.05	46.77
Vel Total (ft/s)	5.86	Avg. Vel. (ft/s)	3.40	7.53	5.95
Max Chl Dpth (ft)	4.10	Hydr. Depth (ft)	1.07	3.10	0.88
Conv. Total (cfs)	6457.8	Conv. (cfs)	1028.6	3207.8	2221.5
Length Wtd. (ft)	130.39	Wetted Per. (ft)	31.17	15.55	46.94
Min Ch El (ft)	2219.65	Shear (lb/sq ft)	0.80	2.25	0.65
Alpha	1.23	Stream Power (lb/ft s)	2.71	16.97	3.89
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)	0.27	0.42	0.10
C & E Loss (ft)	0.01	Cum SA (acres)	0.17	0.06	0.08

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2224.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.	0.050	0.045	0.025
W.S. Elev (ft)	2223.76	Reach Len. (ft)	131.49	130.36	129.70
Crit W.S. (ft)	2223.76	Flow Area (sq ft)	16.66	46.81	27.54
E.G. Slope (ft/ft)	0.014946	Area (sq ft)	16.66	46.81	27.54
Q Total (cfs)	708.00	Flow (cfs)	81.57	393.91	232.52
Top Width (ft)	44.61	Top Width (ft)	8.87	15.05	20.69
Vel Total (ft/s)	7.78	Avg. Vel. (ft/s)	4.90	8.42	8.44
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)	1.88	3.11	1.33
Conv. Total (cfs)	5791.3	Conv. (cfs)	667.2	3222.1	1902.0
Length Wtd. (ft)	130.35	Wetted Per. (ft)	10.64	15.55	21.98
Min Ch El (ft)	2219.65	Shear (lb/sq ft)	1.46	2.81	1.17
Alpha	1.08	Stream Power (lb/ft s)	7.15	23.63	9.87
Frctn Loss (ft)	1.74	Cum Volume (acre-ft)	0.20	0.42	0.08
C & E Loss (ft)	0.05	Cum SA (acres)	0.09	0.06	0.04

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.41	9968.83	1.54	1.66	8.21	0.22	0.20	0.93
2	LOB	9968.83	9980.26	28.27	10.84	11.48	3.99	0.95	2.61
3	LOB	9980.26	9991.68	82.96	20.69	11.49	11.72	1.81	4.01
4	Chan	9991.68	9993.83	33.39	5.25	2.20	4.72	2.44	6.36
5	Chan	9993.83	9995.98	44.56	6.24	2.20	6.29	2.90	7.14
6	Chan	9995.98	9998.13	57.35	7.26	2.20	8.10	3.38	7.90
7	Chan	9998.13	10000.28	71.91	8.36	2.23	10.16	3.89	8.60

8	Chan	10000.28	10002.43	65.00	7.89	2.24	9.18	3.67	8.24
9	Chan	10002.43	10004.58	47.13	6.50	2.24	6.66	3.03	7.25
10	Chan	10004.58	10006.73	32.34	5.18	2.23	4.57	2.41	6.25
11	ROB	10006.73	10024.49	163.36	23.80	17.90	23.07	1.34	6.86
12	ROB	10024.49	10042.25	76.30	15.04	17.78	10.78	0.85	5.07
13	ROB	10042.25	10060.02	3.90	2.10	11.26	0.55	0.19	1.85

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.26	9991.68	81.57	16.66	10.64	11.52	1.88	4.90
2	Chan	9991.68	9993.83	37.44	5.26	2.20	5.29	2.45	7.11
3	Chan	9993.83	9995.98	49.93	6.26	2.20	7.05	2.91	7.98
4	Chan	9995.98	9998.13	64.22	7.28	2.20	9.07	3.39	8.82
5	Chan	9998.13	10000.28	80.48	8.38	2.23	11.37	3.90	9.60
6	Chan	10000.28	10002.43	72.76	7.91	2.24	10.28	3.68	9.20
7	Chan	10002.43	10004.58	52.80	6.52	2.24	7.46	3.03	8.10
8	Chan	10004.58	10006.73	36.28	5.20	2.23	5.12	2.42	6.98
9	ROB	10006.73	10024.49	208.90	23.95	17.90	29.51	1.35	8.72
10	ROB	10024.49	10042.25	23.61	3.59	4.08	3.34	1.22	6.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X1
REACH: Reach 3 RS: 0.015

INPUT
Description: Confluence with Tributary X2
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9859.428	2221.97	9862.228	2221.98	9865.608	2221.95	9867.408	2221.91	9871.278	2221.85
9875.048	2221.26	9875.498	2221.25	9877.388	2221.23	9888.698	2221.66	9890.988	2221.72
9896.768	2221.41	9903.098	2221.19	9908.958	2220.81	9909.738	2220.76	9910.408	2220.72
9915.308	2220.47	9918.608	2220.65	9918.948	2220.67	9931.028	2221.71	9931.478	2221.71
9931.778	2221.79	9933.558	2221.68	9935.988	2221.67	9937.728	2221.67	9940.568	2221.67
9941.468	2221.69	9944.378	2221.66	9947.218	2221.57	9948.288	2221.55	9949.218	2221.53
9952.428	2221.42	9953.398	2221.38	9955.668	2221.39	9956.738	2221.26	9963.188	2221.12
9975.728	2220.83	9979.438	2220.74	9982.548	2220.65	9987.35	2219.48	9994.988	2217.63
9998.108	2216.84	10001.36	2217.48	10011.78	2219.51	10027.65	2222.91	10030.77	2223.54
10031.66	2223.57	10032.7	2223.58	10039.74	2223.64	10042.12	2223.64	10044.36	2223.64

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9859.428	.05	9987.35	.045	10011.78	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.35	10011.78	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2222.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.77	Wt. n-Val.	0.050	0.045	0.065
W.S. Elev (ft)	2221.48	Reach Len. (ft)	100.64	100.64	100.64
Crit W.S. (ft)	2221.48	Flow Area (sq ft)	38.84	80.60	9.01
E.G. Slope (ft/ft)	0.010988	Area (sq ft)	38.84	80.60	9.01
Q Total (cfs)	708.00	Flow (cfs)	78.30	608.68	21.02
Top Width (ft)	113.02	Top Width (ft)	79.42	24.43	9.17
Vel Total (ft/s)	5.51	Avg. Vel. (ft/s)	2.02	7.55	2.33
Max Chl Dpth (ft)	4.63	Hydr. Depth (ft)	0.49	3.30	0.98
Conv. Total (cfs)	6754.3	Conv. (cfs)	746.9	5806.8	200.5
Length Wtd. (ft)	100.64	Wetted Per. (ft)	79.66	25.01	9.38
Min Ch El (ft)	2216.84	Shear (lb/sq ft)	0.33	2.21	0.66
Alpha	1.63	Stream Power (lb/ft s)	0.67	16.70	1.54
Frctn Loss (ft)	1.36	Cum Volume (acre-ft)	0.16	0.23	0.03
C & E Loss (ft)	0.01	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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2222.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.050	0.045	0.065
W.S. Elev (ft)	2221.45	Reach Len. (ft)	100.64	100.64	100.64
Crit W.S. (ft)	2221.45	Flow Area (sq ft)	26.63	80.00	8.79
E.G. Slope (ft/ft)	0.012052	Area (sq ft)	26.63	80.00	8.79
Q Total (cfs)	708.00	Flow (cfs)	57.15	629.56	21.29
Top Width (ft)	82.30	Top Width (ft)	48.82	24.43	9.06
Vel Total (ft/s)	6.13	Avg. Vel. (ft/s)	2.15	7.87	2.42
Max Chl Dpth (ft)	4.61	Hydr. Depth (ft)	0.55	3.27	0.97
Conv. Total (cfs)	6449.2	Conv. (cfs)	520.6	5734.7	193.9
Length Wtd. (ft)	100.64	Wetted Per. (ft)	49.97	25.01	9.26
Min Ch El (ft)	2216.84	Shear (lb/sq ft)	0.40	2.41	0.71
Alpha	1.48	Stream Power (lb/ft s)	0.86	18.94	1.73
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	0.13	0.23	0.03
C & E Loss (ft)	0.00	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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9859.43	9885.01	1.18	1.48	10.18	0.17	0.15	0.80
2	LOB	9885.01	9910.60	8.49	5.65	15.06	1.20	0.38	1.50
3	LOB	9910.60	9936.18	23.90	11.23	17.75	3.38	0.63	2.13
4	LOB	9936.18	9961.77	1.84	1.99	10.94	0.26	0.18	0.93
5	LOB	9961.77	9987.35	42.88	18.49	25.73	6.06	0.72	2.32
6	Chan	9987.35	9990.84	50.13	8.43	3.59	7.08	2.41	5.95
7	Chan	9990.84	9994.33	82.75	11.38	3.59	11.69	3.26	7.27
8	Chan	9994.33	9997.82	122.02	14.38	3.60	17.23	4.12	8.48
9	Chan	9997.82	10001.31	134.08	15.15	3.56	18.94	4.34	8.85
10	Chan	10001.31	10004.80	101.16	12.79	3.56	14.29	3.66	7.91
11	Chan	10004.80	10008.29	71.85	10.42	3.56	10.15	2.98	6.90
12	Chan	10008.29	10011.78	46.70	8.04	3.56	6.60	2.30	5.81
13	ROB	10011.78	10018.30	20.33	8.26	6.66	2.87	1.27	2.46
14	ROB	10018.30	10024.81	0.69	0.76	2.72	0.10	0.28	0.91

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9910.60	9936.18	13.40	7.04	14.01	1.89	0.54	1.90
2	LOB	9936.18	9961.77	1.59	1.72	10.23	0.22	0.17	0.92
3	LOB	9961.77	9987.35	42.17	17.86	25.73	5.96	0.70	2.36
4	Chan	9987.35	9990.84	51.59	8.34	3.59	7.29	2.39	6.18
5	Chan	9990.84	9994.33	85.54	11.30	3.59	12.08	3.24	7.57
6	Chan	9994.33	9997.82	126.47	14.30	3.60	17.86	4.10	8.85
7	Chan	9997.82	10001.31	139.04	15.07	3.56	19.64	4.32	9.23
8	Chan	10001.31	10004.80	104.71	12.70	3.56	14.79	3.64	8.24
9	Chan	10004.80	10008.29	74.19	10.33	3.56	10.48	2.96	7.18
10	Chan	10008.29	10011.78	48.02	7.96	3.56	6.78	2.28	6.03
11	ROB	10011.78	10018.30	20.65	8.09	6.66	2.92	1.24	2.55
12	ROB	10018.30	10024.81	0.64	0.69	2.60	0.09	0.27	0.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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: X2
REACH: Reach 1 RS: 1.028

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
 9939.98 2431.97 9940.07 2431.96  9942.8 2431.78 9947.01 2431.36 9948.32 2431.27
 9949.25 2431.25 9950.01 2431.29  9950.6  2431.3 9957.79 2430.81 9958.25 2430.77
 9968.59 2430.03 9969.14 2429.97  9969.4    2430 9973.92 2429.87 9976.16 2429.51
 9978.46 2429.47 9982.49 2429.43 9984.22 2429.42 9992.14 2429.24    99942428.822
 9997.57 2428.02   10000  2427.610008.48 2428.7310009.43 2428.8510009.62 2428.89
10009.81 2428.9110010.95 2429.0510020.15 2430.4410024.79 2430.8810030.03 2431.19
10036.78 2431.9910040.59 2432.7810042.38 2432.9510057.04 2433.4210072.75    2434

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9939.98    .065    9994    .05510008.48    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          999410008.48             68.25   72.07   73.75            .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2431.19   Element                  Left OB   Channel   Right OB
  Vel Head (ft)              0.63   Wt. n-Val.                0.065     0.055     0.065
  W.S. Elev (ft)          2430.56   Reach Len. (ft)           68.25     72.07     73.75
  Crit W.S. (ft)          2430.56   Flow Area (sq ft)         28.51     34.56     11.63
  E.G. Slope (ft/ft)     0.024500   Area (sq ft)              28.51     34.56     11.63
  Q Total (cfs)            390.00   Flow (cfs)                92.83    258.57     38.60
  Top Width (ft)            60.11   Top Width (ft)            32.74     14.48     12.88
  Vel Total (ft/s)           5.22   Avg. Vel. (ft/s)           3.26      7.48      3.32
  Max Chl Dpth (ft)          2.95   Hydr. Depth (ft)           0.87      2.39      0.90
  Conv. Total (cfs)        2491.6   Conv. (cfs)               593.1    1652.0     246.6
  Length Wtd. (ft)          71.69   Wetted Per. (ft)          32.85     14.68     13.01
  Min Ch El (ft)          2427.60   Shear (lb/sq ft)           1.33      3.60      1.37
  Alpha                      1.49   Stream Power (lb/ft s)     4.32     26.94      4.54
  Frctn Loss (ft)            1.84   Cum Volume (acre-ft)       2.27      5.16      1.37
  C & E Loss (ft)            0.02   Cum SA (acres)             2.77      2.57      1.90

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2431.19   Element                  Left OB   Channel   Right OB
  Vel Head (ft)              0.63   Wt. n-Val.                0.065     0.055     0.065
  W.S. Elev (ft)          2430.56   Reach Len. (ft)           68.25     72.07     73.75
  Crit W.S. (ft)          2430.56   Flow Area (sq ft)         28.51     34.56     11.63
  E.G. Slope (ft/ft)     0.024500   Area (sq ft)              28.51     34.56     11.63
  Q Total (cfs)            390.00   Flow (cfs)                92.83    258.57     38.60
  Top Width (ft)            60.11   Top Width (ft)            32.74     14.48     12.88
  Vel Total (ft/s)           5.22   Avg. Vel. (ft/s)           3.26      7.48      3.32
  Max Chl Dpth (ft)          2.95   Hydr. Depth (ft)           0.87      2.39      0.90
  Conv. Total (cfs)        2491.6   Conv. (cfs)               593.1    1652.0     246.6
  Length Wtd. (ft)          71.69   Wetted Per. (ft)          32.85     14.68     13.01
  Min Ch El (ft)          2427.60   Shear (lb/sq ft)           1.33      3.60      1.37
  Alpha                      1.49   Stream Power (lb/ft s)     4.32     26.94      4.54
  Frctn Loss (ft)            1.84   Cum Volume (acre-ft)       1.30      5.35      1.06
  C & E Loss (ft)            0.02   Cum SA (acres)             1.08      2.57      1.06

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

  Profile #profile 1

              Pos        Left Sta   Right Sta     Flow      Area      W.P.   Percent      Hydr   Velocity
                          (ft)       (ft)        (cfs)    (sq ft)    (ft)     Conv  Depth(ft)    (ft/s)
  1           LOB       9950.78    9961.59       0.00      0.00      0.33     0.00      0.01      0.17
  2           LOB       9961.59    9972.39       7.11      4.16     10.83     1.82      0.39      1.71
  3           LOB       9972.39    9983.20      34.02     10.65     10.83     8.72      0.99      3.20
  4           LOB       9983.20    9994.00      51.69     13.70     10.85    13.25      1.27      3.77
  5           Chan      9994.00    9996.07      26.25      4.06      2.12     6.73      1.97      6.46
  6           Chan      9996.07    9998.14      37.38      5.02      2.12     9.58      2.43      7.45
  7           Chan      9998.14   10000.21      47.94      5.81      2.10    12.29      2.81      8.25
  8           Chan     10000.21   10002.27      47.57      5.77      2.09    12.20      2.79      8.24
  9           Chan     10002.27   10004.34      40.00      5.20      2.09    10.26      2.51      7.69
  10          Chan     10004.34   10006.41      32.97      4.63      2.09     8.45      2.24      7.12
  11          Chan     10006.41   10008.48      26.48      4.06      2.09     6.79      1.96      6.52
  12          ROB      10008.48   10021.33      38.59     11.63     12.98     9.90      0.90      3.32

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 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.

  Profile #profile 2
```

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9950.78	9961.59	0.00	0.00	0.33	0.00	0.01	0.17
2	LOB	9961.59	9972.39	7.11	4.16	10.83	1.82	0.39	1.71
3	LOB	9972.39	9983.20	34.02	10.65	10.83	8.72	0.99	3.20
4	LOB	9983.20	9994.00	51.69	13.70	10.85	13.25	1.27	3.77
5	Chan	9994.00	9996.07	26.25	4.06	2.12	6.73	1.97	6.46
6	Chan	9996.07	9998.14	37.38	5.02	2.12	9.58	2.43	7.45
7	Chan	9998.14	10000.21	47.94	5.81	2.10	12.29	2.81	8.25
8	Chan	10000.21	10002.27	47.57	5.77	2.09	12.20	2.79	8.24
9	Chan	10002.27	10004.34	40.00	5.20	2.09	10.26	2.51	7.69
10	Chan	10004.34	10006.41	32.97	4.63	2.09	8.45	2.24	7.12
11	Chan	10006.41	10008.48	26.48	4.06	2.09	6.79	1.96	6.52
12	ROB	10008.48	10021.33	38.59	11.63	12.98	9.90	0.90	3.32

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 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: X2
REACH: Reach 1 RS: 1.014

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9945.607	2432.01	9947.107	2431.71	9947.997	2431.53	9951.857	2430.61	9954.827	2430.08
9971.357	2427.89	9975.887	2427.16	9979.207	2426.57	9980.447	2426.49	9987.447	2424.84
9990.297	2424.06	9993.597	2423.39	9993.62	2423.38	9998.647	2422.23	10004.38	2422.35
10007.03	2422.39	10010.51	2423.17	10013.05	2423.7	10015.2	2424.11	10017.83	2424.02
10020.54	2424.11	10023.98	2424.04	10027.93	2424.91	10035.36	2426.66	10041.06	2427.37
10041.92	2427.48	10046.49	2427.91	10048.56	2428.07	10057.72	2428.87	10065.57	2429.53
10071.5	2429.96								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9945.607	.065	9993.6	.055	10013.05	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.61	10013.05	125.78	108.14	90.6	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2425.73	Element			
Vel Head (ft)	0.79	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2424.94	Reach Len. (ft)	125.78	108.14	90.60
Crit W.S. (ft)	2424.94	Flow Area (sq ft)	5.46	44.18	11.78
E.G. Slope (ft/ft)	0.026883	Area (sq ft)	5.46	44.18	11.78
Q Total (cfs)	390.00	Flow (cfs)	17.68	335.03	37.29
Top Width (ft)	41.10	Top Width (ft)	6.62	19.45	15.03
Vel Total (ft/s)	6.35	Avg. Vel. (ft/s)	3.24	7.58	3.17
Max Chl Dpth (ft)	2.71	Hydr. Depth (ft)	0.82	2.27	0.78
Conv. Total (cfs)	2378.6	Conv. (cfs)	107.8	2043.4	227.4
Length Wtd. (ft)	107.69	Wetted Per. (ft)	6.80	19.72	15.17
Min Ch El (ft)	2422.23	Shear (lb/sq ft)	1.35	3.76	1.30
Alpha	1.26	Stream Power (lb/ft s)	4.36	28.51	4.13
Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	2.24	5.10	1.35
C & E Loss (ft)	0.02	Cum SA (acres)	2.74	2.54	1.88

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2425.73	Element			
Vel Head (ft)	0.79	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2424.94	Reach Len. (ft)	125.78	108.14	90.60
Crit W.S. (ft)	2424.94	Flow Area (sq ft)	5.46	44.18	11.78
E.G. Slope (ft/ft)	0.026883	Area (sq ft)	5.46	44.18	11.78
Q Total (cfs)	390.00	Flow (cfs)	17.68	335.03	37.29
Top Width (ft)	41.10	Top Width (ft)	6.62	19.45	15.03
Vel Total (ft/s)	6.35	Avg. Vel. (ft/s)	3.24	7.58	3.17
Max Chl Dpth (ft)	2.71	Hydr. Depth (ft)	0.82	2.27	0.78
Conv. Total (cfs)	2378.6	Conv. (cfs)	107.8	2043.4	227.4
Length Wtd. (ft)	107.69	Wetted Per. (ft)	6.80	19.72	15.17
Min Ch El (ft)	2422.23	Shear (lb/sq ft)	1.35	3.76	1.30
Alpha	1.26	Stream Power (lb/ft s)	4.36	28.51	4.13
Frctn Loss (ft)	3.12	Cum Volume (acre-ft)	1.27	5.29	1.04
C & E Loss (ft)	0.02	Cum SA (acres)	1.05	2.54	1.04

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.00	9993.60	17.68	5.46	6.80	4.53	0.82	3.24
2	Chan	9993.60	9996.38	33.82	5.21	2.85	8.67	1.87	6.49
3	Chan	9996.38	9999.16	54.86	6.95	2.84	14.07	2.50	7.89
4	Chan	9999.16	10001.94	62.20	7.43	2.78	15.95	2.67	8.37
5	Chan	10001.94	10004.71	59.97	7.27	2.78	15.38	2.62	8.25
6	Chan	10004.71	10007.49	57.68	7.11	2.79	14.79	2.56	8.11
7	Chan	10007.49	10010.27	42.20	5.95	2.85	10.82	2.14	7.10
8	Chan	10010.27	10013.05	24.29	4.26	2.84	6.23	1.53	5.70
9	ROB	10013.05	10024.74	35.06	10.54	11.75	8.99	0.90	3.32
10	ROB	10024.74	10036.43	2.23	1.23	3.42	0.57	0.37	1.81

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.00	9993.60	17.68	5.46	6.80	4.53	0.82	3.24
2	Chan	9993.60	9996.38	33.82	5.21	2.85	8.67	1.87	6.49
3	Chan	9996.38	9999.16	54.86	6.95	2.84	14.07	2.50	7.89
4	Chan	9999.16	10001.94	62.20	7.43	2.78	15.95	2.67	8.37
5	Chan	10001.94	10004.71	59.97	7.27	2.78	15.38	2.62	8.25
6	Chan	10004.71	10007.49	57.68	7.11	2.79	14.79	2.56	8.11
7	Chan	10007.49	10010.27	42.20	5.95	2.85	10.82	2.14	7.10
8	Chan	10010.27	10013.05	24.29	4.26	2.84	6.23	1.53	5.70
9	ROB	10013.05	10024.74	35.06	10.54	11.75	8.99	0.90	3.32
10	ROB	10024.74	10036.43	2.23	1.23	3.42	0.57	0.37	1.81

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: X2
REACH: Reach 1 RS: 0.994

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9933.551	2426.169940.111	2424.669949.341	2423.419955.911	2422.419963.171	2421.61				
9965.801	2421.219967.371	2421.319970.431	2421.049971.241	2420.979982.791	2419.93				
9983.651	2419.9 9989.7	2418.299989.701	2418.2910000.19	2415.4710003.34	2416.48				
10005.65	2417.3810011.382	418.39310016.91	2419.3710017.37	2419.4510026.92	2420.62				
10030.91	2421.1110044.06	2422.4510046.19	2422.3710051.96	2422.8810055.29	2423.3				
10061.61	2424								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9933.551	.065	9989.7	.05510011.38	.065	

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9989.710011.38 101.83 110.79 120.64 .1 .3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2420.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2419.24	Reach Len. (ft)	101.83	110.79	120.64
Crit W.S. (ft)	2419.24	Flow Area (sq ft)	1.69	48.08	2.02
E.G. Slope (ft/ft)	0.031269	Area (sq ft)	1.69	48.08	2.02
Q Total (cfs)	390.00	Flow (cfs)	4.05	381.40	4.55
Top Width (ft)	30.02	Top Width (ft)	3.56	21.68	4.78
Vel Total (ft/s)	7.53	Avg. Vel. (ft/s)	2.40	7.93	2.25
Max Chl Dpth (ft)	3.77	Hydr. Depth (ft)	0.47	2.22	0.42
Conv. Total (cfs)	2205.5	Conv. (cfs)	22.9	2156.9	25.7
Length Wtd. (ft)	110.83	Wetted Per. (ft)	3.68	22.47	4.85
Min Ch El (ft)	2415.47	Shear (lb/sq ft)	0.89	4.18	0.81
Alpha	1.09	Stream Power (lb/ft s)	2.15	33.14	1.83
Frctn Loss (ft)	3.25	Cum Volume (acre-ft)	2.23	4.98	1.34

C & E Loss (ft)	0.01	Cum SA (acres)	2.72	2.49	1.86

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2420.20	Element			
Vel Head (ft)	0.96	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2419.24	Reach Len. (ft)	101.83	110.79	120.64
Crit W.S. (ft)	2419.24	Flow Area (sq ft)	1.69	48.08	2.02
E.G. Slope (ft/ft)	0.031269	Area (sq ft)	1.69	48.08	2.02
Q Total (cfs)	390.00	Flow (cfs)	4.05	381.40	4.55
Top Width (ft)	30.02	Top Width (ft)	3.56	21.68	4.78
Vel Total (ft/s)	7.53	Avg. Vel. (ft/s)	2.40	7.93	2.25
Max Chl Dpth (ft)	3.77	Hydr. Depth (ft)	0.47	2.22	0.42
Conv. Total (cfs)	2205.5	Conv. (cfs)	22.9	2156.9	25.7
Length Wtd. (ft)	110.83	Wetted Per. (ft)	3.68	22.47	4.85
Min Ch El (ft)	2415.47	Shear (lb/sq ft)	0.89	4.18	0.81
Alpha	1.09	Stream Power (lb/ft s)	2.15	33.14	1.83
Frctn Loss (ft)	3.25	Cum Volume (acre-ft)	1.26	5.17	1.03
C & E Loss (ft)	0.01	Cum SA (acres)	1.04	2.49	1.01

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.47	9989.70	4.05	1.69	3.68	1.04	0.47	2.40
2	Chan	9989.70	9992.80	22.58	4.22	3.21	5.79	1.36	5.35
3	Chan	9992.80	9995.90	49.98	6.80	3.21	12.81	2.20	7.35
4	Chan	9995.90	9998.99	85.37	9.38	3.21	21.89	3.03	9.10
5	Chan	9998.99	10002.09	109.00	10.90	3.24	27.95	3.52	10.00
6	Chan	10002.09	10005.19	66.03	8.13	3.29	16.93	2.62	8.13
7	Chan	10005.19	10008.28	32.00	5.18	3.17	8.21	1.67	6.17
8	Chan	10008.28	10011.38	16.44	3.46	3.14	4.21	1.12	4.75
9	ROB	10011.38	10021.43	4.55	2.02	4.85	1.17	0.42	2.25

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.47	9989.70	4.05	1.69	3.68	1.04	0.47	2.40
2	Chan	9989.70	9992.80	22.58	4.22	3.21	5.79	1.36	5.35
3	Chan	9992.80	9995.90	49.98	6.80	3.21	12.81	2.20	7.35
4	Chan	9995.90	9998.99	85.37	9.38	3.21	21.89	3.03	9.10
5	Chan	9998.99	10002.09	109.00	10.90	3.24	27.95	3.52	10.00
6	Chan	10002.09	10005.19	66.03	8.13	3.29	16.93	2.62	8.13
7	Chan	10005.19	10008.28	32.00	5.18	3.17	8.21	1.67	6.17
8	Chan	10008.28	10011.38	16.44	3.46	3.14	4.21	1.12	4.75
9	ROB	10011.38	10021.43	4.55	2.02	4.85	1.17	0.42	2.25

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: 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: X2
REACH: Reach 1 RS: 0.973

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9910.702	2419.93	9920.142	2418.61	9923.982	2418.07	9939.852	2416.91	9952.632	2415.99
9963.602	2415.29	9965.442	2415.99	9982.522	2413.31	9985.252	2412.99	9992.292	2411.261

9996.572 2410.219999.352 2409.53 10000.2 2409.310000.93 2409.5210007.432411.243
10010.74 2412.12 10011.7 2412.2810020.09 2413.7410023.43 2414.3310038.16 2415.23
10041.88 2415.46 10050.4 2416.05 10053.4 2416.1310056.83 2416.6210059.46 2416.96
10069.15 2417.5610076.33 2418.01

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9910.702	.065	9992.29	.05	10007.43	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.29	10007.43	131.53	126.78	119.75	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2414.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.03	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2412.99	Reach Len. (ft)	131.53	126.78	119.75
Crit W.S. (ft)	2412.99	Flow Area (sq ft)	6.07	40.90	6.52
E.G. Slope (ft/ft)	0.027636	Area (sq ft)	6.07	40.90	6.52
Q Total (cfs)	390.00	Flow (cfs)	20.52	348.74	20.74
Top Width (ft)	30.51	Top Width (ft)	7.03	15.14	8.34
Vel Total (ft/s)	7.29	Avg. Vel. (ft/s)	3.38	8.53	3.18
Max Chl Dpth (ft)	3.69	Hydr. Depth (ft)	0.86	2.70	0.78
Conv. Total (cfs)	2346.0	Conv. (cfs)	123.5	2097.8	124.7
Length Wtd. (ft)	126.33	Wetted Per. (ft)	7.24	15.64	8.53
Min Ch El (ft)	2409.30	Shear (lb/sq ft)	1.45	4.51	1.32
Alpha	1.24	Stream Power (lb/ft s)	4.89	38.48	4.19
Frctn Loss (ft)	3.66	Cum Volume (acre-ft)	2.22	4.87	1.33
C & E Loss (ft)	0.08	Cum SA (acres)	2.71	2.44	1.84

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2414.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.03	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2412.99	Reach Len. (ft)	131.53	126.78	119.75
Crit W.S. (ft)	2412.99	Flow Area (sq ft)	6.07	40.90	6.52
E.G. Slope (ft/ft)	0.027636	Area (sq ft)	6.07	40.90	6.52
Q Total (cfs)	390.00	Flow (cfs)	20.52	348.74	20.74
Top Width (ft)	30.51	Top Width (ft)	7.03	15.14	8.34
Vel Total (ft/s)	7.29	Avg. Vel. (ft/s)	3.38	8.53	3.18
Max Chl Dpth (ft)	3.69	Hydr. Depth (ft)	0.86	2.70	0.78
Conv. Total (cfs)	2346.0	Conv. (cfs)	123.5	2097.8	124.7
Length Wtd. (ft)	126.33	Wetted Per. (ft)	7.24	15.64	8.53
Min Ch El (ft)	2409.30	Shear (lb/sq ft)	1.45	4.51	1.32
Alpha	1.24	Stream Power (lb/ft s)	4.89	38.48	4.19
Frctn Loss (ft)	3.66	Cum Volume (acre-ft)	1.26	5.06	1.02
C & E Loss (ft)	0.08	Cum SA (acres)	1.03	2.44	1.00

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.97	9992.29	20.52	6.07	7.24	5.26	0.86	3.38
2	Chan	9992.29	9994.45	29.43	4.31	2.23	7.55	1.99	6.83
3	Chan	9994.45	9996.62	43.60	5.46	2.23	11.18	2.52	7.99
4	Chan	9996.62	9998.78	59.93	6.60	2.23	15.37	3.05	9.07
5	Chan	9998.78	10000.94	75.78	7.63	2.24	19.43	3.53	9.94
6	Chan	10000.94	10003.10	63.87	6.88	2.24	16.38	3.18	9.29
7	Chan	10003.10	10005.27	45.83	5.63	2.24	11.75	2.61	8.14
8	Chan	10005.27	10007.43	30.30	4.40	2.24	7.77	2.03	6.89
9	ROB	10007.43	10021.21	20.74	6.52	8.53	5.32	0.78	3.18

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.97	9992.29	20.52	6.07	7.24	5.26	0.86	3.38
2	Chan	9992.29	9994.45	29.43	4.31	2.23	7.55	1.99	6.83
3	Chan	9994.45	9996.62	43.60	5.46	2.23	11.18	2.52	7.99

4	Chan	9996.62	9998.78	59.93	6.60	2.23	15.37	3.05	9.07
5	Chan	9998.78	10000.94	75.78	7.63	2.24	19.43	3.53	9.94
6	Chan	10000.94	10003.10	63.87	6.88	2.24	16.38	3.18	9.29
7	Chan	10003.10	10005.27	45.83	5.63	2.24	11.75	2.61	8.14
8	Chan	10005.27	10007.43	30.30	4.40	2.24	7.77	2.03	6.89
9	ROB	10007.43	10021.21	20.74	6.52	8.53	5.32	0.78	3.18

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

CROSS SECTION

RIVER: X2
REACH: Reach 1 RS: 0.949

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9946.822	2412.029	947.702	2411.799	950.532	24119	957.802	2407.959	958.702	2407.93
9961.582	2407.769	966.302	2407.579	968.842	2407.399	973.162	2407.069	973.282	2407.05
9973.352	2407.059	973.462	2407.039	981.312	2405.779	988.902	2404.439	988.922	2404.43
9989.092	2404.41	9994.73	2403.73	10000.25	2403.07	10002.62	2403.29	10007.63	2403.68
10011.85	2403.98	10013.46	2404.15	10022.4	2405.45	10034.52	2407.56	10043.15	2407.9
10050.25	2408.15	10056.83	2408.39	10069.4	2408.96	10071.52	2409.26	10079.52	2409.85

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9946.822	.065	9994.73	.055	10007.63	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.73	10007.63	87.09	82.53	81.4	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2406.49	Element			
Vel Head (ft)	0.77	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2405.72	Reach Len. (ft)	87.09	82.53	81.40
Crit W.S. (ft)	2405.72	Flow Area (sq ft)	14.21	29.97	19.02
E.G. Slope (ft/ft)	0.030442	Area (sq ft)	14.21	29.97	19.02
Q Total (cfs)	390.00	Flow (cfs)	59.34	247.02	83.63
Top Width (ft)	42.32	Top Width (ft)	13.12	12.90	16.30
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	4.18	8.24	4.40
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)	1.08	2.32	1.17
Conv. Total (cfs)	2235.3	Conv. (cfs)	340.1	1415.8	479.3
Length Wtd. (ft)	82.83	Wetted Per. (ft)	13.27	12.96	16.44
Min Ch El (ft)	2403.07	Shear (lb/sq ft)	2.04	4.39	2.20
Alpha	1.31	Stream Power (lb/ft s)	8.50	36.21	9.67
Frctn Loss (ft)	2.33	Cum Volume (acre-ft)	2.19	4.77	1.29
C & E Loss (ft)	0.01	Cum SA (acres)	2.68	2.40	1.80

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2406.49	Element			
Vel Head (ft)	0.77	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2405.72	Reach Len. (ft)	87.09	82.53	81.40
Crit W.S. (ft)	2405.72	Flow Area (sq ft)	14.21	29.97	19.02
E.G. Slope (ft/ft)	0.030442	Area (sq ft)	14.21	29.97	19.02
Q Total (cfs)	390.00	Flow (cfs)	59.34	247.02	83.63
Top Width (ft)	42.32	Top Width (ft)	13.12	12.90	16.30
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	4.18	8.24	4.40
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)	1.08	2.32	1.17
Conv. Total (cfs)	2235.3	Conv. (cfs)	340.1	1415.8	479.3
Length Wtd. (ft)	82.83	Wetted Per. (ft)	13.27	12.96	16.44
Min Ch El (ft)	2403.07	Shear (lb/sq ft)	2.04	4.39	2.20
Alpha	1.31	Stream Power (lb/ft s)	8.50	36.21	9.67
Frctn Loss (ft)	2.33	Cum Volume (acre-ft)	1.22	4.95	0.98
C & E Loss (ft)	0.01	Cum SA (acres)	1.00	2.40	0.96

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.57	9985.15	1.80	1.10	3.59	0.46	0.31	1.63
2	LOB	9985.15	9994.73	57.54	13.11	9.68	14.75	1.37	4.39
3	Chan	9994.73	9996.57	29.55	3.86	1.86	7.58	2.09	7.66
4	Chan	9996.57	9998.42	34.93	4.27	1.86	8.96	2.32	8.19
5	Chan	9998.42	10000.26	40.68	4.68	1.86	10.43	2.54	8.70
6	Chan	10000.26	10002.10	41.38	4.72	1.85	10.61	2.56	8.77
7	Chan	10002.10	10003.94	37.08	4.42	1.85	9.51	2.40	8.40
8	Chan	10003.94	10005.79	33.44	4.15	1.85	8.57	2.25	8.06
9	Chan	10005.79	10007.63	29.96	3.89	1.85	7.68	2.11	7.71
10	ROB	10007.63	10022.01	83.27	18.70	14.49	21.35	1.30	4.45
11	ROB	10022.01	10036.39	0.36	0.32	1.95	0.09	0.17	1.13

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.57	9985.15	1.80	1.10	3.59	0.46	0.31	1.63
2	LOB	9985.15	9994.73	57.54	13.11	9.68	14.75	1.37	4.39
3	Chan	9994.73	9996.57	29.55	3.86	1.86	7.58	2.09	7.66
4	Chan	9996.57	9998.42	34.93	4.27	1.86	8.96	2.32	8.19
5	Chan	9998.42	10000.26	40.68	4.68	1.86	10.43	2.54	8.70
6	Chan	10000.26	10002.10	41.38	4.72	1.85	10.61	2.56	8.77
7	Chan	10002.10	10003.94	37.08	4.42	1.85	9.51	2.40	8.40
8	Chan	10003.94	10005.79	33.44	4.15	1.85	8.57	2.25	8.06
9	Chan	10005.79	10007.63	29.96	3.89	1.85	7.68	2.11	7.71
10	ROB	10007.63	10022.01	83.27	18.70	14.49	21.35	1.30	4.45
11	ROB	10022.01	10036.39	0.36	0.32	1.95	0.09	0.17	1.13

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: X2
REACH: Reach 1 RS: 0.933

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9924.519	2402.149	9946.979	2400.849	9950.629	2400.79	9957.199	2401.149	9959.189	2401.24
9960.159	2401.239	9960.369	2401.239	9960.949	2401.239	9972.469	2400.979	9972.699	2400.93
9980.239	2399.69	9981.919	2399.469	9986.289	2398.99	9991.549	2397.66	9991.55	2397.66
9996.559	2396.76	10000.09	2396.29	10005.58	2397.37	10012.62	2398.58	10019.27	2400.38
10024.82	2401.93	10031.28	2402.48	10041.47	2403.34	10047.83	2403.86	10051.56	2404.76
10056.53	2406.09								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9924.519	.065	9991.55	.05	10005.58	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.55	10005.58	64.06	97.19	125.9	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2400.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2399.56	Reach Len. (ft)	64.06	97.19	125.90
Crit W.S. (ft)	2399.56	Flow Area (sq ft)	8.43	37.45	12.91
E.G. Slope (ft/ft)	0.025994	Area (sq ft)	8.43	37.45	12.91
Q Total (cfs)	390.00	Flow (cfs)	26.05	310.65	53.30
Top Width (ft)	35.49	Top Width (ft)	10.80	14.03	10.65
Vel Total (ft/s)	6.63	Avg. Vel. (ft/s)	3.09	8.30	4.13
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	0.78	2.67	1.21
Conv. Total (cfs)	2419.0	Conv. (cfs)	161.6	1926.8	330.6
Length Wtd. (ft)	97.18	Wetted Per. (ft)	10.99	14.25	10.89
Min Ch El (ft)	2396.29	Shear (lb/sq ft)	1.25	4.27	1.92
Alpha	1.31	Stream Power (lb/ft s)	3.85	35.38	7.95
Frctn Loss (ft)	2.61	Cum Volume (acre-ft)	2.17	4.70	1.26
C & E Loss (ft)	0.01	Cum SA (acres)	2.66	2.38	1.78

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

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2400.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.	0.065	0.055	0.065
W.S. Elev (ft)	2399.56	Reach Len. (ft)	64.06	97.19	125.90
Crit W.S. (ft)	2399.56	Flow Area (sq ft)	8.43	37.45	12.91
E.G. Slope (ft/ft)	0.025994	Area (sq ft)	8.43	37.45	12.91
Q Total (cfs)	390.00	Flow (cfs)	26.05	310.65	53.30
Top Width (ft)	35.49	Top Width (ft)	10.80	14.03	10.65
Vel Total (ft/s)	6.63	Avg. Vel. (ft/s)	3.09	8.30	4.13
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	0.78	2.67	1.21
Conv. Total (cfs)	2419.0	Conv. (cfs)	161.6	1926.8	330.6
Length Wtd. (ft)	97.18	Wetted Per. (ft)	10.99	14.25	10.89
Min Ch El (ft)	2396.29	Shear (lb/sq ft)	1.25	4.27	1.92
Alpha	1.31	Stream Power (lb/ft s)	3.85	35.38	7.95
Frctn Loss (ft)	2.61	Cum Volume (acre-ft)	1.20	4.89	0.95
C & E Loss (ft)	0.01	Cum SA (acres)	0.97	2.38	0.94

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.14	9991.55	26.05	8.43	10.99	6.68	0.78	3.09
2	Chan	9991.55	9993.55	28.93	4.16	2.04	7.42	2.08	6.95
3	Chan	9993.55	9995.56	37.78	4.89	2.04	9.69	2.44	7.73
4	Chan	9995.56	9997.56	47.28	5.58	2.03	12.12	2.79	8.47
5	Chan	9997.56	9999.57	55.57	6.14	2.02	14.25	3.06	9.04
6	Chan	9999.57	10001.57	57.88	6.31	2.04	14.84	3.15	9.17
7	Chan	10001.57	10003.58	46.89	5.57	2.04	12.02	2.78	8.42
8	Chan	10003.58	10005.58	36.32	4.78	2.04	9.31	2.38	7.60
9	ROB	10005.58	10015.77	53.29	12.88	10.41	13.66	1.26	4.14
10	ROB	10015.77	10025.96	0.02	0.03	0.48	0.00	0.06	0.55

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.14	9991.55	26.05	8.43	10.99	6.68	0.78	3.09
2	Chan	9991.55	9993.55	28.93	4.16	2.04	7.42	2.08	6.95
3	Chan	9993.55	9995.56	37.78	4.89	2.04	9.69	2.44	7.73
4	Chan	9995.56	9997.56	47.28	5.58	2.03	12.12	2.79	8.47
5	Chan	9997.56	9999.57	55.57	6.14	2.02	14.25	3.06	9.04
6	Chan	9999.57	10001.57	57.88	6.31	2.04	14.84	3.15	9.17
7	Chan	10001.57	10003.58	46.89	5.57	2.04	12.02	2.78	8.42
8	Chan	10003.58	10005.58	36.32	4.78	2.04	9.31	2.38	7.60
9	ROB	10005.58	10015.77	53.29	12.88	10.41	13.66	1.26	4.14
10	ROB	10015.77	10025.96	0.02	0.03	0.48	0.00	0.06	0.55

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: X2
REACH: Reach 1 RS: 0.915

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9922.265	2398.01	9937.385	2396.91	9946.825	2396.22	9949.185	2396.05	9949.525	2396.04
9958.435	2395.29	9960.855	2394.89	9963.235	2394.46	9967.135	2393.88	9968.415	2393.69
9968.715	2393.62	9969.965	2393.66	9970.735	2393.65	9976.815	2393.91	9977.965	2393.72
9986.935	2392.23	9987.485	2392.15	9988.385	2391.97	9993.342	2390.91	9999.865	2389.53
10006.24	2391.09	10009.1	2391.79	10014.23	2392.86	10015.64	2393.08	10031.17	2393.74
10047.47	2394.27	10054.42	2394.49	10070.35	2393.59	10070.94	2393.56	10076.53	2394.15
10083.34	2394.81	10084.71	2394.95	10088.3	2395.05	10091.24	2395.14	10098.63	2395.99

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9922.265     .06 9993.34    .05510006.24    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9993.3410006.24            114.74   94.56   79.24            .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2394.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2393.05	Reach Len. (ft)	114.74	94.56	79.24
Crit W.S. (ft)	2393.05	Flow Area (sq ft)	11.35	35.91	8.44
E.G. Slope (ft/ft)	0.027666	Area (sq ft)	11.35	35.91	8.44
Q Total (cfs)	390.00	Flow (cfs)	46.22	313.95	29.83
Top Width (ft)	33.45	Top Width (ft)	11.34	12.90	9.21
Vel Total (ft/s)	7.00	Avg. Vel. (ft/s)	4.07	8.74	3.53
Max Chl Dpth (ft)	3.52	Hydr. Depth (ft)	1.00	2.78	0.92
Conv. Total (cfs)	2344.7	Conv. (cfs)	277.9	1887.5	179.3
Length Wtd. (ft)	93.99	Wetted Per. (ft)	11.54	13.23	9.42
Min Ch El (ft)	2389.53	Shear (lb/sq ft)	1.70	4.69	1.55
Alpha	1.31	Stream Power (lb/ft s)	6.92	40.97	5.47
Frctn Loss (ft)	2.99	Cum Volume (acre-ft)	2.16	4.62	1.23
C & E Loss (ft)	0.07	Cum SA (acres)	2.64	2.35	1.75

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2394.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2393.05	Reach Len. (ft)	114.74	94.56	79.24
Crit W.S. (ft)	2393.05	Flow Area (sq ft)	11.35	35.91	8.44
E.G. Slope (ft/ft)	0.027666	Area (sq ft)	11.35	35.91	8.44
Q Total (cfs)	390.00	Flow (cfs)	46.22	313.95	29.83
Top Width (ft)	33.45	Top Width (ft)	11.34	12.90	9.21
Vel Total (ft/s)	7.00	Avg. Vel. (ft/s)	4.07	8.74	3.53
Max Chl Dpth (ft)	3.52	Hydr. Depth (ft)	1.00	2.78	0.92
Conv. Total (cfs)	2344.7	Conv. (cfs)	277.9	1887.5	179.3
Length Wtd. (ft)	93.99	Wetted Per. (ft)	11.54	13.23	9.42
Min Ch El (ft)	2389.53	Shear (lb/sq ft)	1.70	4.69	1.55
Alpha	1.31	Stream Power (lb/ft s)	6.92	40.97	5.47
Frctn Loss (ft)	2.99	Cum Volume (acre-ft)	1.19	4.81	0.92
C & E Loss (ft)	0.07	Cum SA (acres)	0.96	2.35	0.91

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.13	9993.34	46.22	11.35	11.54	11.85	1.00	4.07
2	Chan	9993.34	9995.18	32.98	4.29	1.88	8.46	2.33	7.69
3	Chan	9995.18	9997.03	42.74	5.01	1.88	10.96	2.72	8.52
4	Chan	9997.03	9998.87	53.48	5.74	1.88	13.71	3.11	9.32
5	Chan	9998.87	10000.71	62.33	6.30	1.89	15.98	3.42	9.90
6	Chan	10000.71	10002.55	52.52	5.69	1.90	13.47	3.09	9.23
7	Chan	10002.55	10004.40	40.37	4.86	1.90	10.35	2.64	8.31
8	Chan	10004.40	10006.24	29.53	4.03	1.90	7.57	2.19	7.33
9	ROB	10006.24	10024.72	29.83	8.44	9.42	7.65	0.92	3.53

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.13	9993.34	46.22	11.35	11.54	11.85	1.00	4.07
2	Chan	9993.34	9995.18	32.98	4.29	1.88	8.46	2.33	7.69
3	Chan	9995.18	9997.03	42.74	5.01	1.88	10.96	2.72	8.52
4	Chan	9997.03	9998.87	53.48	5.74	1.88	13.71	3.11	9.32
5	Chan	9998.87	10000.71	62.33	6.30	1.89	15.98	3.42	9.90
6	Chan	10000.71	10002.55	52.52	5.69	1.90	13.47	3.09	9.23
7	Chan	10002.55	10004.40	40.37	4.86	1.90	10.35	2.64	8.31
8	Chan	10004.40	10006.24	29.53	4.03	1.90	7.57	2.19	7.33

9	ROB	10006.24	10024.72	29.83	8.44	9.42	7.65	0.92	3.53

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: X2
REACH: Reach 1 RS: 0.897

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9945.067	2391.99	9952.977	2391.52	9966.607	2390.69	9977.757	2390.01	9985.757	2389.29
9987.687	2389.04	9991.857	2386.08	9991.86	2386.07	9993.17	2385.64	9996.057	2384.68
9998.717	2385.28	9999.677	2385.28	10000.31	2384.06	10000.43	2384.05	10000.49	2384.05
10000.77	2384.08	10008.17	2385.46	10014.86	2385.62	10021.95	2385.63	10026.95	2386.24
10031.65	2386.91	10034.16	2387.09	10040.65	2387.51	10047.18	2387.93	10048.3	2387.99
10049.21	2387.94	10051.12	2388.09	10053.46	2388.27	10060.82	2389.28	10062.34	2389.3
10079.44	2389.32	10079.97	2389.28	10082.12	2388.91	10087.34	2389.01	10094.52	2388.92
10101.42	2389.37	10102.08	2389.43	10102.84	2389.49	10114.46	2390.91	10121.22	2391.94

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9945.067	.06	9993.17	.055	10014.86	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.17	10014.86	95.39	84.93	75.65	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2387.76	Element			
Vel Head (ft)	0.78	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2386.97	Reach Len. (ft)	95.39	84.93	75.65
Crit W.S. (ft)	2386.97	Flow Area (sq ft)	2.02	40.81	16.65
E.G. Slope (ft/ft)	0.036952	Area (sq ft)	2.02	40.81	16.65
Q Total (cfs)	390.00	Flow (cfs)	7.50	312.58	69.92
Top Width (ft)	41.99	Top Width (ft)	2.57	21.69	17.73
Vel Total (ft/s)	6.56	Avg. Vel. (ft/s)	3.72	7.66	4.20
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)	0.79	1.88	0.94
Conv. Total (cfs)	2028.8	Conv. (cfs)	39.0	1626.1	363.7
Length Wtd. (ft)	84.07	Wetted Per. (ft)	2.92	22.79	17.82
Min Ch El (ft)	2384.05	Shear (lb/sq ft)	1.59	4.13	2.16
Alpha	1.17	Stream Power (lb/ft s)	5.92	31.65	9.05
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	2.14	4.54	1.21
C & E Loss (ft)	0.02	Cum SA (acres)	2.62	2.31	1.73

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2387.76	Element			
Vel Head (ft)	0.78	Wt. n-Val.	0.060	0.055	0.065
W.S. Elev (ft)	2386.97	Reach Len. (ft)	95.39	84.93	75.65
Crit W.S. (ft)	2386.97	Flow Area (sq ft)	2.02	40.81	16.65
E.G. Slope (ft/ft)	0.036952	Area (sq ft)	2.02	40.81	16.65
Q Total (cfs)	390.00	Flow (cfs)	7.50	312.58	69.92
Top Width (ft)	41.99	Top Width (ft)	2.57	21.69	17.73
Vel Total (ft/s)	6.56	Avg. Vel. (ft/s)	3.72	7.66	4.20
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)	0.79	1.88	0.94
Conv. Total (cfs)	2028.8	Conv. (cfs)	39.0	1626.1	363.7
Length Wtd. (ft)	84.07	Wetted Per. (ft)	2.92	22.79	17.82
Min Ch El (ft)	2384.05	Shear (lb/sq ft)	1.59	4.13	2.16
Alpha	1.17	Stream Power (lb/ft s)	5.92	31.65	9.05
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	1.17	4.73	0.90
C & E Loss (ft)	0.02	Cum SA (acres)	0.94	2.31	0.88

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9983.55	9993.17	7.50	2.02	2.92	1.92	0.79	3.72

2	Chan	9993.17	9996.27	42.46	5.71	3.26	10.89	1.84	7.44
3	Chan	9996.27	9999.37	46.05	5.92	3.16	11.81	1.91	7.78
4	Chan	9999.37	10002.47	65.86	7.96	3.87	16.89	2.57	8.28
5	Chan	10002.47	10005.56	62.26	7.08	3.15	15.96	2.29	8.79
6	Chan	10005.56	10008.66	38.62	5.31	3.14	9.90	1.71	7.27
7	Chan	10008.66	10011.76	29.91	4.53	3.10	7.67	1.46	6.60
8	Chan	10011.76	10014.86	27.42	4.30	3.10	7.03	1.39	6.37
9	ROB	10014.86	10036.13	69.92	16.65	17.82	17.93	0.94	4.20

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9983.55	9993.17	7.50	2.02	2.92	1.92	0.79	3.72
2	Chan	9993.17	9996.27	42.46	5.71	3.26	10.89	1.84	7.44
3	Chan	9996.27	9999.37	46.05	5.92	3.16	11.81	1.91	7.78
4	Chan	9999.37	10002.47	65.86	7.96	3.87	16.89	2.57	8.28
5	Chan	10002.47	10005.56	62.26	7.08	3.15	15.96	2.29	8.79
6	Chan	10005.56	10008.66	38.62	5.31	3.14	9.90	1.71	7.27
7	Chan	10008.66	10011.76	29.91	4.53	3.10	7.67	1.46	6.60
8	Chan	10011.76	10014.86	27.42	4.30	3.10	7.03	1.39	6.37
9	ROB	10014.86	10036.13	69.92	16.65	17.82	17.93	0.94	4.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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: X2
REACH: Reach 1 RS: 0.881

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9947.9	2385.01	9953.12	2384.83	9953.81	2384.83	9960.23	2384.52	9963.41	2384.35
9966.06	2384.17	9968.63	2384.03	9970.72	2383.91	9971.29	2383.92	9972.79	2383.84
9979.42	2383.59	9981.87	2383.43	9987.47	2381.23	9991.42	2379.41	9997.64	2378.12
9999.92	2377.61	10000.73	2377.82	10006.86	2379.30	10016.02	2381.52	10019.02	2382.27
10019.25	2382.33	10019.8	2382.36	10026.7	2382.71	10031.28	2383.41	10032.89	2383.55
10037.72	2383.98	10038.92	2384.15	10042.22	2384.51	10045.73	2385.13	10046.34	2385.15
10057.79	2386.55	10061.21	2386.78	10064.62	2387.22	10067.53	2387.35	10072.97	2388.09

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9947.9	.055	9991.42	.055	10006.86	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.42	10006.86	121.95	127.25	137.58	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2382.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.03	Wt. n-Val.	0.055	0.055	0.065
W.S. Elev (ft)	2381.17	Reach Len. (ft)	121.95	127.25	137.58
Crit W.S. (ft)	2381.17	Flow Area (sq ft)	3.38	41.34	7.23
E.G. Slope (ft/ft)	0.027508	Area (sq ft)	3.38	41.34	7.23
Q Total (cfs)	390.00	Flow (cfs)	13.05	351.24	25.72
Top Width (ft)	27.00	Top Width (ft)	3.83	15.44	7.73
Vel Total (ft/s)	7.51	Avg. Vel. (ft/s)	3.86	8.50	3.56
Max Chl Dpth (ft)	3.56	Hydr. Depth (ft)	0.88	2.68	0.94
Conv. Total (cfs)	2351.5	Conv. (cfs)	78.7	2117.8	155.0
Length Wtd. (ft)	128.55	Wetted Per. (ft)	4.21	15.83	7.95
Min Ch El (ft)	2377.61	Shear (lb/sq ft)	1.38	4.48	1.56
Alpha	1.18	Stream Power (lb/ft s)	5.32	38.10	5.55
Frctn Loss (ft)	3.18	Cum Volume (acre-ft)	2.13	4.46	1.19
C & E Loss (ft)	0.07	Cum SA (acres)	2.62	2.27	1.70

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2382.20	Element	Left OB	Channel	Right OB

Vel Head (ft)	1.03	Wt. n-Val.	0.055	0.055	0.065
W.S. Elev (ft)	2381.17	Reach Len. (ft)	121.95	127.25	137.58
Crit W.S. (ft)	2381.17	Flow Area (sq ft)	3.38	41.34	7.23
E.G. Slope (ft/ft)	0.027508	Area (sq ft)	3.38	41.34	7.23
Q Total (cfs)	390.00	Flow (cfs)	13.05	351.24	25.72
Top Width (ft)	27.00	Top Width (ft)	3.83	15.44	7.73
Vel Total (ft/s)	7.51	Avg. Vel. (ft/s)	3.86	8.50	3.56
Max Chl Dpth (ft)	3.56	Hydr. Depth (ft)	0.88	2.68	0.94
Conv. Total (cfs)	2351.5	Conv. (cfs)	78.7	2117.8	155.0
Length Wtd. (ft)	128.55	Wetted Per. (ft)	4.21	15.83	7.95
Min Ch El (ft)	2377.61	Shear (lb/sq ft)	1.38	4.48	1.56
Alpha	1.18	Stream Power (lb/ft s)	5.32	38.10	5.55
Frctn Loss (ft)	3.18	Cum Volume (acre-ft)	1.16	4.65	0.88
C & E Loss (ft)	0.07	Cum SA (acres)	0.93	2.27	0.86

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9982.72	9991.42	13.05	3.38	4.21	3.34	0.88	3.86
2	Chan	9991.42	9993.63	30.21	4.40	2.25	7.75	1.99	6.87
3	Chan	9993.63	9995.83	42.61	5.40	2.25	10.93	2.45	7.89
4	Chan	9995.83	9998.04	56.70	6.41	2.25	14.54	2.91	8.84
5	Chan	9998.04	10000.24	72.59	7.45	2.26	18.61	3.38	9.74
6	Chan	10000.24	10002.45	66.36	7.07	2.27	17.02	3.21	9.38
7	Chan	10002.45	10004.65	48.97	5.89	2.27	12.56	2.67	8.31
8	Chan	10004.65	10006.86	33.79	4.72	2.27	8.67	2.14	7.17
9	ROB	10006.86	10020.08	25.72	7.23	7.95	6.59	0.94	3.56

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9982.72	9991.42	13.05	3.38	4.21	3.34	0.88	3.86
2	Chan	9991.42	9993.63	30.21	4.40	2.25	7.75	1.99	6.87
3	Chan	9993.63	9995.83	42.61	5.40	2.25	10.93	2.45	7.89
4	Chan	9995.83	9998.04	56.70	6.41	2.25	14.54	2.91	8.84
5	Chan	9998.04	10000.24	72.59	7.45	2.26	18.61	3.38	9.74
6	Chan	10000.24	10002.45	66.36	7.07	2.27	17.02	3.21	9.38
7	Chan	10002.45	10004.65	48.97	5.89	2.27	12.56	2.67	8.31
8	Chan	10004.65	10006.86	33.79	4.72	2.27	8.67	2.14	7.17
9	ROB	10006.86	10020.08	25.72	7.23	7.95	6.59	0.94	3.56

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: X2
REACH: Reach 1 RS: 0.857

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9966.557	2382.029	9969.007	2380.83	9976.397	2376.92	9978.217	2376.52	9981.297	2375.89
9984.677	2376.06	9986.017	2376.01	9989.287	2374.68	9994.537	2372.73	9994.54	2372.729
9998.577	2370.92	10000.81	2371.26	10009.55	2372.22	10009.64	2372.23	10009.87	2372.24
10022.59	2373.19	10026.01	2373.41	10030.49	2374.31	10039.23	2375.85	10053.8	2378.68
10093.68	2381.03	10102.75	2381.54	10103.24	2381.54	10103.71	2381.58	10104.93	2381.63
10107.11	2381.63								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9966.557	.035	9994.54	.05	10009.87	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.54	10009.87	87.28	96.09	105.77	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2374.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.035	0.050	0.060
W.S. Elev (ft)	2374.11	Reach Len. (ft)	87.28	96.09	105.77
Crit W.S. (ft)	2374.11	Flow Area (sq ft)	2.55	37.21	21.64
E.G. Slope (ft/ft)	0.022343	Area (sq ft)	2.55	37.21	21.64
Q Total (cfs)	390.00	Flow (cfs)	12.08	292.66	85.26
Top Width (ft)	38.64	Top Width (ft)	3.71	15.33	19.60
Vel Total (ft/s)	6.35	Avg. Vel. (ft/s)	4.74	7.86	3.94
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)	0.69	2.43	1.10
Conv. Total (cfs)	2609.1	Conv. (cfs)	80.8	1957.9	570.4
Length Wtd. (ft)	95.07	Wetted Per. (ft)	3.95	15.80	19.71
Min Ch El (ft)	2370.92	Shear (lb/sq ft)	0.90	3.29	1.53
Alpha	1.25	Stream Power (lb/ft s)	4.26	25.84	6.03
Frctn Loss (ft)	2.26	Cum Volume (acre-ft)	2.12	4.34	1.14
C & E Loss (ft)	0.03	Cum SA (acres)	2.61	2.23	1.66

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2374.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.035	0.050	0.060
W.S. Elev (ft)	2374.11	Reach Len. (ft)	87.28	96.09	105.77
Crit W.S. (ft)	2374.11	Flow Area (sq ft)	2.55	37.21	21.64
E.G. Slope (ft/ft)	0.022343	Area (sq ft)	2.55	37.21	21.64
Q Total (cfs)	390.00	Flow (cfs)	12.08	292.66	85.26
Top Width (ft)	38.64	Top Width (ft)	3.71	15.33	19.60
Vel Total (ft/s)	6.35	Avg. Vel. (ft/s)	4.74	7.86	3.94
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)	0.69	2.43	1.10
Conv. Total (cfs)	2609.1	Conv. (cfs)	80.8	1957.9	570.4
Length Wtd. (ft)	95.65	Wetted Per. (ft)	3.95	15.80	19.71
Min Ch El (ft)	2370.92	Shear (lb/sq ft)	0.90	3.29	1.53
Alpha	1.25	Stream Power (lb/ft s)	4.26	25.84	6.03
Frctn Loss (ft)	2.22	Cum Volume (acre-ft)	1.16	4.53	0.83
C & E Loss (ft)	0.00	Cum SA (acres)	0.92	2.23	0.82

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9988.94	9994.54	12.08	2.55	3.95	3.10	0.69	4.74
2	Chan	9994.54	9996.73	25.50	4.09	2.40	6.54	1.87	6.23
3	Chan	9996.73	9998.92	51.46	6.20	2.37	13.19	2.83	8.30
4	Chan	9998.92	10001.11	58.24	6.50	2.21	14.93	2.97	8.96
5	Chan	10001.11	10003.30	49.65	5.89	2.20	12.73	2.69	8.42
6	Chan	10003.30	10005.49	42.50	5.37	2.20	10.90	2.45	7.91
7	Chan	10005.49	10007.68	35.76	4.84	2.20	9.17	2.21	7.39
8	Chan	10007.68	10009.87	29.56	4.32	2.20	7.58	1.97	6.85
9	ROB	10009.87	10029.32	85.25	21.64	19.56	21.86	1.11	3.94
10	ROB	10029.32	10048.77	0.00	0.00	0.16	0.00	0.02	0.22

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9988.94	9994.54	12.08	2.55	3.95	3.10	0.69	4.74
2	Chan	9994.54	9996.73	25.50	4.09	2.40	6.54	1.87	6.23
3	Chan	9996.73	9998.92	51.46	6.20	2.37	13.19	2.83	8.30
4	Chan	9998.92	10001.11	58.24	6.50	2.21	14.93	2.97	8.96
5	Chan	10001.11	10003.30	49.65	5.89	2.20	12.73	2.69	8.42
6	Chan	10003.30	10005.49	42.50	5.37	2.20	10.90	2.45	7.91
7	Chan	10005.49	10007.68	35.76	4.84	2.20	9.17	2.21	7.39
8	Chan	10007.68	10009.87	29.56	4.32	2.20	7.58	1.97	6.85
9	ROB	10009.87	10029.32	85.25	21.64	19.56	21.86	1.11	3.94
10	ROB	10029.32	10048.77	0.00	0.00	0.16	0.00	0.02	0.22

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: X2
REACH: Reach 1 RS: 0.838

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9928.781	23729940.861	2371.229941.291		2371.199945.491		2371.019948.501		2370.72	
9962.411	2369.119972.931	2366.619973.901		2366.389975.571		2366.429983.401		2366.68	
9990.951	2367.689991.151	2367.679994.491		2366.91 9995.96		2366.489995.961		2366.48	
9999.661	2365.3110001.07	2365.610005.56		2366.5610010.64		2368.1810011.62		2368.47	
10016.71	2369.5210030.27	2372.4710034.15		2372.6810036.28		2372.8310045.76		2373.28	
10057.25	2373.8310062.65	2373.7910076.71		2373.8710090.81		2374.2610091.79		2374.28	
10092.77	2374.26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9928.781	.055	9995.96	.0510005.56		.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.9610005.56		134.8	158.8	177.47	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2368.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2368.27	Reach Len. (ft)	134.80	158.80	177.47
Crit W.S. (ft)	2368.27	Flow Area (sq ft)	38.02	22.58	4.58
E.G. Slope (ft/ft)	0.025312	Area (sq ft)	38.02	22.58	4.58
Q Total (cfs)	390.00	Flow (cfs)	189.48	184.82	15.70
Top Width (ft)	44.99	Top Width (ft)	30.01	9.60	5.38
Vel Total (ft/s)	5.98	Avg. Vel. (ft/s)	4.98	8.19	3.43
Max Chl Dpth (ft)	2.96	Hydr. Depth (ft)	1.27	2.35	0.85
Conv. Total (cfs)	2451.3	Conv. (cfs)	1191.0	1161.7	98.7
Length Wtd. (ft)	152.10	Wetted Per. (ft)	30.45	9.91	5.65
Min Ch El (ft)	2365.31	Shear (lb/sq ft)	1.97	3.60	1.28
Alpha	1.24	Stream Power (lb/ft s)	9.83	29.47	4.39
Frctn Loss (ft)	2.95	Cum Volume (acre-ft)	2.08	4.28	1.11
C & E Loss (ft)	0.00	Cum SA (acres)	2.57	2.20	1.63

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2369.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2368.56	Reach Len. (ft)	134.80	158.80	177.47
Crit W.S. (ft)	2368.56	Flow Area (sq ft)	28.12	25.32	6.12
E.G. Slope (ft/ft)	0.024196	Area (sq ft)	28.12	25.32	6.12
Q Total (cfs)	390.00	Flow (cfs)	147.20	218.74	24.06
Top Width (ft)	32.94	Top Width (ft)	17.96	9.60	5.38
Vel Total (ft/s)	6.55	Avg. Vel. (ft/s)	5.23	8.64	3.93
Max Chl Dpth (ft)	3.24	Hydr. Depth (ft)	1.57	2.64	1.14
Conv. Total (cfs)	2507.2	Conv. (cfs)	946.3	1406.2	154.7
Length Wtd. (ft)	153.78	Wetted Per. (ft)	20.23	9.91	5.93
Min Ch El (ft)	2365.31	Shear (lb/sq ft)	2.10	3.86	1.56
Alpha	1.24	Stream Power (lb/ft s)	10.99	33.34	6.13
Frctn Loss (ft)	3.07	Cum Volume (acre-ft)	1.13	4.46	0.80
C & E Loss (ft)	0.01	Cum SA (acres)	0.90	2.20	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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9955.65	9969.09	2.43	1.17	3.23	0.62	0.37	2.08
2	LOB	9969.09	9982.52	119.42	21.52	13.57	30.62	1.60	5.55
3	LOB	9982.52	9995.96	67.62	15.33	13.65	17.34	1.14	4.41
4	Chan	9995.96	9997.33	19.80	2.75	1.44	5.08	2.01	7.20
5	Chan	9997.33	9998.70	27.46	3.35	1.44	7.04	2.44	8.20
6	Chan	9998.70	10000.07	35.56	3.89	1.43	9.12	2.84	9.13

7	Chan	10000.07	10001.45	33.75	3.75	1.40	8.65	2.73	9.01
8	Chan	10001.45	10002.82	27.96	3.35	1.40	7.17	2.44	8.35
9	Chan	10002.82	10004.19	22.61	2.95	1.40	5.80	2.15	7.67
10	Chan	10004.19	10005.56	17.69	2.54	1.40	4.54	1.86	6.95
11	ROB	10005.56	10023.00	15.70	4.58	5.65	4.03	0.85	3.43

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.09	9982.52	46.20	8.95	6.58	11.85	1.98	5.16
2	LOB	9982.52	9995.96	101.00	19.17	13.65	25.90	1.43	5.27
3	Chan	9995.96	9997.33	24.23	3.14	1.44	6.21	2.29	7.71
4	Chan	9997.33	9998.70	32.36	3.74	1.44	8.30	2.72	8.66
5	Chan	9998.70	10000.07	40.88	4.29	1.43	10.48	3.13	9.54
6	Chan	10000.07	10001.45	39.03	4.14	1.40	10.01	3.02	9.43
7	Chan	10001.45	10002.82	32.95	3.74	1.40	8.45	2.73	8.81
8	Chan	10002.82	10004.19	27.28	3.34	1.40	7.00	2.43	8.17
9	Chan	10004.19	10005.56	22.01	2.94	1.40	5.64	2.14	7.50
10	ROB	10005.56	10023.00	24.06	6.12	5.93	6.17	1.14	3.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.808

INPUT
Description:
Station Elevation Data num= 34

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9920.833    23669921.283 2365.949921.513 2365.919934.313  2364.49941.823 2363.51
9942.213 2363.479942.293 2363.469942.463 2363.449942.653  2363.49942.803 2363.37
9952.903 2361.179959.583 2360.099962.433 2359.769965.073 2359.469972.963 2359.32
9983.873  2359.19984.873 2359.049987.773 2358.93 9992.192357.8919995.553  2357.1
10000.58 2355.8610006.962357.93610014.29 2360.3210017.81 2361.5110037.42 2361.26
10045.99  2361.210046.61  2361.210056.75 2361.1610060.12 2361.1510064.36  2361.2
10074.76 2361.6810079.35 2361.75 10092.7 2362.1110095.68 2362.05
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
9920.833    .055 9992.19     .0510006.96     .06
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9992.1910006.96            134.08  125.96  119.89              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2360.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2359.84	Reach Len. (ft)	134.08	125.96	119.89
Crit W.S. (ft)	2359.84	Flow Area (sq ft)	20.56	43.51	5.56
E.G. Slope (ft/ft)	0.015368	Area (sq ft)	20.56	43.51	5.56
Q Total (cfs)	390.00	Flow (cfs)	52.84	321.20	15.96
Top Width (ft)	51.05	Top Width (ft)	30.43	14.77	5.85
Vel Total (ft/s)	5.60	Avg. Vel. (ft/s)	2.57	7.38	2.87
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)	0.68	2.95	0.95
Conv. Total (cfs)	3146.0	Conv. (cfs)	426.2	2591.0	128.8
Length Wtd. (ft)	126.59	Wetted Per. (ft)	30.58	15.34	6.15
Min Ch El (ft)	2355.86	Shear (lb/sq ft)	0.64	2.72	0.87
Alpha	1.47	Stream Power (lb/ft s)	1.66	20.09	2.49
Frctn Loss (ft)	1.71	Cum Volume (acre-ft)	1.99	4.16	1.09
C & E Loss (ft)	0.05	Cum SA (acres)	2.48	2.16	1.61

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2360.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2359.79	Reach Len. (ft)	134.08	125.96	119.89
Crit W.S. (ft)	2359.79	Flow Area (sq ft)	15.98	42.85	5.30
E.G. Slope (ft/ft)	0.016796	Area (sq ft)	15.98	42.85	5.30
Q Total (cfs)	390.00	Flow (cfs)	46.99	327.34	15.66
Top Width (ft)	40.67	Top Width (ft)	20.19	14.77	5.71
Vel Total (ft/s)	6.08	Avg. Vel. (ft/s)	2.94	7.64	2.95
Max Chl Dpth (ft)	3.93	Hydr. Depth (ft)	0.79	2.90	0.93
Conv. Total (cfs)	3009.3	Conv. (cfs)	362.6	2525.8	120.9
Length Wtd. (ft)	126.55	Wetted Per. (ft)	20.77	15.34	6.00
Min Ch El (ft)	2355.86	Shear (lb/sq ft)	0.81	2.93	0.93
Alpha	1.36	Stream Power (lb/ft s)	2.37	22.37	2.74
Frctn Loss (ft)	1.84	Cum Volume (acre-ft)	1.06	4.34	0.77
C & E Loss (ft)	0.06	Cum SA (acres)	0.84	2.16	0.77

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9949.38	9963.65	0.14	0.20	1.90	0.04	0.11	0.69
2	LOB	9963.65	9977.92	12.62	6.77	14.28	3.24	0.47	1.86
3	LOB	9977.92	9992.19	40.07	13.58	14.40	10.27	0.95	2.95
4	Chan	9992.19	9994.30	27.74	4.63	2.17	7.11	2.20	5.99
5	Chan	9994.30	9996.41	38.97	5.68	2.17	9.99	2.69	6.86
6	Chan	9996.41	9998.52	52.16	6.77	2.17	13.37	3.21	7.70
7	Chan	9998.52	10000.63	66.94	7.87	2.17	17.16	3.73	8.51
8	Chan	10000.63	10002.74	62.82	7.64	2.22	16.11	3.62	8.23
9	Chan	10002.74	10004.85	44.22	6.18	2.22	11.34	2.93	7.15
10	Chan	10004.85	10006.96	28.36	4.74	2.22	7.27	2.25	5.99
11	ROB	10006.96	10024.70	15.96	5.56	6.15	4.09	0.95	2.87

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.65	9977.92	6.27	3.04	6.38	1.61	0.51	2.06
2	LOB	9977.92	9992.19	40.73	12.94	14.40	10.44	0.91	3.15
3	Chan	9992.19	9994.30	28.00	4.54	2.17	7.18	2.15	6.17
4	Chan	9994.30	9996.41	39.59	5.59	2.17	10.15	2.65	7.09
5	Chan	9996.41	9998.52	53.24	6.68	2.17	13.65	3.16	7.97
6	Chan	9998.52	10000.63	68.55	7.77	2.17	17.58	3.68	8.82
7	Chan	10000.63	10002.74	64.29	7.54	2.22	16.48	3.57	8.52
8	Chan	10002.74	10004.85	45.03	6.09	2.22	11.55	2.89	7.39
9	Chan	10004.85	10006.96	28.65	4.64	2.22	7.35	2.20	6.17
10	ROB	10006.96	10024.70	15.66	5.30	6.00	4.02	0.93	2.95

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: X2
REACH: Reach 1 RS: 0.784

INPUT
Description: 22nd Street
Station Elevation Data num= 52

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9927.323	2357.34	9930.753	2356.89	9932.603	2356.69	9935.373	2356.59	9935.513	2356.49
9936.983	2356.39	9939.163	2356.19	9940.313	2356.07	9941.503	2356.03	9942.093	2355.96
9944.423	2355.82	9944.523	2355.81	9948.133	2355.52	9948.663	2355.47	9949.073	2355.41
9955.003	2354.67	9959.903	2353.85	9959.973	2353.83	9963.353	2353.07	9965.73	2353.24
9965.733	2353.24	9976.343	2352.97	9977.423	2352.92	9977.713	2352.99	9978.123	2352.89
9978.963	2352.91	9992.683	2353.38	10002.84	2353.85	10004.35	2353.55	10006.4	2353.9
10007.32	2353.91	10008.34	2353.95	10013.53	2354.07	10017.94	2354.18	10022.43	2354.34
10024.74	2354.35	10027.93	2354.49	10028.44	2354.51	10033.74	2354.69	10036.86	2354.77
10039.25	2354.78	10041.21	2354.82	10042.39	2354.81	10044.02	2354.79	10047.62	2354.97
10052.27	2355.19	10059.37	2355.51	10061.17	2355.66	10065.07	2355.81	10067.4	2355.88
10071.18	2355.89	10073.72	2355.87						

```
Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
9927.323    .055 9965.73     .0310013.53    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9965.7310013.53             58.55   61.69   64.13          .1        .3
```

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2355.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.055	0.030	0.055
W.S. Elev (ft)	2354.61	Reach Len. (ft)	58.55	61.69	64.13
Crit W.S. (ft)	2354.61	Flow Area (sq ft)	9.15	58.21	5.11
E.G. Slope (ft/ft)	0.011936	Area (sq ft)	9.15	58.21	5.11
Q Total (cfs)	390.00	Flow (cfs)	24.62	358.83	6.56
Top Width (ft)	76.00	Top Width (ft)	10.37	47.80	17.84
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	2.69	6.16	1.28
Max Chl Dpth (ft)	1.72	Hydr. Depth (ft)	0.88	1.22	0.29
Conv. Total (cfs)	3569.8	Conv. (cfs)	225.3	3284.4	60.0
Length Wtd. (ft)	61.34	Wetted Per. (ft)	10.52	47.89	17.85
Min Ch El (ft)	2352.89	Shear (lb/sq ft)	0.65	0.91	0.21
Alpha	1.22	Stream Power (lb/ft s)	1.74	5.58	0.27
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	1.95	4.01	1.07
C & E Loss (ft)	0.01	Cum SA (acres)	2.42	2.07	1.57

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2355.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.055	0.030	0.055
W.S. Elev (ft)	2354.59	Reach Len. (ft)	58.55	61.69	64.13
Crit W.S. (ft)	2354.59	Flow Area (sq ft)	8.96	57.32	2.81
E.G. Slope (ft/ft)	0.012693	Area (sq ft)	8.96	57.32	2.81
Q Total (cfs)	390.00	Flow (cfs)	24.68	360.57	4.75
Top Width (ft)	64.52	Top Width (ft)	10.25	47.80	6.47
Vel Total (ft/s)	5.64	Avg. Vel. (ft/s)	2.75	6.29	1.69
Max Chl Dpth (ft)	1.70	Hydr. Depth (ft)	0.87	1.20	0.44
Conv. Total (cfs)	3461.6	Conv. (cfs)	219.0	3200.4	42.2
Length Wtd. (ft)	61.32	Wetted Per. (ft)	10.41	47.89	6.81
Min Ch El (ft)	2352.89	Shear (lb/sq ft)	0.68	0.95	0.33
Alpha	1.16	Stream Power (lb/ft s)	1.88	5.97	0.55
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)	1.02	4.19	0.76
C & E Loss (ft)	0.01	Cum SA (acres)	0.79	2.07	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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9950.37	9958.05	0.58	0.60	2.72	0.15	0.22	0.97
2	LOB	9958.05	9965.73	24.04	8.55	7.80	6.16	1.11	2.81
3	Chan	9965.73	9972.56	65.91	9.94	6.83	16.90	1.46	6.63
4	Chan	9972.56	9979.39	80.00	11.17	6.83	20.51	1.64	7.16
5	Chan	9979.39	9986.22	74.53	10.71	6.83	19.11	1.57	6.96
6	Chan	9986.22	9993.05	56.94	9.11	6.83	14.60	1.33	6.25
7	Chan	9993.05	9999.87	38.48	7.20	6.84	9.87	1.05	5.34
8	Chan	9999.87	10006.70	27.12	5.86	6.89	6.95	0.86	4.63
9	Chan	10006.70	10013.53	15.85	4.23	6.83	4.06	0.62	3.75
10	ROB	10013.53	10025.57	6.20	4.51	12.04	1.59	0.37	1.38
11	ROB	10025.57	10037.61	0.36	0.61	5.80	0.09	0.10	0.59

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9950.37	9958.05	0.54	0.55	2.61	0.14	0.22	0.97
2	LOB	9958.05	9965.73	24.14	8.41	7.80	6.19	1.09	2.87
3	Chan	9965.73	9972.56	66.42	9.82	6.83	17.03	1.44	6.77
4	Chan	9972.56	9979.39	80.80	11.04	6.83	20.72	1.62	7.32
5	Chan	9979.39	9986.22	75.22	10.58	6.83	19.29	1.55	7.11
6	Chan	9986.22	9993.05	57.26	8.98	6.83	14.68	1.32	6.38

7	Chan	9993.05	9999.87	38.45	7.07	6.84	9.86	1.04	5.44
8	Chan	9999.87	10006.70	26.91	5.73	6.89	6.90	0.84	4.70
9	Chan	10006.70	10013.53	15.50	4.10	6.83	3.97	0.60	3.78
10	ROB	10013.53	10025.57	4.75	2.81	6.81	1.22	0.44	1.69

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: X2
REACH: Reach 1 RS: 0.773

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9901.765	23549903.015	2353.849906.485	2353.369911.205	2352.799916.735	2352.9				
9920.955	2352.839928.725	2352.779934.195	2352.569936.405	2352.489938.725	2352.42				
9941.095	2352.249944.265	2351.769959.435	2350.239965.225	2349.629973.225	2349.02				
9989.945	2347.869992.525	2347.76 9992.532347.7599994.835	2347.4810000.08	2346.78					
10006.492347.74410015.64	2349.1210022.28	2350.1610028.59	2350.8610036.56	2351.64					
10046.92	2352.7310048.47	2352.8910055.86	2353.410061.64	2353.21					

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9901.765	.039959.435	.055 9992.53	.0510006.49	.055			

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.53	10006.49	133.13	134.89	136.97	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2350.24	Element			
Vel Head (ft)	0.66	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2349.58	Reach Len. (ft)	133.13	134.89	136.97
Crit W.S. (ft)	2349.58	Flow Area (sq ft)	25.81	32.27	11.22
E.G. Slope (ft/ft)	0.021986	Area (sq ft)	25.81	32.27	11.22
Q Total (cfs)	390.00	Flow (cfs)	100.62	247.00	42.37
Top Width (ft)	52.88	Top Width (ft)	26.81	13.96	12.11
Vel Total (ft/s)	5.63	Avg. Vel. (ft/s)	3.90	7.65	3.78
Max Chl Dpth (ft)	2.80	Hydr. Depth (ft)	0.96	2.31	0.93
Conv. Total (cfs)	2630.2	Conv. (cfs)	678.6	1665.8	285.8
Length Wtd. (ft)	134.69	Wetted Per. (ft)	26.87	14.10	12.24
Min Ch El (ft)	2346.78	Shear (lb/sq ft)	1.32	3.14	1.26
Alpha	1.34	Stream Power (lb/ft s)	5.14	24.05	4.75
Frctn Loss (ft)	3.31	Cum Volume (acre-ft)	1.92	3.95	1.06
C & E Loss (ft)	0.02	Cum SA (acres)	2.39	2.02	1.55

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2350.24	Element			
Vel Head (ft)	0.68	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2349.55	Reach Len. (ft)	133.13	134.89	136.97
Crit W.S. (ft)	2349.55	Flow Area (sq ft)	23.22	31.84	10.85
E.G. Slope (ft/ft)	0.022620	Area (sq ft)	23.22	31.84	10.85
Q Total (cfs)	390.00	Flow (cfs)	103.90	245.01	41.09
Top Width (ft)	45.40	Top Width (ft)	19.53	13.96	11.91
Vel Total (ft/s)	5.92	Avg. Vel. (ft/s)	4.47	7.69	3.79
Max Chl Dpth (ft)	2.77	Hydr. Depth (ft)	1.19	2.28	0.91
Conv. Total (cfs)	2593.1	Conv. (cfs)	690.8	1629.1	273.2
Length Wtd. (ft)	134.68	Wetted Per. (ft)	20.09	14.10	12.05
Min Ch El (ft)	2346.78	Shear (lb/sq ft)	1.63	3.19	1.27
Alpha	1.26	Stream Power (lb/ft s)	7.30	24.55	4.82
Frctn Loss (ft)	3.03	Cum Volume (acre-ft)	1.00	4.13	0.75
C & E Loss (ft)	0.01	Cum SA (acres)	0.77	2.02	0.74

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.

Profile #profile 1

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	9956.22	9974.38	4.72	2.81	8.68	1.21	0.32	1.68
2	LOB	9974.38	9992.53	95.90	23.00	18.19	24.59	1.27	4.17
3	Chan	9992.53	9994.52	26.30	3.88	2.01	6.74	1.94	6.78
4	Chan	9994.52	9996.52	32.15	4.38	2.01	8.24	2.19	7.34
5	Chan	9996.52	9998.51	38.89	4.91	2.01	9.97	2.46	7.92
6	Chan	9998.51	10000.51	45.79	5.41	2.01	11.74	2.71	8.46
7	Chan	10000.51	10002.50	42.25	5.16	2.02	10.83	2.59	8.18
8	Chan	10002.50	10004.50	34.41	4.56	2.02	8.82	2.29	7.54
9	Chan	10004.50	10006.49	27.23	3.97	2.02	6.98	1.99	6.87
10	ROB	10006.49	10017.52	42.31	11.12	11.16	10.85	1.01	3.80
11	ROB	10017.52	10028.55	0.07	0.09	1.09	0.02	0.08	0.73

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9956.22	9974.38	1.70	0.78	1.90	0.44	0.56	2.18
2	LOB	9974.38	9992.53	102.20	22.44	18.19	26.20	1.24	4.55
3	Chan	9992.53	9994.52	25.97	3.82	2.01	6.66	1.91	6.80
4	Chan	9994.52	9996.52	31.84	4.32	2.01	8.16	2.16	7.38
5	Chan	9996.52	9998.51	38.62	4.85	2.01	9.90	2.43	7.97
6	Chan	9998.51	10000.51	45.56	5.35	2.01	11.68	2.68	8.51
7	Chan	10000.51	10002.50	42.00	5.10	2.02	10.77	2.56	8.23
8	Chan	10002.50	10004.50	34.12	4.50	2.02	8.75	2.26	7.58
9	Chan	10004.50	10006.49	26.91	3.91	2.02	6.90	1.96	6.89
10	ROB	10006.49	10017.52	41.05	10.79	11.16	10.53	0.98	3.81
11	ROB	10017.52	10028.55	0.04	0.06	0.89	0.01	0.07	0.65

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: X2
REACH: Reach 1 RS: 0.747

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9949.372	2346.01	9964.642	2345.12	9965.182	2345.07	9968.472	2345.03	9969.452	2344.91
9970.282	2344.91	9971.162	2344.83	9971.972	2344.81	9978.602	2342.89	9981.112	2342.16
9982.252	2342.13	9983.612	2342	9993.17	2341.45	9993.172	2341.45	9999.352	2340.63
10001.68	2340.28	10007.96	2341.39	4 10010.7	2341.88	10018.15	2343.24	10019.4	2343.23
10078.75	2344	10090.49	2343.79	10093.48	2343.79	10096.34	2343.99	10097.12	2344.05

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9949.372	.065	9993.17	.05	10007.96	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.17	10007.96	138.68	124.62	112.62	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2344.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2343.14	Reach Len. (ft)	138.68	124.62	112.62
Crit W.S. (ft)	2343.14	Flow Area (sq ft)	17.74	33.66	8.45
E.G. Slope (ft/ft)	0.027573	Area (sq ft)	17.74	33.66	8.45
Q Total (cfs)	390.00	Flow (cfs)	73.40	285.13	31.48
Top Width (ft)	39.84	Top Width (ft)	15.42	14.79	9.63
Vel Total (ft/s)	6.52	Avg. Vel. (ft/s)	4.14	8.47	3.73
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)	1.15	2.28	0.88
Conv. Total (cfs)	2348.7	Conv. (cfs)	442.0	1717.1	189.6
Length Wtd. (ft)	125.02	Wetted Per. (ft)	15.59	14.97	9.79
Min Ch El (ft)	2340.28	Shear (lb/sq ft)	1.96	3.87	1.49
Alpha	1.34	Stream Power (lb/ft s)	8.11	32.79	5.54
Frctn Loss (ft)	3.41	Cum Volume (acre-ft)	1.86	3.84	1.03
C & E Loss (ft)	0.11	Cum SA (acres)	2.33	1.98	1.52

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2344.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2343.25	Reach Len. (ft)	138.68	124.62	112.62
Crit W.S. (ft)	2343.25	Flow Area (sq ft)	19.47	35.32	9.52
E.G. Slope (ft/ft)	0.022433	Area (sq ft)	19.47	35.32	9.52
Q Total (cfs)	390.00	Flow (cfs)	76.94	278.63	34.43
Top Width (ft)	39.84	Top Width (ft)	15.42	14.79	9.63
Vel Total (ft/s)	6.06	Avg. Vel. (ft/s)	3.95	7.89	3.62
Max Chl Dpth (ft)	2.97	Hydr. Depth (ft)	1.26	2.39	0.99
Conv. Total (cfs)	2603.9	Conv. (cfs)	513.7	1860.3	229.9
Length Wtd. (ft)	125.48	Wetted Per. (ft)	15.69	14.97	9.90
Min Ch El (ft)	2340.28	Shear (lb/sq ft)	1.74	3.30	1.35
Alpha	1.32	Stream Power (lb/ft s)	6.87	26.07	4.87
Frctn Loss (ft)	3.43	Cum Volume (acre-ft)	0.93	4.03	0.72
C & E Loss (ft)	0.01	Cum SA (acres)	0.72	1.98	0.70

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.65	9984.41	15.53	5.16	6.81	3.98	0.77	3.01
2	LOB	9984.41	9993.17	57.87	12.58	8.77	14.84	1.44	4.60
3	Chan	9993.17	9995.28	28.03	3.86	2.13	7.19	1.83	7.26
4	Chan	9995.28	9997.40	35.54	4.45	2.13	9.11	2.11	7.98
5	Chan	9997.40	9999.51	43.78	5.05	2.13	11.23	2.39	8.67
6	Chan	9999.51	10001.62	53.27	5.68	2.14	13.66	2.69	9.38
7	Chan	10001.62	10003.73	52.83	5.66	2.15	13.55	2.68	9.33
8	Chan	10003.73	10005.85	41.08	4.87	2.15	10.53	2.31	8.44
9	Chan	10005.85	10007.96	30.58	4.08	2.15	7.84	1.93	7.49
10	ROB	10007.96	10025.79	31.48	8.45	9.79	8.07	0.88	3.73

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.65	9984.41	17.45	5.91	6.92	4.47	0.89	2.95
2	LOB	9984.41	9993.17	59.48	13.56	8.77	15.25	1.55	4.39
3	Chan	9993.17	9995.28	27.95	4.10	2.13	7.17	1.94	6.82
4	Chan	9995.28	9997.40	34.98	4.69	2.13	8.97	2.22	7.46
5	Chan	9997.40	9999.51	42.67	5.28	2.13	10.94	2.50	8.07
6	Chan	9999.51	10001.62	51.49	5.92	2.14	13.20	2.80	8.70
7	Chan	10001.62	10003.73	51.06	5.90	2.15	13.09	2.79	8.65
8	Chan	10003.73	10005.85	40.15	5.11	2.15	10.29	2.42	7.86
9	Chan	10005.85	10007.96	30.33	4.32	2.15	7.78	2.04	7.03
10	ROB	10007.96	10025.79	34.43	9.52	9.90	8.83	0.99	3.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.724

INPUT
Description:
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9886.052	2340	9888.172	2339.87	9889.682	2339.92	9890.542	2339.84	9892.462	2339.76
9895.522	2339.71	9898.382	2339.44	9902.482	2339.23	9905.502	2338.91	9907.822	2338.75
9911.022	2338.37	9911.432	2338.35	9920.052	2337.99	9922.692	2337.99	9924.072	2337.8
9928.722	2337.91	9940.132	2337.43	9944.662	2337.26	9947.392	2337.15	9951.572	2336.99
9954.102	2336.92	9957.702	2337.01	9962.932	2337.03	9964.102	2337.03	9967.862	2336.95

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9968.722 2336.919970.862 2336.89 9974.872336.3279978.412 2335.839982.732 2336.09
9987.222 2336.619989.442 2336.299993.982 2335.5910000.35 2334.8910001.83    2335
   10013 2335.9710020.79 2336.3610036.57 2337.1810037.27 2337.1910046.91 2337.38
10076.06 2337.9410080.22 2338.0310082.35  2338.110084.53 2338.14 10085.7 2338.16
10094.09 2338.2810095.61 2338.28

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
9886.052    .055 9974.87     .05    10013     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       9974.87   10013            131.86  137.16  141.14             .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2337.70    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.53    Wt. n-Val.                  0.055      0.050     0.060
  W.S. Elev (ft)          2337.18    Reach Len. (ft)            131.86     137.16    141.14
  Crit W.S. (ft)          2337.18    Flow Area (sq ft)            6.54      54.60     14.29
  E.G. Slope (ft/ft)     0.026998    Area (sq ft)                 6.54      54.60     14.29
  Q Total (cfs)            390.00    Flow (cfs)                  10.97     337.34     41.69
  Top Width (ft)            89.76    Top Width (ft)              28.13      38.13     23.50
  Vel Total (ft/s)           5.17    Avg. Vel. (ft/s)             1.68       6.18      2.92
  Max Chl Dpth (ft)          2.29    Hydr. Depth (ft)             0.23       1.43      0.61
  Conv. Total (cfs)        2373.6    Conv. (cfs)                 66.8     2053.1     253.7
  Length Wtd. (ft)         135.09    Wetted Per. (ft)            28.18      38.36     23.53
  Min Ch El (ft)          2334.89    Shear (lb/sq ft)             0.39       2.40      1.02
  Alpha                      1.27    Stream Power (lb/ft s)       0.66      14.82      2.99
  Frctn Loss (ft)            4.11    Cum Volume (acre-ft)         1.82       3.72      1.00
  C & E Loss (ft)            0.05    Cum SA (acres)               2.26       1.90      1.48

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2337.97    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.73    Wt. n-Val.                            0.050
  W.S. Elev (ft)          2337.24    Reach Len. (ft)            131.86     137.16    141.14
  Crit W.S. (ft)          2337.24    Flow Area (sq ft)                     56.83
  E.G. Slope (ft/ft)     0.033976    Area (sq ft)                          56.83
  Q Total (cfs)            390.00    Flow (cfs)                           390.00
  Top Width (ft)            38.13    Top Width (ft)                        38.13
  Vel Total (ft/s)           6.86    Avg. Vel. (ft/s)                       6.86
  Max Chl Dpth (ft)          2.34    Hydr. Depth (ft)                       1.49
  Conv. Total (cfs)        2115.8    Conv. (cfs)                          2115.8
  Length Wtd. (ft)         136.20    Wetted Per. (ft)                      40.54
  Min Ch El (ft)          2334.89    Shear (lb/sq ft)                       2.97
  Alpha                      1.00    Stream Power (lb/ft s)                20.41
  Frctn Loss (ft)            4.60    Cum Volume (acre-ft)         0.90      3.89      0.71
  C & E Loss (ft)            0.04    Cum SA (acres)               0.69      1.90      0.69

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                         (ft)        (ft)           (cfs)      (sq ft)    (ft)    Conv  Depth(ft)      (ft/s)
  1           LOB        9939.34     9957.11        2.13       1.67       10.37   0.55      0.16         1.27
  2           LOB        9957.11     9974.87        8.84       4.87       17.81   2.27      0.27         1.81
  3           Chan       9974.87     9980.32        32.40      6.34       5.49    8.31      1.16         5.11
  4           Chan       9980.32     9985.77        26.05      5.56       5.47    6.68      1.02         4.68
  5           Chan       9985.77     9991.21        17.38      4.37       5.50    4.46      0.80         3.98
  6           Chan       9991.21     9996.66        52.09      8.44       5.50    13.36     1.55         6.17
  7           Chan       9996.66     10002.11       88.58      11.59      5.47    22.71     2.13         7.64
  8           Chan       10002.11    10007.55       74.44      10.44      5.47    19.09     1.92         7.13
  9           Chan       10007.55    10013.00       46.41      7.86       5.47    11.90     1.44         5.90
  10          ROB        10013.00    10029.52       40.23      13.02      16.54   10.31     0.79         3.09
  11          ROB        10029.52    10046.04       1.47       1.26       6.99    0.38      0.18         1.16

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.

  Profile #profile 2
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	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9974.87	9980.32	35.44	6.66	6.39	9.09	1.22	5.32
2	Chan	9980.32	9985.77	31.91	5.88	5.47	8.18	1.08	5.43
3	Chan	9985.77	9991.21	21.81	4.69	5.50	5.59	0.86	4.65
4	Chan	9991.21	9996.66	61.85	8.76	5.50	15.86	1.61	7.06
5	Chan	9996.66	10002.11	103.45	11.91	5.47	26.53	2.19	8.69
6	Chan	10002.11	10007.55	87.37	10.76	5.47	22.40	1.97	8.12
7	Chan	10007.55	10013.00	48.18	8.18	6.73	12.35	1.50	5.89

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.698

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9894.13	2331.8	9907.65	2331.62	9911.59	2331.59	9930.36	2331.16	9937.27	2331
9940.88	2330.9	9944.35	2330.175	9948.87	2329.23	9949.23	2329.15	9952.76	2329.66
9958.9	2330.54	9960.23	2330.4	9971.55	2329.56	9975	2330.062	9976.57	2330.29
9982.94	2330.87	9985.21	2330.84	9989.42	2330.8	9993.63	2330.69	9995.92	2330.73
10000.94	2330.92	10004.45	2331.07	10005.72	2331.21	10011.13	2331.36	10021.07	2331.33
10034.68	2331.28	10042.93	2331.53	10046.16	2331.71	10055.67	2331.81	10056.65	2331.81
10060.58	2331.86								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9894.13	.055	9982.94	.05	10011.13	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.94	10011.13	107.5	116.45	116.84	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2331.83	Element			
Vel Head (ft)	0.36	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2331.47	Reach Len. (ft)	107.50	116.45	116.84
Crit W.S. (ft)	2331.47	Flow Area (sq ft)	65.94	15.24	4.04
E.G. Slope (ft/ft)	0.034515	Area (sq ft)	65.94	15.24	4.04
Q Total (cfs)	390.00	Flow (cfs)	329.27	55.82	4.90
Top Width (ft)	124.00	Top Width (ft)	66.05	28.19	29.77
Vel Total (ft/s)	4.58	Avg. Vel. (ft/s)	4.99	3.66	1.21
Max Chl Dpth (ft)	2.32	Hydr. Depth (ft)	1.00	0.54	0.14
Conv. Total (cfs)	2099.2	Conv. (cfs)	1772.4	300.5	26.4
Length Wtd. (ft)	110.21	Wetted Per. (ft)	66.45	28.21	29.77
Min Ch El (ft)	2330.69	Shear (lb/sq ft)	2.14	1.16	0.29
Alpha	1.10	Stream Power (lb/ft s)	10.68	4.26	0.35
Frctn Loss (ft)	3.17	Cum Volume (acre-ft)	1.71	3.61	0.97
C & E Loss (ft)	0.02	Cum SA (acres)	2.11	1.80	1.39

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2332.69	Element			
Vel Head (ft)	0.59	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2332.09	Reach Len. (ft)	107.50	116.45	116.84
Crit W.S. (ft)	2332.09	Flow Area (sq ft)	24.35	32.84	8.14
E.G. Slope (ft/ft)	0.033510	Area (sq ft)	24.35	32.84	8.14
Q Total (cfs)	390.00	Flow (cfs)	163.20	197.70	29.10
Top Width (ft)	52.00	Top Width (ft)	12.94	28.19	10.87
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)	6.70	6.02	3.57
Max Chl Dpth (ft)	2.53	Hydr. Depth (ft)	1.88	1.16	0.75
Conv. Total (cfs)	2130.5	Conv. (cfs)	891.5	1080.0	159.0
Length Wtd. (ft)	112.86	Wetted Per. (ft)	15.44	28.21	11.64
Min Ch El (ft)	2330.69	Shear (lb/sq ft)	3.30	2.44	1.46
Alpha	1.07	Stream Power (lb/ft s)	22.11	14.66	5.23
Frctn Loss (ft)	3.17	Cum Volume (acre-ft)	0.86	3.75	0.69
C & E Loss (ft)	0.02	Cum SA (acres)	0.67	1.80	0.67

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9911.89	9929.65	2.25	1.87	12.76	0.58	0.15	1.20
2	LOB	9929.65	9947.42	45.24	12.95	17.91	11.60	0.73	3.49
3	LOB	9947.42	9965.18	154.50	27.07	17.92	39.62	1.52	5.71
4	LOB	9965.18	9982.94	127.29	24.06	17.86	32.64	1.35	5.29
5	Chan	9982.94	9986.97	9.39	2.51	4.03	2.41	0.62	3.74
6	Chan	9986.97	9990.99	10.56	2.70	4.03	2.71	0.67	3.92
7	Chan	9990.99	9995.02	12.82	3.03	4.03	3.29	0.75	4.23
8	Chan	9995.02	9999.05	11.23	2.80	4.03	2.88	0.69	4.02
9	Chan	9999.05	10003.08	7.41	2.18	4.03	1.90	0.54	3.40
10	Chan	10003.08	10007.10	3.35	1.35	4.03	0.86	0.34	2.47
11	Chan	10007.10	10011.13	1.05	0.68	4.03	0.27	0.17	1.56
12	ROB	10011.13	10021.02	1.38	1.22	9.89	0.35	0.12	1.13
13	ROB	10021.02	10030.91	2.05	1.55	9.89	0.53	0.16	1.32
14	ROB	10030.91	10040.80	1.47	1.27	9.89	0.38	0.13	1.16

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9965.18	9982.94	163.20	24.35	15.44	41.85	1.88	6.70
2	Chan	9982.94	9986.97	31.18	5.03	4.03	7.99	1.25	6.20
3	Chan	9986.97	9990.99	33.10	5.21	4.03	8.49	1.29	6.35
4	Chan	9990.99	9995.02	36.70	5.54	4.03	9.41	1.38	6.62
5	Chan	9995.02	9999.05	34.17	5.31	4.03	8.76	1.32	6.43
6	Chan	9999.05	10003.08	27.81	4.69	4.03	7.13	1.17	5.93
7	Chan	10003.08	10007.10	20.13	3.87	4.03	5.16	0.96	5.20
8	Chan	10007.10	10011.13	14.62	3.19	4.03	3.75	0.79	4.58
9	ROB	10011.13	10021.02	27.19	7.39	9.89	6.97	0.75	3.68
10	ROB	10021.02	10030.91	1.90	0.75	1.75	0.49	0.76	2.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.676

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9910.772	2326.68	9913.742	2326.19	9931.232	2325.77	9933.132	2325.69	9934.992	2325.61
9935.942	2325.62	9939.702	2325.54	9940.762	2325.51	9951.662	2323.93	9951.912	2323.89
9952.902	2323.89	9961.062	2323.11	9964.662	2322.72	9973.092	2323.21	9976.632	2323.44
9987.582	2323.36	9992.642	2323.27	9996.28	2322.55	19996.282	2322.55	9999.352	2321.79
10000.48	2321.69	10002.26	2321.79	10005.03	2322.60	310007.44	2323.31	10011.78	2326.02

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9910.772	.065	9961.062	.059	9973.092	.06	9996.28	.05	10005.03	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9996.28	10005.03	94.27	100.51	103.04	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2324.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.	0.056	0.050	0.065
W.S. Elev (ft)	2324.34	Reach Len. (ft)	94.27	100.51	103.04
Crit W.S. (ft)	2324.34	Flow Area (sq ft)	49.35	20.16	4.18
E.G. Slope (ft/ft)	0.024285	Area (sq ft)	49.35	20.16	4.18
Q Total (cfs)	390.00	Flow (cfs)	215.55	160.18	14.27
Top Width (ft)	60.25	Top Width (ft)	47.44	8.75	4.06

Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	4.37	7.95	3.41
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)	1.04	2.30	1.03
Conv. Total (cfs)	2502.6	Conv. (cfs)	1383.2	1027.9	91.6
Length Wtd. (ft)	98.84	Wetted Per. (ft)	47.62	8.97	4.46
Min Ch El (ft)	2321.69	Shear (lb/sq ft)	1.57	3.41	1.42
Alpha	1.32	Stream Power (lb/ft s)	6.86	27.08	4.86
Frctn Loss (ft)	2.23	Cum Volume (acre-ft)	1.57	3.56	0.96
C & E Loss (ft)	0.04	Cum SA (acres)	1.97	1.75	1.34

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2325.61	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.060	0.050	0.065
W.S. Elev (ft)	2324.79	Reach Len. (ft)	94.27	100.51	103.04
Crit W.S. (ft)	2324.79	Flow Area (sq ft)	31.82	24.11	6.01
E.G. Slope (ft/ft)	0.023831	Area (sq ft)	31.82	24.11	6.01
Q Total (cfs)	390.00	Flow (cfs)	151.89	213.81	24.30
Top Width (ft)	34.09	Top Width (ft)	21.28	8.75	4.06
Vel Total (ft/s)	6.30	Avg. Vel. (ft/s)	4.77	8.87	4.04
Max Chl Dpth (ft)	3.10	Hydr. Depth (ft)	1.50	2.75	1.48
Conv. Total (cfs)	2526.4	Conv. (cfs)	983.9	1385.0	157.4
Length Wtd. (ft)	99.76	Wetted Per. (ft)	22.81	8.97	4.91
Min Ch El (ft)	2321.69	Shear (lb/sq ft)	2.08	4.00	1.82
Alpha	1.34	Stream Power (lb/ft s)	9.91	35.47	7.37
Frctn Loss (ft)	2.59	Cum Volume (acre-ft)	0.79	3.68	0.68
C & E Loss (ft)	0.00	Cum SA (acres)	0.63	1.75	0.65

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.98	9962.08	30.25	9.69	13.31	7.76	0.73	3.12
2	LOB	9962.08	9979.18	111.33	21.31	17.14	28.55	1.25	5.22
3	LOB	9979.18	9996.28	73.97	18.35	17.17	18.97	1.07	4.03
4	Chan	9996.28	9997.53	17.02	2.43	1.29	4.36	1.94	7.01
5	Chan	9997.53	9998.78	21.77	2.82	1.29	5.58	2.25	7.73
6	Chan	9998.78	10000.03	26.72	3.17	1.27	6.85	2.53	8.44
7	Chan	10000.03	10001.28	28.65	3.28	1.25	7.35	2.63	8.72
8	Chan	10001.28	10002.53	27.33	3.20	1.26	7.01	2.56	8.53
9	Chan	10002.53	10003.78	22.14	2.86	1.30	5.68	2.29	7.75
10	Chan	10003.78	10005.03	16.54	2.40	1.30	4.24	1.92	6.90
11	ROB	10005.03	10006.38	8.41	2.08	1.41	2.16	1.54	4.05
12	ROB	10006.38	10007.73	4.95	1.53	1.45	1.27	1.13	3.24
13	ROB	10007.73	10009.08	0.91	0.58	1.59	0.23	0.43	1.59

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9962.08	9979.18	22.00	5.75	5.64	5.64	1.38	3.82
2	LOB	9979.18	9996.28	129.89	26.07	17.17	33.31	1.52	4.98
3	Chan	9996.28	9997.53	23.94	2.99	1.29	6.14	2.39	8.00
4	Chan	9997.53	9998.78	29.32	3.38	1.29	7.52	2.70	8.67
5	Chan	9998.78	10000.03	34.87	3.73	1.27	8.94	2.98	9.35
6	Chan	10000.03	10001.28	37.06	3.85	1.25	9.50	3.08	9.63
7	Chan	10001.28	10002.53	35.57	3.77	1.26	9.12	3.01	9.44
8	Chan	10002.53	10003.78	29.69	3.42	1.30	7.61	2.74	8.68
9	Chan	10003.78	10005.03	23.36	2.96	1.30	5.99	2.37	7.88
10	ROB	10005.03	10006.38	12.74	2.69	1.41	3.27	1.99	4.75
11	ROB	10006.38	10007.73	8.55	2.14	1.45	2.19	1.58	4.00
12	ROB	10007.73	10009.08	3.00	1.18	1.59	0.77	0.88	2.53
13	ROB	10009.08	10010.43	0.00	0.00	0.46	0.00	0.45	0.14

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.657

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9906.479	2321.67	9907.549	2321.46	9909.329	2321.49	9911.089	2320.93	9916.189	2320.87
9918.489	2320.86	9925.119	2320.92	9934.419	2320.63	9935.009	2320.59	9935.209	2320.59
9942.219	2320.47	9944.529	2320.29	9969.279	2319.68	9970.569	2319.58	9972.339	2319.39
9974.039	2319.21	9974.04	2319.21	9978.449	2318.98	9979.449	2318.82	9985.039	2318.73
9986.529	2318.81	9988.899	2318.81	9995.709	2319.32	9996.529	2319.31	9998.379	2319.32
10006.48	2319.46	10007.91	2319.51	10008.89	2319.57	10010.65	2319.57	10010.75	2319.48
10011.76	2319.57	10014.71	2319.57	10016.55	2319.97	10019.88	2320.21	10023.17	2320.23
10026.7	2320.19	10029.59	2320.23	10036.05	2320.43	10046.13	2320.83		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9906.479	.045	9974.04	.05	9995.709	.035	10016.55	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.04	9995.709	10.4	10.55	10.5	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2320.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.	0.045	0.050	0.036
W.S. Elev (ft)	2320.49	Reach Len. (ft)	10.40	10.55	10.50
Crit W.S. (ft)	2320.49	Flow Area (sq ft)	17.82	33.67	26.44
E.G. Slope (ft/ft)	0.020941	Area (sq ft)	17.82	33.67	26.44
Q Total (cfs)	390.00	Flow (cfs)	56.16	194.01	139.83
Top Width (ft)	96.88	Top Width (ft)	33.25	21.67	41.96
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)	3.15	5.76	5.29
Max Chl Dpth (ft)	1.76	Hydr. Depth (ft)	0.54	1.55	0.63
Conv. Total (cfs)	2695.1	Conv. (cfs)	388.1	1340.7	966.3
Length Wtd. (ft)	10.51	Wetted Per. (ft)	33.28	21.71	42.06
Min Ch El (ft)	2318.73	Shear (lb/sq ft)	0.70	2.03	0.82
Alpha	1.12	Stream Power (lb/ft s)	2.21	11.68	4.35
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	1.49	3.50	0.93
C & E Loss (ft)	0.01	Cum SA (acres)	1.89	1.71	1.29

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2321.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.84	Wt. n-Val.		0.050	0.035
W.S. Elev (ft)	2320.72	Reach Len. (ft)	10.40	10.55	10.50
Crit W.S. (ft)	2320.72	Flow Area (sq ft)		38.57	14.70
E.G. Slope (ft/ft)	0.028357	Area (sq ft)		38.57	14.70
Q Total (cfs)	390.00	Flow (cfs)		270.78	119.22
Top Width (ft)	32.57	Top Width (ft)		21.67	10.90
Vel Total (ft/s)	7.32	Avg. Vel. (ft/s)		7.02	8.11
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)		1.78	1.35
Conv. Total (cfs)	2316.0	Conv. (cfs)		1608.0	708.0
Length Wtd. (ft)	10.53	Wetted Per. (ft)		23.22	12.16
Min Ch El (ft)	2318.73	Shear (lb/sq ft)		2.94	2.14
Alpha	1.01	Stream Power (lb/ft s)		20.64	17.36
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	0.76	3.60	0.65
C & E Loss (ft)	0.00	Cum SA (acres)	0.61	1.71	0.63

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9933.50	9947.02	0.98	0.87	6.23	0.25	0.14	1.13
2	LOB	9947.02	9960.53	14.07	5.84	13.52	3.61	0.43	2.41
3	LOB	9960.53	9974.04	41.10	11.12	13.54	10.54	0.82	3.70
4	Chan	9974.04	9977.14	22.21	4.23	3.10	5.69	1.37	5.26
5	Chan	9977.14	9980.23	27.91	4.85	3.11	7.16	1.57	5.75
6	Chan	9980.23	9983.33	32.41	5.30	3.10	8.31	1.71	6.12
7	Chan	9983.33	9986.42	33.29	5.39	3.10	8.54	1.74	6.18

8	Chan	9986.42	9989.52	31.40	5.20	3.10	8.05	1.68	6.04
9	Chan	9989.52	9992.61	26.60	4.71	3.10	6.82	1.52	5.65
10	Chan	9992.61	9995.71	20.20	3.99	3.10	5.18	1.29	5.06
11	ROB	9995.71	10005.79	74.90	11.38	10.09	19.20	1.13	6.58
12	ROB	10005.79	10015.88	54.85	9.47	10.15	14.06	0.94	5.79
13	ROB	10015.88	10025.96	7.21	3.43	10.11	1.85	0.34	2.10
14	ROB	10025.96	10036.05	2.86	2.11	10.09	0.73	0.21	1.36
15	ROB	10036.05	10046.13	0.02	0.05	1.63	0.01	0.03	0.39

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9974.04	9977.14	25.22	4.93	4.61	6.47	1.59	5.12
2	Chan	9977.14	9980.23	40.03	5.55	3.11	10.26	1.79	7.21
3	Chan	9980.23	9983.33	45.67	6.00	3.10	11.71	1.94	7.61
4	Chan	9983.33	9986.42	46.76	6.09	3.10	11.99	1.97	7.68
5	Chan	9986.42	9989.52	44.41	5.90	3.10	11.39	1.91	7.53
6	Chan	9989.52	9992.61	38.40	5.41	3.10	9.85	1.75	7.09
7	Chan	9992.61	9995.71	30.29	4.69	3.10	7.77	1.52	6.45
8	ROB	9995.71	10005.79	114.76	13.66	10.09	29.43	1.35	8.40
9	ROB	10005.79	10015.88	4.46	1.03	2.07	1.14	1.27	4.31

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: 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: X2
REACH: Reach 1 RS: 0.655

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9907.909	2322.469	9908.319	2322.469	910.779	2321.879	919.359	2320.319	920.479	2320.29
9921.329	2320.289	929.529	2320.189	937.599	2319.979	946.129	2319.769	957.639	2319.47
9964.339	2319.229	968.369	2318.949	969.069	2318.99	972.139	2318.899	977.089	2318.67
9987.759	2318.69	988.229	2318.569	990.469	2318.32	9990.47	2318.329	996.689	2317.39
10002.46	2317.69	10007.95	2318.37	10008.79	2318.45	10009.45	2318.42	10013.6	2318.61
10019.34	2318.92	10020.44	2319.01	10020.71	2319.03	10025.4	2319.45	10029.42	2319.77
10030.23	2319.88	10044.84	2320.46						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9907.909	.045	9990.47	.05	10009.45	.035	10030.23	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.47	10007.95	22.93	45.91	55.58	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2320.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.045	0.050	0.037
W.S. Elev (ft)	2319.67	Reach Len. (ft)	22.93	45.91	55.58
Crit W.S. (ft)	2319.67	Flow Area (sq ft)	27.12	32.65	15.21
E.G. Slope (ft/ft)	0.021503	Area (sq ft)	27.12	32.65	15.21
Q Total (cfs)	390.00	Flow (cfs)	99.76	214.79	75.45
Top Width (ft)	78.65	Top Width (ft)	40.91	17.48	20.26
Vel Total (ft/s)	5.20	Avg. Vel. (ft/s)	3.68	6.58	4.96
Max Chl Dpth (ft)	2.28	Hydr. Depth (ft)	0.66	1.87	0.75
Conv. Total (cfs)	2659.6	Conv. (cfs)	680.3	1464.8	514.5
Length Wtd. (ft)	41.36	Wetted Per. (ft)	40.95	17.60	20.31
Min Ch El (ft)	2317.39	Shear (lb/sq ft)	0.89	2.49	1.01
Alpha	1.18	Stream Power (lb/ft s)	3.27	16.38	4.99
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	1.49	3.49	0.92
C & E Loss (ft)	0.01	Cum SA (acres)	1.88	1.71	1.28

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2320.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.045	0.050	0.040
W.S. Elev (ft)	2319.84	Reach Len. (ft)	22.93	45.91	55.58
Crit W.S. (ft)	2319.84	Flow Area (sq ft)	12.54	35.49	5.68
E.G. Slope (ft/ft)	0.027508	Area (sq ft)	12.54	35.49	5.68

Q Total (cfs)	390.00	Flow (cfs)	74.13	279.26	36.61
Top Width (ft)	31.59	Top Width (ft)	9.99	17.48	4.12
Vel Total (ft/s)	7.26	Avg. Vel. (ft/s)	5.91	7.87	6.45
Max Chl Dpth (ft)	2.45	Hydr. Depth (ft)	1.26	2.03	1.38
Conv. Total (cfs)	2351.5	Conv. (cfs)	447.0	1683.7	220.7
Length Wtd. (ft)	42.95	Wetted Per. (ft)	11.19	17.60	5.42
Min Ch El (ft)	2317.39	Shear (lb/sq ft)	1.92	3.46	1.80
Alpha	1.04	Stream Power (lb/ft s)	11.37	27.25	11.59
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	0.76	3.60	0.65
C & E Loss (ft)	0.01	Cum SA (acres)	0.61	1.71	0.63

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9940.93	9957.45	0.70	0.78	7.89	0.18	0.10	0.89
2	LOB	9957.45	9973.96	25.14	9.05	16.53	6.45	0.55	2.78
3	LOB	9973.96	9990.47	73.92	17.28	16.53	18.95	1.05	4.28
4	Chan	9990.47	9992.97	21.92	3.85	2.52	5.62	1.54	5.70
5	Chan	9992.97	9995.46	31.48	4.78	2.52	8.07	1.91	6.59
6	Chan	9995.46	9997.96	40.51	5.55	2.51	10.39	2.22	7.30
7	Chan	9997.96	10000.46	38.56	5.38	2.50	9.89	2.15	7.17
8	Chan	10000.46	10002.96	34.62	5.04	2.50	8.88	2.02	6.87
9	Chan	10002.96	10005.45	27.64	4.41	2.52	7.09	1.77	6.26
10	Chan	10005.45	10007.95	20.06	3.64	2.52	5.14	1.46	5.51
11	ROB	10007.95	10015.33	47.68	8.44	7.39	12.23	1.14	5.65
12	ROB	10015.33	10022.71	25.22	5.52	7.40	6.47	0.75	4.57
13	ROB	10022.71	10030.08	2.55	1.24	5.52	0.65	0.23	2.05

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.96	9990.47	74.13	12.54	11.19	19.01	1.26	5.91
2	Chan	9990.47	9992.97	29.37	4.25	2.52	7.53	1.70	6.91
3	Chan	9992.97	9995.46	40.87	5.19	2.52	10.48	2.08	7.88
4	Chan	9995.46	9997.96	51.64	5.95	2.51	13.24	2.38	8.67
5	Chan	9997.96	10000.46	49.34	5.78	2.50	12.65	2.32	8.53
6	Chan	10000.46	10002.96	44.64	5.45	2.50	11.45	2.18	8.19
7	Chan	10002.96	10005.45	36.27	4.82	2.52	9.30	1.93	7.53
8	Chan	10005.45	10007.95	27.11	4.05	2.52	6.95	1.62	6.70
9	ROB	10007.95	10015.33	36.61	5.68	5.42	9.39	1.38	6.45

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: X2
REACH: Reach 1 RS: 0.646

INPUT
Description:
Station Elevation Data num= 36

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9936.933 2320.099939.683 2319.479940.463 2319.299941.153 2319.149943.643 2318.54
9948.923 2316.889949.733 2316.629950.113 2316.539958.913  2316.99961.583 2316.98
9970.093 2316.829975.533 2316.829983.203 2316.659983.903 2316.75 9989.962315.841
9989.963 2315.849991.073 2315.659991.903 2315.549999.493 2314.0510000.04 2313.93
10001.81 2314.5310004.762315.63310010.42 2317.7510016.75 2317.56 10018.3 2317.48
10025.99 2317.1410032.34 2316.9310039.17  2316.710042.14 2316.6510045.34 2316.53
10047.97 2316.4410051.45 2316.3510066.31 2316.1710072.23    2316 10077.3 2315.77
10089.75 2316.02
```

Manning's n Values num= 5

```
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
9936.933    .0559975.533    .065 9989.96     .0510010.42    .06510047.97     .03
```

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

```
       9989.9610004.76          102.61  123.09   110.9              .1       .3
Right Levee     Station=10010.42      Elevation= 2317.75
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2318.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.059	0.050	0.050
W.S. Elev (ft)	2317.54	Reach Len. (ft)	102.61	123.09	110.90
Crit W.S. (ft)	2317.54	Flow Area (sq ft)	34.08	39.45	4.84
E.G. Slope (ft/ft)	0.016047	Area (sq ft)	34.08	39.45	4.84
Q Total (cfs)	390.00	Flow (cfs)	93.62	279.48	16.89
Top Width (ft)	63.02	Top Width (ft)	43.13	14.80	5.09
Vel Total (ft/s)	4.98	Avg. Vel. (ft/s)	2.75	7.08	3.49
Max Chl Dpth (ft)	3.61	Hydr. Depth (ft)	0.79	2.67	0.95
Conv. Total (cfs)	3078.7	Conv. (cfs)	739.1	2206.2	133.4
Length Wtd. (ft)	118.95	Wetted Per. (ft)	43.37	15.28	5.43
Min Ch El (ft)	2313.93	Shear (lb/sq ft)	0.79	2.59	0.89
Alpha	1.55	Stream Power (lb/ft s)	2.16	18.32	3.11
Frctn Loss (ft)	1.93	Cum Volume (acre-ft)	1.47	3.45	0.91
C & E Loss (ft)	0.00	Cum SA (acres)	1.86	1.69	1.27

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2318.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.84	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2317.59	Reach Len. (ft)	102.61	123.09	110.90
Crit W.S. (ft)	2317.59	Flow Area (sq ft)	15.56	40.24	5.12
E.G. Slope (ft/ft)	0.019622	Area (sq ft)	15.56	40.24	5.12
Q Total (cfs)	390.00	Flow (cfs)	50.28	319.40	20.32
Top Width (ft)	35.02	Top Width (ft)	15.13	14.80	5.09
Vel Total (ft/s)	6.40	Avg. Vel. (ft/s)	3.23	7.94	3.97
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)	1.03	2.72	1.01
Conv. Total (cfs)	2784.2	Conv. (cfs)	358.9	2280.2	145.1
Length Wtd. (ft)	120.67	Wetted Per. (ft)	15.98	15.28	5.49
Min Ch El (ft)	2313.93	Shear (lb/sq ft)	1.19	3.23	1.14
Alpha	1.31	Stream Power (lb/ft s)	3.86	25.61	4.54
Frctn Loss (ft)	2.59	Cum Volume (acre-ft)	0.75	3.56	0.64
C & E Loss (ft)	0.00	Cum SA (acres)	0.60	1.69	0.63

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9936.93	9947.54	0.06	0.08	0.74	0.02	0.11	0.75
2	LOB	9947.54	9958.14	23.78	8.34	10.73	6.10	0.79	2.85
3	LOB	9958.14	9968.75	16.09	6.57	10.61	4.13	0.62	2.45
4	LOB	9968.75	9979.35	19.94	7.74	10.61	5.11	0.73	2.58
5	LOB	9979.35	9989.96	33.75	11.35	10.68	8.65	1.07	2.97
6	Chan	9989.96	9992.07	21.91	3.95	2.14	5.62	1.87	5.55
7	Chan	9992.07	9994.19	29.47	4.73	2.15	7.56	2.24	6.23
8	Chan	9994.19	9996.30	39.13	5.61	2.15	10.03	2.65	6.98
9	Chan	9996.30	9998.42	49.86	6.49	2.15	12.79	3.07	7.69
10	Chan	9998.42	10000.53	60.46	7.31	2.18	15.50	3.46	8.27
11	Chan	10000.53	10002.65	48.77	6.50	2.24	12.50	3.08	7.50
12	Chan	10002.65	10004.76	29.88	4.86	2.26	7.66	2.30	6.15
13	ROB	10004.76	10010.42	16.89	4.84	5.43	4.33	0.95	3.49

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9968.75	9979.35	9.61	3.64	5.30	2.46	0.81	2.64
2	LOB	9979.35	9989.96	40.67	11.92	10.68	10.43	1.12	3.41
3	Chan	9989.96	9992.07	25.41	4.06	2.14	6.52	1.92	6.25

4	Chan	9992.07	9994.19	33.91	4.84	2.15	8.70	2.29	7.00
5	Chan	9994.19	9996.30	44.76	5.72	2.15	11.48	2.71	7.82
6	Chan	9996.30	9998.42	56.79	6.60	2.15	14.56	3.12	8.61
7	Chan	9998.42	10000.53	68.63	7.42	2.18	17.60	3.51	9.25
8	Chan	10000.53	10002.65	55.54	6.62	2.24	14.24	3.13	8.39
9	Chan	10002.65	10004.76	34.36	4.97	2.26	8.81	2.35	6.91
10	ROB	10004.76	10010.42	20.32	5.12	5.49	5.21	1.01	3.97

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: X2
REACH: Reach 1 RS: 0.623

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9950.702	2316.01	9955.912	2315.79	9963.602	2315.12	9964.902	2315.04	9968.912	2314.74
9968.982	2314.76	9983.732	2313.14	9988.272	2312.69	9989.822	2312.01	9993.442	2310.585
9997.412	2309.02	10010.62	2310.71	10017.41	2311.51	10029.38	2312.15	10033.66	2312.33
10036.97	2312.02	10047.36	2310.98	10048.42	2311.79	10049.74	2312.94	10051.05	2313.05
10054.59	2312.99	10062.62	2313.01	10063.18	2313.05	10065.88	2313.49	10069.43	2314.02

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9950.702	.03	9964.902	.06	9993.44	.05	10010.62	.06	10054.59	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.44	10010.62	150.46	145.35	134.29	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2313.03	Element			
Vel Head (ft)	0.62	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2312.40	Reach Len. (ft)	150.46	145.35	134.29
Crit W.S. (ft)	2312.40	Flow Area (sq ft)	4.18	43.87	27.81
E.G. Slope (ft/ft)	0.016459	Area (sq ft)	4.18	43.87	27.81
Q Total (cfs)	390.00	Flow (cfs)	12.00	307.65	70.35
Top Width (ft)	60.20	Top Width (ft)	4.52	17.18	38.50
Vel Total (ft/s)	5.14	Avg. Vel. (ft/s)	2.87	7.01	2.53
Max Chl Dpth (ft)	3.38	Hydr. Depth (ft)	0.93	2.55	0.72
Conv. Total (cfs)	3039.9	Conv. (cfs)	93.5	2398.1	548.3
Length Wtd. (ft)	144.48	Wetted Per. (ft)	4.87	17.58	39.14
Min Ch El (ft)	2309.02	Shear (lb/sq ft)	0.88	2.56	0.73
Alpha	1.52	Stream Power (lb/ft s)	2.53	17.98	1.85
Frctn Loss (ft)	3.07	Cum Volume (acre-ft)	1.43	3.33	0.87
C & E Loss (ft)	0.01	Cum SA (acres)	1.80	1.65	1.21

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2313.23	Element			
Vel Head (ft)	0.85	Wt. n-Val.		0.050	0.060
W.S. Elev (ft)	2312.38	Reach Len. (ft)	150.46	145.35	134.29
Crit W.S. (ft)	2312.38	Flow Area (sq ft)		43.45	14.54
E.G. Slope (ft/ft)	0.023610	Area (sq ft)		43.45	14.54
Q Total (cfs)	390.00	Flow (cfs)		339.93	50.07
Top Width (ft)	33.65	Top Width (ft)		17.18	16.47
Vel Total (ft/s)	6.73	Avg. Vel. (ft/s)		7.82	3.44
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)		2.53	0.88
Conv. Total (cfs)	2538.1	Conv. (cfs)		2212.3	325.9
Length Wtd. (ft)	144.64	Wetted Per. (ft)		19.38	16.88
Min Ch El (ft)	2309.02	Shear (lb/sq ft)		3.31	1.27
Alpha	1.21	Stream Power (lb/ft s)		25.85	4.37
Frctn Loss (ft)	4.11	Cum Volume (acre-ft)	0.73	3.44	0.62
C & E Loss (ft)	0.03	Cum SA (acres)	0.58	1.65	0.60

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.89	9993.44	12.00	4.18	4.87	3.08	0.93	2.87
2	Chan	9993.44	9995.90	35.18	5.65	2.64	9.02	2.30	6.23
3	Chan	9995.90	9998.35	61.11	7.79	2.58	15.67	3.18	7.84
4	Chan	9998.35	10000.80	60.50	7.63	2.47	15.51	3.11	7.93
5	Chan	10000.80	10003.26	50.68	6.86	2.48	12.99	2.79	7.39
6	Chan	10003.26	10005.71	41.52	6.08	2.47	10.65	2.48	6.83
7	Chan	10005.71	10008.17	33.14	5.31	2.47	8.50	2.17	6.24
8	Chan	10008.17	10010.62	25.52	4.54	2.47	6.54	1.85	5.62
9	ROB	10010.62	10022.38	38.01	12.57	11.82	9.75	1.07	3.02
10	ROB	10022.38	10034.14	5.27	3.84	11.78	1.35	0.33	1.37
11	ROB	10034.14	10045.91	18.42	8.14	11.82	4.72	0.69	2.26
12	ROB	10045.91	10057.67	8.65	3.26	3.73	2.22	1.01	2.65

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9993.44	9995.90	28.39	5.59	4.43	7.28	2.28	5.08
2	Chan	9995.90	9998.35	70.05	7.74	2.58	17.96	3.15	9.06
3	Chan	9998.35	10000.80	69.33	7.57	2.47	17.78	3.08	9.16
4	Chan	10000.80	10003.26	57.99	6.80	2.48	14.87	2.77	8.53
5	Chan	10003.26	10005.71	47.43	6.02	2.47	12.16	2.45	7.87
6	Chan	10005.71	10008.17	37.75	5.25	2.47	9.68	2.14	7.19
7	Chan	10008.17	10010.62	28.99	4.48	2.47	7.43	1.83	6.47
8	ROB	10010.62	10022.38	45.36	12.29	11.82	11.63	1.04	3.69
9	ROB	10022.38	10034.14	4.71	2.25	5.07	1.21	0.48	2.09

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.595

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9925.921	2308.039	927.101	2307.969	931.341	2307.689	937.051	2307.279	948.161	2306.68
9952.501	2306.439	959.821	2305.999	964.801	2305.67	9969.58	2305.399	976.091	2305.01
9981.081	2305.269	981.931	2305.289	985.291	2305.189	992.791	2304.99	994.191	2304.81
10001.4	2304.271	0007.552	2305.36	210015.48	2306.77	10019.56	2307.6	10023	2307.63
10029.47	2307.55	10033.14	2307.55	10037.92	2307.58	10047.11	2307.65		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9925.921	.055	9969.58	.05	10007.55	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.58	10007.55	141.76	139.12	136.39	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2307.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2306.42	Reach Len. (ft)	141.76	139.12	136.39
Crit W.S. (ft)	2306.42	Flow Area (sq ft)	8.74	55.31	3.16
E.G. Slope (ft/ft)	0.028512	Area (sq ft)	8.74	55.31	3.16
Q Total (cfs)	390.00	Flow (cfs)	25.64	355.81	8.55
Top Width (ft)	60.86	Top Width (ft)	16.92	37.97	5.96
Vel Total (ft/s)	5.80	Avg. Vel. (ft/s)	2.93	6.43	2.71
Max Chl Dpth (ft)	2.15	Hydr. Depth (ft)	0.52	1.46	0.53
Conv. Total (cfs)	2309.7	Conv. (cfs)	151.8	2107.2	50.6
Length Wtd. (ft)	139.22	Wetted Per. (ft)	16.96	38.11	6.06
Min Ch El (ft)	2304.27	Shear (lb/sq ft)	0.92	2.58	0.93
Alpha	1.14	Stream Power (lb/ft s)	2.69	16.62	2.51
Frctn Loss (ft)	3.44	Cum Volume (acre-ft)	1.41	3.17	0.82
C & E Loss (ft)	0.00	Cum SA (acres)	1.76	1.55	1.14

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2307.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.		0.050	
W.S. Elev (ft)	2306.45	Reach Len. (ft)	141.76	139.12	136.39
Crit W.S. (ft)	2306.45	Flow Area (sq ft)		56.25	
E.G. Slope (ft/ft)	0.034836	Area (sq ft)		56.25	
Q Total (cfs)	390.00	Flow (cfs)		390.00	
Top Width (ft)	37.97	Top Width (ft)		37.97	
Vel Total (ft/s)	6.93	Avg. Vel. (ft/s)		6.93	
Max Chl Dpth (ft)	2.18	Hydr. Depth (ft)		1.48	
Conv. Total (cfs)	2089.5	Conv. (cfs)		2089.5	
Length Wtd. (ft)	139.11	Wetted Per. (ft)		40.25	
Min Ch El (ft)	2304.27	Shear (lb/sq ft)		3.04	
Alpha	1.00	Stream Power (lb/ft s)		21.07	
Frctn Loss (ft)	3.92	Cum Volume (acre-ft)	0.73	3.27	0.59
C & E Loss (ft)	0.02	Cum SA (acres)	0.58	1.55	0.57

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9952.12	9960.85	3.16	2.02	8.21	0.81	0.25	1.56
2	LOB	9960.85	9969.58	22.48	6.72	8.75	5.76	0.77	3.34
3	Chan	9969.58	9975.00	35.65	6.45	5.43	9.14	1.19	5.53
4	Chan	9975.00	9980.43	42.32	7.15	5.43	10.85	1.32	5.92
5	Chan	9980.43	9985.85	35.68	6.45	5.43	9.15	1.19	5.53
6	Chan	9985.85	9991.28	44.81	7.39	5.43	11.49	1.36	6.06
7	Chan	9991.28	9996.70	59.05	8.73	5.43	15.14	1.61	6.76
8	Chan	9996.70	10002.13	83.94	10.79	5.45	21.52	1.99	7.78
9	Chan	10002.13	10007.55	54.37	8.35	5.51	13.94	1.54	6.51
10	ROB	10007.55	10015.46	8.55	3.16	6.06	2.19	0.53	2.71

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9969.58	9975.00	35.98	6.58	6.49	9.22	1.21	5.47
2	Chan	9975.00	9980.43	47.91	7.28	5.43	12.28	1.34	6.58
3	Chan	9980.43	9985.85	40.53	6.58	5.43	10.39	1.21	6.16
4	Chan	9985.85	9991.28	50.68	7.53	5.43	12.99	1.39	6.73
5	Chan	9991.28	9996.70	66.48	8.86	5.43	17.05	1.63	7.50
6	Chan	9996.70	10002.13	94.05	10.93	5.45	24.12	2.01	8.61
7	Chan	10002.13	10007.55	54.38	8.49	6.59	13.94	1.56	6.41

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: X2
REACH: Reach 1 RS: 0.569

INPUT
Description:
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9912.566	2301.97	9912.846	2301.96	9914.726	2301.89	9916.956	2301.78	9929.496	2301.71
9931.506	2301.69	9936.246	2301.59	9963.346	2300.99	9965.996	2300.92	9966.246	2300.94
9966.496	2300.93	9969.206	2300.71	9974.266	2300.09	9977.296	2300.09	9978.536	2300.09
9981.406	2300.09	9984.456	2299.67	9985.186	2299.58	9985.19	2299.58	9989.346	2299.27

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9995.616  2298.89998.156 2298.599999.526 2298.8710003.99 2299.6410009.84 2300.08
10031.92 2301.6910032.79 2301.7510032.94 2301.7610032.98 2301.7710033.17 2301.78
10037.92 2301.7810040.62 2301.7610047.91 2301.6310048.13 2301.6310055.17 2301.62
10056.14 2301.6210056.59 2301.6210063.52 2301.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9912.566    .045 9985.19     .0510003.99    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9985.1910003.99             97.4  100.58  102.99            .1        .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2301.75    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.59    Wt. n-Val.                0.045      0.050     0.055
  W.S. Elev (ft)          2301.16    Reach Len. (ft)           97.40     100.58    102.99
  Crit W.S. (ft)          2301.16    Flow Area (sq ft)         18.74      38.62     15.60
  E.G. Slope (ft/ft)     0.021640    Area (sq ft)              18.74      38.62     15.60
  Q Total (cfs)            390.00    Flow (cfs)                67.12     271.59     51.30
  Top Width (ft)            68.96    Top Width (ft)            29.51      18.80     20.66
  Vel Total (ft/s)           5.35    Avg. Vel. (ft/s)           3.58       7.03      3.29
  Max Chl Dpth (ft)          2.57    Hydr. Depth (ft)           0.64       2.05      0.75
  Conv. Total (cfs)         2651.2   Conv. (cfs)              456.2     1846.2     348.7
  Length Wtd. (ft)          100.14   Wetted Per. (ft)          29.59      18.93     20.71
  Min Ch El (ft)         2298.59     Shear (lb/sq ft)           0.86       2.76      1.02
  Alpha                      1.33    Stream Power (lb/ft s)     3.06      19.38      3.35
  Frctn Loss (ft)            2.81    Cum Volume (acre-ft)       1.36       3.02      0.79
  C & E Loss (ft)            0.01    Cum SA (acres)             1.69       1.46      1.10

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2301.83    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.68    Wt. n-Val.                0.045      0.050     0.055
  W.S. Elev (ft)          2301.15    Reach Len. (ft)           97.40     100.58    102.99
  Crit W.S. (ft)          2301.15    Flow Area (sq ft)         10.70      38.39     14.25
  E.G. Slope (ft/ft)     0.023290    Area (sq ft)              10.70      38.39     14.25
  Q Total (cfs)            390.00    Flow (cfs)                55.37     278.96     55.66
  Top Width (ft)            43.00    Top Width (ft)             9.19      18.80     15.01
  Vel Total (ft/s)           6.16    Avg. Vel. (ft/s)           5.17       7.27      3.91
  Max Chl Dpth (ft)          2.56    Hydr. Depth (ft)           1.16       2.04      0.95
  Conv. Total (cfs)         2555.5   Conv. (cfs)              362.8     1828.0     364.8
  Length Wtd. (ft)          100.28   Wetted Per. (ft)          10.28      18.93     15.45
  Min Ch El (ft)         2298.59     Shear (lb/sq ft)           1.51       2.95      1.34
  Alpha                      1.15    Stream Power (lb/ft s)     7.83      21.42      5.24
  Frctn Loss (ft)            2.86    Cum Volume (acre-ft)       0.72       3.12      0.57
  C & E Loss (ft)            0.01    Cum SA (acres)             0.57       1.46      0.55

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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.

  Profile #profile 1

              Pos        Left Sta   Right Sta     Flow      Area      W.P.   Percent      Hydr   Velocity
                         (ft)       (ft)          (cfs)     (sq ft)   (ft)     Conv   Depth(ft)   (ft/s)
  1           LOB        9941.62    9956.14       0.00      0.00      0.46     0.00       0.01      0.11
  2           LOB        9956.14    9970.67       4.02      3.01      14.55    1.03       0.21      1.34
  3           LOB        9970.67    9985.19       63.09     15.72     14.59    16.18      1.08      4.01
  4           Chan       9985.19    9987.88       27.54     4.51      2.69     7.06       1.68      6.11
  5           Chan       9987.88    9990.56       33.24     5.05      2.69     8.52       1.88      6.58
  6           Chan       9990.56    9993.25       39.37     5.59      2.69     10.10      2.08      7.04
  7           Chan       9993.25    9995.93       45.94     6.13      2.69     11.78      2.28      7.49
  8           Chan       9995.93    9998.62       52.79     6.67      2.70     13.54      2.49      7.91
  9           Chan       9998.62    10001.30      43.41     5.96      2.73     11.13      2.22      7.28
  10          Chan       10001.30   10003.99      29.29     4.70      2.73     7.51       1.75      6.23
  11          ROB        10003.99   10015.90      46.76     12.80     11.94    11.99      1.08      3.65
  12          ROB        10015.90   10027.80      4.53      2.79      8.77     1.16       0.32      1.62

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

  Profile #profile 2
```

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9970.67	9985.19	55.37	10.70	10.28	14.20	1.16	5.17
2	Chan	9985.19	9987.88	28.23	4.48	2.69	7.24	1.67	6.30
3	Chan	9987.88	9990.56	34.10	5.02	2.69	8.74	1.87	6.80
4	Chan	9990.56	9993.25	40.44	5.56	2.69	10.37	2.07	7.28
5	Chan	9993.25	9995.93	47.23	6.10	2.69	12.11	2.27	7.74
6	Chan	9995.93	9998.62	54.31	6.64	2.70	13.93	2.47	8.18
7	Chan	9998.62	10001.30	44.62	5.93	2.73	11.44	2.21	7.53
8	Chan	10001.30	10003.99	30.03	4.67	2.73	7.70	1.74	6.43
9	ROB	10003.99	10015.90	51.96	12.66	11.94	13.32	1.06	4.10
10	ROB	10015.90	10027.80	3.70	1.59	3.51	0.95	0.51	2.33

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.550

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9881.574	2299.81	9884.344	2299.74	9888.914	2299.66	9896.744	2299.44	9903.134	2299.13
9906.834	2298.99	9919.324	2298.48	9921.244	2298.42	9923.244	2298.35	9924.744	2298.31
9926.994	2298.25	9928.314	2298.23	9930.744	2298.18	9932.614	2298.09	9933.734	2298.05
9934.964	2298.01	9935.644	2298	9935.764	2297.99	9936.674	2297.99	9942.594	2297.76
9949.804	2297.58	9956.824	2297.34	9962.794	2297.03	9965.224	2296.88	9970.994	2296.68
9973.304	2296.64	9978.764	2296.63	9981.27	2296.57	9981.274	2296.57	9986.954	2296.41
9993.55	2296.34	9993.554	2296.34	10015.46	2296	10017.39	2296.11	10019.55	2296.24
10021.2	2296.29	10022.16	2296.39	10023.64	2296.45	10024.6	2296.52	10026.64	2296.64
10032.98	2297.06	10037.15	2297.47	10040.75	2297.51	10045.04	2297.67	10047.7	2297.68
10052.47	2297.71	10057.11	2297.81	10060.29	2297.81	10062.48	2297.87	10069.04	2298.1
10069.84	2298.12	10069.87	2298.12	10074.4	2298.21	10087.78	2298.23	10095.73	2298.24
10100.92	2298.31	10104.83	2298.31						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9881.574	.03	59942.594	.06	9993.55	.05	10021.2	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.55	10021.2	102.52	104.51	105.28	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2298.01	Element			
Vel Head (ft)	0.54	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2297.46	Reach Len. (ft)	102.52	104.51	105.28
Crit W.S. (ft)	2297.46	Flow Area (sq ft)	28.33	35.84	10.08
E.G. Slope (ft/ft)	0.037867	Area (sq ft)	28.33	35.84	10.08
Q Total (cfs)	390.00	Flow (cfs)	107.81	246.36	35.83
Top Width (ft)	83.88	Top Width (ft)	40.34	27.65	15.89
Vel Total (ft/s)	5.25	Avg. Vel. (ft/s)	3.81	6.87	3.55
Max Chl Dpth (ft)	1.46	Hydr. Depth (ft)	0.70	1.30	0.63
Conv. Total (cfs)	2004.2	Conv. (cfs)	554.0	1266.0	184.1
Length Wtd. (ft)	104.20	Wetted Per. (ft)	40.36	27.66	15.93
Min Ch El (ft)	2296.00	Shear (lb/sq ft)	1.66	3.06	1.50
Alpha	1.27	Stream Power (lb/ft s)	6.31	21.06	5.32
Frctn Loss (ft)	2.34	Cum Volume (acre-ft)	1.31	2.93	0.76
C & E Loss (ft)	0.00	Cum SA (acres)	1.61	1.41	1.06

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2298.56	Element			
Vel Head (ft)	0.79	Wt. n-Val.	0.060	0.050	
W.S. Elev (ft)	2297.77	Reach Len. (ft)	102.52	104.51	105.28
Crit W.S. (ft)	2297.77	Flow Area (sq ft)	11.68	44.30	
E.G. Slope (ft/ft)	0.035611	Area (sq ft)	11.68	44.30	
Q Total (cfs)	390.00	Flow (cfs)	61.53	328.47	
Top Width (ft)	36.11	Top Width (ft)	8.46	27.65	
Vel Total (ft/s)	6.97	Avg. Vel. (ft/s)	5.27	7.41	
Max Chl Dpth (ft)	1.77	Hydr. Depth (ft)	1.38	1.60	

Conv. Total (cfs)	2066.7	Conv. (cfs)	326.0	1740.6	
Length Wtd. (ft)	104.37	Wetted Per. (ft)	9.77	29.14	
Min Ch El (ft)	2296.00	Shear (lb/sq ft)	2.66	3.38	
Alpha	1.04	Stream Power (lb/ft s)	14.00	25.06	
Frctn Loss (ft)	2.55	Cum Volume (acre-ft)	0.69	3.02	0.56
C & E Loss (ft)	0.01	Cum SA (acres)	0.55	1.41	0.53

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9948.76	9971.15	17.38	7.19	17.96	4.46	0.40	2.42
2	LOB	9971.15	9993.55	90.43	21.13	22.40	23.19	0.94	4.28
3	Chan	9993.55	9997.50	28.93	4.56	3.95	7.42	1.15	6.34
4	Chan	9997.50	10001.45	31.53	4.80	3.95	8.09	1.22	6.57
5	Chan	10001.45	10005.40	34.23	5.04	3.95	8.78	1.28	6.79
6	Chan	10005.40	10009.35	37.00	5.28	3.95	9.49	1.34	7.00
7	Chan	10009.35	10013.30	39.88	5.53	3.95	10.23	1.40	7.21
8	Chan	10013.30	10017.25	41.50	5.66	3.95	10.64	1.43	7.33
9	Chan	10017.25	10021.20	33.30	4.96	3.96	8.54	1.26	6.71
10	ROB	10021.20	10037.93	35.83	10.08	15.93	9.19	0.63	3.55

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9971.15	9993.55	61.53	11.68	9.77	15.78	1.38	5.27
2	Chan	9993.55	9997.50	41.20	5.77	3.95	10.57	1.46	7.14
3	Chan	9997.50	10001.45	44.13	6.01	3.95	11.31	1.52	7.34
4	Chan	10001.45	10005.40	47.13	6.25	3.95	12.08	1.58	7.54
5	Chan	10005.40	10009.35	50.20	6.49	3.95	12.87	1.64	7.73
6	Chan	10009.35	10013.30	53.38	6.74	3.95	13.69	1.71	7.92
7	Chan	10013.30	10017.25	55.14	6.87	3.95	14.14	1.74	8.03
8	Chan	10017.25	10021.20	37.29	6.17	5.44	9.56	1.56	6.04

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: X2
REACH: Reach 1 RS: 0.530

INPUT
Description:
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9959.441 2295.939959.631 2295.899959.991 2295.859963.951  2295.59964.211 2295.47
9964.711  2295.49969.251 2294.949970.661 2294.689975.081 2294.239975.931 2294.04
9977.871 2293.699980.901 2293.339984.471 2292.449987.521 2292.449992.111 2292.43
 9995.522291.8539997.601  2291.510001.61 2290.7810004.52 2291.2410008.78 2291.75
10012.88 2292.2410018.94 2292.6810024.72 2293.1410026.81 2293.2910030.18 2293.36
10030.48 2293.3410037.22 2293.5110042.61 2293.6710053.91 2294.1610055.57 2294.22
10056.59 2294.28
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
9959.441     .06 9995.52    .04510008.78    .045
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9995.5210008.78           135.76  104.15   71.85              .1       .3
```

Blocked Obstructions num= 1

```
   Sta L   Sta R    Elev
9959.4419964.441    2298
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2294.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.	0.060	0.045	0.045

W.S. Elev (ft)	2293.78	Reach Len. (ft)	135.76	104.15	71.85
Crit W.S. (ft)	2293.78	Flow Area (sq ft)	19.88	32.76	26.75
E.G. Slope (ft/ft)	0.014861	Area (sq ft)	19.88	32.76	26.75
Q Total (cfs)	390.00	Flow (cfs)	63.36	239.04	87.60
Top Width (ft)	67.78	Top Width (ft)	18.15	13.26	36.37
Vel Total (ft/s)	4.91	Avg. Vel. (ft/s)	3.19	7.30	3.28
Max Chl Dpth (ft)	3.00	Hydr. Depth (ft)	1.10	2.47	0.74
Conv. Total (cfs)	3199.2	Conv. (cfs)	519.7	1960.9	718.6
Length Wtd. (ft)	103.82	Wetted Per. (ft)	18.33	13.42	36.45
Min Ch El (ft)	2290.78	Shear (lb/sq ft)	1.01	2.26	0.68
Alpha	1.52	Stream Power (lb/ft s)	3.21	16.52	2.23
Frctn Loss (ft)	1.57	Cum Volume (acre-ft)	1.25	2.85	0.71
C & E Loss (ft)	0.03	Cum SA (acres)	1.54	1.36	0.99

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2294.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.060	0.045	0.045
W.S. Elev (ft)	2293.76	Reach Len. (ft)	135.76	104.15	71.85
Crit W.S. (ft)	2293.76	Flow Area (sq ft)	8.30	32.44	21.18
E.G. Slope (ft/ft)	0.017837	Area (sq ft)	8.30	32.44	21.18
Q Total (cfs)	390.00	Flow (cfs)	31.06	257.63	101.31
Top Width (ft)	37.00	Top Width (ft)	5.52	13.26	18.22
Vel Total (ft/s)	6.30	Avg. Vel. (ft/s)	3.74	7.94	4.78
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	1.50	2.45	1.16
Conv. Total (cfs)	2920.1	Conv. (cfs)	232.6	1929.0	758.6
Length Wtd. (ft)	97.71	Wetted Per. (ft)	6.89	13.42	18.75
Min Ch El (ft)	2290.78	Shear (lb/sq ft)	1.34	2.69	1.26
Alpha	1.23	Stream Power (lb/ft s)	5.02	21.38	6.02
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	0.67	2.93	0.53
C & E Loss (ft)	0.02	Cum SA (acres)	0.53	1.36	0.51

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.87	9981.09	1.00	0.93	3.75	0.26	0.25	1.08
2	LOB	9981.09	9988.30	24.41	8.24	7.32	6.26	1.14	2.96
3	LOB	9988.30	9995.52	37.94	10.71	7.26	9.73	1.48	3.54
4	Chan	9995.52	9997.41	25.58	3.96	1.92	6.56	2.09	6.47
5	Chan	9997.41	9999.31	32.61	4.58	1.92	8.36	2.42	7.12
6	Chan	9999.31	10001.20	40.61	5.22	1.92	10.41	2.76	7.78
7	Chan	10001.20	10003.10	44.25	5.49	1.92	11.35	2.90	8.06
8	Chan	10003.10	10004.99	37.37	4.96	1.92	9.58	2.62	7.54
9	Chan	10004.99	10006.89	31.76	4.49	1.91	8.14	2.37	7.07
10	Chan	10006.89	10008.78	26.86	4.06	1.91	6.89	2.14	6.61
11	ROB	10008.78	10018.34	61.12	14.65	9.61	15.67	1.53	4.17
12	ROB	10018.34	10027.90	19.63	7.41	9.59	5.03	0.77	2.65
13	ROB	10027.90	10037.47	5.90	3.60	9.56	1.51	0.38	1.64
14	ROB	10037.47	10047.03	0.95	1.10	7.69	0.24	0.14	0.86

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9988.30	9995.52	31.06	8.30	6.89	7.96	1.50	3.74
2	Chan	9995.52	9997.41	27.48	3.91	1.92	7.05	2.06	7.03
3	Chan	9997.41	9999.31	35.13	4.53	1.92	9.01	2.39	7.75
4	Chan	9999.31	10001.20	43.84	5.18	1.92	11.24	2.73	8.47
5	Chan	10001.20	10003.10	47.80	5.45	1.92	12.26	2.88	8.78
6	Chan	10003.10	10004.99	40.31	4.91	1.92	10.34	2.59	8.20
7	Chan	10004.99	10006.89	34.20	4.44	1.91	8.77	2.35	7.69
8	Chan	10006.89	10008.78	28.87	4.02	1.91	7.40	2.12	7.19
9	ROB	10008.78	10018.34	78.37	14.42	9.61	20.09	1.51	5.44
10	ROB	10018.34	10027.90	22.95	6.76	9.15	5.88	0.78	3.39

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.510

INPUT
Description: Private Drive Way
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9937.225	2291.29	9937.405	2291.199	9941.825	2290.72	9945.105	2290.38	9947.005	2290.2
9956.055	2289.81	9965.165	2289.439	9966.475	2289.38	9975.192	2289.022	9978	2288.907
9981.085	2288.789	9991.995	2289.019	9994.225	2289.039	9997.055	2288.939	9997.695	2288.96
9998.685	2288.98	10002.42	2288.971	10004.14	2288.931	10005.41	2288.961	10006.81	2289.02
10008.21	2289.07	10009.02	2289.041	10020.93	2289.371	10022.58	2289.521	10023.95	2289.59
10027.49	2289.74	10038.74	2290.641	10044.65	2291.121	10048.86	2291.361	10061.12	2292
10061.45	2292.01	10062.97	2292.021	10068.69	2292.01	10069	2292.021	10074.34	2292.18
10074.82	2292.18	10075.1	2292.191	10075.38	2292.2	10075.9	2292.231	10076.29	2292.26

Manning's n Values num= 2

Sta	n Val	Sta	n Val
9937.225	.035	10008.21	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978	10006.81	35.46	32.08	28.02	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2290.69	Element			
Vel Head (ft)	0.46	Wt. n-Val.	0.035	0.035	0.048
W.S. Elev (ft)	2290.23	Reach Len. (ft)	35.46	32.08	28.02
Crit W.S. (ft)	2290.23	Flow Area (sq ft)	21.31	37.50	20.63
E.G. Slope (ft/ft)	0.015438	Area (sq ft)	21.31	37.50	20.63
Q Total (cfs)	390.00	Flow (cfs)	86.85	235.79	67.35
Top Width (ft)	87.01	Top Width (ft)	31.35	28.81	26.85
Vel Total (ft/s)	4.91	Avg. Vel. (ft/s)	4.08	6.29	3.26
Max Chl Dpth (ft)	1.45	Hydr. Depth (ft)	0.68	1.30	0.77
Conv. Total (cfs)	3138.8	Conv. (cfs)	699.0	1897.7	542.1
Length Wtd. (ft)	31.95	Wetted Per. (ft)	31.38	28.82	26.89
Min Ch El (ft)	2288.78	Shear (lb/sq ft)	0.65	1.25	0.74
Alpha	1.22	Stream Power (lb/ft s)	2.67	7.89	2.41
Frctn Loss (ft)	0.53	Cum Volume (acre-ft)	1.19	2.77	0.68
C & E Loss (ft)	0.02	Cum SA (acres)	1.46	1.31	0.94

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2291.11	Element			
Vel Head (ft)	0.70	Wt. n-Val.		0.035	0.048
W.S. Elev (ft)	2290.41	Reach Len. (ft)	35.46	32.08	28.02
Crit W.S. (ft)	2290.41	Flow Area (sq ft)		42.59	18.42
E.G. Slope (ft/ft)	0.018131	Area (sq ft)		42.59	18.42
Q Total (cfs)	390.00	Flow (cfs)		305.33	84.67
Top Width (ft)	44.00	Top Width (ft)		28.81	15.19
Vel Total (ft/s)	6.39	Avg. Vel. (ft/s)		7.17	4.60
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)		1.48	1.21
Conv. Total (cfs)	2896.3	Conv. (cfs)		2267.5	628.8
Length Wtd. (ft)	31.45	Wetted Per. (ft)		30.32	16.14
Min Ch El (ft)	2288.78	Shear (lb/sq ft)		1.59	1.29
Alpha	1.10	Stream Power (lb/ft s)		11.40	5.94
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	0.65	2.84	0.50
C & E Loss (ft)	0.00	Cum SA (acres)	0.52	1.31	0.48

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

Profile #profile 1

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	9945.38	9953.54	1.56	1.14	6.89	0.40	0.17	1.37
2	LOB	9953.54	9961.69	11.17	3.98	8.16	2.86	0.49	2.81
3	LOB	9961.69	9969.85	26.86	6.74	8.16	6.89	0.83	3.99
4	LOB	9969.85	9978.00	47.27	9.45	8.16	12.12	1.16	5.00
5	Chan	9978.00	9982.12	38.11	5.77	4.12	9.77	1.40	6.60
6	Chan	9982.12	9986.23	37.46	5.71	4.12	9.61	1.39	6.56
7	Chan	9986.23	9990.35	33.63	5.36	4.12	8.62	1.30	6.28
8	Chan	9990.35	9994.46	30.37	5.04	4.12	7.79	1.22	6.03
9	Chan	9994.46	9998.58	32.02	5.20	4.12	8.21	1.26	6.16
10	Chan	9998.58	10002.69	31.83	5.18	4.12	8.16	1.26	6.14
11	Chan	10002.69	10006.81	32.38	5.24	4.12	8.30	1.27	6.18
12	ROB	10006.81	10020.71	55.15	14.67	13.90	14.14	1.06	3.76
13	ROB	10020.71	10034.60	12.20	5.96	12.98	3.13	0.46	2.05

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9978.00	9982.12	40.75	6.50	5.62	10.45	1.58	6.27
2	Chan	9982.12	9986.23	49.40	6.44	4.12	12.67	1.56	7.67
3	Chan	9986.23	9990.35	44.90	6.08	4.12	11.51	1.48	7.38
4	Chan	9990.35	9994.46	41.06	5.76	4.12	10.53	1.40	7.12
5	Chan	9994.46	9998.58	43.01	5.93	4.12	11.03	1.44	7.26
6	Chan	9998.58	10002.69	42.78	5.91	4.12	10.97	1.44	7.24
7	Chan	10002.69	10006.81	43.44	5.96	4.12	11.14	1.45	7.28
8	ROB	10006.81	10020.71	81.15	17.12	13.90	20.81	1.23	4.74
9	ROB	10020.71	10034.60	3.52	1.29	2.24	0.90	1.00	2.72

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: 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: X2
REACH: Reach 1 RS: 0.504

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9943.503	2289.699	9966.503	2288.529	9968.963	2288.429	9970.483	2288.319	9971.683	2288.23
9974.963	2288.089	9975.923	2288.01	9979.79	2287.19	9980.792	2286.9789	982.623	2286.59
9983.113	2286.669	9987.633	2287.159	9995.443	2285.971	10000.22	2285.311	0005.822	2286.999
10007.05	2287.371	0007.73	2287.611	0008.83	2287.61	0023.26	2287.71	10028.7	2288.61
10038.16	2289.871	0046.35	2290.971	0050.04	2291.05				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9943.503	.055	9980.79	.045	10005.82	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.79	10005.82	108.44	123.12	137.95	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2289.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2288.35	Reach Len. (ft)	108.44	123.12	137.95
Crit W.S. (ft)	2288.35	Flow Area (sq ft)	5.22	49.50	14.13
E.G. Slope (ft/ft)	0.017856	Area (sq ft)	5.22	49.50	14.13
Q Total (cfs)	390.00	Flow (cfs)	11.46	339.95	38.59
Top Width (ft)	57.22	Top Width (ft)	10.87	25.03	21.31
Vel Total (ft/s)	5.67	Avg. Vel. (ft/s)	2.20	6.87	2.73
Max Chl Dpth (ft)	3.04	Hydr. Depth (ft)	0.48	1.98	0.66
Conv. Total (cfs)	2918.6	Conv. (cfs)	85.8	2544.1	288.8
Length Wtd. (ft)	123.65	Wetted Per. (ft)	10.99	25.49	21.46
Min Ch El (ft)	2285.31	Shear (lb/sq ft)	0.53	2.16	0.73
Alpha	1.31	Stream Power (lb/ft s)	1.16	14.87	2.00
Frctn Loss (ft)	2.36	Cum Volume (acre-ft)	1.18	2.74	0.66
C & E Loss (ft)	0.02	Cum SA (acres)	1.45	1.29	0.93

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2289.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.		0.045	0.055
W.S. Elev (ft)	2288.36	Reach Len. (ft)	108.44	123.12	137.95
Crit W.S. (ft)	2288.36	Flow Area (sq ft)		49.59	11.36
E.G. Slope (ft/ft)	0.020695	Area (sq ft)		49.59	11.36
Q Total (cfs)	390.00	Flow (cfs)		354.53	35.47
Top Width (ft)	40.03	Top Width (ft)		25.03	15.00
Vel Total (ft/s)	6.40	Avg. Vel. (ft/s)		7.15	3.12
Max Chl Dpth (ft)	3.04	Hydr. Depth (ft)		1.98	0.76
Conv. Total (cfs)	2711.0	Conv. (cfs)		2464.4	246.6
Length Wtd. (ft)	123.66	Wetted Per. (ft)		26.86	15.76
Min Ch El (ft)	2285.31	Shear (lb/sq ft)		2.39	0.93
Alpha	1.16	Stream Power (lb/ft s)		17.05	2.91
Frctn Loss (ft)	2.52	Cum Volume (acre-ft)	0.65	2.81	0.49
C & E Loss (ft)	0.01	Cum SA (acres)	0.52	1.29	0.47

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9965.88	9973.33	0.26	0.37	3.42	0.07	0.11	0.71
2	LOB	9973.33	9980.79	11.20	4.85	7.57	2.87	0.65	2.31
3	Chan	9980.79	9984.37	33.32	5.75	3.63	8.54	1.61	5.79
4	Chan	9984.37	9987.94	25.48	4.88	3.60	6.53	1.37	5.22
5	Chan	9987.94	9991.52	30.32	5.43	3.62	7.78	1.52	5.59
6	Chan	9991.52	9995.09	50.35	7.36	3.62	12.91	2.06	6.84
7	Chan	9995.09	9998.67	73.46	9.22	3.61	18.84	2.58	7.96
8	Chan	9998.67	10002.24	84.20	10.09	3.68	21.59	2.82	8.35
9	Chan	10002.24	10005.82	42.81	6.76	3.74	10.98	1.89	6.33
10	ROB	10005.82	10014.66	21.08	7.09	8.94	5.41	0.80	2.97
11	ROB	10014.66	10023.51	15.83	5.95	8.85	4.06	0.67	2.66
12	ROB	10023.51	10032.35	1.68	1.09	3.68	0.43	0.30	1.54

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9980.79	9984.37	28.61	5.77	5.01	7.34	1.61	4.96
2	Chan	9984.37	9987.94	27.13	4.89	3.60	6.96	1.37	5.54
3	Chan	9987.94	9991.52	32.27	5.44	3.62	8.27	1.52	5.93
4	Chan	9991.52	9995.09	53.52	7.37	3.62	13.72	2.06	7.26
5	Chan	9995.09	9998.67	78.04	9.24	3.61	20.01	2.58	8.45
6	Chan	9998.67	10002.24	89.43	10.10	3.68	22.93	2.83	8.85
7	Chan	10002.24	10005.82	45.53	6.78	3.74	11.67	1.90	6.72
8	ROB	10005.82	10014.66	23.62	7.13	8.94	6.06	0.81	3.31
9	ROB	10014.66	10023.51	11.86	4.23	6.82	3.04	0.69	2.80

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.481

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9938.102	2286.79	948.762	2286.45	9954.882	2286.31	9959.692	2286.07	9963.902	2285.84
9971.302	2284.99	972.952	2284.69	9977.502	2284.19	9979.632	2283.81	9982.532	2283.24
9984.62	2283.11	9984.622	2283.11	9988.382	2282.64	9992.842	2282.08	9997.472	2281.67
9999.662	2281.49	10000.25	2281.51	0003.35	2282.15	10007.332	2282.91	710010.93	2283.61

10020.82 2285.6910025.74 2286.810027.56 2286.8910027.86 2286.910044.16 2287.58

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9938.102	.065	9984.62	.04510007.33		.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.6210007.33		88.61	100.35	119.98	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2285.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.86	Wt. n-Val.	0.065	0.045	0.060
W.S. Elev (ft)	2284.30	Reach Len. (ft)	88.61	100.35	119.98
Crit W.S. (ft)	2284.30	Flow Area (sq ft)	5.45	47.45	4.83
E.G. Slope (ft/ft)	0.020443	Area (sq ft)	5.45	47.45	4.83
Q Total (cfs)	390.00	Flow (cfs)	13.01	363.63	13.36
Top Width (ft)	38.19	Top Width (ft)	8.63	22.71	6.86
Vel Total (ft/s)	6.76	Avg. Vel. (ft/s)	2.39	7.66	2.77
Max Chl Dpth (ft)	2.81	Hydr. Depth (ft)	0.63	2.09	0.70
Conv. Total (cfs)	2727.7	Conv. (cfs)	91.0	2543.2	93.5
Length Wtd. (ft)	101.09	Wetted Per. (ft)	8.72	22.94	7.00
Min Ch El (ft)	2281.49	Shear (lb/sq ft)	0.80	2.64	0.88
Alpha	1.21	Stream Power (lb/ft s)	1.90	20.23	2.44
Frctn Loss (ft)	1.96	Cum Volume (acre-ft)	1.16	2.60	0.63
C & E Loss (ft)	0.00	Cum SA (acres)	1.42	1.22	0.88

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2285.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.065	0.045	0.060
W.S. Elev (ft)	2284.33	Reach Len. (ft)	88.61	100.35	119.98
Crit W.S. (ft)	2284.33	Flow Area (sq ft)	5.71	48.13	2.29
E.G. Slope (ft/ft)	0.020098	Area (sq ft)	5.71	48.13	2.29
Q Total (cfs)	390.00	Flow (cfs)	13.92	369.30	6.79
Top Width (ft)	33.19	Top Width (ft)	8.62	22.71	1.86
Vel Total (ft/s)	6.95	Avg. Vel. (ft/s)	2.44	7.67	2.97
Max Chl Dpth (ft)	2.84	Hydr. Depth (ft)	0.66	2.12	1.23
Conv. Total (cfs)	2751.0	Conv. (cfs)	98.2	2604.9	47.9
Length Wtd. (ft)	100.95	Wetted Per. (ft)	8.74	22.94	2.95
Min Ch El (ft)	2281.49	Shear (lb/sq ft)	0.82	2.63	0.97
Alpha	1.16	Stream Power (lb/ft s)	2.00	20.20	2.89
Frctn Loss (ft)	1.82	Cum Volume (acre-ft)	0.65	2.67	0.47
C & E Loss (ft)	0.02	Cum SA (acres)	0.51	1.22	0.45

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.32	9984.62	13.01	5.45	8.72	3.34	0.63	2.39
2	Chan	9984.62	9987.86	25.65	4.50	3.27	6.58	1.39	5.70
3	Chan	9987.86	9991.11	39.35	5.82	3.27	10.09	1.79	6.76
4	Chan	9991.11	9994.35	54.86	7.10	3.26	14.07	2.19	7.73
5	Chan	9994.35	9997.60	68.28	8.09	3.26	17.51	2.49	8.44
6	Chan	9997.60	10000.84	79.66	8.88	3.26	20.43	2.74	8.97
7	Chan	10000.84	10004.09	60.42	7.57	3.31	15.49	2.33	7.98
8	Chan	10004.09	10007.33	35.41	5.49	3.30	9.08	1.69	6.45
9	ROB	10007.33	10014.70	13.36	4.83	7.00	3.43	0.70	2.77

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.32	9984.62	13.92	5.71	8.74	3.57	0.66	2.44

2	Chan	9984.62	9987.86	26.39	4.60	3.27	6.77	1.42	5.74
3	Chan	9987.86	9991.11	40.15	5.92	3.27	10.30	1.82	6.78
4	Chan	9991.11	9994.35	55.69	7.20	3.26	14.28	2.22	7.74
5	Chan	9994.35	9997.60	69.12	8.19	3.26	17.72	2.52	8.44
6	Chan	9997.60	10000.84	80.50	8.98	3.26	20.64	2.77	8.97
7	Chan	10000.84	10004.09	61.25	7.67	3.31	15.71	2.36	7.99
8	Chan	10004.09	10007.33	36.19	5.58	3.30	9.28	1.72	6.48
9	ROB	10007.33	10014.70	6.79	2.29	2.95	1.74	1.23	2.97

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.462

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9949.192	2283.67	9953.572	2283.57	9955.422	2283.51	9959.252	2283.36	9961.592	2283.38
9963.982	2283.25	9967.622	2282.96	9982.582	2281.78	9993.402	2279.46	9995.352	2279.031
9995.352	2279.03	9996.272	2278.75	9999.702	2277.71	10001.29	2277.88	10012.04	2279.08
10013.76	2279.26	10014.85	2279.44	10020.9	2280.33	10030.68	2281.79	10032.36	2281.98
10036.12	2283.23	10037.86	2283.71	10039.39	2284.06	10040.89	2284.37	10043.24	2284.67
10044.09	2284.69	10048.87	2285.04	10048.91	2285.05				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9949.192	.06	9995.35	.045	10012.04	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.35	10012.04	195.19	204.23	220.3	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2281.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.060	0.045	0.055
W.S. Elev (ft)	2280.84	Reach Len. (ft)	195.19	204.23	220.30
Crit W.S. (ft)	2280.84	Flow Area (sq ft)	7.51	40.91	11.09
E.G. Slope (ft/ft)	0.018362	Area (sq ft)	7.51	40.91	11.09
Q Total (cfs)	390.00	Flow (cfs)	23.10	329.14	37.75
Top Width (ft)	37.30	Top Width (ft)	8.36	16.69	12.25
Vel Total (ft/s)	6.55	Avg. Vel. (ft/s)	3.08	8.05	3.40
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	0.90	2.45	0.91
Conv. Total (cfs)	2878.1	Conv. (cfs)	170.5	2429.0	278.6
Length Wtd. (ft)	204.81	Wetted Per. (ft)	8.56	16.97	12.37
Min Ch El (ft)	2277.70	Shear (lb/sq ft)	1.01	2.76	1.03
Alpha	1.31	Stream Power (lb/ft s)	3.10	22.24	3.50
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	1.15	2.50	0.61
C & E Loss (ft)	0.04	Cum SA (acres)	1.40	1.18	0.85

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2281.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.060	0.045	0.055
W.S. Elev (ft)	2280.91	Reach Len. (ft)	195.19	204.23	220.30
Crit W.S. (ft)	2280.91	Flow Area (sq ft)	8.10	42.08	11.95
E.G. Slope (ft/ft)	0.016326	Area (sq ft)	8.10	42.08	11.95
Q Total (cfs)	390.00	Flow (cfs)	24.56	325.29	40.15
Top Width (ft)	37.30	Top Width (ft)	8.36	16.69	12.25
Vel Total (ft/s)	6.28	Avg. Vel. (ft/s)	3.03	7.73	3.36
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)	0.97	2.52	0.98
Conv. Total (cfs)	3052.3	Conv. (cfs)	192.3	2545.8	314.2
Length Wtd. (ft)	205.05	Wetted Per. (ft)	8.62	16.97	12.45
Min Ch El (ft)	2277.70	Shear (lb/sq ft)	0.96	2.53	0.98
Alpha	1.31	Stream Power (lb/ft s)	2.90	19.54	3.29
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)	0.63	2.57	0.45
C & E Loss (ft)	0.00	Cum SA (acres)	0.50	1.18	0.43

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.12	9995.35	23.10	7.51	8.56	5.92	0.90	3.08
2	Chan	9995.35	9997.73	37.15	5.17	2.49	9.53	2.17	7.18
3	Chan	9997.73	10000.12	59.95	6.87	2.48	15.37	2.88	8.72
4	Chan	10000.12	10002.50	63.80	7.04	2.40	16.36	2.95	9.06
5	Chan	10002.50	10004.89	54.47	6.41	2.40	13.97	2.69	8.50
6	Chan	10004.89	10007.27	45.80	5.77	2.40	11.74	2.42	7.93
7	Chan	10007.27	10009.66	37.70	5.14	2.40	9.67	2.16	7.34
8	Chan	10009.66	10012.04	30.28	4.50	2.40	7.76	1.89	6.72
9	ROB	10012.04	10019.41	34.87	9.32	7.45	8.94	1.26	3.74
10	ROB	10019.41	10026.79	2.88	1.77	4.93	0.74	0.36	1.63

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.12	9995.35	24.56	8.10	8.62	6.30	0.97	3.03
2	Chan	9995.35	9997.73	36.96	5.34	2.49	9.48	2.24	6.92
3	Chan	9997.73	10000.12	58.87	7.04	2.48	15.10	2.95	8.36
4	Chan	10000.12	10002.50	62.60	7.21	2.40	16.05	3.02	8.68
5	Chan	10002.50	10004.89	53.65	6.57	2.40	13.76	2.76	8.16
6	Chan	10004.89	10007.27	45.32	5.94	2.40	11.62	2.49	7.63
7	Chan	10007.27	10009.66	37.53	5.30	2.40	9.62	2.23	7.07
8	Chan	10009.66	10012.04	30.36	4.67	2.40	7.78	1.96	6.50
9	ROB	10012.04	10019.41	36.49	9.84	7.45	9.36	1.33	3.71
10	ROB	10019.41	10026.79	3.66	2.11	5.00	0.94	0.43	1.73

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.423

INPUT
Description: 20th Street
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9932.802	2278.64	9934.672	2278.59	9935.652	2278.57	9937.312	2278.53	9940.002	2278.35
9941.182	2278.31	9948.242	2277.88	9955.162	2277.63	9955.762	2277.62	9957.152	2277.57
9959.892	2277.29	9966.202	2276.67	9974.6	2275.3	9978.032	2274.73	9979.732	2274.46
9980.042	2274.41	9980.262	2274.38	9989.112	2274.23	9995.352	2274.09	9999.102	2274.15
10005.73	2274.57	10006.98	2274.81	10013.97	2275.72	10030.48	2277.12	10042.92	2278.18
10043.44	2278.22	10043.79	2278.24	10045.32	2278.27	10047.76	2278.25	10048.73	2278.24

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9932.802	.055	9974.6	.03	9999.102	.045	10005.73	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.03	10005.73	125.8	104.85	97.11	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2276.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.033	0.032	0.060
W.S. Elev (ft)	2276.06	Reach Len. (ft)	125.80	104.85	97.11
Crit W.S. (ft)	2276.06	Flow Area (sq ft)	5.32	49.22	7.96
E.G. Slope (ft/ft)	0.011351	Area (sq ft)	5.32	49.22	7.96
Q Total (cfs)	390.00	Flow (cfs)	21.73	352.57	15.70
Top Width (ft)	47.99	Top Width (ft)	8.07	27.70	12.22
Vel Total (ft/s)	6.24	Avg. Vel. (ft/s)	4.08	7.16	1.97
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)	0.66	1.78	0.65
Conv. Total (cfs)	3660.6	Conv. (cfs)	204.0	3309.3	147.4
Length Wtd. (ft)	107.13	Wetted Per. (ft)	8.18	27.75	12.31
Min Ch El (ft)	2274.09	Shear (lb/sq ft)	0.46	1.26	0.46
Alpha	1.22	Stream Power (lb/ft s)	1.88	9.00	0.90

Frctn Loss (ft)	1.59	Cum Volume (acre-ft)	1.12	2.29	0.56
C & E Loss (ft)	0.06	Cum SA (acres)	1.37	1.07	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: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2276.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.84	Wt. n-Val.	0.030	0.032	0.060
W.S. Elev (ft)	2276.05	Reach Len. (ft)	125.80	104.85	97.11
Crit W.S. (ft)	2276.05	Flow Area (sq ft)	1.31	48.90	6.30
E.G. Slope (ft/ft)	0.012657	Area (sq ft)	1.31	48.90	6.30
Q Total (cfs)	390.00	Flow (cfs)	5.12	368.40	16.48
Top Width (ft)	35.04	Top Width (ft)	1.07	27.70	6.27
Vel Total (ft/s)	6.90	Avg. Vel. (ft/s)	3.92	7.53	2.62
Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)	1.22	1.77	1.00
Conv. Total (cfs)	3466.6	Conv. (cfs)	45.5	3274.6	146.5
Length Wtd. (ft)	106.05	Wetted Per. (ft)	2.22	27.75	6.92
Min Ch El (ft)	2274.09	Shear (lb/sq ft)	0.47	1.39	0.72
Alpha	1.14	Stream Power (lb/ft s)	1.82	10.49	1.88
Frctn Loss (ft)	1.70	Cum Volume (acre-ft)	0.61	2.35	0.40
C & E Loss (ft)	0.00	Cum SA (acres)	0.47	1.07	0.38

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9968.98	9978.03	21.73	5.32	8.18	5.57	0.66	4.08
2	Chan	9978.03	9981.99	44.63	6.27	3.99	11.44	1.58	7.12
3	Chan	9981.99	9985.94	52.42	6.89	3.96	13.44	1.74	7.61
4	Chan	9985.94	9989.90	55.85	7.15	3.96	14.32	1.81	7.81
5	Chan	9989.90	9993.86	60.14	7.48	3.96	15.42	1.89	8.04
6	Chan	9993.86	9997.82	63.30	7.71	3.96	16.23	1.95	8.21
7	Chan	9997.82	10001.77	45.48	7.33	3.96	11.66	1.85	6.20
8	Chan	10001.77	10005.73	30.75	6.38	3.96	7.88	1.61	4.82
9	ROB	10005.73	10014.33	15.34	7.40	8.68	3.93	0.86	2.07
10	ROB	10014.33	10022.93	0.37	0.56	3.63	0.09	0.15	0.66

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9968.98	9978.03	5.12	1.31	2.22	1.31	1.22	3.92
2	Chan	9978.03	9981.99	46.57	6.23	3.99	11.94	1.57	7.48
3	Chan	9981.99	9985.94	54.76	6.84	3.96	14.04	1.73	8.00
4	Chan	9985.94	9989.90	58.37	7.11	3.96	14.97	1.80	8.21
5	Chan	9989.90	9993.86	62.87	7.43	3.96	16.12	1.88	8.46
6	Chan	9993.86	9997.82	66.20	7.67	3.96	16.98	1.94	8.64
7	Chan	9997.82	10001.77	47.54	7.29	3.96	12.19	1.84	6.52
8	Chan	10001.77	10005.73	32.09	6.34	3.96	8.23	1.60	5.06
9	ROB	10005.73	10014.33	16.48	6.30	6.92	4.23	1.00	2.62

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X2
REACH: Reach 1 RS: 0.403

INPUT
Description:

```
Station Elevation Data     num=       24
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
9929.439 2276.029931.139 2275.819933.749 2275.729948.609    22759951.049 2274.87
9952.619 2274.839953.639 2274.789958.099 2273.979964.959 2272.789970.339 2271.83
9971.219 2271.819975.059 2271.659990.909 2271.08 9990.91 2271.089994.579 2270.89
 10000.9 2270.58 10002.4 2270.5110003.92 2270.6610008.132271.07810013.29 2271.59
10018.91 2271.8510032.77 2272.6110039.26 2274.4910044.77 2275.98

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
9929.439    .065 9990.91    .04510008.13     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       9990.9110008.13            202.27  189.64  180.37              .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2273.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.065	0.045	0.050
W.S. Elev (ft)	2272.68	Reach Len. (ft)	202.27	189.64	180.37
Crit W.S. (ft)	2272.68	Flow Area (sq ft)	27.21	32.46	18.50
E.G. Slope (ft/ft)	0.020348	Area (sq ft)	27.21	32.46	18.50
Q Total (cfs)	390.00	Flow (cfs)	92.75	232.98	64.27
Top Width (ft)	67.45	Top Width (ft)	25.37	17.22	24.87
Vel Total (ft/s)	4.99	Avg. Vel. (ft/s)	3.41	7.18	3.47
Max Chl Dpth (ft)	2.17	Hydr. Depth (ft)	1.07	1.89	0.74
Conv. Total (cfs)	2734.1	Conv. (cfs)	650.2	1633.3	450.5
Length Wtd. (ft)	190.53	Wetted Per. (ft)	25.45	17.26	24.93
Min Ch El (ft)	2270.51	Shear (lb/sq ft)	1.36	2.39	0.94
Alpha	1.43	Stream Power (lb/ft s)	4.63	17.15	3.27
Frctn Loss (ft)	4.26	Cum Volume (acre-ft)	1.07	2.19	0.53
C & E Loss (ft)	0.01	Cum SA (acres)	1.32	1.02	0.75

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2273.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.065	0.045	0.050
W.S. Elev (ft)	2272.96	Reach Len. (ft)	202.27	189.64	180.37
Crit W.S. (ft)	2272.83	Flow Area (sq ft)	13.77	37.32	6.83
E.G. Slope (ft/ft)	0.020928	Area (sq ft)	13.77	37.32	6.83
Q Total (cfs)	390.00	Flow (cfs)	58.19	298.13	33.68
Top Width (ft)	29.22	Top Width (ft)	7.93	17.22	4.07
Vel Total (ft/s)	6.73	Avg. Vel. (ft/s)	4.23	7.99	4.93
Max Chl Dpth (ft)	2.45	Hydr. Depth (ft)	1.74	2.17	1.68
Conv. Total (cfs)	2695.9	Conv. (cfs)	402.2	2060.8	232.8
Length Wtd. (ft)	190.18	Wetted Per. (ft)	9.53	17.26	5.57
Min Ch El (ft)	2270.51	Shear (lb/sq ft)	1.89	2.83	1.60
Alpha	1.18	Stream Power (lb/ft s)	7.98	22.57	7.90
Frctn Loss (ft)	4.67	Cum Volume (acre-ft)	0.59	2.25	0.39
C & E Loss (ft)	0.01	Cum SA (acres)	0.46	1.02	0.37

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.03	9966.32	0.03	0.05	0.79	0.01	0.07	0.51
2	LOB	9966.32	9978.62	27.98	10.24	12.36	7.18	0.83	2.73
3	LOB	9978.62	9990.91	64.74	16.91	12.30	16.60	1.38	3.83
4	Chan	9990.91	9993.37	26.84	4.08	2.46	6.88	1.66	6.57
5	Chan	9993.37	9995.83	30.34	4.40	2.46	7.78	1.79	6.90
6	Chan	9995.83	9998.29	33.86	4.69	2.46	8.68	1.91	7.21
7	Chan	9998.29	10000.75	37.50	4.99	2.46	9.61	2.03	7.51
8	Chan	10000.75	10003.21	40.56	5.23	2.47	10.40	2.13	7.75
9	Chan	10003.21	10005.67	35.46	4.83	2.47	9.09	1.96	7.34
10	Chan	10005.67	10008.13	28.43	4.23	2.47	7.29	1.72	6.72
11	ROB	10008.13	10015.46	38.96	9.17	7.36	9.99	1.25	4.25
12	ROB	10015.46	10022.79	18.80	5.92	7.34	4.82	0.81	3.18
13	ROB	10022.79	10030.11	6.14	3.03	7.34	1.58	0.41	2.03
14	ROB	10030.11	10037.44	0.36	0.38	2.90	0.09	0.13	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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.62	9990.91	58.19	13.77	9.53	14.92	1.74	4.23
2	Chan	9990.91	9993.37	35.40	4.78	2.46	9.08	1.94	7.41
3	Chan	9993.37	9995.83	39.33	5.09	2.46	10.08	2.07	7.73
4	Chan	9995.83	9998.29	43.25	5.39	2.46	11.09	2.19	8.03
5	Chan	9998.29	10000.75	47.29	5.69	2.46	12.13	2.31	8.32
6	Chan	10000.75	10003.21	50.67	5.93	2.47	12.99	2.41	8.55
7	Chan	10003.21	10005.67	45.02	5.53	2.47	11.54	2.25	8.14
8	Chan	10005.67	10008.13	37.17	4.93	2.47	9.53	2.00	7.54
9	ROB	10008.13	10015.46	33.68	6.83	5.57	8.64	1.68	4.93

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: X2
REACH: Reach 1 RS: 0.367

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9887.667	2271.99	9912.597	2271.28	9939.037	2270.13	9943.937	2269.91	9948.197	2269.73
9950.457	2269.42	9968.82	267.078	9971.837	2266.69	9972.287	2266.79	9974.417	2266.77
9987.197	2267.14	9989.707	2267.21	9992.707	2266.85	9999.277	2266.18	9999.657	2266.02
10001.48	2266.29	10004.73	2266.99	10008.37	2267.78	10013.37	2269.21	10014.04	2269.24
10027.05	2269.71	10038.17	2270.01	10040.98	2270.23	10043.95	2270.44	10046.9	2270.64
10048.27	2270.66	10054.37	2270.75						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9887.667	.055	9968.8	.045	10004.73	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9968.8	10004.73	226.95	215.86	206.9	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2268.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.055	0.045	0.060
W.S. Elev (ft)	2268.29	Reach Len. (ft)	226.95	215.86	206.90
Crit W.S. (ft)	2268.29	Flow Area (sq ft)	5.72	53.56	3.72
E.G. Slope (ft/ft)	0.024741	Area (sq ft)	5.72	53.56	3.72
Q Total (cfs)	390.00	Flow (cfs)	17.29	361.61	11.10
Top Width (ft)	50.81	Top Width (ft)	9.47	35.93	5.41
Vel Total (ft/s)	6.19	Avg. Vel. (ft/s)	3.02	6.75	2.98
Max Chl Dpth (ft)	2.27	Hydr. Depth (ft)	0.60	1.49	0.69
Conv. Total (cfs)	2479.5	Conv. (cfs)	109.9	2299.0	70.6
Length Wtd. (ft)	218.74	Wetted Per. (ft)	9.54	36.15	5.57
Min Ch El (ft)	2266.02	Shear (lb/sq ft)	0.93	2.29	1.03
Alpha	1.12	Stream Power (lb/ft s)	2.80	15.45	3.08
Frctn Loss (ft)	5.25	Cum Volume (acre-ft)	1.00	2.00	0.49
C & E Loss (ft)	0.03	Cum SA (acres)	1.24	0.90	0.69

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2269.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.		0.045	
W.S. Elev (ft)	2268.32	Reach Len. (ft)	226.95	215.86	206.90
Crit W.S. (ft)	2268.32	Flow Area (sq ft)		54.84	
E.G. Slope (ft/ft)	0.029153	Area (sq ft)		54.84	
Q Total (cfs)	390.00	Flow (cfs)		390.00	
Top Width (ft)	35.93	Top Width (ft)		35.93	
Vel Total (ft/s)	7.11	Avg. Vel. (ft/s)		7.11	
Max Chl Dpth (ft)	2.30	Hydr. Depth (ft)		1.53	
Conv. Total (cfs)	2284.1	Conv. (cfs)		2284.1	
Length Wtd. (ft)	217.80	Wetted Per. (ft)		38.72	
Min Ch El (ft)	2266.02	Shear (lb/sq ft)		2.58	
Alpha	1.00	Stream Power (lb/ft s)		18.33	
Frctn Loss (ft)	5.69	Cum Volume (acre-ft)	0.56	2.05	0.37
C & E Loss (ft)	0.01	Cum SA (acres)	0.44	0.90	0.36

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9952.57	9968.80	17.29	5.72	9.54	4.43	0.60	3.02
2	Chan	9968.80	9973.93	49.76	7.54	5.16	12.76	1.47	6.60
3	Chan	9973.93	9979.07	49.17	7.48	5.14	12.61	1.46	6.58
4	Chan	9979.07	9984.20	41.10	6.71	5.13	10.54	1.31	6.12
5	Chan	9984.20	9989.33	33.64	5.95	5.14	8.63	1.16	5.65
6	Chan	9989.33	9994.47	42.43	6.86	5.16	10.88	1.34	6.19
7	Chan	9994.47	9999.60	74.81	9.65	5.18	19.18	1.88	7.75
8	Chan	9999.60	10004.73	70.71	9.37	5.23	18.13	1.83	7.55
9	ROB	10004.73	10014.66	11.10	3.72	5.57	2.85	0.69	2.98

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9968.80	9973.93	48.75	7.73	6.40	12.50	1.51	6.31
2	Chan	9973.93	9979.07	55.66	7.66	5.14	14.27	1.49	7.27
3	Chan	9979.07	9984.20	46.73	6.90	5.13	11.98	1.34	6.78
4	Chan	9984.20	9989.33	38.47	6.14	5.14	9.86	1.20	6.27
5	Chan	9989.33	9994.47	48.20	7.04	5.16	12.36	1.37	6.85
6	Chan	9994.47	9999.60	83.92	9.84	5.18	21.52	1.92	8.53
7	Chan	9999.60	10004.73	68.28	9.55	6.56	17.51	1.86	7.15

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: X2
REACH: Reach 1 RS: 0.326

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9901.11	2264.01	9905.08	2263.68	9911.14	2263.39	9911.34	2263.4	9914.14	2263.37
9929.48	2262.96	9942.5	2262.68	9944.23	2262.65	9954.94	2261.14	9959	2260.52
9967.04	2260.6	9971.27	2260.67	9992.47	2261.26	9993.11	2261.27	9993.66	2261.11
9994.88	2260.747	9998.2	2259.76	9999.9	2259.34	10002.96	2260.11	10005.48	2260.648
10013.03	2262.29	10017.57	2262.48	10037.88	2263.61	10038.16	2263.63	10038.31	2263.63
10038.66	2263.65	10045.93	2264.03	10050.65	2264.28	10060.62	2264.61	10063.35	2264.81
10064.05	2264.87	10064.48	2264.92	10067.07	2265.21	10075.13	2265.97		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9901.11	.045	9954.94	.065	9994.88	.045	10005.48	.065	10037.88	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.88	10005.48	153.36	169	181.53	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2262.63	Element			
Vel Head (ft)	0.57	Wt. n-Val.	0.064	0.045	0.065
W.S. Elev (ft)	2262.07	Reach Len. (ft)	153.36	169.00	181.53
Crit W.S. (ft)	2262.07	Flow Area (sq ft)	51.95	21.74	4.62
E.G. Slope (ft/ft)	0.023326	Area (sq ft)	51.95	21.74	4.62
Q Total (cfs)	390.00	Flow (cfs)	204.15	173.21	12.64
Top Width (ft)	63.63	Top Width (ft)	46.51	10.60	6.52
Vel Total (ft/s)	4.98	Avg. Vel. (ft/s)	3.93	7.97	2.73
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	1.12	2.05	0.71
Conv. Total (cfs)	2553.6	Conv. (cfs)	1336.7	1134.1	82.8
Length Wtd. (ft)	164.24	Wetted Per. (ft)	46.71	10.95	6.67
Min Ch El (ft)	2259.34	Shear (lb/sq ft)	1.62	2.89	1.01
Alpha	1.47	Stream Power (lb/ft s)	6.37	23.04	2.76
Frctn Loss (ft)	3.88	Cum Volume (acre-ft)	0.85	1.81	0.47
C & E Loss (ft)	0.00	Cum SA (acres)	1.09	0.79	0.66

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2263.11	Element			
Vel Head (ft)	0.77	Wt. n-Val.	0.065	0.045	0.065
W.S. Elev (ft)	2262.34	Reach Len. (ft)	153.36	169.00	181.53
Crit W.S. (ft)	2262.34	Flow Area (sq ft)	36.66	24.66	6.42
E.G. Slope (ft/ft)	0.023547	Area (sq ft)	36.66	24.66	6.42
Q Total (cfs)	390.00	Flow (cfs)	153.85	214.78	21.38
Top Width (ft)	43.34	Top Width (ft)	26.22	10.60	6.52
Vel Total (ft/s)	5.76	Avg. Vel. (ft/s)	4.20	8.71	3.33
Max Chl Dpth (ft)	3.00	Hydr. Depth (ft)	1.40	2.33	0.99
Conv. Total (cfs)	2541.5	Conv. (cfs)	1002.6	1399.6	139.3
Length Wtd. (ft)	165.68	Wetted Per. (ft)	28.02	10.95	6.95
Min Ch El (ft)	2259.34	Shear (lb/sq ft)	1.92	3.31	1.36

Alpha	1.49	Stream Power (lb/ft s)	8.07	28.84	4.52
Frctn Loss (ft)	3.82	Cum Volume (acre-ft)	0.46	1.85	0.36
C & E Loss (ft)	0.04	Cum SA (acres)	0.38	0.79	0.34

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.62	9957.37	18.91	5.75	9.09	4.85	0.64	3.29
2	LOB	9957.37	9976.13	117.87	26.93	18.78	30.22	1.44	4.38
3	LOB	9976.13	9994.88	67.37	19.27	18.84	17.27	1.03	3.49
4	Chan	9994.88	9996.40	15.03	2.34	1.58	3.85	1.54	6.43
5	Chan	9996.40	9997.91	23.00	3.02	1.58	5.90	1.99	7.62
6	Chan	9997.91	9999.42	31.99	3.66	1.56	8.20	2.42	8.73
7	Chan	9999.42	10000.94	36.56	3.97	1.56	9.38	2.62	9.22
8	Chan	10000.94	10002.45	29.02	3.45	1.56	7.44	2.28	8.40
9	Chan	10002.45	10003.97	21.74	2.90	1.55	5.57	1.91	7.50
10	Chan	10003.97	10005.48	15.86	2.40	1.55	4.07	1.58	6.62
11	ROB	10005.48	10019.41	12.64	4.62	6.67	3.24	0.71	2.73

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.37	9976.13	51.80	12.21	9.18	13.28	1.64	4.24
2	LOB	9976.13	9994.88	102.05	24.45	18.84	26.17	1.30	4.17
3	Chan	9994.88	9996.40	19.94	2.76	1.58	5.11	1.82	7.23
4	Chan	9996.40	9997.91	28.81	3.44	1.58	7.39	2.27	8.38
5	Chan	9997.91	9999.42	38.64	4.08	1.56	9.91	2.70	9.46
6	Chan	9999.42	10000.94	43.59	4.39	1.56	11.18	2.90	9.94
7	Chan	10000.94	10002.45	35.42	3.87	1.56	9.08	2.56	9.15
8	Chan	10002.45	10003.97	27.45	3.32	1.55	7.04	2.19	8.28
9	Chan	10003.97	10005.48	20.92	2.82	1.55	5.36	1.86	7.43
10	ROB	10005.48	10019.41	21.38	6.42	6.95	5.48	0.99	3.33

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.294

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9845.381	2260	9851.931	2259.89	9864.421	2259.62	9870.871	2259.42	9872.851	2259.37
9873.861	2259.33	9876.311	2259.25	9884.241	2259.08	9899.491	2258.84	9905.221	2258.77
9909.381	2258.71	9933.151	2258.24	9934.911	2258.21	9936.711	2258.16	9939.511	2258.08
9940.001	2258.06	9941.491	2258.08	9943.971	2257.96	9977.39	2256.74	9977.391	2256.74
9990.901	2256.23	10001.31	2255.42	10003.13	2255.28	10004.02	2255.55	10007.46	2256.785
10009.09	2257.37	10011.68	2258.27	10012.07	2258.43	10013.31	2258.57	10036.37	2261.02
10036.39	2261.02	10036.52	2261.02	10039.64	2261.05	10047.45	2261.67	10048.8	2261.77

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9845.381	.055	9977.39	.05	10007.46	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.39	10007.46	209.36	200.5	194.1	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2258.44	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.60	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2257.84	Reach Len. (ft)	209.36	200.50	194.10
Crit W.S. (ft)	2257.84	Flow Area (sq ft)	16.58	51.74	1.56
E.G. Slope (ft/ft)	0.023952	Area (sq ft)	16.58	51.74	1.56
Q Total (cfs)	390.00	Flow (cfs)	46.53	339.39	4.08
Top Width (ft)	63.20	Top Width (ft)	30.14	30.07	2.98
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)	2.81	6.56	2.61
Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	0.55	1.72	0.52
Conv. Total (cfs)	2520.0	Conv. (cfs)	300.7	2192.9	26.3
Length Wtd. (ft)	201.67	Wetted Per. (ft)	30.16	30.37	3.16
Min Ch El (ft)	2255.28	Shear (lb/sq ft)	0.82	2.55	0.74
Alpha	1.23	Stream Power (lb/ft s)	2.31	16.71	1.93
Frctn Loss (ft)	3.40	Cum Volume (acre-ft)	0.73	1.67	0.46
C & E Loss (ft)	0.06	Cum SA (acres)	0.96	0.71	0.64

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2258.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2257.91	Reach Len. (ft)	209.36	200.50	194.10
Crit W.S. (ft)	2257.79	Flow Area (sq ft)	8.53	53.83	1.77
E.G. Slope (ft/ft)	0.022623	Area (sq ft)	8.53	53.83	1.77
Q Total (cfs)	390.00	Flow (cfs)	32.82	352.37	4.81
Top Width (ft)	41.44	Top Width (ft)	8.39	30.07	2.98
Vel Total (ft/s)	6.08	Avg. Vel. (ft/s)	3.85	6.55	2.72
Max Chl Dpth (ft)	2.63	Hydr. Depth (ft)	1.02	1.79	0.59
Conv. Total (cfs)	2592.9	Conv. (cfs)	218.2	2342.7	32.0
Length Wtd. (ft)	200.72	Wetted Per. (ft)	9.26	30.37	3.23
Min Ch El (ft)	2255.28	Shear (lb/sq ft)	1.30	2.50	0.77
Alpha	1.08	Stream Power (lb/ft s)	5.01	16.39	2.10
Frctn Loss (ft)	4.09	Cum Volume (acre-ft)	0.38	1.70	0.34
C & E Loss (ft)	0.01	Cum SA (acres)	0.31	0.71	0.32

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9924.59	9950.99	0.17	0.26	3.74	0.04	0.07	0.65
2	LOB	9950.99	9977.39	46.36	16.33	26.42	11.89	0.62	2.84
3	Chan	9977.39	9981.69	25.36	5.08	4.30	6.50	1.18	5.00
4	Chan	9981.69	9985.98	31.43	5.77	4.30	8.06	1.34	5.44
5	Chan	9985.98	9990.28	38.00	6.47	4.30	9.74	1.51	5.87
6	Chan	9990.28	9994.57	47.85	7.43	4.31	12.27	1.73	6.44
7	Chan	9994.57	9998.87	64.14	8.86	4.31	16.45	2.06	7.24
8	Chan	9998.87	10003.16	82.34	10.30	4.31	21.11	2.40	8.00
9	Chan	10003.16	10007.46	50.27	7.83	4.55	12.89	1.82	6.42
10	ROB	10007.46	10015.73	4.08	1.56	3.16	1.05	0.52	2.61

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9950.99	9977.39	32.82	8.53	9.26	8.42	1.02	3.85
2	Chan	9977.39	9981.69	27.17	5.37	4.30	6.97	1.25	5.06
3	Chan	9981.69	9985.98	33.29	6.07	4.30	8.54	1.41	5.48
4	Chan	9985.98	9990.28	39.90	6.77	4.30	10.23	1.58	5.90
5	Chan	9990.28	9994.57	49.77	7.73	4.31	12.76	1.80	6.44
6	Chan	9994.57	9998.87	66.01	9.16	4.31	16.93	2.13	7.20
7	Chan	9998.87	10003.16	84.11	10.60	4.31	21.57	2.47	7.94
8	Chan	10003.16	10007.46	52.11	8.12	4.55	13.36	1.89	6.41
9	ROB	10007.46	10015.73	4.81	1.77	3.23	1.23	0.59	2.72

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: X2
REACH: Reach 1 RS: 0.256

INPUT
Description:

```
Station Elevation Data     num=       33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9913.762 2254.049914.912 2253.989917.102 2253.899919.292 2253.789923.172 2253.62
9926.822  2253.59929.102 2253.439931.952  2253.49932.632 2253.399937.092 2253.34
9943.822 2253.259947.412 2253.139947.932 2253.129954.032 2253.019954.852 2252.99
9960.822 2253.079975.082 2252.899986.662 2252.999990.772 2253.02 9994.682251.851
9994.682 2251.8510000.15 2250.25 10009.4 2251.7710014.77 2252.7310039.93 2253.44
10047.68 2253.66 10047.8 2253.6610050.39 2253.7110063.17 2253.8910070.01 2254.12
10076.25 2254.3110085.97 2255.5610089.68 2256.02

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9913.762     .05 9994.68     .05 10009.4    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9994.68 10009.4            201.32  241.26  270.87             .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2254.08    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.41    Wt. n-Val.                  0.050      0.050      0.055
  W.S. Elev (ft)          2253.67    Reach Len. (ft)            201.32     241.26     270.87
  Crit W.S. (ft)          2253.67    Flow Area (sq ft)           41.84      38.98      23.40
  E.G. Slope (ft/ft)     0.012495    Area (sq ft)                41.84      38.98      23.40
  Q Total (cfs)            390.00    Flow (cfs)                  95.92     243.97      50.11
  Top Width (ft)           126.60    Top Width (ft)              72.79      14.72      39.08
  Vel Total (ft/s)           3.74    Avg. Vel. (ft/s)             2.29       6.26       2.14
  Max Chl Dpth (ft)          3.42    Hydr. Depth (ft)             0.57       2.65       0.60
  Conv. Total (cfs)        3489.0    Conv. (cfs)                858.1     2182.6      448.3
  Length Wtd. (ft)         236.76    Wetted Per. (ft)            72.97      15.07      39.18
  Min Ch El (ft)          2250.25    Shear (lb/sq ft)             0.45       2.02       0.47
  Alpha                      1.88    Stream Power (lb/ft s)       1.03      12.62       1.00
  Frctn Loss (ft)            4.31    Cum Volume (acre-ft)         0.59       1.46       0.40
  C & E Loss (ft)            0.02    Cum SA (acres)               0.71       0.61       0.55


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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2254.43    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              0.74    Wt. n-Val.                  0.050      0.050      0.055
  W.S. Elev (ft)          2253.69    Reach Len. (ft)            201.32     241.26     270.87
  Crit W.S. (ft)          2253.69    Flow Area (sq ft)            8.90      39.24      16.09
  E.G. Slope (ft/ft)     0.018427    Area (sq ft)                 8.90      39.24      16.09
  Q Total (cfs)            390.00    Flow (cfs)                  32.03     299.61      58.36
  Top Width (ft)            40.00    Top Width (ft)               9.68      14.72      15.60
  Vel Total (ft/s)           6.07    Avg. Vel. (ft/s)             3.60       7.63       3.63
  Max Chl Dpth (ft)          3.44    Hydr. Depth (ft)             0.92       2.67       1.03
  Conv. Total (cfs)        2873.0    Conv. (cfs)                236.0     2207.1      429.9
  Length Wtd. (ft)         240.30    Wetted Per. (ft)            10.57      15.07      16.36
  Min Ch El (ft)          2250.25    Shear (lb/sq ft)             0.97       2.99       1.13
  Alpha                      1.30    Stream Power (lb/ft s)       3.49      22.86       4.10
  Frctn Loss (ft)            5.22    Cum Volume (acre-ft)         0.34       1.49       0.30
  C & E Loss (ft)            0.04    Cum SA (acres)               0.27       0.61       0.28


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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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.

  Profile #profile 1
```

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9913.76	9929.95	0.93	1.13	8.06	0.24	0.14	0.82
2	LOB	9929.95	9946.13	8.67	5.70	16.19	2.22	0.35	1.52
3	LOB	9946.13	9962.31	22.01	9.97	16.19	5.64	0.62	2.21
4	LOB	9962.31	9978.50	28.31	11.59	16.18	7.26	0.72	2.44
5	LOB	9978.50	9994.68	36.00	13.45	16.36	9.23	0.83	2.68
6	Chan	9994.68	9996.78	23.61	4.48	2.19	6.05	2.13	5.27
7	Chan	9996.78	9998.89	36.06	5.77	2.19	9.25	2.75	6.24
8	Chan	9998.89	10000.99	48.96	6.91	2.17	12.55	3.28	7.09
9	Chan	10000.99	10003.09	45.29	6.55	2.13	11.61	3.11	6.92
10	Chan	10003.09	10005.19	37.20	5.82	2.13	9.54	2.77	6.39
11	Chan	10005.19	10007.30	29.80	5.09	2.13	7.64	2.42	5.85
12	Chan	10007.30	10009.40	23.04	4.36	2.13	5.91	2.08	5.28
13	ROB	10009.40	10025.46	40.47	16.11	16.15	10.38	1.00	2.51
14	ROB	10025.46	10041.51	9.33	6.66	16.06	2.39	0.42	1.40
15	ROB	10041.51	10057.57	0.32	0.63	6.97	0.08	0.09	0.51

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.50	9994.68	32.03	8.90	10.57	8.21	0.92	3.60
2	Chan	9994.68	9996.78	29.08	4.52	2.19	7.46	2.15	6.44
3	Chan	9996.78	9998.89	44.28	5.81	2.19	11.35	2.76	7.62
4	Chan	9998.89	10000.99	60.00	6.94	2.17	15.39	3.30	8.64
5	Chan	10000.99	10003.09	55.53	6.58	2.13	14.24	3.13	8.43
6	Chan	10003.09	10005.19	45.68	5.86	2.13	11.71	2.78	7.80
7	Chan	10005.19	10007.30	36.64	5.13	2.13	9.40	2.44	7.14
8	Chan	10007.30	10009.40	28.39	4.40	2.13	7.28	2.09	6.45
9	ROB	10009.40	10025.46	58.36	16.09	16.36	14.96	1.03	3.63

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.211

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9912.054	2248.99	9914.234	2248.99	918.414	2248.99	925.874	2248.99	927.774	2248.88
9931.024	2248.84	9936.424	2248.74	9938.634	2248.45	9940.094	2248.26	9941.604	2248.19
9947.494	2247.89	951.424	2247.45	9959.304	2247	9959.644	2246.99	9960.434	2246.97
9960.614	2246.97	9960.924	2246.96	9972.384	2246.74	9977.634	2246.43	9982.074	2246.26
9991.99	2245.65	9991.994	2245.65	9996.284	2244.66	9999.754	2244.05	10001.04	2244.37
10009.16	2245.94	10013.16	2246.26	10015.55	2245.85	10020.54	2244.77	10025.71	2245.75
10036.46	2248.15	10038.14	2248.27	10038.18	2248.27	10039.59	2248.37	10058	2249.63
10062.69	2249.99								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9912.054	.055	9991.99	.05	10025.71	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.99	10025.71	200.87	167.86	144.07	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2247.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2246.80	Reach Len. (ft)	200.87	167.86	144.07
Crit W.S. (ft)	2246.78	Flow Area (sq ft)	11.64	52.24	2.47
E.G. Slope (ft/ft)	0.028908	Area (sq ft)	11.64	52.24	2.47
Q Total (cfs)	390.00	Flow (cfs)	34.15	349.18	6.67
Top Width (ft)	61.20	Top Width (ft)	22.77	33.72	4.71
Vel Total (ft/s)	5.88	Avg. Vel. (ft/s)	2.93	6.68	2.70
Max Chl Dpth (ft)	2.75	Hydr. Depth (ft)	0.51	1.55	0.53
Conv. Total (cfs)	2293.8	Conv. (cfs)	200.9	2053.7	39.2
Length Wtd. (ft)	165.28	Wetted Per. (ft)	22.81	34.33	4.82
Min Ch El (ft)	2244.05	Shear (lb/sq ft)	0.92	2.75	0.93
Alpha	1.18	Stream Power (lb/ft s)	2.70	18.36	2.50
Frctn Loss (ft)	4.24	Cum Volume (acre-ft)	0.46	1.21	0.32
C & E Loss (ft)	0.00	Cum SA (acres)	0.49	0.47	0.41

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2247.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.055	0.050	
W.S. Elev (ft)	2246.90	Reach Len. (ft)	200.87	167.86	144.07
Crit W.S. (ft)	2246.81	Flow Area (sq ft)	7.26	55.69	
E.G. Slope (ft/ft)	0.025944	Area (sq ft)	7.26	55.69	
Q Total (cfs)	390.00	Flow (cfs)	30.02	359.98	
Top Width (ft)	40.71	Top Width (ft)	6.99	33.72	
Vel Total (ft/s)	6.20	Avg. Vel. (ft/s)	4.14	6.46	
Max Chl Dpth (ft)	2.85	Hydr. Depth (ft)	1.04	1.65	

Conv. Total (cfs)	2421.3	Conv. (cfs)	186.4	2234.9	
Length Wtd. (ft)	165.62	Wetted Per. (ft)	7.83	35.48	
Min Ch El (ft)	2244.05	Shear (lb/sq ft)	1.50	2.54	
Alpha	1.04	Stream Power (lb/ft s)	6.21	16.43	
Frctn Loss (ft)	4.23	Cum Volume (acre-ft)	0.30	1.22	0.25
C & E Loss (ft)	0.01	Cum SA (acres)	0.23	0.47	0.23

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9960.02	9976.00	0.61	0.70	6.79	0.16	0.10	0.87
2	LOB	9976.00	9991.99	33.54	10.94	16.01	8.60	0.68	3.07
3	Chan	9991.99	9996.81	54.57	8.21	4.94	13.99	1.70	6.65
4	Chan	9996.81	10001.62	103.96	12.06	4.91	26.66	2.50	8.62
5	Chan	10001.62	10006.44	62.96	8.92	4.91	16.14	1.85	7.06
6	Chan	10006.44	10011.26	21.61	4.69	4.87	5.54	0.97	4.61
7	Chan	10011.26	10016.08	13.21	3.49	4.87	3.39	0.72	3.79
8	Chan	10016.08	10020.89	48.20	7.61	4.93	12.36	1.58	6.33
9	Chan	10020.89	10025.71	44.68	7.26	4.90	11.46	1.51	6.15
10	ROB	10025.71	10033.11	6.67	2.47	4.82	1.71	0.53	2.70

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.00	9991.99	30.02	7.26	7.83	7.70	1.04	4.14
2	Chan	9991.99	9996.81	57.13	8.70	4.94	14.65	1.81	6.56
3	Chan	9996.81	10001.62	105.57	12.55	4.91	27.07	2.61	8.41
4	Chan	10001.62	10006.44	65.42	9.42	4.91	16.77	1.95	6.95
5	Chan	10006.44	10011.26	24.25	5.18	4.87	6.22	1.07	4.68
6	Chan	10011.26	10016.08	15.64	3.98	4.87	4.01	0.83	3.93
7	Chan	10016.08	10020.89	50.83	8.11	4.93	13.03	1.68	6.27
8	Chan	10020.89	10025.71	41.14	7.75	6.06	10.55	1.61	5.31

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X2
REACH: Reach 1 RS: 0.179

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9924.31	2243.43	9932.22	1.2243.49	9943.12	1.2243.56	9946.34	1.2243.56	9947.59	1.2243.54
9947.82	2243.54	9955.40	1.2243.48	9956.93	1.2243.46	9959.12	1.2243.41	9964.15	1.2243.31
9988.18	2242.85	9988.86	1.2242.62	9994.19	2241.01	19999.16	1.2239.51	10007.42	2240.85
10010.1	2241.36	10014.78	2241.16	10022.37	2240.93	10025.12	2241.12	10029.52	2241.43
10039.98	2242.25	10041.04	2242.32	10041.26	2242.34	10041.72	2242.38	10046.81	2242.95
10049.12	2243.21	10050.08	2243.34	10053.73	2243.73	10054.82	2243.89	10056.17	2244.02
10057.9	2244.17	10059.09	2244.34	10060.97	2244.59	10063.71	2244.81	10065.27	2245.1
10069.14	2245.25								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9924.31	.065	9994.19	.05	10007.42	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.19	10007.42	124.31	156.35	161.23	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2243.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2242.53	Reach Len. (ft)	124.31	156.35	161.23
Crit W.S. (ft)	2242.53	Flow Area (sq ft)	3.84	30.74	38.54
E.G. Slope (ft/ft)	0.022962	Area (sq ft)	3.84	30.74	38.54
Q Total (cfs)	390.00	Flow (cfs)	10.78	238.95	140.27
Top Width (ft)	53.95	Top Width (ft)	5.04	13.23	35.68
Vel Total (ft/s)	5.33	Avg. Vel. (ft/s)	2.81	7.77	3.64
Max Chl Dpth (ft)	3.02	Hydr. Depth (ft)	0.76	2.32	1.08
Conv. Total (cfs)	2573.7	Conv. (cfs)	71.2	1576.9	925.6
Length Wtd. (ft)	151.80	Wetted Per. (ft)	5.27	13.56	35.80
Min Ch El (ft)	2239.51	Shear (lb/sq ft)	1.05	3.25	1.54
Alpha	1.48	Stream Power (lb/ft s)	2.93	25.26	5.62
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	0.43	1.05	0.25
C & E Loss (ft)	0.00	Cum SA (acres)	0.43	0.38	0.34

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2243.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2242.52	Reach Len. (ft)	124.31	156.35	161.23
Crit W.S. (ft)	2242.50	Flow Area (sq ft)	3.79	30.61	29.98
E.G. Slope (ft/ft)	0.025180	Area (sq ft)	3.79	30.61	29.98
Q Total (cfs)	390.00	Flow (cfs)	11.08	248.34	130.57
Top Width (ft)	39.82	Top Width (ft)	5.01	13.23	21.58
Vel Total (ft/s)	6.06	Avg. Vel. (ft/s)	2.93	8.11	4.36
Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)	0.76	2.31	1.39
Conv. Total (cfs)	2457.7	Conv. (cfs)	69.8	1565.0	822.9
Length Wtd. (ft)	152.35	Wetted Per. (ft)	5.23	13.56	22.78
Min Ch El (ft)	2239.51	Shear (lb/sq ft)	1.14	3.55	2.07
Alpha	1.32	Stream Power (lb/ft s)	3.33	28.79	9.01
Frctn Loss (ft)	3.94	Cum Volume (acre-ft)	0.28	1.06	0.20
C & E Loss (ft)	0.00	Cum SA (acres)	0.20	0.38	0.20

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.22	9994.19	10.78	3.84	5.27	2.76	0.76	2.81
2	Chan	9994.19	9996.08	21.84	3.42	1.97	5.60	1.81	6.39
3	Chan	9996.08	9997.97	34.52	4.50	1.97	8.85	2.38	7.67
4	Chan	9997.97	9999.86	48.07	5.46	1.95	12.32	2.89	8.80
5	Chan	9999.86	10001.75	45.02	5.21	1.91	11.54	2.76	8.64
6	Chan	10001.75	10003.64	36.99	4.63	1.91	9.49	2.45	7.99
7	Chan	10003.64	10005.53	29.62	4.05	1.92	7.59	2.14	7.31
8	Chan	10005.53	10007.42	22.89	3.47	1.91	5.87	1.84	6.59
9	ROB	10007.42	10019.76	67.24	17.02	12.40	17.24	1.38	3.95
10	ROB	10019.76	10032.11	63.08	16.36	12.37	16.17	1.33	3.85
11	ROB	10032.11	10044.45	9.96	5.16	11.03	2.55	0.47	1.93

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.22	9994.19	11.08	3.79	5.23	2.84	0.76	2.93
2	Chan	9994.19	9996.08	22.65	3.40	1.97	5.81	1.80	6.67
3	Chan	9996.08	9997.97	35.88	4.48	1.97	9.20	2.37	8.01
4	Chan	9997.97	9999.86	50.02	5.44	1.95	12.83	2.88	9.19
5	Chan	9999.86	10001.75	46.84	5.19	1.91	12.01	2.75	9.02
6	Chan	10001.75	10003.64	38.46	4.61	1.91	9.86	2.44	8.34
7	Chan	10003.64	10005.53	30.76	4.03	1.92	7.89	2.13	7.63
8	Chan	10005.53	10007.42	23.74	3.45	1.91	6.09	1.83	6.88
9	ROB	10007.42	10019.76	75.22	16.89	12.40	19.29	1.37	4.45
10	ROB	10019.76	10032.11	55.35	13.09	10.38	14.19	1.42	4.23

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: X2
REACH: Reach 1 RS: 0.149

INPUT
Description:
Station Elevation Data num= 44

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9872.923 2239.999874.633 2239.899874.793 2239.899877.363  2239.79888.603 2238.89
9888.973 2238.919890.653 2238.999898.853 2239.359900.503 2239.429929.553 2239.04
9930.033 2239.049930.143 2239.049930.223 2239.039935.963 2239.039937.433 2239.03
9941.853 2238.939943.303 2238.889947.033 2238.819949.093 2238.689950.403  2238.6
9956.173 2238.159956.883  2238.19959.083 2237.859959.403 2237.839960.553 2237.74
9961.633  2237.79962.433 2237.679967.223  2237.69968.123 2237.589973.783 2237.37
9976.193 2237.31 9986.79 2236.939986.793 2236.939992.603 2236.729995.453 2236.39
9998.793 2236.0210000.62 2235.7810003.142236.88210008.76 2239.3410010.88 2240.26
10011.91 2240.3810013.82 2240.5610026.79 2241.72 10029.3    2242
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```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9872.923    .065 9986.79     .0510003.14    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9986.7910003.14            150.19  163.61  175.09            .1        .3
```

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2239.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2238.55	Reach Len. (ft)	150.19	163.61	175.09
Crit W.S. (ft)	2238.55	Flow Area (sq ft)	34.60	33.94	3.17
E.G. Slope (ft/ft)	0.025204	Area (sq ft)	34.60	33.94	3.17
Q Total (cfs)	390.00	Flow (cfs)	122.85	257.54	9.61
Top Width (ft)	55.87	Top Width (ft)	35.71	16.35	3.81
Vel Total (ft/s)	5.44	Avg. Vel. (ft/s)	3.55	7.59	3.03
Max Chl Dpth (ft)	2.77	Hydr. Depth (ft)	0.97	2.08	0.83
Conv. Total (cfs)	2456.6	Conv. (cfs)	773.8	1622.2	60.5
Length Wtd. (ft)	160.64	Wetted Per. (ft)	35.76	16.64	4.16
Min Ch El (ft)	2235.78	Shear (lb/sq ft)	1.52	3.21	1.20
Alpha	1.43	Stream Power (lb/ft s)	5.41	24.35	3.64
Frctn Loss (ft)	3.18	Cum Volume (acre-ft)	0.37	0.93	0.17
C & E Loss (ft)	0.02	Cum SA (acres)	0.37	0.33	0.27

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2239.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2238.58	Reach Len. (ft)	150.19	163.61	175.09
Crit W.S. (ft)	2238.58	Flow Area (sq ft)	24.86	34.49	3.30
E.G. Slope (ft/ft)	0.026581	Area (sq ft)	24.86	34.49	3.30
Q Total (cfs)	390.00	Flow (cfs)	107.84	271.67	10.49
Top Width (ft)	38.95	Top Width (ft)	18.79	16.35	3.81
Vel Total (ft/s)	6.22	Avg. Vel. (ft/s)	4.34	7.88	3.18
Max Chl Dpth (ft)	2.80	Hydr. Depth (ft)	1.32	2.11	0.87
Conv. Total (cfs)	2392.1	Conv. (cfs)	661.4	1666.3	64.3
Length Wtd. (ft)	161.92	Wetted Per. (ft)	19.80	16.64	4.19
Min Ch El (ft)	2235.78	Shear (lb/sq ft)	2.08	3.44	1.31
Alpha	1.26	Stream Power (lb/ft s)	9.04	27.09	4.15
Frctn Loss (ft)	3.81	Cum Volume (acre-ft)	0.24	0.94	0.14
C & E Loss (ft)	0.02	Cum SA (acres)	0.17	0.33	0.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9941.24	9964.02	14.49	6.67	12.98	3.72	0.52	2.17
2	LOB	9964.02	9986.79	108.36	27.93	22.79	27.79	1.23	3.88
3	Chan	9986.79	9989.13	25.31	3.88	2.34	6.49	1.66	6.53
4	Chan	9989.13	9991.46	27.48	4.07	2.34	7.05	1.74	6.75
5	Chan	9991.46	9993.80	30.34	4.33	2.34	7.78	1.85	7.01
6	Chan	9993.80	9996.13	37.33	4.91	2.35	9.57	2.10	7.61
7	Chan	9996.13	9998.47	45.41	5.52	2.35	11.64	2.36	8.23
8	Chan	9998.47	10000.80	54.14	6.15	2.37	13.88	2.63	8.80
9	Chan	10000.80	10003.14	37.52	5.08	2.55	9.62	2.18	7.38
10	ROB	10003.14	10008.37	9.61	3.17	4.16	2.46	0.83	3.03

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.02	9986.79	107.84	24.86	19.80	27.65	1.32	4.34
2	Chan	9986.79	9989.13	26.89	3.96	2.34	6.89	1.69	6.80
3	Chan	9989.13	9991.46	29.15	4.15	2.34	7.47	1.78	7.02

4	Chan	9991.46	9993.80	32.12	4.41	2.34	8.24	1.89	7.29
5	Chan	9993.80	9996.13	39.39	4.99	2.35	10.10	2.13	7.90
6	Chan	9996.13	9998.47	47.77	5.60	2.35	12.25	2.40	8.54
7	Chan	9998.47	10000.80	56.81	6.23	2.37	14.57	2.67	9.12
8	Chan	10000.80	10003.14	39.55	5.16	2.55	10.14	2.21	7.66
9	ROB	10003.14	10008.37	10.49	3.30	4.19	2.69	0.87	3.18

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.118

INPUT
Description:
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9927.108	2236.039	9928.768	2235.859	9929.308	2235.829	9929.898	2235.789	9935.528	2235.05
9936.618	2234.919	9937.248	2234.869	9939.218	2234.679	9942.118	2234.519	9944.428	2234.25
9952.268	2233.539	9952.308	2233.539	9952.328	2233.539	9958.128	2233.659	9967.108	2233.65
9968.468	2233.689	9971.038	2233.769	9984.358	2234.069	9989.628	2234.24	9992.882	2233.218
9996.688	2232.021	0001.14	2230.651	0007.19	2232.171	0011.06	2233.069	10016.27	2234.28
10017.69	2234.361	0018.54	2234.41	0020.63	2234.541	0026.34	2234.861	0028.86	2234.97
10037.24	2234.711	0043.15	2234.521	0047.59	2234.331	0051.02	2234.481	0052.86	2234.56
10061.53	2235.361	0065.48	2234.96	10065.7	2234.98	10066.1	2235.021	0066.76	2235.11
10072.99	2235.96								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9927.108	.065	9992.88	.05	10011.06	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.88	10011.06		208.67	186.94	171.89 .1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2235.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2234.45	Reach Len. (ft)	208.67	186.94	171.89
Crit W.S. (ft)	2234.45	Flow Area (sq ft)	31.08	46.40	4.70
E.G. Slope (ft/ft)	0.015913	Area (sq ft)	31.08	46.40	4.70
Q Total (cfs)	390.00	Flow (cfs)	64.86	316.95	8.19
Top Width (ft)	82.49	Top Width (ft)	50.27	18.18	14.04
Vel Total (ft/s)	4.75	Avg. Vel. (ft/s)	2.09	6.83	1.74
Max Chl Dpth (ft)	3.80	Hydr. Depth (ft)	0.62	2.55	0.33
Conv. Total (cfs)	3091.6	Conv. (cfs)	514.1	2512.5	64.9
Length Wtd. (ft)	187.80	Wetted Per. (ft)	50.48	18.86	14.19
Min Ch El (ft)	2230.65	Shear (lb/sq ft)	0.61	2.44	0.33
Alpha	1.72	Stream Power (lb/ft s)	1.28	16.70	0.57
Frctn Loss (ft)	3.10	Cum Volume (acre-ft)	0.26	0.78	0.16
C & E Loss (ft)	0.01	Cum SA (acres)	0.22	0.26	0.24

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2235.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.92	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2234.48	Reach Len. (ft)	208.67	186.94	171.89
Crit W.S. (ft)	2234.48	Flow Area (sq ft)	4.74	46.81	4.12
E.G. Slope (ft/ft)	0.020972	Area (sq ft)	4.74	46.81	4.12
Q Total (cfs)	390.00	Flow (cfs)	9.25	369.26	11.48
Top Width (ft)	33.00	Top Width (ft)	9.88	18.18	4.94
Vel Total (ft/s)	7.01	Avg. Vel. (ft/s)	1.95	7.89	2.79
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)	0.48	2.57	0.83
Conv. Total (cfs)	2693.1	Conv. (cfs)	63.9	2549.9	79.3
Length Wtd. (ft)	186.12	Wetted Per. (ft)	10.49	18.86	5.33
Min Ch El (ft)	2230.65	Shear (lb/sq ft)	0.59	3.25	1.01
Alpha	1.21	Stream Power (lb/ft s)	1.15	25.63	2.82
Frctn Loss (ft)	3.56	Cum Volume (acre-ft)	0.19	0.79	0.12
C & E Loss (ft)	0.07	Cum SA (acres)	0.12	0.26	0.13

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9940.26	9953.42	10.27	5.66	10.85	2.63	0.52	1.82
2	LOB	9953.42	9966.57	26.57	10.81	13.16	6.81	0.82	2.46
3	LOB	9966.57	9979.73	18.05	8.57	13.16	4.63	0.65	2.11
4	LOB	9979.73	9992.88	9.96	6.03	13.32	2.55	0.46	1.65
5	Chan	9992.88	9995.48	20.77	4.27	2.72	5.33	1.64	4.86
6	Chan	9995.48	9998.07	40.65	6.39	2.72	10.42	2.46	6.36
7	Chan	9998.07	10000.67	65.06	8.47	2.72	16.68	3.26	7.68
8	Chan	10000.67	10003.27	76.39	9.28	2.69	19.59	3.57	8.23
9	Chan	10003.27	10005.87	55.40	7.64	2.68	14.21	2.94	7.25
10	Chan	10005.87	10008.46	36.71	5.97	2.67	9.41	2.30	6.15
11	Chan	10008.46	10011.06	21.97	4.38	2.67	5.63	1.69	5.02
12	ROB	10011.06	10023.45	8.03	4.34	8.44	2.06	0.52	1.85
13	ROB	10023.45	10035.83						
14	ROB	10035.83	10048.22	0.12	0.25	3.54	0.03	0.07	0.49
15	ROB	10048.22	10060.60	0.04	0.11	2.22	0.01	0.05	0.38

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.73	9992.88	9.25	4.74	10.49	2.37	0.48	1.95
2	Chan	9992.88	9995.48	24.41	4.33	2.72	6.26	1.67	5.64
3	Chan	9995.48	9998.07	47.42	6.45	2.72	12.16	2.48	7.36
4	Chan	9998.07	10000.67	75.61	8.53	2.72	19.39	3.28	8.87
5	Chan	10000.67	10003.27	88.69	9.34	2.69	22.74	3.59	9.50
6	Chan	10003.27	10005.87	64.46	7.70	2.68	16.53	2.97	8.37
7	Chan	10005.87	10008.46	42.87	6.03	2.67	10.99	2.32	7.11
8	Chan	10008.46	10011.06	25.81	4.44	2.67	6.62	1.71	5.81
9	ROB	10011.06	10023.45	11.48	4.12	5.33	2.94	0.83	2.79

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X2
REACH: Reach 1 RS: 0.083

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9894.164	2233.94	9899.404	2233.85	9910.824	2233.69	9929.864	2233.45	9931.554	2233.42
9934.644	2233.37	9937.204	2233.33	9977.954	2231.82	9978.564	2231.78	9979.134	2231.46
9984.344	2230	9992.894	2228.59	9993.79	2228.19	10000.05	2225.42	10010.29	2227.89
10011.72	2228.22	10012.99	2228.28	10014.38	2228.32	10027.59	2228.74	10041.16	2229.24
10045.43	2229.35	10048.3	2229.43	10048.54	2229.43	10050.21	2229.46	10056.44	2229.88
10058.59	2230.03	10064.61	2230.35	10066.84	2230.51	10072.52	2230.82	10073.89	2230.9
10078.55	2231.13	10081.79	2231.11	10082.53	2231.11	10083.88	2231.13	10090.85	2231.2
10097.2	2231.23	10101.2	2231.31	10103.11	2231.31	10107.91	2231.34	10109.35	2231.8
10114.08	2233.55	10115.34	2234						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9894.164	.065	9993.79	.05	10011.72	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.79	10011.72	183.04	192.89	199.82	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2230.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.065	0.050	0.060

W.S. Elev (ft)	2229.43	Reach Len. (ft)	183.04	192.89	199.82
Crit W.S. (ft)	2229.43	Flow Area (sq ft)	3.09	46.87	21.75
E.G. Slope (ft/ft)	0.017138	Area (sq ft)	3.09	46.87	21.75
Q Total (cfs)	390.00	Flow (cfs)	5.84	334.71	49.45
Top Width (ft)	60.97	Top Width (ft)	6.01	17.93	37.02
Vel Total (ft/s)	5.44	Avg. Vel. (ft/s)	1.89	7.14	2.27
Max Chl Dpth (ft)	4.01	Hydr. Depth (ft)	0.51	2.61	0.59
Conv. Total (cfs)	2979.1	Conv. (cfs)	44.6	2556.7	377.8
Length Wtd. (ft)	192.89	Wetted Per. (ft)	6.16	18.85	37.04
Min Ch El (ft)	2225.42	Shear (lb/sq ft)	0.54	2.66	0.63
Alpha	1.50	Stream Power (lb/ft s)	1.01	19.00	1.43
Frctn Loss (ft)	2.63	Cum Volume (acre-ft)	0.18	0.58	0.11
C & E Loss (ft)	0.04	Cum SA (acres)	0.08	0.19	0.13

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2230.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.065	0.050	0.060
W.S. Elev (ft)	2229.41	Reach Len. (ft)	183.04	192.89	199.82
Crit W.S. (ft)	2229.41	Flow Area (sq ft)	2.93	46.38	19.52
E.G. Slope (ft/ft)	0.017509	Area (sq ft)	2.93	46.38	19.52
Q Total (cfs)	390.00	Flow (cfs)	5.50	332.43	52.07
Top Width (ft)	50.06	Top Width (ft)	5.85	17.93	26.28
Vel Total (ft/s)	5.67	Avg. Vel. (ft/s)	1.88	7.17	2.67
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)	0.50	2.59	0.74
Conv. Total (cfs)	2947.4	Conv. (cfs)	41.5	2512.3	393.5
Length Wtd. (ft)	192.66	Wetted Per. (ft)	6.00	18.85	26.58
Min Ch El (ft)	2225.42	Shear (lb/sq ft)	0.53	2.69	0.80
Alpha	1.40	Stream Power (lb/ft s)	1.00	19.28	2.14
Frctn Loss (ft)	2.80	Cum Volume (acre-ft)	0.17	0.59	0.08
C & E Loss (ft)	0.02	Cum SA (acres)	0.08	0.19	0.07

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.87	9993.79	5.84	3.09	6.16	1.50	0.51	1.89
2	Chan	9993.79	9996.35	24.01	4.63	2.80	6.16	1.81	5.18
3	Chan	9996.35	9998.91	54.07	7.54	2.80	13.86	2.94	7.17
4	Chan	9998.91	10001.47	84.91	9.75	2.71	21.77	3.81	8.71
5	Chan	10001.47	10004.04	70.27	8.61	2.63	18.02	3.36	8.17
6	Chan	10004.04	10006.60	50.12	7.03	2.64	12.85	2.74	7.13
7	Chan	10006.60	10009.16	32.75	5.44	2.64	8.40	2.13	6.02
8	Chan	10009.16	10011.72	18.58	3.87	2.63	4.76	1.51	4.80
9	ROB	10011.72	10032.44	45.44	17.95	20.74	11.65	0.87	2.53
10	ROB	10032.44	10053.17	4.02	3.81	16.31	1.03	0.23	1.06

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.87	9993.79	5.50	2.93	6.00	1.41	0.50	1.88
2	Chan	9993.79	9996.35	23.63	4.56	2.80	6.06	1.78	5.18
3	Chan	9996.35	9998.91	53.75	7.47	2.80	13.78	2.92	7.20
4	Chan	9998.91	10001.47	84.71	9.68	2.71	21.72	3.78	8.75
5	Chan	10001.47	10004.04	70.00	8.54	2.63	17.95	3.33	8.20
6	Chan	10004.04	10006.60	49.77	6.96	2.64	12.76	2.72	7.15
7	Chan	10006.60	10009.16	32.37	5.37	2.64	8.30	2.10	6.02
8	Chan	10009.16	10011.72	18.20	3.80	2.63	4.67	1.48	4.79
9	ROB	10011.72	10032.44	48.63	17.38	20.74	12.47	0.84	2.80
10	ROB	10032.44	10053.17	3.45	2.14	5.84	0.88	0.39	1.61

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: X2
REACH: Reach 1 RS: 0.046

INPUT
Description: 18th Street
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9918.554	2229.39	9920.674	2229.15	9922.624	2229.99	9929.084	2228.77	9935.994	2228.49
9955.784	2227.79	9961.104	2227.38	9963.024	2227.29	9964.224	2226.95	9974.524	2223.99
9978.434	2223.6	9985.492	2223.07	9996.324	2222.28	10002.4	2222.22	10007.91	2222.99
10017.94	2224.39	10019.93	2224.75	10022.13	2224.76	10024.27	2224.75	10030.59	2224.74
10035.01	2224.73	10041.21	2224.95	10044.75	2225.07	10054.11	2225.44	10056.22	2225.5
10058.43	2225.57	10062.7	2225.73						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9918.554	.065	9974.524	.041	10017.94	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.49	10007.91	212.38	170.68	143.56	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2225.18	Element			
Vel Head (ft)	0.54	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2224.64	Reach Len. (ft)	212.38	170.68	143.56
Crit W.S. (ft)	2224.49	Flow Area (sq ft)	13.21	46.96	9.70
E.G. Slope (ft/ft)	0.011105	Area (sq ft)	13.21	46.96	9.70
Q Total (cfs)	390.00	Flow (cfs)	53.89	300.21	35.89
Top Width (ft)	47.05	Top Width (ft)	13.23	22.42	11.41
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)	4.08	6.39	3.70
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)	1.00	2.09	0.85
Conv. Total (cfs)	3700.8	Conv. (cfs)	511.4	2848.8	340.6
Length Wtd. (ft)	172.42	Wetted Per. (ft)	13.36	22.50	11.53
Min Ch El (ft)	2222.22	Shear (lb/sq ft)	0.69	1.45	0.58
Alpha	1.12	Stream Power (lb/ft s)	2.80	9.25	2.16
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	0.14	0.37	0.03
C & E Loss (ft)	0.03	Cum SA (acres)	0.04	0.10	0.02

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2225.29	Element			
Vel Head (ft)	0.63	Wt. n-Val.	0.040	0.040	0.040
W.S. Elev (ft)	2224.66	Reach Len. (ft)	212.38	170.68	143.56
Crit W.S. (ft)	2224.49	Flow Area (sq ft)	13.43	47.33	3.18
E.G. Slope (ft/ft)	0.012263	Area (sq ft)	13.43	47.33	3.18
Q Total (cfs)	390.00	Flow (cfs)	58.07	319.64	12.29
Top Width (ft)	37.73	Top Width (ft)	13.22	22.42	2.09
Vel Total (ft/s)	6.10	Avg. Vel. (ft/s)	4.32	6.75	3.87
Max Chl Dpth (ft)	2.44	Hydr. Depth (ft)	1.02	2.11	1.52
Conv. Total (cfs)	3521.9	Conv. (cfs)	524.4	2886.5	111.0
Length Wtd. (ft)	173.48	Wetted Per. (ft)	13.37	22.50	3.48
Min Ch El (ft)	2222.22	Shear (lb/sq ft)	0.77	1.61	0.70
Alpha	1.09	Stream Power (lb/ft s)	3.33	10.87	2.70
Frctn Loss (ft)	3.02	Cum Volume (acre-ft)	0.13	0.38	0.02
C & E Loss (ft)	0.02	Cum SA (acres)	0.04	0.10	0.01

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.10	9985.49	53.89	13.21	13.36	13.82	1.00	4.08
2	Chan	9985.49	9988.69	29.42	5.38	3.21	7.54	1.68	5.47
3	Chan	9988.69	9991.90	36.63	6.13	3.21	9.39	1.91	5.97
4	Chan	9991.90	9995.10	44.48	6.89	3.21	11.41	2.15	6.46
5	Chan	9995.10	9998.30	51.54	7.52	3.21	13.22	2.35	6.85
6	Chan	9998.30	10001.50	53.30	7.67	3.20	13.67	2.39	6.95
7	Chan	10001.50	10004.71	49.66	7.37	3.22	12.73	2.30	6.74
8	Chan	10004.71	10007.91	35.17	6.00	3.23	9.02	1.87	5.86
9	ROB	10007.91	10018.87	35.89	9.68	11.07	9.20	0.88	3.71
10	ROB	10018.87	10029.83	0.01	0.02	0.46	0.00	0.04	0.31

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.10	9985.49	58.07	13.43	13.37	14.89	1.02	4.32
2	Chan	9985.49	9988.69	31.43	5.43	3.21	8.06	1.70	5.79
3	Chan	9988.69	9991.90	39.06	6.18	3.21	10.01	1.93	6.32
4	Chan	9991.90	9995.10	47.35	6.94	3.21	12.14	2.17	6.82
5	Chan	9995.10	9998.30	54.81	7.57	3.21	14.05	2.36	7.24
6	Chan	9998.30	10001.50	56.66	7.72	3.20	14.53	2.41	7.34
7	Chan	10001.50	10004.71	52.82	7.42	3.22	13.54	2.32	7.11
8	Chan	10004.71	10007.91	37.51	6.05	3.23	9.62	1.89	6.20
9	ROB	10007.91	10018.87	12.29	3.18	3.48	3.15	1.52	3.87

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: X2
REACH: Reach 1 RS: 0.014

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9964.646	2223.93	9969.506	2223.21	9977.096	2222.14	9987.166	2220.71	9987.17	2220.709
9996.006	2219.05	10000.24	2218.19	10014.5	2220.85	10022.32	2222.31	10031.48	2222.7
10041.63	2223.17	10050.38	2223.57	10050.42	2223.57	10050.44	2223.57	10051.8	2223.69
10052.47	2223.74	10067.14	2224.17						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9964.646	.065	9987.17	.05	10014.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.17	10014.5	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2222.25	Element			
Vel Head (ft)	0.88	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2221.37	Reach Len. (ft)	92.45	92.45	92.45
Crit W.S. (ft)	2221.37	Flow Area (sq ft)	1.53	51.16	0.73
E.G. Slope (ft/ft)	0.028606	Area (sq ft)	1.53	51.16	0.73
Q Total (cfs)	390.00	Flow (cfs)	2.81	386.06	1.13
Top Width (ft)	34.77	Top Width (ft)	4.64	27.33	2.80
Vel Total (ft/s)	7.30	Avg. Vel. (ft/s)	1.83	7.55	1.55
Max Chl Dpth (ft)	3.18	Hydr. Depth (ft)	0.33	1.87	0.26
Conv. Total (cfs)	2305.9	Conv. (cfs)	16.6	2282.6	6.7
Length Wtd. (ft)	92.45	Wetted Per. (ft)	4.69	27.82	2.85
Min Ch El (ft)	2218.19	Shear (lb/sq ft)	0.58	3.28	0.46
Alpha	1.06	Stream Power (lb/ft s)	1.07	24.79	0.71
Frctn Loss (ft)	1.57	Cum Volume (acre-ft)	0.11	0.18	0.02
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 selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2222.24	Element			
Vel Head (ft)	0.84	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2221.41	Reach Len. (ft)	92.45	92.45	92.45
Crit W.S. (ft)	2221.41	Flow Area (sq ft)	1.70	52.18	0.83
E.G. Slope (ft/ft)	0.026705	Area (sq ft)	1.70	52.18	0.83
Q Total (cfs)	390.00	Flow (cfs)	3.22	385.42	1.35
Top Width (ft)	34.77	Top Width (ft)	4.64	27.33	2.80
Vel Total (ft/s)	7.13	Avg. Vel. (ft/s)	1.89	7.39	1.63
Max Chl Dpth (ft)	3.22	Hydr. Depth (ft)	0.37	1.91	0.30
Conv. Total (cfs)	2386.5	Conv. (cfs)	19.7	2358.5	8.3
Length Wtd. (ft)	92.45	Wetted Per. (ft)	4.72	27.82	2.88
Min Ch El (ft)	2218.19	Shear (lb/sq ft)	0.60	3.13	0.48
Alpha	1.06	Stream Power (lb/ft s)	1.14	23.10	0.78
Frctn Loss (ft)	1.59	Cum Volume (acre-ft)	0.10	0.18	0.02
C & E Loss (ft)	0.00	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.16	9982.67	0.00	0.00	0.14	0.00	0.01	0.17
2	LOB	9982.67	9987.17	2.81	1.53	4.55	0.72	0.34	1.83
3	Chan	9987.17	9991.07	18.72	4.01	3.97	4.80	1.03	4.67
4	Chan	9991.07	9994.98	45.96	6.87	3.97	11.78	1.76	6.69
5	Chan	9994.98	9998.88	82.90	9.80	3.98	21.26	2.51	8.46
6	Chan	9998.88	10002.79	110.30	11.62	3.98	28.28	2.98	9.49
7	Chan	10002.79	10006.69	73.92	9.13	3.97	18.95	2.34	8.09
8	Chan	10006.69	10010.60	39.70	6.29	3.97	10.18	1.61	6.31
9	Chan	10010.60	10014.50	14.57	3.45	3.97	3.74	0.88	4.23
10	ROB	10014.50	10025.03	1.13	0.73	2.85	0.29	0.26	1.55

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.16	9982.67	0.00	0.01	0.17	0.00	0.05	0.40
2	LOB	9982.67	9987.17	3.22	1.70	4.55	0.83	0.38	1.90
3	Chan	9987.17	9991.07	19.25	4.15	3.97	4.93	1.06	4.64
4	Chan	9991.07	9994.98	46.11	7.01	3.97	11.82	1.80	6.57
5	Chan	9994.98	9998.88	82.33	9.94	3.98	21.11	2.55	8.28
6	Chan	9998.88	10002.79	109.12	11.76	3.98	27.98	3.01	9.28
7	Chan	10002.79	10006.69	73.54	9.28	3.97	18.86	2.38	7.92
8	Chan	10006.69	10010.60	39.96	6.44	3.97	10.25	1.65	6.21
9	Chan	10010.60	10014.50	15.12	3.59	3.97	3.88	0.92	4.21
10	ROB	10014.50	10025.03	1.35	0.83	2.88	0.35	0.30	1.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 1.168

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9942.592	2321.28	9951.982	2320.76	9975.892	2319.44	9980.562	2319.27	9981.722	2319.28
9986.002	2319.04	9986.262	2319.03	9989.32	318.28	19989.302	2318.28	99932	317.373
9997.492	2316.27	9999.532	2315.83	10013.25	2317.21	10017.4	2317.71	100202	318.018
10022.79	2318.34	10029.64	2319.16	10039.97	2320.41	10043.25	2320.81	10045.89	2320.89
10054.37	2321.43								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9942.592	.03	9993	.05	10020	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993	10020	107.43	115.69	117.41	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2319.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.92	Wt. n-Val.	0.030	0.050	0.055
W.S. Elev (ft)	2319.02	Reach Len. (ft)	107.43	115.69	117.41
Crit W.S. (ft)	2319.02	Flow Area (sq ft)	5.55	59.80	4.27
E.G. Slope (ft/ft)	0.024527	Area (sq ft)	5.55	59.80	4.27
Q Total (cfs)	518.00	Flow (cfs)	37.15	469.48	11.37
Top Width (ft)	42.20	Top Width (ft)	6.71	27.00	8.49
Vel Total (ft/s)	7.44	Avg. Vel. (ft/s)	6.70	7.85	2.66
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)	0.83	2.21	0.50
Conv. Total (cfs)	3307.6	Conv. (cfs)	237.2	2997.7	72.6
Length Wtd. (ft)	115.13	Wetted Per. (ft)	6.91	27.30	8.55
Min Ch El (ft)	2315.83	Shear (lb/sq ft)	1.23	3.35	0.76
Alpha	1.07	Stream Power (lb/ft s)	8.23	26.33	2.04
Frctn Loss (ft)	2.71	Cum Volume (acre-ft)	3.50	6.80	3.02

C & E Loss (ft)	0.01	Cum SA (acres)	3.42	2.87	3.34

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2320.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.12	Wt. n-Val.		0.050	
W.S. Elev (ft)	2319.07	Reach Len. (ft)	107.43	115.69	117.41
Crit W.S. (ft)	2319.07	Flow Area (sq ft)		60.99	
E.G. Slope (ft/ft)	0.031775	Area (sq ft)		60.99	
Q Total (cfs)	518.00	Flow (cfs)		518.00	
Top Width (ft)	27.00	Top Width (ft)		27.00	
Vel Total (ft/s)	8.49	Avg. Vel. (ft/s)		8.49	
Max Chl Dpth (ft)	3.24	Hydr. Depth (ft)		2.26	
Conv. Total (cfs)	2905.9	Conv. (cfs)		2905.9	
Length Wtd. (ft)	115.69	Wetted Per. (ft)		30.04	
Min Ch El (ft)	2315.83	Shear (lb/sq ft)		4.03	
Alpha	1.00	Stream Power (lb/ft s)		34.20	
Frctn Loss (ft)	3.57	Cum Volume (acre-ft)	2.22	7.23	1.63
C & E Loss (ft)	0.01	Cum SA (acres)	1.45	2.87	1.14

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9982.92	9993.00	37.15	5.55	6.91	7.17	0.83	6.70
2	Chan	9993.00	9996.86	59.52	8.19	3.97	11.49	2.12	7.26
3	Chan	9996.86	10000.71	105.01	11.47	3.93	20.27	2.97	9.16
4	Chan	10000.71	10004.57	100.51	11.11	3.88	19.40	2.88	9.05
5	Chan	10004.57	10008.43	78.97	9.61	3.88	15.24	2.49	8.21
6	Chan	10008.43	10012.29	59.56	8.12	3.88	11.50	2.10	7.34
7	Chan	10012.29	10016.14	41.47	6.54	3.88	8.01	1.69	6.34
8	Chan	10016.14	10020.00	24.45	4.76	3.88	4.72	1.23	5.13
9	ROB	10020.00	10026.87	11.25	4.12	6.92	2.17	0.60	2.73
10	ROB	10026.87	10033.75	0.12	0.15	1.63	0.02	0.10	0.81

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9993.00	9996.86	53.84	8.36	5.67	10.39	2.17	6.44
2	Chan	9996.86	10000.71	119.20	11.64	3.93	23.01	3.02	10.24
3	Chan	10000.71	10004.57	114.18	11.28	3.88	22.04	2.92	10.12
4	Chan	10004.57	10008.43	90.06	9.78	3.88	17.39	2.54	9.21
5	Chan	10008.43	10012.29	68.29	8.29	3.88	13.18	2.15	8.24
6	Chan	10012.29	10016.14	47.94	6.71	3.88	9.26	1.74	7.15
7	Chan	10016.14	10020.00	24.48	4.93	4.93	4.73	1.28	4.96

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 1.146

INPUT

Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9941.195	2315.95	9968.325	2314.27	9972.915	2313.91	9974.065	2313.99	9977.485	2313.58
9984.582	312.344	99882	311.748	99892	311.5739	989.765	2311.441	0000.55	2309.57
10005.34	2310.88	10011.81	2312.51	10018.66	2313.391	0031.54	2315.11	10043.8	2316.01

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9941.195	.05	9989	.05	10011.81	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989	10011.81	108.72	105.93	103.96	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2314.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2313.36	Reach Len. (ft)	108.72	105.93	103.96
Crit W.S. (ft)	2313.36	Flow Area (sq ft)	9.10	57.92	2.81
E.G. Slope (ft/ft)	0.022623	Area (sq ft)	9.10	57.92	2.81
Q Total (cfs)	518.00	Flow (cfs)	37.30	474.25	6.45
Top Width (ft)	39.61	Top Width (ft)	10.22	22.81	6.58
Vel Total (ft/s)	7.42	Avg. Vel. (ft/s)	4.10	8.19	2.29
Max Chl Dpth (ft)	3.78	Hydr. Depth (ft)	0.89	2.54	0.43
Conv. Total (cfs)	3444.0	Conv. (cfs)	248.0	3153.1	42.9
Length Wtd. (ft)	105.98	Wetted Per. (ft)	10.38	23.36	6.64
Min Ch El (ft)	2309.57	Shear (lb/sq ft)	1.24	3.50	0.60
Alpha	1.14	Stream Power (lb/ft s)	5.08	28.68	1.37
Frctn Loss (ft)	2.18	Cum Volume (acre-ft)	3.48	6.65	3.01
C & E Loss (ft)	0.04	Cum SA (acres)	3.39	2.80	3.32

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2314.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.25	Wt. n-Val.		0.050	0.055
W.S. Elev (ft)	2313.35	Reach Len. (ft)	108.72	105.93	103.96
Crit W.S. (ft)	2313.35	Flow Area (sq ft)		57.78	0.16
E.G. Slope (ft/ft)	0.029964	Area (sq ft)		57.78	0.16
Q Total (cfs)	518.00	Flow (cfs)		517.78	0.22
Top Width (ft)	23.00	Top Width (ft)		22.81	0.19
Vel Total (ft/s)	8.94	Avg. Vel. (ft/s)		8.96	1.36
Max Chl Dpth (ft)	3.78	Hydr. Depth (ft)		2.53	0.84
Conv. Total (cfs)	2992.5	Conv. (cfs)		2991.2	1.3
Length Wtd. (ft)	106.02	Wetted Per. (ft)		25.13	1.02
Min Ch El (ft)	2309.57	Shear (lb/sq ft)		4.30	0.29
Alpha	1.00	Stream Power (lb/ft s)		38.54	0.40
Frctn Loss (ft)	2.75	Cum Volume (acre-ft)	2.22	7.07	1.63
C & E Loss (ft)	0.07	Cum SA (acres)	1.45	2.80	1.14

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.88	9979.44	0.02	0.04	0.67	0.00	0.06	0.64
2	LOB	9979.44	9989.00	37.27	9.07	9.70	7.20	0.95	4.11
3	Chan	9989.00	9992.26	46.08	6.73	3.31	8.90	2.06	6.85
4	Chan	9992.26	9995.52	68.94	8.57	3.31	13.31	2.63	8.05
5	Chan	9995.52	9998.78	95.37	10.41	3.31	18.41	3.19	9.16
6	Chan	9998.78	10002.03	116.09	11.76	3.34	22.41	3.61	9.87
7	Chan	10002.03	10005.29	81.57	9.56	3.38	15.75	2.93	8.53
8	Chan	10005.29	10008.55	46.11	6.77	3.36	8.90	2.08	6.81
9	Chan	10008.55	10011.81	20.10	4.12	3.36	3.88	1.26	4.88
10	ROB	10011.81	10018.21	6.45	2.81	6.45	1.25	0.44	2.29
11	ROB	10018.21	10024.61	0.00	0.00	0.19	0.00	0.01	0.21

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9989.00	9992.26	38.67	6.71	5.08	7.46	2.06	5.76
2	Chan	9992.26	9995.52	77.12	8.55	3.31	14.89	2.62	9.02
3	Chan	9995.52	9998.78	106.77	10.39	3.31	20.61	3.19	10.27
4	Chan	9998.78	10002.03	130.00	11.74	3.34	25.10	3.60	11.07
5	Chan	10002.03	10005.29	91.29	9.54	3.38	17.62	2.93	9.57
6	Chan	10005.29	10008.55	51.53	6.75	3.36	9.95	2.07	7.63
7	Chan	10008.55	10011.81	22.40	4.10	3.36	4.32	1.26	5.47
8	ROB	10011.81	10018.21	0.22	0.16	1.02	0.04	0.84	1.36

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 1.126

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9956.702	2309.99	9956.862	2309.97	9962.492	2309.55	9969.392	2308.95	9975.062	2308.34
9979.752	2307.92	9990.202	2306.81	9992.452	2306.14	9994.212	2305.63	9999.682	2303.98
10008.51	2305.43	10013	2306.14	10013.32	2306.21	10021.86	2306.94	10043.63	2308.62
10045.57	2308.42	10049.9	2308.61	10053.48	2308.95	10064.09	2310.01		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9956.702	.05	9992.45	.05	10013	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.45	10013	152.69	152.46	162.09	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
10039.66	10064.09	2312

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2308.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.84	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2307.81	Reach Len. (ft)	152.69	152.46	162.09
Crit W.S. (ft)	2307.81	Flow Area (sq ft)	7.73	56.36	16.07
E.G. Slope (ft/ft)	0.018828	Area (sq ft)	7.73	56.36	16.07
Q Total (cfs)	518.00	Flow (cfs)	23.72	443.20	51.08
Top Width (ft)	52.40	Top Width (ft)	11.69	20.55	20.17
Vel Total (ft/s)	6.46	Avg. Vel. (ft/s)	3.07	7.86	3.18
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)	0.66	2.74	0.80
Conv. Total (cfs)	3775.1	Conv. (cfs)	172.9	3230.0	372.3
Length Wtd. (ft)	154.92	Wetted Per. (ft)	11.84	21.04	20.24
Min Ch El (ft)	2303.98	Shear (lb/sq ft)	0.77	3.15	0.93
Alpha	1.30	Stream Power (lb/ft s)	2.36	24.76	2.97
Frctn Loss (ft)	3.70	Cum Volume (acre-ft)	3.46	6.51	2.98
C & E Loss (ft)	0.04	Cum SA (acres)	3.37	2.75	3.29

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2308.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.03	Wt. n-Val.	0.050	0.050	
W.S. Elev (ft)	2307.90	Reach Len. (ft)	152.69	152.46	162.09
Crit W.S. (ft)	2307.90	Flow Area (sq ft)	8.78	58.20	
E.G. Slope (ft/ft)	0.022621	Area (sq ft)	8.78	58.20	
Q Total (cfs)	518.00	Flow (cfs)	32.03	485.97	
Top Width (ft)	32.20	Top Width (ft)	11.65	20.55	
Vel Total (ft/s)	7.73	Avg. Vel. (ft/s)	3.65	8.35	
Max Chl Dpth (ft)	3.92	Hydr. Depth (ft)	0.75	2.83	
Conv. Total (cfs)	3444.1	Conv. (cfs)	213.0	3231.2	
Length Wtd. (ft)	153.25	Wetted Per. (ft)	11.89	22.80	
Min Ch El (ft)	2303.98	Shear (lb/sq ft)	1.04	3.61	
Alpha	1.11	Stream Power (lb/ft s)	3.80	30.10	
Frctn Loss (ft)	4.01	Cum Volume (acre-ft)	2.21	6.93	1.63
C & E Loss (ft)	0.00	Cum SA (acres)	1.44	2.75	1.14

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.15	9985.30	1.50	1.09	4.56	0.29	0.24	1.37
2	LOB	9985.30	9992.45	22.22	6.64	7.27	4.29	0.93	3.35
3	Chan	9992.45	9995.39	38.97	6.16	3.06	7.52	2.10	6.33
4	Chan	9995.39	9998.32	69.86	8.75	3.07	13.49	2.98	7.99
5	Chan	9998.32	10001.26	99.86	10.77	3.02	19.28	3.67	9.27
6	Chan	10001.26	10004.19	85.95	9.79	2.98	16.59	3.33	8.78
7	Chan	10004.19	10007.13	66.22	8.37	2.97	12.78	2.85	7.91
8	Chan	10007.13	10010.06	48.69	6.96	2.97	9.40	2.37	7.00
9	Chan	10010.06	10013.00	33.65	5.57	2.97	6.50	1.90	6.04
10	ROB	10013.00	10023.22	44.57	12.25	10.26	8.60	1.20	3.64
11	ROB	10023.22	10033.44	6.51	3.82	9.98	1.26	0.38	1.70

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.15	9985.30	2.83	1.50	4.62	0.55	0.33	1.89
2	LOB	9985.30	9992.45	29.20	7.28	7.27	5.64	1.02	4.01
3	Chan	9992.45	9995.39	44.42	6.42	3.06	8.57	2.19	6.92
4	Chan	9995.39	9998.32	78.02	9.01	3.07	15.06	3.07	8.66
5	Chan	9998.32	10001.26	110.51	11.03	3.02	21.33	3.76	10.02
6	Chan	10001.26	10004.19	95.49	10.05	2.98	18.43	3.42	9.50
7	Chan	10004.19	10007.13	74.11	8.63	2.97	14.31	2.94	8.59
8	Chan	10007.13	10010.06	55.06	7.22	2.97	10.63	2.46	7.63
9	Chan	10010.06	10013.00	28.36	5.84	4.73	5.48	1.99	4.86

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 1.097

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9938.738	2303.09	9941.188	2302.86	9942.608	2302.74	9945.868	2302.48	9949.268	2302.02
9952.908	2301.54	9955.018	2301.33	9957.838	2301.11	9959.378	2301.08	9975.668	2299.3
9977.148	2299.21	9981.518	2298.67	9985.65	2297.96	9988.168	2297.53	9988.258	2297.52
9988.888	2297.39	9994.848	2297.87	9997.518	2298.11	0001.87	2298.15	10004.7	2298.15
10016.54	2298.58	10018.33	2298.67	10019.55	2298.25	10023.74	2297.12	10025.61	2297.59
10027.17	2298.48	10031.17	2300.79	10034.32	2302.58	10036.21	2303.51		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9938.738	.055	9985.65	.05	10004.7	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.65	10004.7	81.05	79.14	78.76	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2300.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2299.68	Reach Len. (ft)	81.05	79.14	78.76
Crit W.S. (ft)	2299.68	Flow Area (sq ft)	10.18	34.33	35.48
E.G. Slope (ft/ft)	0.031216	Area (sq ft)	10.18	34.33	35.48
Q Total (cfs)	518.00	Flow (cfs)	40.08	266.22	211.70
Top Width (ft)	57.07	Top Width (ft)	13.47	19.05	24.54
Vel Total (ft/s)	6.48	Avg. Vel. (ft/s)	3.94	7.75	5.97

Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	0.76	1.80	1.45
Conv. Total (cfs)	2931.8	Conv. (cfs)	226.8	1506.8	1198.2
Length Wtd. (ft)	79.18	Wetted Per. (ft)	13.59	19.13	25.39
Min Ch El (ft)	2297.39	Shear (lb/sq ft)	1.46	3.50	2.72
Alpha	1.11	Stream Power (lb/ft s)	5.75	27.12	16.25
Frctn Loss (ft)	2.13	Cum Volume (acre-ft)	3.43	6.35	2.89
C & E Loss (ft)	0.02	Cum SA (acres)	3.32	2.68	3.20

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2301.17	Element			
Vel Head (ft)	1.05	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2300.12	Reach Len. (ft)	81.05	79.14	78.76
Crit W.S. (ft)	2300.12	Flow Area (sq ft)	9.54	42.76	13.44
E.G. Slope (ft/ft)	0.030545	Area (sq ft)	9.54	42.76	13.44
Q Total (cfs)	518.00	Flow (cfs)	55.40	379.74	82.86
Top Width (ft)	32.00	Top Width (ft)	5.65	19.05	7.30
Vel Total (ft/s)	7.88	Avg. Vel. (ft/s)	5.81	8.88	6.16
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	1.69	2.24	1.84
Conv. Total (cfs)	2963.9	Conv. (cfs)	317.0	2172.8	474.1
Length Wtd. (ft)	79.27	Wetted Per. (ft)	6.99	19.13	9.01
Min Ch El (ft)	2297.39	Shear (lb/sq ft)	2.60	4.26	2.84
Alpha	1.09	Stream Power (lb/ft s)	15.12	37.85	17.53
Frctn Loss (ft)	2.07	Cum Volume (acre-ft)	2.18	6.75	1.61
C & E Loss (ft)	0.02	Cum SA (acres)	1.41	2.68	1.13

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9966.89	9976.27	1.40	0.91	4.11	0.27	0.22	1.54
2	LOB	9976.27	9985.65	38.68	9.27	9.48	7.47	0.99	4.17
3	Chan	9985.65	9988.37	42.77	5.31	2.76	8.26	1.95	8.05
4	Chan	9988.37	9991.09	52.80	6.01	2.74	10.19	2.21	8.78
5	Chan	9991.09	9993.81	45.00	5.45	2.73	8.69	2.00	8.25
6	Chan	9993.81	9996.54	36.99	4.85	2.73	7.14	1.78	7.63
7	Chan	9996.54	9999.26	30.64	4.33	2.73	5.91	1.59	7.08
8	Chan	9999.26	10001.98	29.24	4.21	2.72	5.64	1.55	6.95
9	Chan	10001.98	10004.70	28.80	4.17	2.72	5.56	1.53	6.91
10	ROB	10004.70	10011.00	53.38	8.93	6.31	10.30	1.42	5.98
11	ROB	10011.00	10017.30	39.75	7.48	6.31	7.67	1.19	5.31
12	ROB	10017.30	10023.61	69.26	10.58	6.52	13.37	1.68	6.55
13	ROB	10023.61	10029.91	49.31	8.49	6.26	9.52	1.51	5.81

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.27	9985.65	55.40	9.54	6.99	10.70	1.69	5.81
2	Chan	9985.65	9988.37	59.67	6.52	2.76	11.52	2.40	9.15
3	Chan	9988.37	9991.09	71.05	7.22	2.74	13.72	2.65	9.85
4	Chan	9991.09	9993.81	62.29	6.66	2.73	12.02	2.45	9.35
5	Chan	9993.81	9996.54	53.14	6.05	2.73	10.26	2.22	8.78
6	Chan	9996.54	9999.26	45.79	5.53	2.73	8.84	2.03	8.28
7	Chan	9999.26	10001.98	44.16	5.41	2.72	8.52	1.99	8.16
8	Chan	10001.98	10004.70	43.65	5.37	2.72	8.43	1.97	8.12
9	ROB	10004.70	10011.00	77.29	11.72	6.31	14.92	1.86	6.60
10	ROB	10011.00	10017.30	5.57	1.72	2.71	1.07	1.73	3.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X3
REACH: Reach 1 RS: 1.082

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9958.357	2299.96	9960.697	2299.66	9967.787	2298.79	9969.747	2298.51	9971.007	2298.36
9977.677	2297.56	9991.097	2295.15	9991.12	2295.14	99999.357	2293.64	10002.49	2293.99
10011.77	2295.25	10011.81	2295.27	10012.04	2295.27	10017.1	2295.51	10020.5	2296.21
10021.34	2296.61	10039.74	2298.74	10050.07	2300				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9958.357	.055	9991.1	.05	10011.77	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.11	10011.77	82.83	76.18	64.65	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2297.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.94	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2296.92	Reach Len. (ft)	82.83	76.18	64.65
Crit W.S. (ft)	2296.92	Flow Area (sq ft)	8.73	51.93	12.64
E.G. Slope (ft/ft)	0.023336	Area (sq ft)	8.73	51.93	12.64
Q Total (cfs)	518.00	Flow (cfs)	32.88	432.39	52.72
Top Width (ft)	42.78	Top Width (ft)	9.86	20.67	12.25
Vel Total (ft/s)	7.07	Avg. Vel. (ft/s)	3.77	8.33	4.17
Max Chl Dpth (ft)	3.28	Hydr. Depth (ft)	0.89	2.51	1.03
Conv. Total (cfs)	3390.9	Conv. (cfs)	215.3	2830.5	345.1
Length Wtd. (ft)	75.72	Wetted Per. (ft)	10.02	20.91	12.44
Min Ch El (ft)	2293.64	Shear (lb/sq ft)	1.27	3.62	1.48
Alpha	1.21	Stream Power (lb/ft s)	4.78	30.12	6.17
Frctn Loss (ft)	1.77	Cum Volume (acre-ft)	3.41	6.27	2.84
C & E Loss (ft)	0.01	Cum SA (acres)	3.30	2.64	3.17

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2297.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.98	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2297.00	Reach Len. (ft)	82.83	76.18	64.65
Crit W.S. (ft)	2297.00	Flow Area (sq ft)	9.53	53.60	6.98
E.G. Slope (ft/ft)	0.022618	Area (sq ft)	9.53	53.60	6.98
Q Total (cfs)	518.00	Flow (cfs)	37.23	448.68	32.09
Top Width (ft)	34.78	Top Width (ft)	9.86	20.67	4.25
Vel Total (ft/s)	7.39	Avg. Vel. (ft/s)	3.91	8.37	4.60
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)	0.97	2.59	1.64
Conv. Total (cfs)	3444.3	Conv. (cfs)	247.6	2983.4	213.4
Length Wtd. (ft)	76.02	Wetted Per. (ft)	10.10	20.91	5.80
Min Ch El (ft)	2293.64	Shear (lb/sq ft)	1.33	3.62	1.70
Alpha	1.16	Stream Power (lb/ft s)	5.21	30.30	7.81
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	2.16	6.67	1.59
C & E Loss (ft)	0.01	Cum SA (acres)	1.39	2.64	1.12

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.00	9984.55	1.59	0.99	3.37	0.31	0.30	1.61
2	LOB	9984.55	9991.10	31.30	7.75	6.65	6.04	1.18	4.04
3	Chan	9991.10	9994.05	42.82	6.03	3.00	8.27	2.04	7.10
4	Chan	9994.05	9997.01	63.28	7.62	3.00	12.22	2.58	8.31
5	Chan	9997.01	9999.96	86.16	9.16	3.00	16.63	3.10	9.40
6	Chan	9999.96	10002.91	84.07	9.00	2.97	16.23	3.05	9.34
7	Chan	10002.91	10005.86	67.43	7.89	2.98	13.02	2.67	8.54
8	Chan	10005.86	10008.82	51.41	6.71	2.98	9.93	2.27	7.67
9	Chan	10008.82	10011.77	37.21	5.52	2.98	7.18	1.87	6.74
10	ROB	10011.77	10019.43	49.56	10.92	7.72	9.57	1.43	4.54
11	ROB	10019.43	10027.09	3.17	1.72	4.72	0.61	0.38	1.84

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.00	9984.55	2.33	1.25	3.44	0.45	0.38	1.86
2	LOB	9984.55	9991.10	34.91	8.27	6.65	6.74	1.26	4.22
3	Chan	9991.10	9994.05	45.01	6.27	3.00	8.69	2.12	7.18
4	Chan	9994.05	9997.01	65.64	7.86	3.00	12.67	2.66	8.36
5	Chan	9997.01	9999.96	88.61	9.40	3.00	17.11	3.18	9.43
6	Chan	9999.96	10002.91	86.53	9.24	2.97	16.70	3.13	9.37
7	Chan	10002.91	10005.86	69.83	8.13	2.98	13.48	2.75	8.59
8	Chan	10005.86	10008.82	53.70	6.94	2.98	10.37	2.35	7.73
9	Chan	10008.82	10011.77	39.34	5.76	2.98	7.60	1.95	6.83
10	ROB	10011.77	10019.43	32.09	6.98	5.80	6.20	1.64	4.60

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 1.068

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9952.27	2298.08	9970.54	2295.65	9972.5	2295.43	9977.25	2294.77	9977.6	2294.77
9988.29	2292.4	9999.46	2289.88	10012.83	2292.39	10015.85	2292.91	10042.17	2295.95
10046.89	2296.54	10049.33	2296.86	10055.98	2297.54	10056.17	2297.54	10056.51	2297.55
10063.05	2297.72								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9952.27	.05	9988.29	.05	10012.83	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.29	10012.83	139.57	124.31	123.85	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2294.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.00	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2293.60	Reach Len. (ft)	139.57	124.31	123.85
Crit W.S. (ft)	2293.60	Flow Area (sq ft)	3.25	60.45	4.94
E.G. Slope (ft/ft)	0.023371	Area (sq ft)	3.25	60.45	4.94
Q Total (cfs)	518.00	Flow (cfs)	10.35	494.08	13.57
Top Width (ft)	38.96	Top Width (ft)	5.42	24.54	9.00
Vel Total (ft/s)	7.55	Avg. Vel. (ft/s)	3.18	8.17	2.75
Max Chl Dpth (ft)	3.72	Hydr. Depth (ft)	0.60	2.46	0.55
Conv. Total (cfs)	3388.4	Conv. (cfs)	67.7	3231.9	88.8
Length Wtd. (ft)	130.17	Wetted Per. (ft)	5.55	25.05	9.08
Min Ch El (ft)	2289.88	Shear (lb/sq ft)	0.86	3.52	0.79
Alpha	1.13	Stream Power (lb/ft s)	2.72	28.77	2.18
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	3.40	6.17	2.83
C & E Loss (ft)	0.14	Cum SA (acres)	3.29	2.60	3.16

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2294.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.05	Wt. n-Val.	0.050	0.050	0.055
W.S. Elev (ft)	2293.57	Reach Len. (ft)	139.57	124.31	123.85
Crit W.S. (ft)	2293.57	Flow Area (sq ft)	3.07	59.63	2.76
E.G. Slope (ft/ft)	0.024904	Area (sq ft)	3.07	59.63	2.76

Q Total (cfs)	518.00	Flow (cfs)	9.90	498.45	9.65
Top Width (ft)	32.80	Top Width (ft)	5.26	24.54	3.00
Vel Total (ft/s)	7.91	Avg. Vel. (ft/s)	3.22	8.36	3.50
Max Chl Dpth (ft)	3.69	Hydr. Depth (ft)	0.58	2.43	0.92
Conv. Total (cfs)	3282.4	Conv. (cfs)	62.7	3158.6	61.1
Length Wtd. (ft)	130.72	Wetted Per. (ft)	5.39	25.05	3.70
Min Ch El (ft)	2289.88	Shear (lb/sq ft)	0.89	3.70	1.16
Alpha	1.08	Stream Power (lb/ft s)	2.85	30.93	4.05
Frctn Loss (ft)	1.74	Cum Volume (acre-ft)	2.15	6.57	1.58
C & E Loss (ft)	0.04	Cum SA (acres)	1.38	2.60	1.11

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9981.09	9988.29	10.35	3.25	5.55	2.00	0.60	3.18
2	Chan	9988.29	9991.80	32.69	5.60	3.59	6.31	1.60	5.84
3	Chan	9991.80	9995.30	63.94	8.37	3.59	12.34	2.39	7.64
4	Chan	9995.30	9998.81	103.02	11.14	3.59	19.89	3.18	9.25
5	Chan	9998.81	10002.31	120.83	12.23	3.57	23.33	3.49	9.88
6	Chan	10002.31	10005.82	86.66	10.01	3.57	16.73	2.86	8.65
7	Chan	10005.82	10009.32	56.00	7.71	3.57	10.81	2.20	7.27
8	Chan	10009.32	10012.83	30.95	5.40	3.57	5.97	1.54	5.73
9	ROB	10012.83	10022.87	13.57	4.94	9.08	2.62	0.55	2.75

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9981.09	9988.29	9.90	3.07	5.39	1.91	0.58	3.22
2	Chan	9988.29	9991.80	32.53	5.48	3.59	6.28	1.56	5.94
3	Chan	9991.80	9995.30	64.38	8.25	3.59	12.43	2.35	7.80
4	Chan	9995.30	9998.81	104.34	11.02	3.59	20.14	3.14	9.47
5	Chan	9998.81	10002.31	122.58	12.11	3.57	23.66	3.46	10.12
6	Chan	10002.31	10005.82	87.60	9.90	3.57	16.91	2.82	8.85
7	Chan	10005.82	10009.32	56.27	7.59	3.57	10.86	2.16	7.42
8	Chan	10009.32	10012.83	30.75	5.28	3.57	5.94	1.51	5.82
9	ROB	10012.83	10022.87	9.65	2.76	3.70	1.86	0.92	3.50

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

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 1.044

INPUT
Description: 20th Street
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9909.777	2293.259	914.117	2292.899	916.237	2292.789	919.127	2292.579	920.277	2292.47
9924.307	2292.199	928.027	2291.569	931.397	2291.119	937.477	2290.479	939.127	2290.3
9939.737	2290.219	939.857	2290.29	942.287	2289.999	945.127	2289.819	945.717	2289.82
9950.037	2289.499	952.727	2289.319	955.377	2289.089	962.807	2288.879	966.837	2288.8
9971.487	2288.839	975.587	2288.889	985.967	2289.059	987.307	2289.069	990.647	2289.18
9994.267	2289.68	9994.272	289.679	997.157	2288.921	003.05	2289.761	007.21	2289.95
10008.31	2289.931	013.37	2289.951	017.87	2289.951	019.75	2289.291	023.82	2288.2
10027.21	2288.591	031.52	2289.181	035.67	2290.071	038.41	2290.611	045.92	2291.98
10048.01	2292.611	049.41	2292.521	053.05	2292.971	054.06	2293.121	057.11	2293.73
10060	2294.161	062.87	2294.631	064.68	2294.911	066.35	2295.181	067.97	2295.46
10068.78	2295.59								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val

9909.777 .049939.127 .02510003.05 .0510035.67 .055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.27	10003.05		71.67	81.98	92.03	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2290.84	Element			
Vel Head (ft)	0.51	Wt. n-Val.	0.025	0.025	0.050
W.S. Elev (ft)	2290.33	Reach Len. (ft)	71.67	81.98	92.03
Crit W.S. (ft)	2290.33	Flow Area (sq ft)	62.91	8.80	29.74
E.G. Slope (ft/ft)	0.009158	Area (sq ft)	62.91	8.80	29.74
Q Total (cfs)	518.00	Flow (cfs)	390.23	49.57	78.20
Top Width (ft)	98.14	Top Width (ft)	55.43	8.78	33.94
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)	6.20	5.63	2.63
Max Chl Dpth (ft)	2.13	Hydr. Depth (ft)	1.14	1.00	0.88
Conv. Total (cfs)	5413.0	Conv. (cfs)	4077.8	518.0	817.1
Length Wtd. (ft)	78.20	Wetted Per. (ft)	55.52	8.94	34.38
Min Ch El (ft)	2288.92	Shear (lb/sq ft)	0.65	0.56	0.49
Alpha	1.27	Stream Power (lb/ft s)	4.02	3.17	1.30
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	3.30	6.07	2.78
C & E Loss (ft)	0.02	Cum SA (acres)	3.19	2.55	3.09

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2291.82	Element			
Vel Head (ft)	0.92	Wt. n-Val.	0.025	0.025	
W.S. Elev (ft)	2290.90	Reach Len. (ft)	71.67	81.98	92.03
Crit W.S. (ft)	2290.90	Flow Area (sq ft)	53.86	13.82	
E.G. Slope (ft/ft)	0.008277	Area (sq ft)	53.86	13.82	
Q Total (cfs)	518.00	Flow (cfs)	425.72	92.28	
Top Width (ft)	37.13	Top Width (ft)	28.35	8.78	
Vel Total (ft/s)	7.65	Avg. Vel. (ft/s)	7.90	6.68	
Max Chl Dpth (ft)	2.10	Hydr. Depth (ft)	1.90	1.57	
Conv. Total (cfs)	5693.7	Conv. (cfs)	4679.4	1014.3	
Length Wtd. (ft)	76.84	Wetted Per. (ft)	30.47	10.08	
Min Ch El (ft)	2288.92	Shear (lb/sq ft)	0.91	0.71	
Alpha	1.01	Stream Power (lb/ft s)	7.22	4.73	
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)	2.06	6.46	1.58
C & E Loss (ft)	0.05	Cum SA (acres)	1.33	2.55	1.11

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9926.68	9943.57	2.41	1.12	4.75	0.46	0.24	2.14
2	LOB	9943.57	9960.47	85.02	16.19	16.93	16.41	0.96	5.25
3	LOB	9960.47	9977.37	175.67	25.00	16.90	33.91	1.48	7.03
4	LOB	9977.37	9994.27	127.13	20.61	16.94	24.54	1.22	6.17
5	Chan	9994.27	9995.52	4.83	1.02	1.30	0.93	0.82	4.72
6	Chan	9995.52	9996.78	8.51	1.44	1.30	1.64	1.14	5.92
7	Chan	9996.78	9998.03	11.32	1.69	1.28	2.19	1.35	6.68
8	Chan	9998.03	9999.29	9.28	1.50	1.27	1.79	1.20	6.19
9	Chan	9999.29	10000.54	7.08	1.27	1.27	1.37	1.02	5.55
10	Chan	10000.54	10001.80	5.13	1.05	1.27	0.99	0.84	4.88
11	Chan	10001.80	10003.05	3.44	0.83	1.27	0.66	0.66	4.16
12	ROB	10003.05	10016.20	7.62	5.44	13.15	1.47	0.41	1.40
13	ROB	10016.20	10029.34	57.03	18.37	13.44	11.01	1.40	3.10
14	ROB	10029.34	10042.49	13.54	5.92	7.78	2.61	0.77	2.29

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9960.47	9977.37	184.69	23.59	13.54	35.65	2.06	7.83
2	LOB	9977.37	9994.27	241.03	30.27	16.94	46.53	1.79	7.96
3	Chan	9994.27	9995.52	10.79	1.74	1.30	2.08	1.39	6.21

4	Chan	9995.52	9996.78	15.41	2.15	1.30	2.97	1.72	7.15
5	Chan	9996.78	9998.03	18.80	2.41	1.28	3.63	1.92	7.80
6	Chan	9998.03	9999.29	16.42	2.22	1.27	3.17	1.77	7.41
7	Chan	9999.29	10000.54	13.74	1.99	1.27	2.65	1.59	6.90
8	Chan	10000.54	10001.80	11.27	1.77	1.27	2.17	1.41	6.37
9	Chan	10001.80	10003.05	5.85	1.54	2.41	1.13	1.23	3.79

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: 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: X3
REACH: Reach 1 RS: 1.029

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9930.015	2288.019	9934.375	2287.379	9937.475	2287.049	9945.145	2285.989	9945.425	2285.95
9946.555	2285.819	9956.035	2285.599	9965.465	2285.419	9968.315	2285.399	9972.615	2285.42
9979.805	2284.739	9980.735	2284.739	9985.865	2284.779	9986.405	2284.789	9986.735	2284.78
9987.805	2284.56	9989.52	2284.141	9999.095	2281.81	10008.22	2284.163	10011.45	2285
10013.23	2285.471	10017.42	2285.941	10023.65	2286.491	10034.96	2287.77		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9930.015	.055	9989.52	.051	10008.22	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.52	10008.22	64.6	95.01	103.66	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2286.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2286.02	Reach Len. (ft)	64.60	95.01	103.66
Crit W.S. (ft)	2286.02	Flow Area (sq ft)	32.53	56.97	7.42
E.G. Slope (ft/ft)	0.014140	Area (sq ft)	32.53	56.97	7.42
Q Total (cfs)	518.00	Flow (cfs)	84.40	414.47	19.13
Top Width (ft)	73.51	Top Width (ft)	44.68	18.70	10.13
Vel Total (ft/s)	5.34	Avg. Vel. (ft/s)	2.59	7.28	2.58
Max Chl Dpth (ft)	4.22	Hydr. Depth (ft)	0.73	3.05	0.73
Conv. Total (cfs)	4356.2	Conv. (cfs)	709.8	3485.5	160.9
Length Wtd. (ft)	91.12	Wetted Per. (ft)	44.80	19.28	10.33
Min Ch El (ft)	2281.80	Shear (lb/sq ft)	0.64	2.61	0.63
Alpha	1.53	Stream Power (lb/ft s)	1.66	18.97	1.64
Frctn Loss (ft)	1.49	Cum Volume (acre-ft)	3.22	6.01	2.74
C & E Loss (ft)	0.01	Cum SA (acres)	3.11	2.53	3.05

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2286.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.055	0.050	
W.S. Elev (ft)	2286.00	Reach Len. (ft)	64.60	95.01	103.66
Crit W.S. (ft)	2286.00	Flow Area (sq ft)	28.77	56.56	
E.G. Slope (ft/ft)	0.017374	Area (sq ft)	28.77	56.56	
Q Total (cfs)	518.00	Flow (cfs)	90.75	427.25	
Top Width (ft)	52.70	Top Width (ft)	34.00	18.70	
Vel Total (ft/s)	6.07	Avg. Vel. (ft/s)	3.15	7.55	
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)	0.85	3.02	
Conv. Total (cfs)	3929.9	Conv. (cfs)	688.5	3241.4	
Length Wtd. (ft)	90.46	Wetted Per. (ft)	34.51	21.12	
Min Ch El (ft)	2281.80	Shear (lb/sq ft)	0.90	2.90	
Alpha	1.32	Stream Power (lb/ft s)	2.85	21.94	
Frctn Loss (ft)	1.91	Cum Volume (acre-ft)	1.99	6.40	1.58
C & E Loss (ft)	0.03	Cum SA (acres)	1.28	2.53	1.11

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9941.92	9953.82	2.64	2.34	8.99	0.51	0.26	1.13
2	LOB	9953.82	9965.72	10.52	5.98	11.90	2.03	0.50	1.76
3	LOB	9965.72	9977.62	18.83	8.49	11.92	3.63	0.71	2.22
4	LOB	9977.62	9989.52	52.41	15.72	11.98	10.12	1.32	3.33
5	Chan	9989.52	9992.19	33.80	5.90	2.75	6.53	2.21	5.73
6	Chan	9992.19	9994.86	52.04	7.64	2.75	10.05	2.86	6.81
7	Chan	9994.86	9997.53	73.34	9.39	2.75	14.16	3.51	7.81
8	Chan	9997.53	10000.21	92.83	10.82	2.75	17.92	4.05	8.58
9	Chan	10000.21	10002.88	75.78	9.59	2.76	14.63	3.59	7.90
10	Chan	10002.88	10005.55	53.02	7.74	2.76	10.23	2.90	6.85
11	Chan	10005.55	10008.22	33.66	5.89	2.76	6.50	2.21	5.71
12	ROB	10008.22	10013.57	17.90	6.24	5.52	3.45	1.17	2.87
13	ROB	10013.57	10018.92	1.24	1.19	4.81	0.24	0.25	1.04

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.82	9965.72	10.13	5.08	10.60	1.95	0.50	1.99
2	LOB	9965.72	9977.62	20.93	8.23	11.92	4.04	0.69	2.54
3	LOB	9977.62	9989.52	59.69	15.46	11.98	11.52	1.30	3.86
4	Chan	9989.52	9992.19	35.50	5.84	2.75	6.85	2.19	6.08
5	Chan	9992.19	9994.86	54.86	7.58	2.75	10.59	2.84	7.24
6	Chan	9994.86	9997.53	77.50	9.33	2.75	14.96	3.49	8.31
7	Chan	9997.53	10000.21	98.23	10.76	2.75	18.96	4.03	9.13
8	Chan	10000.21	10002.88	80.10	9.53	2.76	15.46	3.57	8.40
9	Chan	10002.88	10005.55	55.90	7.68	2.76	10.79	2.88	7.28
10	Chan	10005.55	10008.22	25.15	5.83	4.60	4.86	2.18	4.31

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 1.011

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9936.913	2284	9937.733	2283.92	9942.913	2283.38	9946.833	2283.07	9951.883	2282.69
9955.593	2282.41	9990.72	2279.81	9990.723	2279.81	9995.773	2278.81	10000.13	2278.06
10008.95	2279.32	10011.33	2279.69	10011.99	2279.80	10017.39	2280.66	10037.61	2282.39
10042.23	2282.82	10057.13	2284.2						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9936.913	.055	9990.72	.05	10011.33	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.72	10011.33	116.52	107.73	75.48	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2282.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2281.50	Reach Len. (ft)	116.52	107.73	75.48
Crit W.S. (ft)	2281.50	Flow Area (sq ft)	19.25	53.91	12.10
E.G. Slope (ft/ft)	0.019089	Area (sq ft)	19.25	53.91	12.10
Q Total (cfs)	518.00	Flow (cfs)	64.07	416.38	37.55
Top Width (ft)	59.28	Top Width (ft)	22.81	20.61	15.86
Vel Total (ft/s)	6.08	Avg. Vel. (ft/s)	3.33	7.72	3.10
Max Chl Dpth (ft)	3.44	Hydr. Depth (ft)	0.84	2.62	0.76
Conv. Total (cfs)	3749.2	Conv. (cfs)	463.8	3013.7	271.7
Length Wtd. (ft)	103.94	Wetted Per. (ft)	22.87	20.89	15.97
Min Ch El (ft)	2278.06	Shear (lb/sq ft)	1.00	3.07	0.90
Alpha	1.36	Stream Power (lb/ft s)	3.34	23.75	2.80
Frctn Loss (ft)	2.19	Cum Volume (acre-ft)	3.18	5.89	2.72
C & E Loss (ft)	0.01	Cum SA (acres)	3.06	2.49	3.02

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2282.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.03	Wt. n-Val.	0.055	0.050	
W.S. Elev (ft)	2281.47	Reach Len. (ft)	116.52	107.73	75.48
Crit W.S. (ft)	2281.47	Flow Area (sq ft)	13.22	53.24	
E.G. Slope (ft/ft)	0.026325	Area (sq ft)	13.22	53.24	
Q Total (cfs)	518.00	Flow (cfs)	64.28	453.72	
Top Width (ft)	31.01	Top Width (ft)	10.40	20.61	
Vel Total (ft/s)	7.79	Avg. Vel. (ft/s)	4.86	8.52	
Max Chl Dpth (ft)	3.41	Hydr. Depth (ft)	1.27	2.58	
Conv. Total (cfs)	3192.6	Conv. (cfs)	396.2	2796.4	
Length Wtd. (ft)	105.32	Wetted Per. (ft)	11.31	22.66	
Min Ch El (ft)	2278.06	Shear (lb/sq ft)	1.92	3.86	
Alpha	1.10	Stream Power (lb/ft s)	9.34	32.91	
Frctn Loss (ft)	2.84	Cum Volume (acre-ft)	1.96	6.28	1.58
C & E Loss (ft)	0.01	Cum SA (acres)	1.24	2.49	1.11

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9958.44	9969.20	0.03	0.06	1.29	0.01	0.05	0.43
2	LOB	9969.20	9979.96	10.75	5.31	10.79	2.07	0.49	2.02
3	LOB	9979.96	9990.72	53.31	13.88	10.79	10.29	1.29	3.84
4	Chan	9990.72	9993.66	36.58	5.83	3.00	7.06	1.98	6.28
5	Chan	9993.66	9996.61	56.18	7.53	3.00	10.85	2.56	7.46
6	Chan	9996.61	9999.55	76.91	9.08	2.99	14.85	3.09	8.47
7	Chan	9999.55	10002.50	85.91	9.69	2.98	16.58	3.29	8.86
8	Chan	10002.50	10005.44	69.16	8.51	2.97	13.35	2.89	8.13
9	Chan	10005.44	10008.39	53.21	7.27	2.97	10.27	2.47	7.32
10	Chan	10008.39	10011.33	38.44	5.99	2.98	7.42	2.03	6.42
11	ROB	10011.33	10020.49	34.87	10.18	9.25	6.73	1.11	3.42
12	ROB	10020.49	10029.65	2.67	1.92	6.72	0.52	0.29	1.39

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.96	9990.72	64.28	13.22	11.31	12.41	1.27	4.86
2	Chan	9990.72	9993.66	40.57	5.73	3.00	7.83	1.95	7.08
3	Chan	9993.66	9996.61	62.70	7.44	3.00	12.10	2.53	8.43
4	Chan	9996.61	9999.55	86.14	8.99	2.99	16.63	3.05	9.58
5	Chan	9999.55	10002.50	96.33	9.60	2.98	18.60	3.26	10.03
6	Chan	10002.50	10005.44	77.37	8.41	2.97	14.94	2.86	9.20
7	Chan	10005.44	10008.39	59.33	7.18	2.97	11.45	2.44	8.27
8	Chan	10008.39	10011.33	31.28	5.89	4.75	6.04	2.00	5.31

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.991

```
INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9956.35 2280.279981.235 2276.549982.925 2276.359988.145  2275.6 9991.022275.178
 9993.932274.7519993.935 2274.759999.375 2273.96 10004.2 2274.4110011.79 2275.16
10011.97 2275.1610012.56 2275.1710013.04 2275.1710014.32 2275.0810015.84 2275.03
10071.37 2279.76

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9956.35    .055 9991.02     .0510011.79    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9991.0210011.79            143.03  141.28  135.29             .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)          2277.60    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.76    Wt. n-Val.                0.055      0.050     0.055
  W.S. Elev (ft)          2276.84    Reach Len. (ft)          143.03     141.28    135.29
  Crit W.S. (ft)          2276.84    Flow Area (sq ft)          9.71      47.49     26.34
  E.G. Slope (ft/ft)     0.023278    Area (sq ft)               9.71      47.49     26.34
  Q Total (cfs)            518.00    Flow (cfs)                34.86     371.97    111.17
  Top Width (ft)            57.94    Top Width (ft)            11.82      20.77     25.35
  Vel Total (ft/s)           6.20    Avg. Vel. (ft/s)           3.59       7.83      4.22
  Max Chl Dpth (ft)          2.88    Hydr. Depth (ft)           0.82       2.29      1.04
  Conv. Total (cfs)        3395.1    Conv. (cfs)               228.5     2438.0     728.6
  Length Wtd. (ft)         140.75    Wetted Per. (ft)          11.93      20.92     25.43
  Min Ch El (ft)          2273.96    Shear (lb/sq ft)           1.18       3.30      1.51
  Alpha                      1.27    Stream Power (lb/ft s)     4.25      25.84      6.35
  Frctn Loss (ft)            3.24    Cum Volume (acre-ft)       3.14       5.77      2.69
  C & E Loss (ft)            0.03    Cum SA (acres)             3.01       2.43      2.98

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)          2277.83    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.98    Wt. n-Val.                0.055      0.050     0.055
  W.S. Elev (ft)          2276.84    Reach Len. (ft)          143.03     141.28    135.29
  Crit W.S. (ft)          2276.84    Flow Area (sq ft)          3.39      47.49     17.34
  E.G. Slope (ft/ft)     0.027532    Area (sq ft)               3.39      47.49     17.34
  Q Total (cfs)            518.00    Flow (cfs)                14.56     404.53     98.91
  Top Width (ft)            33.84    Top Width (ft)             2.26      20.77     10.81
  Vel Total (ft/s)           7.59    Avg. Vel. (ft/s)           4.29       8.52      5.70
  Max Chl Dpth (ft)          2.88    Hydr. Depth (ft)           1.50       2.29      1.60
  Conv. Total (cfs)        3121.8    Conv. (cfs)                87.7     2438.0     596.1
  Length Wtd. (ft)         140.79    Wetted Per. (ft)           3.62      20.92     12.08
  Min Ch El (ft)          2273.96    Shear (lb/sq ft)           1.61       3.90      2.47
  Alpha                      1.10    Stream Power (lb/ft s)     6.91      33.24     14.08
  Frctn Loss (ft)            3.32    Cum Volume (acre-ft)       1.94       6.15      1.56
  C & E Loss (ft)            0.00    Cum SA (acres)             1.23       2.43      1.10

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: 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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                         (ft)        (ft)           (cfs)      (sq ft)    (ft)       Conv  Depth(ft)     (ft/s)
  1           LOB        9977.15     9984.09        2.89       1.65       4.93       0.56       0.34       1.75
  2           LOB        9984.09     9991.02       31.97       8.05       7.01       6.17       1.16       3.97
  3           Chan       9991.02     9993.99       37.94       5.59       3.00       7.32       1.88       6.79
  4           Chan       9993.99     9996.95       53.60       6.88       3.00      10.35       2.32       7.79
  5           Chan       9996.95     9999.92       70.72       8.12       2.99      13.65       2.74       8.71
  6           Chan       9999.92     10002.89      69.21       8.00       2.98      13.36       2.70       8.65
  7           Chan       10002.89    10005.86      57.65       7.17       2.98      11.13       2.42       8.04
  8           Chan       10005.86    10008.82      46.53       6.30       2.98       8.98       2.12       7.38
  9           Chan       10008.82    10011.79      36.32       5.43       2.98       7.01       1.83       6.68
  10          ROB        10011.79    10023.71      90.84      18.66      11.95      17.54       1.57       4.87
  11          ROB        10023.71    10035.62      20.28       7.59      11.96       3.91       0.64       2.67
  12          ROB        10035.62    10047.54       0.06       0.10       1.53       0.01       0.06       0.58

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: 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
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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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.09	9991.02	14.56	3.39	3.62	2.81	1.50	4.29
2	Chan	9991.02	9993.99	41.26	5.59	3.00	7.97	1.88	7.38
3	Chan	9993.99	9996.95	58.29	6.88	3.00	11.25	2.32	8.47
4	Chan	9996.95	9999.92	76.92	8.12	2.99	14.85	2.74	9.47
5	Chan	9999.92	10002.89	75.27	8.00	2.98	14.53	2.70	9.41
6	Chan	10002.89	10005.86	62.69	7.17	2.98	12.10	2.42	8.75
7	Chan	10005.86	10008.82	50.61	6.30	2.98	9.77	2.12	8.03
8	Chan	10008.82	10011.79	39.50	5.43	2.98	7.62	1.83	7.27
9	ROB	10011.79	10023.71	98.91	17.34	12.08	19.09	1.60	5.70

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.964

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9949.49	2276	9950.99	2275.79	9954.7	2275.35	9958.62	2274.9	9976.43	2272.46
9978.16	2272.2	9980.93	2271.77	9985.11	2271.16	9992.05	2270.28	9997.94	2267.92
10000.47	2267	10002.64	2267.86	10011.32	2271.61	10016.85	2271.95	10055.35	2274.75
10070.89	2276.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9949.49	.055	9992.05	.05	10011.32	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.05	10011.32	180.51	175.69	160.66	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2272.97	Element			
Vel Head (ft)	1.09	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2271.88	Reach Len. (ft)	180.51	175.69	160.66
Crit W.S. (ft)	2271.88	Flow Area (sq ft)	9.78	55.80	0.60
E.G. Slope (ft/ft)	0.022743	Area (sq ft)	9.78	55.80	0.60
Q Total (cfs)	518.00	Flow (cfs)	34.92	482.43	0.65
Top Width (ft)	35.43	Top Width (ft)	11.80	19.27	4.36
Vel Total (ft/s)	7.83	Avg. Vel. (ft/s)	3.57	8.65	1.09
Max Chl Dpth (ft)	4.88	Hydr. Depth (ft)	0.83	2.90	0.14
Conv. Total (cfs)	3434.8	Conv. (cfs)	231.6	3198.9	4.3
Length Wtd. (ft)	175.16	Wetted Per. (ft)	11.91	20.82	4.37
Min Ch El (ft)	2267.00	Shear (lb/sq ft)	1.17	3.80	0.20
Alpha	1.15	Stream Power (lb/ft s)	4.16	32.89	0.21
Frctn Loss (ft)	3.60	Cum Volume (acre-ft)	3.11	5.60	2.64
C & E Loss (ft)	0.10	Cum SA (acres)	2.97	2.37	2.94

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2272.97	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2271.96	Reach Len. (ft)	180.51	175.69	160.66
Crit W.S. (ft)	2271.96	Flow Area (sq ft)	10.71	57.32	0.95
E.G. Slope (ft/ft)	0.020437	Area (sq ft)	10.71	57.32	0.95
Q Total (cfs)	518.00	Flow (cfs)	38.37	478.33	1.30
Top Width (ft)	35.43	Top Width (ft)	11.80	19.27	4.36
Vel Total (ft/s)	7.51	Avg. Vel. (ft/s)	3.58	8.34	1.38
Max Chl Dpth (ft)	4.96	Hydr. Depth (ft)	0.91	2.97	0.22
Conv. Total (cfs)	3623.4	Conv. (cfs)	268.4	3345.9	9.1
Length Wtd. (ft)	175.05	Wetted Per. (ft)	11.99	20.82	4.45
Min Ch El (ft)	2267.00	Shear (lb/sq ft)	1.14	3.51	0.27
Alpha	1.16	Stream Power (lb/ft s)	4.08	29.31	0.37
Frctn Loss (ft)	3.83	Cum Volume (acre-ft)	1.92	5.98	1.53
C & E Loss (ft)	0.00	Cum SA (acres)	1.20	2.37	1.07

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.03	9983.54	1.15	0.81	3.33	0.22	0.25	1.42
2	LOB	9983.54	9992.05	33.77	8.97	8.58	6.52	1.05	3.77
3	Chan	9992.05	9994.80	38.21	5.91	2.97	7.38	2.15	6.46
4	Chan	9994.80	9997.56	76.25	8.95	2.97	14.72	3.25	8.52
5	Chan	9997.56	10000.31	123.16	11.88	2.93	23.78	4.32	10.37
6	Chan	10000.31	10003.06	125.82	12.08	2.96	24.29	4.39	10.41
7	Chan	10003.06	10005.81	75.34	8.92	3.00	14.54	3.24	8.44
8	Chan	10005.81	10008.57	35.25	5.66	3.00	6.81	2.05	6.23
9	Chan	10008.57	10011.32	8.40	2.39	3.00	1.62	0.87	3.51
10	ROB	10011.32	10023.23	0.65	0.60	4.37	0.13	0.14	1.09

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.03	9983.54	1.74	1.07	3.40	0.34	0.33	1.63
2	LOB	9983.54	9992.05	36.63	9.64	8.58	7.07	1.13	3.80
3	Chan	9992.05	9994.80	38.66	6.13	2.97	7.46	2.23	6.31
4	Chan	9994.80	9997.56	75.59	9.17	2.97	14.59	3.33	8.25
5	Chan	9997.56	10000.31	120.91	12.10	2.93	23.34	4.39	9.99
6	Chan	10000.31	10003.06	123.46	12.30	2.96	23.83	4.47	10.04
7	Chan	10003.06	10005.81	74.70	9.14	3.00	14.42	3.32	8.17
8	Chan	10005.81	10008.57	35.76	5.87	3.00	6.90	2.13	6.09
9	Chan	10008.57	10011.32	9.25	2.61	3.00	1.79	0.95	3.54
10	ROB	10011.32	10023.23	1.30	0.95	4.45	0.25	0.22	1.38

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.930

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9930.418	2268.08	9936.248	2267.51	9939.838	2267.29	9976.148	2265.07	9987.008	2264.22
9987.418	2264.15	9991.06	2263.46	3999.828	2261.81	10012.21	2263.69	10012.59	2263.75
10031.62	2264.98	10042.25	2265.54	10048.38	2266.39	10055.24	2267.56	10060.05	2268.3
10064.25	2269.11	10064.83	2269.22	10068.14	2269.45	10073.48	2269.86	10074.65	2269.98

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9930.418	.055	9991.06	.05	10012.21	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.06	10012.21	143.58	183.19	224.55	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2266.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2265.30	Reach Len. (ft)	143.58	183.19	224.55
Crit W.S. (ft)	2265.30	Flow Area (sq ft)	13.50	55.00	19.45
E.G. Slope (ft/ft)	0.018663	Area (sq ft)	13.50	55.00	19.45
Q Total (cfs)	518.00	Flow (cfs)	39.91	418.32	59.76
Top Width (ft)	65.42	Top Width (ft)	18.72	21.15	25.54
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)	2.96	7.61	3.07
Max Chl Dpth (ft)	3.49	Hydr. Depth (ft)	0.72	2.60	0.76

Conv. Total (cfs)	3791.7	Conv. (cfs)	292.2	3062.1	437.5
Length Wtd. (ft)	184.58	Wetted Per. (ft)	18.84	21.45	25.60
Min Ch El (ft)	2261.81	Shear (lb/sq ft)	0.84	2.99	0.89
Alpha	1.40	Stream Power (lb/ft s)	2.47	22.73	2.72
Frctn Loss (ft)	3.73	Cum Volume (acre-ft)	3.06	5.38	2.61
C & E Loss (ft)	0.01	Cum SA (acres)	2.91	2.29	2.88

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2266.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.01	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2265.27	Reach Len. (ft)	143.58	183.19	224.55
Crit W.S. (ft)	2265.27	Flow Area (sq ft)	1.38	54.24	12.66
E.G. Slope (ft/ft)	0.023426	Area (sq ft)	1.38	54.24	12.66
Q Total (cfs)	518.00	Flow (cfs)	3.89	458.01	56.10
Top Width (ft)	32.48	Top Width (ft)	0.80	21.15	10.53
Vel Total (ft/s)	7.59	Avg. Vel. (ft/s)	2.81	8.44	4.43
Max Chl Dpth (ft)	3.46	Hydr. Depth (ft)	1.73	2.56	1.20
Conv. Total (cfs)	3384.4	Conv. (cfs)	25.4	2992.5	366.5
Length Wtd. (ft)	185.85	Wetted Per. (ft)	2.47	21.45	11.42
Min Ch El (ft)	2261.81	Shear (lb/sq ft)	0.82	3.70	1.62
Alpha	1.13	Stream Power (lb/ft s)	2.30	31.23	7.19
Frctn Loss (ft)	4.83	Cum Volume (acre-ft)	1.89	5.76	1.51
C & E Loss (ft)	0.02	Cum SA (acres)	1.18	2.29	1.05

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9966.80	9978.93	1.58	1.40	6.61	0.30	0.21	1.13
2	LOB	9978.93	9991.06	38.33	12.10	12.22	7.40	1.00	3.17
3	Chan	9991.06	9994.08	41.74	6.42	3.07	8.06	2.13	6.50
4	Chan	9994.08	9997.10	62.00	8.14	3.07	11.97	2.69	7.62
5	Chan	9997.10	10000.12	85.17	9.85	3.07	16.44	3.26	8.65
6	Chan	10000.12	10003.15	83.72	9.73	3.06	16.16	3.22	8.61
7	Chan	10003.15	10006.17	64.79	8.34	3.06	12.51	2.76	7.77
8	Chan	10006.17	10009.19	47.86	6.95	3.06	9.24	2.30	6.88
9	Chan	10009.19	10012.21	33.04	5.57	3.06	6.38	1.84	5.93
10	ROB	10012.21	10024.70	51.80	14.67	12.52	10.00	1.17	3.53
11	ROB	10024.70	10037.19	7.96	4.77	12.51	1.54	0.38	1.67
12	ROB	10037.19	10049.67	0.00	0.01	0.57	0.00	0.02	0.19

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.93	9991.06	3.89	1.38	2.47	0.75	1.73	2.81
2	Chan	9991.06	9994.08	45.44	6.31	3.07	8.77	2.09	7.20
3	Chan	9994.08	9997.10	67.90	8.03	3.07	13.11	2.66	8.45
4	Chan	9997.10	10000.12	93.63	9.74	3.07	18.08	3.22	9.61
5	Chan	10000.12	10003.15	92.02	9.62	3.06	17.76	3.18	9.57
6	Chan	10003.15	10006.17	71.00	8.23	3.06	13.71	2.72	8.62
7	Chan	10006.17	10009.19	52.21	6.85	3.06	10.08	2.27	7.63
8	Chan	10009.19	10012.21	35.81	5.46	3.06	6.91	1.81	6.56
9	ROB	10012.21	10024.70	56.10	12.66	11.42	10.83	1.20	4.43

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.896

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9928.98	2263.84	9941.07	2262.18	9944.63	2261.76	9944.74	2261.75	9944.94	2261.73
9951.52	2261.74	9951.93	2261.67	9953.59	2261.43	9964	2259.91	9977.76	2258.26
9987.16	2257.28	9992.34	2256.66	9999.52	2255.88	10010.09	2257.11	10016.31	2257.86
10028.75	2259.23	10050.21	2261.73	10051.98	2261.73	10053.24	2261.73	10054.22	2261.73
10057.29	2261.73	10069.34	2262.99	10076.73	2263.79				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9928.98	.055	9987.16	.05	10010.09	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.16	10010.09	144.24	153.09	157.49	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2259.69	Element			
Vel Head (ft)	0.80	Wt. n-Val.	0.055	0.050	0.050
W.S. Elev (ft)	2258.89	Reach Len. (ft)	144.24	153.09	157.49
Crit W.S. (ft)	2258.89	Flow Area (sq ft)	12.18	54.12	13.58
E.G. Slope (ft/ft)	0.021956	Area (sq ft)	12.18	54.12	13.58
Q Total (cfs)	518.00	Flow (cfs)	42.94	420.69	54.37
Top Width (ft)	53.15	Top Width (ft)	14.65	22.93	15.57
Vel Total (ft/s)	6.48	Avg. Vel. (ft/s)	3.53	7.77	4.00
Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)	0.83	2.36	0.87
Conv. Total (cfs)	3495.9	Conv. (cfs)	289.8	2839.1	366.9
Length Wtd. (ft)	153.02	Wetted Per. (ft)	14.74	23.08	15.67
Min Ch El (ft)	2255.88	Shear (lb/sq ft)	1.13	3.21	1.19
Alpha	1.23	Stream Power (lb/ft s)	3.99	24.99	4.75
Frctn Loss (ft)	2.96	Cum Volume (acre-ft)	3.02	5.15	2.52
C & E Loss (ft)	0.00	Cum SA (acres)	2.85	2.20	2.77

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2260.07	Element			
Vel Head (ft)	1.18	Wt. n-Val.	0.055	0.050	0.050
W.S. Elev (ft)	2258.89	Reach Len. (ft)	144.24	153.09	157.49
Crit W.S. (ft)	2258.89	Flow Area (sq ft)	2.63	54.06	4.64
E.G. Slope (ft/ft)	0.029023	Area (sq ft)	2.63	54.06	4.64
Q Total (cfs)	518.00	Flow (cfs)	10.66	482.76	24.58
Top Width (ft)	27.54	Top Width (ft)	1.73	22.93	2.88
Vel Total (ft/s)	8.45	Avg. Vel. (ft/s)	4.06	8.93	5.30
Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)	1.52	2.36	1.61
Conv. Total (cfs)	3040.6	Conv. (cfs)	62.6	2833.7	144.3
Length Wtd. (ft)	153.35	Wetted Per. (ft)	3.17	23.08	4.34
Min Ch El (ft)	2255.88	Shear (lb/sq ft)	1.50	4.24	1.94
Alpha	1.07	Stream Power (lb/ft s)	6.10	37.90	10.27
Frctn Loss (ft)	4.08	Cum Volume (acre-ft)	1.88	5.53	1.46
C & E Loss (ft)	0.03	Cum SA (acres)	1.17	2.20	1.01

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.89	9975.52	0.63	0.55	3.04	0.12	0.18	1.16
2	LOB	9975.52	9987.16	42.31	11.64	11.70	8.17	1.00	3.64
3	Chan	9987.16	9990.44	37.93	5.92	3.30	7.32	1.81	6.41
4	Chan	9990.44	9993.71	52.54	7.19	3.30	10.14	2.19	7.31
5	Chan	9993.71	9996.99	67.78	8.38	3.29	13.08	2.56	8.09
6	Chan	9996.99	10000.26	83.30	9.48	3.30	16.08	2.89	8.79
7	Chan	10000.26	10003.54	75.79	8.96	3.30	14.63	2.74	8.46
8	Chan	10003.54	10006.81	59.16	7.72	3.30	11.42	2.36	7.66
9	Chan	10006.81	10010.09	44.19	6.48	3.30	8.53	1.98	6.82
10	ROB	10010.09	10023.42	54.09	13.31	13.42	10.44	1.00	4.07

11	ROB	10023.42	10036.75	0.28	0.28	2.26	0.05	0.12	1.01

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.52	9987.16	10.66	2.63	3.17	2.06	1.52	4.06
2	Chan	9987.16	9990.44	43.50	5.91	3.30	8.40	1.80	7.37
3	Chan	9990.44	9993.71	60.28	7.18	3.30	11.64	2.19	8.39
4	Chan	9993.71	9996.99	77.79	8.37	3.29	15.02	2.55	9.30
5	Chan	9996.99	10000.26	95.62	9.47	3.30	18.46	2.89	10.10
6	Chan	10000.26	10003.54	87.00	8.95	3.30	16.79	2.73	9.72
7	Chan	10003.54	10006.81	67.89	7.71	3.30	13.11	2.35	8.80
8	Chan	10006.81	10010.09	50.69	6.47	3.30	9.79	1.98	7.83
9	ROB	10010.09	10023.42	24.58	4.64	4.34	4.74	1.61	5.30

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.867

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9969.14	2258.03	9985.57	2255.18	9987.66	2254.2	9992.36	2252.51	9993.87	2251.99
99952	2251.564	9999.95	2249.7	10010.08	2251.53	10012.56	2251.96	110015.84	2252.53
10025.67	2252.98	10031.08	2253.22	10043.58	2253.76	10051.05	2254.13	10052.41	2254.2
10054.89	2254.32	10057.28	2254.53	10059.96	2254.72	10067.44	2255.25	10068.98	2255.31
10075.21	2255.76	10080.99	2256.15	10082.96	2256.18	10083.2	2256.17	10087.28	2256.48
10107.42	2257.83								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9969.14	.06	9995	.05	10012.56	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
99951	10012.56	142.98	125.28	117.59	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2254.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2253.83	Reach Len. (ft)	142.98	125.28	117.59
Crit W.S. (ft)	2253.83	Flow Area (sq ft)	7.14	53.61	24.10
E.G. Slope (ft/ft)	0.017123	Area (sq ft)	7.14	53.61	24.10
Q Total (cfs)	518.00	Flow (cfs)	24.13	429.99	63.88
Top Width (ft)	56.36	Top Width (ft)	6.32	17.56	32.49
Vel Total (ft/s)	6.10	Avg. Vel. (ft/s)	3.38	8.02	2.65
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)	1.13	3.05	0.74
Conv. Total (cfs)	3958.6	Conv. (cfs)	184.4	3286.0	488.2
Length Wtd. (ft)	127.61	Wetted Per. (ft)	6.71	18.10	32.56
Min Ch El (ft)	2249.70	Shear (lb/sq ft)	1.14	3.17	0.79
Alpha	1.47	Stream Power (lb/ft s)	3.84	25.39	2.10
Frctn Loss (ft)	2.31	Cum Volume (acre-ft)	2.98	4.96	2.45
C & E Loss (ft)	0.03	Cum SA (acres)	2.82	2.12	2.69

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2254.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.08	Wt. n-Val.		0.050	0.060
W.S. Elev (ft)	2253.77	Reach Len. (ft)	142.98	125.28	117.59
Crit W.S. (ft)	2253.77	Flow Area (sq ft)		52.45	14.40
E.G. Slope (ft/ft)	0.024481	Area (sq ft)		52.45	14.40
Q Total (cfs)	518.00	Flow (cfs)		459.23	58.77

Top Width (ft)	30.00	Top Width (ft)		17.56	12.44
Vel Total (ft/s)	7.75	Avg. Vel. (ft/s)		8.76	4.08
Max Chl Dpth (ft)	4.07	Hydr. Depth (ft)		2.99	1.16
Conv. Total (cfs)	3310.7	Conv. (cfs)		2935.1	375.6
Length Wtd. (ft)	124.46	Wetted Per. (ft)		20.30	13.32
Min Ch El (ft)	2249.70	Shear (lb/sq ft)		3.95	1.65
Alpha	1.16	Stream Power (lb/ft s)		34.57	6.74
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)	1.88	5.34	1.43
C & E Loss (ft)	0.03	Cum SA (acres)	1.17	2.12	0.99

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.66	9989.83	0.24	0.24	1.22	0.05	0.21	0.99
2	LOB	9989.83	9995.00	23.90	6.91	5.50	4.61	1.34	3.46
3	Chan	9995.00	9997.51	49.06	6.88	2.68	9.47	2.74	7.13
4	Chan	9997.51	10000.02	80.38	9.24	2.68	15.52	3.68	8.70
5	Chan	10000.02	10002.53	91.08	9.77	2.55	17.58	3.89	9.32
6	Chan	10002.53	10005.03	74.11	8.63	2.55	14.31	3.44	8.59
7	Chan	10005.03	10007.54	58.56	7.49	2.55	11.31	2.99	7.81
8	Chan	10007.54	10010.05	44.50	6.36	2.55	8.59	2.53	7.00
9	Chan	10010.05	10012.56	32.30	5.24	2.55	6.24	2.09	6.16
10	ROB	10012.56	10031.53	58.72	20.03	19.04	11.34	1.06	2.93
11	ROB	10031.53	10050.50	5.16	4.06	13.53	1.00	0.30	1.27

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9995.00	9997.51	36.31	6.71	4.88	7.01	2.67	5.41
2	Chan	9997.51	10000.02	89.66	9.08	2.68	17.31	3.62	9.88
3	Chan	10000.02	10002.53	101.76	9.60	2.55	19.65	3.83	10.60
4	Chan	10002.53	10005.03	82.49	8.47	2.55	15.92	3.37	9.74
5	Chan	10005.03	10007.54	64.86	7.33	2.55	12.52	2.92	8.85
6	Chan	10007.54	10010.05	48.96	6.19	2.55	9.45	2.47	7.91
7	Chan	10010.05	10012.56	35.20	5.08	2.55	6.80	2.02	6.93
8	ROB	10012.56	10031.53	58.77	14.40	13.32	11.34	1.16	4.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.843

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9921.452	2251.99	9921.462	2251.99	9928.982	2249.85	9931.202	2249.63	9931.872	2249.95
9932.112	2250.03	9958.492	2248.92	9973.042	2248.16	9990.35	2247.34	9990.352	2247.34
9994.742	2246.56	9999.562	2245.68	10004.85	2247.22	10008.45	2248.27	10015.12	2250.08
10040.07	2251.25	10050.73	2251.7	10054.5	2252				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9921.452	.055	9990.35	.05	10004.85	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.35	10004.85	109.85	128.3	140.24	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2250.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2249.34	Reach Len. (ft)	109.85	128.30	140.24
Crit W.S. (ft)	2249.34	Flow Area (sq ft)	41.26	41.30	7.85
E.G. Slope (ft/ft)	0.019174	Area (sq ft)	41.26	41.30	7.85
Q Total (cfs)	518.00	Flow (cfs)	152.80	335.79	29.41
Top Width (ft)	63.89	Top Width (ft)	41.84	14.50	7.54
Vel Total (ft/s)	5.73	Avg. Vel. (ft/s)	3.70	8.13	3.75
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)	0.99	2.85	1.04
Conv. Total (cfs)	3740.9	Conv. (cfs)	1103.5	2425.0	212.4
Length Wtd. (ft)	126.82	Wetted Per. (ft)	41.89	14.87	7.84
Min Ch El (ft)	2245.68	Shear (lb/sq ft)	1.18	3.32	1.20
Alpha	1.45	Stream Power (lb/ft s)	4.37	27.03	4.49
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	2.91	4.82	2.41
C & E Loss (ft)	0.01	Cum SA (acres)	2.74	2.08	2.63

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2251.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.35	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2249.77	Reach Len. (ft)	109.85	128.30	140.24
Crit W.S. (ft)	2249.77	Flow Area (sq ft)	0.84	47.46	11.06
E.G. Slope (ft/ft)	0.022795	Area (sq ft)	0.84	47.46	11.06
Q Total (cfs)	518.00	Flow (cfs)	1.57	461.65	54.78
Top Width (ft)	22.39	Top Width (ft)	0.35	14.50	7.54
Vel Total (ft/s)	8.73	Avg. Vel. (ft/s)	1.85	9.73	4.95
Max Chl Dpth (ft)	4.09	Hydr. Depth (ft)	2.42	3.27	1.47
Conv. Total (cfs)	3430.9	Conv. (cfs)	10.4	3057.7	362.8
Length Wtd. (ft)	129.24	Wetted Per. (ft)	2.76	14.87	8.26
Min Ch El (ft)	2245.68	Shear (lb/sq ft)	0.44	4.54	1.91
Alpha	1.14	Stream Power (lb/ft s)	0.81	44.19	9.44
Frctn Loss (ft)	2.84	Cum Volume (acre-ft)	1.88	5.20	1.40
C & E Loss (ft)	0.11	Cum SA (acres)	1.17	2.08	0.96

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9935.23	9949.01	0.00	0.01	0.50	0.00	0.01	0.15
2	LOB	9949.01	9962.79	6.45	4.38	13.79	1.24	0.32	1.47
3	LOB	9962.79	9976.57	43.69	13.81	13.80	8.43	1.00	3.16
4	LOB	9976.57	9990.35	102.68	23.06	13.79	19.82	1.67	4.45
5	Chan	9990.35	9992.42	30.58	4.52	2.10	5.90	2.18	6.76
6	Chan	9992.42	9994.49	39.65	5.29	2.10	7.65	2.55	7.50
7	Chan	9994.49	9996.56	49.71	6.06	2.11	9.60	2.92	8.21
8	Chan	9996.56	9998.64	60.91	6.84	2.11	11.76	3.30	8.90
9	Chan	9998.64	10000.71	67.45	7.31	2.13	13.02	3.53	9.22
10	Chan	10000.71	10002.78	51.76	6.26	2.16	9.99	3.02	8.26
11	Chan	10002.78	10004.85	35.71	5.01	2.16	6.89	2.42	7.12
12	ROB	10004.85	10014.78	29.41	7.85	7.84	5.68	1.04	3.75

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9976.57	9990.35	1.57	0.84	2.76	0.30	2.42	1.85
2	Chan	9990.35	9992.42	45.00	5.40	2.10	8.69	2.61	8.33
3	Chan	9992.42	9994.49	56.07	6.17	2.10	10.82	2.98	9.09
4	Chan	9994.49	9996.56	68.19	6.94	2.11	13.16	3.35	9.83
5	Chan	9996.56	9998.64	81.54	7.72	2.11	15.74	3.73	10.56
6	Chan	9998.64	10000.71	89.18	8.19	2.13	17.22	3.96	10.89
7	Chan	10000.71	10002.78	70.50	7.15	2.16	13.61	3.45	9.87
8	Chan	10002.78	10004.85	51.16	5.89	2.16	9.88	2.85	8.68
9	ROB	10004.85	10014.78	54.78	11.06	8.26	10.58	1.47	4.95

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.819

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9954.519	2247.359	987.009	2245.18	9991.53	2243.5	049993.619	2242.739	998.489	2240.88
10001.89	2242.09	10001.93	2242.111	0001.94	2242.111	0002.08	2242.111	0009.38	2242.41
10011.36	2243.86	10017.75	2244.091	0019.36	2244.111	0038.04	2244.191	0042.09	2244.33
10044.63	2244.37	10048.12	2244.48	10052.6	2245.06	10055.65	2245.311	0055.76	2245.33
10061.41	2245.22	10062.13	2245.211	0062.84	2245.241	0065.04	2245.19	10065.6	2245.21
10067.34	2245.25	10068.47	2245.221	0069.08	2245.21	0070.14	2245.15	10071.4	2245.1
10073.15	2245.06	10078.1	2244.971	0078.29	2244.971	0079.32	2245.011	0085.01	2245.67
10085.66	2245.74	10089.36	224610	0090.11	2246.121	0094.51	2246.31	0099.39	2246.78

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9954.519	.055	9991.53	.051	0011.36	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.53	10011.36	172.55	149.98	126.76	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2245.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2245.04	Reach Len. (ft)	172.55	149.98	126.76
Crit W.S. (ft)	2245.04	Flow Area (sq ft)	3.20	56.56	33.59
E.G. Slope (ft/ft)	0.016424	Area (sq ft)	3.20	56.56	33.59
Q Total (cfs)	518.00	Flow (cfs)	8.91	416.95	92.14
Top Width (ft)	70.66	Top Width (ft)	4.15	19.83	46.67
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)	2.79	7.37	2.74
Max Chl Dpth (ft)	4.16	Hydr. Depth (ft)	0.77	2.85	0.72
Conv. Total (cfs)	4041.9	Conv. (cfs)	69.5	3253.4	719.0
Length Wtd. (ft)	152.99	Wetted Per. (ft)	4.43	21.00	46.72
Min Ch El (ft)	2240.88	Shear (lb/sq ft)	0.74	2.76	0.74
Alpha	1.47	Stream Power (lb/ft s)	2.06	20.36	2.02
Frctn Loss (ft)	2.56	Cum Volume (acre-ft)	2.85	4.68	2.34
C & E Loss (ft)	0.07	Cum SA (acres)	2.68	2.03	2.55

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2245.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.98	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2245.01	Reach Len. (ft)	172.55	149.98	126.76
Crit W.S. (ft)	2245.01	Flow Area (sq ft)	3.05	55.85	13.06
E.G. Slope (ft/ft)	0.021267	Area (sq ft)	3.05	55.85	13.06
Q Total (cfs)	518.00	Flow (cfs)	9.52	464.55	43.93
Top Width (ft)	37.53	Top Width (ft)	4.06	19.83	13.64
Vel Total (ft/s)	7.20	Avg. Vel. (ft/s)	3.12	8.32	3.36
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)	0.75	2.82	0.96
Conv. Total (cfs)	3552.0	Conv. (cfs)	65.3	3185.5	301.2
Length Wtd. (ft)	150.44	Wetted Per. (ft)	4.33	21.00	14.52
Min Ch El (ft)	2240.88	Shear (lb/sq ft)	0.94	3.53	1.19
Alpha	1.22	Stream Power (lb/ft s)	2.92	29.37	4.02
Frctn Loss (ft)	2.95	Cum Volume (acre-ft)	1.87	5.05	1.36
C & E Loss (ft)	0.04	Cum SA (acres)	1.16	2.03	0.92

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.

Profile #profile 1

Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	9984.13	9991.53	8.91	3.20	4.43	1.72	0.77	2.79
2	Chan	9991.53	9994.36	33.67	5.85	3.02	6.50	2.07	5.75
3	Chan	9994.36	9997.20	67.36	8.88	3.03	13.00	3.13	7.59
4	Chan	9997.20	10000.03	97.35	11.06	3.02	18.79	3.90	8.80
5	Chan	10000.03	10002.86	69.45	8.95	2.95	13.41	3.16	7.76
6	Chan	10002.86	10005.69	59.86	8.06	2.84	11.56	2.84	7.43
7	Chan	10005.69	10008.53	55.83	7.73	2.84	10.78	2.73	7.23
8	Chan	10008.53	10011.36	33.43	6.04	3.31	6.45	2.13	5.53
9	ROB	10011.36	10028.97	51.46	17.12	17.61	9.94	0.97	3.01
10	ROB	10028.97	10046.57	37.28	14.11	17.61	7.20	0.80	2.64
11	ROB	10046.57	10064.18	3.31	2.14	5.94	0.64	0.36	1.55
12	ROB	10064.18	10081.78	0.08	0.22	5.56	0.02	0.04	0.36

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.13	9991.53	9.52	3.05	4.33	1.84	0.75	3.12
2	Chan	9991.53	9994.36	37.18	5.75	3.02	7.18	2.03	6.47
3	Chan	9994.36	9997.20	75.15	8.78	3.03	14.51	3.10	8.56
4	Chan	9997.20	10000.03	109.01	10.95	3.02	21.04	3.87	9.95
5	Chan	10000.03	10002.86	77.49	8.85	2.95	14.96	3.12	8.76
6	Chan	10002.86	10005.69	66.65	7.95	2.84	12.87	2.81	8.38
7	Chan	10005.69	10008.53	62.11	7.62	2.84	11.99	2.69	8.15
8	Chan	10008.53	10011.36	36.96	5.94	3.31	7.13	2.10	6.22
9	ROB	10011.36	10028.97	43.93	13.06	14.52	8.48	0.96	3.36

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: X3
REACH: Reach 1 RS: 0.790

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9898.742	2242.05	9904.392	2241.39	9910.252	2240.73	9914.882	2240.99	9924.682	2240.94
9928.882	2240.62	9931.982	2240.33	9937.982	2238.99	9939.612	2238.52	9941.512	2238.04
9942.412	2238.19	9951.242	2238.59	9958.612	2238.88	9970.422	2239.44	9972.842	2239.55
9973.622	2239.52	9974.952	2239.47	9983.162	2239.11	9986.812	2239.03	9990.16	2238.53
9990.162	2238.53	9998.772	2236.91	10006.39	2238.57	10019.39	2241.63	10026.93	2242.26

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9898.742	.05	9910.252	.03	9924.682	.05	9937.982	.06	9990.16	.05
10006.39	.06								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.16	10006.39	172.76	211.63	250.13	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2240.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2240.13	Reach Len. (ft)	172.76	211.63	250.13
Crit W.S. (ft)	2240.01	Flow Area (sq ft)	66.19	38.87	5.13
E.G. Slope (ft/ft)	0.016998	Area (sq ft)	66.19	38.87	5.13
Q Total (cfs)	518.00	Flow (cfs)	238.18	266.05	13.77
Top Width (ft)	80.15	Top Width (ft)	57.32	16.23	6.61
Vel Total (ft/s)	4.70	Avg. Vel. (ft/s)	3.60	6.84	2.68
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)	1.15	2.40	0.78
Conv. Total (cfs)	3973.1	Conv. (cfs)	1826.9	2040.6	105.6
Length Wtd. (ft)	202.05	Wetted Per. (ft)	57.65	16.56	6.79
Min Ch El (ft)	2236.91	Shear (lb/sq ft)	1.22	2.49	0.80
Alpha	1.37	Stream Power (lb/ft s)	4.38	17.05	2.15
Frctn Loss (ft)	4.13	Cum Volume (acre-ft)	2.71	4.51	2.29
C & E Loss (ft)	0.01	Cum SA (acres)	2.56	1.97	2.47

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2241.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.060	0.050	0.060

W.S. Elev (ft)	2240.69	Reach Len. (ft)	172.76	211.63	250.13
Crit W.S. (ft)	2240.55	Flow Area (sq ft)	21.27	48.12	8.90
E.G. Slope (ft/ft)	0.018183	Area (sq ft)	21.27	48.12	8.90
Q Total (cfs)	518.00	Flow (cfs)	91.61	392.65	33.73
Top Width (ft)	36.00	Top Width (ft)	13.16	16.23	6.61
Vel Total (ft/s)	6.62	Avg. Vel. (ft/s)	4.31	8.16	3.79
Max Chl Dpth (ft)	3.78	Hydr. Depth (ft)	1.62	2.96	1.35
Conv. Total (cfs)	3841.5	Conv. (cfs)	679.4	2911.9	250.2
Length Wtd. (ft)	207.00	Wetted Per. (ft)	14.52	16.56	7.36
Min Ch El (ft)	2236.91	Shear (lb/sq ft)	1.66	3.30	1.37
Alpha	1.25	Stream Power (lb/ft s)	7.16	26.92	5.20
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	1.83	4.87	1.33
C & E Loss (ft)	0.01	Cum SA (acres)	1.13	1.97	0.89

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9917.03	9935.31	1.06	0.72	2.53	0.20	0.29	1.46
2	LOB	9935.31	9953.59	126.15	29.30	18.48	24.35	1.60	4.31
3	LOB	9953.59	9971.88	60.64	19.09	18.30	11.71	1.04	3.18
4	LOB	9971.88	9990.16	50.33	17.08	18.33	9.72	0.93	2.95
5	Chan	9990.16	9992.48	23.45	4.20	2.36	4.53	1.81	5.58
6	Chan	9992.48	9994.80	33.59	5.21	2.36	6.49	2.25	6.44
7	Chan	9994.80	9997.12	45.15	6.22	2.36	8.72	2.68	7.25
8	Chan	9997.12	9999.44	56.80	7.15	2.36	10.97	3.08	7.94
9	Chan	9999.44	10001.75	48.74	6.53	2.37	9.41	2.82	7.46
10	Chan	10001.75	10004.07	35.07	5.36	2.37	6.77	2.31	6.54
11	Chan	10004.07	10006.39	23.25	4.19	2.37	4.49	1.81	5.55
12	ROB	10006.39	10010.50	12.86	4.40	4.22	2.48	1.07	2.92
13	ROB	10010.50	10014.61	0.91	0.73	2.57	0.17	0.29	1.23

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9971.88	9990.16	91.61	21.27	14.52	17.69	1.62	4.31
2	Chan	9990.16	9992.48	38.51	5.52	2.36	7.43	2.38	6.97
3	Chan	9992.48	9994.80	50.97	6.53	2.36	9.84	2.82	7.80
4	Chan	9994.80	9997.12	64.79	7.55	2.36	12.51	3.25	8.59
5	Chan	9997.12	9999.44	78.47	8.47	2.36	15.15	3.65	9.26
6	Chan	9999.44	10001.75	68.99	7.85	2.37	13.32	3.39	8.78
7	Chan	10001.75	10004.07	52.71	6.68	2.37	10.18	2.88	7.89
8	Chan	10004.07	10006.39	38.23	5.51	2.37	7.38	2.38	6.94
9	ROB	10006.39	10010.50	28.52	6.74	4.22	5.51	1.64	4.23
10	ROB	10010.50	10014.61	5.21	2.16	3.14	1.01	0.86	2.41

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.750

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9915.143	2238.03	9931.413	2237.49	9933.193	2237.34	9942.713	2236.76	9949.093	2236.3
9955.643	2235.89	9957.653	2235.66	9966.803	2235.04	9967.193	2235.02	9978.163	2234.77
9986.333	2234.62	9988.38	2234.54	9988.383	2234.54	9993.343	2233.58	9994.903	2233.34
10004.1	2234.05	10007.73	2234.33	10011.01	2234.53	10020.11	2234.69	10029.49	2235.04
10038.09	2236.85	10046.42	2238.44	10050.99	2238.91	10057.9	2239.91	10058.63	2240

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9915.143	.05	9988.38	.05	10011.01	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.38	10011.01	188.91	168.48	159.55	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2236.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.050	0.050	0.060
W.S. Elev (ft)	2235.86	Reach Len. (ft)	188.91	168.48	159.55
Crit W.S. (ft)	2235.86	Flow Area (sq ft)	28.05	43.37	22.34
E.G. Slope (ft/ft)	0.025087	Area (sq ft)	28.05	43.37	22.34
Q Total (cfs)	518.00	Flow (cfs)	117.12	313.60	87.28

Top Width (ft)	78.56	Top Width (ft)	33.54	22.63	22.38
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)	4.18	7.23	3.91
Max Chl Dpth (ft)	2.52	Hydr. Depth (ft)	0.84	1.92	1.00
Conv. Total (cfs)	3270.4	Conv. (cfs)	739.5	1979.9	551.1
Length Wtd. (ft)	175.49	Wetted Per. (ft)	33.58	22.78	22.48
Min Ch El (ft)	2233.34	Shear (lb/sq ft)	1.31	2.98	1.56
Alpha	1.25	Stream Power (lb/ft s)	5.46	21.56	6.08
Frctn Loss (ft)	4.76	Cum Volume (acre-ft)	2.53	4.31	2.21
C & E Loss (ft)	0.01	Cum SA (acres)	2.38	1.87	2.39

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2237.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.	0.050	0.050	0.060
W.S. Elev (ft)	2236.28	Reach Len. (ft)	188.91	168.48	159.55
Crit W.S. (ft)	2236.18	Flow Area (sq ft)	13.43	52.94	3.22
E.G. Slope (ft/ft)	0.024236	Area (sq ft)	13.43	52.94	3.22
Q Total (cfs)	518.00	Flow (cfs)	76.72	429.71	11.56
Top Width (ft)	32.71	Top Width (ft)	8.23	22.63	1.85
Vel Total (ft/s)	7.44	Avg. Vel. (ft/s)	5.71	8.12	3.59
Max Chl Dpth (ft)	2.94	Hydr. Depth (ft)	1.63	2.34	1.74
Conv. Total (cfs)	3327.4	Conv. (cfs)	492.8	2760.3	74.3
Length Wtd. (ft)	173.40	Wetted Per. (ft)	9.78	22.78	3.57
Min Ch El (ft)	2233.34	Shear (lb/sq ft)	2.08	3.52	1.36
Alpha	1.08	Stream Power (lb/ft s)	11.87	28.54	4.90
Frctn Loss (ft)	4.72	Cum Volume (acre-ft)	1.76	4.62	1.29
C & E Loss (ft)	0.00	Cum SA (acres)	1.09	1.87	0.87

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9944.44	9959.09	0.80	0.65	4.26	0.15	0.15	1.23
2	LOB	9959.09	9973.73	37.09	10.64	14.67	7.16	0.73	3.49
3	LOB	9973.73	9988.38	79.23	16.77	14.65	15.30	1.14	4.73
4	Chan	9988.38	9991.61	33.49	5.28	3.29	6.47	1.63	6.34
5	Chan	9991.61	9994.85	57.05	7.26	3.28	11.01	2.25	7.86
6	Chan	9994.85	9998.08	64.28	7.76	3.24	12.41	2.40	8.28
7	Chan	9998.08	10001.31	53.56	6.96	3.24	10.34	2.15	7.70
8	Chan	10001.31	10004.54	43.60	6.15	3.24	8.42	1.90	7.09
9	Chan	10004.54	10007.78	34.50	5.34	3.24	6.66	1.65	6.46
10	Chan	10007.78	10011.01	27.12	4.62	3.24	5.24	1.43	5.87
11	ROB	10011.01	10020.53	51.22	11.88	9.53	9.89	1.25	4.31
12	ROB	10020.53	10030.06	33.92	9.29	9.54	6.55	0.98	3.65
13	ROB	10030.06	10039.58	2.14	1.17	3.41	0.41	0.35	1.82

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.73	9988.38	76.72	13.43	9.78	14.81	1.63	5.71
2	Chan	9988.38	9991.61	48.58	6.65	3.29	9.38	2.06	7.31
3	Chan	9991.61	9994.85	75.16	8.63	3.28	14.51	2.67	8.71
4	Chan	9994.85	9998.08	83.25	9.13	3.24	16.07	2.82	9.12
5	Chan	9998.08	10001.31	71.39	8.32	3.24	13.78	2.57	8.58
6	Chan	10001.31	10004.54	60.21	7.52	3.24	11.62	2.32	8.01
7	Chan	10004.54	10007.78	49.85	6.71	3.24	9.62	2.08	7.43
8	Chan	10007.78	10011.01	41.28	5.99	3.24	7.97	1.85	6.89
9	ROB	10011.01	10020.53	11.56	3.22	3.57	2.23	1.74	3.59

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: X3
REACH: Reach 1 RS: 0.718

INPUT
Description: 50 Feet Upstream of 18th Street

```
Station Elevation Data     num=       25
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
9913.513    22349914.403 2233.939920.893 2233.289922.273 2233.149937.163 2231.25
9937.993 2231.169939.163    22319945.793 2230.159950.333 2229.649955.443 2229.69
9961.713 2229.749963.943 2229.789967.843  2229.89992.573 2230.069993.063 2230.07
  9993.32230.0419993.303 2230.0410004.58 2228.51 10010.42229.92210013.73 2230.73
10013.75 2230.7310013.76 2230.7410032.98 2232.1710049.86 2233.6310054.08 2234.01

Manning's n Values         num=        4
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
9913.513    .0559939.163     .06  9993.3     .05 10010.4    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9993.3 10010.4            191.18  177.96  169.58             .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2231.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.	0.060	0.050	0.065
W.S. Elev (ft)	2231.07	Reach Len. (ft)	191.18	177.96	169.58
Crit W.S. (ft)	2231.07	Flow Area (sq ft)	60.92	30.97	3.19
E.G. Slope (ft/ft)	0.029365	Area (sq ft)	60.92	30.97	3.19
Q Total (cfs)	518.00	Flow (cfs)	279.32	231.83	6.85
Top Width (ft)	79.46	Top Width (ft)	54.62	17.10	7.74
Vel Total (ft/s)	5.45	Avg. Vel. (ft/s)	4.58	7.49	2.15
Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	1.12	1.81	0.41
Conv. Total (cfs)	3022.9	Conv. (cfs)	1630.0	1352.9	39.9
Length Wtd. (ft)	182.74	Wetted Per. (ft)	54.71	17.37	7.85
Min Ch El (ft)	2228.51	Shear (lb/sq ft)	2.04	3.27	0.74
Alpha	1.23	Stream Power (lb/ft s)	9.36	24.46	1.60
Frctn Loss (ft)	4.42	Cum Volume (acre-ft)	2.33	4.17	2.16
C & E Loss (ft)	0.02	Cum SA (acres)	2.19	1.79	2.33

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2232.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.060	0.050	
W.S. Elev (ft)	2231.59	Reach Len. (ft)	191.18	177.96	169.58
Crit W.S. (ft)	2231.59	Flow Area (sq ft)	31.38	39.89	
E.G. Slope (ft/ft)	0.030733	Area (sq ft)	31.38	39.89	
Q Total (cfs)	518.00	Flow (cfs)	177.68	340.32	
Top Width (ft)	36.45	Top Width (ft)	19.35	17.10	
Vel Total (ft/s)	7.27	Avg. Vel. (ft/s)	5.66	8.53	
Max Chl Dpth (ft)	3.08	Hydr. Depth (ft)	1.62	2.33	
Conv. Total (cfs)	2954.8	Conv. (cfs)	1013.6	1941.3	
Length Wtd. (ft)	181.58	Wetted Per. (ft)	21.08	19.04	
Min Ch El (ft)	2228.51	Shear (lb/sq ft)	2.86	4.02	
Alpha	1.11	Stream Power (lb/ft s)	16.18	34.30	
Frctn Loss (ft)	4.65	Cum Volume (acre-ft)	1.66	4.44	1.28
C & E Loss (ft)	0.02	Cum SA (acres)	1.03	1.79	0.87

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9929.47	9945.43	7.23	2.94	6.80	1.40	0.44	2.46
2	LOB	9945.43	9961.39	102.39	20.84	15.99	19.77	1.31	4.91
3	LOB	9961.39	9977.34	94.75	19.87	15.96	18.29	1.25	4.77
4	LOB	9977.34	9993.30	74.96	17.27	15.96	14.47	1.08	4.34
5	Chan	9993.30	9995.74	16.09	2.91	2.47	3.11	1.19	5.53
6	Chan	9995.74	9998.19	24.21	3.72	2.46	4.67	1.52	6.51
7	Chan	9998.19	10000.63	33.63	4.53	2.47	6.49	1.85	7.42
8	Chan	10000.63	10003.07	44.22	5.34	2.46	8.54	2.19	8.28
9	Chan	10003.07	10005.51	53.22	5.98	2.48	10.27	2.45	8.89
10	Chan	10005.51	10007.96	38.68	4.96	2.51	7.47	2.03	7.79
11	Chan	10007.96	10010.40	21.79	3.52	2.51	4.21	1.44	6.19
12	ROB	10010.40	10019.14	6.85	3.19	7.85	1.32	0.41	2.15

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9961.39	9977.34	26.99	5.79	5.12	5.21	1.71	4.66
2	LOB	9977.34	9993.30	150.70	25.60	15.96	29.09	1.60	5.89
3	Chan	9993.30	9995.74	29.58	4.19	2.47	5.71	1.71	7.07
4	Chan	9995.74	9998.19	39.71	4.99	2.46	7.67	2.04	7.95
5	Chan	9998.19	10000.63	51.02	5.81	2.47	9.85	2.38	8.79
6	Chan	10000.63	10003.07	63.41	6.61	2.46	12.24	2.71	9.59
7	Chan	10003.07	10005.51	73.69	7.26	2.48	14.23	2.97	10.15
8	Chan	10005.51	10007.96	56.82	6.24	2.51	10.97	2.55	9.11
9	Chan	10007.96	10010.40	26.09	4.79	4.18	5.04	1.96	5.44

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.685

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9928.912	2227.979	946.682	2227.349	948.892	2226.939	949.352	2226.839	952.792	2227.01
9954.002	2226.959	961.042	2226.399	962.532	2226.39	966.212	2226.029	971.602	2225.58
9979.052	2224.97	9990.31	2224.19	990.312	2224.11	0001.17	2223.25	10001.26	2223.25
10001.28	2223.25	10001.32	2223.26	10007.12	2224.30	210009.17	2224.67	10029.21	2229.92
10029.69	2230.05	10037.69	2230.88	10046.01	2231.99				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9928.912	.035	9962.532	.065	9990.31	.05	10007.12	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.31	10007.12	172.4	198.39	218.37	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2227.16	Element			
Vel Head (ft)	0.78	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2226.38	Reach Len. (ft)	172.40	198.39	218.37
Crit W.S. (ft)	2226.38	Flow Area (sq ft)	33.08	44.97	9.49
E.G. Slope (ft/ft)	0.020299	Area (sq ft)	33.08	44.97	9.49
Q Total (cfs)	518.00	Flow (cfs)	120.49	365.11	32.40
Top Width (ft)	54.55	Top Width (ft)	29.15	16.81	8.59
Vel Total (ft/s)	5.92	Avg. Vel. (ft/s)	3.64	8.12	3.41
Max Chl Dpth (ft)	3.13	Hydr. Depth (ft)	1.13	2.68	1.10
Conv. Total (cfs)	3635.7	Conv. (cfs)	845.7	2562.6	227.4
Length Wtd. (ft)	194.15	Wetted Per. (ft)	29.24	16.94	8.84
Min Ch El (ft)	2223.25	Shear (lb/sq ft)	1.43	3.36	1.36
Alpha	1.44	Stream Power (lb/ft s)	5.22	27.32	4.64
Frctn Loss (ft)	3.72	Cum Volume (acre-ft)	2.13	4.01	2.14
C & E Loss (ft)	0.00	Cum SA (acres)	2.00	1.73	2.30

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2227.19	Element			
Vel Head (ft)	0.83	Wt. n-Val.	0.065	0.050	0.065
W.S. Elev (ft)	2226.36	Reach Len. (ft)	172.40	198.39	218.37
Crit W.S. (ft)	2226.36	Flow Area (sq ft)	32.08	44.50	6.48
E.G. Slope (ft/ft)	0.021637	Area (sq ft)	32.08	44.50	6.48
Q Total (cfs)	518.00	Flow (cfs)	122.35	370.38	25.27
Top Width (ft)	47.00	Top Width (ft)	26.31	16.81	3.88
Vel Total (ft/s)	6.24	Avg. Vel. (ft/s)	3.81	8.32	3.90
Max Chl Dpth (ft)	3.10	Hydr. Depth (ft)	1.22	2.65	1.67
Conv. Total (cfs)	3521.5	Conv. (cfs)	831.8	2517.9	171.8
Length Wtd. (ft)	193.39	Wetted Per. (ft)	26.56	16.94	5.18
Min Ch El (ft)	2223.25	Shear (lb/sq ft)	1.63	3.55	1.69
Alpha	1.38	Stream Power (lb/ft s)	6.22	29.54	6.59
Frctn Loss (ft)	3.14	Cum Volume (acre-ft)	1.52	4.27	1.27

C & E Loss (ft) 0.04 Cum SA (acres) 0.93 1.73 0.86

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.47	9965.75	0.69	0.72	4.61	0.13	0.16	0.97
2	LOB	9965.75	9978.03	25.57	10.16	12.32	4.94	0.83	2.52
3	LOB	9978.03	9990.31	94.22	22.21	12.32	18.19	1.81	4.24
4	Chan	9990.31	9992.71	42.72	5.71	2.41	8.25	2.38	7.49
5	Chan	9992.71	9995.11	48.50	6.16	2.41	9.36	2.56	7.87
6	Chan	9995.11	9997.51	54.57	6.61	2.41	10.53	2.75	8.26
7	Chan	9997.51	9999.92	60.95	7.07	2.41	11.77	2.94	8.63
8	Chan	9999.92	10002.32	65.06	7.36	2.42	12.56	3.07	8.84
9	Chan	10002.32	10004.72	53.30	6.55	2.44	10.29	2.73	8.14
10	Chan	10004.72	10007.12	40.01	5.52	2.44	7.72	2.30	7.25
11	ROB	10007.12	10014.90	32.34	9.40	8.00	6.24	1.21	3.44
12	ROB	10014.90	10022.68	0.06	0.09	0.84	0.01	0.11	0.68

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.47	9965.75	0.44	0.41	1.92	0.08	0.23	1.07
2	LOB	9965.75	9978.03	25.39	9.81	12.32	4.90	0.80	2.59
3	LOB	9978.03	9990.31	96.52	21.86	12.32	18.63	1.78	4.42
4	Chan	9990.31	9992.71	43.24	5.64	2.41	8.35	2.35	7.67
5	Chan	9992.71	9995.11	49.16	6.09	2.41	9.49	2.54	8.07
6	Chan	9995.11	9997.51	55.38	6.54	2.41	10.69	2.72	8.46
7	Chan	9997.51	9999.92	61.92	7.00	2.41	11.95	2.91	8.85
8	Chan	9999.92	10002.32	66.14	7.30	2.42	12.77	3.04	9.07
9	Chan	10002.32	10004.72	54.08	6.48	2.44	10.44	2.70	8.34
10	Chan	10004.72	10007.12	40.46	5.45	2.44	7.81	2.27	7.43
11	ROB	10007.12	10014.90	25.27	6.48	5.18	4.88	1.67	3.90

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.647

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9962.344	2223.97	9963.024	2223.81	9974.644	2221.14	9991.504	2218.79	9992.65	2218.64
9992.654	2218.64	9992.934	2218.61	10000.16	2217.62	10007.13	2218.67	10010.84	2219.2
10014	2219.49	10017.69	2219.91	10021.44	2220.19	10024.8	2220.58	10029.24	2221.08
10032.89	2221.43	10036.81	2221.89	10058.82	2223.21	10061.43	2223.41	10062.59	2223.49
10067.47	2223.77	10068.8	2223.84	10069.29	2223.87	10070.95	2223.91	10071.88	2224

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9962.344	.03	9992.65	.05	10007.13	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.65	10007.13	116.23	112.98	97.47	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2221.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.030	0.050	0.060
W.S. Elev (ft)	2220.89	Reach Len. (ft)	116.23	112.98	97.47

Crit W.S. (ft)	2220.89	Flow Area (sq ft)	18.30	39.85	21.78
E.G. Slope (ft/ft)	0.018122	Area (sq ft)	18.30	39.85	21.78
Q Total (cfs)	518.00	Flow (cfs)	131.47	311.00	75.53
Top Width (ft)	51.10	Top Width (ft)	16.21	14.48	20.42
Vel Total (ft/s)	6.48	Avg. Vel. (ft/s)	7.18	7.80	3.47
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	1.13	2.75	1.07
Conv. Total (cfs)	3847.9	Conv. (cfs)	976.6	2310.3	561.0
Length Wtd. (ft)	110.22	Wetted Per. (ft)	16.36	14.63	20.54
Min Ch El (ft)	2217.62	Shear (lb/sq ft)	1.27	3.08	1.20
Alpha	1.22	Stream Power (lb/ft s)	9.09	24.05	4.16
Frctn Loss (ft)	2.00	Cum Volume (acre-ft)	2.02	3.82	2.06
C & E Loss (ft)	0.01	Cum SA (acres)	1.91	1.65	2.23

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2221.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.030	0.050	0.060
W.S. Elev (ft)	2221.13	Reach Len. (ft)	116.23	112.98	97.47
Crit W.S. (ft)		Flow Area (sq ft)	20.43	43.30	18.16
E.G. Slope (ft/ft)	0.012648	Area (sq ft)	20.43	43.30	18.16
Q Total (cfs)	518.00	Flow (cfs)	149.97	298.34	69.69
Top Width (ft)	37.00	Top Width (ft)	12.65	14.48	9.87
Vel Total (ft/s)	6.33	Avg. Vel. (ft/s)	7.34	6.89	3.84
Max Chl Dpth (ft)	3.51	Hydr. Depth (ft)	1.61	2.99	1.84
Conv. Total (cfs)	4605.9	Conv. (cfs)	1333.5	2652.8	619.7
Length Wtd. (ft)	110.40	Wetted Per. (ft)	13.51	14.63	11.24
Min Ch El (ft)	2217.62	Shear (lb/sq ft)	1.19	2.34	1.28
Alpha	1.12	Stream Power (lb/ft s)	8.77	16.11	4.90
Frctn Loss (ft)	1.82	Cum Volume (acre-ft)	1.42	4.07	1.21
C & E Loss (ft)	0.05	Cum SA (acres)	0.85	1.65	0.82

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9974.47	9980.53	2.86	1.16	4.12	0.55	0.28	2.46
2	LOB	9980.53	9986.59	33.93	6.01	6.12	6.55	0.99	5.64
3	LOB	9986.59	9992.65	94.69	11.13	6.12	18.28	1.84	8.51
4	Chan	9992.65	9994.72	34.94	4.95	2.09	6.75	2.39	7.07
5	Chan	9994.72	9996.79	42.05	5.53	2.09	8.12	2.67	7.61
6	Chan	9996.79	9998.86	49.66	6.11	2.09	9.59	2.95	8.13
7	Chan	9998.86	10000.92	56.57	6.61	2.09	10.92	3.19	8.56
8	Chan	10000.92	10002.99	50.89	6.20	2.09	9.82	3.00	8.21
9	Chan	10002.99	10005.06	42.38	5.56	2.09	8.18	2.69	7.63
10	Chan	10005.06	10007.13	34.51	4.91	2.09	6.66	2.38	7.03
11	ROB	10007.13	10020.08	70.32	18.65	13.03	13.57	1.44	3.77
12	ROB	10020.08	10033.03	5.21	3.14	7.51	1.01	0.42	1.66

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9974.47	9980.53	0.98	0.41	1.27	0.19	0.77	2.42
2	LOB	9980.53	9986.59	43.96	7.45	6.12	8.49	1.23	5.90
3	LOB	9986.59	9992.65	105.02	12.57	6.12	20.27	2.07	8.36
4	Chan	9992.65	9994.72	34.23	5.44	2.09	6.61	2.63	6.29
5	Chan	9994.72	9996.79	40.53	6.02	2.09	7.83	2.91	6.74
6	Chan	9996.79	9998.86	47.25	6.60	2.09	9.12	3.19	7.16
7	Chan	9998.86	10000.92	53.33	7.10	2.09	10.29	3.43	7.51
8	Chan	10000.92	10002.99	48.33	6.69	2.09	9.33	3.24	7.22
9	Chan	10002.99	10005.06	40.83	6.05	2.09	7.88	2.92	6.75
10	Chan	10005.06	10007.13	33.84	5.40	2.09	6.53	2.61	6.26
11	ROB	10007.13	10020.08	69.69	18.16	11.24	13.45	1.84	3.84

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: X3
REACH: Reach 1 RS: 0.626

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9971.019	2223.969	9971.219	2223.949	9973.129	2223.949	9978.909	2221.69	9989.929	2216.8
9992.739	2215.95	9992.74	2215.959	9996.679	2214.731	10003.79	2215.921	10009.19	2216.94
10026.68	2218.051	10042.09	2219.061	10065.39	2220.51	10073.97	2221.041	10075.89	2221.12
10078.4	2221.12								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9971.019	.065	9992.74	.051	10003.79	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.741	10003.79	166.69	164.58	159.59	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2219.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.065	0.050	0.055
W.S. Elev (ft)	2218.72	Reach Len. (ft)	166.69	164.58	159.59
Crit W.S. (ft)	2218.72	Flow Area (sq ft)	10.80	37.41	37.09
E.G. Slope (ft/ft)	0.018086	Area (sq ft)	10.80	37.41	37.09
Q Total (cfs)	518.00	Flow (cfs)	41.45	331.50	145.05
Top Width (ft)	51.31	Top Width (ft)	7.21	11.05	33.05
Vel Total (ft/s)	6.07	Avg. Vel. (ft/s)	3.84	8.86	3.91
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)	1.50	3.39	1.12
Conv. Total (cfs)	3851.7	Conv. (cfs)	308.2	2464.9	1078.6
Length Wtd. (ft)	163.56	Wetted Per. (ft)	7.73	11.33	33.20
Min Ch El (ft)	2214.73	Shear (lb/sq ft)	1.58	3.73	1.26
Alpha	1.51	Stream Power (lb/ft s)	6.05	33.03	4.93
Frctn Loss (ft)	1.99	Cum Volume (acre-ft)	1.99	3.72	1.99
C & E Loss (ft)	0.13	Cum SA (acres)	1.88	1.62	2.17

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2219.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.22	Wt. n-Val.	0.065	0.050	0.055
W.S. Elev (ft)	2218.72	Reach Len. (ft)	166.69	164.58	159.59
Crit W.S. (ft)	2218.72	Flow Area (sq ft)	3.33	37.50	23.88
E.G. Slope (ft/ft)	0.022469	Area (sq ft)	3.33	37.50	23.88
Q Total (cfs)	518.00	Flow (cfs)	10.56	370.95	136.49
Top Width (ft)	25.16	Top Width (ft)	1.29	11.05	12.82
Vel Total (ft/s)	8.01	Avg. Vel. (ft/s)	3.17	9.89	5.72
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)	2.58	3.39	1.86
Conv. Total (cfs)	3455.7	Conv. (cfs)	70.5	2474.7	910.5
Length Wtd. (ft)	163.60	Wetted Per. (ft)	3.73	11.33	14.24
Min Ch El (ft)	2214.73	Shear (lb/sq ft)	1.25	4.64	2.35
Alpha	1.23	Stream Power (lb/ft s)	3.97	45.91	13.44
Frctn Loss (ft)	2.43	Cum Volume (acre-ft)	1.38	3.96	1.16
C & E Loss (ft)	0.21	Cum SA (acres)	0.83	1.62	0.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.05	9988.40	3.34	1.79	3.13	0.64	0.62	1.87
2	LOB	9988.40	9992.74	38.12	9.01	4.61	7.36	2.07	4.23
3	Chan	9992.74	9994.32	38.19	4.75	1.65	7.37	3.01	8.04
4	Chan	9994.32	9995.90	49.11	5.53	1.65	9.48	3.50	8.89
5	Chan	9995.90	9997.48	59.23	6.14	1.63	11.43	3.89	9.64
6	Chan	9997.48	9999.06	55.56	5.88	1.60	10.73	3.72	9.46
7	Chan	9999.06	10000.63	49.11	5.45	1.60	9.48	3.46	9.00

8	Chan	10000.63	10002.21	43.04	5.04	1.60	8.31	3.19	8.54
9	Chan	10002.21	10003.79	37.25	4.62	1.60	7.19	2.93	8.06
10	ROB	10003.79	10018.71	119.52	26.38	15.04	23.07	1.77	4.53
11	ROB	10018.71	10033.63	25.30	10.37	14.95	4.88	0.69	2.44
12	ROB	10033.63	10048.56	0.23	0.34	3.21	0.05	0.11	0.69

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9988.40	9992.74	10.56	3.33	3.73	2.04	2.58	3.17
2	Chan	9992.74	9994.32	42.76	4.76	1.65	8.25	3.02	8.98
3	Chan	9994.32	9995.90	54.95	5.54	1.65	10.61	3.51	9.92
4	Chan	9995.90	9997.48	66.25	6.16	1.63	12.79	3.90	10.76
5	Chan	9997.48	9999.06	62.15	5.89	1.60	12.00	3.73	10.56
6	Chan	9999.06	10000.63	54.96	5.47	1.60	10.61	3.46	10.05
7	Chan	10000.63	10002.21	48.18	5.05	1.60	9.30	3.20	9.53
8	Chan	10002.21	10003.79	41.71	4.63	1.60	8.05	2.94	9.00
9	ROB	10003.79	10018.71	136.48	23.88	14.24	26.35	1.86	5.72

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: 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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.595

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9964.833	2217.979	965.143	2217.899	978.613	2214.619	978.913	2214.549	978.923	2214.54
9979.223	2214.49	9987.9	2213.019	987.903	2213.019	993.373	2212.681	000.41	2212.05
10004.29	2212.99	410005.59	2213.311	0013.71	2215.141	0017.18	2215.171	0019.91	2215.2
10024.68	2215.21	0037.91	2215.321	0039.73	2215.331	0043.73	2215.61	10044.2	2215.64
10048.15	2215.89	10049.58	2215.931	0052.18	2216.121	0053.45	2216.141	0054.62	2216.22
10057.42	2216.21	0059.45	2216.311	0061.21	2216.39	10061.7	2216.411	0063.09	2216.45
10066	2216.61	0070.21	2216.751	0075.35	2216.941	0076.32	2217.041	0082.33	2217.25
10085.68	2217.661	0086.72	2217.761	0088.71	2217.951	0089.79	2218.02		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9964.833	.065	9987.9	.051	004.29	.061	0019.91	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.91	004.29	98.4	68.37	23.54	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2216.35	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.065	0.050	0.047
W.S. Elev (ft)	2215.92	Reach Len. (ft)	98.40	68.37	23.54
Crit W.S. (ft)		Flow Area (sq ft)	23.17	55.01	37.78
E.G. Slope (ft/ft)	0.008722	Area (sq ft)	23.17	55.01	37.78
Q Total (cfs)	518.00	Flow (cfs)	66.24	340.14	111.62
Top Width (ft)	75.94	Top Width (ft)	14.66	16.39	44.89
Vel Total (ft/s)	4.47	Avg. Vel. (ft/s)	2.86	6.18	2.95
Max Chl Dpth (ft)	3.87	Hydr. Depth (ft)	1.58	3.36	0.84
Conv. Total (cfs)	5546.7	Conv. (cfs)	709.3	3642.2	1195.2
Length Wtd. (ft)	65.52	Wetted Per. (ft)	14.96	16.54	45.15
Min Ch El (ft)	2212.05	Shear (lb/sq ft)	0.84	1.81	0.46
Alpha	1.40	Stream Power (lb/ft s)	2.41	11.20	1.35
Frctn Loss (ft)	0.86	Cum Volume (acre-ft)	1.92	3.54	1.86
C & E Loss (ft)	0.07	Cum SA (acres)	1.84	1.57	2.02

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.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2216.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.	0.065	0.050	0.050
W.S. Elev (ft)	2215.85	Reach Len. (ft)	98.40	68.37	23.54
Crit W.S. (ft)		Flow Area (sq ft)	17.10	53.86	30.21
E.G. Slope (ft/ft)	0.010550	Area (sq ft)	17.10	53.86	30.21
Q Total (cfs)	518.00	Flow (cfs)	59.41	361.17	97.42
Top Width (ft)	55.00	Top Width (ft)	7.90	16.39	30.71
Vel Total (ft/s)	5.12	Avg. Vel. (ft/s)	3.47	6.71	3.22
Max Chl Dpth (ft)	3.80	Hydr. Depth (ft)	2.16	3.29	0.98
Conv. Total (cfs)	5043.2	Conv. (cfs)	578.4	3516.3	948.4
Length Wtd. (ft)	65.98	Wetted Per. (ft)	9.51	16.54	31.51
Min Ch El (ft)	2212.05	Shear (lb/sq ft)	1.19	2.14	0.63
Alpha	1.32	Stream Power (lb/ft s)	4.12	14.38	2.04
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	1.35	3.79	1.06
C & E Loss (ft)	0.05	Cum SA (acres)	0.81	1.57	0.72

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.45	9974.06	0.03	0.08	0.85	0.01	0.10	0.39
2	LOB	9974.06	9978.67	5.36	3.51	4.75	1.04	0.76	1.53
3	LOB	9978.67	9983.29	21.20	7.97	4.68	4.09	1.73	2.66
4	LOB	9983.29	9987.90	39.64	11.60	4.68	7.65	2.52	3.42
5	Chan	9987.90	9990.24	39.91	6.98	2.35	7.70	2.98	5.72
6	Chan	9990.24	9992.58	43.09	7.30	2.35	8.32	3.12	5.90
7	Chan	9992.58	9994.93	46.72	7.67	2.35	9.02	3.28	6.09
8	Chan	9994.93	9997.27	51.67	8.15	2.35	9.97	3.48	6.34
9	Chan	9997.27	9999.61	56.98	8.65	2.35	11.00	3.69	6.59
10	Chan	9999.61	10001.95	57.39	8.74	2.39	11.08	3.73	6.57
11	Chan	10001.95	10004.29	44.38	7.52	2.41	8.57	3.21	5.90
12	ROB	10004.29	10021.39	65.52	23.07	17.34	12.65	1.35	2.84
13	ROB	10021.39	10038.49	39.35	11.43	17.10	7.60	0.67	3.44
14	ROB	10038.49	10055.59	6.75	3.29	10.71	1.30	0.31	2.05

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.67	9983.29	14.59	5.82	4.83	2.82	1.77	2.51
2	LOB	9983.29	9987.90	44.82	11.28	4.68	8.65	2.45	3.97
3	Chan	9987.90	9990.24	42.18	6.81	2.35	8.14	2.91	6.19
4	Chan	9990.24	9992.58	45.63	7.14	2.35	8.81	3.05	6.39
5	Chan	9992.58	9994.93	49.56	7.51	2.35	9.57	3.21	6.60
6	Chan	9994.93	9997.27	54.92	7.99	2.35	10.60	3.41	6.88
7	Chan	9997.27	9999.61	60.69	8.48	2.35	11.72	3.62	7.15
8	Chan	9999.61	10001.95	61.15	8.58	2.39	11.81	3.66	7.13
9	Chan	10001.95	10004.29	47.04	7.35	2.41	9.08	3.14	6.40
10	ROB	10004.29	10021.39	67.59	21.87	17.34	13.05	1.28	3.09
11	ROB	10021.39	10038.49	29.83	8.35	14.17	5.76	0.61	3.57

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

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.582

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9909.894	2217.749	9912.444	2217.249	9920.084	2215.699	9926.194	2215.489	9934.274	2215.15
9939.064	2214.969	9945.524	2214.719	9947.334	2214.639	9948.614	2214.589	9951.694	2214.43
9957.664	2214.679	9961.374	2214.849	9965.054	2214.719	9970.654	2214.539	9987.074	2213.93
9990.44	2212.811	9994.834	2211.359	9999.944	2209.47	10009.7	2213.251	10010.17	2213.43
10010.35	2213.471	10010.52	2213.511	10011.15	2213.641	10015.28	2214.561	10016.43	2214.7
10016.66	2214.71	10016.95	2214.71	10017.34	2214.71	10018.96	2214.741	10020.19	2214.77
10028.78	2215.081	10034.15	2215.361	10038.15	2215.551	10050.87	2216.251	10061.87	2216.61
10062.36	2216.641	10062.38	2216.641	10063.53	2216.771	10065.11	2216.931	10065.69	2216.95
10074.84	2217.831	10076.93	2217.981	10077.19	2218				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9909.894	.055	9990.44	.05	10009.7	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.44	10009.7	124.01	150.03	160.11	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2215.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2214.27	Reach Len. (ft)	124.01	150.03	160.11
Crit W.S. (ft)	2214.27	Flow Area (sq ft)	4.55	57.64	2.02
E.G. Slope (ft/ft)	0.021874	Area (sq ft)	4.55	57.64	2.02
Q Total (cfs)	518.00	Flow (cfs)	9.15	504.02	4.84
Top Width (ft)	36.05	Top Width (ft)	12.53	19.26	4.25
Vel Total (ft/s)	8.07	Avg. Vel. (ft/s)	2.01	8.74	2.39
Max Chl Dpth (ft)	4.79	Hydr. Depth (ft)	0.36	2.99	0.48
Conv. Total (cfs)	3502.4	Conv. (cfs)	61.9	3407.9	32.7
Length Wtd. (ft)	146.42	Wetted Per. (ft)	12.72	20.54	4.38
Min Ch El (ft)	2209.47	Shear (lb/sq ft)	0.49	3.83	0.63
Alpha	1.15	Stream Power (lb/ft s)	0.98	33.51	1.51
Frctn Loss (ft)	2.66	Cum Volume (acre-ft)	1.89	3.46	1.85
C & E Loss (ft)	0.14	Cum SA (acres)	1.81	1.54	2.01

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2215.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.05	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2214.37	Reach Len. (ft)	124.01	150.03	160.11
Crit W.S. (ft)	2214.37	Flow Area (sq ft)	5.82	59.59	2.46
E.G. Slope (ft/ft)	0.019188	Area (sq ft)	5.82	59.59	2.46
Q Total (cfs)	518.00	Flow (cfs)	12.85	499.00	6.15
Top Width (ft)	36.05	Top Width (ft)	12.53	19.26	4.26
Vel Total (ft/s)	7.63	Avg. Vel. (ft/s)	2.21	8.37	2.51
Max Chl Dpth (ft)	4.90	Hydr. Depth (ft)	0.46	3.09	0.58
Conv. Total (cfs)	3739.5	Conv. (cfs)	92.8	3602.3	44.4
Length Wtd. (ft)	146.13	Wetted Per. (ft)	12.82	20.54	4.48
Min Ch El (ft)	2209.47	Shear (lb/sq ft)	0.54	3.48	0.66
Alpha	1.16	Stream Power (lb/ft s)	1.20	29.11	1.64
Frctn Loss (ft)	2.44	Cum Volume (acre-ft)	1.32	3.70	1.06
C & E Loss (ft)	0.09	Cum SA (acres)	0.79	1.54	0.71

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9974.33	9990.44	9.15	4.55	12.72	1.77	0.36	2.01
2	Chan	9990.44	9993.19	32.38	5.26	2.90	6.25	1.91	6.16
3	Chan	9993.19	9995.94	62.27	7.80	2.91	12.02	2.83	7.98
4	Chan	9995.94	9998.69	102.33	10.53	2.93	19.75	3.83	9.71
5	Chan	9998.69	10001.45	135.23	12.47	2.94	26.11	4.53	10.84
6	Chan	10001.45	10004.20	95.36	10.12	2.95	18.41	3.68	9.42
7	Chan	10004.20	10006.95	53.94	7.19	2.95	10.41	2.61	7.50
8	Chan	10006.95	10009.70	22.52	4.26	2.95	4.35	1.55	5.29
9	ROB	10009.70	10023.20	4.84	2.02	4.38	0.93	0.48	2.39

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9974.33	9990.44	12.85	5.82	12.82	2.48	0.46	2.21
2	Chan	9990.44	9993.19	33.18	5.54	2.90	6.40	2.01	5.99
3	Chan	9993.19	9995.94	62.07	8.08	2.91	11.98	2.94	7.68
4	Chan	9995.94	9998.69	100.48	10.81	2.93	19.40	3.93	9.29
5	Chan	9998.69	10001.45	131.90	12.75	2.94	25.46	4.63	10.35
6	Chan	10001.45	10004.20	93.80	10.40	2.95	18.11	3.78	9.02
7	Chan	10004.20	10006.95	54.03	7.47	2.95	10.43	2.72	7.23
8	Chan	10006.95	10009.70	23.53	4.54	2.95	4.54	1.65	5.19
9	ROB	10009.70	10023.20	6.15	2.46	4.48	1.19	0.58	2.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.553

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9878.56	2216.01	9885.57	2214.85	9888.01	2214.42	9890.97	2213.91	9893.39	2213.55
9895.32	2213.25	9907.72	2211.7	9909.59	2211.62	9917.33	2211.22	9918.66	2211.16
9920.02	2211.22	9925.29	2211.49	9933.16	2211.81	9937.37	2211.88	9939.77	2211.89
9941.18	2211.99	9958.38	2211.39	9969.65	2211.02	9988.51	2209.41	9989.05	2209.36
9989.29	2209.33	10000.21	2207.95	10003.14	2209.26	10009.89	2212.31	10010.01	2212.35
10017.47	2212.94	10021.8	2213.51	10040.11	2215.15	10045.16	2215.19	10046.62	2215.27
10051.52	2215.73								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9878.56	.06	9909.59	.055	9989.05	.05	10003.14	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.05	10003.14	154.28	169.39	181.05	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2212.49	Element			
Vel Head (ft)	0.68	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2211.81	Reach Len. (ft)	154.28	169.39	181.05
Crit W.S. (ft)	2211.81	Flow Area (sq ft)	49.42	44.59	7.20
E.G. Slope (ft/ft)	0.015329	Area (sq ft)	49.42	44.59	7.20
Q Total (cfs)	518.00	Flow (cfs)	146.09	347.56	24.36
Top Width (ft)	88.78	Top Width (ft)	69.03	14.09	5.66
Vel Total (ft/s)	5.12	Avg. Vel. (ft/s)	2.96	7.79	3.38
Max Chl Dpth (ft)	3.86	Hydr. Depth (ft)	0.72	3.16	1.27
Conv. Total (cfs)	4183.8	Conv. (cfs)	1179.9	2807.1	196.7
Length Wtd. (ft)	166.33	Wetted Per. (ft)	69.15	14.46	6.20
Min Ch El (ft)	2207.95	Shear (lb/sq ft)	0.68	2.95	1.11
Alpha	1.67	Stream Power (lb/ft s)	2.02	23.00	3.76
Frctn Loss (ft)	3.11	Cum Volume (acre-ft)	1.81	3.28	1.83
C & E Loss (ft)	0.01	Cum SA (acres)	1.70	1.48	1.99

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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2212.69	Element			
Vel Head (ft)	0.76	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2211.93	Reach Len. (ft)	154.28	169.39	181.05
Crit W.S. (ft)	2211.61	Flow Area (sq ft)	31.68	46.28	3.08
E.G. Slope (ft/ft)	0.014634	Area (sq ft)	31.68	46.28	3.08
Q Total (cfs)	518.00	Flow (cfs)	148.19	361.33	8.48
Top Width (ft)	32.74	Top Width (ft)	17.35	14.09	1.30
Vel Total (ft/s)	6.39	Avg. Vel. (ft/s)	4.68	7.81	2.75
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)	1.83	3.28	2.37
Conv. Total (cfs)	4282.1	Conv. (cfs)	1225.0	2986.9	70.1
Length Wtd. (ft)	166.05	Wetted Per. (ft)	18.50	14.46	3.50
Min Ch El (ft)	2207.95	Shear (lb/sq ft)	1.56	2.92	0.80
Alpha	1.20	Stream Power (lb/ft s)	7.32	22.83	2.21
Frctn Loss (ft)	3.10	Cum Volume (acre-ft)	1.27	3.52	1.05
C & E Loss (ft)	0.00	Cum SA (acres)	0.75	1.48	0.70

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9900.66	9922.76	10.46	6.44	15.94	2.02	0.40	1.62
2	LOB	9922.76	9944.85	2.25	2.24	10.41	0.43	0.21	1.00
3	LOB	9944.85	9966.95	10.32	7.34	20.63	1.99	0.36	1.41

4	LOB	9966.95	9989.05	123.05	33.40	22.17	23.76	1.51	3.68
5	Chan	9989.05	9991.06	35.39	5.19	2.03	6.83	2.58	6.82
6	Chan	9991.06	9993.08	41.40	5.70	2.03	7.99	2.83	7.27
7	Chan	9993.08	9995.09	47.78	6.21	2.03	9.22	3.09	7.69
8	Chan	9995.09	9997.10	54.55	6.73	2.03	10.53	3.34	8.11
9	Chan	9997.10	9999.11	61.63	7.23	2.03	11.90	3.59	8.52
10	Chan	9999.11	10001.13	63.81	7.50	2.11	12.32	3.73	8.50
11	Chan	10001.13	10003.14	43.00	6.03	2.21	8.30	3.00	7.13
12	ROB	10003.14	10012.82	24.36	7.20	6.20	4.70	1.27	3.39

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9966.95	9989.05	148.19	31.68	18.50	28.61	1.83	4.68
2	Chan	9989.05	9991.06	37.33	5.43	2.03	7.21	2.70	6.88
3	Chan	9991.06	9993.08	43.37	5.94	2.03	8.37	2.95	7.30
4	Chan	9993.08	9995.09	49.78	6.45	2.03	9.61	3.21	7.72
5	Chan	9995.09	9997.10	56.57	6.97	2.03	10.92	3.46	8.12
6	Chan	9997.10	9999.11	63.64	7.48	2.03	12.29	3.71	8.51
7	Chan	9999.11	10001.13	65.77	7.75	2.11	12.70	3.85	8.49
8	Chan	10001.13	10003.14	44.88	6.27	2.21	8.66	3.12	7.16
9	ROB	10003.14	10012.82	8.48	3.08	3.50	1.64	2.37	2.75

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.521

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9939.568	2209.12	9939.898	2209.11	9944.708	2209.03	9947.438	2208.98	9948.438	2208.94
9954.118	2208.64	9955.148	2208.59	9956.378	2208.53	9962.628	2208.16	9963.998	2208.08
9965.188	2208.02	9969.348	2207.77	9975.368	2207.37	9980.418	2207.34	9986.318	2207
9988.748	2206.81	9988.75	2206.81	9994.028	2206.54	9996.648	2206.43	10000.78	2206.14
10006.27	2206.72	10014.38	2207.59	10018.8	2208.07	10030.98	2209.12	10034.33	2209.29
10053.47	2210.25	10058.75	2210.51						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9939.568	.055	9988.75	.05	10006.27	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.75	10006.27	60.08	59.8	59.89	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2209.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2208.71	Reach Len. (ft)	60.08	59.80	59.89
Crit W.S. (ft)	2208.71	Flow Area (sq ft)	34.79	39.10	18.86
E.G. Slope (ft/ft)	0.023373	Area (sq ft)	34.79	39.10	18.86
Q Total (cfs)	518.00	Flow (cfs)	140.40	302.81	74.79
Top Width (ft)	73.45	Top Width (ft)	35.97	17.52	19.96
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)	4.04	7.74	3.96
Max Chl Dpth (ft)	2.57	Hydr. Depth (ft)	0.97	2.23	0.95
Conv. Total (cfs)	3388.2	Conv. (cfs)	918.3	1980.7	489.2
Length Wtd. (ft)	59.88	Wetted Per. (ft)	36.03	17.57	20.06
Min Ch El (ft)	2206.14	Shear (lb/sq ft)	1.41	3.25	1.37
Alpha	1.34	Stream Power (lb/ft s)	5.69	25.15	5.44
Frctn Loss (ft)	1.42	Cum Volume (acre-ft)	1.66	3.12	1.77
C & E Loss (ft)	0.03	Cum SA (acres)	1.51	1.42	1.94

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2209.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.81	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2208.78	Reach Len. (ft)	60.08	59.80	59.89
Crit W.S. (ft)	2208.69	Flow Area (sq ft)	24.67	40.32	11.02
E.G. Slope (ft/ft)	0.024562	Area (sq ft)	24.67	40.32	11.02
Q Total (cfs)	518.00	Flow (cfs)	132.73	326.72	58.55
Top Width (ft)	39.92	Top Width (ft)	15.96	17.52	6.44
Vel Total (ft/s)	6.81	Avg. Vel. (ft/s)	5.38	8.10	5.31
Max Chl Dpth (ft)	2.64	Hydr. Depth (ft)	1.55	2.30	1.71

Conv. Total (cfs)	3305.2	Conv. (cfs)	846.9	2084.7	373.6
Length Wtd. (ft)	59.89	Wetted Per. (ft)	17.22	17.57	7.85
Min Ch El (ft)	2206.14	Shear (lb/sq ft)	2.20	3.52	2.15
Alpha	1.12	Stream Power (lb/ft s)	11.82	28.51	11.44
Frctn Loss (ft)	1.47	Cum Volume (acre-ft)	1.17	3.35	1.02
C & E Loss (ft)	0.01	Cum SA (acres)	0.69	1.42	0.68

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9949.40	9959.24	1.18	1.09	6.47	0.23	0.17	1.08
2	LOB	9959.24	9969.08	16.44	6.26	9.85	3.17	0.64	2.63
3	LOB	9969.08	9978.91	48.01	11.91	9.85	9.27	1.21	4.03
4	LOB	9978.91	9988.75	74.76	15.53	9.85	14.43	1.58	4.81
5	Chan	9988.75	9991.25	34.89	4.92	2.51	6.74	1.96	7.10
6	Chan	9991.25	9993.76	38.76	5.24	2.51	7.48	2.09	7.40
7	Chan	9993.76	9996.26	42.52	5.54	2.51	8.21	2.21	7.68
8	Chan	9996.26	9998.76	46.72	5.86	2.51	9.02	2.34	7.97
9	Chan	9998.76	10001.26	52.37	6.28	2.51	10.11	2.51	8.34
10	Chan	10001.26	10003.77	48.09	5.97	2.52	9.28	2.39	8.05
11	Chan	10003.77	10006.27	39.46	5.30	2.52	7.62	2.12	7.44
12	ROB	10006.27	10016.77	67.11	14.96	10.56	12.96	1.43	4.49
13	ROB	10016.77	10027.26	7.68	3.91	9.50	1.48	0.41	1.97

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.08	9978.91	38.57	8.45	7.37	7.45	1.38	4.56
2	LOB	9978.91	9988.75	94.16	16.22	9.85	18.18	1.65	5.81
3	Chan	9988.75	9991.25	37.91	5.09	2.51	7.32	2.03	7.45
4	Chan	9991.25	9993.76	41.97	5.41	2.51	8.10	2.16	7.76
5	Chan	9993.76	9996.26	45.90	5.71	2.51	8.86	2.28	8.04
6	Chan	9996.26	9998.76	50.30	6.03	2.51	9.71	2.41	8.34
7	Chan	9998.76	10001.26	56.21	6.45	2.51	10.85	2.58	8.71
8	Chan	10001.26	10003.77	51.73	6.15	2.52	9.99	2.46	8.42
9	Chan	10003.77	10006.27	42.70	5.48	2.52	8.24	2.19	7.80
10	ROB	10006.27	10016.77	58.55	11.02	7.85	11.30	1.71	5.31

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: X3
REACH: Reach 1 RS: 0.510

INPUT
Description:
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9930.579	2209.69	9931.439	2209.51	9932.729	2209.34	9934.239	2209.21	9939.439	2209.26
9940.779	2209.16	9942.929	2209.19	9944.739	2209.05	9948.529	2208.71	9958.409	2207.82
9960.819	2207.56	9965.309	2207.37	9966.659	2207.26	9967.579	2207.09	9971.739	2206.84
9984.589	2205.19	9988.969	2204.69	9989.559	2204.69	9991.679	2204.53	9991.68	2204.53
9996.829	2204.02	10000.76	2203.71	10004.46	2204.52	10004.94	2204.63	10015.57	2207.35
10035.44	2207.45	10036.66	2207.46	10036.99	2207.47	10038.46	2207.46	10038.79	2207.46
10045.98	2207.41	10046.94	2207.39	10048.98	2207.36	10054.2	2207.31	10058.44	2207.23
10068.43	2207.76	10073.76	2208.1						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9930.579	.055	9991.68	.05	10004.46	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.68	10004.46	279.59	219.2	156.3	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2207.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2206.93	Reach Len. (ft)	279.59	219.20	156.30
Crit W.S. (ft)	2206.93	Flow Area (sq ft)	26.97	36.21	11.50
E.G. Slope (ft/ft)	0.024196	Area (sq ft)	26.97	36.21	11.50
Q Total (cfs)	518.00	Flow (cfs)	131.30	332.89	53.81
Top Width (ft)	43.75	Top Width (ft)	21.49	12.78	9.48
Vel Total (ft/s)	6.94	Avg. Vel. (ft/s)	4.87	9.19	4.68
Max Chl Dpth (ft)	3.23	Hydr. Depth (ft)	1.26	2.83	1.21
Conv. Total (cfs)	3330.1	Conv. (cfs)	844.1	2140.1	345.9
Length Wtd. (ft)	229.21	Wetted Per. (ft)	21.63	12.91	9.78
Min Ch El (ft)	2203.70	Shear (lb/sq ft)	1.88	4.24	1.78
Alpha	1.30	Stream Power (lb/ft s)	9.17	38.95	8.31
Frctn Loss (ft)	3.92	Cum Volume (acre-ft)	1.62	3.07	1.75
C & E Loss (ft)	0.15	Cum SA (acres)	1.47	1.40	1.92

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2208.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.92	Wt. n-Val.	0.055	0.050	
W.S. Elev (ft)	2207.18	Reach Len. (ft)	279.59	219.20	156.30
Crit W.S. (ft)	2207.18	Flow Area (sq ft)	32.31	39.38	
E.G. Slope (ft/ft)	0.024564	Area (sq ft)	32.31	39.38	
Q Total (cfs)	518.00	Flow (cfs)	177.42	340.58	
Top Width (ft)	34.27	Top Width (ft)	21.49	12.78	
Vel Total (ft/s)	7.22	Avg. Vel. (ft/s)	5.49	8.65	
Max Chl Dpth (ft)	3.48	Hydr. Depth (ft)	1.50	3.08	
Conv. Total (cfs)	3305.1	Conv. (cfs)	1132.0	2173.1	
Length Wtd. (ft)	235.15	Wetted Per. (ft)	21.88	15.57	
Min Ch El (ft)	2203.70	Shear (lb/sq ft)	2.26	3.88	
Alpha	1.14	Stream Power (lb/ft s)	12.43	33.55	
Frctn Loss (ft)	3.56	Cum Volume (acre-ft)	1.13	3.30	1.01
C & E Loss (ft)	0.15	Cum SA (acres)	0.66	1.40	0.68

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.24	9979.46	10.48	4.62	9.33	2.02	0.50	2.27
2	LOB	9979.46	9991.68	120.82	22.35	12.30	23.32	1.83	5.40
3	Chan	9991.68	9993.51	38.44	4.55	1.84	7.42	2.49	8.44
4	Chan	9993.51	9995.33	43.17	4.88	1.83	8.33	2.67	8.84
5	Chan	9995.33	9997.16	48.16	5.21	1.83	9.30	2.85	9.24
6	Chan	9997.16	9998.98	52.75	5.50	1.83	10.18	3.01	9.59
7	Chan	9998.98	10000.81	57.16	5.78	1.83	11.04	3.16	9.90
8	Chan	10000.81	10002.63	52.18	5.51	1.87	10.07	3.02	9.47
9	Chan	10002.63	10004.46	41.03	4.77	1.87	7.92	2.61	8.60
10	ROB	10004.46	10018.32	53.81	11.50	9.78	10.39	1.21	4.68

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.24	9979.46	21.15	6.92	9.58	4.08	0.75	3.06
2	LOB	9979.46	9991.68	156.27	25.39	12.30	30.17	2.08	6.15
3	Chan	9991.68	9993.51	42.43	5.01	1.84	8.19	2.74	8.47
4	Chan	9993.51	9995.33	47.17	5.33	1.83	9.11	2.92	8.84
5	Chan	9995.33	9997.16	52.15	5.67	1.83	10.07	3.10	9.20
6	Chan	9997.16	9998.98	56.71	5.95	1.83	10.95	3.26	9.52
7	Chan	9998.98	10000.81	61.09	6.23	1.83	11.79	3.41	9.81
8	Chan	10000.81	10002.63	56.08	5.96	1.87	10.83	3.27	9.40
9	Chan	10002.63	10004.46	24.95	5.23	4.53	4.82	2.86	4.77

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.468

INPUT
Description:
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9924.908	2207.969	9932.708	2207.319	9944.028	2206.419	9947.768	2206.19	9951.748	2205.78
9959.118	2205.229	9969.268	2202.829	9970.428	2202.489	9970.718	2202.489	9971.048	2202.48
9971.218	2202.379	9977.078	2201.089	9985.618	2201.539	9989.938	2201.69	9989.94	2201.689
9997.318	2200	9998.988	2199.611	10009.35	2201.981	10009.61	2202.031	10016.59	2202.32
10038.11	2203.181	10039.17	2203.231	10039.66	2203.251	10041.84	2203.281	10045.95	2203.28
10049.46	2203.28	10050.8	2203.291	10060.64	2203.791	10074.54	2204.51	10074.67	2204.51
10074.75	2204.511	10074.97	2204.521	10076.56	2204.61	10082.68	2204.491	10083.55	2204.44
10085.34	2204.451	10087.21	2204.411	10089.52	2204.44	10093	2204.531	10096.97	2204.54
10101.63	2204.761	10104.49	2204.871	10108.69	2204.991	10110.17	2205.051	10114.49	2204.98
10118.04	2205.051	10120.87	2205.441	10125.62	2205.71	10126.94	2205.551	10134.41	2205.75
10134.45	2205.751	10134.61	2205.761	10139.75	2206.171	10140.76	2206.211	10142.69	2206.36

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9924.908	.035	9969.268	.06	9989.94	.051	10009.35	.065	10016.59	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.94	10009.35	121.17	146.71	173.88	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2203.82	Element			
Vel Head (ft)	0.46	Wt. n-Val.	0.060	0.050	0.060
W.S. Elev (ft)	2203.36	Reach Len. (ft)	121.17	146.71	173.88
Crit W.S. (ft)	2203.06	Flow Area (sq ft)	36.91	51.13	23.07
E.G. Slope (ft/ft)	0.012718	Area (sq ft)	36.91	51.13	23.07
Q Total (cfs)	518.00	Flow (cfs)	147.57	321.33	49.09
Top Width (ft)	85.26	Top Width (ft)	22.97	19.41	42.89
Vel Total (ft/s)	4.66	Avg. Vel. (ft/s)	4.00	6.28	2.13
Max Chl Dpth (ft)	3.75	Hydr. Depth (ft)	1.61	2.63	0.54
Conv. Total (cfs)	4593.3	Conv. (cfs)	1308.6	2849.4	435.3
Length Wtd. (ft)	149.91	Wetted Per. (ft)	23.27	19.91	42.92
Min Ch El (ft)	2199.61	Shear (lb/sq ft)	1.26	2.04	0.43
Alpha	1.36	Stream Power (lb/ft s)	5.04	12.81	0.91
Frctn Loss (ft)	2.69	Cum Volume (acre-ft)	1.42	2.85	1.69
C & E Loss (ft)	0.01	Cum SA (acres)	1.33	1.32	1.82

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2204.06	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.060	0.050	0.063
W.S. Elev (ft)	2203.62	Reach Len. (ft)	121.17	146.71	173.88
Crit W.S. (ft)		Flow Area (sq ft)	35.33	56.10	14.52
E.G. Slope (ft/ft)	0.010277	Area (sq ft)	35.33	56.10	14.52
Q Total (cfs)	518.00	Flow (cfs)	139.36	337.16	41.47
Top Width (ft)	45.91	Top Width (ft)	16.00	19.41	10.50
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)	3.94	6.01	2.86
Max Chl Dpth (ft)	4.01	Hydr. Depth (ft)	2.21	2.89	1.38
Conv. Total (cfs)	5109.7	Conv. (cfs)	1374.7	3325.9	409.1
Length Wtd. (ft)	147.52	Wetted Per. (ft)	17.94	19.91	11.68
Min Ch El (ft)	2199.61	Shear (lb/sq ft)	1.26	1.81	0.80
Alpha	1.19	Stream Power (lb/ft s)	4.98	10.86	2.28
Frctn Loss (ft)	2.19	Cum Volume (acre-ft)	0.91	3.06	0.98
C & E Loss (ft)	0.03	Cum SA (acres)	0.54	1.32	0.66

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.93	9976.93	37.90	11.43	10.24	7.32	1.15	3.32
2	LOB	9976.93	9989.94	109.67	25.48	13.03	21.17	1.96	4.30
3	Chan	9989.94	9992.71	27.92	5.52	2.84	5.39	1.99	5.06
4	Chan	9992.71	9995.49	44.29	7.28	2.85	8.55	2.63	6.08
5	Chan	9995.49	9998.26	63.52	9.04	2.85	12.26	3.26	7.02
6	Chan	9998.26	10001.03	73.44	9.87	2.84	14.18	3.56	7.44
7	Chan	10001.03	10003.80	54.31	8.23	2.84	10.48	2.97	6.60
8	Chan	10003.80	10006.58	36.40	6.47	2.85	7.03	2.33	5.62
9	Chan	10006.58	10009.35	21.45	4.71	2.84	4.14	1.70	4.55
10	ROB	10009.35	10036.02	48.07	21.37	26.69	9.28	0.80	2.25
11	ROB	10036.02	10062.69	1.02	1.70	16.22	0.20	0.10	0.60

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.93	9976.93	19.32	6.52	4.91	3.73	2.18	2.96
2	LOB	9976.93	9989.94	120.05	28.81	13.03	23.18	2.22	4.17
3	Chan	9989.94	9992.71	30.86	6.23	2.84	5.96	2.25	4.95
4	Chan	9992.71	9995.49	46.74	7.99	2.85	9.02	2.88	5.85
5	Chan	9995.49	9998.26	65.11	9.75	2.85	12.57	3.52	6.68
6	Chan	9998.26	10001.03	74.52	10.58	2.84	14.39	3.81	7.05
7	Chan	10001.03	10003.80	56.33	8.94	2.84	10.88	3.22	6.30
8	Chan	10003.80	10006.58	39.12	7.18	2.85	7.55	2.59	5.44
9	Chan	10006.58	10009.35	24.49	5.42	2.84	4.73	1.96	4.52
10	ROB	10009.35	10036.02	41.47	14.52	11.68	8.01	1.38	2.86

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: X3
REACH: Reach 1 RS: 0.440

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9926.478	2201.629	9932.528	2201.349	9934.448	2201.359	9936.718	2201.369	9937.958	2201.35
9938.198	2201.359	9961.698	2200.849	9962.968	2200.819	9965.478	2200.859	9967.998	2200.95
9971.868	2201.19	9974.668	2201.099	9978.348	2201.079	9978.948	2201.079	9988.478	2200.01
9990.198	2199.859	9992.168	2199.51	9992.17	2199.519	9999.228	2197.98	10006.92	2198.78
10015.63	2199.55	10021.51	2199.39	10027.78	2199.37	10031.41	2199.32	10037.73	2199.51
10049.59	2199.21	10050.32	2199.33	10053.03	2199.77	10053.97	2199.79	10058.22	2200.59
10059.1	2200.66	10060	2200.89	10063.88	2201.03	10064.8	2201.07	10065.39	2201.09
10069.88	2201.26	10073.91	2201.38	10076.15	2201.48	10079.45	2201.62	10080.81	2201.72
10083.16	2201.82	10084.69	2201.91	10087.32	2202				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9926.478	.055	9992.17	.05	10015.63	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.17	10015.63	153.2	160.56	168.2	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2201.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.055	0.050	0.050
W.S. Elev (ft)	2200.52	Reach Len. (ft)	153.20	160.56	168.20
Crit W.S. (ft)	2200.52	Flow Area (sq ft)	3.83	40.77	44.01
E.G. Slope (ft/ft)	0.027148	Area (sq ft)	3.83	40.77	44.01
Q Total (cfs)	518.00	Flow (cfs)	10.17	286.67	221.16
Top Width (ft)	73.94	Top Width (ft)	8.27	23.46	42.21
Vel Total (ft/s)	5.85	Avg. Vel. (ft/s)	2.65	7.03	5.02
Max Chl Dpth (ft)	2.54	Hydr. Depth (ft)	0.46	1.74	1.04
Conv. Total (cfs)	3143.8	Conv. (cfs)	61.7	1739.8	1342.3
Length Wtd. (ft)	162.17	Wetted Per. (ft)	8.34	23.70	42.34
Min Ch El (ft)	2197.98	Shear (lb/sq ft)	0.78	2.92	1.76
Alpha	1.12	Stream Power (lb/ft s)	2.07	20.50	8.85
Frctn Loss (ft)	4.00	Cum Volume (acre-ft)	1.36	2.69	1.56
C & E Loss (ft)	0.02	Cum SA (acres)	1.28	1.25	1.65

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2201.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.		0.050	0.050
W.S. Elev (ft)	2201.06	Reach Len. (ft)	153.20	160.56	168.20
Crit W.S. (ft)	2200.90	Flow Area (sq ft)		53.36	20.81
E.G. Slope (ft/ft)	0.023196	Area (sq ft)		53.36	20.81
Q Total (cfs)	518.00	Flow (cfs)		397.74	120.26
Top Width (ft)	36.19	Top Width (ft)		23.46	12.73
Vel Total (ft/s)	6.98	Avg. Vel. (ft/s)		7.45	5.78
Max Chl Dpth (ft)	3.08	Hydr. Depth (ft)		2.27	1.63
Conv. Total (cfs)	3401.1	Conv. (cfs)		2611.5	789.6
Length Wtd. (ft)	162.19	Wetted Per. (ft)		25.25	14.43
Min Ch El (ft)	2197.98	Shear (lb/sq ft)		3.06	2.09

Alpha	1.03	Stream Power (lb/ft s)		22.82	12.07
Frctn Loss (ft)	4.00	Cum Volume (acre-ft)	0.86	2.87	0.91
C & E Loss (ft)	0.01	Cum SA (acres)	0.52	1.25	0.61

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.03	9992.17	10.17	3.83	8.34	1.96	0.46	2.65
2	Chan	9992.17	9995.52	26.50	4.60	3.43	5.12	1.37	5.76
3	Chan	9995.52	9998.87	53.81	7.04	3.43	10.39	2.10	7.65
4	Chan	9998.87	10002.22	67.78	8.03	3.38	13.08	2.40	8.44
5	Chan	10002.22	10005.58	52.46	6.88	3.37	10.13	2.05	7.63
6	Chan	10005.58	10008.93	38.86	5.75	3.37	7.50	1.71	6.76
7	Chan	10008.93	10012.28	28.20	4.74	3.36	5.44	1.41	5.95
8	Chan	10012.28	10015.63	19.05	3.75	3.36	3.68	1.12	5.09
9	ROB	10015.63	10029.97	82.65	15.86	14.34	15.96	1.11	5.21
10	ROB	10029.97	10044.31	82.95	15.90	14.34	16.01	1.11	5.22
11	ROB	10044.31	10058.64	55.57	12.26	13.66	10.73	0.91	4.53

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9992.17	9995.52	32.95	6.40	4.98	6.36	1.91	5.15
2	Chan	9995.52	9998.87	72.28	8.83	3.43	13.95	2.64	8.18
3	Chan	9998.87	10002.22	87.26	9.83	3.38	16.85	2.93	8.88
4	Chan	10002.22	10005.58	71.01	8.68	3.37	13.71	2.59	8.18
5	Chan	10005.58	10008.93	56.25	7.54	3.37	10.86	2.25	7.46
6	Chan	10008.93	10012.28	44.31	6.54	3.36	8.55	1.95	6.78
7	Chan	10012.28	10015.63	33.67	5.54	3.36	6.50	1.65	6.07
8	ROB	10015.63	10029.97	120.26	20.81	14.43	23.22	1.63	5.78

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.410

INPUT
Description:
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9906.063	2200.12	9930.963	2197.38	9932.793	2197.16	9937.533	2196.97	9958.043	2196.12
9968.443	2195.79	9973.423	2195.51	9978.423	2195.35	9989.11	2194.94	9989.113	2194.94
9995.743	2194.21	0001.21	2193.57	10002.94	2194.21	0007.03	2195.39	10010.25	2195.47
10018.8	2195.71	0020.78	2195.75	10025.77	2195.86	10027.45	2195.68	10028.46	2195.58
10036.49	2194.81	10039.65	2195.44	10041.76	2195.86	10043.96	2196.31	10046	2196.74
10048.84	2197.12	10056.08	2197.36	10059.89	2198.19	10060.06	2198.22	10060.43	2198.25
10065.01	2198.67	10065.31	2198.69	10076.43	2199.69	10076.98	2199.74	10085.37	2200.56
10100.68	2201.98	10101	2202						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9906.063	.055	9989.11	.05	10007.03	.06	10046	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.11	10010.25	173.64	158.58	145.9	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2197.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.52	Wt. n-Val.	0.055	0.050	0.060
W.S. Elev (ft)	2196.49	Reach Len. (ft)	173.64	158.58	145.90
Crit W.S. (ft)	2196.49	Flow Area (sq ft)	31.72	41.81	32.15
E.G. Slope (ft/ft)	0.022550	Area (sq ft)	31.72	41.81	32.15
Q Total (cfs)	518.00	Flow (cfs)	110.28	294.25	113.47
Top Width (ft)	95.67	Top Width (ft)	39.97	21.14	34.56
Vel Total (ft/s)	4.90	Avg. Vel. (ft/s)	3.48	7.04	3.53
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)	0.79	1.98	0.93
Conv. Total (cfs)	3449.5	Conv. (cfs)	734.4	1959.5	755.6
Length Wtd. (ft)	157.78	Wetted Per. (ft)	40.00	21.50	34.78

Min Ch El (ft)	2193.57	Shear (lb/sq ft)	1.12	2.74	1.30
Alpha	1.39	Stream Power (lb/ft s)	3.88	19.27	4.59
Frctn Loss (ft)	1.88	Cum Volume (acre-ft)	1.30	2.54	1.41
C & E Loss (ft)	0.01	Cum SA (acres)	1.20	1.17	1.51

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2197.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.88	Wt. n-Val.		0.051	0.060
W.S. Elev (ft)	2196.95	Reach Len. (ft)	173.64	158.58	145.90
Crit W.S. (ft)	2196.95	Flow Area (sq ft)		51.53	22.51
E.G. Slope (ft/ft)	0.026273	Area (sq ft)		51.53	22.51
Q Total (cfs)	518.00	Flow (cfs)		417.23	100.77
Top Width (ft)	38.91	Top Width (ft)		21.14	17.77
Vel Total (ft/s)	7.00	Avg. Vel. (ft/s)		8.10	4.48
Max Chl Dpth (ft)	3.38	Hydr. Depth (ft)		2.44	1.27
Conv. Total (cfs)	3195.8	Conv. (cfs)		2574.1	621.7
Length Wtd. (ft)	155.71	Wetted Per. (ft)		23.51	19.11
Min Ch El (ft)	2193.57	Shear (lb/sq ft)		3.60	1.93
Alpha	1.16	Stream Power (lb/ft s)		29.11	8.65
Frctn Loss (ft)	2.05	Cum Volume (acre-ft)	0.86	2.68	0.83
C & E Loss (ft)	0.01	Cum SA (acres)	0.52	1.17	0.56

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9939.28	9955.89	0.90	0.94	6.76	0.17	0.14	0.95
2	LOB	9955.89	9972.50	26.08	10.24	16.62	5.03	0.62	2.55
3	LOB	9972.50	9989.11	83.31	20.55	16.62	16.08	1.24	4.05
4	Chan	9989.11	9992.13	32.35	5.19	3.04	6.25	1.72	6.24
5	Chan	9992.13	9995.15	43.63	6.21	3.04	8.42	2.05	7.03
6	Chan	9995.15	9998.17	56.31	7.23	3.04	10.87	2.39	7.79
7	Chan	9998.17	10001.19	70.61	8.28	3.04	13.63	2.74	8.52
8	Chan	10001.19	10004.21	54.64	7.23	3.18	10.55	2.40	7.55
9	Chan	10004.21	10007.23	24.67	4.48	3.14	4.76	1.48	5.51
10	Chan	10007.23	10010.25	12.05	3.19	3.02	2.33	1.06	3.78
11	ROB	10010.25	10028.40	46.89	14.68	18.17	9.05	0.81	3.19
12	ROB	10028.40	10046.55	66.58	17.48	16.61	12.85	1.07	3.81

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9989.11	9992.13	36.08	6.57	5.05	6.97	2.18	5.49
2	Chan	9992.13	9995.15	64.36	7.59	3.04	12.42	2.51	8.48
3	Chan	9995.15	9998.17	79.49	8.62	3.04	15.35	2.85	9.22
4	Chan	9998.17	10001.19	96.31	9.67	3.04	18.59	3.20	9.96
5	Chan	10001.19	10004.21	77.12	8.62	3.18	14.89	2.86	8.94
6	Chan	10004.21	10007.23	40.69	5.87	3.14	7.86	1.94	6.94
7	Chan	10007.23	10010.25	23.18	4.58	3.02	4.47	1.52	5.06
8	ROB	10010.25	10028.40	100.77	22.51	19.11	19.45	1.27	4.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.380

INPUT
Description: 16th Street
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9935.798	2196.229	942.198	2195.49	944.218	2195.099	945.058	2194.989	945.508	2194.92
9945.988	2194.859	946.298	2194.779	948.498	2194.69	953.648	2194.339	970.758	2193.45
9974.218	2193.289	983.388	2193	9990.83	2192.581	9995.648	2192.311	0000.18	2192.14
10002.73	2192.271	0014.68	2192.671	0035.21	2192.861	0036.01	2192.871	0037.69	2192.91
10040.07	2193	10043.13	2193.041	0046.28	2193.221	0065.28	2193.561	0065.37	2193.56
10069	2193.841	0072.12	2194.241	0073.96	2194.431	0077.53	2194.551	0080.94	2194.57
10083.88	2194.731	0096.16	2195.471	0098.16	2195.59	10101.5	2195.81	10104.7	2196.11
10105.54	2196.15								

Manning's n Values num= 2

Sta	n Val	Sta	n Val
9935.798	.025	10036.01	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.83	10014.68	43.04	35.74	25.64	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2194.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.025	0.025	0.031
W.S. Elev (ft)	2193.95	Reach Len. (ft)	43.04	35.74	25.64
Crit W.S. (ft)	2193.95	Flow Area (sq ft)	20.56	37.24	46.49
E.G. Slope (ft/ft)	0.007382	Area (sq ft)	20.56	37.24	46.49
Q Total (cfs)	518.00	Flow (cfs)	81.88	255.83	180.29
Top Width (ft)	108.87	Top Width (ft)	29.83	23.85	55.19
Vel Total (ft/s)	4.97	Avg. Vel. (ft/s)	3.98	6.87	3.88
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)	0.69	1.56	0.84
Conv. Total (cfs)	6028.9	Conv. (cfs)	953.0	2977.6	2098.3
Length Wtd. (ft)	34.39	Wetted Per. (ft)	29.86	23.87	55.22
Min Ch El (ft)	2192.14	Shear (lb/sq ft)	0.32	0.72	0.39
Alpha	1.26	Stream Power (lb/ft s)	1.26	4.94	1.50
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	1.19	2.40	1.28
C & E Loss (ft)	0.02	Cum SA (acres)	1.06	1.08	1.36

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2195.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.025	0.025	0.025
W.S. Elev (ft)	2194.22	Reach Len. (ft)	43.04	35.74	25.64
Crit W.S. (ft)	2194.22	Flow Area (sq ft)	3.63	43.54	24.10
E.G. Slope (ft/ft)	0.007908	Area (sq ft)	3.63	43.54	24.10
Q Total (cfs)	518.00	Flow (cfs)	18.52	343.51	155.97
Top Width (ft)	42.56	Top Width (ft)	2.31	23.85	16.40
Vel Total (ft/s)	7.27	Avg. Vel. (ft/s)	5.11	7.89	6.47
Max Chl Dpth (ft)	2.08	Hydr. Depth (ft)	1.57	1.83	1.47
Conv. Total (cfs)	5824.9	Conv. (cfs)	208.2	3862.7	1753.9
Length Wtd. (ft)	34.35	Wetted Per. (ft)	3.82	23.87	17.79
Min Ch El (ft)	2192.14	Shear (lb/sq ft)	0.47	0.90	0.67
Alpha	1.04	Stream Power (lb/ft s)	2.39	7.10	4.33
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	0.85	2.51	0.75
C & E Loss (ft)	0.03	Cum SA (acres)	0.52	1.08	0.50

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.81	9968.82	2.40	1.57	7.82	0.46	0.20	1.53
2	LOB	9968.82	9979.82	23.96	7.15	11.02	4.63	0.65	3.35

3	LOB	9979.82	9990.83	55.51	11.84	11.02	10.72	1.08	4.69
4	Chan	9990.83	9994.24	32.75	5.00	3.41	6.32	1.47	6.56
5	Chan	9994.24	9997.65	39.77	5.61	3.41	7.68	1.65	7.09
6	Chan	9997.65	10001.05	44.87	6.03	3.41	8.66	1.77	7.44
7	Chan	10001.05	10004.46	41.42	5.75	3.41	8.00	1.69	7.20
8	Chan	10004.46	10007.87	36.60	5.34	3.41	7.07	1.57	6.86
9	Chan	10007.87	10011.27	32.27	4.95	3.41	6.23	1.45	6.52
10	Chan	10011.27	10014.68	28.16	4.56	3.41	5.44	1.34	6.17
11	ROB	10014.68	10032.85	123.66	21.76	18.17	23.87	1.20	5.68
12	ROB	10032.85	10051.02	45.18	16.33	18.18	8.72	0.90	2.77
13	ROB	10051.02	10069.20	11.43	8.37	18.19	2.21	0.46	1.37
14	ROB	10069.20	10087.37	0.01	0.03	0.68	0.00	0.04	0.28

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.82	9990.83	18.52	3.63	3.82	3.57	1.57	5.11
2	Chan	9990.83	9994.24	44.72	5.90	3.41	8.63	1.73	7.59
3	Chan	9994.24	9997.65	52.79	6.51	3.41	10.19	1.91	8.11
4	Chan	9997.65	10001.05	58.61	6.93	3.41	11.31	2.03	8.45
5	Chan	10001.05	10004.46	54.68	6.65	3.41	10.56	1.95	8.22
6	Chan	10004.46	10007.87	49.16	6.24	3.41	9.49	1.83	7.88
7	Chan	10007.87	10011.27	44.16	5.85	3.41	8.53	1.72	7.55
8	Chan	10011.27	10014.68	39.38	5.46	3.41	7.60	1.60	7.21
9	ROB	10014.68	10032.85	155.98	24.10	17.79	30.11	1.47	6.47

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

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.373

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9940.981	2195.99	9942.471	2195.73	9943.051	2195.71	9943.441	2195.68	9943.661	2195.67
9949.771	2194.95	9950.231	2194.92	9953.661	2194.62	9956.201	2194.42	9958.161	2194.26
9977.361	2192.79	9980.561	2192.51	9984.59	2191.89	9984.591	2191.89	9991.381	2190.54
9998.101	2191.25	9998.471	2191.29	10017	2191.02	10017.51	2191.02	10021.76	2191.59
10025.02	2191.97	10028.28	2192.45	10028.87	2192.51	10032.14	2192.89	10033.03	2192.91
10036.46	2192.69	10036.87	2192.7	10042.5	2192.75	10045.91	2193.01	10046.91	2193.11
10052.07	2194	10052.11	2194	10057.35	2194.07	10057.98	2194.11	10062.36	2194
10063.3	2194.07	10065.84	2194.05	10068.09	2194.04	10069.27	2194.18	10070.08	2194.25
10073.93	2194.39	10076.21	2194.44	10081.61	2194.63	10084.86	2194.59	10089.19	2194.71
10092.02	2194.71	10094.43	2194.81	10096.26	2194.88	10100.69	2195.13	10101.59	2195.13
10106.26	2195.56	10106.93	2195.59	10112.5	2195.83	10113.43	2195.89	10114.01	2195.89
10119.43	2195.91	10119.96	2195.91	10120.7	2195.93	10122.78	2196		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9940.981	.055	9984.59	.05	10021.76	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.59	10021.76	133.01	160.35	190.31	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2193.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2193.03	Reach Len. (ft)	133.01	160.35	190.31
Crit W.S. (ft)	2193.03	Flow Area (sq ft)	5.50	70.53	11.30
E.G. Slope (ft/ft)	0.022213	Area (sq ft)	5.50	70.53	11.30
Q Total (cfs)	518.00	Flow (cfs)	13.68	477.10	27.22
Top Width (ft)	72.69	Top Width (ft)	11.22	37.17	24.30
Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)	2.49	6.76	2.41
Max Chl Dpth (ft)	2.48	Hydr. Depth (ft)	0.49	1.90	0.46
Conv. Total (cfs)	3475.6	Conv. (cfs)	91.8	3201.2	182.6
Length Wtd. (ft)	160.96	Wetted Per. (ft)	11.31	37.37	24.40
Min Ch El (ft)	2190.54	Shear (lb/sq ft)	0.67	2.62	0.64
Alpha	1.21	Stream Power (lb/ft s)	1.68	17.71	1.55
Frctn Loss (ft)	3.35	Cum Volume (acre-ft)	1.18	2.35	1.26
C & E Loss (ft)	0.02	Cum SA (acres)	1.04	1.06	1.33

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2193.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.		0.050	
W.S. Elev (ft)	2193.13	Reach Len. (ft)	133.01	160.35	190.31
Crit W.S. (ft)	2192.94	Flow Area (sq ft)		74.28	
E.G. Slope (ft/ft)	0.024312	Area (sq ft)		74.28	
Q Total (cfs)	518.00	Flow (cfs)		518.00	
Top Width (ft)	37.17	Top Width (ft)		37.17	
Vel Total (ft/s)	6.97	Avg. Vel. (ft/s)		6.97	
Max Chl Dpth (ft)	2.59	Hydr. Depth (ft)		2.00	
Conv. Total (cfs)	3322.2	Conv. (cfs)		3322.2	
Length Wtd. (ft)	160.48	Wetted Per. (ft)		40.23	
Min Ch El (ft)	2190.54	Shear (lb/sq ft)		2.80	
Alpha	1.00	Stream Power (lb/ft s)		19.54	
Frctn Loss (ft)	3.47	Cum Volume (acre-ft)	0.85	2.46	0.74
C & E Loss (ft)	0.01	Cum SA (acres)	0.51	1.06	0.49

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.15	9975.87	0.20	0.25	2.51	0.04	0.10	0.79
2	LOB	9975.87	9984.59	13.48	5.24	8.79	2.60	0.60	2.57
3	Chan	9984.59	9989.90	56.97	9.12	5.40	11.00	1.72	6.25
4	Chan	9989.90	9995.21	93.29	12.22	5.36	18.01	2.30	7.64
5	Chan	9995.21	10000.52	64.90	9.81	5.33	12.53	1.85	6.62
6	Chan	10000.52	10005.83	62.52	9.58	5.31	12.07	1.80	6.53
7	Chan	10005.83	10011.14	67.04	9.98	5.31	12.94	1.88	6.71
8	Chan	10011.14	10016.45	71.72	10.40	5.31	13.84	1.96	6.90
9	Chan	10016.45	10021.76	60.67	9.43	5.35	11.71	1.78	6.43
10	ROB	10021.76	10041.96	26.51	10.65	20.29	5.12	0.53	2.49
11	ROB	10041.96	10062.17	0.71	0.64	4.10	0.14	0.16	1.11

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9984.59	9989.90	55.96	9.65	6.73	10.80	1.82	5.80
2	Chan	9989.90	9995.21	103.60	12.75	5.36	20.00	2.40	8.12
3	Chan	9995.21	10000.52	73.32	10.34	5.33	14.15	1.95	7.09
4	Chan	10000.52	10005.83	70.77	10.11	5.31	13.66	1.90	7.00
5	Chan	10005.83	10011.14	75.62	10.52	5.31	14.60	1.98	7.19
6	Chan	10011.14	10016.45	80.62	10.93	5.31	15.56	2.06	7.37
7	Chan	10016.45	10021.76	58.12	9.97	6.88	11.22	1.88	5.83

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: X3
REACH: Reach 1 RS: 0.343

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9936.78	2192	9974.21	2189.01	9978.05	2188.69	9980.27	2188.52	9988.98	2187.82
9996.91	2188	9999.6	2187.96	10009.72	2188.13	10019.43	2188.44	10031.95	2188.42
10034.74	2188.41	10036.49	2188.73	10037.07	2188.83	10039.71	2189.29	10044.26	2190.12
10055.09	2192.21	10061.29	2192.81	10069.27	2193.41	10074.75	2193.9		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9936.78	.035	9999.6	.045	10037.07	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.98	10019.43	212.12	216.67	221.12	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2190.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.035	0.040	0.046
W.S. Elev (ft)	2189.58	Reach Len. (ft)	212.12	216.67	221.12
Crit W.S. (ft)	2189.58	Flow Area (sq ft)	19.33	45.73	21.56
E.G. Slope (ft/ft)	0.019566	Area (sq ft)	19.33	45.73	21.56
Q Total (cfs)	518.00	Flow (cfs)	105.31	310.18	102.51
Top Width (ft)	74.27	Top Width (ft)	21.93	30.45	21.88
Vel Total (ft/s)	5.98	Avg. Vel. (ft/s)	5.45	6.78	4.76
Max Chl Dpth (ft)	1.76	Hydr. Depth (ft)	0.88	1.50	0.99
Conv. Total (cfs)	3703.2	Conv. (cfs)	752.9	2217.5	732.8
Length Wtd. (ft)	216.59	Wetted Per. (ft)	22.01	30.46	21.99
Min Ch El (ft)	2187.82	Shear (lb/sq ft)	1.07	1.83	1.20
Alpha	1.06	Stream Power (lb/ft s)	5.85	12.44	5.69
Frctn Loss (ft)	3.78	Cum Volume (acre-ft)	1.14	2.14	1.19
C & E Loss (ft)	0.02	Cum SA (acres)	0.99	0.93	1.23

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2190.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.035	0.040	0.045
W.S. Elev (ft)	2189.69	Reach Len. (ft)	212.12	216.67	221.12
Crit W.S. (ft)	2189.66	Flow Area (sq ft)	12.29	48.91	16.86
E.G. Slope (ft/ft)	0.019374	Area (sq ft)	12.29	48.91	16.86
Q Total (cfs)	518.00	Flow (cfs)	88.14	344.88	84.98
Top Width (ft)	51.79	Top Width (ft)	7.94	30.45	13.40
Vel Total (ft/s)	6.64	Avg. Vel. (ft/s)	7.17	7.05	5.04
Max Chl Dpth (ft)	1.87	Hydr. Depth (ft)	1.55	1.61	1.26
Conv. Total (cfs)	3721.6	Conv. (cfs)	633.2	2477.8	610.5
Length Wtd. (ft)	216.59	Wetted Per. (ft)	9.20	30.46	14.67
Min Ch El (ft)	2187.82	Shear (lb/sq ft)	1.62	1.94	1.39
Alpha	1.05	Stream Power (lb/ft s)	11.59	13.70	7.00
Frctn Loss (ft)	4.07	Cum Volume (acre-ft)	0.83	2.23	0.71
C & E Loss (ft)	0.03	Cum SA (acres)	0.50	0.93	0.46

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.66	9968.10	0.03	0.04	1.06	0.01	0.04	0.62
2	LOB	9968.10	9978.54	17.20	5.26	10.47	3.32	0.50	3.27
3	LOB	9978.54	9988.98	88.08	14.02	10.47	17.00	1.34	6.28
4	Chan	9988.98	9993.33	63.14	7.45	4.35	12.19	1.71	8.47
5	Chan	9993.33	9997.68	57.36	7.03	4.35	11.07	1.62	8.15
6	Chan	9997.68	10002.03	49.62	6.98	4.35	9.58	1.60	7.11
7	Chan	10002.03	10006.38	41.36	6.72	4.35	7.98	1.55	6.15
8	Chan	10006.38	10010.73	38.07	6.39	4.35	7.35	1.47	5.95
9	Chan	10010.73	10015.08	33.06	5.88	4.35	6.38	1.35	5.63
10	Chan	10015.08	10019.43	27.58	5.27	4.35	5.32	1.21	5.23
11	ROB	10019.43	10030.49	64.59	12.74	11.06	12.47	1.15	5.07
12	ROB	10030.49	10041.56	37.91	8.82	10.92	7.32	0.82	4.30

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.54	9988.98	88.14	12.29	9.20	17.02	1.55	7.17
2	Chan	9988.98	9993.33	69.39	7.91	4.35	13.40	1.82	8.78
3	Chan	9993.33	9997.68	63.40	7.49	4.35	12.24	1.72	8.46
4	Chan	9997.68	10002.03	54.88	7.44	4.35	10.60	1.71	7.38
5	Chan	10002.03	10006.38	45.92	7.18	4.35	8.87	1.65	6.40
6	Chan	10006.38	10010.73	42.50	6.85	4.35	8.21	1.57	6.20
7	Chan	10010.73	10015.08	37.27	6.33	4.35	7.19	1.46	5.89
8	Chan	10015.08	10019.43	31.52	5.73	4.35	6.09	1.32	5.50
9	ROB	10019.43	10030.49	73.23	13.90	11.06	14.14	1.26	5.27
10	ROB	10030.49	10041.56	11.75	2.96	3.61	2.27	1.27	3.97

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: X3
REACH: Reach 1 RS: 0.302

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9934.331	2190.079	9942.071	2189.59	9948.141	2189.059	9952.901	2188.689	9958.001	2187.9
9969.941	2185.999	9975.191	2185.189	9977.451	2184.789	9980.921	2184.439	9988.611	2183.58
9991.69	2183.089	9991.691	2183.089	9995.291	2182.529	9996.731	2182.39	9997.421	2182.15
9999.841	2181.751	10005.32	2182.71	10007.78	2183.163	10010.63	2183.71	10024.56	2184.91
10030.25	2185.421	10034.38	2186.141	10046.31	2188.091	10060.13	2189.041	10074.65	2190.05

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9934.331	.05	9991.69	.045	10007.78	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.691	0007.78	183.12	181.83	180.68	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2186.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.050	0.045	0.055
W.S. Elev (ft)	2185.29	Reach Len. (ft)	183.12	181.83	180.68
Crit W.S. (ft)		Flow Area (sq ft)	19.05	45.92	19.84
E.G. Slope (ft/ft)	0.015677	Area (sq ft)	19.05	45.92	19.84
Q Total (cfs)	518.00	Flow (cfs)	75.38	378.31	64.32
Top Width (ft)	54.34	Top Width (ft)	17.22	16.09	21.03
Vel Total (ft/s)	6.11	Avg. Vel. (ft/s)	3.96	8.24	3.24
Max Chl Dpth (ft)	3.54	Hydr. Depth (ft)	1.11	2.85	0.94
Conv. Total (cfs)	4137.1	Conv. (cfs)	602.0	3021.4	513.7
Length Wtd. (ft)	181.81	Wetted Per. (ft)	17.37	16.32	21.15
Min Ch El (ft)	2181.75	Shear (lb/sq ft)	1.07	2.75	0.92
Alpha	1.42	Stream Power (lb/ft s)	4.25	22.68	2.98
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)	1.05	1.91	1.08
C & E Loss (ft)	0.00	Cum SA (acres)	0.89	0.82	1.12

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2186.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.03	Wt. n-Val.	0.050	0.045	0.055
W.S. Elev (ft)	2185.28	Reach Len. (ft)	183.12	181.83	180.68
Crit W.S. (ft)	2185.24	Flow Area (sq ft)	12.38	45.67	11.59
E.G. Slope (ft/ft)	0.018230	Area (sq ft)	12.38	45.67	11.59
Q Total (cfs)	518.00	Flow (cfs)	62.57	404.23	51.20
Top Width (ft)	31.03	Top Width (ft)	7.48	16.09	7.46
Vel Total (ft/s)	7.44	Avg. Vel. (ft/s)	5.05	8.85	4.42
Max Chl Dpth (ft)	3.53	Hydr. Depth (ft)	1.65	2.84	1.55
Conv. Total (cfs)	3836.5	Conv. (cfs)	463.4	2993.9	379.2
Length Wtd. (ft)	181.80	Wetted Per. (ft)	8.76	16.32	8.70
Min Ch El (ft)	2181.75	Shear (lb/sq ft)	1.61	3.18	1.52
Alpha	1.20	Stream Power (lb/ft s)	8.13	28.18	6.70
Frctn Loss (ft)	3.09	Cum Volume (acre-ft)	0.77	2.00	0.63
C & E Loss (ft)	0.07	Cum SA (acres)	0.46	0.82	0.41

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9968.75	9980.22	4.94	2.54	5.80	0.95	0.44	1.94
2	LOB	9980.22	9991.69	70.44	16.50	11.56	13.60	1.44	4.27
3	Chan	9991.69	9993.99	39.87	5.49	2.33	7.70	2.39	7.26
4	Chan	9993.99	9996.29	50.27	6.31	2.33	9.70	2.75	7.97
5	Chan	9996.29	9998.59	62.41	7.20	2.34	12.05	3.13	8.67
6	Chan	9998.59	10000.88	73.20	7.92	2.33	14.13	3.44	9.25
7	Chan	10000.88	10003.18	63.43	7.27	2.33	12.25	3.16	8.73
8	Chan	10003.18	10005.48	50.64	6.35	2.33	9.78	2.76	7.98
9	Chan	10005.48	10007.78	38.48	5.39	2.34	7.43	2.34	7.14
10	ROB	10007.78	10021.15	60.53	17.23	13.46	11.69	1.29	3.51
11	ROB	10021.15	10034.53	3.79	2.61	7.68	0.73	0.34	1.45

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.22	9991.69	62.57	12.38	8.76	12.08	1.65	5.05
2	Chan	9991.69	9993.99	42.52	5.46	2.33	8.21	2.37	7.79

3	Chan	9993.99	9996.29	53.69	6.27	2.33	10.36	2.73	8.56
4	Chan	9996.29	9998.59	66.74	7.16	2.34	12.88	3.12	9.32
5	Chan	9998.59	10000.88	78.33	7.88	2.33	15.12	3.43	9.94
6	Chan	10000.88	10003.18	67.83	7.23	2.33	13.09	3.14	9.38
7	Chan	10003.18	10005.48	54.09	6.31	2.33	10.44	2.75	8.57
8	Chan	10005.48	10007.78	41.03	5.35	2.34	7.92	2.33	7.67
9	ROB	10007.78	10021.15	51.20	11.59	8.70	9.88	1.55	4.42

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.267

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9908.539	2186.029	913.529	2185.539	914.219	2185.529	919.799	2185.439	938.639	2185.1
9968.049	2184.589	975.989	2183.219	992.809	2180.33	9992.81	2180.339	997.479	2179.42
9999.789	2179	10002.31	2179.331	0007.31	2179.961	0010.91	2180.441	0013.94	2180.64
10021.97	2181.241	0039.28	2182.54	10041.8	2182.691	0051.85	2183.261	0052.65	2183.3
10053.5	2183.321	0054.94	2183.371	0062.94	2183.661	0067.19	2183.821	0070.23	2183.92
10070.5	2183.88	10073.2	2183.981	0074.58	2184.041	0087.87	2185.21	0091.77	2185.53
10094.96	2185.871	0096.43	2186.01						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9908.539	.055	9992.81	.045	10010.91	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.81	10010.91	141.55	156.8	172.21	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2183.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2182.35	Reach Len. (ft)	141.55	156.80	172.21
Crit W.S. (ft)	2182.35	Flow Area (sq ft)	11.93	48.12	25.04
E.G. Slope (ft/ft)	0.016705	Area (sq ft)	11.93	48.12	25.04
Q Total (cfs)	518.00	Flow (cfs)	41.54	391.03	85.42
Top Width (ft)	55.76	Top Width (ft)	11.80	18.10	25.85
Vel Total (ft/s)	6.09	Avg. Vel. (ft/s)	3.48	8.13	3.41
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)	1.01	2.66	0.97
Conv. Total (cfs)	4007.8	Conv. (cfs)	321.4	3025.4	660.9
Length Wtd. (ft)	158.63	Wetted Per. (ft)	11.98	18.32	25.92
Min Ch El (ft)	2179.00	Shear (lb/sq ft)	1.04	2.74	1.01
Alpha	1.42	Stream Power (lb/ft s)	3.62	22.26	3.44
Frctn Loss (ft)	2.56	Cum Volume (acre-ft)	0.98	1.71	0.99
C & E Loss (ft)	0.07	Cum SA (acres)	0.83	0.75	1.03

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2183.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.78	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2182.37	Reach Len. (ft)	141.55	156.80	172.21
Crit W.S. (ft)	2182.37	Flow Area (sq ft)	11.29	48.40	24.84
E.G. Slope (ft/ft)	0.015843	Area (sq ft)	11.29	48.40	24.84
Q Total (cfs)	518.00	Flow (cfs)	43.21	384.42	90.37
Top Width (ft)	49.00	Top Width (ft)	8.81	18.10	22.09
Vel Total (ft/s)	6.13	Avg. Vel. (ft/s)	3.83	7.94	3.64
Max Chl Dpth (ft)	3.37	Hydr. Depth (ft)	1.28	2.67	1.12
Conv. Total (cfs)	4115.4	Conv. (cfs)	343.3	3054.2	718.0
Length Wtd. (ft)	158.82	Wetted Per. (ft)	9.47	18.32	22.45
Min Ch El (ft)	2179.00	Shear (lb/sq ft)	1.18	2.61	1.09
Alpha	1.34	Stream Power (lb/ft s)	4.51	20.76	3.98
Frctn Loss (ft)	2.37	Cum Volume (acre-ft)	0.72	1.80	0.56
C & E Loss (ft)	0.05	Cum SA (acres)	0.43	0.75	0.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.96	9992.81	41.54	11.93	11.98	8.02	1.01	3.48
2	Chan	9992.81	9995.40	42.33	5.88	2.63	8.17	2.27	7.20
3	Chan	9995.40	9997.98	59.10	7.18	2.63	11.41	2.78	8.23
4	Chan	9997.98	10000.57	75.91	8.33	2.62	14.65	3.22	9.11
5	Chan	10000.57	10003.15	70.72	7.96	2.61	13.65	3.08	8.88
6	Chan	10003.15	10005.74	58.64	7.12	2.61	11.32	2.75	8.24
7	Chan	10005.74	10008.32	47.47	6.27	2.61	9.16	2.42	7.57
8	Chan	10008.32	10010.91	36.85	5.39	2.61	7.11	2.08	6.84
9	ROB	10010.91	10028.01	81.20	22.16	17.15	15.68	1.30	3.66
10	ROB	10028.01	10045.12	4.22	2.88	8.77	0.81	0.33	1.47

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.96	9992.81	43.21	11.29	9.47	8.34	1.28	3.83
2	Chan	9992.81	9995.40	41.69	5.92	2.63	8.05	2.29	7.05
3	Chan	9995.40	9997.98	58.09	7.22	2.63	11.21	2.79	8.05
4	Chan	9997.98	10000.57	74.52	8.37	2.62	14.39	3.24	8.90
5	Chan	10000.57	10003.15	69.44	8.00	2.61	13.41	3.10	8.68
6	Chan	10003.15	10005.74	57.64	7.16	2.61	11.13	2.77	8.05
7	Chan	10005.74	10008.32	46.72	6.31	2.61	9.02	2.44	7.40
8	Chan	10008.32	10010.91	36.33	5.43	2.61	7.01	2.10	6.69
9	ROB	10010.91	10028.01	85.78	22.42	17.15	16.56	1.31	3.83
10	ROB	10028.01	10045.12	4.59	2.42	5.30	0.89	0.49	1.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.238

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9906.189	2184.01	9908.209	2183.89	9917.489	2182.73	9923.899	2182.29	9927.399	2182
9938.349	2181.53	9958.719	2180.66	9960.679	2180.65	9964.459	2180.29	9976.499	2179.39
9986.599	2178.63	9990.632	2177.93	9995.119	2177.17	9996.119	2176.99	10004.78	2177.69
10012.31	2178.29	10013.87	2178.31	10032.94	2178.61	10037.19	2179.51	10047.94	2181.28
10049.02	2181.47	10053.51	2182.29	10058.81	2183.08	10071.07	2184		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9906.189	.055	9990.63	.045	10012.31	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.63	10012.31	212.08	198.6	184.94	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2180.44	Element			
Vel Head (ft)	0.58	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2179.85	Reach Len. (ft)	212.08	198.60	184.94
Crit W.S. (ft)	2179.74	Flow Area (sq ft)	16.26	48.87	32.74
E.G. Slope (ft/ft)	0.015636	Area (sq ft)	16.26	48.87	32.74
Q Total (cfs)	518.00	Flow (cfs)	47.18	345.48	125.33
Top Width (ft)	69.00	Top Width (ft)	20.32	21.68	27.01
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	2.90	7.07	3.83
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)	0.80	2.25	1.21
Conv. Total (cfs)	4142.5	Conv. (cfs)	377.3	2762.9	1002.3
Length Wtd. (ft)	197.77	Wetted Per. (ft)	20.42	21.81	27.13
Min Ch El (ft)	2176.99	Shear (lb/sq ft)	0.78	2.19	1.18
Alpha	1.34	Stream Power (lb/ft s)	2.26	15.46	4.51
Frctn Loss (ft)	3.31	Cum Volume (acre-ft)	0.94	1.54	0.88
C & E Loss (ft)	0.00	Cum SA (acres)	0.78	0.68	0.92

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2180.64	Element			
Vel Head (ft)	0.62	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2180.02	Reach Len. (ft)	212.08	198.60	184.94
Crit W.S. (ft)	2179.75	Flow Area (sq ft)	8.05	52.53	28.52
E.G. Slope (ft/ft)	0.014027	Area (sq ft)	8.05	52.53	28.52
Q Total (cfs)	518.00	Flow (cfs)	30.67	369.11	118.22
Top Width (ft)	44.36	Top Width (ft)	4.80	21.68	17.88
Vel Total (ft/s)	5.81	Avg. Vel. (ft/s)	3.81	7.03	4.15
Max Chl Dpth (ft)	3.03	Hydr. Depth (ft)	1.68	2.42	1.59
Conv. Total (cfs)	4373.7	Conv. (cfs)	258.9	3116.6	998.2
Length Wtd. (ft)	197.67	Wetted Per. (ft)	6.19	21.81	19.34
Min Ch El (ft)	2176.99	Shear (lb/sq ft)	1.14	2.11	1.29
Alpha	1.18	Stream Power (lb/ft s)	4.34	14.82	5.35
Frctn Loss (ft)	3.35	Cum Volume (acre-ft)	0.69	1.62	0.45
C & E Loss (ft)	0.02	Cum SA (acres)	0.41	0.68	0.27

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9956.85	9973.74	0.35	0.44	3.44	0.07	0.13	0.79
2	LOB	9973.74	9990.63	46.84	15.82	16.98	9.04	0.94	2.96
3	Chan	9990.63	9993.73	45.77	6.75	3.14	8.84	2.18	6.78
4	Chan	9993.73	9996.82	65.24	8.34	3.14	12.60	2.69	7.82
5	Chan	9996.82	9999.92	65.14	8.30	3.11	12.57	2.68	7.85
6	Chan	9999.92	10003.02	55.33	7.53	3.11	10.68	2.43	7.35
7	Chan	10003.02	10006.12	46.16	6.75	3.11	8.91	2.18	6.84
8	Chan	10006.12	10009.21	37.78	5.99	3.11	7.29	1.93	6.31
9	Chan	10009.21	10012.31	30.07	5.22	3.11	5.81	1.69	5.76
10	ROB	10012.31	10024.06	71.64	17.32	11.75	13.83	1.47	4.14
11	ROB	10024.06	10035.81	52.19	14.35	11.82	10.07	1.22	3.64
12	ROB	10035.81	10047.57	1.50	1.06	3.56	0.29	0.30	1.42

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.74	9990.63	30.67	8.05	6.19	5.92	1.68	3.81
2	Chan	9990.63	9993.73	49.18	7.27	3.14	9.49	2.35	6.77
3	Chan	9993.73	9996.82	68.51	8.86	3.14	13.23	2.86	7.73
4	Chan	9996.82	9999.92	68.43	8.82	3.11	13.21	2.85	7.76
5	Chan	9999.92	10003.02	58.72	8.05	3.11	11.34	2.60	7.29
6	Chan	10003.02	10006.12	49.60	7.27	3.11	9.57	2.35	6.82
7	Chan	10006.12	10009.21	41.21	6.51	3.11	7.96	2.10	6.33
8	Chan	10009.21	10012.31	33.46	5.74	3.11	6.46	1.85	5.83
9	ROB	10012.31	10024.06	85.05	19.31	11.75	16.42	1.64	4.41
10	ROB	10024.06	10035.81	33.16	9.21	7.58	6.40	1.50	3.60

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.200

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9939.233	2180.12	9941.573	2179.53	9942.473	2179.39	9954.273	2176.15	9956.443	2176.03
9960.853	2175.74	9963.503	2175.67	9971.953	2175.93	9981.543	2176.23	9986.313	2175.26
9988.93	2174.95	9988.933	2174.95	9992.013	2173.62	9994.273	2172.88	9994.853	2172.96
9995.113	2173	9997.243	2173	9999.883	2173	10011.53	2175.21	10012.76	2175.43
10013.38	2175.46	10015.27	2175.53	10031.89	2176.19	10038.61	2176.51	10061.62	2177.28
10065.65	2177.42	10095.44	2178.38	10096.37	2178.59	10106.61	2179.93	10107.81	2179.95

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9939.233	.06	9988.93	.05	10011.53	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.93	10011.53	219.35	204.72	189.77	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2177.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.060	0.055	0.055
W.S. Elev (ft)	2176.48	Reach Len. (ft)	219.35	204.72	189.77
Crit W.S. (ft)	2176.48	Flow Area (sq ft)	22.48	61.40	15.20
E.G. Slope (ft/ft)	0.017993	Area (sq ft)	22.48	61.40	15.20
Q Total (cfs)	518.00	Flow (cfs)	54.49	425.69	37.82
Top Width (ft)	85.19	Top Width (ft)	35.90	22.60	26.69
Vel Total (ft/s)	5.23	Avg. Vel. (ft/s)	2.42	6.93	2.49
Max Chl Dpth (ft)	3.60	Hydr. Depth (ft)	0.63	2.72	0.57
Conv. Total (cfs)	3861.7	Conv. (cfs)	406.2	3173.5	282.0
Length Wtd. (ft)	205.35	Wetted Per. (ft)	36.08	23.21	26.73
Min Ch El (ft)	2172.88	Shear (lb/sq ft)	0.70	2.97	0.64
Alpha	1.48	Stream Power (lb/ft s)	1.70	20.60	1.59
Frctn Loss (ft)	3.48	Cum Volume (acre-ft)	0.84	1.29	0.78
C & E Loss (ft)	0.01	Cum SA (acres)	0.64	0.58	0.81

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2177.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.060	0.055	0.055
W.S. Elev (ft)	2176.49	Reach Len. (ft)	219.35	204.72	189.77
Crit W.S. (ft)	2176.47	Flow Area (sq ft)	14.50	61.50	5.70
E.G. Slope (ft/ft)	0.020878	Area (sq ft)	14.50	61.50	5.70
Q Total (cfs)	518.00	Flow (cfs)	37.90	459.78	20.32
Top Width (ft)	50.61	Top Width (ft)	22.37	22.60	5.64
Vel Total (ft/s)	6.34	Avg. Vel. (ft/s)	2.61	7.48	3.56
Max Chl Dpth (ft)	3.61	Hydr. Depth (ft)	0.65	2.72	1.01
Conv. Total (cfs)	3585.0	Conv. (cfs)	262.3	3182.1	140.6
Length Wtd. (ft)	205.49	Wetted Per. (ft)	23.22	23.21	6.55
Min Ch El (ft)	2172.88	Shear (lb/sq ft)	0.81	3.45	1.14
Alpha	1.26	Stream Power (lb/ft s)	2.13	25.82	4.05
Frctn Loss (ft)	3.62	Cum Volume (acre-ft)	0.64	1.36	0.38
C & E Loss (ft)	0.00	Cum SA (acres)	0.34	0.58	0.22

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9949.17	9959.11	4.41	2.50	6.14	0.85	0.41	1.76
2	LOB	9959.11	9969.05	19.01	7.28	9.95	3.67	0.73	2.61
3	LOB	9969.05	9978.99	9.63	4.84	9.94	1.86	0.49	1.99
4	LOB	9978.99	9988.93	21.44	7.86	10.06	4.14	0.79	2.73
5	Chan	9988.93	9992.16	40.50	7.19	3.51	7.82	2.23	5.63
6	Chan	9992.16	9995.39	82.54	10.81	3.35	15.93	3.35	7.63
7	Chan	9995.39	9998.62	90.19	11.24	3.23	17.41	3.48	8.02
8	Chan	9998.62	10001.84	84.80	10.88	3.26	16.37	3.37	7.79
9	Chan	10001.84	10005.07	62.23	9.06	3.29	12.01	2.81	6.87
10	Chan	10005.07	10008.30	41.37	7.09	3.29	7.99	2.20	5.83
11	Chan	10008.30	10011.53	24.06	5.12	3.29	4.64	1.59	4.70
12	ROB	10011.53	10030.79	36.54	13.93	19.29	7.05	0.72	2.62
13	ROB	10030.79	10050.04	1.27	1.27	7.44	0.25	0.17	1.00

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9959.11	9969.05	3.88	1.70	3.21	0.75	0.68	2.28
2	LOB	9969.05	9978.99	10.58	4.89	9.94	2.04	0.49	2.17
3	LOB	9978.99	9988.93	23.43	7.91	10.06	4.52	0.80	2.96
4	Chan	9988.93	9992.16	43.78	7.21	3.51	8.45	2.23	6.08
5	Chan	9992.16	9995.39	89.11	10.83	3.35	17.20	3.35	8.23
6	Chan	9995.39	9998.62	97.37	11.26	3.23	18.80	3.49	8.65
7	Chan	9998.62	10001.84	91.56	10.90	3.26	17.68	3.37	8.40
8	Chan	10001.84	10005.07	67.21	9.07	3.29	12.98	2.81	7.41
9	Chan	10005.07	10008.30	44.71	7.11	3.29	8.63	2.20	6.29
10	Chan	10008.30	10011.53	26.04	5.14	3.29	5.03	1.59	5.07

11	ROB	10011.53	10030.79	20.32	5.70	6.55	3.92	1.01	3.56

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.161

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9923.926	2178.019	929.726	2177.39	931.546	2177.29	932.036	2177.159	937.166	2177.23
9937.456	2177.249	939.356	2177.26	941.056	2176.889	946.376	2176.739	949.646	2176.2
9955.866	2175.9968	116	2172.75	975.526	2172.09	992.066	2171.09	9992.07	2171.089
9996.576	2170.059	999.736	2169.35	10009.1	2171.03	10009.7	2171.13	10021.62	2171.52
10038.21	2173.23	10040.8	2173.57	10044.78	2174.03	10045.11	2174.06	10050.82	2174.67
10051.36	2174.72	10051.73	2174.76	10054.67	2174.86	10058.63	2174.94	10065.84	2175.3
10073.46	2175.68	10077.66	2175.83	10099.5	2176.63	10099.68	2176.69	10100.89	2176.7
10103.84	2176.81	10108.97	2176.81	10109.21	2176.81	10113.09	2177.06	10125.57	2177.85

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9923.926	.035	9992.07	.045	10009.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.07	10009.7	206.2	206.97	195.41	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2173.42	Element			
Vel Head (ft)	0.68	Wt. n-Val.	0.035	0.045	0.060
W.S. Elev (ft)	2172.74	Reach Len. (ft)	206.20	206.97	195.41
Crit W.S. (ft)	2172.74	Flow Area (sq ft)	21.31	44.19	24.00
E.G. Slope (ft/ft)	0.016005	Area (sq ft)	21.31	44.19	24.00
Q Total (cfs)	518.00	Flow (cfs)	106.15	336.21	75.64
Top Width (ft)	65.15	Top Width (ft)	23.80	17.63	23.72
Vel Total (ft/s)	5.79	Avg. Vel. (ft/s)	4.98	7.61	3.15
Max Chl Dpth (ft)	3.39	Hydr. Depth (ft)	0.90	2.51	1.01
Conv. Total (cfs)	4094.6	Conv. (cfs)	839.1	2657.6	597.9
Length Wtd. (ft)	202.56	Wetted Per. (ft)	23.86	17.98	23.79
Min Ch El (ft)	2169.35	Shear (lb/sq ft)	0.89	2.46	1.01
Alpha	1.32	Stream Power (lb/ft s)	4.45	18.68	3.18
Frctn Loss (ft)	2.25	Cum Volume (acre-ft)	0.73	1.04	0.69
C & E Loss (ft)	0.11	Cum SA (acres)	0.49	0.48	0.70

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2173.65	Element			
Vel Head (ft)	0.77	Wt. n-Val.	0.035	0.045	0.060
W.S. Elev (ft)	2172.88	Reach Len. (ft)	206.20	206.97	195.41
Crit W.S. (ft)	2172.72	Flow Area (sq ft)	15.98	46.66	16.15
E.G. Slope (ft/ft)	0.015052	Area (sq ft)	15.98	46.66	16.15
Q Total (cfs)	518.00	Flow (cfs)	100.02	356.94	61.03
Top Width (ft)	38.85	Top Width (ft)	10.99	17.63	10.23
Vel Total (ft/s)	6.57	Avg. Vel. (ft/s)	6.26	7.65	3.78
Max Chl Dpth (ft)	3.53	Hydr. Depth (ft)	1.45	2.65	1.58
Conv. Total (cfs)	4222.1	Conv. (cfs)	815.3	2909.4	497.5
Length Wtd. (ft)	203.79	Wetted Per. (ft)	12.13	17.98	11.65
Min Ch El (ft)	2169.35	Shear (lb/sq ft)	1.24	2.44	1.30
Alpha	1.15	Stream Power (lb/ft s)	7.75	18.65	4.92
Frctn Loss (ft)	3.26	Cum Volume (acre-ft)	0.56	1.10	0.33
C & E Loss (ft)	0.00	Cum SA (acres)	0.26	0.48	0.19

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.81	9978.44	12.55	4.49	10.21	2.42	0.44	2.80
2	LOB	9978.44	9992.07	93.60	16.82	13.65	18.07	1.23	5.56
3	Chan	9992.07	9994.59	30.49	4.88	2.58	5.89	1.94	6.25
4	Chan	9994.59	9997.11	47.20	6.34	2.58	9.11	2.52	7.44
5	Chan	9997.11	9999.63	66.21	7.76	2.58	12.78	3.08	8.53

6	Chan	9999.63	10002.14	70.05	8.01	2.56	13.52	3.18	8.75
7	Chan	10002.14	10004.66	54.30	6.87	2.56	10.48	2.73	7.90
8	Chan	10004.66	10007.18	40.15	5.73	2.56	7.75	2.28	7.00
9	Chan	10007.18	10009.70	27.80	4.60	2.56	5.37	1.83	6.05
10	ROB	10009.70	10032.87	75.63	23.98	23.24	14.60	1.04	3.15
11	ROB	10032.87	10056.05	0.00	0.02	0.55	0.00	0.03	0.29

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.44	9992.07	100.02	15.98	12.13	19.31	1.45	6.26
2	Chan	9992.07	9994.59	33.29	5.23	2.58	6.43	2.08	6.36
3	Chan	9994.59	9997.11	50.20	6.69	2.58	9.69	2.66	7.50
4	Chan	9997.11	9999.63	69.29	8.12	2.58	13.38	3.22	8.54
5	Chan	9999.63	10002.14	73.15	8.36	2.56	14.12	3.32	8.75
6	Chan	10002.14	10004.66	57.36	7.22	2.56	11.07	2.87	7.94
7	Chan	10004.66	10007.18	43.10	6.09	2.56	8.32	2.42	7.08
8	Chan	10007.18	10009.70	30.56	4.95	2.56	5.90	1.97	6.17
9	ROB	10009.70	10032.87	61.03	16.15	11.65	11.78	1.58	3.78

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X3
REACH: Reach 1 RS: 0.122

INPUT
Description: Geometry Data updated per 12/8/06 survey by FCDMC
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9952.12	2176	9953.24	2175.68	9962.9	2175.16	9965.3	2175.01	9976.1	2172.42
9992.9	2168	9996.16	2166.22	10000	2165.83	10005.16	2168.171	10022.56	2167.88
10031.36	2166.83	10034.69	2167.39	10044.82	2168.41	10062.35	2169.16	10077.4	2169.54
10097.31	2170.35	10115.64	2171.58	10135.55	2172.33				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9952.12	.065	9992.9	.045	10034.69	.055	10097.31	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.91	10005.16	113	118.34	121	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2169.87	Element			
Vel Head (ft)	0.31	Wt. n-Val.	0.065	0.045	0.047
W.S. Elev (ft)	2169.56	Reach Len. (ft)	113.00	118.34	121.00
Crit W.S. (ft)		Flow Area (sq ft)	4.64	34.81	88.08
E.G. Slope (ft/ft)	0.008150	Area (sq ft)	4.64	34.81	88.08
Q Total (cfs)	518.00	Flow (cfs)	7.95	197.67	312.38
Top Width (ft)	91.01	Top Width (ft)	5.94	12.26	72.81
Vel Total (ft/s)	4.06	Avg. Vel. (ft/s)	1.71	5.68	3.55
Max Chl Dpth (ft)	3.73	Hydr. Depth (ft)	0.78	2.84	1.21
Conv. Total (cfs)	5738.0	Conv. (cfs)	88.1	2189.6	3460.2
Length Wtd. (ft)	119.55	Wetted Per. (ft)	6.14	13.24	72.99
Min Ch El (ft)	2165.83	Shear (lb/sq ft)	0.38	1.34	0.61
Alpha	1.21	Stream Power (lb/ft s)	0.66	7.60	2.18
Frctn Loss (ft)	1.64	Cum Volume (acre-ft)	0.67	0.85	0.44
C & E Loss (ft)	0.05	Cum SA (acres)	0.42	0.41	0.48

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2170.39	Element			
Vel Head (ft)	0.80	Wt. n-Val.	0.065	0.045	0.045
W.S. Elev (ft)	2169.59	Reach Len. (ft)	113.00	118.34	121.00
Crit W.S. (ft)	2169.50	Flow Area (sq ft)	4.78	35.08	38.20
E.G. Slope (ft/ft)	0.016998	Area (sq ft)	4.78	35.08	38.20
Q Total (cfs)	518.00	Flow (cfs)	12.01	289.21	216.78
Top Width (ft)	41.04	Top Width (ft)	5.94	12.26	22.84
Vel Total (ft/s)	6.64	Avg. Vel. (ft/s)	2.51	8.24	5.68
Max Chl Dpth (ft)	3.76	Hydr. Depth (ft)	0.80	2.86	1.67

Conv. Total (cfs)	3973.1	Conv. (cfs)	92.1	2218.3	1662.7
Length Wtd. (ft)	119.51	Wetted Per. (ft)	6.17	13.24	25.24
Min Ch El (ft)	2165.83	Shear (lb/sq ft)	0.82	2.81	1.61
Alpha	1.17	Stream Power (lb/ft s)	2.07	23.18	9.12
Frctn Loss (ft)	2.09	Cum Volume (acre-ft)	0.51	0.91	0.21
C & E Loss (ft)	0.05	Cum SA (acres)	0.22	0.41	0.11

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.74	9992.90	7.95	4.64	6.14	1.54	0.78	1.71
2	Chan	9992.90	9994.65	15.10	3.57	1.99	2.91	2.04	4.22
3	Chan	9994.65	9996.40	28.85	5.24	1.96	5.57	2.99	5.51
4	Chan	9996.40	9998.15	39.48	6.05	1.76	7.62	3.46	6.52
5	Chan	9998.15	9999.91	42.95	6.37	1.76	8.29	3.63	6.75
6	Chan	9999.91	10001.66	35.92	5.91	1.91	6.93	3.38	6.07
7	Chan	10001.66	10003.41	22.94	4.53	1.92	4.43	2.58	5.07
8	Chan	10003.41	10005.16	12.43	3.13	1.92	2.40	1.79	3.97
9	ROB	10005.16	10031.24	188.88	45.87	26.14	36.46	1.76	4.12
10	ROB	10031.24	10057.32	117.76	36.42	26.19	22.73	1.40	3.23
11	ROB	10057.32	10083.39	5.74	5.79	20.66	1.11	0.28	0.99

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9984.74	9992.90	12.01	4.78	6.17	2.32	0.80	2.51
2	Chan	9992.90	9994.65	22.21	3.61	1.99	4.29	2.06	6.15
3	Chan	9994.65	9996.40	42.21	5.28	1.96	8.15	3.01	8.00
4	Chan	9996.40	9998.15	57.66	6.09	1.76	11.13	3.48	9.47
5	Chan	9998.15	9999.91	62.70	6.41	1.76	12.10	3.66	9.79
6	Chan	9999.91	10001.66	52.47	5.95	1.91	10.13	3.40	8.81
7	Chan	10001.66	10003.41	33.62	4.57	1.92	6.49	2.61	7.36
8	Chan	10003.41	10005.16	18.34	3.17	1.92	3.54	1.81	5.78
9	ROB	10005.16	10031.24	216.78	38.20	25.24	41.85	1.67	5.68

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: X3
REACH: Reach 1 RS: 0.099

INPUT
Description: Geometry Data updated per 12/8/06 survey by FCDMC
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9928.42	2173.85	9947.07	2172.96	9952.21	2172	9963.79	2168.37	9976.96	2168
9979.16	2167.36	9989.85	2166.15	9995.94	2164.83	10000.34	2164.58	10003.56	2165.51
10023.15	2165.75	10035.53	2167.09	10055.77	2166.96	10075.05	2167.53	10078.13	2167.9

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9928.42	.03	9947.07	.055	9989.85	.045	10003.56	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.85	10003.56	124	123.05	135	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2168.18	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2167.35	Reach Len. (ft)	124.00	123.05	135.00
Crit W.S. (ft)	2167.07	Flow Area (sq ft)	6.39	30.43	54.56
E.G. Slope (ft/ft)	0.027690	Area (sq ft)	6.39	30.43	54.56
Q Total (cfs)	518.00	Flow (cfs)	20.39	280.66	216.94
Top Width (ft)	89.84	Top Width (ft)	10.63	13.71	65.50
Vel Total (ft/s)	5.67	Avg. Vel. (ft/s)	3.19	9.22	3.98
Max Chl Dpth (ft)	2.77	Hydr. Depth (ft)	0.60	2.22	0.83
Conv. Total (cfs)	3112.9	Conv. (cfs)	122.6	1686.6	1303.7
Length Wtd. (ft)	126.16	Wetted Per. (ft)	10.69	13.99	65.58
Min Ch El (ft)	2164.58	Shear (lb/sq ft)	1.03	3.76	1.44
Alpha	1.65	Stream Power (lb/ft s)	3.30	34.68	5.72
Frctn Loss (ft)	2.02	Cum Volume (acre-ft)	0.66	0.76	0.24
C & E Loss (ft)	0.10	Cum SA (acres)	0.40	0.37	0.29

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

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2168.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.045	0.055
W.S. Elev (ft)	2167.61	Reach Len. (ft)	124.00	123.05	135.00
Crit W.S. (ft)		Flow Area (sq ft)		33.96	50.08
E.G. Slope (ft/ft)	0.017953	Area (sq ft)		33.96	50.08
Q Total (cfs)	518.00	Flow (cfs)		254.03	263.97
Top Width (ft)	41.15	Top Width (ft)		13.71	27.44
Vel Total (ft/s)	6.16	Avg. Vel. (ft/s)		7.48	5.27
Max Chl Dpth (ft)	3.03	Hydr. Depth (ft)		2.48	1.82
Conv. Total (cfs)	3866.0	Conv. (cfs)		1895.9	1970.1
Length Wtd. (ft)	126.09	Wetted Per. (ft)		15.45	28.50
Min Ch El (ft)	2164.58	Shear (lb/sq ft)		2.46	1.97
Alpha	1.09	Stream Power (lb/ft s)		18.43	10.38
Frctn Loss (ft)	1.84	Cum Volume (acre-ft)	0.50	0.82	0.09
C & E Loss (ft)	0.01	Cum SA (acres)	0.21	0.37	0.04

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.56	9989.85	20.39	6.39	10.69	3.94	0.60	3.19
2	Chan	9989.85	9991.81	18.49	2.77	2.00	3.57	1.42	6.67
3	Chan	9991.81	9993.77	28.62	3.60	2.00	5.52	1.84	7.94
4	Chan	9993.77	9995.73	40.46	4.44	2.00	7.81	2.26	9.12
5	Chan	9995.73	9997.68	50.40	5.02	1.97	9.73	2.56	10.04
6	Chan	9997.68	9999.64	54.28	5.25	1.96	10.48	2.68	10.35
7	Chan	9999.64	10001.60	52.40	5.19	2.01	10.12	2.65	10.10
8	Chan	10001.60	10003.56	36.02	4.16	2.04	6.95	2.13	8.65
9	ROB	10003.56	10018.47	129.52	26.13	14.92	25.00	1.75	4.96
10	ROB	10018.47	10033.39	71.82	18.37	14.97	13.86	1.23	3.91
11	ROB	10033.39	10048.30	7.41	4.69	14.93	1.43	0.31	1.58
12	ROB	10048.30	10063.22	7.86	4.86	14.92	1.52	0.33	1.62
13	ROB	10063.22	10078.13	0.34	0.51	5.85	0.07	0.09	0.67

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9989.85	9991.81	13.13	3.28	3.47	2.54	1.67	4.01
2	Chan	9991.81	9993.77	27.56	4.11	2.00	5.32	2.10	6.71
3	Chan	9993.77	9995.73	37.49	4.94	2.00	7.24	2.52	7.59
4	Chan	9995.73	9997.68	45.77	5.53	1.97	8.84	2.82	8.28
5	Chan	9997.68	9999.64	48.98	5.75	1.96	9.45	2.94	8.52
6	Chan	9999.64	10001.60	47.35	5.69	2.01	9.14	2.91	8.32
7	Chan	10001.60	10003.56	33.74	4.67	2.04	6.51	2.38	7.23
8	ROB	10003.56	10018.47	170.60	29.97	14.92	32.93	2.01	5.69
9	ROB	10018.47	10033.39	93.37	20.11	13.58	18.03	1.61	4.64

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: X3
REACH: Reach 1 RS: 0.076

INPUT
Description: 14th Street, Geometry Data updated per 12/8/06 survey by FCDMC
Station Elevation Data num= 21

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9935.06    2168 9936.93 2167.85 9941.37 2167.47 9949.62 2166.91 9949.79 2166.84
  9951.3  2166.7  9956.6 2166.67  9958.1  2166.6 9960.11 2166.41 9961.64 2166.24
  9962.6  2166.1 9966.11    2166 9972.86 2165.06    99902164.505 9997.88 2164.25
10013.62 2164.1310039.37 2164.3810043.422164.53110064.04  2165.3 10082.7    2166
10103.45 2167.85
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
 9935.06     .03    9990     .0310043.42     .03
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          999010043.42            141.65  134.25  126.29            .1       .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2166.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.030	0.030	0.030
W.S. Elev (ft)	2165.56	Reach Len. (ft)	141.65	134.25	126.29
Crit W.S. (ft)	2165.56	Flow Area (sq ft)	14.28	69.10	14.26
E.G. Slope (ft/ft)	0.010451	Area (sq ft)	14.28	69.10	14.26

Q Total (cfs)	518.00	Flow (cfs)	56.26	415.30	46.44
Top Width (ft)	101.79	Top Width (ft)	20.75	53.42	27.62
Vel Total (ft/s)	5.31	Avg. Vel. (ft/s)	3.94	6.01	3.26
Max Chl Dpth (ft)	1.43	Hydr. Depth (ft)	0.69	1.29	0.52
Conv. Total (cfs)	5067.1	Conv. (cfs)	550.3	4062.5	454.3
Length Wtd. (ft)	134.72	Wetted Per. (ft)	20.79	53.43	27.64
Min Ch El (ft)	2164.13	Shear (lb/sq ft)	0.45	0.84	0.34
Alpha	1.12	Stream Power (lb/ft s)	1.77	5.07	1.10
Frctn Loss (ft)	2.07	Cum Volume (acre-ft)	0.63	0.62	0.13
C & E Loss (ft)	0.00	Cum SA (acres)	0.36	0.28	0.14

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2166.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.		0.030	
W.S. Elev (ft)	2165.71	Reach Len. (ft)	141.65	134.25	126.29
Crit W.S. (ft)	2165.69	Flow Area (sq ft)		76.90	
E.G. Slope (ft/ft)	0.012065	Area (sq ft)		76.90	
Q Total (cfs)	518.00	Flow (cfs)		518.00	
Top Width (ft)	53.42	Top Width (ft)		53.42	
Vel Total (ft/s)	6.74	Avg. Vel. (ft/s)		6.74	
Max Chl Dpth (ft)	1.58	Hydr. Depth (ft)		1.44	
Conv. Total (cfs)	4716.0	Conv. (cfs)		4716.0	
Length Wtd. (ft)	134.70	Wetted Per. (ft)		55.81	
Min Ch El (ft)	2164.13	Shear (lb/sq ft)		1.04	
Alpha	1.00	Stream Power (lb/ft s)		6.99	
Frctn Loss (ft)	2.37	Cum Volume (acre-ft)	0.50	0.66	0.01
C & E Loss (ft)	0.01	Cum SA (acres)	0.21	0.28	

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9968.02	9979.01	13.46	4.61	9.80	2.60	0.47	2.92
2	LOB	9979.01	9990.00	42.80	9.67	10.99	8.26	0.88	4.43
3	Chan	9990.00	9997.63	50.83	9.01	7.64	9.81	1.18	5.64
4	Chan	9997.63	10005.26	62.72	10.22	7.63	12.11	1.34	6.14
5	Chan	10005.26	10012.89	67.34	10.67	7.63	13.00	1.40	6.31
6	Chan	10012.89	10020.53	67.66	10.70	7.63	13.06	1.40	6.32
7	Chan	10020.53	10028.16	61.86	10.14	7.63	11.94	1.33	6.10
8	Chan	10028.16	10035.79	56.21	9.57	7.63	10.85	1.25	5.87
9	Chan	10035.79	10043.42	48.67	8.78	7.63	9.40	1.15	5.54
10	ROB	10043.42	10055.43	36.73	9.70	12.01	7.09	0.81	3.79
11	ROB	10055.43	10067.43	9.54	4.32	12.01	1.84	0.36	2.21
12	ROB	10067.43	10079.44	0.18	0.24	3.61	0.03	0.07	0.72

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9990.00	9997.63	59.81	10.13	8.84	11.55	1.33	5.91
2	Chan	9997.63	10005.26	79.61	11.34	7.63	15.37	1.49	7.02
3	Chan	10005.26	10012.89	84.90	11.78	7.63	16.39	1.54	7.20
4	Chan	10012.89	10020.53	85.25	11.81	7.63	16.46	1.55	7.22
5	Chan	10020.53	10028.16	78.63	11.25	7.63	15.18	1.47	6.99
6	Chan	10028.16	10035.79	72.14	10.69	7.63	13.93	1.40	6.75
7	Chan	10035.79	10043.42	57.66	9.90	8.81	11.13	1.30	5.83

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: X3
REACH: Reach 1 RS: 0.051

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9920.553	2165.799928.753	2165.429936.953	2164.159942.513	2163.319948.723	2162.37				
9963.013	2162.659969.273	2162.95	9977.52161.8719977.503	2161.879981.003	2161.32				
9982.183	2161.779983.653	2161.669988.153	2162.229998.003	2160.919998.173	2160.88				
9998.413	2160.9110003.15	2161.5810004.08	2161.7410016.41	2162.1110017.45	2162.19				
10034.47	2163.510040.21	2164.110043.57	2164.3110053.39	2165.1410056.53	2165.39				
10065.8	2166.03								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9920.553	.055	9977.5	.0510017.45		.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.510017.45		189.94	200.56	213.52	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2163.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2163.31	Reach Len. (ft)	189.94	200.56	213.52
Crit W.S. (ft)	2163.31	Flow Area (sq ft)	24.84	64.26	8.11
E.G. Slope (ft/ft)	0.024807	Area (sq ft)	24.84	64.26	8.11
Q Total (cfs)	518.00	Flow (cfs)	83.92	410.72	23.35
Top Width (ft)	89.43	Top Width (ft)	34.97	39.95	14.51
Vel Total (ft/s)	5.33	Avg. Vel. (ft/s)	3.38	6.39	2.88
Max Chl Dpth (ft)	2.43	Hydr. Depth (ft)	0.71	1.61	0.56
Conv. Total (cfs)	3288.9	Conv. (cfs)	532.8	2607.7	148.3
Length Wtd. (ft)	198.49	Wetted Per. (ft)	35.12	40.28	14.56
Min Ch El (ft)	2160.88	Shear (lb/sq ft)	1.10	2.47	0.86
Alpha	1.22	Stream Power (lb/ft s)	3.70	15.79	2.48
Frctn Loss (ft)	1.95	Cum Volume (acre-ft)	0.56	0.42	0.10
C & E Loss (ft)	0.10	Cum SA (acres)	0.27	0.14	0.08

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2164.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.055	0.050	
W.S. Elev (ft)	2163.37	Reach Len. (ft)	189.94	200.56	213.52
Crit W.S. (ft)	2163.37	Flow Area (sq ft)	16.69	66.67	
E.G. Slope (ft/ft)	0.028039	Area (sq ft)	16.69	66.67	
Q Total (cfs)	518.00	Flow (cfs)	62.55	455.45	
Top Width (ft)	61.16	Top Width (ft)	21.21	39.95	
Vel Total (ft/s)	6.21	Avg. Vel. (ft/s)	3.75	6.83	
Max Chl Dpth (ft)	2.49	Hydr. Depth (ft)	0.79	1.67	
Conv. Total (cfs)	3093.5	Conv. (cfs)	373.5	2719.9	
Length Wtd. (ft)	197.69	Wetted Per. (ft)	22.14	41.45	
Min Ch El (ft)	2160.88	Shear (lb/sq ft)	1.32	2.82	
Alpha	1.11	Stream Power (lb/ft s)	4.95	19.23	
Frctn Loss (ft)	2.13	Cum Volume (acre-ft)	0.48	0.44	0.01
C & E Loss (ft)	0.13	Cum SA (acres)	0.18	0.14	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9931.94	9943.33	0.03	0.05	0.81	0.01	0.06	0.64
2	LOB	9943.33	9954.72	27.11	8.12	11.45	5.23	0.71	3.34
3	LOB	9954.72	9966.11	26.14	7.93	11.39	5.05	0.70	3.30
4	LOB	9966.11	9977.50	30.65	8.75	11.46	5.92	0.77	3.50
5	Chan	9977.50	9983.21	62.43	9.69	5.84	12.05	1.70	6.44
6	Chan	9983.21	9988.91	43.42	7.75	5.75	8.38	1.36	5.61
7	Chan	9988.91	9994.62	55.17	8.95	5.76	10.65	1.57	6.17
8	Chan	9994.62	10000.33	98.46	12.67	5.76	19.01	2.22	7.77

9	Chan	10000.33	10006.04	66.19	9.97	5.75	12.78	1.75	6.64
10	Chan	10006.04	10011.74	47.19	8.12	5.71	9.11	1.42	5.81
11	Chan	10011.74	10017.45	37.87	7.12	5.71	7.31	1.25	5.32
12	ROB	10017.45	10027.12	22.24	7.20	9.70	4.29	0.74	3.09
13	ROB	10027.12	10036.79	1.11	0.90	4.86	0.21	0.19	1.23

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.72	9966.11	25.27	7.26	10.67	4.88	0.74	3.48
2	LOB	9966.11	9977.50	37.28	9.43	11.46	7.20	0.83	3.95
3	Chan	9977.50	9983.21	69.87	10.03	5.84	13.49	1.76	6.96
4	Chan	9983.21	9988.91	49.29	8.09	5.75	9.52	1.42	6.09
5	Chan	9988.91	9994.62	62.04	9.29	5.76	11.98	1.63	6.68
6	Chan	9994.62	10000.33	108.71	13.01	5.76	20.99	2.28	8.35
7	Chan	10000.33	10006.04	73.95	10.32	5.75	14.28	1.81	7.17
8	Chan	10006.04	10011.74	53.40	8.46	5.71	10.31	1.48	6.31
9	Chan	10011.74	10017.45	38.18	7.46	6.89	7.37	1.31	5.12

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X3
REACH: Reach 1 RS: 0.013

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9876.041	2161.87	9879.351	2161.76	9897.411	2161.26	9899.621	2160.94	9910.481	2159.48
9913.231	2159.49	9920.741	2159.39	9933.111	2159.33	9935.121	2159.32	9937.021	2159.35
9947.211	2159.51	9967.261	2159.59	9969.431	2159.49	9971.851	2159.47	9983.921	2159.14
9985.071	2159.07	9989.47	2158.34	9996.571	2157.17	10000.52	2156.57	10008.42	2157.952
10014.89	2159.09	10019.27	2159.82	10020.41	2159.93	10050.52	2162.43	10054.3	2162.75

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9876.041	.055	9989.47	.05	10008.4	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.47	10008.4	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2160.75	Element			
Vel Head (ft)	0.21	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2160.54	Reach Len. (ft)	83.77	83.77	83.77
Crit W.S. (ft)		Flow Area (sq ft)	95.49	60.16	20.92
E.G. Slope (ft/ft)	0.005228	Area (sq ft)	95.49	60.16	20.92
Q Total (cfs)	518.00	Flow (cfs)	198.40	276.90	42.70
Top Width (ft)	125.23	Top Width (ft)	86.90	18.93	19.40
Vel Total (ft/s)	2.93	Avg. Vel. (ft/s)	2.08	4.60	2.04
Max Chl Dpth (ft)	3.97	Hydr. Depth (ft)	1.10	3.18	1.08
Conv. Total (cfs)	7164.3	Conv. (cfs)	2744.0	3829.8	590.5
Length Wtd. (ft)	83.77	Wetted Per. (ft)	87.04	19.19	19.59
Min Ch El (ft)	2156.57	Shear (lb/sq ft)	0.36	1.02	0.35
Alpha	1.55	Stream Power (lb/ft s)	0.74	4.71	0.71
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	0.30	0.13	0.03
C & E Loss (ft)	0.06	Cum SA (acres)			

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2161.05	Element			
Vel Head (ft)	0.23	Wt. n-Val.	0.055	0.050	
W.S. Elev (ft)	2160.82	Reach Len. (ft)	83.77	83.77	83.77

Crit W.S. (ft)		Flow Area (sq ft)	85.35	65.31	
E.G. Slope (ft/ft)	0.005658	Area (sq ft)	85.35	65.31	
Q Total (cfs)	518.00	Flow (cfs)	216.97	301.03	
Top Width (ft)	78.40	Top Width (ft)	59.47	18.93	
Vel Total (ft/s)	3.44	Avg. Vel. (ft/s)	2.54	4.61	
Max Chl Dpth (ft)	4.25	Hydr. Depth (ft)	1.44	3.45	
Conv. Total (cfs)	6886.6	Conv. (cfs)	2884.5	4002.1	
Length Wtd. (ft)	83.77	Wetted Per. (ft)	61.01	22.06	
Min Ch El (ft)	2156.57	Shear (lb/sq ft)	0.49	1.05	
Alpha	1.27	Stream Power (lb/ft s)	1.26	4.82	
Frctn Loss (ft)	1.03	Cum Volume (acre-ft)	0.26	0.13	0.01
C & E Loss (ft)	0.08	Cum SA (acres)			

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9898.73	9921.41	28.11	16.18	18.91	5.43	0.86	1.74
2	LOB	9921.41	9944.10	57.23	26.66	22.69	11.05	1.18	2.15
3	LOB	9944.10	9966.78	43.95	22.76	22.69	8.49	1.00	1.93
4	LOB	9966.78	9989.47	69.11	29.89	22.75	13.34	1.32	2.31
5	Chan	9989.47	9992.17	24.89	6.55	2.74	4.81	2.42	3.80
6	Chan	9992.17	9994.88	33.01	7.77	2.74	6.37	2.87	4.25
7	Chan	9994.88	9997.58	41.97	8.96	2.74	8.10	3.31	4.68
8	Chan	9997.58	10000.29	51.19	10.09	2.74	9.88	3.73	5.07
9	Chan	10000.29	10002.99	52.02	10.20	2.74	10.04	3.77	5.10
10	Chan	10002.99	10005.70	41.66	8.93	2.75	8.04	3.30	4.66
11	Chan	10005.70	10008.40	32.16	7.65	2.75	6.21	2.83	4.21
12	ROB	10008.40	10017.58	38.33	16.43	9.32	7.40	1.79	2.33
13	ROB	10017.58	10026.76	4.36	4.44	9.23	0.84	0.48	0.98
14	ROB	10026.76	10035.94	0.01	0.04	1.04	0.00	0.04	0.20

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9921.41	9944.10	49.27	20.38	15.57	9.51	1.45	2.42
2	LOB	9944.10	9966.78	68.69	28.92	22.69	13.26	1.27	2.38
3	LOB	9966.78	9989.47	99.00	36.05	22.75	19.11	1.59	2.75
4	Chan	9989.47	9992.17	29.55	7.29	2.74	5.70	2.70	4.05
5	Chan	9992.17	9994.88	38.17	8.50	2.74	7.37	3.14	4.49
6	Chan	9994.88	9997.58	47.59	9.70	2.74	9.19	3.59	4.91
7	Chan	9997.58	10000.29	57.23	10.83	2.74	11.05	4.00	5.29
8	Chan	10000.29	10002.99	58.08	10.94	2.74	11.21	4.05	5.31
9	Chan	10002.99	10005.70	47.26	9.67	2.75	9.12	3.57	4.89
10	Chan	10005.70	10008.40	23.15	8.38	5.61	4.47	3.10	2.76

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: X4A
REACH: Reach 1 RS: 0.812

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9951.441	2197.769	951.561	2197.759	956.401	2197.279	961.031	2196.779	965.031	2196.42
9975.892	195.3849	979.701	2195.029	981.131	2194.899	983.991	2194.529	986.071	2194.84
9986.221	2194.859	991.201	2195.511	0001.77	2194.911	0002.38	2194.910	0003.22	2194.72
10006.07	2194.381	0007.86	2194.210	012.35	2194.521	0014.61	2194.721	0020.26	2195.18
10023.49	2195.431	0024.87	2195.521	0027.85	2195.631	0042.71	2197.67		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9951.441	.05	9975.89	.041	0023.49	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.89	10023.49	183.3	187.56	188.18	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2196.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2195.89	Reach Len. (ft)	183.30	187.56	188.18
Crit W.S. (ft)	2195.89	Flow Area (sq ft)	1.32	45.69	1.73
E.G. Slope (ft/ft)	0.022763	Area (sq ft)	1.32	45.69	1.73
Q Total (cfs)	254.00	Flow (cfs)	2.35	248.35	3.30
Top Width (ft)	59.09	Top Width (ft)	5.26	47.60	6.22
Vel Total (ft/s)	5.21	Avg. Vel. (ft/s)	1.78	5.44	1.91

Max Chl Dpth (ft)	1.69	Hydr. Depth (ft)	0.25	0.96	0.28
Conv. Total (cfs)	1683.5	Conv. (cfs)	15.6	1646.1	21.9
Length Wtd. (ft)	187.50	Wetted Per. (ft)	5.29	47.83	6.25
Min Ch El (ft)	2194.20	Shear (lb/sq ft)	0.36	1.36	0.39
Alpha	1.07	Stream Power (lb/ft s)	0.63	7.38	0.75
Frctn Loss (ft)	3.41	Cum Volume (acre-ft)	0.95	1.98	0.99
C & E Loss (ft)	0.01	Cum SA (acres)	1.81	1.17	1.83

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2196.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2195.90	Reach Len. (ft)	183.30	187.56	188.18
Crit W.S. (ft)	2195.90	Flow Area (sq ft)	1.41	46.49	1.84
E.G. Slope (ft/ft)	0.021409	Area (sq ft)	1.41	46.49	1.84
Q Total (cfs)	254.00	Flow (cfs)	2.53	247.94	3.53
Top Width (ft)	59.08	Top Width (ft)	5.26	47.60	6.22
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)	1.80	5.33	1.92
Max Chl Dpth (ft)	1.70	Hydr. Depth (ft)	0.27	0.98	0.30
Conv. Total (cfs)	1735.9	Conv. (cfs)	17.3	1694.5	24.1
Length Wtd. (ft)	187.49	Wetted Per. (ft)	5.30	47.83	6.26
Min Ch El (ft)	2194.20	Shear (lb/sq ft)	0.36	1.30	0.39
Alpha	1.07	Stream Power (lb/ft s)	0.64	6.93	0.75
Frctn Loss (ft)	3.31	Cum Volume (acre-ft)	0.17	2.19	0.42
C & E Loss (ft)	0.01	Cum SA (acres)	0.26	1.17	0.42

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.
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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9966.11	9971.00	0.00	0.01	0.37	0.00	0.02	0.29
2	LOB	9971.00	9975.89	2.35	1.31	4.91	0.92	0.27	1.79
3	Chan	9975.89	9982.69	26.37	5.65	6.84	10.38	0.83	4.67
4	Chan	9982.69	9989.49	37.72	7.01	6.86	14.85	1.03	5.38
5	Chan	9989.49	9996.29	11.82	3.49	6.82	4.65	0.51	3.39
6	Chan	9996.29	10003.09	27.99	5.85	6.82	11.02	0.86	4.79
7	Chan	10003.09	10009.89	69.37	10.09	6.84	27.31	1.48	6.87
8	Chan	10009.89	10016.69	54.13	8.69	6.82	21.31	1.28	6.23
9	Chan	10016.69	10023.49	20.96	4.92	6.82	8.25	0.72	4.26
10	ROB	10023.49	10027.33	2.85	1.36	3.85	1.12	0.35	2.10
11	ROB	10027.33	10031.18	0.46	0.38	2.40	0.18	0.16	1.22

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9966.11	9971.00	0.01	0.01	0.39	0.00	0.03	0.43
2	LOB	9971.00	9975.89	2.53	1.40	4.91	0.99	0.29	1.81
3	Chan	9975.89	9982.69	26.50	5.76	6.84	10.43	0.85	4.60
4	Chan	9982.69	9989.49	37.65	7.13	6.86	14.82	1.05	5.28
5	Chan	9989.49	9996.29	12.12	3.60	6.82	4.77	0.53	3.37
6	Chan	9996.29	10003.09	28.09	5.96	6.82	11.06	0.88	4.71
7	Chan	10003.09	10009.89	68.68	10.20	6.84	27.04	1.50	6.73
8	Chan	10009.89	10016.69	53.75	8.80	6.82	21.16	1.29	6.11
9	Chan	10016.69	10023.49	21.16	5.03	6.82	8.33	0.74	4.21
10	ROB	10023.49	10027.33	3.00	1.42	3.85	1.18	0.37	2.11
11	ROB	10027.33	10031.18	0.53	0.42	2.41	0.21	0.18	1.27

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.
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: X4A
REACH: Reach 1 RS: 0.777

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9941.614	2190.05	9944.024	2189.89	9983.954	2188.33	9984.774	2188.39	9985.024	2188.28
9985.144	2188.26	9988.82	2187.513	9994.444	2186.36	10003.91	2187.151	10005.18	2187.25
10006.86	2187.39	10009.37	2187.58	10012.88	2187.84	10044.98	2190.11	10048.44	2190.2
10058.86	2190.66								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9941.614	.05	9988.8	.04	10009.37	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.81	10009.37	176.72	191.46	209.66	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2189.25	Element			
Vel Head (ft)	0.58	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2188.67	Reach Len. (ft)	176.72	191.46	209.66
Crit W.S. (ft)	2188.67	Flow Area (sq ft)	4.82	35.09	8.29
E.G. Slope (ft/ft)	0.014828	Area (sq ft)	4.82	35.09	8.29
Q Total (cfs)	254.00	Flow (cfs)	8.69	225.40	19.91
Top Width (ft)	49.50	Top Width (ft)	13.63	20.57	15.29
Vel Total (ft/s)	5.27	Avg. Vel. (ft/s)	1.80	6.42	2.40
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.35	1.71	0.54
Conv. Total (cfs)	2085.9	Conv. (cfs)	71.4	1851.0	163.5
Length Wtd. (ft)	190.49	Wetted Per. (ft)	13.72	20.74	15.33
Min Ch El (ft)	2186.36	Shear (lb/sq ft)	0.33	1.57	0.50
Alpha	1.34	Stream Power (lb/ft s)	0.59	10.06	1.20
Frctn Loss (ft)	2.85	Cum Volume (acre-ft)	0.93	1.81	0.97
C & E Loss (ft)	0.08	Cum SA (acres)	1.77	1.02	1.78

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2189.24	Element			
Vel Head (ft)	0.57	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2188.67	Reach Len. (ft)	176.72	191.46	209.66
Crit W.S. (ft)	2188.67	Flow Area (sq ft)	4.10	34.95	7.74
E.G. Slope (ft/ft)	0.014789	Area (sq ft)	4.10	34.95	7.74
Q Total (cfs)	254.00	Flow (cfs)	9.43	223.60	20.97
Top Width (ft)	40.00	Top Width (ft)	7.80	20.57	11.63
Vel Total (ft/s)	5.43	Avg. Vel. (ft/s)	2.30	6.40	2.71
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.53	1.70	0.67
Conv. Total (cfs)	2088.6	Conv. (cfs)	77.5	1838.7	172.4
Length Wtd. (ft)	191.49	Wetted Per. (ft)	8.10	20.74	11.91
Min Ch El (ft)	2186.36	Shear (lb/sq ft)	0.47	1.56	0.60
Alpha	1.25	Stream Power (lb/ft s)	1.07	9.96	1.63
Frctn Loss (ft)	3.14	Cum Volume (acre-ft)	0.16	2.02	0.40
C & E Loss (ft)	0.02	Cum SA (acres)	0.24	1.02	0.38

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.93	9979.36	0.20	0.34	4.20	0.08	0.08	0.59
2	LOB	9979.36	9988.80	8.49	4.48	9.52	3.34	0.47	1.90
3	Chan	9988.80	9991.74	24.14	4.29	3.00	9.51	1.46	5.63
4	Chan	9991.74	9994.68	42.80	6.05	3.00	16.85	2.06	7.08
5	Chan	9994.68	9997.62	47.29	6.38	2.95	18.62	2.17	7.41
6	Chan	9997.62	10000.55	38.74	5.66	2.95	15.25	1.93	6.84
7	Chan	10000.55	10003.49	30.86	4.94	2.95	12.15	1.68	6.25
8	Chan	10003.49	10006.43	23.84	4.23	2.95	9.38	1.44	5.64
9	Chan	10006.43	10009.37	17.72	3.54	2.95	6.98	1.20	5.01
10	ROB	10009.37	10019.27	18.83	7.26	9.92	7.41	0.73	2.59
11	ROB	10019.27	10029.17	1.09	1.03	5.41	0.43	0.19	1.06

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.36	9988.80	9.43	4.10	8.10	3.71	0.53	2.30
2	Chan	9988.80	9991.74	23.92	4.27	3.00	9.42	1.45	5.60
3	Chan	9991.74	9994.68	42.50	6.03	3.00	16.73	2.05	7.05
4	Chan	9994.68	9997.62	46.97	6.36	2.95	18.49	2.16	7.39
5	Chan	9997.62	10000.55	38.45	5.64	2.95	15.14	1.92	6.82
6	Chan	10000.55	10003.49	30.61	4.92	2.95	12.05	1.67	6.22
7	Chan	10003.49	10006.43	23.61	4.21	2.95	9.30	1.43	5.61
8	Chan	10006.43	10009.37	17.53	3.52	2.95	6.90	1.20	4.98
9	ROB	10009.37	10019.27	20.18	7.19	9.92	7.94	0.73	2.80
10	ROB	10019.27	10029.17	0.79	0.54	1.99	0.31	0.31	1.46

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: 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: X4A
REACH: Reach 1 RS: 0.740

INPUT
Description:
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9927.915	2183.079	937.325	2182.359	944.255	2181.819	944.355	2181.89	945.205	2181.74
9956.475	2180.829	958.065	2180.719	966.175	2180.839	968.015	2180.829	968.385	2180.85
9973.335	2180.959	976.195	2180.899	989.865	2181.079	992.635	2181.059	993.865	2180.83
9993.872	2180.829	999.565	2179.55	10000.65	2179.66	10007.6	2180.53	10011.17	2180.98
10027.14	2181.231	0028.45	2181.251	0029.03	2181.261	0029.86	2181.261	0032.78	2181.19
10034.93	2181.21	0037.03	2181.231	0039.07	2181.271	0043.19	2181.41	0045.58	2181.45
10047.27	2181.531	0047.55	2181.551	0048.36	2181.571	0048.54	2181.581	0048.84	2181.58
10048.92	2181.581	0049.31	2181.581	0050.44	2181.621	0054.68	2181.741	0073.26	2182.2
10077.02	2182.27								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9927.915	.05	9993.87	.04	10011.17	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.87	10011.17	185.59	179.86	174.94	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2181.95	Element			
Vel Head (ft)	0.32	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2181.63	Reach Len. (ft)	185.59	179.86	174.94
Crit W.S. (ft)	2181.63	Flow Area (sq ft)	31.28	24.26	15.44
E.G. Slope (ft/ft)	0.015088	Area (sq ft)	31.28	24.26	15.44
Q Total (cfs)	254.00	Flow (cfs)	86.54	137.45	30.01
Top Width (ft)	104.42	Top Width (ft)	47.36	17.30	39.75
Vel Total (ft/s)	3.58	Avg. Vel. (ft/s)	2.77	5.67	1.94
Max Chl Dpth (ft)	2.08	Hydr. Depth (ft)	0.66	1.40	0.39
Conv. Total (cfs)	2067.8	Conv. (cfs)	704.5	1119.0	244.3
Length Wtd. (ft)	179.29	Wetted Per. (ft)	47.43	17.53	39.76
Min Ch El (ft)	2179.55	Shear (lb/sq ft)	0.62	1.30	0.37
Alpha	1.60	Stream Power (lb/ft s)	1.72	7.39	0.71
Frctn Loss (ft)	3.37	Cum Volume (acre-ft)	0.86	1.68	0.91
C & E Loss (ft)	0.02	Cum SA (acres)	1.65	0.94	1.65

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2182.70	Element			
Vel Head (ft)	0.72	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2181.98	Reach Len. (ft)	185.59	179.86	174.94
Crit W.S. (ft)	2181.98	Flow Area (sq ft)	7.44	30.24	2.77
E.G. Slope (ft/ft)	0.018264	Area (sq ft)	7.44	30.24	2.77

Q Total (cfs)	254.00	Flow (cfs)	26.64	218.34	9.01
Top Width (ft)	28.00	Top Width (ft)	7.87	17.30	2.83
Vel Total (ft/s)	6.28	Avg. Vel. (ft/s)	3.58	7.22	3.26
Max Chl Dpth (ft)	2.43	Hydr. Depth (ft)	0.95	1.75	0.98
Conv. Total (cfs)	1879.5	Conv. (cfs)	197.1	1615.6	66.7
Length Wtd. (ft)	178.98	Wetted Per. (ft)	8.85	17.53	3.79
Min Ch El (ft)	2179.55	Shear (lb/sq ft)	0.96	1.97	0.83
Alpha	1.18	Stream Power (lb/ft s)	3.43	14.20	2.71
Frctn Loss (ft)	3.92	Cum Volume (acre-ft)	0.14	1.87	0.37
C & E Loss (ft)	0.00	Cum SA (acres)	0.21	0.94	0.35

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9941.11	9954.30	4.04	2.48	7.82	1.59	0.32	1.63
2	LOB	9954.30	9967.49	34.34	11.03	13.20	13.52	0.84	3.11
3	LOB	9967.49	9980.68	27.28	9.60	13.19	10.74	0.73	2.84
4	LOB	9980.68	9993.87	20.88	8.18	13.21	8.22	0.62	2.55
5	Chan	9993.87	9996.34	12.14	2.68	2.53	4.78	1.08	4.54
6	Chan	9996.34	9998.81	24.19	4.05	2.53	9.52	1.64	5.98
7	Chan	9998.81	10001.28	33.94	4.93	2.50	13.36	2.00	6.88
8	Chan	10001.28	10003.76	27.08	4.30	2.49	10.66	1.74	6.30
9	Chan	10003.76	10006.23	19.54	3.54	2.49	7.69	1.43	5.53
10	Chan	10006.23	10008.70	13.00	2.77	2.49	5.12	1.12	4.70
11	Chan	10008.70	10011.17	7.57	2.00	2.49	2.98	0.81	3.78
12	ROB	10011.17	10024.34	16.51	7.25	13.17	6.50	0.55	2.28
13	ROB	10024.34	10037.51	10.24	5.45	13.17	4.03	0.41	1.88
14	ROB	10037.51	10050.68	3.26	2.74	13.18	1.29	0.21	1.19

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.68	9993.87	26.64	7.44	8.85	10.49	0.95	3.58
2	Chan	9993.87	9996.34	21.51	3.53	2.53	8.47	1.43	6.10
3	Chan	9996.34	9998.81	37.17	4.90	2.53	14.63	1.98	7.59
4	Chan	9998.81	10001.28	49.46	5.79	2.50	19.47	2.34	8.55
5	Chan	10001.28	10003.76	40.90	5.15	2.49	16.10	2.09	7.93
6	Chan	10003.76	10006.23	31.29	4.39	2.49	12.32	1.78	7.13
7	Chan	10006.23	10008.70	22.73	3.62	2.49	8.95	1.47	6.27
8	Chan	10008.70	10011.17	15.28	2.86	2.49	6.02	1.16	5.35
9	ROB	10011.17	10024.34	9.01	2.77	3.79	3.55	0.98	3.26

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X4A
REACH: Reach 1 RS: 0.706

INPUT
Description:
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9921.645	2177.94	9933.225	2177.29	9933.255	2177.19	9933.375	2177.19	9933.425	2177.19
9933.905	2177.15	9934.015	2177.15	9934.185	2177.14	9934.325	2177.13	9935.525	2177.05
9947.745	2176.25	9950.235	2176.11	9976.315	2174.77	9977.445	2174.71	9980.095	2174.71
9981.155	2174.75	9982.095	2174.74	9984.835	2174.71	9984.875	2174.72	9985.225	2174.71
9985.575	2174.64	9985.58	2174.63	8	9987	2174.195	9990.345	2173.15	9991.585	2172.76
9991.625	2172.76	9991.645	2172.77	9992.215	2172.88	9998.385	2174.14	9999.015	2174.27
9999.235	2174.28	10002.26	2174.37	10008.57	2173.15	10011.04	2172.65	10012.5	2172.97
10018.43	2174.16	10021.38	2174.76	10028.41	2175.16	10038.03	2175.72	10044.31	2176.21
10050.8	2176.66	10055.47	2176.98	10061.16	2177.16	10067.57	2177.38	10073.5	2177.52

10081.59 2177.8310086.98 2178

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9921.645	.05	9987	.041	10002.26	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987	10002.26	173.63	192.36	207.37	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2175.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.050	0.040	0.045
W.S. Elev (ft)	2174.88	Reach Len. (ft)	173.63	192.36	207.37
Crit W.S. (ft)	2174.88	Flow Area (sq ft)	2.20	18.38	24.07
E.G. Slope (ft/ft)	0.024123	Area (sq ft)	2.20	18.38	24.07
Q Total (cfs)	254.00	Flow (cfs)	3.13	118.08	132.79
Top Width (ft)	49.22	Top Width (ft)	12.78	15.26	21.18
Vel Total (ft/s)	5.69	Avg. Vel. (ft/s)	1.42	6.43	5.52
Max Chl Dpth (ft)	2.23	Hydr. Depth (ft)	0.17	1.20	1.14
Conv. Total (cfs)	1635.4	Conv. (cfs)	20.1	760.3	854.9
Length Wtd. (ft)	196.01	Wetted Per. (ft)	12.86	15.63	21.57
Min Ch El (ft)	2172.76	Shear (lb/sq ft)	0.26	1.77	1.68
Alpha	1.09	Stream Power (lb/ft s)	0.37	11.37	9.27
Frctn Loss (ft)	3.41	Cum Volume (acre-ft)	0.79	1.59	0.83
C & E Loss (ft)	0.03	Cum SA (acres)	1.52	0.87	1.52

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2175.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.		0.040	0.045
W.S. Elev (ft)	2175.00	Reach Len. (ft)	173.63	192.36	207.37
Crit W.S. (ft)	2175.00	Flow Area (sq ft)		20.25	17.20
E.G. Slope (ft/ft)	0.026758	Area (sq ft)		20.25	17.20
Q Total (cfs)	254.00	Flow (cfs)		141.36	112.64
Top Width (ft)	26.00	Top Width (ft)		15.26	10.74
Vel Total (ft/s)	6.78	Avg. Vel. (ft/s)		6.98	6.55
Max Chl Dpth (ft)	2.35	Hydr. Depth (ft)		1.33	1.60
Conv. Total (cfs)	1552.8	Conv. (cfs)		864.1	688.6
Length Wtd. (ft)	195.58	Wetted Per. (ft)		16.44	12.88
Min Ch El (ft)	2172.76	Shear (lb/sq ft)		2.06	2.23
Alpha	1.00	Stream Power (lb/ft s)		14.36	14.61
Frctn Loss (ft)	3.68	Cum Volume (acre-ft)	0.12	1.77	0.33
C & E Loss (ft)	0.07	Cum SA (acres)	0.19	0.87	0.32

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.93	9987.00	3.13	2.20	12.86	1.23	0.17	1.42
2	Chan	9987.00	9989.18	11.63	2.23	2.28	4.58	1.02	5.21
3	Chan	9989.18	9991.36	27.24	3.72	2.29	10.72	1.70	7.33
4	Chan	9991.36	9993.54	34.36	4.23	2.23	13.53	1.94	8.12
5	Chan	9993.54	9995.72	22.50	3.28	2.22	8.86	1.50	6.86
6	Chan	9995.72	9997.90	12.54	2.31	2.22	4.94	1.06	5.43
7	Chan	9997.90	10000.08	5.69	1.43	2.20	2.24	0.66	3.97
8	Chan	10000.08	10002.26	4.13	1.18	2.18	1.63	0.54	3.51
9	ROB	10002.26	10019.20	131.43	23.21	17.28	51.74	1.37	5.66
10	ROB	10019.20	10036.15	1.35	0.85	4.29	0.53	0.20	1.59

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9987.00	9989.18	12.09	2.50	3.09	4.76	1.15	4.84
2	Chan	9989.18	9991.36	32.22	3.98	2.29	12.68	1.83	8.09

3	Chan	9991.36	9993.54	40.09	4.50	2.23	15.78	2.06	8.91
4	Chan	9993.54	9995.72	27.01	3.55	2.22	10.63	1.63	7.62
5	Chan	9995.72	9997.90	15.85	2.58	2.22	6.24	1.18	6.15
6	Chan	9997.90	10000.08	7.98	1.70	2.20	3.14	0.78	4.69
7	Chan	10000.08	10002.26	6.12	1.44	2.18	2.41	0.66	4.24
8	ROB	10002.26	10019.20	112.64	17.20	12.88	44.35	1.60	6.55

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X4A
REACH: Reach 1 RS: 0.670

INPUT
Description:
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9939.205	2171.969	942.995	2171.899	943.275	2171.899	944.755	2171.859	947.425	2171.6
9950.105	2171.479	952.595	2171.259	956.005	2171.049	963.795	2170.469	964.945	2170.42
9976.215	2170.429	976.995	2170.429	988.735	2170.059	990.255	2169.989	991.705	2169.66
9991.71	2169.65	910000.02	2167.81	10008.34	2169.32	10010.49	2169.73	10026.6	2170.49
10042.51	2171.07	10043.35	2171.02	10045.78	2170.87	10047.69	2170.71	10051.81	2170.31
10055.96	2169.95	10058.17	2169.75	10070.32	2170.57	10079.55	2171.13	10080.68	2171.13
10084.99	2171.13	10088.89	2171.36	10091.52	2171.47	10092.09	2171.48	10100.3	2171.61
10109.48	2171.69	10127.41	2171.92						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9939.205	.04	9991.71	.04	510010.49	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9991.71 10010.49 203.91 206.7 192.32 .1 .3
Right Levee Station=10042.51 Elevation= 2171.07

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2171.10	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.040	0.045	0.040
W.S. Elev (ft)	2170.67	Reach Len. (ft)	203.91	206.70	192.32
Crit W.S. (ft)	2170.67	Flow Area (sq ft)	10.84	36.01	9.41
E.G. Slope (ft/ft)	0.013128	Area (sq ft)	10.84	36.01	9.41
Q Total (cfs)	254.00	Flow (cfs)	23.01	207.52	23.47
Top Width (ft)	70.46	Top Width (ft)	30.70	18.78	20.98
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)	2.12	5.76	2.49
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)	0.35	1.92	0.45
Conv. Total (cfs)	2216.8	Conv. (cfs)	200.8	1811.2	204.8
Length Wtd. (ft)	205.09	Wetted Per. (ft)	30.75	19.16	21.00
Min Ch El (ft)	2167.81	Shear (lb/sq ft)	0.29	1.54	0.37
Alpha	1.38	Stream Power (lb/ft s)	0.61	8.88	0.92
Frctn Loss (ft)	2.34	Cum Volume (acre-ft)	0.76	1.47	0.75
C & E Loss (ft)	0.00	Cum SA (acres)	1.44	0.80	1.42

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2171.13	Element			
Vel Head (ft)	0.47	Wt. n-Val.	0.040	0.045	0.040
W.S. Elev (ft)	2170.65	Reach Len. (ft)	203.91	206.70	192.32
Crit W.S. (ft)	2170.65	Flow Area (sq ft)	8.71	35.73	6.64
E.G. Slope (ft/ft)	0.013963	Area (sq ft)	8.71	35.73	6.64
Q Total (cfs)	254.00	Flow (cfs)	20.61	211.21	22.18
Top Width (ft)	50.00	Top Width (ft)	21.71	18.78	9.51
Vel Total (ft/s)	4.97	Avg. Vel. (ft/s)	2.37	5.91	3.34
Max Chl Dpth (ft)	2.84	Hydr. Depth (ft)	0.40	1.90	0.70
Conv. Total (cfs)	2149.5	Conv. (cfs)	174.4	1787.4	187.7
Length Wtd. (ft)	205.58	Wetted Per. (ft)	21.98	19.16	9.99
Min Ch El (ft)	2167.81	Shear (lb/sq ft)	0.35	1.63	0.58
Alpha	1.23	Stream Power (lb/ft s)	0.82	9.61	1.93
Frctn Loss (ft)	3.25	Cum Volume (acre-ft)	0.10	1.64	0.27
C & E Loss (ft)	0.03	Cum SA (acres)	0.15	0.80	0.27

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9960.21	9970.71	2.63	1.98	9.71	1.03	0.20	1.33
2	LOB	9970.71	9981.21	4.66	2.88	10.50	1.84	0.27	1.62
3	LOB	9981.21	9991.71	15.72	5.98	10.54	6.19	0.57	2.63
4	Chan	9991.71	9994.39	14.98	3.51	2.75	5.90	1.31	4.27
5	Chan	9994.39	9997.08	28.06	5.11	2.75	11.05	1.90	5.49
6	Chan	9997.08	9999.76	44.19	6.71	2.75	17.40	2.50	6.59
7	Chan	9999.76	10002.44	49.09	7.13	2.73	19.33	2.66	6.89
8	Chan	10002.44	10005.12	35.19	5.83	2.73	13.85	2.17	6.03
9	Chan	10005.12	10007.81	23.07	4.53	2.73	9.08	1.69	5.09
10	Chan	10007.81	10010.49	12.92	3.20	2.73	5.09	1.19	4.04
11	ROB	10010.49	10042.51	23.47	9.41	21.00	9.24	0.45	2.49

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9960.21	9970.71	0.21	0.16	0.94	0.08	0.23	1.27
2	LOB	9970.71	9981.21	4.49	2.72	10.50	1.77	0.26	1.65
3	LOB	9981.21	9991.71	15.91	5.82	10.54	6.26	0.55	2.73
4	Chan	9991.71	9994.39	15.15	3.47	2.75	5.96	1.29	4.37
5	Chan	9994.39	9997.08	28.54	5.07	2.75	11.24	1.89	5.63
6	Chan	9997.08	9999.76	45.09	6.67	2.75	17.75	2.49	6.76
7	Chan	9999.76	10002.44	50.12	7.09	2.73	19.73	2.64	7.07
8	Chan	10002.44	10005.12	35.85	5.79	2.73	14.11	2.16	6.19
9	Chan	10005.12	10007.81	23.43	4.49	2.73	9.22	1.67	5.22
10	Chan	10007.81	10010.49	13.04	3.16	2.73	5.13	1.18	4.13
11	ROB	10010.49	10042.51	22.18	6.64	9.99	8.73	0.70	3.34

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

CROSS SECTION

RIVER: X4A
REACH: Reach 1 RS: 0.631

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9953.212	2168	9961.282	2167.77	9966.162	2167.67	9982.562	2167.29	9984.902	2165.87
9990.762	2165.27	9992.022	2165.27	9992.59	2165.27	9992.592	2165.27	9993	2165.129
9995.292	2164.34	9999.752	2162.94	10001.51	2163.56	10006.08	2165.28	10008.45	2166.18
10025.9	2166.28	10043.85	2166.43	10050.35	2166.44	10054.88	2166.52	10068.18	2166.7
10084.82	2166.94	10087.28	2166.95	10100.62	2167.05	10104.79	2167.04	10111.16	2166.96
10111.26	2166.96	10111.29	2166.96	10122.61	2167.26	10135.72	2167.73	10140.34	2167.86
10141.79	2167.91	10145.52	2168						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9953.212	.04	9993	.04	10006.08	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993	10006.08	226.96	229.43	239.19	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2167.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.040	0.045	0.040
W.S. Elev (ft)	2166.59	Reach Len. (ft)	226.96	229.43	239.19
Crit W.S. (ft)	2166.59	Flow Area (sq ft)	9.43	33.25	14.46
E.G. Slope (ft/ft)	0.010019	Area (sq ft)	9.43	33.25	14.46
Q Total (cfs)	254.00	Flow (cfs)	34.76	197.02	22.22
Top Width (ft)	76.68	Top Width (ft)	9.29	13.08	54.30

Vel Total (ft/s)	4.45	Avg. Vel. (ft/s)	3.69	5.93	1.54
Max Chl Dpth (ft)	3.65	Hydr. Depth (ft)	1.01	2.54	0.27
Conv. Total (cfs)	2537.6	Conv. (cfs)	347.3	1968.3	222.0
Length Wtd. (ft)	229.77	Wetted Per. (ft)	9.55	13.85	54.47
Min Ch El (ft)	2162.94	Shear (lb/sq ft)	0.62	1.50	0.17
Alpha	1.48	Stream Power (lb/ft s)	2.28	8.90	0.26
Frctn Loss (ft)	3.13	Cum Volume (acre-ft)	0.72	1.30	0.70
C & E Loss (ft)	0.02	Cum SA (acres)	1.34	0.72	1.26

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2167.36	Element			
Vel Head (ft)	0.80	Wt. n-Val.		0.045	0.040
W.S. Elev (ft)	2166.55	Reach Len. (ft)	226.96	229.43	239.19
Crit W.S. (ft)	2166.55	Flow Area (sq ft)		32.70	4.59
E.G. Slope (ft/ft)	0.018016	Area (sq ft)		32.70	4.59
Q Total (cfs)	254.00	Flow (cfs)		240.73	13.27
Top Width (ft)	23.00	Top Width (ft)		13.08	9.92
Vel Total (ft/s)	6.81	Avg. Vel. (ft/s)		7.36	2.89
Max Chl Dpth (ft)	3.61	Hydr. Depth (ft)		2.50	0.46
Conv. Total (cfs)	1892.4	Conv. (cfs)		1793.5	98.9
Length Wtd. (ft)	229.91	Wetted Per. (ft)		15.27	10.41
Min Ch El (ft)	2162.94	Shear (lb/sq ft)		2.41	0.50
Alpha	1.12	Stream Power (lb/ft s)		17.73	1.43
Frctn Loss (ft)	3.92	Cum Volume (acre-ft)	0.08	1.48	0.25
C & E Loss (ft)	0.05	Cum SA (acres)	0.09	0.72	0.23

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.09	9985.04	0.94	0.53	1.54	0.37	0.40	1.75
2	LOB	9985.04	9993.00	33.83	8.89	8.01	13.32	1.12	3.80
3	Chan	9993.00	9994.87	15.12	3.34	1.98	5.95	1.79	4.53
4	Chan	9994.87	9996.74	25.08	4.51	1.96	9.87	2.41	5.56
5	Chan	9996.74	9998.61	36.10	5.61	1.96	14.21	3.00	6.44
6	Chan	9998.61	10000.47	46.41	6.53	1.97	18.27	3.49	7.10
7	Chan	10000.47	10002.34	37.01	5.73	1.99	14.57	3.07	6.46
8	Chan	10002.34	10004.21	24.00	4.42	2.00	9.45	2.37	5.42
9	Chan	10004.21	10006.08	13.31	3.11	2.00	5.24	1.66	4.28
10	ROB	10006.08	10033.97	18.74	10.67	28.05	7.38	0.38	1.76
11	ROB	10033.97	10061.86	3.48	3.79	26.42	1.37	0.14	0.92

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9993.00	9994.87	13.00	3.26	3.40	5.12	1.75	3.99
2	Chan	9994.87	9996.74	31.28	4.43	1.96	12.31	2.37	7.06
3	Chan	9996.74	9998.61	45.29	5.53	1.96	17.83	2.96	8.19
4	Chan	9998.61	10000.47	58.41	6.45	1.97	23.00	3.45	9.05
5	Chan	10000.47	10002.34	46.46	5.65	1.99	18.29	3.02	8.22
6	Chan	10002.34	10004.21	29.92	4.35	2.00	11.78	2.33	6.88
7	Chan	10004.21	10006.08	16.37	3.03	2.00	6.45	1.62	5.41
8	ROB	10006.08	10033.97	13.27	4.59	10.41	5.22	0.46	2.89

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X4A
REACH: Reach 1 RS: 0.587

INPUT
Description:
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9920.667	2163.689	924.197	2163.259	926.417	2163.029	932.417	2162.269	937.077	2162.13
9940.857	2162.029	949.877	2161.769	951.867	2161.79	953.087	2161.679	963.877	2160.52
9969.767	2159.99	970.997	2160.039	982.517	2161.239	990.607	2159.44	9990.61	2159.439
99932	158.895	9995.697	2158.281	0000.87	2158.231	0005.54	2158.071	0006.98	2158.01
10007.27	2158	10007.54	2158.01	10011	2158.985	10012	2159.267	10014.07	2159.85
10016.69	2160.951	0018.05	2161.011	0024.44	2161.381	0033.19	2161.871	0043.33	2162.52
10048.94	2162.451	0049.44	2162.441	0052.42	2162.411	0063.21	2162.271	0073.55	2162.1
10074.96	2162.071	0077.61	2162.011	0086.58	2162.191	0098.55	2162.411	0104.85	2162.57
10107.07	2162.64								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9920.667	.04	9993	.045	10011	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993	10011	174.23	152.62	135.79	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2160.86	Element			
Vel Head (ft)	0.70	Wt. n-Val.	0.040	0.045	0.045
W.S. Elev (ft)	2160.16	Reach Len. (ft)	174.23	152.62	135.79
Crit W.S. (ft)	2160.16	Flow Area (sq ft)	4.18	33.47	2.39
E.G. Slope (ft/ft)	0.019579	Area (sq ft)	4.18	33.47	2.39
Q Total (cfs)	254.00	Flow (cfs)	14.11	232.05	7.84
Top Width (ft)	32.37	Top Width (ft)	10.57	18.00	3.81
Vel Total (ft/s)	6.34	Avg. Vel. (ft/s)	3.38	6.93	3.28
Max Chl Dpth (ft)	2.16	Hydr. Depth (ft)	0.40	1.86	0.63
Conv. Total (cfs)	1815.3	Conv. (cfs)	100.8	1658.4	56.0
Length Wtd. (ft)	157.31	Wetted Per. (ft)	10.73	18.21	3.99
Min Ch El (ft)	2158.00	Shear (lb/sq ft)	0.48	2.25	0.73
Alpha	1.11	Stream Power (lb/ft s)	1.61	15.58	2.40
Frctn Loss (ft)	2.38	Cum Volume (acre-ft)	0.68	1.13	0.65
C & E Loss (ft)	0.09	Cum SA (acres)	1.29	0.64	1.10

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2161.01	Element			
Vel Head (ft)	0.63	Wt. n-Val.		0.045	0.045
W.S. Elev (ft)	2160.39	Reach Len. (ft)	174.23	152.62	135.79
Crit W.S. (ft)		Flow Area (sq ft)		37.59	3.23
E.G. Slope (ft/ft)	0.016134	Area (sq ft)		37.59	3.23
Q Total (cfs)	254.00	Flow (cfs)		242.51	11.49
Top Width (ft)	21.70	Top Width (ft)		18.00	3.70
Vel Total (ft/s)	6.22	Avg. Vel. (ft/s)		6.45	3.55
Max Chl Dpth (ft)	2.39	Hydr. Depth (ft)		2.09	0.87
Conv. Total (cfs)	1999.7	Conv. (cfs)		1909.3	90.4
Length Wtd. (ft)	152.22	Wetted Per. (ft)		19.70	4.15
Min Ch El (ft)	2158.00	Shear (lb/sq ft)		1.92	0.79
Alpha	1.04	Stream Power (lb/ft s)		12.40	2.79
Frctn Loss (ft)	2.15	Cum Volume (acre-ft)	0.08	1.30	0.23
C & E Loss (ft)	0.00	Cum SA (acres)	0.09	0.64	0.19

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.07	9978.53	0.84	0.64	4.95	0.33	0.13	1.32
2	LOB	9978.53	9993.00	13.27	3.54	5.78	5.22	0.63	3.75
3	Chan	9993.00	9995.57	24.22	4.00	2.64	9.54	1.56	6.05
4	Chan	9995.57	9998.14	33.98	4.86	2.57	13.38	1.89	6.99
5	Chan	9998.14	10000.71	34.78	4.92	2.57	13.69	1.91	7.06
6	Chan	10000.71	10003.29	36.39	5.06	2.57	14.33	1.97	7.19
7	Chan	10003.29	10005.86	39.13	5.29	2.57	15.41	2.06	7.40
8	Chan	10005.86	10008.43	40.07	5.39	2.61	15.78	2.10	7.43
9	Chan	10008.43	10011.00	23.48	3.95	2.67	9.24	1.54	5.95
10	ROB	10011.00	10030.21	7.84	2.39	3.99	3.09	0.63	3.28

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9993.00	9995.57	20.03	4.59	4.13	7.89	1.79	4.36
2	Chan	9995.57	9998.14	36.49	5.45	2.57	14.37	2.12	6.70
3	Chan	9998.14	10000.71	37.26	5.51	2.57	14.67	2.14	6.76
4	Chan	10000.71	10003.29	38.80	5.65	2.57	15.27	2.20	6.87
5	Chan	10003.29	10005.86	41.41	5.87	2.57	16.30	2.28	7.05
6	Chan	10005.86	10008.43	42.27	5.98	2.61	16.64	2.33	7.07
7	Chan	10008.43	10011.00	26.26	4.54	2.67	10.34	1.76	5.79
8	ROB	10011.00	10030.21	11.49	3.23	4.15	4.52	0.87	3.55

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: X4A
REACH: Reach 1 RS: 0.558

INPUT
Description: 12th Street
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9865.566	2160.789	869.396	2160.419	871.006	2160.39	876.846	2159.699	881.166	2159.31
9887.596	2159.069	889.176	2159.019	900.096	2158.429	901.766	2158.339	903.206	2158.23
9913.636	2157.969	914.616	2157.949	923.676	2157.549	926.266	2157.439	933.686	2157.21
9933.786	2157.219	937.146	2157.129	941.226	2157.119	948.146	2157.059	954.416	2157.02
9959.516	2156.939	963.656	2156.889	971.526	2156.879	975.096	2156.789	983.076	2156.79
9984.936	2156.78	99862	2156.784	9994.606	2156.829	995.206	2156.811	0000.31	2156.84
10004.9	2156.691	0006.13	2156.931	0006.96	2156.941	0015.71	2157.281	0020.71	2157.43
10024.06	2157.4	10031.8	2157.611	0042.55	2158.871	0047.93	2159.071	0051.56	2159.13
10051.76	2159.121	0055.88	2159.05	10057.4	2159.151	0058.25	2159.191	0058.93	2159.2
10069.06	2159.251	0074.64	2159.22	10080.3	2159.191	0084.68	2159.21	0088.71	2159.13
10090.94	2159.061	0094.14	2159.11	0099.66	2159.011	0100.96	2159.031	0104.57	2159.02
10104.63	2159.021	0104.79	2159.021	0106.95	2159.121	0108.96	2159.16	10112	2159.22
10115.28	2159.31	0129.16	2160.451	0130.43	2160.541	0136.05	2160.881	0141.22	2161.17
10144.48	2161.4								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9865.566	.045	9900.096	.03	10031.8	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986	10015.71	205.12	226.5	243.32	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
9865.566	9963		F

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2158.15	Element			
Vel Head (ft)	0.38	Wt. n-Val.	0.030	0.030	0.030
W.S. Elev (ft)	2157.76	Reach Len. (ft)	205.12	226.50	243.32
Crit W.S. (ft)	2157.76	Flow Area (sq ft)	21.61	25.81	5.32
E.G. Slope (ft/ft)	0.012063	Area (sq ft)	47.22	25.81	5.32
Q Total (cfs)	254.00	Flow (cfs)	112.75	127.78	13.47
Top Width (ft)	114.52	Top Width (ft)	67.40	29.71	17.40
Vel Total (ft/s)	4.82	Avg. Vel. (ft/s)	5.22	4.95	2.53
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)	0.94	0.87	0.31
Conv. Total (cfs)	2312.6	Conv. (cfs)	1026.5	1163.4	122.7
Length Wtd. (ft)	224.16	Wetted Per. (ft)	23.00	29.74	17.42
Min Ch El (ft)	2156.69	Shear (lb/sq ft)	0.71	0.65	0.23
Alpha	1.07	Stream Power (lb/ft s)	3.69	3.24	0.58
Frctn Loss (ft)	2.73	Cum Volume (acre-ft)	0.58	1.02	0.64
C & E Loss (ft)	0.00	Cum SA (acres)	1.13	0.56	1.07

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2158.86	Element			
Vel Head (ft)	0.64	Wt. n-Val.		0.030	0.030
W.S. Elev (ft)	2158.22	Reach Len. (ft)	205.12	226.50	243.32
Crit W.S. (ft)	2158.22	Flow Area (sq ft)		39.29	0.27
E.G. Slope (ft/ft)	0.012459	Area (sq ft)		39.29	0.27

Q Total (cfs)	254.00	Flow (cfs)		253.45	0.55
Top Width (ft)	30.00	Top Width (ft)		29.71	0.29
Vel Total (ft/s)	6.42	Avg. Vel. (ft/s)		6.45	2.03
Max Chl Dpth (ft)	1.53	Hydr. Depth (ft)		1.32	0.93
Conv. Total (cfs)	2275.6	Conv. (cfs)		2270.7	4.9
Length Wtd. (ft)	226.76	Wetted Per. (ft)		31.18	1.22
Min Ch El (ft)	2156.69	Shear (lb/sq ft)		0.98	0.17
Alpha	1.01	Stream Power (lb/ft s)		6.32	0.35
Frctn Loss (ft)	3.29	Cum Volume (acre-ft)	0.08	1.16	0.22
C & E Loss (ft)	0.01	Cum SA (acres)	0.09	0.56	0.19

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9914.28	9938.64	0.00	7.62	20.05	0.00	0.38	0.00
2	LOB	9938.64	9963.00	0.00	17.99	24.36	0.00	0.74	0.00
3	LOB	9963.00	9986.00	112.75	21.61	23.00	44.39	0.94	5.22
4	Chan	9986.00	9990.24	21.65	4.12	4.24	8.52	0.97	5.25
5	Chan	9990.24	9994.49	20.99	4.05	4.24	8.26	0.95	5.19
6	Chan	9994.49	9998.73	20.66	4.01	4.24	8.13	0.94	5.15
7	Chan	9998.73	10002.98	20.98	4.05	4.25	8.26	0.95	5.18
8	Chan	10002.98	10007.22	21.20	4.08	4.27	8.35	0.96	5.20
9	Chan	10007.22	10011.47	13.49	3.10	4.25	5.31	0.73	4.34
10	Chan	10011.47	10015.71	8.81	2.40	4.25	3.47	0.57	3.66
11	ROB	10015.71	10041.46	13.47	5.32	17.42	5.30	0.31	2.53

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9986.00	9990.24	34.54	6.05	5.68	13.60	1.42	5.71
2	Chan	9990.24	9994.49	41.07	5.97	4.24	16.17	1.41	6.88
3	Chan	9994.49	9998.73	40.63	5.93	4.24	16.00	1.40	6.85
4	Chan	9998.73	10002.98	41.05	5.97	4.25	16.16	1.41	6.87
5	Chan	10002.98	10007.22	41.30	6.01	4.27	16.26	1.42	6.88
6	Chan	10007.22	10011.47	30.84	5.03	4.25	12.14	1.19	6.13
7	Chan	10011.47	10015.71	24.02	4.33	4.25	9.46	1.02	5.55
8	ROB	10015.71	10041.46	0.55	0.27	1.22	0.22	0.93	2.03

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: X4A
REACH: Reach 1 RS: 0.515

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9862.187	2156.04	9890.767	2155.52	9894.597	2155.28	9897.637	2155.17	9901.127	2155.05
9907.437	2154.79	9910.417	2154.72	9911.957	2154.69	9936.027	2154.05	9937.727	2154.06
9939.577	2154.06	9971.687	2153.89	9987.407	2153.68	9988.697	2153.24	9990.19	2152.705
9996.207	2150.55	10002.91	2152.35	10005.67	2152.92	10014.28	2153.66	10017.49	2153.89
10021.52	2153.43	10024.48	2153.15	10046.49	2153.17	10048.97	2153.18	10054.78	2153.22
10070.07	2154.43	10084.89	2155.58	10091.82	2156.08				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9862.187	.05	9990.19	.04	10005.67	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.19	10005.67	210.77	223.47	233.8	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2154.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2153.82	Reach Len. (ft)	210.77	223.47	233.80

Crit W.S. (ft)	2153.82	Flow Area (sq ft)	3.05	32.38	29.10
E.G. Slope (ft/ft)	0.012294	Area (sq ft)	3.05	32.38	29.10
Q Total (cfs)	254.00	Flow (cfs)	2.75	188.49	62.76
Top Width (ft)	91.87	Top Width (ft)	21.22	15.48	55.18
Vel Total (ft/s)	3.94	Avg. Vel. (ft/s)	0.90	5.82	2.16
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	0.14	2.09	0.53
Conv. Total (cfs)	2290.8	Conv. (cfs)	24.8	1700.0	566.0
Length Wtd. (ft)	223.78	Wetted Per. (ft)	21.38	16.15	55.27
Min Ch El (ft)	2150.55	Shear (lb/sq ft)	0.11	1.54	0.40
Alpha	1.70	Stream Power (lb/ft s)	0.10	8.96	0.87
Frctn Loss (ft)	2.82	Cum Volume (acre-ft)	0.46	0.87	0.54
C & E Loss (ft)	0.02	Cum SA (acres)	0.93	0.44	0.86

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2154.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2153.89	Reach Len. (ft)	210.77	223.47	233.80
Crit W.S. (ft)	2153.89	Flow Area (sq ft)	2.41	33.44	5.32
E.G. Slope (ft/ft)	0.017097	Area (sq ft)	2.41	33.44	5.32
Q Total (cfs)	254.00	Flow (cfs)	5.38	234.61	14.01
Top Width (ft)	30.00	Top Width (ft)	5.19	15.48	9.33
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	2.23	7.01	2.63
Max Chl Dpth (ft)	3.34	Hydr. Depth (ft)	0.46	2.16	0.57
Conv. Total (cfs)	1942.6	Conv. (cfs)	41.2	1794.2	107.2
Length Wtd. (ft)	223.77	Wetted Per. (ft)	5.55	16.15	9.54
Min Ch El (ft)	2150.55	Shear (lb/sq ft)	0.46	2.21	0.60
Alpha	1.21	Stream Power (lb/ft s)	1.04	15.51	1.57
Frctn Loss (ft)	3.40	Cum Volume (acre-ft)	0.08	0.97	0.21
C & E Loss (ft)	0.06	Cum SA (acres)	0.08	0.44	0.16

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.59	9990.19	2.75	3.05	21.38	1.08	0.14	0.90
2	Chan	9990.19	9992.40	14.73	3.35	2.35	5.80	1.51	4.40
3	Chan	9992.40	9994.61	29.73	5.10	2.35	11.71	2.31	5.83
4	Chan	9994.61	9996.82	47.44	6.73	2.33	18.68	3.04	7.05
5	Chan	9996.82	9999.04	42.05	6.21	2.29	16.56	2.81	6.77
6	Chan	9999.04	10001.25	28.29	4.90	2.29	11.14	2.22	5.78
7	Chan	10001.25	10003.46	16.94	3.60	2.28	6.67	1.63	4.71
8	Chan	10003.46	10005.67	9.30	2.50	2.26	3.66	1.13	3.72
9	ROB	10005.67	10022.90	10.13	6.07	15.75	3.99	0.39	1.67
10	ROB	10022.90	10040.13	27.10	11.35	17.24	10.67	0.66	2.39
11	ROB	10040.13	10057.36	24.46	10.68	17.24	9.63	0.62	2.29
12	ROB	10057.36	10074.59	1.07	1.00	5.04	0.42	0.20	1.07

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9964.59	9990.19	5.38	2.41	5.55	2.12	0.46	2.23
2	Chan	9990.19	9992.40	18.77	3.50	2.35	7.39	1.58	5.37
3	Chan	9992.40	9994.61	36.94	5.25	2.35	14.54	2.37	7.04
4	Chan	9994.61	9996.82	58.25	6.88	2.33	22.93	3.11	8.47
5	Chan	9996.82	9999.04	51.80	6.37	2.29	20.39	2.88	8.14
6	Chan	9999.04	10001.25	35.22	5.05	2.29	13.87	2.28	6.97
7	Chan	10001.25	10003.46	21.47	3.75	2.28	8.45	1.69	5.73
8	Chan	10003.46	10005.67	12.15	2.65	2.26	4.78	1.20	4.58
9	ROB	10005.67	10022.90	14.01	5.32	9.54	5.52	0.57	2.63

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X4A
REACH: Reach 1 RS: 0.473

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9874.893	2150.819	882.343	2150.49	900.143	2149.429	903.883	2149.399	913.003	2149.34
9933.923	2149.229	943.583	2149.119	944.283	2149.199	952.073	2150.149	956.563	2150.73
9976.413	2150.039	984.983	2149.739	986.693	2149.31	9987.1	2149.249	987.103	2149.24
9988.873	2148.879	996.873	2147.061	0001.53	2147.741	0009.57	2148.927	10012.1	2149.3
10020.51	2149.441	0037.28	2149.671	0037.81	2149.671	0054.41	2149.81	0059.71	2149.8
10088.47	2150.161	0112.69	2150.45						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9874.893	.05	9987.1	.04	510009.57	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.1	10009.57	200.58	188.21	177.89	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2150.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2149.75	Reach Len. (ft)	200.58	188.21	177.89
Crit W.S. (ft)	2149.75	Flow Area (sq ft)	23.59	37.85	8.54
E.G. Slope (ft/ft)	0.012949	Area (sq ft)	23.59	37.85	8.54
Q Total (cfs)	254.00	Flow (cfs)	44.31	199.12	10.58
Top Width (ft)	118.39	Top Width (ft)	57.43	22.47	38.49
Vel Total (ft/s)	3.63	Avg. Vel. (ft/s)	1.88	5.26	1.24
Max Chl Dpth (ft)	2.69	Hydr. Depth (ft)	0.41	1.68	0.22
Conv. Total (cfs)	2232.1	Conv. (cfs)	389.4	1749.8	92.9
Length Wtd. (ft)	189.82	Wetted Per. (ft)	57.54	22.85	38.52
Min Ch El (ft)	2147.06	Shear (lb/sq ft)	0.33	1.34	0.18
Alpha	1.70	Stream Power (lb/ft s)	0.62	7.04	0.22
Frctn Loss (ft)	2.79	Cum Volume (acre-ft)	0.39	0.69	0.44
C & E Loss (ft)	0.00	Cum SA (acres)	0.74	0.34	0.61

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2150.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.		0.045	0.050
W.S. Elev (ft)	2149.98	Reach Len. (ft)	200.58	188.21	177.89
Crit W.S. (ft)	2149.68	Flow Area (sq ft)		42.97	2.79
E.G. Slope (ft/ft)	0.013571	Area (sq ft)		42.97	2.79
Q Total (cfs)	254.00	Flow (cfs)		246.55	7.45
Top Width (ft)	25.90	Top Width (ft)		22.47	3.43
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)		5.74	2.67
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)		1.91	0.81
Conv. Total (cfs)	2180.3	Conv. (cfs)		2116.4	63.9
Length Wtd. (ft)	188.23	Wetted Per. (ft)		23.59	4.12
Min Ch El (ft)	2147.06	Shear (lb/sq ft)		1.54	0.57
Alpha	1.04	Stream Power (lb/ft s)		8.86	1.53
Frctn Loss (ft)	3.28	Cum Volume (acre-ft)	0.07	0.78	0.18
C & E Loss (ft)	0.03	Cum SA (acres)	0.07	0.34	0.12

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9874.89	9897.33	0.18	0.28	3.20	0.07	0.09	0.64
2	LOB	9897.33	9919.78	14.28	8.43	22.45	5.62	0.38	1.69
3	LOB	9919.78	9942.22	24.74	11.72	22.44	9.74	0.52	2.11
4	LOB	9942.22	9964.66	4.42	2.57	6.70	1.74	0.39	1.72
5	LOB	9964.66	9987.10	0.69	0.59	2.75	0.27	0.22	1.17

6	Chan	9987.10	9990.31	8.53	2.73	3.28	3.36	0.85	3.12
7	Chan	9990.31	9993.52	23.62	5.03	3.29	9.30	1.57	4.69
8	Chan	9993.52	9996.73	44.54	7.37	3.29	17.54	2.29	6.05
9	Chan	9996.73	9999.94	51.03	7.95	3.25	20.09	2.48	6.42
10	Chan	9999.94	10003.15	35.99	6.44	3.24	14.17	2.01	5.58
11	Chan	10003.15	10006.36	22.99	4.92	3.24	9.05	1.53	4.67
12	Chan	10006.36	10009.57	12.42	3.40	3.24	4.89	1.06	3.65
13	ROB	10009.57	10030.19	9.89	7.17	20.65	3.89	0.35	1.38
14	ROB	10030.19	10050.82	0.69	1.37	17.86	0.27	0.08	0.50

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9987.10	9990.31	11.32	3.46	4.02	4.46	1.08	3.27
2	Chan	9990.31	9993.52	30.28	5.77	3.29	11.92	1.80	5.25
3	Chan	9993.52	9996.73	53.33	8.10	3.29	21.00	2.52	6.59
4	Chan	9996.73	9999.94	60.43	8.68	3.25	23.79	2.70	6.96
5	Chan	9999.94	10003.15	44.02	7.17	3.24	17.33	2.24	6.14
6	Chan	10003.15	10006.36	29.61	5.66	3.24	11.66	1.76	5.23
7	Chan	10006.36	10009.57	17.56	4.13	3.24	6.91	1.29	4.25
8	ROB	10009.57	10030.19	7.45	2.79	4.12	2.93	0.81	2.67

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X4A
REACH: Reach 1 RS: 0.437

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9925.948	2148.11	9942.878	2146.96	9947.688	2146.64	9954.55	2145.72	9959.768	2145.02
9960.568	2144.91	9961.108	2144.84	9961.758	2144.91	9972.548	2145.86	9973.868	2145.97
9974.158	2145.97	9990.558	2145.53	9996.018	2144.57	9999.898	2143.87	10008.08	2144.96
10008.83	2145.09	10013.72	2145.32	10048.74	2146.99	10052.83	2147.18	10056.16	2147.28
10085.77	2147.34								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9925.948	.05	9990.558	.04	10008.83	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.55	10008.83	209.73	188.39	171.8	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2146.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2146.17	Reach Len. (ft)	209.73	188.39	171.80
Crit W.S. (ft)	2146.17	Flow Area (sq ft)	23.11	28.86	12.25
E.G. Slope (ft/ft)	0.016797	Area (sq ft)	23.11	28.86	12.25
Q Total (cfs)	254.00	Flow (cfs)	56.60	166.14	31.26
Top Width (ft)	80.29	Top Width (ft)	39.35	18.27	22.67
Vel Total (ft/s)	3.96	Avg. Vel. (ft/s)	2.45	5.76	2.55
Max Chl Dpth (ft)	2.30	Hydr. Depth (ft)	0.59	1.58	0.54
Conv. Total (cfs)	1959.8	Conv. (cfs)	436.7	1281.9	241.2
Length Wtd. (ft)	190.68	Wetted Per. (ft)	39.49	18.50	22.70
Min Ch El (ft)	2143.87	Shear (lb/sq ft)	0.61	1.64	0.57
Alpha	1.52	Stream Power (lb/ft s)	1.50	9.42	1.44
Frctn Loss (ft)	3.09	Cum Volume (acre-ft)	0.29	0.55	0.40
C & E Loss (ft)	0.01	Cum SA (acres)	0.51	0.25	0.49

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2147.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2146.37	Reach Len. (ft)	209.73	188.39	171.80
Crit W.S. (ft)	2146.37	Flow Area (sq ft)	3.53	32.48	1.46

E.G. Slope (ft/ft)	0.023261	Area (sq ft)	3.53	32.48	1.46
Q Total (cfs)	254.00	Flow (cfs)	11.14	238.09	4.77
Top Width (ft)	24.00	Top Width (ft)	4.56	18.27	1.17
Vel Total (ft/s)	6.78	Avg. Vel. (ft/s)	3.15	7.33	3.26
Max Chl Dpth (ft)	2.50	Hydr. Depth (ft)	0.78	1.78	1.25
Conv. Total (cfs)	1665.4	Conv. (cfs)	73.1	1561.1	31.2
Length Wtd. (ft)	189.00	Wetted Per. (ft)	5.27	18.50	2.39
Min Ch El (ft)	2143.87	Shear (lb/sq ft)	0.97	2.55	0.89
Alpha	1.11	Stream Power (lb/ft s)	3.07	18.69	2.89
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	0.06	0.61	0.18
C & E Loss (ft)	0.03	Cum SA (acres)	0.06	0.25	0.12

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.87	9951.79	0.01	0.02	0.59	0.00	0.04	0.38
2	LOB	9951.79	9964.71	31.41	10.72	13.02	12.37	0.83	2.93
3	LOB	9964.71	9977.64	13.18	6.36	12.96	5.19	0.49	2.07
4	LOB	9977.64	9990.56	12.00	6.00	12.93	4.72	0.46	2.00
5	Chan	9990.56	9993.17	8.39	2.26	2.65	3.30	0.87	3.70
6	Chan	9993.17	9995.78	17.02	3.46	2.65	6.70	1.33	4.92
7	Chan	9995.78	9998.39	28.05	4.67	2.65	11.04	1.79	6.00
8	Chan	9998.39	10001.00	39.27	5.71	2.64	15.46	2.19	6.88
9	Chan	10001.00	10003.61	33.26	5.16	2.63	13.10	1.98	6.44
10	Chan	10003.61	10006.22	24.10	4.25	2.63	9.49	1.63	5.66
11	Chan	10006.22	10008.83	16.04	3.34	2.64	6.32	1.28	4.81
12	ROB	10008.83	10024.22	29.92	10.98	15.41	11.78	0.71	2.72
13	ROB	10024.22	10039.61	1.34	1.27	7.29	0.53	0.17	1.06

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.64	9990.56	11.14	3.53	5.27	4.39	0.78	3.15
2	Chan	9990.56	9993.17	14.02	2.78	2.65	5.52	1.07	5.04
3	Chan	9993.17	9995.78	25.48	3.98	2.65	10.03	1.52	6.40
4	Chan	9995.78	9998.39	39.65	5.19	2.65	15.61	1.99	7.64
5	Chan	9998.39	10001.00	53.84	6.23	2.64	21.20	2.39	8.64
6	Chan	10001.00	10003.61	46.28	5.68	2.63	18.22	2.18	8.15
7	Chan	10003.61	10006.22	34.62	4.77	2.63	13.63	1.83	7.26
8	Chan	10006.22	10008.83	24.21	3.85	2.64	9.53	1.48	6.28
9	ROB	10008.83	10024.22	4.77	1.46	2.39	1.88	1.25	3.26

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X4A
REACH: Reach 1 RS: 0.402

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9917.655	2144.57	9927.785	2144.16	9929.045	2144.09	9933.955	2143.74	9934.815	2143.7
9938.895	2143.54	9943.795	2143.21	9951.885	2143.04	9963.355	2141.01	9963.945	2140.92
9965.035	2141.02	9968.725	2141.57	9970.775	2141.57	9971.195	2141.67	9971.745	2141.71
9972.465	2141.68	9981.495	2140.98	9981.5	2140.98	9989.035	2140.51	9994.645	2139.59
9998.815	2138.92	10005	2140.21	10009.16	2141.05	10015.01	2141.28	10017.43	2141.33
10023.99	2141.49	10027.09	2141.51	10047.74	2141.82	10051.31	2141.88	10112.91	2143.02
10116.3	2143.05	10124.04	2143.14	10124.61	2143.16	10124.7	2143.16	10128.02	2143.45
10144.01	2144.87								

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Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9917.655    .0559989.035    .04510009.16     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9989.03510009.16             192.5  175.42  162.25          .1          .3
```

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2142.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2141.64	Reach Len. (ft)	192.50	175.42	162.25
Crit W.S. (ft)	2141.64	Flow Area (sq ft)	13.33	35.97	6.28
E.G. Slope (ft/ft)	0.015636	Area (sq ft)	13.33	35.97	6.28
Q Total (cfs)	254.00	Flow (cfs)	28.93	216.30	8.77
Top Width (ft)	74.73	Top Width (ft)	27.41	20.13	27.19
Vel Total (ft/s)	4.57	Avg. Vel. (ft/s)	2.17	6.01	1.40
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)	0.49	1.79	0.23
Conv. Total (cfs)	2031.3	Conv. (cfs)	231.4	1729.8	70.2
Length Wtd. (ft)	174.91	Wetted Per. (ft)	27.57	20.47	27.20
Min Ch El (ft)	2138.92	Shear (lb/sq ft)	0.47	1.72	0.23
Alpha	1.50	Stream Power (lb/ft s)	1.02	10.31	0.31
Frctn Loss (ft)	2.81	Cum Volume (acre-ft)	0.20	0.41	0.36
C & E Loss (ft)	0.05	Cum SA (acres)	0.35	0.17	0.39

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2142.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2141.58	Reach Len. (ft)	192.50	175.42	162.25
Crit W.S. (ft)	2141.58	Flow Area (sq ft)	3.46	34.60	2.40
E.G. Slope (ft/ft)	0.021356	Area (sq ft)	3.46	34.60	2.40
Q Total (cfs)	254.00	Flow (cfs)	11.50	236.93	5.56
Top Width (ft)	29.60	Top Width (ft)	3.63	20.13	5.84
Vel Total (ft/s)	6.28	Avg. Vel. (ft/s)	3.32	6.85	2.32
Max Chl Dpth (ft)	2.66	Hydr. Depth (ft)	0.95	1.72	0.41
Conv. Total (cfs)	1738.1	Conv. (cfs)	78.7	1621.3	38.1
Length Wtd. (ft)	174.37	Wetted Per. (ft)	4.48	20.47	6.14
Min Ch El (ft)	2138.92	Shear (lb/sq ft)	1.03	2.25	0.52
Alpha	1.13	Stream Power (lb/ft s)	3.42	15.43	1.21
Frctn Loss (ft)	2.90	Cum Volume (acre-ft)	0.05	0.47	0.17
C & E Loss (ft)	0.09	Cum SA (acres)	0.04	0.17	0.10

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9946.21	9960.48	0.02	0.04	0.72	0.01	0.06	0.51
2	LOB	9960.48	9974.76	5.56	3.80	12.54	2.19	0.31	1.46
3	LOB	9974.76	9989.04	23.35	9.49	14.31	9.19	0.66	2.46
4	Chan	9989.04	9991.91	18.88	3.94	2.91	7.43	1.37	4.80
5	Chan	9991.91	9994.79	30.91	5.29	2.91	12.17	1.84	5.84
6	Chan	9994.79	9997.66	45.06	6.63	2.91	17.74	2.31	6.79
7	Chan	9997.66	10000.54	54.07	7.41	2.93	21.29	2.58	7.29
8	Chan	10000.54	10003.41	37.24	5.94	2.94	14.66	2.07	6.27
9	Chan	10003.41	10006.29	21.08	4.22	2.94	8.30	1.47	5.00
10	Chan	10006.29	10009.16	9.06	2.54	2.93	3.57	0.88	3.57
11	ROB	10009.16	10036.13	8.77	6.28	26.98	3.45	0.23	1.40

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 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.

Profile #profile 2

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	9974.76	9989.04	11.50	3.46	4.48	4.53	0.95	3.32
2	Chan	9989.04	9991.91	20.18	3.74	2.91	7.95	1.30	5.40
3	Chan	9991.91	9994.79	33.79	5.10	2.91	13.30	1.77	6.63
4	Chan	9994.79	9997.66	49.89	6.44	2.91	19.64	2.24	7.75
5	Chan	9997.66	10000.54	60.19	7.22	2.93	23.70	2.51	8.34
6	Chan	10000.54	10003.41	40.99	5.74	2.94	16.14	2.00	7.14
7	Chan	10003.41	10006.29	22.67	4.02	2.94	8.92	1.40	5.63
8	Chan	10006.29	10009.16	9.23	2.35	2.93	3.63	0.82	3.93
9	ROB	10009.16	10036.13	5.56	2.40	6.14	2.19	0.41	2.32

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X4A
REACH: Reach 1 RS: 0.368

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9902.382	2139.21	9933.232	2138.69	9937.772	2138.61	9938.902	2138.58	9943.692	2138.41
9944.472	2138.49	9945.372	2138.31	9947.362	2138.24	9949.082	2138.17	9957.522	2137.84
9958.672	2137.73	9962.432	2137.79	9969.692	2137.61	9970.362	2137.69	9972.012	2137.59
9977.832	2137.51	9984.54	2137.16	9984.542	2137.16	9990.792	2136.76	9999.682	2135.82
10001.59	2136.17	10006.96	2137.06	10011.51	2137.04	10022.9	2137.02	10025.01	2137.1
10051.39	2138.08	10061.64	2138.46	10067.62	2138.79	10073.75	2138.82	10087.2	2139.43

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9902.382	.05	9984.54	.045	10006.96	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.54	10006.96	207.12	219	228.15	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2138.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2137.93	Reach Len. (ft)	207.12	219.00	228.15
Crit W.S. (ft)	2137.89	Flow Area (sq ft)	9.51	31.37	25.31
E.G. Slope (ft/ft)	0.016561	Area (sq ft)	9.51	31.37	25.31
Q Total (cfs)	254.00	Flow (cfs)	17.19	165.92	70.89
Top Width (ft)	92.06	Top Width (ft)	29.29	22.42	40.36
Vel Total (ft/s)	3.84	Avg. Vel. (ft/s)	1.81	5.29	2.80
Max Chl Dpth (ft)	2.11	Hydr. Depth (ft)	0.32	1.40	0.63
Conv. Total (cfs)	1973.7	Conv. (cfs)	133.6	1289.3	550.9
Length Wtd. (ft)	221.12	Wetted Per. (ft)	29.30	22.59	40.37
Min Ch El (ft)	2135.82	Shear (lb/sq ft)	0.34	1.44	0.65
Alpha	1.40	Stream Power (lb/ft s)	0.61	7.59	1.82
Frctn Loss (ft)	4.35	Cum Volume (acre-ft)	0.15	0.27	0.30
C & E Loss (ft)	0.02	Cum SA (acres)	0.23	0.09	0.26

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2138.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.		0.045	0.050
W.S. Elev (ft)	2138.25	Reach Len. (ft)	207.12	219.00	228.15
Crit W.S. (ft)	2137.94	Flow Area (sq ft)		38.65	13.70
E.G. Slope (ft/ft)	0.013309	Area (sq ft)		38.65	13.70
Q Total (cfs)	254.00	Flow (cfs)		204.13	49.87
Top Width (ft)	33.71	Top Width (ft)		22.42	11.29
Vel Total (ft/s)	4.85	Avg. Vel. (ft/s)		5.28	3.64
Max Chl Dpth (ft)	2.43	Hydr. Depth (ft)		1.72	1.21
Conv. Total (cfs)	2201.7	Conv. (cfs)		1769.4	432.3
Length Wtd. (ft)	220.85	Wetted Per. (ft)		23.68	12.52
Min Ch El (ft)	2135.82	Shear (lb/sq ft)		1.36	0.91
Alpha	1.06	Stream Power (lb/ft s)		7.16	3.31
Frctn Loss (ft)	4.11	Cum Volume (acre-ft)	0.04	0.32	0.14
C & E Loss (ft)	0.02	Cum SA (acres)	0.03	0.09	0.07

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.

Profile #profile 1

Pos	Left Sta	Right Sta	Flow	Area	W.P.	Percent	Hydr	Velocity

		(ft)	(ft)	(cfs)	(sq ft)	(ft)	Conv	Depth(ft)	(ft/s)
1	LOB	9951.68	9968.11	2.14	2.09	12.86	0.84	0.16	1.02
2	LOB	9968.11	9984.54	15.05	7.43	16.44	5.93	0.45	2.03
3	Chan	9984.54	9987.74	10.40	2.79	3.21	4.09	0.87	3.73
4	Chan	9987.74	9990.95	14.78	3.45	3.21	5.82	1.08	4.29
5	Chan	9990.95	9994.15	21.64	4.34	3.22	8.52	1.35	4.99
6	Chan	9994.15	9997.35	31.39	5.42	3.22	12.36	1.69	5.79
7	Chan	9997.35	10000.55	41.26	6.40	3.23	16.25	2.00	6.45
8	Chan	10000.55	10003.76	30.43	5.34	3.25	11.98	1.67	5.70
9	Chan	10003.76	10006.96	16.02	3.63	3.25	6.31	1.13	4.41
10	ROB	10006.96	10023.01	45.75	14.33	16.05	18.01	0.89	3.19
11	ROB	10023.01	10039.06	23.90	9.71	16.06	9.41	0.61	2.46
12	ROB	10039.06	10055.10	1.25	1.27	8.27	0.49	0.15	0.99

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9984.54	9987.74	12.94	3.83	4.30	5.09	1.20	3.38
2	Chan	9987.74	9990.95	20.47	4.49	3.21	8.06	1.40	4.56
3	Chan	9990.95	9994.15	27.62	5.38	3.22	10.88	1.68	5.14
4	Chan	9994.15	9997.35	37.52	6.46	3.22	14.77	2.02	5.81
5	Chan	9997.35	10000.55	47.32	7.44	3.23	18.63	2.32	6.36
6	Chan	10000.55	10003.76	36.52	6.38	3.25	14.38	1.99	5.72
7	Chan	10003.76	10006.96	21.74	4.67	3.25	8.56	1.46	4.65
8	ROB	10006.96	10023.01	49.87	13.70	12.52	19.63	1.21	3.64

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
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: X4A
REACH: Reach 1 RS: 0.327

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9896.724	2134.25	9906.364	2134.07	9910.764	2134.05	9913.824	2134.02	9918.244	2134.01
9926.304	2133.66	9930.724	2133.49	9931.874	2133.47	9932.404	2133.47	9932.994	2133.47
9940.194	2133.43	9946.274	2133.37	9949.104	2133.36	9973.544	2133.18	9986.504	2133.46
9988.474	2133.48	9993.14	2132.79	9994.924	2132.53	9998.634	2132.02	10002.65	2132.62
10004.61	2132.89	10005.9	2133.01	10010.62	2132.61	10015.74	2132.42	10019.39	2132.47
10025.77	2132.57	10028.2	2132.68	10031.11	2132.8	10046.6	2133.14	10047.79	2133.17
10049.13	2133.26	10052.07	2133.22	10052.39	2133.21	10084.11	2134.33	10089.1	2134.43

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9896.724	.045	9993.14	.045	10004.61	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.14	10004.61	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2133.88	Element			
Vel Head (ft)	0.25	Wt. n-Val.	0.045	0.045	0.060
W.S. Elev (ft)	2133.64	Reach Len. (ft)	208.89	208.89	208.89
Crit W.S. (ft)	2133.64	Flow Area (sq ft)	20.04	13.83	42.52
E.G. Slope (ft/ft)	0.023722	Area (sq ft)	20.04	13.83	42.52
Q Total (cfs)	254.00	Flow (cfs)	45.90	79.12	128.98
Top Width (ft)	137.66	Top Width (ft)	66.28	11.47	59.91
Vel Total (ft/s)	3.32	Avg. Vel. (ft/s)	2.29	5.72	3.03
Max Chl Dpth (ft)	1.62	Hydr. Depth (ft)	0.30	1.21	0.71
Conv. Total (cfs)	1649.1	Conv. (cfs)	298.0	513.7	837.4
Length Wtd. (ft)	208.89	Wetted Per. (ft)	66.33	11.59	59.96
Min Ch El (ft)	2132.02	Shear (lb/sq ft)	0.45	1.77	1.05
Alpha	1.43	Stream Power (lb/ft s)	1.02	10.11	3.19
Frctn Loss (ft)	3.90	Cum Volume (acre-ft)	0.08	0.16	0.13
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: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2134.51	Element			
Vel Head (ft)	0.56	Wt. n-Val.	0.045	0.045	0.060
W.S. Elev (ft)	2133.95	Reach Len. (ft)	208.89	208.89	208.89
Crit W.S. (ft)	2133.95	Flow Area (sq ft)	8.35	17.37	20.37
E.G. Slope (ft/ft)	0.027906	Area (sq ft)	8.35	17.37	20.37

Q Total (cfs)	254.00	Flow (cfs)	32.94	125.54	95.52
Top Width (ft)	40.00	Top Width (ft)	13.14	11.47	15.39
Vel Total (ft/s)	5.51	Avg. Vel. (ft/s)	3.94	7.23	4.69
Max Chl Dpth (ft)	1.93	Hydr. Depth (ft)	0.64	1.51	1.32
Conv. Total (cfs)	1520.5	Conv. (cfs)	197.2	751.5	571.8
Length Wtd. (ft)	208.89	Wetted Per. (ft)	13.82	11.59	16.88
Min Ch El (ft)	2132.02	Shear (lb/sq ft)	1.05	2.61	2.10
Alpha	1.19	Stream Power (lb/ft s)	4.15	18.87	9.86
Frctn Loss (ft)	4.58	Cum Volume (acre-ft)	0.02	0.18	0.05
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 selected the water surface that had the least amount of error between computed and assumed values.
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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9916.01	9935.29	1.29	1.06	8.43	0.51	0.13	1.22
2	LOB	9935.29	9954.57	9.26	4.81	19.28	3.64	0.25	1.92
3	LOB	9954.57	9973.86	19.46	7.51	19.28	7.66	0.39	2.59
4	LOB	9973.86	9993.14	15.89	6.66	19.34	6.25	0.35	2.39
5	Chan	9993.14	9994.78	7.66	1.58	1.66	3.01	0.97	4.84
6	Chan	9994.78	9996.42	11.01	1.97	1.65	4.34	1.20	5.60
7	Chan	9996.42	9998.06	14.67	2.34	1.65	5.77	1.43	6.28
8	Chan	9998.06	9999.69	16.89	2.55	1.66	6.65	1.55	6.64
9	Chan	9999.69	10001.33	13.16	2.19	1.66	5.18	1.34	6.01
10	Chan	10001.33	10002.97	9.40	1.79	1.66	3.70	1.09	5.25
11	Chan	10002.97	10004.61	6.33	1.41	1.65	2.49	0.86	4.48
12	ROB	10004.61	10021.51	60.42	17.35	16.92	23.79	1.03	3.48
13	ROB	10021.51	10038.41	49.09	15.31	16.91	19.32	0.91	3.21
14	ROB	10038.41	10055.30	17.95	8.37	16.91	7.07	0.50	2.14
15	ROB	10055.30	10072.20	1.53	1.50	9.23	0.60	0.16	1.02

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.86	9993.14	32.94	8.35	13.82	12.97	0.64	3.94
2	Chan	9993.14	9994.78	13.29	2.09	1.66	5.23	1.28	6.36
3	Chan	9994.78	9996.42	17.62	2.47	1.65	6.94	1.51	7.12
4	Chan	9996.42	9998.06	22.22	2.84	1.65	8.75	1.74	7.81
5	Chan	9998.06	9999.69	24.98	3.05	1.66	9.83	1.86	8.18
6	Chan	9999.69	10001.33	20.34	2.70	1.66	8.01	1.65	7.54
7	Chan	10001.33	10002.97	15.56	2.30	1.66	6.13	1.40	6.77
8	Chan	10002.97	10004.61	11.53	1.92	1.65	4.54	1.17	6.01
9	ROB	10004.61	10021.51	95.52	20.37	16.88	37.61	1.32	4.69

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X4A
REACH: Reach 2 RS: 0.287

INPUT
Description: 10th Street
Station Elevation Data num= 90

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9876.876	2131.259	883.696	2131.119	899.276	2131.069	903.436	2130.999	917.166	2129.87
9957.346	2128.869	968.146	2128.599	978.186	2128.31	9978.19	2128.319	978.756	2128.28
99862	2127.42	19991.666	2126.759	992.356	2126.689	992.636	2126.699	997.876	2127.09
9998.276	2127.129	998.306	2127.139	998.356	2127.121	0003.74	2126.391	0006.83	2126.84
10009.22	2127.21	100142	2127.62	410018.54	2128.01	710024.58	2128.54	10026.03	2128.65
10027.04	2128.651	0031.11	2128.651	0032.56	2128.871	0035.25	2128.981	0036.67	2129.14
10043.07	2129.251	0043.72	2129.261	0048.02	2129.36	10051.6	2129.481	0053.71	2129.64
10074.07	2130.11	0076.58	2130.161	0077.26	2130.17	10088.2	2130.31	0090.37	2130.37
10094.74	2130.431	0095.03	2130.431	0097.13	2130.451	0097.98	2130.451	0098.22	2130.45
10101.63	2130.431	0104.75	2130.39	10108	2130.41	0111.12	2130.32	10117.6	2130.3
10117.75	2130.31	0118.07	2130.31	0118.28	2130.291	0118.43	2130.291	0146.67	2130.16
10147.51	2130.141	0167.13	2129.761	0168.13	2129.731	0182.17	2129.971	0196.11	2130.34

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10196.35 2130.3410196.62 2130.3510212.48 2130.1110219.81 2129.8310225.32 2129.61
10235.15  2129.410236.47 2129.3610238.36 2129.3410240.89 2129.2310246.28 2128.98
10248.12 2128.8110248.56 2128.9810250.89 2128.8310256.96  2128.710259.51 2128.89
10260.55 2128.97 10263.1 2129.2510264.51 2129.3510266.78 2129.48 10272.8 2129.87
10276.81 2129.9910287.42 2130.1410321.98 2130.7410322.34 2130.6910323.82 2130.74
10325.72  2130.910326.77 2130.9610327.51 2131.0110337.75 2131.1110340.49 2131.15

Manning's n Values        num=       5
     Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val      Sta   n Val
9876.876     .055 9978.19    .04510018.54     .0510147.51     .0310212.48     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          9986   10014            155.7  161.52  165.06              .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2129.38    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.55    Wt. n-Val.                  0.047      0.045     0.046
  W.S. Elev (ft)           2128.84    Reach Len. (ft)            155.70     161.52    165.06
  Crit W.S. (ft)           2128.84    Flow Area (sq ft)           12.61      52.27     10.02
  E.G. Slope (ft/ft)      0.016272    Area (sq ft)                12.61      52.27     10.02
  Q Total (cfs)             399.00    Flow (cfs)                  37.56     332.28     29.16
  Top Width (ft)             82.62    Top Width (ft)              27.80      28.00     26.81
  Vel Total (ft/s)            5.33    Avg. Vel. (ft/s)             2.98       6.36      2.91
  Max Chl Dpth (ft)           2.45    Hydr. Depth (ft)             0.45       1.87      0.37
  Conv. Total (cfs)         3127.9    Conv. (cfs)                294.5     2604.9     228.6
  Length Wtd. (ft)          161.90    Wetted Per. (ft)            27.86      28.19     26.88
  Min Ch El (ft)          2126.39     Shear (lb/sq ft)             0.46       1.88      0.38
  Alpha                       1.24    Stream Power (lb/ft s)       1.37      11.97      1.10
  Frctn Loss (ft)             2.37    Cum Volume (acre-ft)         0.82       1.33      1.19
  C & E Loss (ft)             0.08    Cum SA (acres)               1.07       0.73      2.40

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2129.78    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.74    Wt. n-Val.                            0.045
  W.S. Elev (ft)           2129.04    Reach Len. (ft)            155.70     161.52    165.06
  Crit W.S. (ft)           2128.81    Flow Area (sq ft)                      57.93
  E.G. Slope (ft/ft)      0.019089    Area (sq ft)                           57.93
  Q Total (cfs)             399.00    Flow (cfs)                            399.00
  Top Width (ft)             28.00    Top Width (ft)                         28.00
  Vel Total (ft/s)            6.89    Avg. Vel. (ft/s)                        6.89
  Max Chl Dpth (ft)           2.65    Hydr. Depth (ft)                        2.07
  Conv. Total (cfs)         2887.9    Conv. (cfs)                           2887.9
  Length Wtd. (ft)          162.13    Wetted Per. (ft)                       31.23
  Min Ch El (ft)          2126.39     Shear (lb/sq ft)                        2.21
  Alpha                       1.00    Stream Power (lb/ft s)                 15.23
  Frctn Loss (ft)             3.16    Cum Volume (acre-ft)         0.53       1.59      0.38
  C & E Loss (ft)             0.02    Cum SA (acres)               0.35       0.73      0.30

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.

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                         (ft)        (ft)           (cfs)      (sq ft)    (ft)    Conv  Depth(ft)      (ft/s)
  1           LOB        9942.35     9964.18        0.27       0.45       5.98    0.07       0.07       0.60
  2           LOB        9964.18     9986.00       37.30      12.16      21.88    9.35       0.56       3.07
  3           Chan       9986.00     9990.00       38.38       6.62       4.03    9.62       1.65       5.80
  4           Chan       9990.00     9994.00       55.42       8.24       4.02   13.89       2.06       6.72
  5           Chan       9994.00     9998.00       48.11       7.57       4.01   12.06       1.89       6.36
  6           Chan       9998.00     10002.00      50.15       7.78       4.04   12.57       1.94       6.45
  7           Chan       10002.00    10006.00      66.53       9.22       4.04   16.68       2.30       7.22
  8           Chan       10006.00    10010.00      44.98       7.29       4.04   11.27       1.82       6.17
  9           Chan       10010.00    10014.00      28.70       5.55       4.01    7.19       1.39       5.17
  10          ROB        10014.00    10079.30      28.69       9.44      18.41    7.19       0.51       3.04
  11          ROB        10079.30    10144.60
  12          ROB        10144.60    10209.89
  13          ROB        10209.89    10275.19       0.47       0.58       8.47    0.12       0.07       0.81

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 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.

  Profile #profile 2
```

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9986.00	9990.00	39.23	7.43	5.65	9.83	1.86	5.28
2	Chan	9990.00	9994.00	68.45	9.05	4.02	17.15	2.26	7.56
3	Chan	9994.00	9998.00	60.22	8.38	4.01	15.09	2.09	7.19
4	Chan	9998.00	10002.00	62.49	8.59	4.04	15.66	2.15	7.28
5	Chan	10002.00	10006.00	80.88	10.03	4.04	20.27	2.51	8.07
6	Chan	10006.00	10010.00	56.64	8.10	4.04	14.19	2.02	6.99
7	Chan	10010.00	10014.00	31.10	6.36	5.43	7.79	1.59	4.89

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: X4A
REACH: Reach 2 RS: 0.257

INPUT
Description:
Station Elevation Data num= 63

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9959.097	2126.52	9968.407	2125.73	9968.637	2125.73	9968.797	2125.79	9969.237	2125.63
9976.497	2125.24	9979.047	2125.09	9979.05	2125.09	9985.957	2124.42	9988.257	2124.32
9989	2124.29	9992.757	2124.17	9998.007	2123.68	10001.29	2123.53	10006.79	2124.17
10007.87	2124.41	10010.81	2124.78	10013.6	2124.66	10015.41	2124.63	10017.51	2124.46
10017.68	2124.44	10017.75	2124.43	10018.11	2124.44	10030.9	2124.75	10035.09	2124.98
10038.08	2125.15	10043.84	2125.18	10059.79	2125.24	10063.82	2125.26	10065.53	2125.28
10065.82	2125.28	10066.08	2125.28	10067.1	2125.28	10073.46	2125.33	10073.64	2125.34
10073.86	2125.35	10074.02	2125.35	10074.19	2125.35	10074.39	2125.36	10078.84	2125.62
10080.15	2125.61	10102.43	2125.78	10125.35	2125.56	10151.78	2125.42	10161.07	2125.46
10161.91	2125.42	10162.88	2125.41	10164.73	2125.42	10165.35	2125.46	10168.25	2125.41
10172.18	2125.41	10178.76	2125.35	10183.87	2125.26	10188.44	2125.31	10191.54	2125.31
10196.68	2125.53	10217.06	2125.69	10221.28	2125.62	10227.14	2125.57	10234.76	2125.51
10235.97	2125.51	10238.8	2125.52	10258.26	2125.96				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9959.097	.05	9989	.045	10007.87	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989	10007.87	229.03	231.06	176.02	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2125.96	Element			
Vel Head (ft)	0.27	Wt. n-Val.	0.050	0.045	0.040
W.S. Elev (ft)	2125.69	Reach Len. (ft)	229.03	231.06	176.02
Crit W.S. (ft)	2125.69	Flow Area (sq ft)	13.75	33.25	73.44
E.G. Slope (ft/ft)	0.013249	Area (sq ft)	13.75	33.25	73.44
Q Total (cfs)	399.00	Flow (cfs)	36.38	183.76	178.86
Top Width (ft)	257.25	Top Width (ft)	20.15	18.87	218.24
Vel Total (ft/s)	3.31	Avg. Vel. (ft/s)	2.65	5.53	2.44
Max Chl Dpth (ft)	2.16	Hydr. Depth (ft)	0.68	1.76	0.34
Conv. Total (cfs)	3466.5	Conv. (cfs)	316.1	1596.5	1553.9
Length Wtd. (ft)	202.28	Wetted Per. (ft)	20.20	18.96	218.31
Min Ch El (ft)	2123.53	Shear (lb/sq ft)	0.56	1.45	0.28
Alpha	1.58	Stream Power (lb/ft s)	1.49	8.02	0.68
Frctn Loss (ft)	3.39	Cum Volume (acre-ft)	0.77	1.17	1.03
C & E Loss (ft)	0.00	Cum SA (acres)	0.98	0.64	1.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2126.60	Element			
Vel Head (ft)	0.69	Wt. n-Val.		0.045	0.040
W.S. Elev (ft)	2125.92	Reach Len. (ft)	229.03	231.06	176.02
Crit W.S. (ft)	2125.81	Flow Area (sq ft)		37.51	22.91
E.G. Slope (ft/ft)	0.019873	Area (sq ft)		37.51	22.91
Q Total (cfs)	399.00	Flow (cfs)		260.51	138.49
Top Width (ft)	36.00	Top Width (ft)		18.87	17.13
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)		6.95	6.04
Max Chl Dpth (ft)	2.39	Hydr. Depth (ft)		1.99	1.34
Conv. Total (cfs)	2830.4	Conv. (cfs)		1847.9	982.4
Length Wtd. (ft)	208.94	Wetted Per. (ft)		20.58	18.48
Min Ch El (ft)	2123.53	Shear (lb/sq ft)		2.26	1.54
Alpha	1.01	Stream Power (lb/ft s)		15.70	9.30
Frctn Loss (ft)	4.89	Cum Volume (acre-ft)	0.53	1.41	0.34
C & E Loss (ft)	0.01	Cum SA (acres)	0.35	0.64	0.27

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9965.08	9971.06	0.13	0.21	2.21	0.03	0.10	0.60
2	LOB	9971.06	9977.04	2.54	1.91	5.99	0.64	0.32	1.33
3	LOB	9977.04	9983.02	9.58	4.24	6.00	2.40	0.71	2.26
4	LOB	9983.02	9989.00	24.14	7.38	6.00	6.05	1.23	3.27
5	Chan	9989.00	9991.70	18.63	3.88	2.70	4.67	1.44	4.80
6	Chan	9991.70	9994.39	21.26	4.21	2.70	5.33	1.56	5.05
7	Chan	9994.39	9997.09	26.92	4.85	2.71	6.75	1.80	5.55
8	Chan	9997.09	9999.78	32.78	5.46	2.70	8.22	2.02	6.01
9	Chan	9999.78	10002.48	35.15	5.69	2.70	8.81	2.11	6.18
10	Chan	10002.48	10005.17	28.56	5.03	2.71	7.16	1.87	5.68
11	Chan	10005.17	10007.87	20.46	4.13	2.73	5.13	1.53	4.96
12	ROB	10007.87	10057.95	132.78	40.22	50.13	33.28	0.80	3.30
13	ROB	10057.95	10108.03	12.45	8.27	33.49	3.12	0.25	1.51
14	ROB	10108.03	10158.10	9.16	7.84	46.42	2.30	0.17	1.17
15	ROB	10158.10	10208.18	21.67	13.55	50.09	5.43	0.27	1.60
16	ROB	10208.18	10258.26	2.79	3.55	38.19	0.70	0.09	0.78

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9989.00	9991.70	20.76	4.49	4.32	5.20	1.67	4.62
2	Chan	9991.70	9994.39	31.85	4.82	2.70	7.98	1.79	6.61
3	Chan	9994.39	9997.09	39.21	5.46	2.71	9.83	2.03	7.18
4	Chan	9997.09	9999.78	46.78	6.06	2.70	11.72	2.25	7.71
5	Chan	9999.78	10002.48	49.81	6.30	2.70	12.48	2.34	7.91
6	Chan	10002.48	10005.17	41.33	5.64	2.71	10.36	2.09	7.33
7	Chan	10005.17	10007.87	30.77	4.74	2.73	7.71	1.76	6.50
8	ROB	10007.87	10057.95	138.49	22.91	18.48	34.71	1.34	6.04

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: X4A
REACH: Reach 2 RS: 0.213

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9892.795	2121.32	9908.465	2120.99	918.215	2120.69	9924.845	2120.87	9930.325	2121.01
9933.995	2120.73	9949.385	2120.69	953.865	2120.59	955.125	2120.48	9956.435	2120.45
9958.205	2120.43	9962.485	2120.49	964.575	2120.49	964.665	2120.49	966.365	2120.38
9966.425	2120.38	9968.765	2120.19	968.935	2120.18	9971.875	2120.01	9972.285	2119.99
9973.705	2119.95	9976.785	2119.85	977.785	2119.87	9979.995	2119.89	9982.475	2119.92
9983.685	2119.91	9985.755	2119.93	9991.985	2119.83	9991.99	2119.82	9993.365	2119.59
9993.37	2119.58	9999.095	2118.71	0005.57	2119.25	10008.44	2119.49	310010.41	2119.66
10011.7	2119.63	10017.19	2119.64	10019.79	2119.73	10023.27	2119.66	10037.08	2119.43
10045.66	2119.46	10058.73	2119.51	10060.65	2119.54	10073.07	2119.81	0075.72	2119.83
10077.65	2119.89	10079.95	2119.96	10100.72	2120.36	10101.95	2120.47	10102.43	2120.54
10104.02	2120.54	10104.33	2120.55	10106.01	2120.54	10111.33	2120.93	10115.55	2121.25
10116.36	2121.31	0117.19	2121.35						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9892.795	.035	9993.37	.04	510008.44	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9993.3710008.44 134.79 142.36 149.99 .1 .3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2120.74	Element			
Vel Head (ft)	0.29	Wt. n-Val.	0.035	0.045	0.050
W.S. Elev (ft)	2120.45	Reach Len. (ft)	134.79	142.36	149.99
Crit W.S. (ft)	2120.40	Flow Area (sq ft)	13.82	20.07	66.85
E.G. Slope (ft/ft)	0.021908	Area (sq ft)	13.82	20.07	66.85
Q Total (cfs)	399.00	Flow (cfs)	45.31	118.22	235.47
Top Width (ft)	144.98	Top Width (ft)	36.66	15.07	93.25
Vel Total (ft/s)	3.96	Avg. Vel. (ft/s)	3.28	5.89	3.52
Max Chl Dpth (ft)	1.75	Hydr. Depth (ft)	0.38	1.33	0.72
Conv. Total (cfs)	2695.7	Conv. (cfs)	306.1	798.7	1590.9
Length Wtd. (ft)	143.66	Wetted Per. (ft)	36.69	15.17	93.27
Min Ch El (ft)	2118.70	Shear (lb/sq ft)	0.52	1.81	0.98
Alpha	1.20	Stream Power (lb/ft s)	1.69	10.66	3.45
Frctn Loss (ft)	3.04	Cum Volume (acre-ft)	0.70	1.03	0.75
C & E Loss (ft)	0.01	Cum SA (acres)	0.83	0.55	1.30

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2121.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.		0.045	0.050
W.S. Elev (ft)	2120.96	Reach Len. (ft)	134.79	142.36	149.99
Crit W.S. (ft)	2120.96	Flow Area (sq ft)		27.77	31.53
E.G. Slope (ft/ft)	0.027996	Area (sq ft)		27.77	31.53
Q Total (cfs)	399.00	Flow (cfs)		216.72	182.28
Top Width (ft)	38.76	Top Width (ft)		15.07	23.69
Vel Total (ft/s)	6.73	Avg. Vel. (ft/s)		7.80	5.78
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)		1.84	1.33
Conv. Total (cfs)	2384.6	Conv. (cfs)		1295.2	1089.4
Length Wtd. (ft)	143.23	Wetted Per. (ft)		16.54	25.15
Min Ch El (ft)	2118.70	Shear (lb/sq ft)		2.93	2.19
Alpha	1.07	Stream Power (lb/ft s)		22.90	12.67
Frctn Loss (ft)	3.10	Cum Volume (acre-ft)	0.53	1.24	0.23
C & E Loss (ft)	0.08	Cum SA (acres)	0.35	0.55	0.19

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.14	9973.26	3.67	2.45	16.55	0.92	0.15	1.50
2	LOB	9973.26	9993.37	41.64	11.37	20.14	10.44	0.57	3.66
3	Chan	9993.37	9995.52	10.70	2.21	2.18	2.68	1.02	4.85
4	Chan	9995.52	9997.68	17.12	2.93	2.18	4.29	1.36	5.85
5	Chan	9997.68	9999.83	24.03	3.58	2.17	6.02	1.66	6.71
6	Chan	9999.83	10001.98	22.43	3.43	2.16	5.62	1.59	6.54
7	Chan	10001.98	10004.13	18.31	3.04	2.16	4.59	1.41	6.03
8	Chan	10004.13	10006.29	14.52	2.64	2.16	3.64	1.23	5.50
9	Chan	10006.29	10008.44	11.11	2.25	2.16	2.79	1.05	4.94
10	ROB	10008.44	10030.19	62.64	17.65	21.76	15.70	0.81	3.55
11	ROB	10030.19	10051.94	85.92	21.33	21.75	21.53	0.98	4.03
12	ROB	10051.94	10073.69	66.35	18.26	21.75	16.63	0.84	3.63
13	ROB	10073.69	10095.44	19.79	8.84	21.76	4.96	0.41	2.24
14	ROB	10095.44	10117.19	0.78	0.77	6.25	0.19	0.12	1.01

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9993.37	9995.52	16.80	3.31	3.55	4.21	1.54	5.08
2	Chan	9995.52	9997.68	32.27	4.02	2.18	8.09	1.87	8.02
3	Chan	9997.68	9999.83	41.59	4.68	2.17	10.42	2.17	8.88
4	Chan	9999.83	10001.98	39.49	4.53	2.16	9.90	2.10	8.72
5	Chan	10001.98	10004.13	33.95	4.14	2.16	8.51	1.92	8.21
6	Chan	10004.13	10006.29	28.73	3.74	2.16	7.20	1.74	7.68
7	Chan	10006.29	10008.44	23.89	3.35	2.16	5.99	1.56	7.13
8	ROB	10008.44	10030.19	170.35	28.76	21.76	42.69	1.32	5.92
9	ROB	10030.19	10051.94	11.93	2.77	3.38	2.99	1.43	4.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X4A
REACH: Reach 2 RS: 0.186

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9842.559	2118.119	843.939	2118.089	847.019	2118.049	855.949	2118.049	865.349	2117.81
9866.439	2117.89	866.949	2117.769	887.019	2117.289	890.979	2117.199	891.989	2117.18
9892.679	2117.179	895.509	2117.149	895.959	2117.149	902.349	2117.149	902.439	2117.14
9903.439	2117.129	903.699	2117.129	904.099	2117.119	904.799	2117.119	906.569	2117.11
9931.269	2116.899	931.659	2116.919	936.169	2117.579	944.829	2118.739	945.519	2118.84
9945.969	2118.889	947.189	2118.699	960.089	2116.749	966.179	2116.849	968.539	2116.85
9974.129	2116.629	974.139	2116.629	978.319	2116.629	989.829	2116.769	989.999	2116.76
9990.679	2116.749	997.899	2116.46	9997.9	2116.469	999.509	2116.44	10000.44	2116.42

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10002.16 2116.3810012.13 2116.1810015.41 2115.97 10015.6 2115.9410016.63 2116.22
10017.15 2116.2310018.78 2116.3110019.63 2116.3210022.28 2116.36 10030.82116.538
10036.19 2116.6510042.15 2116.7910044.94 2116.8110046.44 2116.8210087.86 2117.22
 10092.6 2117.1810099.23 2117.2310099.92 2117.2410100.35 2117.2710102.03 2117.33
 10105.1 2117.5410112.85 2118.0310124.21 2118.5910125.55 2118.5910125.93 2118.59
10130.19 2118.72

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
9842.559     .05  9997.9    .045 10030.8     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
        9997.9 10030.8            168.71  172.72  164.96             .1        .3
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2117.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2117.44	Reach Len. (ft)	168.71	172.72	164.96
Crit W.S. (ft)	2117.42	Flow Area (sq ft)	47.28	36.76	31.90
E.G. Slope (ft/ft)	0.020461	Area (sq ft)	47.28	36.76	31.90
Q Total (cfs)	399.00	Flow (cfs)	133.96	186.78	78.26
Top Width (ft)	202.84	Top Width (ft)	97.16	32.90	72.78
Vel Total (ft/s)	3.44	Avg. Vel. (ft/s)	2.83	5.08	2.45
Max Chl Dpth (ft)	1.50	Hydr. Depth (ft)	0.49	1.12	0.44
Conv. Total (cfs)	2789.4	Conv. (cfs)	936.5	1305.7	547.1
Length Wtd. (ft)	168.20	Wetted Per. (ft)	97.27	32.95	72.79
Min Ch El (ft)	2115.94	Shear (lb/sq ft)	0.62	1.43	0.56
Alpha	1.35	Stream Power (lb/ft s)	1.76	7.24	1.37
Frctn Loss (ft)	2.94	Cum Volume (acre-ft)	0.61	0.94	0.58
C & E Loss (ft)	0.03	Cum SA (acres)	0.62	0.47	1.02

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2118.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.	0.050	0.045	
W.S. Elev (ft)	2117.93	Reach Len. (ft)	168.71	172.72	164.96
Crit W.S. (ft)	2117.72	Flow Area (sq ft)	21.13	53.04	
E.G. Slope (ft/ft)	0.017226	Area (sq ft)	21.13	53.04	
Q Total (cfs)	399.00	Flow (cfs)	91.85	307.15	
Top Width (ft)	49.57	Top Width (ft)	16.67	32.90	
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	4.35	5.79	
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)	1.27	1.61	
Conv. Total (cfs)	3040.0	Conv. (cfs)	699.9	2340.2	
Length Wtd. (ft)	170.11	Wetted Per. (ft)	17.95	34.35	
Min Ch El (ft)	2115.94	Shear (lb/sq ft)	1.27	1.66	
Alpha	1.04	Stream Power (lb/ft s)	5.50	9.62	
Frctn Loss (ft)	2.71	Cum Volume (acre-ft)	0.50	1.11	0.17
C & E Loss (ft)	0.04	Cum SA (acres)	0.33	0.47	0.14

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9873.63	9904.70	7.99	5.29	24.19	2.00	0.22	1.51
2	LOB	9904.70	9935.76	28.73	12.53	30.60	7.20	0.41	2.29
3	LOB	9935.76	9966.83	15.91	5.92	11.40	3.99	0.52	2.69
4	LOB	9966.83	9997.90	81.34	23.54	31.08	20.39	0.76	3.46
5	Chan	9997.90	10002.60	22.61	4.77	4.70	5.67	1.02	4.74
6	Chan	10002.60	10007.30	26.31	5.22	4.70	6.59	1.11	5.03
7	Chan	10007.30	10012.00	30.13	5.67	4.70	7.55	1.21	5.32
8	Chan	10012.00	10016.70	36.55	6.39	4.75	9.16	1.36	5.72
9	Chan	10016.70	10021.40	27.35	5.35	4.70	6.85	1.14	5.11
10	Chan	10021.40	10026.10	23.70	4.91	4.70	5.94	1.04	4.83
11	Chan	10026.10	10030.80	20.13	4.45	4.70	5.04	0.95	4.52
12	ROB	10030.80	10050.68	42.77	14.03	19.88	10.72	0.71	3.05
13	ROB	10050.68	10070.56	22.40	9.52	19.88	5.61	0.48	2.35
14	ROB	10070.56	10090.43	9.71	5.76	19.88	2.43	0.29	1.68
15	ROB	10090.43	10110.31	3.37	2.59	13.15	0.85	0.20	1.30

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9966.83	9997.90	91.86	21.13	17.95	23.02	1.27	4.35
2	Chan	9997.90	10002.60	40.00	7.10	4.70	10.03	1.51	5.64
3	Chan	10002.60	10007.30	44.36	7.55	4.70	11.12	1.61	5.87
4	Chan	10007.30	10012.00	48.79	7.99	4.70	12.23	1.70	6.10
5	Chan	10012.00	10016.70	55.98	8.72	4.75	14.03	1.85	6.42
6	Chan	10016.70	10021.40	45.57	7.67	4.70	11.42	1.63	5.94
7	Chan	10021.40	10026.10	41.30	7.23	4.70	10.35	1.54	5.71
8	Chan	10026.10	10030.80	31.15	6.78	6.09	7.81	1.44	4.60

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.

LATERAL STRUCTURE

RIVER: X4A
REACH: Reach 2 RS: 0.170

INPUT
Description:
Lateral structure position = Left overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 20
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2118.11	1.16	2118.06	2.02	2118.03	9.17	2118.03	11.95	2118.03
12.24	2118	12.91	2118	23.12	2117.53	26.68	2117.49	31.25	2117.38
37.33	2117.3	43.9	2117.28	49.13	2117.27	51.85	2117.05	55.19	2116.85
63.51	2116.5	65.46	2116.41	75.72	2116.1	75.76	2116.1	87.58	2116.1
94.7	2116.01	105.71	2115.93	106.01	2115.92	106.14	2115.92	106.21	2115.9
106.25	2115.92	136.94	2115.02	153.8	2114.9	154.48	2114.88	155.11	2114.9
159.54	2114.85	160.37	2114.84	167.06	2114.72	168.71	2114.7		

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: X4A
REACH: Reach 2 RS: 0.153

INPUT
Description:
Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9924.15	2114.7	9929.42	2114.65	9930.47	2114.65	9937.17	2114.6	9943.77	2114.39
9944.35	2114.4	9944.95	2114.35	9950.16	2114.14	9957.15	2113.92	9959.9	2113.62
9962.37	2113.4	9962.54	2113.35	9971.02	2114.11	9976.15	2114.62	9979.93	2114.56
9987.83	2114.37	9991.63	2114.23	9993.74	2114.14	9997.57	2113.5	10001.35	2113.3
10005.85	2114.1	510008.13	2114.6	210009.12	2114.47	10012.7	2113.7	710012.84	2113.8
10013.33	2113.8	210016.42	2113.74	10018.9	2113.9	110020.76	2113.9	710024.36	2114
10046.14	2113.6	610047.91	2113.6	610048.98	2113.6	710049.87	2113.6	610050.44	2113.7
10051.14	2113.6	710051.43	2113.6	710051.49	2113.6	710052.01	2113.6	710062.85	2113.7
10086.15	2113.9	10088.68	2113.87	10092.7	2113.7	210094.49	2113.71	10096.8	2113.7
10100.13	2113.7	510110.97	2113.8	110114.42	2113.8	510118.72	2113.8	310121.38	2114
10131.21	2114.08	10136.1	2114.1	410140.01	2114.2	10163.25	2113.9	210164.52	2113.9
10174.73	2113.8	610175.75	2113.9	410176.95	2114.0	110177.09	2114.0	110178.38	2114.2
10181.74	2114.65	10186.6	2115.25						

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9924.15	.04	9943.77	.03	9971.02	.04	9993.74	.04	510005.85	.055
10163.25	.03								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.74	10005.85	229.61	209.53	131.4	.1	.3

Blocked Obstructions num= 1

Sta L	Sta R	Elev
10118	10161.43	2116

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2114.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.031	0.045	0.051
W.S. Elev (ft)	2114.56	Reach Len. (ft)	229.61	209.53	131.40
Crit W.S. (ft)	2114.40	Flow Area (sq ft)	21.65	10.77	94.54
E.G. Slope (ft/ft)	0.015124	Area (sq ft)	21.65	10.77	94.54
Q Total (cfs)	399.00	Flow (cfs)	85.91	40.15	272.94
Top Width (ft)	194.35	Top Width (ft)	51.11	12.11	131.13
Vel Total (ft/s)	3.14	Avg. Vel. (ft/s)	3.97	3.73	2.89
Max Chl Dpth (ft)	1.26	Hydr. Depth (ft)	0.42	0.89	0.72
Conv. Total (cfs)	3244.4	Conv. (cfs)	698.5	326.5	2219.4
Length Wtd. (ft)	172.22	Wetted Per. (ft)	51.22	12.24	132.66
Min Ch El (ft)	2113.30	Shear (lb/sq ft)	0.40	0.83	0.67
Alpha	1.06	Stream Power (lb/ft s)	1.58	3.10	1.94
Frctn Loss (ft)	3.32	Cum Volume (acre-ft)	0.47	0.84	0.34
C & E Loss (ft)	0.02	Cum SA (acres)	0.34	0.38	0.63

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 OUTPUT Profile #profile 2

E.G. Elev (ft)	2115.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.036	0.045	0.055
W.S. Elev (ft)	2115.31	Reach Len. (ft)	229.61	209.53	131.40
Crit W.S. (ft)	2115.08	Flow Area (sq ft)	29.19	19.78	38.51
E.G. Slope (ft/ft)	0.014740	Area (sq ft)	29.19	19.78	38.51

Q Total (cfs)	399.00	Flow (cfs)	143.03	109.22	146.75
Top Width (ft)	70.00	Top Width (ft)	28.74	12.11	29.15
Vel Total (ft/s)	4.56	Avg. Vel. (ft/s)	4.90	5.52	3.81
Max Chl Dpth (ft)	2.01	Hydr. Depth (ft)	1.02	1.63	1.32
Conv. Total (cfs)	3286.4	Conv. (cfs)	1178.1	899.6	1208.7
Length Wtd. (ft)	200.69	Wetted Per. (ft)	30.53	12.24	30.76
Min Ch El (ft)	2113.30	Shear (lb/sq ft)	0.88	1.49	1.15
Alpha	1.07	Stream Power (lb/ft s)	4.31	8.21	4.39
Frctn Loss (ft)	3.70	Cum Volume (acre-ft)	0.40	0.96	0.10
C & E Loss (ft)	0.02	Cum SA (acres)	0.24	0.38	0.09

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9938.07	9951.99	7.69	3.15	13.62	1.93	0.23	2.45
2	LOB	9951.99	9965.90	57.57	11.44	13.97	14.43	0.82	5.03
3	LOB	9965.90	9979.82	17.09	4.51	9.70	4.28	0.47	3.79
4	LOB	9979.82	9993.74	3.55	2.55	13.92	0.89	0.18	1.39
5	Chan	9993.74	9995.47	2.49	0.96	1.75	0.62	0.55	2.61
6	Chan	9995.47	9997.20	4.76	1.41	1.75	1.19	0.81	3.37
7	Chan	9997.20	9998.93	7.09	1.79	1.74	1.78	1.03	3.97
8	Chan	9998.93	10000.66	8.56	2.00	1.73	2.15	1.15	4.28
9	Chan	10000.66	10002.39	8.98	2.06	1.75	2.25	1.19	4.35
10	Chan	10002.39	10004.12	5.61	1.56	1.76	1.41	0.90	3.60
11	Chan	10004.12	10005.85	2.65	0.99	1.76	0.66	0.58	2.67
12	ROB	10005.85	10042.00	54.16	22.31	35.61	13.57	0.63	2.43
13	ROB	10042.00	10078.15	90.44	30.53	36.15	22.67	0.84	2.96
14	ROB	10078.15	10114.30	76.24	27.56	36.15	19.11	0.76	2.77
15	ROB	10114.30	10150.45	6.29	2.66	4.43	1.58	0.72	2.36
16	ROB	10150.45	10186.60	45.82	11.47	20.32	11.48	0.58	3.99

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9951.99	9965.90	6.23	1.53	2.64	1.56	1.70	4.06
2	LOB	9965.90	9979.82	82.99	14.75	13.96	20.80	1.06	5.63
3	LOB	9979.82	9993.74	53.82	12.91	13.92	13.49	0.93	4.17
4	Chan	9993.74	9995.47	10.49	2.24	1.75	2.63	1.30	4.67
5	Chan	9995.47	9997.20	14.25	2.70	1.75	3.57	1.56	5.28
6	Chan	9997.20	9998.93	17.80	3.07	1.74	4.46	1.78	5.79
7	Chan	9998.93	10000.66	19.92	3.29	1.73	4.99	1.90	6.06
8	Chan	10000.66	10002.39	20.46	3.35	1.75	5.13	1.94	6.11
9	Chan	10002.39	10004.12	15.54	2.85	1.76	3.90	1.65	5.46
10	Chan	10004.12	10005.85	10.75	2.28	1.76	2.69	1.32	4.71
11	ROB	10005.85	10042.00	146.75	38.51	30.76	36.78	1.32	3.81

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.

LATERAL STRUCTURE

RIVER: X4A
REACH: Reach 2 RS: 0.130

INPUT
Description:
Lateral structure position = Left overbank
Distance from Upstream XS = 0
Deck/Roadway Width = 20
Weir Coefficient = 2
Weir Flow Reference = Water Surface
Weir Embankment Coordinates num = 67

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2114.7	2.44	2114.6	3.34	2114.58	12.77	2114.27	14.17	2114.2
19.63	2114.08	20.91	2114.07	25.62	2113.84	26.38	2113.84	31.8	2113.8
32.55	2113.83	39.81	2113.66	41.12	2113.63	44.64	2113.63	51.08	2113.6
55.83	2113.58	57.04	2113.54	88.47	2112.93	88.61	2112.92	89.97	2112.9
103.48	2112.82	104.36	2112.82	104.98	2112.82	106.37	2112.82	109.96	2112.8
112.25	2112.85	114.27	2112.77	116.84	2112.62	129.12	2112.7	131.06	2112.7
132.43	2112.7	134.05	2112.65	134.61	2112.65	134.78	2112.65	135.38	2112.6
138.9	2112.66	139.53	2112.65	144.36	2112.82	144.65	2112.82	148.46	2112.9
152.31	2112.89	157.48	2112.81	157.69	2112.82	158.65	2112.79	163.27	2112.8
168.52	2112.62	170.14	2112.47	175.49	2112.46	179.22	2112.54	179.74	2112.5
181.47	2112.6	185.03	2112.52	185.32	2112.52	185.79	2112.54	192.56	2112.3
196.92	2111.95	197.7	2111.96	202.93	2111.49	204.61	2111.42	206.43	2111.4
209.21	2111.35	214.19	2111.2	217.05	2111.2	223.1	2111.17	227	2111.1
229.6	2111.12	229.61	2111.12						

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: X4A
REACH: Reach 2 RS: 0.113

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9939.58	2111.12	9945.42	2111.1	9950.26	2111.11	9963.99	2111.1	9965.58	2110.95
9966.64	2110.89	9970.85	2110.51	9974.27	2110.25	9984.19	2110.8	9985.75	2110.87
9986.94	2110.69	9990.82	2110.286	9995.87	2109.761	10004.82	2109.721	10006.54	2109.7
10007.65	2109.721	10011.32	2109.711	10015.11	2109.841	10024.37	2110.33	10028.7	2110.4
10032.8	2110.631	10035.45	2110.541	10038.36	2110.371	10038.53	2110.371	10043.74	2110.6
10079.13	2110.64	10080.5	2110.581	10082.14	2110.631	10085.53	2110.651	10091.05	2110.7
10108.33	2110.681	10119.35	2110.721	10128.58	2110.61	10136.83	2110.351	10144.72	2111
10147.42	2111.33								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9939.58	.05	9990.82	.045	10024.37	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.82	10024.37	163.39	161.95	149.78	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2111.39	Element			
Vel Head (ft)	0.35	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2111.04	Reach Len. (ft)	163.39	161.95	149.78
Crit W.S. (ft)	2111.04	Flow Area (sq ft)	11.78	39.09	51.59
E.G. Slope (ft/ft)	0.025412	Area (sq ft)	11.78	39.09	51.59
Q Total (cfs)	399.00	Flow (cfs)	32.70	227.67	138.63
Top Width (ft)	180.45	Top Width (ft)	26.21	33.55	120.69
Vel Total (ft/s)	3.89	Avg. Vel. (ft/s)	2.77	5.82	2.69
Max Chl Dpth (ft)	1.34	Hydr. Depth (ft)	0.45	1.17	0.43
Conv. Total (cfs)	2503.0	Conv. (cfs)	205.1	1428.2	869.7
Length Wtd. (ft)	159.78	Wetted Per. (ft)	26.30	33.59	120.75
Min Ch El (ft)	2109.70	Shear (lb/sq ft)	0.71	1.85	0.68
Alpha	1.48	Stream Power (lb/ft s)	1.97	10.75	1.82
Frctn Loss (ft)	3.77	Cum Volume (acre-ft)	0.39	0.72	0.12
C & E Loss (ft)	0.05	Cum SA (acres)	0.13	0.27	0.25

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2111.93	Element			
Vel Head (ft)	0.57	Wt. n-Val.	0.050	0.045	
W.S. Elev (ft)	2111.36	Reach Len. (ft)	163.39	161.95	149.78
Crit W.S. (ft)	2111.36	Flow Area (sq ft)	20.15	49.81	
E.G. Slope (ft/ft)	0.023670	Area (sq ft)	20.15	49.81	
Q Total (cfs)	399.00	Flow (cfs)	76.56	322.44	
Top Width (ft)	59.76	Top Width (ft)	26.21	33.55	
Vel Total (ft/s)	5.70	Avg. Vel. (ft/s)	3.80	6.47	
Max Chl Dpth (ft)	1.66	Hydr. Depth (ft)	0.77	1.48	
Conv. Total (cfs)	2593.4	Conv. (cfs)	497.6	2095.8	
Length Wtd. (ft)	161.97	Wetted Per. (ft)	26.61	34.62	
Min Ch El (ft)	2109.70	Shear (lb/sq ft)	1.12	2.13	
Alpha	1.13	Stream Power (lb/ft s)	4.25	13.76	
Frctn Loss (ft)	3.69	Cum Volume (acre-ft)	0.27	0.79	0.04
C & E Loss (ft)	0.03	Cum SA (acres)	0.09	0.27	0.05

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9960.08	9970.32	2.28	1.35	5.74	0.57	0.24	1.69
2	LOB	9970.32	9980.57	20.87	6.42	10.27	5.23	0.63	3.25
3	LOB	9980.57	9990.82	9.55	4.02	10.29	2.39	0.39	2.38
4	Chan	9990.82	9995.61	25.04	4.82	4.82	6.27	1.01	5.20
5	Chan	9995.61	10000.41	38.09	6.19	4.79	9.55	1.29	6.16
6	Chan	10000.41	10005.20	39.20	6.29	4.79	9.82	1.31	6.23
7	Chan	10005.20	10009.99	40.00	6.37	4.79	10.03	1.33	6.28
8	Chan	10009.99	10014.78	37.98	6.17	4.80	9.52	1.29	6.15
9	Chan	10014.78	10019.58	28.81	5.23	4.80	7.22	1.09	5.50
10	Chan	10019.58	10024.37	18.55	4.02	4.80	4.65	0.84	4.62
11	ROB	10024.37	10048.98	41.35	13.32	24.63	10.36	0.54	3.10
12	ROB	10048.98	10073.59	27.32	10.39	24.61	6.85	0.42	2.63

13	ROB	10073.59	10098.20	23.19	9.41	24.61	5.81	0.38	2.46
14	ROB	10098.20	10122.81	19.81	8.56	24.61	4.96	0.35	2.31
15	ROB	10122.81	10147.42	26.98	9.91	22.29	6.76	0.45	2.72

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9960.08	9970.32	9.18	3.17	6.05	2.30	0.55	2.90
2	LOB	9970.32	9980.57	41.55	9.69	10.27	10.41	0.95	4.29
3	LOB	9980.57	9990.82	25.83	7.29	10.29	6.47	0.71	3.54
4	Chan	9990.82	9995.61	38.12	6.35	4.82	9.55	1.32	6.00
5	Chan	9995.61	10000.41	52.94	7.72	4.79	13.27	1.61	6.86
6	Chan	10000.41	10005.20	54.18	7.82	4.79	13.58	1.63	6.93
7	Chan	10005.20	10009.99	55.07	7.90	4.79	13.80	1.65	6.97
8	Chan	10009.99	10014.78	52.81	7.71	4.80	13.24	1.61	6.85
9	Chan	10014.78	10019.58	42.48	6.76	4.80	10.65	1.41	6.28
10	Chan	10019.58	10024.37	26.83	5.55	5.83	6.72	1.16	4.83

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 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: X4A
REACH: Reach 2 RS: 0.082

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9978.766	2106.6	9986.61	2104.98	29989.236	2104.44	9997.346	2102.67	10002.9	2103.11
10009.83	2103.71	0013.75	2104.64	10019.16	2105.29	10021.46	2105.65	10022.69	2105.89
10022.92	2106	10025.96	2106.62	10030.25	2106.62	10030.74	2106.56	10030.92	2106.57
10031.11	2106.59	10036.9	2106.58	10039.79	2106.57	10045.56	2106.69	10045.89	2106.7
10046.09	2106.71	10047.08	2106.73	10049.09	2106.73	10057.64	2106.92	10060.42	2107.02
10064.89	2107.22								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9978.766	.055	9986.61	.04	510013.75	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.61	10013.75	159.01	161.49	164.23	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2106.35	Element			
Vel Head (ft)	0.85	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2105.50	Reach Len. (ft)	159.01	161.49	164.23
Crit W.S. (ft)	2105.50	Flow Area (sq ft)	0.65	52.09	3.04
E.G. Slope (ft/ft)	0.021996	Area (sq ft)	0.65	52.09	3.04
Q Total (cfs)	399.00	Flow (cfs)	1.05	390.13	7.82
Top Width (ft)	36.41	Top Width (ft)	2.51	27.14	6.75
Vel Total (ft/s)	7.15	Avg. Vel. (ft/s)	1.61	7.49	2.57
Max Chl Dpth (ft)	2.83	Hydr. Depth (ft)	0.26	1.92	0.45
Conv. Total (cfs)	2690.3	Conv. (cfs)	7.1	2630.5	52.7
Length Wtd. (ft)	161.51	Wetted Per. (ft)	2.57	27.54	6.81
Min Ch El (ft)	2102.67	Shear (lb/sq ft)	0.35	2.60	0.61
Alpha	1.07	Stream Power (lb/ft s)	0.56	19.45	1.58
Frctn Loss (ft)	3.79	Cum Volume (acre-ft)	0.36	0.55	0.03
C & E Loss (ft)	0.00	Cum SA (acres)	0.08	0.16	0.03

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2106.35	Element			
Vel Head (ft)	0.85	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2105.50	Reach Len. (ft)	159.01	161.49	164.23
Crit W.S. (ft)	2105.50	Flow Area (sq ft)	0.65	52.09	3.04

E.G. Slope (ft/ft)	0.021996	Area (sq ft)	0.65	52.09	3.04
Q Total (cfs)	399.00	Flow (cfs)	1.05	390.13	7.82
Top Width (ft)	36.41	Top Width (ft)	2.51	27.14	6.75
Vel Total (ft/s)	7.15	Avg. Vel. (ft/s)	1.61	7.49	2.57
Max Chl Dpth (ft)	2.83	Hydr. Depth (ft)	0.26	1.92	0.45
Conv. Total (cfs)	2690.3	Conv. (cfs)	7.1	2630.5	52.7
Length Wtd. (ft)	161.51	Wetted Per. (ft)	2.57	27.54	6.81
Min Ch El (ft)	2102.67	Shear (lb/sq ft)	0.35	2.60	0.61
Alpha	1.07	Stream Power (lb/ft s)	0.56	19.45	1.58
Frctn Loss (ft)	3.73	Cum Volume (acre-ft)	0.23	0.61	0.04
C & E Loss (ft)	0.01	Cum SA (acres)	0.04	0.16	0.03

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9983.47	9985.04	0.07	0.09	0.96	0.02	0.10	0.74
2	LOB	9985.04	9986.61	0.98	0.56	1.60	0.25	0.36	1.75
3	Chan	9986.61	9990.49	15.46	3.57	3.96	3.88	0.92	4.33
4	Chan	9990.49	9994.36	45.31	6.81	3.97	11.36	1.76	6.65
5	Chan	9994.36	9998.24	85.81	9.97	3.95	21.51	2.57	8.60
6	Chan	9998.24	10002.12	88.63	10.11	3.89	22.21	2.61	8.77
7	Chan	10002.12	10006.00	71.49	8.88	3.89	17.92	2.29	8.05
8	Chan	10006.00	10009.87	55.18	7.61	3.89	13.83	1.96	7.25
9	Chan	10009.87	10013.75	28.25	5.14	3.99	7.08	1.33	5.50
10	ROB	10013.75	10023.98	7.82	3.04	6.81	1.96	0.45	2.57

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9983.47	9985.04	0.07	0.09	0.96	0.02	0.10	0.74
2	LOB	9985.04	9986.61	0.98	0.56	1.60	0.25	0.36	1.75
3	Chan	9986.61	9990.49	15.46	3.57	3.96	3.88	0.92	4.33
4	Chan	9990.49	9994.36	45.31	6.81	3.97	11.36	1.76	6.65
5	Chan	9994.36	9998.24	85.81	9.97	3.95	21.51	2.57	8.60
6	Chan	9998.24	10002.12	88.63	10.11	3.89	22.21	2.61	8.77
7	Chan	10002.12	10006.00	71.49	8.88	3.89	17.92	2.29	8.05
8	Chan	10006.00	10009.87	55.18	7.61	3.89	13.83	1.96	7.25
9	Chan	10009.87	10013.75	28.25	5.14	3.99	7.08	1.33	5.50
10	ROB	10013.75	10023.98	7.82	3.04	6.81	1.96	0.45	2.57

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: X4A
REACH: Reach 2 RS: 0.051

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9922.379	2101.09	9926.249	2101.08	9932.269	2101.01	9947.289	2100.93	9967.599	2100.77
9971.959	2100.73	9973.609	2100.78	9978.709	2100.53	9984.099	2100.05	9984.1	2100.05
9984.179	2100.03	9999.769	2096.88	10011.75	2099.27	10015.43	2100.11	10037.82	2100.75
10039.67	2100.81	10041.27	2100.85	10046.62	2101.04	10050.05	2101.04	10055.07	2101.04
10055.2	2101.04	10055.22	2101.04	10055.32	2101.05	10056.97	2101.15		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9922.379	.055	9984.1	.045	10015.43	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.11	10015.43	84.81	96.14	116.22	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2101.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.055	0.045	0.050

W.S. Elev (ft)	2100.18	Reach Len. (ft)	84.81	96.14	116.22
Crit W.S. (ft)	2100.18	Flow Area (sq ft)	0.09	53.90	0.11
E.G. Slope (ft/ft)	0.025039	Area (sq ft)	0.09	53.90	0.11
Q Total (cfs)	399.00	Flow (cfs)	0.06	398.88	0.06
Top Width (ft)	35.47	Top Width (ft)	1.44	31.33	2.70
Vel Total (ft/s)	7.38	Avg. Vel. (ft/s)	0.68	7.40	0.54
Max Chl Dpth (ft)	3.30	Hydr. Depth (ft)	0.06	1.72	0.04
Conv. Total (cfs)	2521.5	Conv. (cfs)	0.4	2520.8	0.4
Length Wtd. (ft)	94.66	Wetted Per. (ft)	1.45	31.98	2.70
Min Ch El (ft)	2096.88	Shear (lb/sq ft)	0.10	2.63	0.06
Alpha	1.01	Stream Power (lb/ft s)	0.07	19.50	0.03
Frctn Loss (ft)	1.73	Cum Volume (acre-ft)	0.36	0.36	0.02
C & E Loss (ft)	0.11	Cum SA (acres)	0.07	0.05	0.02

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2101.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.83	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2100.20	Reach Len. (ft)	84.81	96.14	116.22
Crit W.S. (ft)	2100.20	Flow Area (sq ft)	0.12	54.43	0.15
E.G. Slope (ft/ft)	0.024230	Area (sq ft)	0.12	54.43	0.15
Q Total (cfs)	399.00	Flow (cfs)	0.09	398.81	0.10
Top Width (ft)	35.47	Top Width (ft)	1.44	31.33	2.70
Vel Total (ft/s)	7.30	Avg. Vel. (ft/s)	0.78	7.33	0.67
Max Chl Dpth (ft)	3.32	Hydr. Depth (ft)	0.08	1.74	0.06
Conv. Total (cfs)	2563.3	Conv. (cfs)	0.6	2562.0	0.7
Length Wtd. (ft)	94.99	Wetted Per. (ft)	1.46	31.98	2.72
Min Ch El (ft)	2096.88	Shear (lb/sq ft)	0.12	2.57	0.08
Alpha	1.01	Stream Power (lb/ft s)	0.09	18.87	0.06
Frctn Loss (ft)	1.70	Cum Volume (acre-ft)	0.23	0.41	0.03
C & E Loss (ft)	0.09	Cum SA (acres)	0.03	0.05	0.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9971.76	9984.10	0.06	0.09	1.45	0.02	0.06	0.68
2	Chan	9984.10	9988.58	8.21	2.62	4.57	2.06	0.58	3.14
3	Chan	9988.58	9993.05	39.00	6.66	4.57	9.78	1.49	5.85
4	Chan	9993.05	9997.53	86.02	10.71	4.57	21.56	2.39	8.03
5	Chan	9997.53	10002.00	130.59	13.76	4.57	32.73	3.07	9.49
6	Chan	10002.00	10006.48	86.84	10.77	4.56	21.76	2.41	8.06
7	Chan	10006.48	10010.95	40.10	6.77	4.56	10.05	1.51	5.92
8	Chan	10010.95	10015.43	8.11	2.60	4.58	2.03	0.58	3.12
9	ROB	10015.43	10023.74	0.06	0.11	2.70	0.01	0.04	0.54

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9971.76	9984.10	0.09	0.12	1.46	0.02	0.08	0.78
2	Chan	9984.10	9988.58	8.49	2.69	4.57	2.13	0.60	3.15
3	Chan	9988.58	9993.05	39.20	6.74	4.57	9.82	1.51	5.82
4	Chan	9993.05	9997.53	85.84	10.79	4.57	21.51	2.41	7.96
5	Chan	9997.53	10002.00	129.97	13.84	4.57	32.57	3.09	9.39
6	Chan	10002.00	10006.48	86.64	10.85	4.56	21.71	2.42	7.99
7	Chan	10006.48	10010.95	40.28	6.85	4.56	10.09	1.53	5.88
8	Chan	10010.95	10015.43	8.39	2.68	4.58	2.10	0.60	3.13
9	ROB	10015.43	10023.74	0.10	0.15	2.72	0.03	0.06	0.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X4A
REACH: Reach 2 RS: 0.033

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9897.513	2098.429	919.023	2098.089	932.803	2097.739	944.973	2097.419	955.883	2097.35
9967.453	2096.919	975.883	2096.599	976.243	2096.579	976.463	2096.69	988.873	2098.25
9992.73	2096.651	9992.733	2096.659	998.793	2094.461	0008.58	2096.911	0008.91	2097
10009.8	2097.081	0028.23	2099.031	0028.95	2099.12				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9897.513	.055	9992.73	.045	10009.8	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.73	10009.8	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2098.57	Element			
Vel Head (ft)	0.49	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2098.07	Reach Len. (ft)	107.45	107.45	107.45
Crit W.S. (ft)	2098.07	Flow Area (sq ft)	49.30	39.87	4.63
E.G. Slope (ft/ft)	0.013957	Area (sq ft)	49.30	39.87	4.63
Q Total (cfs)	399.00	Flow (cfs)	122.33	266.54	10.13
Top Width (ft)	97.94	Top Width (ft)	71.51	17.07	9.35
Vel Total (ft/s)	4.25	Avg. Vel. (ft/s)	2.48	6.69	2.19
Max Chl Dpth (ft)	3.61	Hydr. Depth (ft)	0.69	2.34	0.49
Conv. Total (cfs)	3377.3	Conv. (cfs)	1035.5	2256.1	85.8
Length Wtd. (ft)	107.45	Wetted Per. (ft)	71.92	17.77	9.41
Min Ch El (ft)	2094.46	Shear (lb/sq ft)	0.60	1.95	0.43
Alpha	1.76	Stream Power (lb/ft s)	1.48	13.07	0.94
Frctn Loss (ft)	2.42	Cum Volume (acre-ft)	0.31	0.25	0.02
C & E Loss (ft)	0.01	Cum SA (acres)			

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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2098.71	Element			
Vel Head (ft)	0.55	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2098.16	Reach Len. (ft)	107.45	107.45	107.45
Crit W.S. (ft)		Flow Area (sq ft)	32.97	41.41	5.48
E.G. Slope (ft/ft)	0.013699	Area (sq ft)	32.97	41.41	5.48
Q Total (cfs)	399.00	Flow (cfs)	104.45	281.35	13.20
Top Width (ft)	58.26	Top Width (ft)	31.84	17.07	9.35
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)	3.17	6.79	2.41
Max Chl Dpth (ft)	3.70	Hydr. Depth (ft)	1.04	2.43	0.59
Conv. Total (cfs)	3409.0	Conv. (cfs)	892.4	2403.8	112.8
Length Wtd. (ft)	107.45	Wetted Per. (ft)	33.23	17.77	9.49
Min Ch El (ft)	2094.46	Shear (lb/sq ft)	0.85	1.99	0.49
Alpha	1.42	Stream Power (lb/ft s)	2.69	13.54	1.19
Frctn Loss (ft)	2.11	Cum Volume (acre-ft)	0.20	0.30	0.02
C & E Loss (ft)	0.02	Cum SA (acres)			

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9916.56	9935.60	3.33	3.33	16.18	0.83	0.21	1.00
2	LOB	9935.60	9954.64	24.17	11.67	19.05	6.06	0.61	2.07
3	LOB	9954.64	9973.69	57.98	19.73	19.06	14.53	1.04	2.94
4	LOB	9973.69	9992.73	36.85	14.57	17.64	9.24	0.84	2.53
5	Chan	9992.73	9995.17	24.40	4.53	2.59	6.11	1.86	5.38
6	Chan	9995.17	9997.61	46.57	6.68	2.59	11.67	2.74	6.97
7	Chan	9997.61	10000.05	68.24	8.35	2.55	17.10	3.43	8.17
8	Chan	10000.05	10002.48	55.00	7.29	2.51	13.78	2.99	7.54
9	Chan	10002.48	10004.92	37.60	5.81	2.51	9.42	2.38	6.48
10	Chan	10004.92	10007.36	22.95	4.32	2.51	5.75	1.77	5.32
11	Chan	10007.36	10009.80	11.78	2.88	2.49	2.95	1.18	4.09
12	ROB	10009.80	10013.63	7.72	3.01	3.85	1.94	0.79	2.56
13	ROB	10013.63	10017.46	2.31	1.46	3.85	0.58	0.38	1.58

14	ROB	10017.46	10021.29	0.09	0.15	1.70	0.02	0.09	0.60

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.64	9973.69	57.94	16.80	14.66	14.52	1.23	3.45
2	LOB	9973.69	9992.73	46.51	16.18	18.56	11.66	0.89	2.87
3	Chan	9992.73	9995.17	26.26	4.76	2.59	6.58	1.95	5.52
4	Chan	9995.17	9997.61	48.89	6.90	2.59	12.25	2.83	7.08
5	Chan	9997.61	10000.05	70.88	8.57	2.55	17.76	3.52	8.27
6	Chan	10000.05	10002.48	57.48	7.51	2.51	14.41	3.08	7.65
7	Chan	10002.48	10004.92	39.79	6.03	2.51	9.97	2.47	6.60
8	Chan	10004.92	10007.36	24.80	4.54	2.51	6.22	1.86	5.47
9	Chan	10007.36	10009.80	13.25	3.10	2.49	3.32	1.27	4.27
10	ROB	10009.80	10013.63	9.52	3.36	3.85	2.39	0.88	2.83
11	ROB	10013.63	10017.46	3.39	1.81	3.85	0.85	0.47	1.87
12	ROB	10017.46	10021.29	0.29	0.30	1.79	0.07	0.18	0.95

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: X4B
REACH: Reach 1 RS: 0.525

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9905.51	2191.2	9906.1	2191.21	9921.1	2190.38	9928.43	2189.72	9928.95	2189.69
9931.72	2189.4	9958.93	2189.57	9990.26	2189.72	9996.48	2188.57	9998.25	2188.28
10000.89	2188.61	10006.52	2189.24	10012	2189.36	10012.57	2189.38	10022.75	2189.57
10030.58	2189.78	10064.47	2190.61	10067.51	2190.64				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9905.51	.035	9990.26	.03	10012	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.26	10012	202.64	207.47	213.27	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2190.11	Element			
Vel Head (ft)	0.20	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	2189.91	Reach Len. (ft)	202.64	207.47	213.27
Crit W.S. (ft)	2189.91	Flow Area (sq ft)	21.19	20.17	6.93
E.G. Slope (ft/ft)	0.008540	Area (sq ft)	21.19	20.17	6.93
Q Total (cfs)	139.00	Flow (cfs)	39.82	87.30	11.88
Top Width (ft)	109.64	Top Width (ft)	63.94	21.74	23.96
Vel Total (ft/s)	2.88	Avg. Vel. (ft/s)	1.88	4.33	1.72
Max Chl Dpth (ft)	1.63	Hydr. Depth (ft)	0.33	0.93	0.29
Conv. Total (cfs)	1504.2	Conv. (cfs)	430.9	944.7	128.6
Length Wtd. (ft)	207.48	Wetted Per. (ft)	63.97	21.93	23.96
Min Ch El (ft)	2188.28	Shear (lb/sq ft)	0.18	0.49	0.15
Alpha	1.57	Stream Power (lb/ft s)	0.33	2.12	0.26
Frctn Loss (ft)	2.04	Cum Volume (acre-ft)	0.55	1.51	0.72
C & E Loss (ft)	0.02	Cum SA (acres)	1.73	1.68	2.06

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2190.46	Element			
Vel Head (ft)	0.43	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	2190.03	Reach Len. (ft)	202.64	207.47	213.27
Crit W.S. (ft)	2190.03	Flow Area (sq ft)	2.36	22.74	3.06
E.G. Slope (ft/ft)	0.011663	Area (sq ft)	2.36	22.74	3.06
Q Total (cfs)	139.00	Flow (cfs)	4.98	124.60	9.43
Top Width (ft)	34.00	Top Width (ft)	7.26	21.74	5.00
Vel Total (ft/s)	4.94	Avg. Vel. (ft/s)	2.10	5.48	3.08
Max Chl Dpth (ft)	1.75	Hydr. Depth (ft)	0.33	1.05	0.61
Conv. Total (cfs)	1287.1	Conv. (cfs)	46.1	1153.7	87.3
Length Wtd. (ft)	207.96	Wetted Per. (ft)	7.60	21.93	5.57
Min Ch El (ft)	2188.28	Shear (lb/sq ft)	0.23	0.76	0.40
Alpha	1.14	Stream Power (lb/ft s)	0.48	4.14	1.23

Frctn Loss (ft)	2.39	Cum Volume (acre-ft)	0.13	1.79	0.13
C & E Loss (ft)	0.00	Cum SA (acres)	0.29	1.68	0.27

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9922.46	9939.41	10.25	5.06	13.12	7.38	0.39	2.03
2	LOB	9939.41	9956.36	14.62	6.94	16.95	10.52	0.41	2.11
3	LOB	9956.36	9973.31	9.31	5.29	16.95	6.70	0.31	1.76
4	LOB	9973.31	9990.26	5.63	3.91	16.95	4.05	0.23	1.44
5	Chan	9990.26	9993.37	3.79	1.48	3.16	2.73	0.48	2.56
6	Chan	9993.37	9996.47	14.14	3.27	3.16	10.18	1.05	4.33
7	Chan	9996.47	9999.58	26.03	4.70	3.14	18.72	1.51	5.54
8	Chan	9999.58	10002.68	19.89	3.99	3.13	14.31	1.28	4.98
9	Chan	10002.68	10005.79	11.60	2.89	3.13	8.35	0.93	4.02
10	Chan	10005.79	10008.89	6.56	2.05	3.11	4.72	0.66	3.20
11	Chan	10008.89	10012.00	5.29	1.80	3.11	3.81	0.58	2.94
12	ROB	10012.00	10023.10	9.61	4.85	11.10	6.92	0.44	1.98
13	ROB	10023.10	10034.20	2.26	2.04	11.11	1.62	0.18	1.11
14	ROB	10034.20	10045.31	0.01	0.04	1.75	0.01	0.02	0.26

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9973.31	9990.26	4.98	2.36	7.60	3.58	0.33	2.10
2	Chan	9990.26	9993.37	6.51	1.85	3.16	4.68	0.60	3.52
3	Chan	9993.37	9996.47	20.06	3.63	3.16	14.43	1.17	5.52
4	Chan	9996.47	9999.58	35.04	5.06	3.14	25.21	1.63	6.92
5	Chan	9999.58	10002.68	27.35	4.36	3.13	19.67	1.40	6.28
6	Chan	10002.68	10005.79	16.82	3.25	3.13	12.10	1.05	5.17
7	Chan	10005.79	10008.89	10.25	2.41	3.11	7.38	0.78	4.25
8	Chan	10008.89	10012.00	8.57	2.17	3.11	6.16	0.70	3.96
9	ROB	10012.00	10023.10	9.43	3.06	5.57	6.78	0.61	3.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The 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: X4B
REACH: Reach 1 RS: 0.486

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9910.527	2184.58	9943.407	2183.81	9970.427	2183.17	9982.177	2182.9	9984.637	2183.01
9985.597	2183.06	9986.917	2183.09	9988.897	2183.04	9994.16	2182.24	9996.477	2181.9
9999.707	2181.46	10010.15	2182.23	10010.87	2182.28	10011.35	2182.29	10021.32	2182.51
10040.13	2183.01	10056.21	2183.43	10103.71	2184.31	10104.15	2184.31	10105.4	2184.36

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9910.527	.035	9994.16	.03	10010.87	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.16	10010.87	163.18	171.76	182.25	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2183.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	2183.00	Reach Len. (ft)	163.18	171.76	182.25
Crit W.S. (ft)	2183.00	Flow Area (sq ft)	2.20	18.99	10.81
E.G. Slope (ft/ft)	0.011388	Area (sq ft)	2.20	18.99	10.81
Q Total (cfs)	139.00	Flow (cfs)	4.58	108.95	25.46
Top Width (ft)	57.08	Top Width (ft)	11.52	16.71	28.85
Vel Total (ft/s)	4.34	Avg. Vel. (ft/s)	2.09	5.74	2.35
Max Chl Dpth (ft)	1.54	Hydr. Depth (ft)	0.19	1.14	0.37

Conv. Total (cfs)	1302.5	Conv. (cfs)	42.9	1021.0	238.6
Length Wtd. (ft)	173.25	Wetted Per. (ft)	11.58	16.80	28.86
Min Ch El (ft)	2181.46	Shear (lb/sq ft)	0.13	0.80	0.27
Alpha	1.43	Stream Power (lb/ft s)	0.28	4.61	0.63
Frctn Loss (ft)	1.83	Cum Volume (acre-ft)	0.50	1.41	0.67
C & E Loss (ft)	0.02	Cum SA (acres)	1.56	1.58	1.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: 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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2183.47	Element			
Vel Head (ft)	0.45	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	2183.02	Reach Len. (ft)	163.18	171.76	182.25
Crit W.S. (ft)	2183.02	Flow Area (sq ft)	1.98	19.35	6.88
E.G. Slope (ft/ft)	0.011370	Area (sq ft)	1.98	19.35	6.88
Q Total (cfs)	139.00	Flow (cfs)	4.72	112.32	21.96
Top Width (ft)	32.97	Top Width (ft)	5.13	16.71	11.13
Vel Total (ft/s)	4.93	Avg. Vel. (ft/s)	2.38	5.80	3.19
Max Chl Dpth (ft)	1.56	Hydr. Depth (ft)	0.39	1.16	0.62
Conv. Total (cfs)	1303.5	Conv. (cfs)	44.3	1053.3	205.9
Length Wtd. (ft)	172.26	Wetted Per. (ft)	5.19	16.80	11.63
Min Ch El (ft)	2181.46	Shear (lb/sq ft)	0.27	0.82	0.42
Alpha	1.20	Stream Power (lb/ft s)	0.65	4.75	1.34
Frctn Loss (ft)	2.03	Cum Volume (acre-ft)	0.12	1.69	0.11
C & E Loss (ft)	0.00	Cum SA (acres)	0.26	1.58	0.23

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.43	9994.16	4.58	2.20	11.58	3.30	0.19	2.09
2	Chan	9994.16	9996.55	10.87	2.22	2.41	7.82	0.93	4.89
3	Chan	9996.55	9998.94	18.31	3.04	2.41	13.18	1.27	6.03
4	Chan	9998.94	10001.32	23.70	3.54	2.40	17.05	1.48	6.70
5	Chan	10001.32	10003.71	19.88	3.18	2.39	14.30	1.33	6.25
6	Chan	10003.71	10006.10	15.69	2.76	2.39	11.29	1.16	5.69
7	Chan	10006.10	10008.48	11.92	2.34	2.39	8.58	0.98	5.09
8	Chan	10008.48	10010.87	8.58	1.92	2.39	6.17	0.80	4.47
9	ROB	10010.87	10029.78	24.09	9.50	18.91	17.33	0.50	2.54
10	ROB	10029.78	10048.68	1.37	1.31	9.94	0.98	0.13	1.04

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.43	9994.16	4.72	1.98	5.19	3.40	0.39	2.38
2	Chan	9994.16	9996.55	11.29	2.27	2.41	8.12	0.95	4.97
3	Chan	9996.55	9998.94	18.83	3.09	2.41	13.55	1.29	6.10
4	Chan	9998.94	10001.32	24.28	3.59	2.40	17.47	1.50	6.77
5	Chan	10001.32	10003.71	20.42	3.23	2.39	14.69	1.35	6.32
6	Chan	10003.71	10006.10	16.18	2.81	2.39	11.64	1.18	5.76
7	Chan	10006.10	10008.48	12.36	2.39	2.39	8.89	1.00	5.17
8	Chan	10008.48	10010.87	8.96	1.97	2.39	6.45	0.83	4.55
9	ROB	10010.87	10029.78	21.96	6.88	11.63	15.80	0.62	3.19

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: X4B

REACH: Reach 1 RS: 0.453

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9914.128	2179.09	9932.368	2178.62	9934.208	2178.53	9936.668	2178.52	9937.758	2178.48
9939.738	2178.44	9941.818	2178.42	9947.028	2178.51	9948.518	2178.53	9949.718	2178.55
9950.898	2178.54	9952.198	2178.54	9967.008	2177.93	9968.688	2177.87	9978.138	2177.54
9989.198	2177.07	9989.2	2177.07	9993	2176.65	9998.178	2176.19	9999.438	2175.96
10004.95	2176.16	10013.52	2176.51	10013.91	2176.53	10019.07	2176.71	10025.69	2176.99
10029.72	2177.18	10032.85	2177.42	10035.44	2177.43	10043.73	2177.71	10104.08	2179.69

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9914.128	.038	9993	.03	10013.5	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993	10013.5	174.79	189.69	205.44	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2177.69	Element			
Vel Head (ft)	0.35	Wt. n-Val.	0.038	0.030	0.035
W.S. Elev (ft)	2177.33	Reach Len. (ft)	174.79	189.69	205.44
Crit W.S. (ft)	2177.33	Flow Area (sq ft)	2.59	22.11	8.42
E.G. Slope (ft/ft)	0.009792	Area (sq ft)	2.59	22.11	8.42
Q Total (cfs)	139.00	Flow (cfs)	4.07	113.81	21.12
Top Width (ft)	48.70	Top Width (ft)	9.98	20.50	18.21
Vel Total (ft/s)	4.20	Avg. Vel. (ft/s)	1.57	5.15	2.51
Max Chl Dpth (ft)	1.37	Hydr. Depth (ft)	0.26	1.08	0.46
Conv. Total (cfs)	1404.7	Conv. (cfs)	41.2	1150.1	213.4
Length Wtd. (ft)	191.49	Wetted Per. (ft)	10.01	20.55	18.23
Min Ch El (ft)	2175.96	Shear (lb/sq ft)	0.16	0.66	0.28
Alpha	1.29	Stream Power (lb/ft s)	0.25	3.39	0.71
Frctn Loss (ft)	2.11	Cum Volume (acre-ft)	0.49	1.33	0.63
C & E Loss (ft)	0.01	Cum SA (acres)	1.52	1.51	1.84

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2177.88	Element			
Vel Head (ft)	0.50	Wt. n-Val.	0.038	0.030	
W.S. Elev (ft)	2177.38	Reach Len. (ft)	174.79	189.69	205.44
Crit W.S. (ft)	2177.38	Flow Area (sq ft)	2.54	23.07	
E.G. Slope (ft/ft)	0.012258	Area (sq ft)	2.54	23.07	
Q Total (cfs)	139.00	Flow (cfs)	6.02	132.98	
Top Width (ft)	26.50	Top Width (ft)	6.00	20.50	
Vel Total (ft/s)	5.43	Avg. Vel. (ft/s)	2.38	5.76	
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)	0.42	1.13	
Conv. Total (cfs)	1255.5	Conv. (cfs)	54.4	1201.1	
Length Wtd. (ft)	189.07	Wetted Per. (ft)	6.24	21.42	
Min Ch El (ft)	2175.96	Shear (lb/sq ft)	0.31	0.82	
Alpha	1.09	Stream Power (lb/ft s)	0.74	4.75	
Frctn Loss (ft)	2.39	Cum Volume (acre-ft)	0.12	1.61	0.10
C & E Loss (ft)	0.00	Cum SA (acres)	0.24	1.51	0.21

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.23	9993.00	4.07	2.59	10.01	2.93	0.26	1.57
2	Chan	9993.00	9995.93	10.38	2.44	2.95	7.47	0.83	4.26
3	Chan	9995.93	9998.86	17.76	3.36	2.95	12.77	1.15	5.28
4	Chan	9998.86	10001.79	22.81	3.90	2.93	16.41	1.33	5.85
5	Chan	10001.79	10004.71	20.10	3.61	2.93	14.46	1.23	5.56
6	Chan	10004.71	10007.64	17.15	3.29	2.93	12.34	1.12	5.22
7	Chan	10007.64	10010.57	14.18	2.93	2.93	10.20	1.00	4.84
8	Chan	10010.57	10013.50	11.44	2.58	2.93	8.23	0.88	4.44
9	ROB	10013.50	10031.62	21.12	8.42	18.14	15.19	0.46	2.51

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.23	9993.00	6.02	2.54	6.24	4.33	0.42	2.38
2	Chan	9993.00	9995.93	12.59	2.57	2.95	9.06	0.88	4.89
3	Chan	9995.93	9998.86	21.02	3.50	2.95	15.13	1.20	6.01
4	Chan	9998.86	10001.79	26.76	4.04	2.93	19.25	1.38	6.63
5	Chan	10001.79	10004.71	23.69	3.75	2.93	17.04	1.28	6.31
6	Chan	10004.71	10007.64	20.33	3.42	2.93	14.63	1.17	5.94
7	Chan	10007.64	10010.57	16.95	3.07	2.93	12.19	1.05	5.52
8	Chan	10010.57	10013.50	11.62	2.72	3.80	8.36	0.93	4.28

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: X4B
REACH: Reach 1 RS: 0.417

INPUT
Description: 12th Street
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9963.661	2175.49	9965.511	2175.37	9967.281	2175.32	9968.621	2175.39	9971.761	2175.11
9972.821	2175.09	9975.581	2174.69	9977.201	2174.45	9977.881	2174.45	9978.561	2174.39
9980.071	2174.49	9980.151	2174.49	9981.201	2174.49	9984.071	2174.39	9985.451	2174.32
9989.22	2174.03	9989.221	2174.03	9991.92	2173.39	9991.961	2173.38	9993.571	2173.01
9994.181	2172.87	10006.63	2172.79	10015	2173.04	11001	9.66	2173.18	10020.29
10020.85	2173.27	10027.66	2173.87	10030.14	2174.06	10030.63	2174.08	10035.01	2174.36
10040.21	2174.51	10045.28	2174.69	10049.14	2174.84	10055.45	2174.92	10063.01	2175
10067.22	2175.04	10071.26	2175.12	10074.31	2175.19	10077	2175.29		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9963.661	.035	9993.571	.03	10015	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.571	10015	145.66	143.28	145.18	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2174.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.035	0.030	0.035
W.S. Elev (ft)	2173.86	Reach Len. (ft)	145.66	143.28	145.18
Crit W.S. (ft)	2173.86	Flow Area (sq ft)	1.55	21.23	6.18
E.G. Slope (ft/ft)	0.012477	Area (sq ft)	1.55	21.23	6.18
Q Total (cfs)	139.00	Flow (cfs)	4.08	116.63	18.28
Top Width (ft)	37.56	Top Width (ft)	3.62	21.43	12.51
Vel Total (ft/s)	4.80	Avg. Vel. (ft/s)	2.64	5.49	2.96
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)	0.43	0.99	0.49
Conv. Total (cfs)	1244.4	Conv. (cfs)	36.6	1044.1	163.7
Length Wtd. (ft)	144.06	Wetted Per. (ft)	3.72	21.45	12.55
Min Ch El (ft)	2172.79	Shear (lb/sq ft)	0.32	0.77	0.38
Alpha	1.16	Stream Power (lb/ft s)	0.86	4.24	1.14
Frctn Loss (ft)	1.38	Cum Volume (acre-ft)	0.48	1.24	0.60
C & E Loss (ft)	0.06	Cum SA (acres)	1.49	1.42	1.76

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2174.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.035	0.030	
W.S. Elev (ft)	2173.94	Reach Len. (ft)	145.66	143.28	145.18
Crit W.S. (ft)	2173.94	Flow Area (sq ft)	1.85	23.08	
E.G. Slope (ft/ft)	0.013045	Area (sq ft)	1.85	23.08	
Q Total (cfs)	139.00	Flow (cfs)	5.62	133.38	
Top Width (ft)	24.95	Top Width (ft)	3.52	21.43	
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)	3.04	5.78	
Max Chl Dpth (ft)	1.15	Hydr. Depth (ft)	0.53	1.08	
Conv. Total (cfs)	1217.0	Conv. (cfs)	49.2	1167.8	
Length Wtd. (ft)	143.56	Wetted Per. (ft)	3.73	22.35	
Min Ch El (ft)	2172.79	Shear (lb/sq ft)	0.40	0.84	
Alpha	1.04	Stream Power (lb/ft s)	1.23	4.86	
Frctn Loss (ft)	1.46	Cum Volume (acre-ft)	0.11	1.51	0.10
C & E Loss (ft)	0.02	Cum SA (acres)	0.22	1.42	0.21

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.59	9993.57	4.08	1.55	3.72	2.94	0.43	2.64
2	Chan	9993.57	9996.63	16.27	3.00	3.08	11.71	0.98	5.43
3	Chan	9996.63	9999.69	17.25	3.10	3.06	12.41	1.01	5.57
4	Chan	9999.69	10002.75	17.82	3.16	3.06	12.82	1.03	5.64
5	Chan	10002.75	10005.82	18.39	3.22	3.06	13.23	1.05	5.71
6	Chan	10005.82	10008.88	18.09	3.19	3.06	13.01	1.04	5.67
7	Chan	10008.88	10011.94	15.61	2.92	3.06	11.23	0.95	5.35
8	Chan	10011.94	10015.00	13.19	2.64	3.06	9.49	0.86	5.00
9	ROB	10015.00	10027.40	18.28	6.18	12.43	13.15	0.50	2.96

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.59	9993.57	5.62	1.85	3.73	4.04	0.53	3.04
2	Chan	9993.57	9996.63	18.99	3.26	3.08	13.66	1.07	5.82
3	Chan	9996.63	9999.69	20.05	3.36	3.06	14.42	1.10	5.96
4	Chan	9999.69	10002.75	20.65	3.43	3.06	14.86	1.12	6.03
5	Chan	10002.75	10005.82	21.27	3.49	3.06	15.30	1.14	6.10
6	Chan	10005.82	10008.88	20.94	3.45	3.06	15.06	1.13	6.06
7	Chan	10008.88	10011.94	18.29	3.18	3.06	13.15	1.04	5.74
8	Chan	10011.94	10015.00	13.20	2.90	3.97	9.50	0.95	4.55

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: X4B
REACH: Reach 1 RS: 0.390

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9874.242	2172.189	884.552	2171.979	893.032	2171.869	898.992	2171.769	902.052	2171.7
9920.152	2171.049	921.632	2170.999	921.972	2170.989	923.582	2170.999	925.912	2171
9928.362	2171.019	929.062	2170.999	940.662	2170.869	942.522	2170.869	951.052	2170.83
9953.932	2170.879	958.862	2170.969	959.312	2170.979	959.822	2170.979	959.912	2170.97
9960.012	2170.979	960.242	2170.979	968.322	2170.999	969.262	2171	972.412	2171.01
9976.912	2171.089	992.612	2171.3	9994.21	2170.99	994.212	2170.91	0000.07	2169.55
10006.62	2170.98	9010009.72	2171.67	10010.27	2171.79	10014.44	2172.01	10015.79	2172.01
10044.42	2172.78								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9874.242	.03	9994.21	.03	10006.62	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.21	10006.62	158.71	164.57	174.78	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2171.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.030	0.030	0.030
W.S. Elev (ft)	2171.40	Reach Len. (ft)	158.71	164.57	174.78
Crit W.S. (ft)	2171.40	Flow Area (sq ft)	31.77	14.32	0.39
E.G. Slope (ft/ft)	0.007575	Area (sq ft)	31.77	14.32	0.39
Q Total (cfs)	139.00	Flow (cfs)	71.61	66.82	0.58
Top Width (ft)	98.29	Top Width (ft)	84.00	12.41	1.88
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)	2.25	4.67	1.48
Max Chl Dpth (ft)	1.85	Hydr. Depth (ft)	0.38	1.15	0.21
Conv. Total (cfs)	1597.0	Conv. (cfs)	822.7	767.7	6.6
Length Wtd. (ft)	162.56	Wetted Per. (ft)	84.06	12.72	1.93
Min Ch El (ft)	2169.55	Shear (lb/sq ft)	0.18	0.53	0.10
Alpha	1.46	Stream Power (lb/ft s)	0.40	2.48	0.14
Frctn Loss (ft)	1.71	Cum Volume (acre-ft)	0.43	1.18	0.59
C & E Loss (ft)	0.01	Cum SA (acres)	1.34	1.36	1.74

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2172.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.030	0.030	0.030
W.S. Elev (ft)	2171.78	Reach Len. (ft)	158.71	164.57	174.78
Crit W.S. (ft)	2171.78	Flow Area (sq ft)	8.23	18.99	1.10
E.G. Slope (ft/ft)	0.008190	Area (sq ft)	8.23	18.99	1.10
Q Total (cfs)	139.00	Flow (cfs)	24.84	111.17	3.00
Top Width (ft)	28.50	Top Width (ft)	14.21	12.41	1.88
Vel Total (ft/s)	4.91	Avg. Vel. (ft/s)	3.02	5.85	2.73
Max Chl Dpth (ft)	2.23	Hydr. Depth (ft)	0.58	1.53	0.58
Conv. Total (cfs)	1535.9	Conv. (cfs)	274.4	1228.3	33.1
Length Wtd. (ft)	164.15	Wetted Per. (ft)	14.92	12.72	2.30
Min Ch El (ft)	2169.55	Shear (lb/sq ft)	0.28	0.76	0.24
Alpha	1.21	Stream Power (lb/ft s)	0.85	4.47	0.67
Frctn Loss (ft)	1.69	Cum Volume (acre-ft)	0.09	1.44	0.09
C & E Loss (ft)	0.02	Cum SA (acres)	0.19	1.36	0.21

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: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9898.24	9922.23	3.91	2.63	12.03	2.81	0.22	1.49
2	LOB	9922.23	9946.22	28.25	11.35	23.99	20.32	0.47	2.49
3	LOB	9946.22	9970.22	28.87	11.50	24.00	20.77	0.48	2.51
4	LOB	9970.22	9994.21	10.57	6.30	24.04	7.61	0.26	1.68
5	Chan	9994.21	9995.98	3.96	1.25	1.82	2.85	0.71	3.16
6	Chan	9995.98	9997.76	8.47	1.98	1.82	6.09	1.11	4.28
7	Chan	9997.76	9999.53	14.25	2.70	1.82	10.25	1.52	5.28
8	Chan	9999.53	10001.30	17.80	3.08	1.82	12.80	1.74	5.77
9	Chan	10001.30	10003.07	12.21	2.46	1.81	8.78	1.39	4.96
10	Chan	10003.07	10004.85	7.05	1.77	1.82	5.07	1.00	3.98
11	Chan	10004.85	10006.62	3.09	1.08	1.81	2.22	0.61	2.86
12	ROB	10006.62	10014.18	0.58	0.39	1.93	0.42	0.21	1.48

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9970.22	9994.21	24.84	8.23	14.92	17.87	0.58	3.02
2	Chan	9994.21	9995.98	8.60	1.92	1.82	6.19	1.08	4.48
3	Chan	9995.98	9997.76	14.68	2.64	1.82	10.56	1.49	5.55
4	Chan	9997.76	9999.53	21.96	3.37	1.82	15.80	1.90	6.52
5	Chan	9999.53	10001.30	26.32	3.75	1.82	18.94	2.12	7.02
6	Chan	10001.30	10003.07	19.43	3.13	1.81	13.98	1.76	6.22
7	Chan	10003.07	10004.85	12.82	2.44	1.82	9.23	1.37	5.26
8	Chan	10004.85	10006.62	7.35	1.74	1.81	5.29	0.98	4.21
9	ROB	10006.62	10014.18	3.00	1.10	2.30	2.16	0.58	2.73

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.
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: X4B
REACH: Reach 1 RS: 0.359

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9885.044	2170.01	9885.904	2170.9	9901.074	2169.59	9912.274	2169.04	9915.834	2168.75
9918.884	2168.669	9922.194	2168.669	9922.714	2168.669	9926.144	2168.669	9936.084	2168.43
9948.574	2168.089	9975.264	2167.37	9976.784	2167.53	9980.844	2167.96	9982.864	2168.18
9985.732	2167.75	9992.184	2166.81	9996.984	2166.55	9998.214	2166.72	10004.83	2167.59
10006.25	2167.77	10006.69	2167.83	10006.99	2167.87	10007.25	2167.88	10007.34	2167.88
10011.21	2167.87	10014.62	2167.86	10039.87	2168.43	10064.59	2168.98	10084.95	2169.56
10086.15	2169.62	10087.18	2169.54	10099.17	2169.62	10103.34	2169.79	10130.81	2170.03

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9885.044	.035	9985.73	.04	10006.69	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.73	10006.69	242.1	233.19	218.9	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2168.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.035	0.040	0.030
W.S. Elev (ft)	2168.11	Reach Len. (ft)	242.10	233.19	218.90
Crit W.S. (ft)	2168.11	Flow Area (sq ft)	13.19	21.01	3.23
E.G. Slope (ft/ft)	0.015632	Area (sq ft)	13.19	21.01	3.23
Q Total (cfs)	139.00	Flow (cfs)	35.57	97.25	6.18
Top Width (ft)	76.80	Top Width (ft)	36.96	20.96	18.88
Vel Total (ft/s)	3.71	Avg. Vel. (ft/s)	2.70	4.63	1.91
Max Chl Dpth (ft)	1.56	Hydr. Depth (ft)	0.36	1.00	0.17
Conv. Total (cfs)	1111.8	Conv. (cfs)	284.5	777.8	49.4
Length Wtd. (ft)	235.03	Wetted Per. (ft)	37.04	21.12	18.88
Min Ch El (ft)	2166.55	Shear (lb/sq ft)	0.35	0.97	0.17
Alpha	1.23	Stream Power (lb/ft s)	0.94	4.49	0.32
Frctn Loss (ft)	3.59	Cum Volume (acre-ft)	0.34	1.11	0.58
C & E Loss (ft)	0.03	Cum SA (acres)	1.12	1.30	1.70

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2168.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.035	0.040	0.030
W.S. Elev (ft)	2168.40	Reach Len. (ft)	242.10	233.19	218.90
Crit W.S. (ft)	2168.21	Flow Area (sq ft)	0.43	27.19	0.17
E.G. Slope (ft/ft)	0.013264	Area (sq ft)	0.43	27.19	0.17
Q Total (cfs)	139.00	Flow (cfs)	1.02	137.64	0.34
Top Width (ft)	22.00	Top Width (ft)	0.73	20.96	0.31
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)	2.37	5.06	1.97
Max Chl Dpth (ft)	1.85	Hydr. Depth (ft)	0.59	1.30	0.55
Conv. Total (cfs)	1206.9	Conv. (cfs)	8.9	1195.1	2.9
Length Wtd. (ft)	233.57	Wetted Per. (ft)	1.27	21.12	0.84
Min Ch El (ft)	2166.55	Shear (lb/sq ft)	0.28	1.07	0.17
Alpha	1.02	Stream Power (lb/ft s)	0.66	5.40	0.33
Frctn Loss (ft)	3.73	Cum Volume (acre-ft)	0.07	1.35	0.09
C & E Loss (ft)	0.00	Cum SA (acres)	0.16	1.30	0.20

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9945.46	9965.59	8.50	4.33	17.99	6.12	0.24	1.97
2	LOB	9965.59	9985.73	27.07	8.87	19.04	19.47	0.47	3.05
3	Chan	9985.73	9988.73	5.01	1.70	3.03	3.60	0.57	2.94
4	Chan	9988.73	9991.72	13.03	3.02	3.03	9.38	1.01	4.32
5	Chan	9991.72	9994.71	21.29	4.04	3.00	15.31	1.35	5.27
6	Chan	9994.71	9997.71	25.34	4.49	3.01	18.23	1.50	5.65
7	Chan	9997.71	10000.70	18.84	3.76	3.02	13.55	1.26	5.00
8	Chan	10000.70	10003.70	10.07	2.58	3.02	7.24	0.86	3.90
9	Chan	10003.70	10006.69	3.68	1.41	3.02	2.65	0.47	2.60
10	ROB	10006.69	10031.51	6.18	3.23	18.88	4.44	0.17	1.91

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 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9965.59	9985.73	1.02	0.43	1.27	0.73	0.59	2.37
2	Chan	9985.73	9988.73	9.53	2.58	3.03	6.85	0.86	3.69
3	Chan	9988.73	9991.72	18.94	3.90	3.03	13.62	1.30	4.85
4	Chan	9991.72	9994.71	28.04	4.92	3.00	20.17	1.64	5.69
5	Chan	9994.71	9997.71	32.39	5.37	3.01	23.30	1.79	6.03
6	Chan	9997.71	10000.70	25.36	4.65	3.02	18.24	1.55	5.46
7	Chan	10000.70	10003.70	15.57	3.47	3.02	11.20	1.16	4.49
8	Chan	10003.70	10006.69	7.83	2.29	3.02	5.63	0.77	3.41
9	ROB	10006.69	10031.51	0.34	0.17	0.84	0.24	0.55	1.97

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: X4B
REACH: Reach 1 RS: 0.315

INPUT
Description: Gaffney Road
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9887.333	2165.13	9891.753	2164.84	9897.433	2164.35	9898.903	2164.38	9904.633	2164.46
9904.963	2164.47	9905.103	2164.47	9917.203	2164.48	9920.343	2164.41	9925.133	2164.21
9934.213	2164.16	9936.553	2164.17	9961.303	2164.16	9968.673	2164.19	9970.713	2164.22
9978.473	2164.31	9979.483	2164.31	9988.88	2164.07	9988.883	2164.07	10003.59	2163.68
10005.62	2163.73	10020	2164.01	10024.9	2164.07	10030.3	2164.21	10032.42	2164.31
10037.13	2164.33	10044.38	2164.52	10058.5	2164.88	10059.72	2164.89	10068.83	2165.05

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9887.333	.035	9904.633	.039	9920.343	.035	9934.213	.039	9961.303	.035
10058.5	.03								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.88	10020	169.91	177.4	189.15	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2164.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.032	0.035	0.035
W.S. Elev (ft)	2164.49	Reach Len. (ft)	169.91	177.40	189.15
Crit W.S. (ft)	2164.49	Flow Area (sq ft)	21.42	19.65	5.94
E.G. Slope (ft/ft)	0.014930	Area (sq ft)	21.42	19.65	5.94
Q Total (cfs)	139.00	Flow (cfs)	51.58	75.04	12.38
Top Width (ft)	147.58	Top Width (ft)	93.11	31.12	23.35
Vel Total (ft/s)	2.96	Avg. Vel. (ft/s)	2.41	3.82	2.08
Max Chl Dpth (ft)	0.81	Hydr. Depth (ft)	0.23	0.63	0.25
Conv. Total (cfs)	1137.6	Conv. (cfs)	422.2	614.1	101.3
Length Wtd. (ft)	178.39	Wetted Per. (ft)	93.12	31.13	23.36
Min Ch El (ft)	2163.68	Shear (lb/sq ft)	0.21	0.59	0.24
Alpha	1.19	Stream Power (lb/ft s)	0.52	2.25	0.49
Frctn Loss (ft)	2.55	Cum Volume (acre-ft)	0.25	1.00	0.56
C & E Loss (ft)	0.00	Cum SA (acres)	0.76	1.16	1.59

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2165.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.035	0.035	
W.S. Elev (ft)	2164.67	Reach Len. (ft)	169.91	177.40	189.15
Crit W.S. (ft)	2164.67	Flow Area (sq ft)	3.08	25.11	
E.G. Slope (ft/ft)	0.019647	Area (sq ft)	3.08	25.11	
Q Total (cfs)	139.00	Flow (cfs)	11.32	127.68	
Top Width (ft)	37.00	Top Width (ft)	5.88	31.12	
Vel Total (ft/s)	4.93	Avg. Vel. (ft/s)	3.68	5.09	
Max Chl Dpth (ft)	0.99	Hydr. Depth (ft)	0.52	0.81	
Conv. Total (cfs)	991.7	Conv. (cfs)	80.8	910.9	
Length Wtd. (ft)	177.37	Wetted Per. (ft)	6.33	31.79	
Min Ch El (ft)	2163.68	Shear (lb/sq ft)	0.60	0.97	
Alpha	1.02	Stream Power (lb/ft s)	2.19	4.93	
Frctn Loss (ft)	3.76	Cum Volume (acre-ft)	0.06	1.21	0.09
C & E Loss (ft)	0.01	Cum SA (acres)	0.15	1.16	0.20

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9887.33	9907.64	0.74	0.80	11.88	0.53	0.07	0.93
2	LOB	9907.64	9927.95	3.39	2.01	20.31	2.44	0.10	1.68
3	LOB	9927.95	9948.26	17.82	6.56	20.31	12.82	0.32	2.72
4	LOB	9948.26	9968.57	18.00	6.63	20.31	12.95	0.33	2.72
5	LOB	9968.57	9988.88	11.62	5.42	20.31	8.36	0.27	2.14
6	Chan	9988.88	9993.33	6.74	2.14	4.45	4.85	0.48	3.14
7	Chan	9993.33	9997.77	9.71	2.67	4.45	6.98	0.60	3.64
8	Chan	9997.77	10002.22	13.09	3.19	4.45	9.42	0.72	4.10
9	Chan	10002.22	10006.66	15.10	3.48	4.45	10.86	0.78	4.34
10	Chan	10006.66	10011.11	12.54	3.11	4.45	9.02	0.70	4.03
11	Chan	10011.11	10015.55	10.06	2.73	4.45	7.24	0.61	3.69
12	Chan	10015.55	10020.00	7.81	2.34	4.45	5.62	0.53	3.34
13	ROB	10020.00	10029.77	9.72	3.97	9.77	6.99	0.41	2.45
14	ROB	10029.77	10039.53	2.55	1.78	9.77	1.83	0.18	1.43
15	ROB	10039.53	10049.30	0.12	0.19	3.82	0.08	0.05	0.60

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9968.57	9988.88	11.32	3.08	6.33	8.14	0.52	3.68
2	Chan	9988.88	9993.33	12.98	2.92	4.45	9.34	0.66	4.44
3	Chan	9993.33	9997.77	17.09	3.45	4.45	12.30	0.78	4.96
4	Chan	9997.77	10002.22	21.64	3.97	4.45	15.56	0.89	5.45
5	Chan	10002.22	10006.66	24.29	4.26	4.45	17.48	0.96	5.71
6	Chan	10006.66	10011.11	20.90	3.89	4.45	15.04	0.87	5.37
7	Chan	10011.11	10015.55	17.58	3.51	4.45	12.64	0.79	5.01
8	Chan	10015.55	10020.00	13.20	3.12	5.10	9.50	0.70	4.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X4B
REACH: Reach 1 RS: 0.281

INPUT
Description:
Station Elevation Data num= 41

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9905.71	2162	9909.28	2161.76	9920.52	2161.67	9970.74	2160.92	9971.65	2160.91
9975.39	2160.68	9975.46	2160.67	9985.78	2160.03	9992.49	2159.62	9996.03	2159.4
10004.65	2159.85	10009.91	2160.08	10016.11	2160.36	10024.04	2160.24	10042.37	2159.95
10047.47	2159.87	10049.88	2160.09	10052.16	2160.31	10059.87	2161.07	10060.91	2161.15
10065.84	2161.28	10067.69	2161.28	10070.19	2161.28	10072.05	2161.31	10072.79	2161.32
10074.95	2161.32	10092	2161.24	10092.43	2161.22	10092.87	2161.21	10100.86	2160.92
10104.65	2160.92	10105.83	2160.91	10108.21	2160.87	10115.9	2160.88	10122.48	2160.94
10128.97	2161.03	10130.61	2161.06	10138.55	2161.12	10141.67	2161.12	10142.29	2161.13
10145.11	2161.16								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9905.71	.05	9985.78	.04	10009.91	.05	10059.87	.04	10105.83	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.78	10009.91	87	88.27	90	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2160.82	Element			
Vel Head (ft)	0.18	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2160.64	Reach Len. (ft)	87.00	88.27	90.00
Crit W.S. (ft)	2160.55	Flow Area (sq ft)	2.95	21.64	21.93
E.G. Slope (ft/ft)	0.013723	Area (sq ft)	2.95	21.64	21.93
Q Total (cfs)	139.00	Flow (cfs)	4.63	87.51	46.86
Top Width (ft)	79.44	Top Width (ft)	9.76	24.13	45.55
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)	1.57	4.04	2.14
Max Chl Dpth (ft)	1.24	Hydr. Depth (ft)	0.30	0.90	0.48
Conv. Total (cfs)	1186.6	Conv. (cfs)	39.5	747.0	400.1

Length Wtd. (ft)	88.60	Wetted Per. (ft)	9.78	24.17	45.60
Min Ch El (ft)	2159.40	Shear (lb/sq ft)	0.26	0.77	0.41
Alpha	1.33	Stream Power (lb/ft s)	0.41	3.10	0.88
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)	0.20	0.92	0.50
C & E Loss (ft)	0.00	Cum SA (acres)	0.56	1.05	1.44

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2161.17	Element			
Vel Head (ft)	0.45	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2160.72	Reach Len. (ft)	87.00	88.27	90.00
Crit W.S. (ft)	2160.72	Flow Area (sq ft)	0.52	23.58	2.64
E.G. Slope (ft/ft)	0.022945	Area (sq ft)	0.52	23.58	2.64
Q Total (cfs)	139.00	Flow (cfs)	1.18	130.54	7.28
Top Width (ft)	30.00	Top Width (ft)	0.78	24.13	5.09
Vel Total (ft/s)	5.20	Avg. Vel. (ft/s)	2.29	5.54	2.76
Max Chl Dpth (ft)	1.32	Hydr. Depth (ft)	0.66	0.98	0.52
Conv. Total (cfs)	917.6	Conv. (cfs)	7.8	861.8	48.0
Length Wtd. (ft)	88.31	Wetted Per. (ft)	1.42	24.17	5.50
Min Ch El (ft)	2159.40	Shear (lb/sq ft)	0.52	1.40	0.69
Alpha	1.08	Stream Power (lb/ft s)	1.19	7.74	1.90
Frctn Loss (ft)	1.58	Cum Volume (acre-ft)	0.06	1.11	0.08
C & E Loss (ft)	0.08	Cum SA (acres)	0.13	1.05	0.19

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.77	9985.78	4.63	2.95	9.78	3.33	0.30	1.57
2	Chan	9985.78	9989.23	8.28	2.45	3.45	5.96	0.71	3.38
3	Chan	9989.23	9992.68	12.76	3.18	3.45	9.18	0.92	4.02
4	Chan	9992.68	9996.12	18.04	3.91	3.45	12.98	1.13	4.62
5	Chan	9996.12	9999.57	18.22	3.93	3.45	13.11	1.14	4.64
6	Chan	9999.57	10003.02	13.69	3.31	3.45	9.85	0.96	4.13
7	Chan	10003.02	10006.46	9.77	2.70	3.45	7.03	0.78	3.61
8	Chan	10006.46	10009.91	6.74	2.16	3.45	4.85	0.63	3.12
9	ROB	10009.91	10036.95	22.90	11.64	27.05	16.47	0.43	1.97
10	ROB	10036.95	10063.99	23.97	10.29	18.55	17.24	0.56	2.33

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.77	9985.78	1.18	0.52	1.42	0.85	0.66	2.29
2	Chan	9985.78	9989.23	12.85	2.73	3.45	9.24	0.79	4.71
3	Chan	9989.23	9992.68	19.04	3.45	3.45	13.70	1.00	5.52
4	Chan	9992.68	9996.12	26.24	4.19	3.45	18.88	1.21	6.27
5	Chan	9996.12	9999.57	26.49	4.21	3.45	19.06	1.22	6.30
6	Chan	9999.57	10003.02	20.31	3.59	3.45	14.61	1.04	5.66
7	Chan	10003.02	10006.46	14.91	2.98	3.45	10.73	0.86	5.00
8	Chan	10006.46	10009.91	10.70	2.44	3.45	7.69	0.71	4.38
9	ROB	10009.91	10036.95	7.28	2.64	5.50	5.24	0.52	2.76

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: X4B
REACH: Reach 1 RS: 0.264

INPUT
Description:
Station Elevation Data num= 16

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9960.19  2159.8 9982.18 2159.43    99932159.06810008.192158.561   10016  2158.3
10033.55  2158.6 10034.4 2157.3810035.44 2157.2710036.92 2158.4910040.192158.588
   100452158.73210054.95 2159.0310074.25 2159.1810093.54 2159.3410111.81 2159.47
10135.09 2159.55
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
 9960.19    .045    9993    .045   10045    .045
```

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

```
          9993   10045              157  153.86     124              .1       .3
```

Ineffective Flow num= 1

```
   Sta L   Sta R    Elev  Permanent
10100.1910135.09              F
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2159.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.045	0.045	0.045
W.S. Elev (ft)	2159.24	Reach Len. (ft)	157.00	153.86	124.00
Crit W.S. (ft)	2159.15	Flow Area (sq ft)	0.45	36.86	6.44
E.G. Slope (ft/ft)	0.018432	Area (sq ft)	0.45	36.86	6.44
Q Total (cfs)	139.00	Flow (cfs)	0.39	129.55	9.06
Top Width (ft)	93.81	Top Width (ft)	5.18	52.00	36.63
Vel Total (ft/s)	3.18	Avg. Vel. (ft/s)	0.88	3.51	1.41
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)	0.09	0.71	0.18
Conv. Total (cfs)	1023.8	Conv. (cfs)	2.9	954.2	66.7
Length Wtd. (ft)	150.42	Wetted Per. (ft)	5.18	53.10	36.64
Min Ch El (ft)	2157.27	Shear (lb/sq ft)	0.10	0.80	0.20
Alpha	1.15	Stream Power (lb/ft s)	0.09	2.81	0.28
Frctn Loss (ft)	3.49	Cum Volume (acre-ft)	0.20	0.86	0.47
C & E Loss (ft)	0.01	Cum SA (acres)	0.54	0.97	1.36

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2159.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.		0.045	
W.S. Elev (ft)	2159.33	Reach Len. (ft)	157.00	153.86	124.00
Crit W.S. (ft)	2159.14	Flow Area (sq ft)		41.68	
E.G. Slope (ft/ft)	0.014391	Area (sq ft)		41.68	
Q Total (cfs)	139.00	Flow (cfs)		139.00	
Top Width (ft)	52.00	Top Width (ft)		52.00	
Vel Total (ft/s)	3.33	Avg. Vel. (ft/s)		3.33	
Max Chl Dpth (ft)	2.06	Hydr. Depth (ft)		0.80	
Conv. Total (cfs)	1158.7	Conv. (cfs)		1158.7	
Length Wtd. (ft)	153.86	Wetted Per. (ft)		53.97	
Min Ch El (ft)	2157.27	Shear (lb/sq ft)		0.69	
Alpha	1.00	Stream Power (lb/ft s)		2.31	
Frctn Loss (ft)	3.27	Cum Volume (acre-ft)	0.06	1.04	0.08
C & E Loss (ft)	0.02	Cum SA (acres)	0.13	0.97	0.19

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.44	9993.00	0.39	0.45	5.18	0.28	0.09	0.88
2	Chan	9993.00	10000.43	4.20	2.21	7.43	3.02	0.30	1.90
3	Chan	10000.43	10007.86	11.54	4.05	7.43	8.30	0.55	2.85
4	Chan	10007.86	10015.29	21.56	5.89	7.43	15.51	0.79	3.66
5	Chan	10015.29	10022.71	26.03	6.60	7.43	18.73	0.89	3.95
6	Chan	10022.71	10030.14	20.21	5.67	7.43	14.54	0.76	3.57
7	Chan	10030.14	10037.57	31.69	7.84	8.51	22.80	1.06	4.04
8	Chan	10037.57	10045.00	14.32	4.61	7.43	10.30	0.62	3.11
9	ROB	10045.00	10063.40	8.16	5.09	18.40	5.87	0.28	1.60
10	ROB	10063.40	10081.79	0.90	1.35	18.23	0.65	0.07	0.67

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9993.00	10000.43	5.74	2.90	7.70	4.13	0.39	1.98
2	Chan	10000.43	10007.86	13.34	4.74	7.43	9.60	0.64	2.82
3	Chan	10007.86	10015.29	23.07	6.58	7.43	16.60	0.89	3.51
4	Chan	10015.29	10022.71	27.34	7.29	7.43	19.67	0.98	3.75
5	Chan	10022.71	10030.14	21.78	6.36	7.43	15.67	0.86	3.43
6	Chan	10030.14	10037.57	32.46	8.53	8.51	23.35	1.15	3.81
7	Chan	10037.57	10045.00	15.26	5.30	8.03	10.98	0.71	2.88

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: X4B
REACH: Reach 1 RS: 0.235

INPUT
Description: Geometry Data updated per 12/8/06 survey by FCDMC
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9941.65	2156.63	9962.02	2155.77	9981.65	2155.047	9982.65	2155.01	9996.81	2155.09
9997.74	2154.47	10000.69	2154.51	10001.11	2155.02	10006.9	2154.92	10013.65	2155.045
10027.87	2155.31	10049.56	2155.8	10073.6	2156.17	10095.49	2157.24	10125.29	2156.92
10155.38	2156.28	10176.02	2156.54	10204.12	2157.44	10226.73	2157.96		

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9941.65    .055 9981.65    .04510013.65     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9981.6510013.65              215  219.49     227            .1        .3
Ineffective Flow      num=       1
   Sta L   Sta R    Elev  Permanent
10097.6510159.65    2160       T
```

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2155.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2155.67	Reach Len. (ft)	215.00	219.49	227.00
Crit W.S. (ft)	2155.67	Flow Area (sq ft)	5.27	22.82	9.88
E.G. Slope (ft/ft)	0.030115	Area (sq ft)	5.27	22.82	9.88
Q Total (cfs)	139.00	Flow (cfs)	11.36	103.42	24.22
Top Width (ft)	79.10	Top Width (ft)	16.93	32.00	30.17
Vel Total (ft/s)	3.66	Avg. Vel. (ft/s)	2.15	4.53	2.45
Max Chl Dpth (ft)	1.20	Hydr. Depth (ft)	0.31	0.71	0.33
Conv. Total (cfs)	801.0	Conv. (cfs)	65.5	596.0	139.6
Length Wtd. (ft)	219.86	Wetted Per. (ft)	16.94	32.43	30.18
Min Ch El (ft)	2154.47	Shear (lb/sq ft)	0.59	1.32	0.62
Alpha	1.25	Stream Power (lb/ft s)	1.26	6.00	1.51
Frctn Loss (ft)	4.49	Cum Volume (acre-ft)	0.19	0.76	0.45
C & E Loss (ft)	0.00	Cum SA (acres)	0.50	0.82	1.26

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2156.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.		0.045	
W.S. Elev (ft)	2155.79	Reach Len. (ft)	215.00	219.49	227.00
Crit W.S. (ft)	2155.79	Flow Area (sq ft)		26.64	
E.G. Slope (ft/ft)	0.034438	Area (sq ft)		26.64	
Q Total (cfs)	139.00	Flow (cfs)		139.00	
Top Width (ft)	32.00	Top Width (ft)		32.00	
Vel Total (ft/s)	5.22	Avg. Vel. (ft/s)		5.22	
Max Chl Dpth (ft)	1.32	Hydr. Depth (ft)		0.83	
Conv. Total (cfs)	749.0	Conv. (cfs)		749.0	
Length Wtd. (ft)	219.38	Wetted Per. (ft)		33.92	
Min Ch El (ft)	2154.47	Shear (lb/sq ft)		1.69	
Alpha	1.00	Stream Power (lb/ft s)		8.81	
Frctn Loss (ft)	5.15	Cum Volume (acre-ft)	0.06	0.92	0.08
C & E Loss (ft)	0.04	Cum SA (acres)	0.13	0.82	0.19

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9957.65	9965.65	0.00	0.02	0.93	0.00	0.02	0.27
2	LOB	9965.65	9973.65	1.90	1.45	8.01	1.36	0.18	1.31
3	LOB	9973.65	9981.65	9.46	3.81	8.01	6.81	0.48	2.49
4	Chan	9981.65	9986.22	12.60	2.96	4.57	9.07	0.65	4.25
5	Chan	9986.22	9990.79	11.92	2.87	4.57	8.58	0.63	4.16
6	Chan	9990.79	9995.36	11.11	2.75	4.57	8.00	0.60	4.04
7	Chan	9995.36	9999.94	22.60	4.28	4.76	16.26	0.94	5.28
8	Chan	9999.94	10004.51	16.59	3.57	4.81	11.94	0.78	4.65
9	Chan	10004.51	10009.08	15.36	3.34	4.57	11.05	0.73	4.60
10	Chan	10009.08	10013.65	13.24	3.05	4.57	9.52	0.67	4.34
11	ROB	10013.65	10055.65	24.22	9.88	30.18	17.42	0.33	2.45

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9981.65	9986.22	16.12	3.51	5.31	11.60	0.77	4.59
2	Chan	9986.22	9990.79	17.01	3.41	4.57	12.24	0.75	4.98
3	Chan	9990.79	9995.36	16.04	3.30	4.57	11.54	0.72	4.87
4	Chan	9995.36	9999.94	29.47	4.82	4.76	21.20	1.06	6.11

5	Chan	9999.94	10004.51	22.45	4.12	4.81	16.15	0.90	5.45
6	Chan	10004.51	10009.08	21.10	3.88	4.57	15.18	0.85	5.43
7	Chan	10009.08	10013.65	16.80	3.60	5.32	12.09	0.79	4.67

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: X4B
REACH: Reach 1 RS: 0.194

INPUT
Description: Geometry Data updated per 12/8/06 survey by FCDMC
Station Elevation Data num= 11

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9913.6  2151.7 9934.63  2151.2 9962.49 2150.74 9981.82 2150.1910000.19 2149.42
10016.14 2150.5610043.69 2150.8310070.49  2150.810099.68 2150.8910125.96 2151.55
10146.55 2152.03
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
  9913.6     .05 9981.82     .0410016.14     .05
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9981.8210016.14 163 184.99 170 .1 .3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2151.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2150.78	Reach Len. (ft)	163.00	184.99	170.00
Crit W.S. (ft)	2150.72	Flow Area (sq ft)	6.17	30.56	2.50
E.G. Slope (ft/ft)	0.014731	Area (sq ft)	6.17	30.56	2.50
Q Total (cfs)	139.00	Flow (cfs)	9.57	127.36	2.07
Top Width (ft)	78.72	Top Width (ft)	21.83	34.32	22.57
Vel Total (ft/s)	3.54	Avg. Vel. (ft/s)	1.55	4.17	0.83
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)	0.28	0.89	0.11
Conv. Total (cfs)	1145.3	Conv. (cfs)	78.9	1049.3	17.1
Length Wtd. (ft)	181.78	Wetted Per. (ft)	21.84	34.38	22.57
Min Ch El (ft)	2149.42	Shear (lb/sq ft)	0.26	0.82	0.10
Alpha	1.28	Stream Power (lb/ft s)	0.40	3.41	0.08
Frctn Loss (ft)	3.23	Cum Volume (acre-ft)	0.16	0.62	0.41
C & E Loss (ft)	0.01	Cum SA (acres)	0.41	0.66	1.12

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2151.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2150.75	Reach Len. (ft)	163.00	184.99	170.00
Crit W.S. (ft)	2150.72	Flow Area (sq ft)	5.48	29.42	1.81
E.G. Slope (ft/ft)	0.017018	Area (sq ft)	5.48	29.42	1.81
Q Total (cfs)	139.00	Flow (cfs)	9.01	128.54	1.45
Top Width (ft)	73.36	Top Width (ft)	19.83	34.32	19.21
Vel Total (ft/s)	3.79	Avg. Vel. (ft/s)	1.64	4.37	0.80
Max Chl Dpth (ft)	1.33	Hydr. Depth (ft)	0.28	0.86	0.09
Conv. Total (cfs)	1065.5	Conv. (cfs)	69.0	985.4	11.1
Length Wtd. (ft)	183.84	Wetted Per. (ft)	19.84	34.38	19.21
Min Ch El (ft)	2149.42	Shear (lb/sq ft)	0.29	0.91	0.10
Alpha	1.24	Stream Power (lb/ft s)	0.48	3.97	0.08
Frctn Loss (ft)	3.03	Cum Volume (acre-ft)	0.04	0.78	0.08
C & E Loss (ft)	0.01	Cum SA (acres)	0.08	0.66	0.14

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9954.53	9968.18	0.47	0.75	8.19	0.34	0.09	0.63
2	LOB	9968.18	9981.82	9.10	5.42	13.65	6.55	0.40	1.68
3	Chan	9981.82	9986.72	11.37	3.40	4.91	8.18	0.69	3.34
4	Chan	9986.72	9991.63	17.53	4.41	4.91	12.61	0.90	3.97
5	Chan	9991.63	9996.53	24.69	5.42	4.91	17.77	1.11	4.56
6	Chan	9996.53	10001.43	32.07	6.34	4.91	23.07	1.29	5.06
7	Chan	10001.43	10006.33	24.38	5.38	4.91	17.54	1.10	4.53
8	Chan	10006.33	10011.24	12.84	3.66	4.92	9.24	0.75	3.51
9	Chan	10011.24	10016.14	4.47	1.94	4.91	3.21	0.40	2.30
10	ROB	10016.14	10042.22	2.07	2.50	22.57	1.49	0.11	0.83

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)

1	LOB	9954.53	9968.18	0.33	0.51	6.19	0.24	0.08	0.65
2	LOB	9968.18	9981.82	8.68	4.97	13.65	6.24	0.36	1.75
3	Chan	9981.82	9986.72	11.23	3.24	4.91	8.08	0.66	3.46
4	Chan	9986.72	9991.63	17.63	4.25	4.91	12.68	0.87	4.15
5	Chan	9991.63	9996.53	25.13	5.26	4.91	18.08	1.07	4.78
6	Chan	9996.53	10001.43	32.88	6.18	4.91	23.65	1.26	5.32
7	Chan	10001.43	10006.33	24.80	5.22	4.91	17.84	1.06	4.75
8	Chan	10006.33	10011.24	12.75	3.50	4.92	9.17	0.71	3.64
9	Chan	10011.24	10016.14	4.14	1.78	4.91	2.98	0.36	2.32
10	ROB	10016.14	10042.22	1.45	1.81	19.21	1.04	0.09	0.80

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: X4B
REACH: Reach 1 RS: 0.159

INPUT
Description: Geometry Data updated per 12/8/06 survey by FCDMC
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9824.01	2149	9861.6	2149.56	9944.81	2149.56	9959.6	2147.05	9978.89	2147.18
9999.9	2146.66	10017.63	2147.11	10036.78	2147.48	10049.77	2148.38	10189.85	2149.1

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9824.01	.05	9978.89	.04	10017.63	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.89	10017.63	70	74.98	60	.1	.3

Blocked Obstructions num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9844.01	9938.01	2156	10052.01	10126.01	2156

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2147.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2147.56	Reach Len. (ft)	70.00	74.98	60.00
Crit W.S. (ft)	2147.55	Flow Area (sq ft)	9.44	25.57	5.20
E.G. Slope (ft/ft)	0.021869	Area (sq ft)	9.44	25.57	5.20
Q Total (cfs)	139.00	Flow (cfs)	23.34	106.46	9.20
Top Width (ft)	81.42	Top Width (ft)	22.32	38.74	20.36
Vel Total (ft/s)	3.46	Avg. Vel. (ft/s)	2.47	4.16	1.77
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)	0.42	0.66	0.26
Conv. Total (cfs)	939.9	Conv. (cfs)	157.8	719.9	62.2
Length Wtd. (ft)	72.13	Wetted Per. (ft)	22.36	38.75	20.37
Min Ch El (ft)	2146.66	Shear (lb/sq ft)	0.58	0.90	0.35
Alpha	1.21	Stream Power (lb/ft s)	1.43	3.75	0.62
Frctn Loss (ft)	1.48	Cum Volume (acre-ft)	0.13	0.50	0.40
C & E Loss (ft)	0.03	Cum SA (acres)	0.33	0.50	1.04

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2147.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2147.73	Reach Len. (ft)	70.00	74.98	60.00
Crit W.S. (ft)		Flow Area (sq ft)	1.06	32.17	1.43
E.G. Slope (ft/ft)	0.015977	Area (sq ft)	1.06	32.17	1.43
Q Total (cfs)	139.00	Flow (cfs)	2.27	133.43	3.30
Top Width (ft)	43.00	Top Width (ft)	1.89	38.74	2.37
Vel Total (ft/s)	4.01	Avg. Vel. (ft/s)	2.14	4.15	2.31
Max Chl Dpth (ft)	1.07	Hydr. Depth (ft)	0.56	0.83	0.60
Conv. Total (cfs)	1099.7	Conv. (cfs)	18.0	1055.6	26.1
Length Wtd. (ft)	74.50	Wetted Per. (ft)	2.46	38.75	2.95
Min Ch El (ft)	2146.66	Shear (lb/sq ft)	0.43	0.83	0.48
Alpha	1.04	Stream Power (lb/ft s)	0.92	3.43	1.12
Frctn Loss (ft)	1.52	Cum Volume (acre-ft)	0.03	0.65	0.07
C & E Loss (ft)	0.00	Cum SA (acres)	0.04	0.50	0.09

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9947.91	9978.89	23.34	9.44	22.36	16.79	0.42	2.47
2	Chan	9978.89	9984.42	7.92	2.50	5.54	5.70	0.45	3.16
3	Chan	9984.42	9989.96	12.30	3.26	5.54	8.85	0.59	3.77
4	Chan	9989.96	9995.49	17.43	4.02	5.54	12.54	0.73	4.33
5	Chan	9995.49	10001.03	22.99	4.75	5.54	16.54	0.86	4.84
6	Chan	10001.03	10006.56	20.69	4.46	5.54	14.88	0.81	4.64
7	Chan	10006.56	10012.10	15.03	3.68	5.54	10.81	0.66	4.09
8	Chan	10012.10	10017.63	10.12	2.90	5.54	7.28	0.52	3.49
9	ROB	10017.63	10052.07	9.20	5.20	20.37	6.62	0.26	1.77

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9947.91	9978.89	2.27	1.06	2.46	1.63	0.56	2.14
2	Chan	9978.89	9984.42	11.63	3.45	5.54	8.37	0.62	3.37
3	Chan	9984.42	9989.96	16.19	4.21	5.54	11.65	0.76	3.85
4	Chan	9989.96	9995.49	21.35	4.96	5.54	15.36	0.90	4.30
5	Chan	9995.49	10001.03	26.81	5.69	5.54	19.29	1.03	4.71
6	Chan	10001.03	10006.56	24.56	5.40	5.54	17.67	0.98	4.55
7	Chan	10006.56	10012.10	18.95	4.62	5.54	13.63	0.84	4.10
8	Chan	10012.10	10017.63	13.94	3.84	5.54	10.03	0.69	3.63
9	ROB	10017.63	10052.07	3.30	1.43	2.95	2.37	0.60	2.31

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: X4B
REACH: Reach 1 RS: 0.144

INPUT
Description: Geometry Data updated per 12/8/06 survey by FCDMC
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9875.24	2147.22	9888.04	2147.17	9924.3	2146.6	9957.91	2145.91	9975.24	2145.678
9993.82	2145.43	10000	2145.22	10002.37	2145.72	10025.24	2145.77	10043.54	2145.81
10086.18	2145.99	10108.55	2147.12	10145.39	2148.85	10161.21	2146.96	10188	2146.48
10239.7	2146.98								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9875.24	.05	9975.24	.04	10025.24	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9975.24 10025.24 170.69 178.73 185.63 .1 .3
Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
10126	10239.7		F

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2146.30	Element			
Vel Head (ft)	0.14	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2146.16	Reach Len. (ft)	170.69	178.73	185.63
Crit W.S. (ft)	2146.13	Flow Area (sq ft)	7.77	27.38	17.93
E.G. Slope (ft/ft)	0.019196	Area (sq ft)	7.77	27.38	17.93
Q Total (cfs)	139.00	Flow (cfs)	13.19	94.27	31.53
Top Width (ft)	143.59	Top Width (ft)	29.35	50.00	64.24
Vel Total (ft/s)	2.62	Avg. Vel. (ft/s)	1.70	3.44	1.76
Max Chl Dpth (ft)	0.94	Hydr. Depth (ft)	0.26	0.55	0.28
Conv. Total (cfs)	1003.3	Conv. (cfs)	95.2	680.4	227.6
Length Wtd. (ft)	179.19	Wetted Per. (ft)	29.35	50.06	64.24
Min Ch El (ft)	2145.22	Shear (lb/sq ft)	0.32	0.66	0.33
Alpha	1.31	Stream Power (lb/ft s)	0.54	2.26	0.59
Frctn Loss (ft)	3.54	Cum Volume (acre-ft)	0.11	0.46	0.38
C & E Loss (ft)	0.00	Cum SA (acres)	0.28	0.42	0.98

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2146.46	Element			
Vel Head (ft)	0.27	Wt. n-Val.	0.050	0.040	0.050
W.S. Elev (ft)	2146.20	Reach Len. (ft)	170.69	178.73	185.63
Crit W.S. (ft)	2146.20	Flow Area (sq ft)	4.60	29.31	0.32
E.G. Slope (ft/ft)	0.027101	Area (sq ft)	4.60	29.31	0.32
Q Total (cfs)	139.00	Flow (cfs)	12.87	125.47	0.66
Top Width (ft)	61.00	Top Width (ft)	10.24	50.00	0.76
Vel Total (ft/s)	4.06	Avg. Vel. (ft/s)	2.80	4.28	2.06
Max Chl Dpth (ft)	0.98	Hydr. Depth (ft)	0.45	0.59	0.42
Conv. Total (cfs)	844.4	Conv. (cfs)	78.1	762.2	4.0
Length Wtd. (ft)	178.38	Wetted Per. (ft)	10.62	50.06	1.18
Min Ch El (ft)	2145.22	Shear (lb/sq ft)	0.73	0.99	0.46
Alpha	1.05	Stream Power (lb/ft s)	2.05	4.24	0.95
Frctn Loss (ft)	3.48	Cum Volume (acre-ft)	0.03	0.60	0.07
C & E Loss (ft)	0.03	Cum SA (acres)	0.03	0.42	0.09

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9935.24	9955.24	0.70	0.90	9.35	0.50	0.10	0.78
2	LOB	9955.24	9975.24	12.49	6.87	20.00	8.99	0.34	1.82
3	Chan	9975.24	9982.38	12.21	3.76	7.14	8.79	0.53	3.25
4	Chan	9982.38	9989.53	16.12	4.44	7.14	11.60	0.62	3.63
5	Chan	9989.53	9996.67	21.00	5.21	7.14	15.10	0.73	4.03
6	Chan	9996.67	10003.81	20.77	5.19	7.20	14.94	0.73	4.00
7	Chan	10003.81	10010.95	8.57	3.04	7.14	6.17	0.43	2.82
8	Chan	10010.95	10018.10	8.06	2.93	7.14	5.80	0.41	2.75
9	Chan	10018.10	10025.24	7.55	2.82	7.14	5.43	0.39	2.68
10	ROB	10025.24	10075.62	28.81	15.66	50.38	20.73	0.31	1.84
11	ROB	10075.62	10126.00	2.73	2.27	13.86	1.96	0.16	1.20

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9955.24	9975.24	12.87	4.60	10.62	9.26	0.45	2.80
2	Chan	9975.24	9982.38	16.39	4.04	7.14	11.79	0.57	4.06
3	Chan	9982.38	9989.53	21.26	4.72	7.14	15.30	0.66	4.51
4	Chan	9989.53	9996.67	27.30	5.48	7.14	19.64	0.77	4.98
5	Chan	9996.67	10003.81	27.01	5.46	7.20	19.43	0.76	4.94
6	Chan	10003.81	10010.95	11.82	3.32	7.14	8.50	0.46	3.56
7	Chan	10010.95	10018.10	11.17	3.21	7.14	8.03	0.45	3.48
8	Chan	10018.10	10025.24	10.52	3.09	7.14	7.57	0.43	3.40
9	ROB	10025.24	10075.62	0.66	0.32	1.18	0.48	0.42	2.06

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: X4B
REACH: Reach 1 RS: 0.111

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9913.122	2143.269	9930.372	2142.949	9932.052	2142.919	9937.952	2142.889	9939.122	2142.86
9957.262	2142.469	9960.062	2142.469	9963.522	2142.479	9970.252	2142.349	9971.992	2142.32
9978.152	2142.279	9983.152	2142.239	9983.562	2142.239	9983.692	2142.239	9984.502	2142.18
9993.342	2141.849	9995.972	2141.879	9997.782	2141.891	0009.28	2141.861	0012.71	2141.78
10017.09	2141.841	0020.54	2141.941	0037.36	2142.4	10040.3	2142.491	0040.93	2142.51
10041.29	2142.521	0041.36	2142.521	0043.87	2142.491	0046.57	2142.461	0046.98	2142.47
10047.27	2142.49	10052.7	2142.491	0124.88	2142.431	0127.28	2142.42	10140.3	2142.6
10143.25	2142.611	0152.29	2142.791	0153.71	2142.831	0155.89	2142.871	0158.05	2142.94

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9913.122	.05	9983.152	.04	5100 37.36	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.15	10037.36	112.56	116.71	97.97	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2142.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.050	0.045	0.055
W.S. Elev (ft)	2142.61	Reach Len. (ft)	112.56	116.71	97.97
Crit W.S. (ft)	2142.61	Flow Area (sq ft)	6.91	33.48	14.14
E.G. Slope (ft/ft)	0.020324	Area (sq ft)	6.91	33.48	14.14
Q Total (cfs)	139.00	Flow (cfs)	10.42	114.25	14.33
Top Width (ft)	191.38	Top Width (ft)	32.51	54.21	104.67
Vel Total (ft/s)	2.55	Avg. Vel. (ft/s)	1.51	3.41	1.01
Max Chl Dpth (ft)	0.83	Hydr. Depth (ft)	0.21	0.62	0.14
Conv. Total (cfs)	975.0	Conv. (cfs)	73.1	801.4	100.5
Length Wtd. (ft)	107.50	Wetted Per. (ft)	32.51	54.23	104.67
Min Ch El (ft)	2141.78	Shear (lb/sq ft)	0.27	0.78	0.17
Alpha	1.52	Stream Power (lb/ft s)	0.41	2.67	0.17
Frctn Loss (ft)	2.09	Cum Volume (acre-ft)	0.09	0.33	0.31
C & E Loss (ft)	0.01	Cum SA (acres)	0.16	0.21	0.62

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2142.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.050	0.045	0.055

W.S. Elev (ft)	2142.75	Reach Len. (ft)	112.56	116.71	97.97
Crit W.S. (ft)	2142.57	Flow Area (sq ft)	0.08	41.44	0.22
E.G. Slope (ft/ft)	0.014695	Area (sq ft)	0.08	41.44	0.22
Q Total (cfs)	139.00	Flow (cfs)	0.07	138.66	0.27
Top Width (ft)	55.00	Top Width (ft)	0.15	54.21	0.64
Vel Total (ft/s)	3.33	Avg. Vel. (ft/s)	0.87	3.35	1.21
Max Chl Dpth (ft)	0.97	Hydr. Depth (ft)	0.52	0.76	0.34
Conv. Total (cfs)	1146.7	Conv. (cfs)	0.6	1143.9	2.2
Length Wtd. (ft)	114.07	Wetted Per. (ft)	0.67	54.23	0.97
Min Ch El (ft)	2141.78	Shear (lb/sq ft)	0.11	0.70	0.21
Alpha	1.01	Stream Power (lb/ft s)	0.09	2.35	0.25
Frctn Loss (ft)	1.85	Cum Volume (acre-ft)	0.02	0.45	0.07
C & E Loss (ft)	0.01	Cum SA (acres)	0.01	0.21	0.09

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9941.13	9955.14	0.11	0.22	4.50	0.08	0.05	0.51
2	LOB	9955.14	9969.15	2.47	2.23	14.01	1.77	0.16	1.11
3	LOB	9969.15	9983.15	7.84	4.46	14.01	5.64	0.32	1.76
4	Chan	9983.15	9990.90	11.86	4.04	7.75	8.54	0.52	2.94
5	Chan	9990.90	9998.64	20.85	5.66	7.75	15.00	0.73	3.68
6	Chan	9998.64	10006.38	20.72	5.64	7.74	14.90	0.73	3.67
7	Chan	10006.38	10014.13	22.98	6.00	7.74	16.53	0.78	3.83
8	Chan	10014.13	10021.87	20.85	5.66	7.75	15.00	0.73	3.68
9	Chan	10021.87	10029.62	11.95	4.06	7.75	8.60	0.52	2.95
10	Chan	10029.62	10037.36	5.04	2.42	7.75	3.63	0.31	2.09
11	ROB	10037.36	10061.50	2.73	2.96	24.14	1.96	0.12	0.92
12	ROB	10061.50	10085.64	3.13	3.22	24.14	2.25	0.13	0.97
13	ROB	10085.64	10109.77	3.96	3.70	24.14	2.85	0.15	1.07
14	ROB	10109.77	10133.91	4.37	3.93	24.14	3.14	0.16	1.11
15	ROB	10133.91	10158.05	0.14	0.32	8.11	0.10	0.04	0.44

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.15	9983.15	0.07	0.08	0.67	0.05	0.52	0.87
2	Chan	9983.15	9990.90	15.46	5.18	7.75	11.12	0.67	2.99
3	Chan	9990.90	9998.64	24.37	6.80	7.75	17.53	0.88	3.58
4	Chan	9998.64	10006.38	24.24	6.78	7.74	17.44	0.88	3.58
5	Chan	10006.38	10014.13	26.43	7.14	7.74	19.01	0.92	3.70
6	Chan	10014.13	10021.87	24.36	6.80	7.75	17.53	0.88	3.58
7	Chan	10021.87	10029.62	15.55	5.19	7.75	11.19	0.67	2.99
8	Chan	10029.62	10037.36	8.26	3.55	7.75	5.94	0.46	2.32
9	ROB	10037.36	10061.50	0.27	0.22	0.97	0.19	0.34	1.21

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: X4B
REACH: Reach 1 RS: 0.088

INPUT
Description:
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9952.77	2140.5	9955.15	2140.42	9961.66	2140.26	9970.07	2140.01	9979.33	2139.96
9983.92	2139.9	9991.38	2139.69	9992.03	2139.63	9997.12	2139.8	10001.82	2139.94
10017.06	2140.3	10019.01	2140.34	10025.24	2140.58	10030.48	2140.58	10033.64	2140.49
10044.07	2140.4	10045.31	2140.43	10045.78	2140.43	10060.11	2140.44	10090.74	2140.41
10097.42	2140.4	10099.3	2140.36	10102.59	2140.23	10107.51	2140.01	10107.87	2140
10119.08	2139.9	10123.07	2139.93	10131.22	2139.92	10137.15	2139.88	10141.22	2139.85
10143.74	2139.9	10145.59	2139.88	10153.07	2139.93	10153.25	2139.92	10153.47	2139.9
10158.75	2139.4	10160.65	2139.25	10161.68	2139.15	10162.59	2139.16	10163.26	2139.16
10163.78	2139.2	10172.21	2139.41	10172.37	2139.42	10181.96	2139.69	10188.4	2139.64
10189.96	2139.6	10192.58	2139.77	10194.21	2139.87	10195.7	2140.01	10218.43	2140.5
10251.84	2140.9								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9952.77	.05	9979.33	.045	10001.82	.05	10119.08	.05	10153.25	.04
10194.21	.055								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.33	10001.82	186.83	181.89	164.53	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2140.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.050	0.045	0.042
W.S. Elev (ft)	2140.16	Reach Len. (ft)	186.83	181.89	164.53
Crit W.S. (ft)	2140.13	Flow Area (sq ft)	2.05	7.77	40.13
E.G. Slope (ft/ft)	0.018668	Area (sq ft)	2.05	7.77	40.13
Q Total (cfs)	139.00	Flow (cfs)	2.27	17.25	119.47
Top Width (ft)	145.16	Top Width (ft)	14.43	22.49	108.24
Vel Total (ft/s)	2.78	Avg. Vel. (ft/s)	1.11	2.22	2.98
Max Chl Dpth (ft)	1.01	Hydr. Depth (ft)	0.14	0.35	0.37
Conv. Total (cfs)	1017.3	Conv. (cfs)	16.6	126.3	874.4
Length Wtd. (ft)	169.65	Wetted Per. (ft)	14.44	22.50	108.31
Min Ch El (ft)	2139.63	Shear (lb/sq ft)	0.17	0.40	0.43
Alpha	1.07	Stream Power (lb/ft s)	0.18	0.89	1.29
Frctn Loss (ft)	3.95	Cum Volume (acre-ft)	0.07	0.28	0.25
C & E Loss (ft)	0.00	Cum SA (acres)	0.10	0.11	0.38

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2141.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2140.82	Reach Len. (ft)	186.83	181.89	164.53
Crit W.S. (ft)	2140.72	Flow Area (sq ft)	0.28	22.53	13.83
E.G. Slope (ft/ft)	0.017972	Area (sq ft)	0.28	22.53	13.83
Q Total (cfs)	139.00	Flow (cfs)	0.43	99.81	38.75
Top Width (ft)	46.00	Top Width (ft)	0.33	22.49	23.18
Vel Total (ft/s)	3.79	Avg. Vel. (ft/s)	1.53	4.43	2.80
Max Chl Dpth (ft)	1.19	Hydr. Depth (ft)	0.86	1.00	0.60
Conv. Total (cfs)	1036.8	Conv. (cfs)	3.2	744.5	289.1
Length Wtd. (ft)	178.57	Wetted Per. (ft)	1.19	22.50	23.44
Min Ch El (ft)	2139.63	Shear (lb/sq ft)	0.27	1.12	0.66
Alpha	1.13	Stream Power (lb/ft s)	0.41	4.98	1.86
Frctn Loss (ft)	4.25	Cum Volume (acre-ft)	0.02	0.37	0.05
C & E Loss (ft)	0.01	Cum SA (acres)	0.01	0.11	0.06

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9963.39	9968.71	0.12	0.22	3.81	0.09	0.06	0.55
2	LOB	9968.71	9974.02	0.91	0.83	5.31	0.65	0.16	1.09
3	LOB	9974.02	9979.33	1.25	1.01	5.31	0.90	0.19	1.24
4	Chan	9979.33	9982.54	1.16	0.72	3.21	0.84	0.22	1.61
5	Chan	9982.54	9985.76	1.63	0.88	3.21	1.17	0.27	1.84
6	Chan	9985.76	9988.97	2.56	1.16	3.21	1.84	0.36	2.21
7	Chan	9988.97	9992.18	3.79	1.47	3.22	2.73	0.46	2.58
8	Chan	9992.18	9995.40	4.00	1.52	3.21	2.88	0.47	2.64
9	Chan	9995.40	9998.61	2.56	1.16	3.21	1.84	0.36	2.21
10	Chan	9998.61	10001.82	1.56	0.86	3.21	1.12	0.27	1.81
11	ROB	10001.82	10051.82	1.00	1.06	9.48	0.72	0.11	0.94
12	ROB	10051.82	10101.83						
13	ROB	10101.83	10151.83	16.54	11.32	47.77	11.90	0.24	1.46
14	ROB	10151.83	10201.84	101.93	27.74	50.07	73.33	0.55	3.67
15	ROB	10201.84	10251.84	0.00	0.01	1.00	0.00	0.01	0.18

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9974.02	9979.33	0.43	0.28	1.19	0.31	0.86	1.53
2	Chan	9979.33	9982.54	11.47	2.83	3.21	8.25	0.88	4.05
3	Chan	9982.54	9985.76	12.57	2.99	3.21	9.04	0.93	4.20
4	Chan	9985.76	9988.97	14.56	3.27	3.21	10.48	1.02	4.46
5	Chan	9988.97	9992.18	16.93	3.58	3.22	12.18	1.11	4.73
6	Chan	9992.18	9995.40	17.30	3.62	3.21	12.45	1.13	4.77
7	Chan	9995.40	9998.61	14.56	3.27	3.21	10.47	1.02	4.46
8	Chan	9998.61	10001.82	12.42	2.97	3.21	8.94	0.92	4.18
9	ROB	10001.82	10051.82	38.75	13.83	23.44	27.88	0.60	2.80

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: X4B
REACH: Reach 1 RS: 0.054

INPUT
Description:
Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9896.71	2136.5	9912.4	2136.44	9971.37	2135.95	9975.4	2135.83	9980.85	2135.67
9990.4	2135.8	9990.93	2135.8	9991.47	2135.8	9996.55	2135.49	9998.07	2135.41
10004.7	2135.91	10005.02	2135.93	10005.84	2135.84	10013.53	2135.98	10021.61	2135.97
10024.46	2136	10027.11	2135.94	10031.76	2135.92	10037.22	2135.95	10042.05	2136.08
10066.99	2136.31	10074.06	2136.45	10081.84	2136.52	10096.32	2136.58	10097.64	2136.6
10101.15	2136.71	10101.91	2136.64	10104.85	2136.64	10131.48	2136.76	10138.85	2136.87
10150.07	2136.81	10154.73	2136.79	10173.29	2136.44	10191.47	2135.92	10194.72	2135.79
10200.04	2135.71	10206.21	2135.61	10209.36	2135.52	10217.89	2135.71	10227.09	2136.24
10228.33	2136.31	10229.43	2136.34	10253.53	2136.53	10264.65	2136.69	10266.77	2136.69
10268.95	2136.7								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9896.71	.05	9975.4	.045	10004.7	.05	10154.73	.05	10194.72	.04
10217.89	.05								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.4	10004.7	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2136.35	Element			
Vel Head (ft)	0.15	Wt. n-Val.	0.050	0.045	0.044
W.S. Elev (ft)	2136.20	Reach Len. (ft)	297.83	297.83	297.83
Crit W.S. (ft)	2136.20	Flow Area (sq ft)	4.83	14.74	27.00
E.G. Slope (ft/ft)	0.029799	Area (sq ft)	4.83	14.74	27.00
Q Total (cfs)	139.00	Flow (cfs)	6.81	53.08	79.10
Top Width (ft)	157.55	Top Width (ft)	33.47	29.30	94.78
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)	1.41	3.60	2.93
Max Chl Dpth (ft)	0.78	Hydr. Depth (ft)	0.14	0.50	0.28
Conv. Total (cfs)	805.2	Conv. (cfs)	39.5	307.5	458.2
Length Wtd. (ft)	297.83	Wetted Per. (ft)	33.47	29.33	94.82
Min Ch El (ft)	2135.41	Shear (lb/sq ft)	0.27	0.93	0.53
Alpha	1.12	Stream Power (lb/ft s)	0.38	3.37	1.55
Frctn Loss (ft)	5.57	Cum Volume (acre-ft)	0.06	0.23	0.13
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: 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 OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2136.80	Element			
Vel Head (ft)	0.35	Wt. n-Val.	0.050	0.045	0.050
W.S. Elev (ft)	2136.45	Reach Len. (ft)	297.83	297.83	297.83
Crit W.S. (ft)	2136.45	Flow Area (sq ft)	2.95	22.30	5.03
E.G. Slope (ft/ft)	0.033060	Area (sq ft)	2.95	22.30	5.03
Q Total (cfs)	139.00	Flow (cfs)	10.04	111.50	17.46
Top Width (ft)	44.00	Top Width (ft)	5.40	29.30	9.30
Vel Total (ft/s)	4.59	Avg. Vel. (ft/s)	3.41	5.00	3.47
Max Chl Dpth (ft)	1.04	Hydr. Depth (ft)	0.55	0.76	0.54
Conv. Total (cfs)	764.5	Conv. (cfs)	55.2	613.2	96.0
Length Wtd. (ft)	297.83	Wetted Per. (ft)	5.89	29.33	9.78
Min Ch El (ft)	2135.41	Shear (lb/sq ft)	1.03	1.57	1.06
Alpha	1.06	Stream Power (lb/ft s)	3.52	7.85	3.68
Frctn Loss (ft)	6.46	Cum Volume (acre-ft)	0.01	0.27	0.02
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 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9928.19	9943.92	0.00	0.02	1.99	0.00	0.01	0.18
2	LOB	9943.92	9959.66	1.08	1.29	15.74	0.77	0.08	0.83
3	LOB	9959.66	9975.40	5.74	3.52	15.74	4.13	0.22	1.63
4	Chan	9975.40	9979.59	5.64	1.78	4.19	4.05	0.43	3.16
5	Chan	9979.59	9983.77	7.49	2.11	4.19	5.39	0.51	3.54
6	Chan	9983.77	9987.96	6.32	1.91	4.19	4.55	0.46	3.31
7	Chan	9987.96	9992.14	5.24	1.71	4.19	3.77	0.41	3.07
8	Chan	9992.14	9996.33	8.97	2.36	4.19	6.45	0.56	3.80
9	Chan	9996.33	10000.51	13.28	2.98	4.19	9.55	0.71	4.45
10	Chan	10000.51	10004.70	6.15	1.88	4.20	4.42	0.45	3.27
11	ROB	10004.70	10057.55	16.76	9.76	50.34	12.06	0.19	1.72
12	ROB	10057.55	10110.40						
13	ROB	10110.40	10163.25						
14	ROB	10163.25	10216.10	54.74	14.24	34.24	39.38	0.42	3.84
15	ROB	10216.10	10268.95	7.60	3.00	10.23	5.47	0.29	2.53

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9959.66	9975.40	10.04	2.95	5.89	7.22	0.55	3.41
2	Chan	9975.40	9979.59	13.22	2.86	4.19	9.51	0.68	4.62
3	Chan	9979.59	9983.77	15.87	3.19	4.19	11.42	0.76	4.97
4	Chan	9983.77	9987.96	14.22	2.99	4.19	10.23	0.71	4.75
5	Chan	9987.96	9992.14	12.64	2.79	4.19	9.09	0.67	4.53
6	Chan	9992.14	9996.33	17.92	3.44	4.19	12.89	0.82	5.21
7	Chan	9996.33	10000.51	23.67	4.06	4.19	17.03	0.97	5.83
8	Chan	10000.51	10004.70	13.96	2.96	4.20	10.04	0.71	4.72
9	ROB	10004.70	10057.55	17.46	5.03	9.78	12.56	0.54	3.47

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: X5
REACH: Reach 1 RS: 0.975

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9968.206	2261.969	9972.086	2261.69	9973.326	2261.479	9975.796	2261.21	9983.306	2260.48
9986.936	2260.129	9988.856	2259.99	9992.636	2259.499	9994.126	2258.37	9994.13	2258.368
9995.77	2257.453	9996.796	2256.88	10000.36	2256.881	10000.92	2256.88	10002.3	2255.98
10002.57	2255.821	10003.94	2256.88	10004.3	2256.881	10007.62	2257.431	10015.33	2258.454
10021.02	2259.211	10022.04	2259.22	10022.27	2259.231	10031.02	2259.261	10032.86	2259.35
10040.01	2259.561	10071.51	2260.47	10074.79	2260.62				

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9968.206	.055	9995.77	.045	10007.62	.061	10032.86	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.77	10007.62	122.4	126.08	132.71	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2260.25	Element			
Vel Head (ft)	0.68	Wt. n-Val.	0.055	0.045	0.060
W.S. Elev (ft)	2259.57	Reach Len. (ft)	122.40	126.08	132.71
Crit W.S. (ft)	2259.57	Flow Area (sq ft)	3.71	32.28	21.34
E.G. Slope (ft/ft)	0.014289	Area (sq ft)	3.71	32.28	21.34
Q Total (cfs)	301.00	Flow (cfs)	10.55	237.10	53.35
Top Width (ft)	48.45	Top Width (ft)	3.87	11.85	32.73
Vel Total (ft/s)	5.25	Avg. Vel. (ft/s)	2.84	7.34	2.50
Max Chl Dpth (ft)	3.75	Hydr. Depth (ft)	0.96	2.72	0.65
Conv. Total (cfs)	2518.1	Conv. (cfs)	88.2	1983.5	446.3
Length Wtd. (ft)	126.63	Wetted Per. (ft)	4.49	12.72	32.85
Min Ch El (ft)	2255.82	Shear (lb/sq ft)	0.74	2.26	0.58
Alpha	1.59	Stream Power (lb/ft s)	2.10	16.63	1.45
Frctn Loss (ft)	2.29	Cum Volume (acre-ft)	0.72	2.06	0.97
C & E Loss (ft)	0.01	Cum SA (acres)	0.96	1.08	1.21

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2260.26	Element			
Vel Head (ft)	0.70	Wt. n-Val.	0.055	0.045	0.060
W.S. Elev (ft)	2259.55	Reach Len. (ft)	122.40	126.08	132.71
Crit W.S. (ft)	2259.55	Flow Area (sq ft)	3.64	32.07	19.87
E.G. Slope (ft/ft)	0.014802	Area (sq ft)	3.64	32.07	19.87
Q Total (cfs)	301.00	Flow (cfs)	10.67	238.62	51.70
Top Width (ft)	39.93	Top Width (ft)	3.70	11.85	24.38
Vel Total (ft/s)	5.42	Avg. Vel. (ft/s)	2.93	7.44	2.60
Max Chl Dpth (ft)	3.73	Hydr. Depth (ft)	0.98	2.71	0.81
Conv. Total (cfs)	2474.1	Conv. (cfs)	87.7	1961.3	425.0
Length Wtd. (ft)	126.58	Wetted Per. (ft)	4.32	12.72	24.74

Min Ch El (ft)	2255.82	Shear (lb/sq ft)	0.78	2.33	0.74
Alpha	1.55	Stream Power (lb/ft s)	2.28	17.34	1.93
Frctn Loss (ft)	2.46	Cum Volume (acre-ft)	0.50	2.12	0.65
C & E Loss (ft)	0.01	Cum SA (acres)	0.47	1.08	0.60

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9990.26	9995.77	10.55	3.71	4.49	3.50	0.96	2.84
2	Chan	9995.77	9997.46	29.34	4.26	1.84	9.75	2.52	6.89
3	Chan	9997.46	9999.16	34.67	4.55	1.69	11.52	2.69	7.62
4	Chan	9999.16	10000.85	34.69	4.56	1.69	11.52	2.69	7.62
5	Chan	10000.85	10002.54	41.34	5.41	2.00	13.73	3.20	7.64
6	Chan	10002.54	10004.23	39.32	5.31	2.06	13.06	3.14	7.40
7	Chan	10004.23	10005.93	31.65	4.33	1.71	10.52	2.56	7.30
8	Chan	10005.93	10007.62	26.10	3.86	1.72	8.67	2.28	6.76
9	ROB	10007.62	10021.05	48.40	16.76	13.55	16.08	1.25	2.89
10	ROB	10021.05	10034.49	4.69	4.08	13.44	1.56	0.30	1.15
11	ROB	10034.49	10047.92	0.27	0.50	5.86	0.09	0.09	0.53

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9990.26	9995.77	10.67	3.64	4.32	3.55	0.98	2.93
2	Chan	9995.77	9997.46	29.50	4.23	1.84	9.80	2.50	6.97
3	Chan	9997.46	9999.16	34.88	4.52	1.69	11.59	2.67	7.71
4	Chan	9999.16	10000.85	34.90	4.52	1.69	11.60	2.67	7.71
5	Chan	10000.85	10002.54	41.67	5.38	2.00	13.84	3.18	7.75
6	Chan	10002.54	10004.23	39.63	5.28	2.06	13.17	3.12	7.51
7	Chan	10004.23	10005.93	31.83	4.30	1.71	10.58	2.54	7.40
8	Chan	10005.93	10007.62	26.21	3.83	1.72	8.71	2.26	6.84
9	ROB	10007.62	10021.05	47.89	16.51	13.55	15.91	1.23	2.90
10	ROB	10021.05	10034.49	3.81	3.35	11.19	1.27	0.31	1.14

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: X5
REACH: Reach 1 RS: 0.951

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9962.384	2253.89	9968.924	2253.54	9975.604	2253.25	9979.874	2252.95	9987.31	2251.651
9987.314	2251.65	10000.02	2249.36	10013.97	2251.36	10021.87	2252.53	10026.18	2252.68
10051.72	2253.98								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9962.384	.06	9987.31	.045	10013.97	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.31	10013.97	125.11	126.48	127.87	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2252.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.	0.060	0.045	0.055
W.S. Elev (ft)	2252.04	Reach Len. (ft)	125.11	126.48	127.87
Crit W.S. (ft)	2252.04	Flow Area (sq ft)	0.43	42.94	1.56
E.G. Slope (ft/ft)	0.023694	Area (sq ft)	0.43	42.94	1.56
Q Total (cfs)	301.00	Flow (cfs)	0.55	297.31	3.14
Top Width (ft)	33.48	Top Width (ft)	2.23	26.66	4.59
Vel Total (ft/s)	6.70	Avg. Vel. (ft/s)	1.27	6.92	2.01
Max Chl Dpth (ft)	2.68	Hydr. Depth (ft)	0.19	1.61	0.34
Conv. Total (cfs)	1955.5	Conv. (cfs)	3.6	1931.5	20.4

Length Wtd. (ft)	126.49	Wetted Per. (ft)	2.26	27.01	4.64
Min Ch El (ft)	2249.36	Shear (lb/sq ft)	0.28	2.35	0.50
Alpha	1.06	Stream Power (lb/ft s)	0.36	16.28	1.00
Frctn Loss (ft)	2.99	Cum Volume (acre-ft)	0.72	1.95	0.94
C & E Loss (ft)	0.00	Cum SA (acres)	0.95	1.02	1.15

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2252.80	Element			
Vel Head (ft)	0.79	Wt. n-Val.	0.060	0.045	
W.S. Elev (ft)	2252.01	Reach Len. (ft)	125.11	126.48	127.87
Crit W.S. (ft)	2252.01	Flow Area (sq ft)	0.37	42.13	
E.G. Slope (ft/ft)	0.026621	Area (sq ft)	0.37	42.13	
Q Total (cfs)	301.00	Flow (cfs)	0.47	300.53	
Top Width (ft)	28.71	Top Width (ft)	2.05	26.66	
Vel Total (ft/s)	7.08	Avg. Vel. (ft/s)	1.27	7.13	
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)	0.18	1.58	
Conv. Total (cfs)	1844.8	Conv. (cfs)	2.9	1842.0	
Length Wtd. (ft)	126.48	Wetted Per. (ft)	2.08	27.66	
Min Ch El (ft)	2249.36	Shear (lb/sq ft)	0.29	2.53	
Alpha	1.01	Stream Power (lb/ft s)	0.37	18.06	
Frctn Loss (ft)	3.24	Cum Volume (acre-ft)	0.50	2.01	0.62
C & E Loss (ft)	0.01	Cum SA (acres)	0.47	1.02	0.56

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9982.32	9987.31	0.55	0.43	2.26	0.18	0.19	1.27
2	Chan	9987.31	9991.12	10.58	2.79	3.87	3.51	0.73	3.79
3	Chan	9991.12	9994.93	31.83	5.40	3.87	10.58	1.42	5.89
4	Chan	9994.93	9998.74	61.45	8.02	3.87	20.41	2.11	7.66
5	Chan	9998.74	10002.54	83.19	9.60	3.86	27.64	2.52	8.66
6	Chan	10002.54	10006.35	58.78	7.79	3.85	19.53	2.05	7.55
7	Chan	10006.35	10010.16	35.02	5.71	3.85	11.64	1.50	6.13
8	Chan	10010.16	10013.97	16.46	3.63	3.85	5.47	0.95	4.54
9	ROB	10013.97	10021.52	3.14	1.56	4.64	1.04	0.34	2.01

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9982.32	9987.31	0.47	0.37	2.08	0.16	0.18	1.27
2	Chan	9987.31	9991.12	10.31	2.67	3.87	3.43	0.70	3.86
3	Chan	9991.12	9994.93	32.12	5.29	3.87	10.67	1.39	6.07
4	Chan	9994.93	9998.74	62.74	7.90	3.87	20.84	2.07	7.94
5	Chan	9998.74	10002.54	85.28	9.49	3.86	28.33	2.49	8.99
6	Chan	10002.54	10006.35	59.97	7.67	3.85	19.92	2.01	7.81
7	Chan	10006.35	10010.16	35.41	5.59	3.85	11.76	1.47	6.33
8	Chan	10010.16	10013.97	14.71	3.51	4.50	4.89	0.92	4.18

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

CROSS SECTION

RIVER: X5
REACH: Reach 1 RS: 0.927

INPUT
Description:
Station Elevation Data num= 12

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
9961.432 2248.079977.882 2247.299986.762 2246.86 9990.822245.6659993.112 2244.99
9998.952 2243.3910001.03 2243.6610015.95 2245.5510017.62  2245.710030.11 2246.43
10046.74 2247.4410061.84 2248.07

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
9961.432    .055 9990.82    .04510017.62    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9990.8210017.62            64.86   60.58   52.35             .1       .3

CROSS SECTION OUTPUT  Profile #profile 1

  E.G. Elev (ft)           2246.90    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.73    Wt. n-Val.                  0.055      0.045     0.055
  W.S. Elev (ft)           2246.17    Reach Len. (ft)            64.86      60.58     52.35
  Crit W.S. (ft)           2246.17    Flow Area (sq ft)           0.43      43.18      1.87
  E.G. Slope (ft/ft)      0.023559    Area (sq ft)                0.43      43.18      1.87
  Q Total (cfs)             301.00    Flow (cfs)                  0.69     297.38      2.94
  Top Width (ft)             36.50    Top Width (ft)              1.71      26.80      8.00
  Vel Total (ft/s)            6.62    Avg. Vel. (ft/s)            1.61       6.89      1.57
  Max Chl Dpth (ft)           2.78    Hydr. Depth (ft)            0.25       1.61      0.23
  Conv. Total (cfs)         1961.1    Conv. (cfs)                  4.5     1937.5      19.1
  Length Wtd. (ft)           60.55    Wetted Per. (ft)            1.78      27.26      8.01
  Min Ch El (ft)           2243.39    Shear (lb/sq ft)            0.35       2.33      0.34
  Alpha                       1.07    Stream Power (lb/ft s)      0.57      16.05      0.54
  Frctn Loss (ft)             1.32    Cum Volume (acre-ft)        0.72       1.83      0.93
  C & E Loss (ft)             0.01    Cum SA (acres)              0.94       0.95      1.13

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

CROSS SECTION OUTPUT  Profile #profile 2

  E.G. Elev (ft)           2246.90    Element                    Left OB    Channel   Right OB
  Vel Head (ft)               0.75    Wt. n-Val.                  0.055      0.045     0.055
  W.S. Elev (ft)           2246.15    Reach Len. (ft)            64.86      60.58     52.35
  Crit W.S. (ft)           2246.15    Flow Area (sq ft)           0.40      42.66      0.90
  E.G. Slope (ft/ft)      0.024713    Area (sq ft)                0.40      42.66      0.90
  Q Total (cfs)             301.00    Flow (cfs)                  0.63     298.52      1.84
  Top Width (ft)             30.82    Top Width (ft)              1.64      26.80      2.38
  Vel Total (ft/s)            6.85    Avg. Vel. (ft/s)            1.60       7.00      2.05
  Max Chl Dpth (ft)           2.76    Hydr. Depth (ft)            0.24       1.59      0.38
  Conv. Total (cfs)         1914.7    Conv. (cfs)                  4.0     1899.0      11.7
  Length Wtd. (ft)           60.56    Wetted Per. (ft)            1.71      27.26      2.69
  Min Ch El (ft)           2243.39    Shear (lb/sq ft)            0.36       2.41      0.52
  Alpha                       1.04    Stream Power (lb/ft s)      0.57      16.90      1.06
  Frctn Loss (ft)             1.58    Cum Volume (acre-ft)        0.50       1.89      0.62
  C & E Loss (ft)             0.01    Cum SA (acres)              0.46       0.95      0.56

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

  Profile #profile 1

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                          (ft)        (ft)         (cfs)     (sq ft)     (ft)       Conv  Depth(ft)     (ft/s)
  1           LOB       9984.94     9990.82         0.69       0.43      1.78       0.23       0.25       1.61
  2           Chan      9990.82     9994.65        19.12       4.06      3.98       6.35       1.06       4.71
  3           Chan      9994.65     9998.48        61.00       8.13      3.97      20.27       2.12       7.51
  4           Chan      9998.48    10002.31        85.76       9.87      3.87      28.49       2.58       8.69
  5           Chan     10002.31    10006.13        61.21       8.05      3.86      20.34       2.10       7.60
  6           Chan     10006.13    10009.96        39.53       6.19      3.86      13.13       1.62       6.38
  7           Chan     10009.96    10013.79        21.84       4.34      3.86       7.26       1.13       5.03
  8           Chan     10013.79    10017.62         8.91       2.53      3.85       2.96       0.66       3.52
  9           ROB      10017.62    10026.46         2.94       1.87      8.01       0.98       0.23       1.57

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.

  Profile #profile 2

              Pos        Left Sta    Right Sta      Flow       Area       W.P.    Percent       Hydr   Velocity
                          (ft)        (ft)         (cfs)     (sq ft)     (ft)       Conv  Depth(ft)     (ft/s)
  1           LOB       9984.94     9990.82         0.63       0.40      1.71       0.21       0.24       1.60
  2           Chan      9990.82     9994.65        18.95       3.98      3.98       6.30       1.04       4.76
```

3	Chan	9994.65	9998.48	61.41	8.05	3.97	20.40	2.10	7.62
4	Chan	9998.48	10002.31	86.57	9.80	3.87	28.76	2.56	8.83
5	Chan	10002.31	10006.13	61.61	7.98	3.86	20.47	2.08	7.72
6	Chan	10006.13	10009.96	39.61	6.12	3.86	13.16	1.60	6.47
7	Chan	10009.96	10013.79	21.69	4.27	3.86	7.21	1.11	5.09
8	Chan	10013.79	10017.62	8.67	2.46	3.85	2.88	0.64	3.53
9	ROB	10017.62	10026.46	1.84	0.90	2.69	0.61	0.38	2.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X5
REACH: Reach 1 RS: 0.915

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9953.611	2244.72	9955.771	2244.58	9962.361	2244.24	9963.211	2244.23	9977.091	2244.2
9979.671	2244.02	9981.111	2243.81	9982.711	2243.69	9983.441	2243.64	9983.99	2243.65
9983.991	2243.65	9989.54	2242.95	9994.741	2242.31	10000.49	2241.32	10012.12	2243.07
10017.47	2243.97	10027.25	2244.49	10029.32	2244.57	10029.98	2244.59		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9953.611	.055	9989.54	.04	510012.12	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.54	10012.12	77.84	82.94	82.36	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2244.72	Element			
Vel Head (ft)	0.71	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2244.01	Reach Len. (ft)	77.84	82.94	82.36
Crit W.S. (ft)	2244.01	Flow Area (sq ft)	4.94	40.92	2.65
E.G. Slope (ft/ft)	0.020204	Area (sq ft)	4.94	40.92	2.65
Q Total (cfs)	301.00	Flow (cfs)	11.95	283.30	5.75
Top Width (ft)	38.52	Top Width (ft)	9.81	22.58	6.13
Vel Total (ft/s)	6.21	Avg. Vel. (ft/s)	2.42	6.92	2.17
Max Chl Dpth (ft)	2.69	Hydr. Depth (ft)	0.50	1.81	0.43
Conv. Total (cfs)	2117.6	Conv. (cfs)	84.1	1993.1	40.5
Length Wtd. (ft)	82.21	Wetted Per. (ft)	9.87	22.84	6.21
Min Ch El (ft)	2241.32	Shear (lb/sq ft)	0.63	2.26	0.54
Alpha	1.18	Stream Power (lb/ft s)	1.53	15.65	1.17
Frctn Loss (ft)	1.36	Cum Volume (acre-ft)	0.71	1.77	0.93
C & E Loss (ft)	0.04	Cum SA (acres)	0.94	0.91	1.12

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2244.85	Element			
Vel Head (ft)	0.88	Wt. n-Val.		0.045	
W.S. Elev (ft)	2243.97	Reach Len. (ft)	77.84	82.94	82.36
Crit W.S. (ft)	2243.97	Flow Area (sq ft)		39.90	
E.G. Slope (ft/ft)	0.027606	Area (sq ft)		39.90	
Q Total (cfs)	301.00	Flow (cfs)		301.00	
Top Width (ft)	22.58	Top Width (ft)		22.58	
Vel Total (ft/s)	7.54	Avg. Vel. (ft/s)		7.54	
Max Chl Dpth (ft)	2.65	Hydr. Depth (ft)		1.77	
Conv. Total (cfs)	1811.6	Conv. (cfs)		1811.6	
Length Wtd. (ft)	82.45	Wetted Per. (ft)		24.74	
Min Ch El (ft)	2241.32	Shear (lb/sq ft)		2.78	
Alpha	1.00	Stream Power (lb/ft s)		20.97	
Frctn Loss (ft)	1.86	Cum Volume (acre-ft)	0.50	1.83	0.62
C & E Loss (ft)	0.00	Cum SA (acres)	0.46	0.91	0.55

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9975.17	9982.35	0.48	0.45	2.64	0.16	0.17	1.07
2	LOB	9982.35	9989.54	11.47	4.49	7.23	3.81	0.62	2.55
3	Chan	9989.54	9992.77	21.18	4.05	3.25	7.04	1.25	5.23
4	Chan	9992.77	9995.99	33.99	5.38	3.26	11.29	1.67	6.32
5	Chan	9995.99	9999.22	53.55	7.08	3.27	17.79	2.19	7.56
6	Chan	9999.22	10002.44	69.30	8.26	3.27	23.02	2.56	8.39
7	Chan	10002.44	10005.67	52.06	6.95	3.26	17.30	2.15	7.49
8	Chan	10005.67	10008.89	34.03	5.38	3.26	11.30	1.67	6.32
9	Chan	10008.89	10012.12	19.19	3.82	3.26	6.38	1.18	5.03
10	ROB	10012.12	10015.69	5.45	2.29	3.62	1.81	0.64	2.38
11	ROB	10015.69	10019.26	0.31	0.36	2.58	0.10	0.14	0.86

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9989.54	9992.77	18.82	3.90	4.26	6.25	1.21	4.82
2	Chan	9992.77	9995.99	36.72	5.23	3.26	12.20	1.62	7.01
3	Chan	9995.99	9999.22	58.49	6.93	3.27	19.43	2.15	8.44
4	Chan	9999.22	10002.44	76.08	8.11	3.27	25.28	2.51	9.38
5	Chan	10002.44	10005.67	56.83	6.80	3.26	18.88	2.11	8.35
6	Chan	10005.67	10008.89	36.76	5.24	3.26	12.21	1.62	7.02
7	Chan	10008.89	10012.12	17.30	3.67	4.16	5.75	1.14	4.71

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.900

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9952.684	2241.59	9964.774	2241.01	9965.284	2241.02	9972.704	2239.48	9974.254	2239.08
9977.574	2239.03	9978.824	2239.01	9985.034	2238.91	9988.444	2238.87	9994.922	2237.761
9994.924	2237.76	10001.26	2236.59	10001.69	2236.51	10002.36	2236.38	10003.95	2237.51
10005.09	2237.88	10012.43	2239.24	10015.5	2239.35	10019.2	2239.44	10023.16	2239.76
10028.82	2240.15	10030.74	2240.35	10031.11	2240.42	10034.77	2240.71	10035.29	2240.8
10040.77	2241.39	10043.16	2241.61	10044.85	2241.82	10045.35	2241.92		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9952.684	.055	9994.92	.045	10005.09	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.92	10005.09	64.44	86.99	110.42	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2240.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2239.81	Reach Len. (ft)	64.44	86.99	110.42
Crit W.S. (ft)	2239.81	Flow Area (sq ft)	22.71	27.35	13.17
E.G. Slope (ft/ft)	0.013859	Area (sq ft)	22.71	27.35	13.17
Q Total (cfs)	301.00	Flow (cfs)	69.62	198.53	32.85
Top Width (ft)	52.80	Top Width (ft)	23.81	10.17	18.82
Vel Total (ft/s)	4.76	Avg. Vel. (ft/s)	3.07	7.26	2.49
Max Chl Dpth (ft)	3.43	Hydr. Depth (ft)	0.95	2.69	0.70
Conv. Total (cfs)	2556.8	Conv. (cfs)	591.4	1686.3	279.1
Length Wtd. (ft)	86.34	Wetted Per. (ft)	23.99	10.72	18.96
Min Ch El (ft)	2236.38	Shear (lb/sq ft)	0.82	2.21	0.60
Alpha	1.66	Stream Power (lb/ft s)	2.51	16.03	1.50
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	0.69	1.71	0.91
C & E Loss (ft)	0.00	Cum SA (acres)	0.91	0.88	1.10

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 energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2240.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2239.80	Reach Len. (ft)	64.44	86.99	110.42
Crit W.S. (ft)	2239.80	Flow Area (sq ft)	13.95	27.26	3.99
E.G. Slope (ft/ft)	0.018732	Area (sq ft)	13.95	27.26	3.99
Q Total (cfs)	301.00	Flow (cfs)	56.35	229.58	15.07
Top Width (ft)	23.76	Top Width (ft)	11.25	10.17	2.34
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)	4.04	8.42	3.78
Max Chl Dpth (ft)	3.42	Hydr. Depth (ft)	1.24	2.68	1.71
Conv. Total (cfs)	2199.3	Conv. (cfs)	411.7	1677.4	110.1
Length Wtd. (ft)	85.47	Wetted Per. (ft)	12.22	10.72	3.87
Min Ch El (ft)	2236.38	Shear (lb/sq ft)	1.34	2.97	1.21
Alpha	1.30	Stream Power (lb/ft s)	5.39	25.05	4.56
Frctn Loss (ft)	1.32	Cum Volume (acre-ft)	0.48	1.76	0.61
C & E Loss (ft)	0.04	Cum SA (acres)	0.45	0.88	0.55

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9969.58	9978.03	8.08	3.95	7.00	2.68	0.57	2.04
2	LOB	9978.03	9986.47	19.50	7.23	8.45	6.48	0.86	2.70
3	LOB	9986.47	9994.92	42.05	11.52	8.54	13.97	1.36	3.65
4	Chan	9994.92	9996.37	20.29	3.17	1.48	6.74	2.18	6.39
5	Chan	9996.37	9997.83	24.59	3.56	1.48	8.17	2.45	6.90
6	Chan	9997.83	9999.28	29.25	3.95	1.48	9.72	2.72	7.40
7	Chan	9999.28	10000.73	34.22	4.34	1.48	11.37	2.99	7.88
8	Chan	10000.73	10002.18	39.55	4.74	1.48	13.14	3.26	8.34
9	Chan	10002.18	10003.64	31.31	4.40	1.74	10.40	3.03	7.11
10	Chan	10003.64	10005.09	19.32	3.17	1.58	6.42	2.18	6.10
11	ROB	10005.09	10013.14	27.91	9.58	8.18	9.27	1.19	2.91
12	ROB	10013.14	10021.19	4.79	3.31	8.06	1.59	0.41	1.45
13	ROB	10021.19	10029.25	0.16	0.28	2.72	0.05	0.10	0.57

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.03	9986.47	6.88	2.50	3.67	2.28	0.89	2.75
2	LOB	9986.47	9994.92	49.47	11.45	8.54	16.44	1.36	4.32
3	Chan	9994.92	9996.37	23.43	3.16	1.48	7.78	2.18	7.41
4	Chan	9996.37	9997.83	28.42	3.55	1.48	9.44	2.44	8.01
5	Chan	9997.83	9999.28	33.83	3.94	1.48	11.24	2.71	8.58
6	Chan	9999.28	10000.73	39.59	4.33	1.48	13.15	2.98	9.14
7	Chan	10000.73	10002.18	45.78	4.73	1.48	15.21	3.25	9.68
8	Chan	10002.18	10003.64	36.22	4.39	1.74	12.03	3.02	8.25
9	Chan	10003.64	10005.09	22.31	3.16	1.58	7.41	2.17	7.07
10	ROB	10005.09	10013.14	15.07	3.99	3.87	5.01	1.71	3.78

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.883

INPUT

Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9957.945	2238.51	9957.965	2238.51	9961.535	2238.24	9963.725	2237.93	9966.115	2237.68
9967.385	2237.46	9972.085	2237.05	9974.045	2236.83	9975.105	2236.53	9981.17	2235.671
9981.175	2235.67	9981.625	2235.56	9984.595	2235.39	9989.245	2235.38	9994.595	2235.49
9998.885	2235.42	10003.12	2235.52	10006.99	2235.61	10008.68	2235.69	10013.24	2235.84
10014.93	2236.05	10018.77	2236.33	10021.89	2236.45	10024.14	2236.64	10024.43	2236.63
10027.86	2237.24	10037.85	2238.76	10040.54	2239.25				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9957.945	.055	9981.17	.03	10008.68	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.17	10008.68	68.78	64.28	57.52	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2237.51	Element			
Vel Head (ft)	0.59	Wt. n-Val.	0.055	0.030	0.055
W.S. Elev (ft)	2236.92	Reach Len. (ft)	68.78	64.28	57.52
Crit W.S. (ft)	2236.92	Flow Area (sq ft)	5.25	39.76	12.50
E.G. Slope (ft/ft)	0.010820	Area (sq ft)	5.25	39.76	12.50
Q Total (cfs)	301.00	Flow (cfs)	11.11	261.73	28.15
Top Width (ft)	52.79	Top Width (ft)	7.91	27.51	17.37
Vel Total (ft/s)	5.23	Avg. Vel. (ft/s)	2.12	6.58	2.25
Max Chl Dpth (ft)	1.54	Hydr. Depth (ft)	0.66	1.45	0.72
Conv. Total (cfs)	2893.8	Conv. (cfs)	106.8	2516.3	270.7
Length Wtd. (ft)	64.04	Wetted Per. (ft)	8.02	27.53	17.43
Min Ch El (ft)	2235.38	Shear (lb/sq ft)	0.44	0.98	0.48
Alpha	1.40	Stream Power (lb/ft s)	0.94	6.42	1.09
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	0.67	1.64	0.88
C & E Loss (ft)	0.02	Cum SA (acres)	0.88	0.84	1.05

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2237.80	Element			
Vel Head (ft)	0.78	Wt. n-Val.		0.030	
W.S. Elev (ft)	2237.02	Reach Len. (ft)	68.78	64.28	57.52
Crit W.S. (ft)	2237.02	Flow Area (sq ft)		42.43	
E.G. Slope (ft/ft)	0.013039	Area (sq ft)		42.43	
Q Total (cfs)	301.00	Flow (cfs)		301.00	
Top Width (ft)	27.51	Top Width (ft)		27.51	
Vel Total (ft/s)	7.09	Avg. Vel. (ft/s)		7.09	
Max Chl Dpth (ft)	1.64	Hydr. Depth (ft)		1.54	
Conv. Total (cfs)	2636.0	Conv. (cfs)		2636.0	
Length Wtd. (ft)	64.27	Wetted Per. (ft)		30.20	
Min Ch El (ft)	2235.38	Shear (lb/sq ft)		1.14	
Alpha	1.00	Stream Power (lb/ft s)		8.11	
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	0.47	1.70	0.61
C & E Loss (ft)	0.02	Cum SA (acres)	0.44	0.84	0.55

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9971.88	9976.53	1.09	0.98	3.33	0.36	0.30	1.11
2	LOB	9976.53	9981.17	10.02	4.27	4.69	3.33	0.92	2.35
3	Chan	9981.17	9985.10	36.93	5.65	3.95	12.27	1.44	6.54
4	Chan	9985.10	9989.03	41.25	6.03	3.93	13.70	1.53	6.84
5	Chan	9989.03	9992.96	39.84	5.90	3.93	13.24	1.50	6.75
6	Chan	9992.96	9996.89	37.39	5.68	3.93	12.42	1.45	6.58
7	Chan	9996.89	10000.82	38.81	5.81	3.93	12.89	1.48	6.68
8	Chan	10000.82	10004.75	35.73	5.53	3.93	11.87	1.41	6.46
9	Chan	10004.75	10008.68	31.78	5.16	3.93	10.56	1.31	6.16
10	ROB	10008.68	10015.05	18.84	7.01	6.39	6.26	1.10	2.69
11	ROB	10015.05	10021.42	7.76	4.12	6.38	2.58	0.65	1.89
12	ROB	10021.42	10027.80	1.55	1.38	4.66	0.51	0.30	1.12

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9981.17	9985.10	36.67	6.03	5.29	12.18	1.53	6.08
2	Chan	9985.10	9989.03	49.47	6.41	3.93	16.43	1.63	7.72
3	Chan	9989.03	9992.96	47.87	6.28	3.93	15.90	1.60	7.62
4	Chan	9992.96	9996.89	45.11	6.06	3.93	14.99	1.54	7.44
5	Chan	9996.89	10000.82	46.71	6.19	3.93	15.52	1.58	7.54
6	Chan	10000.82	10004.75	43.23	5.91	3.93	14.36	1.50	7.31
7	Chan	10004.75	10008.68	31.93	5.54	5.26	10.61	1.41	5.77

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: X5
REACH: Reach 1 RS: 0.871

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9950.311	2236.49	9954.041	2236.39	9973.401	2234.97	9979.361	2234.24	9988.01	2233.14
9988.011	2233.14	9992.601	2232.33	9999.891	2231.3	10007.9	2233.03	10010.94	2233.74
10014.42	2234.02	10015.18	2234.13	10019.37	2234.61	10020.42	2234.87	10029.01	2236.19
10030.74	2236.62								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9950.311	.055	9988.01	.045	10007.9	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.01	10007.9	151.31	164	175.1	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2234.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2234.16	Reach Len. (ft)	151.31	164.00	175.10
Crit W.S. (ft)	2234.16	Flow Area (sq ft)	4.06	39.55	3.37
E.G. Slope (ft/ft)	0.019334	Area (sq ft)	4.06	39.55	3.37
Q Total (cfs)	301.00	Flow (cfs)	9.67	283.97	7.36
Top Width (ft)	35.40	Top Width (ft)	7.99	19.89	7.52
Vel Total (ft/s)	6.41	Avg. Vel. (ft/s)	2.38	7.18	2.18
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)	0.51	1.99	0.45
Conv. Total (cfs)	2164.7	Conv. (cfs)	69.5	2042.3	52.9
Length Wtd. (ft)	163.95	Wetted Per. (ft)	8.06	20.22	7.62
Min Ch El (ft)	2231.30	Shear (lb/sq ft)	0.61	2.36	0.53
Alpha	1.19	Stream Power (lb/ft s)	1.45	16.95	1.17
Frctn Loss (ft)	3.39	Cum Volume (acre-ft)	0.66	1.58	0.87
C & E Loss (ft)	0.04	Cum SA (acres)	0.87	0.81	1.04

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2234.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2234.20	Reach Len. (ft)	151.31	164.00	175.10
Crit W.S. (ft)	2234.20	Flow Area (sq ft)	4.41	40.41	3.70
E.G. Slope (ft/ft)	0.017768	Area (sq ft)	4.41	40.41	3.70
Q Total (cfs)	301.00	Flow (cfs)	10.59	282.21	8.20
Top Width (ft)	35.40	Top Width (ft)	7.99	19.89	7.52
Vel Total (ft/s)	6.20	Avg. Vel. (ft/s)	2.40	6.98	2.22
Max Chl Dpth (ft)	2.90	Hydr. Depth (ft)	0.55	2.03	0.49
Conv. Total (cfs)	2258.1	Conv. (cfs)	79.4	2117.2	61.5
Length Wtd. (ft)	163.93	Wetted Per. (ft)	8.10	20.22	7.67
Min Ch El (ft)	2231.30	Shear (lb/sq ft)	0.60	2.22	0.54
Alpha	1.20	Stream Power (lb/ft s)	1.45	15.48	1.19
Frctn Loss (ft)	3.64	Cum Volume (acre-ft)	0.47	1.63	0.61
C & E Loss (ft)	0.01	Cum SA (acres)	0.43	0.81	0.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.93	9980.47	0.00	0.01	0.46	0.00	0.03	0.34
2	LOB	9980.47	9988.01	9.66	4.05	7.60	3.21	0.54	2.39
3	Chan	9988.01	9990.85	18.52	3.60	2.89	6.15	1.27	5.14
4	Chan	9990.85	9993.69	32.09	5.00	2.88	10.66	1.76	6.41
5	Chan	9993.69	9996.53	45.97	6.20	2.87	15.27	2.18	7.41
6	Chan	9996.53	9999.38	60.91	7.34	2.87	20.24	2.58	8.30
7	Chan	9999.38	10002.22	62.89	7.51	2.90	20.89	2.64	8.37
8	Chan	10002.22	10005.06	40.97	5.82	2.91	13.61	2.05	7.05
9	Chan	10005.06	10007.90	22.63	4.07	2.91	7.52	1.43	5.56
10	ROB	10007.90	10012.47	6.88	2.89	4.66	2.29	0.63	2.38
11	ROB	10012.47	10017.04	0.47	0.48	2.96	0.16	0.16	0.98

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9972.93	9980.47	0.02	0.03	0.50	0.01	0.07	0.57
2	LOB	9980.47	9988.01	10.57	4.38	7.60	3.51	0.58	2.41
3	Chan	9988.01	9990.85	18.81	3.72	2.89	6.25	1.31	5.05
4	Chan	9990.85	9993.69	32.08	5.13	2.88	10.66	1.80	6.26
5	Chan	9993.69	9996.53	45.60	6.32	2.87	15.15	2.22	7.21
6	Chan	9996.53	9999.38	60.13	7.46	2.87	19.98	2.63	8.06
7	Chan	9999.38	10002.22	62.03	7.64	2.90	20.61	2.69	8.12
8	Chan	10002.22	10005.06	40.73	5.94	2.91	13.53	2.09	6.86
9	Chan	10005.06	10007.90	22.83	4.20	2.91	7.59	1.48	5.44
10	ROB	10007.90	10012.47	7.52	3.09	4.66	2.50	0.68	2.44
11	ROB	10012.47	10017.04	0.68	0.61	3.01	0.23	0.21	1.11

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.840

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9944.768	2230.83	9949.438	2230.58	9966.528	2229.67	9966.998	2229.69	9968.158	2229.45
9980.888	2227.7	9980.89	2227.79	9986.908	2226.81	9989.698	2226.65	9997.588	2226.24
10001.45	2226.01	10002.69	2226.04	10006.23	2226.06	10014	2226.89	10021.44	2227.7
10022.94	2227.86	10023.17	2227.89	10023.45	2227.94	10023.51	2227.95	10023.54	2227.95
10023.57	2227.96	10023.7	2227.98	10032.32	2229.05	10036.41	2230.06	10039.56	2230.54
10042	2231.14	10045.2	2231.98						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9944.768	.05	9986.908	.045	10014	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.908	10014	86.27	89.08	88.92	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2228.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2227.92	Reach Len. (ft)	86.27	89.08	88.92
Crit W.S. (ft)	2227.92	Flow Area (sq ft)	4.17	42.03	4.84
E.G. Slope (ft/ft)	0.022106	Area (sq ft)	4.17	42.03	4.84
Q Total (cfs)	301.00	Flow (cfs)	11.15	276.13	13.73
Top Width (ft)	44.04	Top Width (ft)	7.62	27.09	9.33
Vel Total (ft/s)	5.90	Avg. Vel. (ft/s)	2.67	6.57	2.84
Max Chl Dpth (ft)	1.91	Hydr. Depth (ft)	0.55	1.55	0.52
Conv. Total (cfs)	2024.5	Conv. (cfs)	75.0	1857.1	92.3
Length Wtd. (ft)	89.00	Wetted Per. (ft)	7.70	27.16	9.39
Min Ch El (ft)	2226.01	Shear (lb/sq ft)	0.75	2.14	0.71

Alpha	1.16	Stream Power (lb/ft s)	2.00	14.03	2.02
Frctn Loss (ft)	1.82	Cum Volume (acre-ft)	0.65	1.43	0.85
C & E Loss (ft)	0.02	Cum SA (acres)	0.84	0.72	1.00

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2228.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.		0.045	
W.S. Elev (ft)	2227.93	Reach Len. (ft)	86.27	89.08	88.92
Crit W.S. (ft)	2227.93	Flow Area (sq ft)		42.23	
E.G. Slope (ft/ft)	0.028621	Area (sq ft)		42.23	
Q Total (cfs)	301.00	Flow (cfs)		301.00	
Top Width (ft)	27.09	Top Width (ft)		27.09	
Vel Total (ft/s)	7.13	Avg. Vel. (ft/s)		7.13	
Max Chl Dpth (ft)	1.92	Hydr. Depth (ft)		1.56	
Conv. Total (cfs)	1779.2	Conv. (cfs)		1779.2	
Length Wtd. (ft)	89.05	Wetted Per. (ft)		29.30	
Min Ch El (ft)	2226.01	Shear (lb/sq ft)		2.58	
Alpha	1.00	Stream Power (lb/ft s)		18.35	
Frctn Loss (ft)	1.96	Cum Volume (acre-ft)	0.46	1.48	0.60
C & E Loss (ft)	0.01	Cum SA (acres)	0.42	0.72	0.53

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.48	9986.91	11.15	4.17	7.70	3.70	0.55	2.67
2	Chan	9986.91	9990.78	26.04	4.72	3.88	8.65	1.22	5.52
3	Chan	9990.78	9994.65	33.81	5.52	3.88	11.23	1.43	6.13
4	Chan	9994.65	9998.52	42.15	6.30	3.88	14.00	1.63	6.69
5	Chan	9998.52	10002.39	51.73	7.12	3.88	17.19	1.84	7.26
6	Chan	10002.39	10006.26	53.17	7.24	3.87	17.66	1.87	7.35
7	Chan	10006.26	10010.13	42.87	6.38	3.89	14.24	1.65	6.73
8	Chan	10010.13	10014.00	26.35	4.76	3.89	8.75	1.23	5.53
9	ROB	10014.00	10020.24	13.02	4.27	6.28	4.33	0.68	3.05
10	ROB	10020.24	10026.48	0.71	0.56	3.11	0.23	0.18	1.26

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9986.91	9990.78	24.73	4.75	4.99	8.22	1.23	5.21
2	Chan	9990.78	9994.65	37.97	5.55	3.88	12.61	1.43	6.84
3	Chan	9994.65	9998.52	47.29	6.33	3.88	15.71	1.64	7.47
4	Chan	9998.52	10002.39	57.99	7.15	3.88	19.26	1.85	8.11
5	Chan	10002.39	10006.26	59.59	7.27	3.87	19.80	1.88	8.20
6	Chan	10006.26	10010.13	48.10	6.40	3.89	15.98	1.65	7.51
7	Chan	10010.13	10014.00	25.34	4.79	4.92	8.42	1.24	5.29

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: X5
REACH: Reach 1 RS: 0.823

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9967.265	2228.02	9972.465	2227.54	9973.045	2227.49	9980.755	2225.98	9990.575	2223.48

9990.582223.4799993.935 2222.4710000.02 2221.1610005.96 2223.0610008.47 2223.72
10020.95 2224.6310031.22 2225.3710034.44 2225.4910043.47 2225.86

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9967.265	.055	9990.58	.04	510008.47	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.58	10008.47	129.25	128.57	128.44	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2225.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2224.51	Reach Len. (ft)	129.25	128.57	128.44
Crit W.S. (ft)	2224.51	Flow Area (sq ft)	2.09	38.62	4.28
E.G. Slope (ft/ft)	0.019016	Area (sq ft)	2.09	38.62	4.28
Q Total (cfs)	301.00	Flow (cfs)	4.90	286.66	9.44
Top Width (ft)	32.78	Top Width (ft)	4.05	17.89	10.84
Vel Total (ft/s)	6.69	Avg. Vel. (ft/s)	2.35	7.42	2.20
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)	0.52	2.16	0.40
Conv. Total (cfs)	2182.8	Conv. (cfs)	35.6	2078.8	68.4
Length Wtd. (ft)	128.59	Wetted Per. (ft)	4.18	18.56	10.87
Min Ch El (ft)	2221.16	Shear (lb/sq ft)	0.59	2.47	0.47
Alpha	1.18	Stream Power (lb/ft s)	1.39	18.34	1.03
Frctn Loss (ft)	2.35	Cum Volume (acre-ft)	0.64	1.34	0.85
C & E Loss (ft)	0.04	Cum SA (acres)	0.83	0.67	0.98

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2225.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.77	Wt. n-Val.	0.055	0.045	0.050
W.S. Elev (ft)	2224.56	Reach Len. (ft)	129.25	128.57	128.44
Crit W.S. (ft)	2224.56	Flow Area (sq ft)	2.28	39.46	4.79
E.G. Slope (ft/ft)	0.017465	Area (sq ft)	2.28	39.46	4.79
Q Total (cfs)	301.00	Flow (cfs)	5.39	284.74	10.87
Top Width (ft)	32.78	Top Width (ft)	4.05	17.89	10.84
Vel Total (ft/s)	6.47	Avg. Vel. (ft/s)	2.37	7.22	2.27
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)	0.56	2.21	0.44
Conv. Total (cfs)	2277.6	Conv. (cfs)	40.8	2154.6	82.2
Length Wtd. (ft)	128.60	Wetted Per. (ft)	4.23	18.56	10.92
Min Ch El (ft)	2221.16	Shear (lb/sq ft)	0.59	2.32	0.48
Alpha	1.18	Stream Power (lb/ft s)	1.39	16.73	1.09
Frctn Loss (ft)	2.31	Cum Volume (acre-ft)	0.46	1.40	0.59
C & E Loss (ft)	0.00	Cum SA (acres)	0.42	0.67	0.52

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9985.92	9990.58	4.90	2.09	4.18	1.63	0.52	2.35
2	Chan	9990.58	9993.14	19.07	3.62	2.67	6.34	1.42	5.27
3	Chan	9993.14	9995.69	38.12	5.45	2.63	12.66	2.13	6.99
4	Chan	9995.69	9998.25	56.50	6.88	2.61	18.77	2.69	8.21
5	Chan	9998.25	10000.80	74.09	8.13	2.64	24.62	3.18	9.12
6	Chan	10000.80	10003.36	55.44	6.88	2.68	18.42	2.69	8.06
7	Chan	10003.36	10005.91	30.32	4.79	2.68	10.07	1.87	6.33
8	Chan	10005.91	10008.47	13.11	2.88	2.64	4.36	1.13	4.56
9	ROB	10008.47	10015.47	8.91	3.75	7.02	2.96	0.54	2.38
10	ROB	10015.47	10022.47	0.52	0.54	3.85	0.17	0.14	0.97

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9985.92	9990.58	5.39	2.28	4.23	1.79	0.56	2.37

2	Chan	9990.58	9993.14	19.34	3.74	2.67	6.43	1.46	5.18
3	Chan	9993.14	9995.69	37.97	5.57	2.63	12.61	2.18	6.82
4	Chan	9995.69	9998.25	55.85	7.00	2.61	18.56	2.74	7.97
5	Chan	9998.25	10000.80	72.93	8.25	2.64	24.23	3.23	8.84
6	Chan	10000.80	10003.36	54.81	7.00	2.68	18.21	2.74	7.83
7	Chan	10003.36	10005.91	30.35	4.91	2.68	10.08	1.92	6.18
8	Chan	10005.91	10008.47	13.48	3.00	2.64	4.48	1.17	4.50
9	ROB	10008.47	10015.47	10.05	4.07	7.02	3.34	0.58	2.47
10	ROB	10015.47	10022.47	0.82	0.72	3.90	0.27	0.19	1.15

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.799

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9956.611	2224.039	9957.411	2223.869	9960.601	2223.079	9967.781	2222.649	9972.991	2222.43
9980.22	2221.489	9989.611	2220.24	9993.96	2219.529	9993.961	2219.52	9995.13	2219.33
9995.131	2219.339	9998.831	2218.61	10001.48	2218.181	10009.07	2219.26	10012.1	2219.67
10018.69	2220.191	10019.83	2220.271	10021.16	2220.431	10030.59	2221.32	10034.38	2221.61
10046.66	2222.71	10050.78	2223.11	10056.08	2223.551	10061.54	2224.05		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9956.611	.03	9980.22	.06	9995.13	.045	10009.07	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.131	10009.07	154.9	156.43	165.74	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2221.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.	0.060	0.045	0.050
W.S. Elev (ft)	2220.95	Reach Len. (ft)	154.90	156.43	165.74
Crit W.S. (ft)	2220.95	Flow Area (sq ft)	8.33	31.04	14.25
E.G. Slope (ft/ft)	0.017571	Area (sq ft)	8.33	31.04	14.25
Q Total (cfs)	301.00	Flow (cfs)	22.72	229.64	48.64
Top Width (ft)	42.41	Top Width (ft)	10.89	13.94	17.59
Vel Total (ft/s)	5.61	Avg. Vel. (ft/s)	2.73	7.40	3.41
Max Chl Dpth (ft)	2.77	Hydr. Depth (ft)	0.77	2.23	0.81
Conv. Total (cfs)	2270.7	Conv. (cfs)	171.4	1732.4	366.9
Length Wtd. (ft)	157.41	Wetted Per. (ft)	11.01	14.12	17.67
Min Ch El (ft)	2218.18	Shear (lb/sq ft)	0.83	2.41	0.88
Alpha	1.40	Stream Power (lb/ft s)	2.26	17.84	3.02
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	0.62	1.24	0.82
C & E Loss (ft)	0.07	Cum SA (acres)	0.81	0.63	0.94

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2221.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.060	0.045	0.050
W.S. Elev (ft)	2221.00	Reach Len. (ft)	154.90	156.43	165.74
Crit W.S. (ft)	2221.00	Flow Area (sq ft)	8.86	31.71	7.07
E.G. Slope (ft/ft)	0.018482	Area (sq ft)	8.86	31.71	7.07
Q Total (cfs)	301.00	Flow (cfs)	25.71	244.06	31.23
Top Width (ft)	29.80	Top Width (ft)	10.89	13.94	4.97
Vel Total (ft/s)	6.32	Avg. Vel. (ft/s)	2.90	7.70	4.42
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)	0.81	2.27	1.42
Conv. Total (cfs)	2214.1	Conv. (cfs)	189.1	1795.2	229.7
Length Wtd. (ft)	156.72	Wetted Per. (ft)	11.06	14.12	6.18
Min Ch El (ft)	2218.18	Shear (lb/sq ft)	0.92	2.59	1.32
Alpha	1.27	Stream Power (lb/ft s)	2.68	19.94	5.83
Frctn Loss (ft)	3.34	Cum Volume (acre-ft)	0.44	1.29	0.58
C & E Loss (ft)	0.01	Cum SA (acres)	0.39	0.63	0.50

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.72	9987.43	0.68	0.67	3.21	0.23	0.21	1.02
2	LOB	9987.43	9995.13	22.03	7.66	7.80	7.32	0.99	2.88
3	Chan	9995.13	9997.12	22.98	3.61	2.03	7.64	1.81	6.36
4	Chan	9997.12	9999.11	31.88	4.40	2.03	10.59	2.21	7.25
5	Chan	9999.11	10001.10	40.73	5.08	2.02	13.53	2.55	8.02
6	Chan	10001.10	10003.10	43.99	5.32	2.01	14.62	2.67	8.27
7	Chan	10003.10	10005.09	36.77	4.77	2.01	12.22	2.40	7.70
8	Chan	10005.09	10007.08	29.83	4.21	2.01	9.91	2.11	7.08
9	Chan	10007.08	10009.07	23.46	3.64	2.01	7.79	1.83	6.44
10	ROB	10009.07	10019.56	44.58	11.85	10.54	14.81	1.13	3.76
11	ROB	10019.56	10030.06	4.06	2.40	7.13	1.35	0.34	1.69

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.72	9987.43	0.99	0.82	3.26	0.33	0.26	1.20
2	LOB	9987.43	9995.13	24.72	8.03	7.80	8.21	1.04	3.08
3	Chan	9995.13	9997.12	24.63	3.71	2.03	8.18	1.86	6.64
4	Chan	9997.12	9999.11	33.91	4.49	2.03	11.26	2.26	7.55
5	Chan	9999.11	10001.10	43.11	5.18	2.02	14.32	2.60	8.33
6	Chan	10001.10	10003.10	46.50	5.41	2.01	15.45	2.72	8.59
7	Chan	10003.10	10005.09	39.00	4.87	2.01	12.96	2.45	8.01
8	Chan	10005.09	10007.08	31.78	4.31	2.01	10.56	2.16	7.38
9	Chan	10007.08	10009.07	25.13	3.74	2.01	8.35	1.88	6.72
10	ROB	10009.07	10019.56	31.23	7.07	6.18	10.38	1.42	4.42

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.769

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9928.622	2217.98	9941.952	2217.59	9947.832	2217.35	9952.382	2217.26	9960.802	2217.09
9967.602	2216.86	9982.692	2216.39	9983.062	2216.29	9983.6	2216.28	9983.602	2216.28
9984.642	2216.19	9990.76	2215.66	9994.962	2215.31	10000.88	2215.34	10005.46	2215.37
10009.69	2215.76	10017.13	2216.47	10021.08	2216.81	10021.82	2216.81	10022.56	2216.8
10026.4	2216.74	10026.88	2216.81	10026.95	2216.8	10028.2	2216.81	10029.37	2216.6
10045.26	2217.65	10049.14	2217.91	10056.19	2218.35				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9928.622	.03	9990.76	.04	10009.69	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.76	10009.69	136.5	125.75	114.67	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2217.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.030	0.045	0.055
W.S. Elev (ft)	2217.11	Reach Len. (ft)	136.50	125.75	114.67
Crit W.S. (ft)	2217.11	Flow Area (sq ft)	17.89	31.98	14.11
E.G. Slope (ft/ft)	0.016364	Area (sq ft)	17.89	31.98	14.11
Q Total (cfs)	301.00	Flow (cfs)	78.38	191.40	31.22
Top Width (ft)	77.45	Top Width (ft)	31.08	18.93	27.44
Vel Total (ft/s)	4.70	Avg. Vel. (ft/s)	4.38	5.98	2.21
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)	0.58	1.69	0.51
Conv. Total (cfs)	2353.0	Conv. (cfs)	612.7	1496.2	244.0
Length Wtd. (ft)	128.48	Wetted Per. (ft)	31.12	18.96	27.52
Min Ch El (ft)	2215.31	Shear (lb/sq ft)	0.59	1.72	0.52

Alpha	1.28	Stream Power (lb/ft s)	2.57	10.31	1.16
Frctn Loss (ft)	1.97	Cum Volume (acre-ft)	0.58	1.13	0.76
C & E Loss (ft)	0.00	Cum SA (acres)	0.73	0.57	0.86

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2218.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.87	Wt. n-Val.	0.030	0.045	
W.S. Elev (ft)	2217.23	Reach Len. (ft)	136.50	125.75	114.67
Crit W.S. (ft)	2217.23	Flow Area (sq ft)	6.15	34.15	
E.G. Slope (ft/ft)	0.024835	Area (sq ft)	6.15	34.15	
Q Total (cfs)	301.00	Flow (cfs)	50.60	250.40	
Top Width (ft)	23.43	Top Width (ft)	4.50	18.93	
Vel Total (ft/s)	7.47	Avg. Vel. (ft/s)	8.22	7.33	
Max Chl Dpth (ft)	1.92	Hydr. Depth (ft)	1.37	1.80	
Conv. Total (cfs)	1910.0	Conv. (cfs)	321.1	1588.9	
Length Wtd. (ft)	127.23	Wetted Per. (ft)	5.69	20.42	
Min Ch El (ft)	2215.31	Shear (lb/sq ft)	1.68	2.59	
Alpha	1.01	Stream Power (lb/ft s)	13.78	19.01	
Frctn Loss (ft)	2.69	Cum Volume (acre-ft)	0.42	1.17	0.56
C & E Loss (ft)	0.04	Cum SA (acres)	0.37	0.57	0.49

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9953.48	9965.90	0.61	0.57	6.23	0.20	0.09	1.07
2	LOB	9965.90	9978.33	15.42	5.23	12.44	5.12	0.42	2.95
3	LOB	9978.33	9990.76	62.35	12.10	12.46	20.72	0.97	5.15
4	Chan	9990.76	9993.46	23.84	4.22	2.71	7.92	1.56	5.65
5	Chan	9993.46	9996.17	29.36	4.78	2.71	9.76	1.77	6.15
6	Chan	9996.17	9998.87	30.05	4.84	2.70	9.98	1.79	6.21
7	Chan	9998.87	10001.58	29.67	4.80	2.70	9.86	1.78	6.18
8	Chan	10001.58	10004.28	29.21	4.76	2.70	9.70	1.76	6.14
9	Chan	10004.28	10006.99	27.65	4.61	2.71	9.19	1.70	6.00
10	Chan	10006.99	10009.69	21.61	3.98	2.72	7.18	1.47	5.43
11	ROB	10009.69	10018.99	23.43	8.44	9.34	7.79	0.91	2.78
12	ROB	10018.99	10028.29	4.71	3.22	9.31	1.57	0.35	1.46
13	ROB	10028.29	10037.59	3.07	2.44	8.87	1.02	0.28	1.26

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9978.33	9990.76	50.60	6.15	5.69	16.81	1.37	8.22
2	Chan	9990.76	9993.46	32.41	4.53	2.71	10.77	1.67	7.16
3	Chan	9993.46	9996.17	39.38	5.09	2.71	13.08	1.88	7.74
4	Chan	9996.17	9998.87	40.25	5.15	2.70	13.37	1.90	7.82
5	Chan	9998.87	10001.58	39.76	5.11	2.70	13.21	1.89	7.78
6	Chan	10001.58	10004.28	39.18	5.07	2.70	13.02	1.87	7.73
7	Chan	10004.28	10006.99	37.22	4.92	2.71	12.36	1.82	7.57
8	Chan	10006.99	10009.69	22.21	4.29	4.17	7.38	1.59	5.18

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

CROSS SECTION

RIVER: X5
REACH: Reach 1 RS: 0.745

INPUT

Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9934.414	2213.26	9934.904	2213.22	9945.124	2212.74	9947.354	2212.71	9951.434	2212.41
9955.044	2212.33	9961.334	2212.18	9968.494	2211.97	9974.374	2211.73	9979.864	2211.45
9985.574	2211.32	9990.23	2211.44	9990.234	2211.44	9992.77	2211.06	9992.774	2211.06
9999.344	2209.96	10004.26	2211.03	10006.01	2211.41	10012.72	2212.09	10015.09	2212.31
10037.29	2213.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9934.414	.035	9992.77	.045	10004.26	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.77	10004.26	141.53	122.83	117.72	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2213.00	Element			
Vel Head (ft)	0.43	Wt. n-Val.	0.035	0.045	0.055
W.S. Elev (ft)	2212.56	Reach Len. (ft)	141.53	122.83	117.72
Crit W.S. (ft)	2212.56	Flow Area (sq ft)	31.41	23.67	9.15
E.G. Slope (ft/ft)	0.014451	Area (sq ft)	31.41	23.67	9.15
Q Total (cfs)	301.00	Flow (cfs)	129.06	150.28	21.66
Top Width (ft)	69.52	Top Width (ft)	43.42	11.49	14.61
Vel Total (ft/s)	4.69	Avg. Vel. (ft/s)	4.11	6.35	2.37
Max Chl Dpth (ft)	2.60	Hydr. Depth (ft)	0.72	2.06	0.63
Conv. Total (cfs)	2503.9	Conv. (cfs)	1073.6	1250.1	180.2
Length Wtd. (ft)	127.03	Wetted Per. (ft)	43.48	11.70	14.70
Min Ch El (ft)	2209.96	Shear (lb/sq ft)	0.65	1.83	0.56
Alpha	1.26	Stream Power (lb/ft s)	2.68	11.59	1.33
Frctn Loss (ft)	2.03	Cum Volume (acre-ft)	0.50	1.05	0.73
C & E Loss (ft)	0.02	Cum SA (acres)	0.62	0.52	0.80

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2213.49	Element			
Vel Head (ft)	0.74	Wt. n-Val.	0.035	0.045	0.055
W.S. Elev (ft)	2212.75	Reach Len. (ft)	141.53	122.83	117.72
Crit W.S. (ft)	2212.73	Flow Area (sq ft)	10.85	25.78	10.27
E.G. Slope (ft/ft)	0.018211	Area (sq ft)	10.85	25.78	10.27
Q Total (cfs)	301.00	Flow (cfs)	69.82	194.53	36.65
Top Width (ft)	29.17	Top Width (ft)	7.68	11.49	10.00
Vel Total (ft/s)	6.42	Avg. Vel. (ft/s)	6.43	7.55	3.57
Max Chl Dpth (ft)	2.79	Hydr. Depth (ft)	1.41	2.24	1.03
Conv. Total (cfs)	2230.5	Conv. (cfs)	517.4	1441.5	271.6
Length Wtd. (ft)	125.19	Wetted Per. (ft)	9.13	11.70	10.60
Min Ch El (ft)	2209.96	Shear (lb/sq ft)	1.35	2.51	1.10
Alpha	1.16	Stream Power (lb/ft s)	8.70	18.91	3.93
Frctn Loss (ft)	2.59	Cum Volume (acre-ft)	0.39	1.09	0.55
C & E Loss (ft)	0.01	Cum SA (acres)	0.35	0.52	0.47

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9946.09	9957.76	2.28	1.58	8.42	0.76	0.19	1.44
2	LOB	9957.76	9969.43	13.73	5.29	11.68	4.56	0.45	2.60
3	LOB	9969.43	9981.10	42.09	10.36	11.68	13.98	0.89	4.06
4	LOB	9981.10	9992.77	70.95	14.18	11.70	23.57	1.22	5.00
5	Chan	9992.77	9994.41	14.55	2.69	1.66	4.84	1.64	5.41
6	Chan	9994.41	9996.05	18.84	3.14	1.66	6.26	1.92	5.99
7	Chan	9996.05	9997.69	23.56	3.60	1.66	7.83	2.19	6.55
8	Chan	9997.69	9999.34	28.68	4.04	1.66	9.53	2.46	7.09
9	Chan	9999.34	10000.98	27.79	3.98	1.68	9.23	2.43	6.98
10	Chan	10000.98	10002.62	21.31	3.40	1.68	7.08	2.07	6.27
11	Chan	10002.62	10004.26	15.54	2.81	1.68	5.16	1.71	5.53
12	ROB	10004.26	10010.87	18.50	6.76	6.67	6.15	1.02	2.74
13	ROB	10010.87	10017.47	3.14	2.33	6.63	1.04	0.35	1.35
14	ROB	10017.47	10024.08	0.02	0.07	1.40	0.01	0.05	0.35

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9981.10	9992.77	69.81	10.85	9.13	23.19	1.41	6.43
2	Chan	9992.77	9994.41	19.54	2.99	1.66	6.49	1.82	6.53
3	Chan	9994.41	9996.05	24.69	3.45	1.66	8.20	2.10	7.17
4	Chan	9996.05	9997.69	30.31	3.90	1.66	10.07	2.37	7.78
5	Chan	9997.69	9999.34	36.36	4.35	1.66	12.08	2.65	8.37
6	Chan	9999.34	10000.98	35.30	4.29	1.68	11.73	2.61	8.24
7	Chan	10000.98	10002.62	27.62	3.70	1.68	9.18	2.25	7.47
8	Chan	10002.62	10004.26	20.71	3.11	1.68	6.88	1.90	6.65
9	ROB	10004.26	10010.87	31.10	7.97	6.67	10.33	1.21	3.90
10	ROB	10010.87	10017.47	5.56	2.29	3.92	1.85	0.68	2.42

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION

RIVER: X5
REACH: Reach 1 RS: 0.722

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9958.084	22129958.814	2211.949960.084	2211.869960.444	2211.829965.114	2211.54				
9967.834	2211.239973.574	2210.779982.774	2209.969983.644	2209.799983.884	2209.99				
9986.954	2209.44 9991.722208.724	9994.722208.2739999.664	2207.5310003.85	2207.9					
10007.162208.22410014.89	2208.9810016.47	2209.0410025.13	2209.47 10030.2	2209.7					
10032.62 2210.1910032.77	2210.2310033.52	2210.3810033.57	2210.3810038.04	2210.88					
10039.38 2211.0710041.28	2211.3610046.24	2212.06							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9958.084	.055	9994.72	.04510007.16	.055	

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.7210007.16		101.54	111.22	121.42	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2210.63	Element			
Vel Head (ft)	0.60	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2210.04	Reach Len. (ft)	101.54	111.22	121.42
Crit W.S. (ft)	2210.04	Flow Area (sq ft)	10.36	26.81	22.05
E.G. Slope (ft/ft)	0.017719	Area (sq ft)	10.36	26.81	22.05
Q Total (cfs)	301.00	Flow (cfs)	31.95	195.71	73.34
Top Width (ft)	49.96	Top Width (ft)	12.82	12.44	24.70
Vel Total (ft/s)	5.08	Avg. Vel. (ft/s)	3.08	7.30	3.33
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	0.81	2.16	0.89
Conv. Total (cfs)	2261.2	Conv. (cfs)	240.0	1470.2	550.9
Length Wtd. (ft)	111.26	Wetted Per. (ft)	13.04	12.53	24.79
Min Ch El (ft)	2207.53	Shear (lb/sq ft)	0.88	2.37	0.98
Alpha	1.48	Stream Power (lb/ft s)	2.71	17.28	3.27
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	0.43	0.98	0.69
C & E Loss (ft)	0.07	Cum SA (acres)	0.53	0.49	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: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2210.88	Element			
Vel Head (ft)	0.88	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2210.00	Reach Len. (ft)	101.54	111.22	121.42
Crit W.S. (ft)	2210.00	Flow Area (sq ft)	6.74	26.32	10.71
E.G. Slope (ft/ft)	0.023726	Area (sq ft)	6.74	26.32	10.71
Q Total (cfs)	301.00	Flow (cfs)	30.23	219.62	51.15
Top Width (ft)	25.10	Top Width (ft)	5.00	12.44	7.66
Vel Total (ft/s)	6.88	Avg. Vel. (ft/s)	4.48	8.34	4.77
Max Chl Dpth (ft)	2.47	Hydr. Depth (ft)	1.35	2.12	1.40
Conv. Total (cfs)	1954.1	Conv. (cfs)	196.3	1425.8	332.0
Length Wtd. (ft)	111.60	Wetted Per. (ft)	6.03	12.53	8.72
Min Ch El (ft)	2207.53	Shear (lb/sq ft)	1.66	3.11	1.82
Alpha	1.20	Stream Power (lb/ft s)	7.43	25.97	8.69
Frctn Loss (ft)	2.01	Cum Volume (acre-ft)	0.36	1.01	0.52
C & E Loss (ft)	0.02	Cum SA (acres)	0.33	0.49	0.45

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.07	9987.39	1.81	1.47	5.64	0.60	0.27	1.23
2	LOB	9987.39	9994.72	30.14	8.89	7.41	10.01	1.21	3.39
3	Chan	9994.72	9996.50	22.44	3.37	1.80	7.46	1.90	6.65
4	Chan	9996.50	9998.27	27.95	3.85	1.80	9.29	2.16	7.27
5	Chan	9998.27	10000.05	33.73	4.30	1.79	11.21	2.42	7.84
6	Chan	10000.05	10001.83	33.21	4.25	1.78	11.03	2.39	7.81
7	Chan	10001.83	10003.61	29.67	3.98	1.78	9.86	2.24	7.46
8	Chan	10003.61	10005.38	26.13	3.69	1.79	8.68	2.07	7.09
9	Chan	10005.38	10007.16	22.58	3.38	1.79	7.50	1.90	6.69
10	ROB	10007.16	10014.98	45.39	11.18	7.85	15.08	1.43	4.06
11	ROB	10014.98	10022.79	20.05	6.84	7.82	6.66	0.88	2.93
12	ROB	10022.79	10030.61	7.76	3.87	7.83	2.58	0.50	2.01
13	ROB	10030.61	10038.42	0.13	0.16	1.28	0.04	0.13	0.80

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9987.39	9994.72	30.23	6.74	6.03	10.04	1.35	4.48
2	Chan	9994.72	9996.50	25.07	3.30	1.80	8.33	1.86	7.59
3	Chan	9996.50	9998.27	31.36	3.78	1.80	10.42	2.13	8.30
4	Chan	9998.27	10000.05	37.97	4.23	1.79	12.62	2.38	8.97
5	Chan	10000.05	10001.83	37.37	4.18	1.78	12.42	2.35	8.93
6	Chan	10001.83	10003.61	33.33	3.91	1.78	11.07	2.20	8.53
7	Chan	10003.61	10005.38	29.29	3.62	1.79	9.73	2.03	8.10
8	Chan	10005.38	10007.16	25.23	3.31	1.79	8.38	1.86	7.63
9	ROB	10007.16	10014.98	51.14	10.71	8.72	16.99	1.40	4.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X5
REACH: Reach 1 RS: 0.701

INPUT
Description: 14th Street
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9918.139	2210.979	919.929	2210.79	925.139	2209.869	929.109	2209.159	939.089	2207.74
9944.399	2207.629	947.199	2207.569	950.519	2207.529	957.979	2207.439	973.509	2207.04
9977.919	2206.88	9977.92	2206.889	978.959	2206.689	980.309	2206.629	993.829	2206.41
9999.809	2205.98	10004.47	2206.87	10004.52	2206.88	10004.57	2206.88	10006.71	2207.06
10010.32	2207.21	10019.42	2207.64	10021.81	2207.75	10025.88	2208.98	10031.24	2210.7

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9918.139	.069	939.089	.025	993.829	.045	10006.71	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.92	10004.47	68.88	67.86	66.39	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2208.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.025	0.032	0.033
W.S. Elev (ft)	2207.88	Reach Len. (ft)	68.88	67.86	66.39
Crit W.S. (ft)	2207.88	Flow Area (sq ft)	20.10	38.07	9.32
E.G. Slope (ft/ft)	0.008198	Area (sq ft)	20.10	38.07	9.32
Q Total (cfs)	301.00	Flow (cfs)	69.33	206.29	25.38
Top Width (ft)	84.12	Top Width (ft)	39.81	26.55	17.76
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)	3.45	5.42	2.72
Max Chl Dpth (ft)	1.90	Hydr. Depth (ft)	0.50	1.43	0.52

Conv. Total (cfs)	3324.3	Conv. (cfs)	765.8	2278.3	280.3
Length Wtd. (ft)	67.90	Wetted Per. (ft)	39.83	26.67	17.81
Min Ch El (ft)	2205.98	Shear (lb/sq ft)	0.26	0.73	0.27
Alpha	1.18	Stream Power (lb/ft s)	0.89	3.96	0.73
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	0.40	0.89	0.65
C & E Loss (ft)	0.05	Cum SA (acres)	0.47	0.44	0.69

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2208.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.		0.031	
W.S. Elev (ft)	2208.02	Reach Len. (ft)	68.88	67.86	66.39
Crit W.S. (ft)	2208.02	Flow Area (sq ft)		41.85	
E.G. Slope (ft/ft)	0.014076	Area (sq ft)		41.85	
Q Total (cfs)	301.00	Flow (cfs)		301.00	
Top Width (ft)	26.55	Top Width (ft)		26.55	
Vel Total (ft/s)	7.19	Avg. Vel. (ft/s)		7.19	
Max Chl Dpth (ft)	2.04	Hydr. Depth (ft)		1.58	
Conv. Total (cfs)	2537.0	Conv. (cfs)		2537.0	
Length Wtd. (ft)	67.92	Wetted Per. (ft)		28.96	
Min Ch El (ft)	2205.98	Shear (lb/sq ft)		1.27	
Alpha	1.00	Stream Power (lb/ft s)		9.13	
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)	0.35	0.92	0.51
C & E Loss (ft)	0.02	Cum SA (acres)	0.32	0.44	0.44

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9930.10	9942.05	0.79	0.58	3.95	0.26	0.15	1.37
2	LOB	9942.05	9954.01	8.65	3.80	11.96	2.87	0.32	2.28
3	LOB	9954.01	9965.96	18.88	6.06	11.96	6.27	0.51	3.11
4	LOB	9965.96	9977.92	41.01	9.66	11.96	13.63	0.81	4.25
5	Chan	9977.92	9981.71	27.74	4.58	3.81	9.22	1.21	6.06
6	Chan	9981.71	9985.51	31.85	4.97	3.79	10.58	1.31	6.41
7	Chan	9985.51	9989.30	34.28	5.19	3.79	11.39	1.37	6.61
8	Chan	9989.30	9993.09	36.77	5.41	3.79	12.22	1.43	6.79
9	Chan	9993.09	9996.88	26.88	5.90	3.80	8.93	1.56	4.56
10	Chan	9996.88	10000.68	29.91	6.82	3.82	9.94	1.80	4.38
11	Chan	10000.68	10004.47	18.86	5.20	3.86	6.27	1.37	3.63
12	ROB	10004.47	10009.82	13.36	4.39	5.37	4.44	0.82	3.04
13	ROB	10009.82	10015.18	8.57	3.03	5.36	2.85	0.57	2.83
14	ROB	10015.18	10020.53	3.19	1.67	5.36	1.06	0.31	1.91
15	ROB	10020.53	10025.89	0.25	0.23	1.72	0.08	0.13	1.08

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	Chan	9977.92	9981.71	36.21	5.12	4.95	12.03	1.35	7.07
2	Chan	9981.71	9985.51	48.83	5.51	3.79	16.22	1.45	8.87
3	Chan	9985.51	9989.30	52.19	5.73	3.79	17.34	1.51	9.11
4	Chan	9989.30	9993.09	55.61	5.95	3.79	18.48	1.57	9.34
5	Chan	9993.09	9996.88	40.19	6.44	3.80	13.35	1.70	6.24
6	Chan	9996.88	10000.68	43.83	7.36	3.82	14.56	1.94	5.96
7	Chan	10000.68	10004.47	24.13	5.74	5.01	8.02	1.51	4.21

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: 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: X5
REACH: Reach 1 RS: 0.688

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9961.01	2205.85	9963.67	2205.78	9965.34	2205.72	9966.9	2205.63	9977.27	2204.5
9982.35	2203.62	9986.89	2202.88	9991.88	2201.67	9995.62	2200.71	61000	0.22 2199.53
10007.11	220110	010.09	2201.61	0019.59	2203.41	10020.15	2203.51	10020.43	2203.57
10032.03	2206.05								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9961.01	.055	9995.6	.051	10007.11	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.61	10007.11	143.97	142.09	136.83	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2203.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.84	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2202.78	Reach Len. (ft)	143.97	142.09	136.83
Crit W.S. (ft)	2202.78	Flow Area (sq ft)	8.48	29.65	8.10
E.G. Slope (ft/ft)	0.021482	Area (sq ft)	8.48	29.65	8.10
Q Total (cfs)	301.00	Flow (cfs)	33.34	238.53	29.12
Top Width (ft)	29.02	Top Width (ft)	8.32	11.51	9.20
Vel Total (ft/s)	6.51	Avg. Vel. (ft/s)	3.93	8.04	3.59
Max Chl Dpth (ft)	3.25	Hydr. Depth (ft)	1.02	2.58	0.88
Conv. Total (cfs)	2053.7	Conv. (cfs)	227.5	1627.5	198.7
Length Wtd. (ft)	142.03	Wetted Per. (ft)	8.57	11.82	9.37
Min Ch El (ft)	2199.53	Shear (lb/sq ft)	1.33	3.37	1.16
Alpha	1.28	Stream Power (lb/ft s)	5.22	27.08	4.17
Frctn Loss (ft)	2.73	Cum Volume (acre-ft)	0.37	0.84	0.63
C & E Loss (ft)	0.07	Cum SA (acres)	0.43	0.41	0.67

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2203.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2202.88	Reach Len. (ft)	143.97	142.09	136.83
Crit W.S. (ft)	2202.88	Flow Area (sq ft)	9.28	30.75	1.42
E.G. Slope (ft/ft)	0.022252	Area (sq ft)	9.28	30.75	1.42
Q Total (cfs)	301.00	Flow (cfs)	39.11	257.98	3.91
Top Width (ft)	20.62	Top Width (ft)	8.32	11.51	0.79
Vel Total (ft/s)	7.26	Avg. Vel. (ft/s)	4.22	8.39	2.75
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)	1.11	2.67	1.80
Conv. Total (cfs)	2017.8	Conv. (cfs)	262.2	1729.5	26.2
Length Wtd. (ft)	142.20	Wetted Per. (ft)	8.67	11.82	2.53
Min Ch El (ft)	2199.53	Shear (lb/sq ft)	1.49	3.62	0.78
Alpha	1.19	Stream Power (lb/ft s)	6.27	30.33	2.15
Frctn Loss (ft)	3.39	Cum Volume (acre-ft)	0.35	0.87	0.50
C & E Loss (ft)	0.01	Cum SA (acres)	0.32	0.41	0.44

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9981.76	9988.68	0.26	0.24	1.44	0.09	0.17	1.09
2	LOB	9988.68	9995.60	33.08	8.24	7.13	10.99	1.19	4.01
3	Chan	9995.60	9997.24	27.34	3.75	1.70	9.08	2.28	7.30
4	Chan	9997.24	9998.89	36.30	4.44	1.70	12.06	2.70	8.17
5	Chan	9998.89	10000.53	45.94	5.11	1.69	15.26	3.11	8.98
6	Chan	10000.53	10002.18	43.77	4.95	1.68	14.54	3.01	8.84
7	Chan	10002.18	10003.82	35.63	4.38	1.68	11.84	2.66	8.14
8	Chan	10003.82	10005.47	28.15	3.80	1.68	9.35	2.31	7.41
9	Chan	10005.47	10007.11	21.39	3.22	1.68	7.11	1.96	6.64
10	ROB	10007.11	10012.09	25.98	6.41	5.08	8.63	1.29	4.05
11	ROB	10012.09	10017.08	3.15	1.69	4.29	1.05	0.40	1.86

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9981.76	9988.68	0.54	0.37	1.54	0.18	0.26	1.45
2	LOB	9988.68	9995.60	38.57	8.90	7.13	12.81	1.29	4.33
3	Chan	9995.60	9997.24	29.83	3.91	1.70	9.91	2.37	7.64
4	Chan	9997.24	9998.89	39.18	4.60	1.70	13.02	2.80	8.52
5	Chan	9998.89	10000.53	49.23	5.27	1.69	16.35	3.21	9.34
6	Chan	10000.53	10002.18	46.97	5.11	1.68	15.61	3.11	9.20
7	Chan	10002.18	10003.82	38.50	4.53	1.68	12.79	2.76	8.49
8	Chan	10003.82	10005.47	30.68	3.96	1.68	10.19	2.41	7.75
9	Chan	10005.47	10007.11	23.60	3.38	1.68	7.84	2.06	6.98
10	ROB	10007.11	10012.09	3.91	1.42	2.53	1.30	1.80	2.75

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.661

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9950.424	2200.49	9953.444	2200.25	9956.544	2200.03	9961.014	2199.69	9967.714	2198.88
9968.074	2198.84	9974.364	2198.46	9979.874	2198.39	9984.154	2198.13	9993.642	2196.827
9997.404	2196.31	9999.794	2195.95	10002.96	2196.35	10005.81	2196.75	10011.87	2198.98
10018.42	2201.51								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9950.424	.03	9993.64	.05	10005.81	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.64	10005.81	73.73	94.34	102.6	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2199.33	Element			
Vel Head (ft)	0.61	Wt. n-Val.	0.030	0.050	0.050
W.S. Elev (ft)	2198.72	Reach Len. (ft)	73.73	94.34	102.60
Crit W.S. (ft)	2198.72	Flow Area (sq ft)	16.47	28.66	5.30
E.G. Slope (ft/ft)	0.017318	Area (sq ft)	16.47	28.66	5.30
Q Total (cfs)	301.00	Flow (cfs)	84.14	197.18	19.68
Top Width (ft)	41.19	Top Width (ft)	23.65	12.17	5.37
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)	5.11	6.88	3.72
Max Chl Dpth (ft)	2.77	Hydr. Depth (ft)	0.70	2.36	0.99
Conv. Total (cfs)	2287.3	Conv. (cfs)	639.4	1498.4	149.6
Length Wtd. (ft)	91.87	Wetted Per. (ft)	23.75	12.29	5.72
Min Ch El (ft)	2195.95	Shear (lb/sq ft)	0.75	2.52	1.00
Alpha	1.10	Stream Power (lb/ft s)	3.83	17.35	3.72
Frctn Loss (ft)	1.77	Cum Volume (acre-ft)	0.33	0.75	0.61
C & E Loss (ft)	0.02	Cum SA (acres)	0.37	0.37	0.65

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2199.74	Element			
Vel Head (ft)	1.05	Wt. n-Val.	0.030	0.050	0.050
W.S. Elev (ft)	2198.69	Reach Len. (ft)	73.73	94.34	102.60
Crit W.S. (ft)	2198.69	Flow Area (sq ft)	5.87	28.23	3.36
E.G. Slope (ft/ft)	0.025612	Area (sq ft)	5.87	28.23	3.36
Q Total (cfs)	301.00	Flow (cfs)	51.50	233.82	15.69
Top Width (ft)	18.00	Top Width (ft)	3.64	12.17	2.19
Vel Total (ft/s)	8.03	Avg. Vel. (ft/s)	8.78	8.28	4.66
Max Chl Dpth (ft)	2.74	Hydr. Depth (ft)	1.61	2.32	1.54

Conv. Total (cfs)	1880.8	Conv. (cfs)	321.8	1461.0	98.0
Length Wtd. (ft)	92.94	Wetted Per. (ft)	5.04	12.29	3.47
Min Ch El (ft)	2195.95	Shear (lb/sq ft)	1.86	3.67	1.55
Alpha	1.05	Stream Power (lb/ft s)	16.35	30.43	7.23
Frctn Loss (ft)	2.10	Cum Volume (acre-ft)	0.32	0.77	0.50
C & E Loss (ft)	0.08	Cum SA (acres)	0.30	0.37	0.43

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.71	9976.35	1.94	1.16	6.37	0.65	0.18	1.67
2	LOB	9976.35	9985.00	12.66	4.04	8.66	4.21	0.47	3.13
3	LOB	9985.00	9993.64	69.53	11.27	8.72	23.10	1.30	6.17
4	Chan	9993.64	9995.38	21.63	3.51	1.75	7.19	2.02	6.17
5	Chan	9995.38	9997.12	26.08	3.92	1.76	8.66	2.26	6.65
6	Chan	9997.12	9998.86	30.96	4.35	1.76	10.28	2.50	7.12
7	Chan	9998.86	10000.59	35.45	4.72	1.76	11.78	2.71	7.52
8	Chan	10000.59	10002.33	32.29	4.46	1.75	10.73	2.56	7.25
9	Chan	10002.33	10004.07	27.71	4.07	1.76	9.20	2.34	6.81
10	Chan	10004.07	10005.81	23.06	3.64	1.76	7.66	2.10	6.33
11	ROB	10005.81	10008.33	16.34	3.81	2.69	5.43	1.51	4.29
12	ROB	10008.33	10010.85	3.34	1.47	2.69	1.11	0.58	2.27
13	ROB	10010.85	10013.38	0.01	0.02	0.34	0.00	0.06	0.49

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9985.00	9993.64	51.50	5.87	5.04	17.11	1.61	8.78
2	Chan	9993.64	9995.38	25.54	3.44	1.75	8.48	1.98	7.41
3	Chan	9995.38	9997.12	30.88	3.86	1.76	10.26	2.22	8.00
4	Chan	9997.12	9998.86	36.76	4.29	1.76	12.21	2.47	8.57
5	Chan	9998.86	10000.59	42.17	4.65	1.76	14.01	2.68	9.06
6	Chan	10000.59	10002.33	38.36	4.39	1.75	12.75	2.53	8.73
7	Chan	10002.33	10004.07	32.84	4.01	1.76	10.91	2.30	8.20
8	Chan	10004.07	10005.81	27.26	3.58	1.76	9.06	2.06	7.61
9	ROB	10005.81	10008.33	15.69	3.36	3.47	5.21	1.54	4.66

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.643

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9969.876	2198	9971.886	2197.86	9974.966	2197.62	9975.196	2197.69	9978.686	2197.32
9985.396	2196.82	9987.536	2196.12	9991.246	2194.86	9995.946	2193.03	9995.952	2193.029
9999.456	2191.78	10003.4	2192.31	10009.08	2193.11	10020.35	2195.11	10029.63	2196.77
10037.93	2197.11	10042.31	2197.26	10051.24	2197.59	10061.78	2198.01		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9969.876	.055	9995.95	.05	10009.08	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.95	10009.08	120.3	114.17	101.45	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2195.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.055	0.050	0.035
W.S. Elev (ft)	2194.81	Reach Len. (ft)	120.30	114.17	101.45
Crit W.S. (ft)	2194.81	Flow Area (sq ft)	4.09	31.34	8.23
E.G. Slope (ft/ft)	0.021605	Area (sq ft)	4.09	31.34	8.23
Q Total (cfs)	301.00	Flow (cfs)	14.37	240.79	45.84
Top Width (ft)	27.32	Top Width (ft)	4.58	13.13	9.61
Vel Total (ft/s)	6.89	Avg. Vel. (ft/s)	3.51	7.68	5.57
Max Chl Dpth (ft)	3.03	Hydr. Depth (ft)	0.89	2.39	0.86
Conv. Total (cfs)	2047.8	Conv. (cfs)	97.8	1638.1	311.9
Length Wtd. (ft)	112.86	Wetted Per. (ft)	4.92	13.44	9.76
Min Ch El (ft)	2191.78	Shear (lb/sq ft)	1.12	3.15	1.14
Alpha	1.11	Stream Power (lb/ft s)	3.94	24.17	6.34
Frctn Loss (ft)	2.56	Cum Volume (acre-ft)	0.32	0.68	0.60
C & E Loss (ft)	0.00	Cum SA (acres)	0.35	0.34	0.63

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2195.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.77	Wt. n-Val.	0.055	0.050	0.035
W.S. Elev (ft)	2194.85	Reach Len. (ft)	120.30	114.17	101.45
Crit W.S. (ft)	2194.85	Flow Area (sq ft)	4.27	31.86	8.61
E.G. Slope (ft/ft)	0.020084	Area (sq ft)	4.27	31.86	8.61
Q Total (cfs)	301.00	Flow (cfs)	14.82	238.64	47.54
Top Width (ft)	27.32	Top Width (ft)	4.58	13.13	9.61
Vel Total (ft/s)	6.73	Avg. Vel. (ft/s)	3.47	7.49	5.52
Max Chl Dpth (ft)	3.07	Hydr. Depth (ft)	0.93	2.43	0.90
Conv. Total (cfs)	2123.9	Conv. (cfs)	104.6	1683.9	335.4
Length Wtd. (ft)	112.80	Wetted Per. (ft)	4.96	13.44	9.80
Min Ch El (ft)	2191.78	Shear (lb/sq ft)	1.08	2.97	1.10
Alpha	1.10	Stream Power (lb/ft s)	3.75	22.27	6.08
Frctn Loss (ft)	2.36	Cum Volume (acre-ft)	0.31	0.71	0.48
C & E Loss (ft)	0.00	Cum SA (acres)	0.29	0.34	0.42

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9990.74	9995.95	14.37	4.09	4.92	4.77	0.89	3.51
2	Chan	9995.95	9997.83	27.18	3.97	1.99	9.03	2.12	6.84
3	Chan	9997.83	9999.70	42.88	5.21	1.98	14.25	2.78	8.23
4	Chan	9999.70	10001.58	46.75	5.39	1.89	15.53	2.87	8.67
5	Chan	10001.58	10003.45	40.12	4.92	1.89	13.33	2.62	8.16
6	Chan	10003.45	10005.33	33.77	4.44	1.89	11.22	2.37	7.61
7	Chan	10005.33	10007.20	27.78	3.95	1.89	9.23	2.10	7.04
8	Chan	10007.20	10009.08	22.30	3.46	1.89	7.41	1.84	6.45
9	ROB	10009.08	10019.62	45.84	8.23	9.76	15.23	0.86	5.57

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9990.74	9995.95	14.82	4.27	4.96	4.93	0.93	3.47
2	Chan	9995.95	9997.83	27.04	4.05	1.99	8.98	2.16	6.68
3	Chan	9997.83	9999.70	42.35	5.29	1.98	14.07	2.82	8.01
4	Chan	9999.70	10001.58	46.14	5.47	1.89	15.33	2.91	8.44
5	Chan	10001.58	10003.45	39.68	4.99	1.89	13.18	2.66	7.95
6	Chan	10003.45	10005.33	33.49	4.51	1.89	11.13	2.41	7.42
7	Chan	10005.33	10007.20	27.65	4.02	1.89	9.19	2.14	6.88
8	Chan	10007.20	10009.08	22.28	3.53	1.89	7.40	1.88	6.31
9	ROB	10009.08	10019.62	47.53	8.61	9.80	15.79	0.90	5.52

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 cross section had to be extended vertically during the critical depth calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.622

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9967.356	2195.56	9971.106	2194.65	9989.296	2189.87	9991.446	2189.04	9991.45	2189.039
9998.076	2187	10004.99	2188.46	10007.8	2189.01	10010.43	2189.25	10013.01	2189.35
10038.21	2193.06								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9967.356	.06	9991.45	.05	10007.8	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.45	10007.8		177.43	179.01	180.79	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2191.03	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2190.21	Reach Len. (ft)	177.43	179.01	180.79
Crit W.S. (ft)	2190.21	Flow Area (sq ft)	1.85	35.84	7.72
E.G. Slope (ft/ft)	0.023753	Area (sq ft)	1.85	35.84	7.72
Q Total (cfs)	301.00	Flow (cfs)	4.50	271.32	25.18
Top Width (ft)	30.87	Top Width (ft)	3.46	16.35	11.06
Vel Total (ft/s)	6.63	Avg. Vel. (ft/s)	2.43	7.57	3.26
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)	0.54	2.19	0.70
Conv. Total (cfs)	1953.0	Conv. (cfs)	29.2	1760.5	163.3
Length Wtd. (ft)	179.30	Wetted Per. (ft)	3.65	16.86	11.14
Min Ch El (ft)	2187.00	Shear (lb/sq ft)	0.75	3.15	1.03
Alpha	1.20	Stream Power (lb/ft s)	1.83	23.86	3.35
Frctn Loss (ft)	4.08	Cum Volume (acre-ft)	0.31	0.59	0.58
C & E Loss (ft)	0.02	Cum SA (acres)	0.34	0.31	0.60

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2191.03	Element			
Vel Head (ft)	0.77	Wt. n-Val.	0.060	0.050	0.055
W.S. Elev (ft)	2190.26	Reach Len. (ft)	177.43	179.01	180.79
Crit W.S. (ft)	2190.26	Flow Area (sq ft)	2.02	36.61	8.25
E.G. Slope (ft/ft)	0.021773	Area (sq ft)	2.02	36.61	8.25
Q Total (cfs)	301.00	Flow (cfs)	4.93	269.24	26.83
Top Width (ft)	30.86	Top Width (ft)	3.45	16.35	11.06
Vel Total (ft/s)	6.42	Avg. Vel. (ft/s)	2.44	7.35	3.25
Max Chl Dpth (ft)	3.26	Hydr. Depth (ft)	0.59	2.24	0.75
Conv. Total (cfs)	2039.9	Conv. (cfs)	33.4	1824.7	181.9
Length Wtd. (ft)	179.31	Wetted Per. (ft)	3.70	16.86	11.18
Min Ch El (ft)	2187.00	Shear (lb/sq ft)	0.74	2.95	1.00
Alpha	1.20	Stream Power (lb/ft s)	1.81	21.70	3.26
Frctn Loss (ft)	3.61	Cum Volume (acre-ft)	0.30	0.62	0.46
C & E Loss (ft)	0.03	Cum SA (acres)	0.28	0.31	0.39

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.63	9991.45	4.50	1.85	3.65	1.50	0.54	2.43
2	Chan	9991.45	9993.79	20.40	3.58	2.44	6.78	1.53	5.70
3	Chan	9993.79	9996.12	38.71	5.26	2.44	12.86	2.25	7.37
4	Chan	9996.12	9998.46	61.06	6.90	2.43	20.29	2.95	8.85
5	Chan	9998.46	10000.79	59.48	6.74	2.39	19.76	2.88	8.83
6	Chan	10000.79	10003.13	43.52	5.59	2.39	14.46	2.39	7.79

7	Chan	10003.13	10005.46	29.63	4.43	2.39	9.85	1.90	6.68
8	Chan	10005.46	10007.80	18.52	3.34	2.38	6.15	1.43	5.54
9	ROB	10007.80	10013.88	21.68	5.89	6.10	7.20	0.97	3.68
10	ROB	10013.88	10019.96	3.50	1.83	5.04	1.16	0.37	1.92

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9986.63	9991.45	4.93	2.02	3.70	1.64	0.59	2.44
2	Chan	9991.45	9993.79	20.58	3.69	2.44	6.84	1.58	5.58
3	Chan	9993.79	9996.12	38.43	5.37	2.44	12.77	2.30	7.16
4	Chan	9996.12	9998.46	60.13	7.01	2.43	19.98	3.00	8.58
5	Chan	9998.46	10000.79	58.61	6.85	2.39	19.47	2.93	8.56
6	Chan	10000.79	10003.13	43.12	5.70	2.39	14.33	2.44	7.57
7	Chan	10003.13	10005.46	29.61	4.55	2.39	9.84	1.95	6.51
8	Chan	10005.46	10007.80	18.75	3.45	2.38	6.23	1.48	5.43
9	ROB	10007.80	10013.88	22.71	6.18	6.10	7.54	1.02	3.67
10	ROB	10013.88	10019.96	4.12	2.06	5.08	1.37	0.41	2.00

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.588

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9958.247	2186.689	964.947	2186.49	971.447	2186.149	974.417	2185.969	989.447	2185.01
9993.572	2183.893	9998.157	2182.65	9998.162	2182.64	910000.59	2181.891	0001.34	2182.1
10004.12	2183.141	0012.55	2183.58	10019.54	2183.94	10028.54	2186.131	0033.98	2187.35

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9958.247	.055	9998.16	.045	10004.12	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9998.161	0004.12	174.79	174.75	189.45	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2185.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2185.02	Reach Len. (ft)	174.79	174.75	189.45
Crit W.S. (ft)	2185.02	Flow Area (sq ft)	10.33	15.60	25.11
E.G. Slope (ft/ft)	0.021841	Area (sq ft)	10.33	15.60	25.11
Q Total (cfs)	301.00	Flow (cfs)	44.85	139.42	116.73
Top Width (ft)	34.60	Top Width (ft)	8.80	5.96	19.84
Vel Total (ft/s)	5.90	Avg. Vel. (ft/s)	4.34	8.94	4.65
Max Chl Dpth (ft)	3.13	Hydr. Depth (ft)	1.17	2.62	1.27
Conv. Total (cfs)	2036.7	Conv. (cfs)	303.5	943.4	789.8
Length Wtd. (ft)	179.16	Wetted Per. (ft)	9.12	6.29	19.99
Min Ch El (ft)	2181.89	Shear (lb/sq ft)	1.55	3.38	1.71
Alpha	1.39	Stream Power (lb/ft s)	6.71	30.21	7.96
Frctn Loss (ft)	3.78	Cum Volume (acre-ft)	0.28	0.49	0.51
C & E Loss (ft)	0.08	Cum SA (acres)	0.31	0.26	0.54

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2185.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.66	Wt. n-Val.	0.055	0.045	0.055
W.S. Elev (ft)	2185.10	Reach Len. (ft)	174.79	174.75	189.45
Crit W.S. (ft)	2185.10	Flow Area (sq ft)	11.04	16.08	26.71
E.G. Slope (ft/ft)	0.018679	Area (sq ft)	11.04	16.08	26.71

Q Total (cfs)	301.00	Flow (cfs)	46.06	135.61	119.32
Top Width (ft)	34.60	Top Width (ft)	8.80	5.96	19.84
Vel Total (ft/s)	5.59	Avg. Vel. (ft/s)	4.17	8.43	4.47
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)	1.25	2.70	1.35
Conv. Total (cfs)	2202.4	Conv. (cfs)	337.0	992.3	873.1
Length Wtd. (ft)	179.22	Wetted Per. (ft)	9.19	6.29	20.07
Min Ch El (ft)	2181.89	Shear (lb/sq ft)	1.40	2.98	1.55
Alpha	1.36	Stream Power (lb/ft s)	5.84	25.13	6.93
Frctn Loss (ft)	3.72	Cum Volume (acre-ft)	0.28	0.51	0.39
C & E Loss (ft)	0.02	Cum SA (acres)	0.25	0.26	0.33

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9982.20	9990.18	0.06	0.08	0.85	0.02	0.09	0.76
2	LOB	9990.18	9998.16	44.80	10.26	8.27	14.88	1.28	4.37
3	Chan	9998.16	9999.01	18.37	2.13	0.89	6.10	2.50	8.63
4	Chan	9999.01	9999.86	21.75	2.36	0.89	7.22	2.77	9.23
5	Chan	9999.86	10000.71	25.29	2.58	0.89	8.40	3.03	9.81
6	Chan	10000.71	10001.57	24.46	2.53	0.89	8.13	2.97	9.69
7	Chan	10001.57	10002.42	20.27	2.28	0.91	6.73	2.67	8.91
8	Chan	10002.42	10003.27	16.41	2.00	0.91	5.45	2.35	8.19
9	Chan	10003.27	10004.12	12.88	1.73	0.91	4.28	2.03	7.43
10	ROB	10004.12	10010.09	54.77	10.27	5.98	18.20	1.72	5.33
11	ROB	10010.09	10016.06	39.28	8.41	5.98	13.05	1.41	4.67
12	ROB	10016.06	10022.04	22.05	5.98	6.05	7.32	1.00	3.69
13	ROB	10022.04	10028.01	0.62	0.45	1.98	0.21	0.23	1.39

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9982.20	9990.18	0.14	0.14	0.92	0.05	0.17	1.01
2	LOB	9990.18	9998.16	45.92	10.90	8.27	15.26	1.37	4.21
3	Chan	9998.16	9999.01	17.92	2.20	0.89	5.95	2.58	8.16
4	Chan	9999.01	9999.86	21.11	2.42	0.89	7.01	2.85	8.71
5	Chan	9999.86	10000.71	24.44	2.65	0.89	8.12	3.11	9.24
6	Chan	10000.71	10001.57	23.67	2.59	0.89	7.86	3.05	9.12
7	Chan	10001.57	10002.42	19.71	2.34	0.91	6.55	2.75	8.41
8	Chan	10002.42	10003.27	16.06	2.07	0.91	5.33	2.43	7.75
9	Chan	10003.27	10004.12	12.71	1.80	0.91	4.22	2.12	7.06
10	ROB	10004.12	10010.09	54.98	10.75	5.98	18.27	1.80	5.11
11	ROB	10010.09	10016.06	40.09	8.90	5.98	13.32	1.49	4.51
12	ROB	10016.06	10022.04	23.33	6.46	6.05	7.75	1.08	3.61
13	ROB	10022.04	10028.01	0.93	0.61	2.06	0.31	0.31	1.53

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.555

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9935.318	2180.49	9957.588	2179.77	9958.828	2179.73	9959.118	2179.72	9959.318	2179.71
9959.458	2179.71	9959.728	2179.69	9959.798	2179.69	9960.128	2179.66	9963.878	2179.38
9965.728	2179.24	9969.978	2178.98	9977.978	2178.47	9981.658	2178.29	9994.928	2177.56
9994.93	2177.55	9997.378	2176.63	9997.958	2176.41	10003.9	2177.4	10008.42	2178.16
10009.62	2178.34	10010.06	2178.33	10010.3	2178.34	10011.99	2178.33	10014.58	2178.34
10015.67	2178.34	10016.71	2178.34	10021.91	2178.74	10027.85	2179.13	10029.54	2179.25

10037.31 2179.9610041.02 2180.26

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9935.318	.055	9994.93	.05	10003.9	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.93	10003.9	200.81	185.84	173.26	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2179.73	Element			
Vel Head (ft)	0.49	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2179.24	Reach Len. (ft)	200.81	185.84	173.26
Crit W.S. (ft)	2179.24	Flow Area (sq ft)	25.15	20.65	19.60
E.G. Slope (ft/ft)	0.020409	Area (sq ft)	25.15	20.65	19.60
Q Total (cfs)	301.00	Flow (cfs)	87.95	149.63	63.42
Top Width (ft)	63.53	Top Width (ft)	29.13	8.97	25.43
Vel Total (ft/s)	4.60	Avg. Vel. (ft/s)	3.50	7.25	3.24
Max Chl Dpth (ft)	2.83	Hydr. Depth (ft)	0.86	2.30	0.77
Conv. Total (cfs)	2106.9	Conv. (cfs)	615.6	1047.4	443.9
Length Wtd. (ft)	185.43	Wetted Per. (ft)	29.17	9.26	25.54
Min Ch El (ft)	2176.41	Shear (lb/sq ft)	1.10	2.84	0.98
Alpha	1.51	Stream Power (lb/ft s)	3.84	20.58	3.16
Frctn Loss (ft)	3.82	Cum Volume (acre-ft)	0.21	0.41	0.41
C & E Loss (ft)	0.01	Cum SA (acres)	0.24	0.23	0.44

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2179.80	Element			
Vel Head (ft)	0.61	Wt. n-Val.	0.055	0.050	0.055
W.S. Elev (ft)	2179.20	Reach Len. (ft)	200.81	185.84	173.26
Crit W.S. (ft)	2179.20	Flow Area (sq ft)	18.21	20.31	15.79
E.G. Slope (ft/ft)	0.023161	Area (sq ft)	18.21	20.31	15.79
Q Total (cfs)	301.00	Flow (cfs)	82.79	154.98	63.23
Top Width (ft)	39.48	Top Width (ft)	14.80	8.97	15.71
Vel Total (ft/s)	5.54	Avg. Vel. (ft/s)	4.55	7.63	4.00
Max Chl Dpth (ft)	2.79	Hydr. Depth (ft)	1.23	2.26	1.01
Conv. Total (cfs)	1977.8	Conv. (cfs)	544.0	1018.3	415.5
Length Wtd. (ft)	185.31	Wetted Per. (ft)	15.65	9.26	16.43
Min Ch El (ft)	2176.41	Shear (lb/sq ft)	1.68	3.17	1.39
Alpha	1.27	Stream Power (lb/ft s)	7.65	24.19	5.57
Frctn Loss (ft)	3.92	Cum Volume (acre-ft)	0.22	0.44	0.30
C & E Loss (ft)	0.00	Cum SA (acres)	0.21	0.23	0.25

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: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9959.16	9971.09	0.85	0.85	5.29	0.28	0.16	0.99
2	LOB	9971.09	9983.01	21.53	8.24	11.94	7.15	0.69	2.61
3	LOB	9983.01	9994.93	65.57	16.06	11.94	21.78	1.35	4.08
4	Chan	9994.93	9996.21	15.27	2.46	1.37	5.07	1.92	6.21
5	Chan	9996.21	9997.49	22.27	3.08	1.37	7.40	2.41	7.22
6	Chan	9997.49	9998.77	28.44	3.52	1.32	9.45	2.75	8.07
7	Chan	9998.77	10000.06	25.94	3.31	1.30	8.62	2.58	7.84
8	Chan	10000.06	10001.34	22.45	3.03	1.30	7.46	2.37	7.40
9	Chan	10001.34	10002.62	19.18	2.76	1.30	6.37	2.15	6.95
10	Chan	10002.62	10003.90	16.09	2.48	1.30	5.35	1.94	6.48
11	ROB	10003.90	10011.32	36.07	9.28	7.50	11.98	1.25	3.89
12	ROB	10011.32	10018.75	20.06	6.50	7.43	6.67	0.88	3.08
13	ROB	10018.75	10026.17	7.02	3.47	7.44	2.33	0.47	2.02
14	ROB	10026.17	10033.60	0.27	0.35	3.17	0.09	0.11	0.77

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9971.09	9983.01	8.21	2.60	3.71	2.73	0.90	3.15
2	LOB	9983.01	9994.93	74.58	15.60	11.94	24.78	1.31	4.78
3	Chan	9994.93	9996.21	15.72	2.41	1.37	5.22	1.88	6.52
4	Chan	9996.21	9997.49	23.09	3.04	1.37	7.67	2.37	7.61
5	Chan	9997.49	9998.77	29.58	3.47	1.32	9.83	2.71	8.52
6	Chan	9998.77	10000.06	26.94	3.26	1.30	8.95	2.54	8.27
7	Chan	10000.06	10001.34	23.26	2.98	1.30	7.73	2.33	7.80
8	Chan	10001.34	10002.62	19.82	2.71	1.30	6.58	2.11	7.31
9	Chan	10002.62	10003.90	16.57	2.43	1.30	5.50	1.90	6.81
10	ROB	10003.90	10011.32	40.18	9.00	7.50	13.35	1.21	4.47
11	ROB	10011.32	10018.75	21.85	6.22	7.43	7.26	0.84	3.51
12	ROB	10018.75	10026.17	1.20	0.57	1.50	0.40	0.67	2.09

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.519

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9935.149	2177.19	9935.209	2177.19	9942.949	2176.81	9957.309	2176.03	9966.249	2175.55
9971.919	2174.18	9972.439	2174.05	9972.719	2173.99	9973.659	2173.82	9978.222	2173.008
9983.379	2172.09	9986.219	2172.08	9986.22	2172.08	9989.519	2171.97	9997.629	2171.84
10002.06	2171.83	10005.22	2171.85	10009.26	2171.89	10012.51	2171.94	10019.4	2173.34
10038.5	2177.23								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9935.149	.055	9989.519	.045	10005.22	.03	10019.4	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.51	10005.22	178.06	175.24	164.08	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2173.97	Element			
Vel Head (ft)	0.64	Wt. n-Val.	0.055	0.045	0.030
W.S. Elev (ft)	2173.34	Reach Len. (ft)	178.06	175.24	164.08
Crit W.S. (ft)	2173.34	Flow Area (sq ft)	12.25	22.99	15.34
E.G. Slope (ft/ft)	0.020762	Area (sq ft)	12.25	22.99	15.34
Q Total (cfs)	301.00	Flow (cfs)	45.22	141.04	114.74
Top Width (ft)	43.01	Top Width (ft)	13.14	15.70	14.16
Vel Total (ft/s)	5.95	Avg. Vel. (ft/s)	3.69	6.13	7.48
Max Chl Dpth (ft)	1.51	Hydr. Depth (ft)	0.93	1.46	1.08
Conv. Total (cfs)	2089.0	Conv. (cfs)	313.8	978.8	796.3
Length Wtd. (ft)	170.63	Wetted Per. (ft)	13.25	15.70	14.30
Min Ch El (ft)	2171.83	Shear (lb/sq ft)	1.20	1.90	1.39
Alpha	1.16	Stream Power (lb/ft s)	4.42	11.64	10.40
Frctn Loss (ft)	3.68	Cum Volume (acre-ft)	0.13	0.32	0.34
C & E Loss (ft)	0.03	Cum SA (acres)	0.14	0.18	0.36

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2173.97	Element			
Vel Head (ft)	0.61	Wt. n-Val.	0.055	0.045	0.030
W.S. Elev (ft)	2173.36	Reach Len. (ft)	178.06	175.24	164.08
Crit W.S. (ft)	2173.36	Flow Area (sq ft)	12.57	23.38	15.69
E.G. Slope (ft/ft)	0.019423	Area (sq ft)	12.57	23.38	15.69
Q Total (cfs)	301.00	Flow (cfs)	45.63	140.26	115.10
Top Width (ft)	43.00	Top Width (ft)	13.14	15.70	14.16
Vel Total (ft/s)	5.83	Avg. Vel. (ft/s)	3.63	6.00	7.33
Max Chl Dpth (ft)	1.53	Hydr. Depth (ft)	0.96	1.49	1.11
Conv. Total (cfs)	2159.8	Conv. (cfs)	327.4	1006.4	825.9
Length Wtd. (ft)	170.96	Wetted Per. (ft)	13.28	15.70	14.33
Min Ch El (ft)	2171.83	Shear (lb/sq ft)	1.15	1.81	1.33
Alpha	1.16	Stream Power (lb/ft s)	4.17	10.83	9.74
Frctn Loss (ft)	3.63	Cum Volume (acre-ft)	0.15	0.34	0.24
C & E Loss (ft)	0.00	Cum SA (acres)	0.14	0.18	0.19

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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.77	9978.65	0.56	0.46	2.30	0.19	0.20	1.23
2	LOB	9978.65	9989.52	44.66	11.79	10.95	14.84	1.08	3.79
3	Chan	9989.52	9991.76	18.34	3.11	2.24	6.09	1.38	5.91
4	Chan	9991.76	9994.01	19.14	3.19	2.24	6.36	1.42	6.01
5	Chan	9994.01	9996.25	19.96	3.27	2.24	6.63	1.46	6.11
6	Chan	9996.25	9998.49	20.72	3.34	2.24	6.88	1.49	6.20
7	Chan	9998.49	10000.73	20.99	3.37	2.24	6.97	1.50	6.23
8	Chan	10000.73	10002.98	21.07	3.37	2.24	7.00	1.50	6.24
9	Chan	10002.98	10005.22	20.81	3.35	2.24	6.92	1.49	6.21
10	ROB	10005.22	10011.88	81.89	9.66	6.66	27.21	1.45	8.48
11	ROB	10011.88	10018.53	32.76	5.61	6.78	10.88	0.84	5.84
12	ROB	10018.53	10025.19	0.09	0.07	0.87	0.03	0.09	1.28

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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9967.77	9978.65	0.66	0.51	2.33	0.22	0.23	1.28
2	LOB	9978.65	9989.52	44.98	12.06	10.95	14.94	1.11	3.73
3	Chan	9989.52	9991.76	18.27	3.16	2.24	6.07	1.41	5.78
4	Chan	9991.76	9994.01	19.05	3.24	2.24	6.33	1.44	5.88
5	Chan	9994.01	9996.25	19.85	3.32	2.24	6.59	1.48	5.98
6	Chan	9996.25	9998.49	20.60	3.40	2.24	6.84	1.51	6.07
7	Chan	9998.49	10000.73	20.86	3.42	2.24	6.93	1.53	6.10
8	Chan	10000.73	10002.98	20.94	3.43	2.24	6.96	1.53	6.10
9	Chan	10002.98	10005.22	20.69	3.41	2.24	6.87	1.52	6.08
10	ROB	10005.22	10011.88	81.65	9.82	6.66	27.13	1.48	8.31
11	ROB	10011.88	10018.53	33.32	5.78	6.78	11.07	0.87	5.77
12	ROB	10018.53	10025.19	0.14	0.09	0.89	0.05	0.11	1.44

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: X5
REACH: Reach 1 RS: 0.486

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9971.423	2174.04	9991.253	2168.54	9992.223	2168.29	9992.483	2168.22	9995.55	2167.386
10000.43	2166.06	10006.91	2167.01	10007.53	2167.11	10008.02	2167.11	10032.02	2167.55
10040.78	2167.71	10040.97	2167.72	10041.09	2167.73	10066.58	2171.41	10066.79	2171.42
10070.08	2171.59								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9971.423	.065	9995.55	.04	10007.53	.05

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.55	10007.53	211.92	213.14	199.57	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2168.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.065	0.045	0.050
W.S. Elev (ft)	2168.40	Reach Len. (ft)	211.92	213.14	199.57
Crit W.S. (ft)	2168.40	Flow Area (sq ft)	1.91	21.15	34.96
E.G. Slope (ft/ft)	0.022411	Area (sq ft)	1.91	21.15	34.96
Q Total (cfs)	301.00	Flow (cfs)	4.04	150.56	146.40
Top Width (ft)	53.97	Top Width (ft)	3.77	11.98	38.23
Vel Total (ft/s)	5.19	Avg. Vel. (ft/s)	2.12	7.12	4.19
Max Chl Dpth (ft)	2.34	Hydr. Depth (ft)	0.51	1.77	0.91
Conv. Total (cfs)	2010.7	Conv. (cfs)	27.0	1005.7	977.9
Length Wtd. (ft)	208.27	Wetted Per. (ft)	3.90	12.23	38.28
Min Ch El (ft)	2166.06	Shear (lb/sq ft)	0.68	2.42	1.28

Alpha	1.26	Stream Power (lb/ft s)	1.45	17.22	5.35
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	0.10	0.23	0.25
C & E Loss (ft)	0.02	Cum SA (acres)	0.11	0.12	0.26

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2169.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.065	0.045	0.050
W.S. Elev (ft)	2168.49	Reach Len. (ft)	211.92	213.14	199.57
Crit W.S. (ft)	2168.49	Flow Area (sq ft)	2.25	22.23	25.99
E.G. Slope (ft/ft)	0.023307	Area (sq ft)	2.25	22.23	25.99
Q Total (cfs)	301.00	Flow (cfs)	5.34	166.89	128.76
Top Width (ft)	37.53	Top Width (ft)	3.77	11.98	21.78
Vel Total (ft/s)	5.96	Avg. Vel. (ft/s)	2.38	7.51	4.95
Max Chl Dpth (ft)	2.43	Hydr. Depth (ft)	0.60	1.86	1.19
Conv. Total (cfs)	1971.6	Conv. (cfs)	35.0	1093.2	843.4
Length Wtd. (ft)	208.64	Wetted Per. (ft)	3.99	12.23	22.78
Min Ch El (ft)	2166.06	Shear (lb/sq ft)	0.82	2.64	1.66
Alpha	1.18	Stream Power (lb/ft s)	1.95	19.85	8.23
Frctn Loss (ft)	4.16	Cum Volume (acre-ft)	0.12	0.25	0.16
C & E Loss (ft)	0.01	Cum SA (acres)	0.11	0.12	0.13

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9990.73	9995.55	4.04	1.91	3.90	1.34	0.51	2.12
2	Chan	9995.55	9997.26	11.76	2.14	1.77	3.91	1.25	5.49
3	Chan	9997.26	9998.97	19.90	2.93	1.77	6.61	1.72	6.78
4	Chan	9998.97	10000.68	29.60	3.72	1.77	9.83	2.17	7.96
5	Chan	10000.68	10002.40	30.20	3.73	1.73	10.03	2.18	8.09
6	Chan	10002.40	10004.11	24.65	3.30	1.73	8.19	1.93	7.46
7	Chan	10004.11	10005.82	19.53	2.87	1.73	6.49	1.68	6.80
8	Chan	10005.82	10007.53	14.93	2.45	1.73	4.96	1.43	6.10
9	ROB	10007.53	10020.04	71.04	14.86	12.51	23.60	1.19	4.78
10	ROB	10020.04	10032.55	49.68	11.99	12.51	16.51	0.96	4.14
11	ROB	10032.55	10045.06	25.65	8.08	12.55	8.52	0.65	3.18
12	ROB	10045.06	10057.57	0.02	0.03	0.70	0.01	0.05	0.58

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: 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.

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9990.73	9995.55	5.34	2.25	3.99	1.78	0.60	2.38
2	Chan	9995.55	9997.26	13.50	2.30	1.77	4.48	1.34	5.88
3	Chan	9997.26	9998.97	22.15	3.09	1.77	7.36	1.81	7.17
4	Chan	9998.97	10000.68	32.37	3.87	1.77	10.75	2.26	8.36
5	Chan	10000.68	10002.40	33.02	3.89	1.73	10.97	2.27	8.50
6	Chan	10002.40	10004.11	27.18	3.46	1.73	9.03	2.02	7.86
7	Chan	10004.11	10005.82	21.78	3.03	1.73	7.24	1.77	7.19
8	Chan	10005.82	10007.53	16.90	2.60	1.73	5.61	1.52	6.50
9	ROB	10007.53	10020.04	84.62	15.99	12.51	28.11	1.28	5.29
10	ROB	10020.04	10032.55	44.14	10.00	10.26	14.66	1.08	4.41

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 cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.446

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9960.496	2168.17	9963.276	2167.76	9972.426	2166.47	9975.076	2166.01	9979.636	2164.42
9987.726	2161.5	9987.732	2161.49	9993.646	2160.78	9993.65	2160.78	10000.13	2159.99
10004.6	2160.71	10004.74	2160.73	10004.83	2160.75	10008.61	2161.44	810021.73	2163.87
10021.84	2163.91	10022.28	2163.96	10040.15	2166.15				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9960.496	.05	9993.65	.045	10004.6	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.65	10004.6	194.56	194.47	193.24	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2163.39	Element			
Vel Head (ft)	0.76	Wt. n-Val.	0.050	0.045	0.030
W.S. Elev (ft)	2162.63	Reach Len. (ft)	194.56	194.47	193.24
Crit W.S. (ft)	2162.63	Flow Area (sq ft)	10.63	24.77	10.04
E.G. Slope (ft/ft)	0.018297	Area (sq ft)	10.63	24.77	10.04
Q Total (cfs)	301.00	Flow (cfs)	46.67	189.46	64.87
Top Width (ft)	30.44	Top Width (ft)	9.06	10.95	10.43
Vel Total (ft/s)	6.62	Avg. Vel. (ft/s)	4.39	7.65	6.46
Max Chl Dpth (ft)	2.64	Hydr. Depth (ft)	1.17	2.26	0.96
Conv. Total (cfs)	2225.2	Conv. (cfs)	345.0	1400.6	479.6
Length Wtd. (ft)	194.00	Wetted Per. (ft)	9.31	11.05	10.61
Min Ch El (ft)	2159.99	Shear (lb/sq ft)	1.30	2.56	1.08
Alpha	1.11	Stream Power (lb/ft s)	5.73	19.58	6.99
Frctn Loss (ft)	2.82	Cum Volume (acre-ft)	0.07	0.12	0.15
C & E Loss (ft)	0.08	Cum SA (acres)	0.07	0.07	0.15

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

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2163.39	Element			
Vel Head (ft)	0.73	Wt. n-Val.	0.050	0.045	0.030
W.S. Elev (ft)	2162.66	Reach Len. (ft)	194.56	194.47	193.24
Crit W.S. (ft)	2162.66	Flow Area (sq ft)	10.89	25.09	10.35
E.G. Slope (ft/ft)	0.017223	Area (sq ft)	10.89	25.09	10.35
Q Total (cfs)	301.00	Flow (cfs)	47.11	187.83	66.06
Top Width (ft)	30.44	Top Width (ft)	9.06	10.95	10.43
Vel Total (ft/s)	6.50	Avg. Vel. (ft/s)	4.32	7.48	6.38
Max Chl Dpth (ft)	2.67	Hydr. Depth (ft)	1.20	2.29	0.99
Conv. Total (cfs)	2293.6	Conv. (cfs)	358.9	1431.2	503.4
Length Wtd. (ft)	194.14	Wetted Per. (ft)	9.33	11.05	10.64
Min Ch El (ft)	2159.99	Shear (lb/sq ft)	1.26	2.44	1.05
Alpha	1.11	Stream Power (lb/ft s)	5.43	18.27	6.68
Frctn Loss (ft)	2.66	Cum Volume (acre-ft)	0.09	0.14	0.07
C & E Loss (ft)	0.00	Cum SA (acres)	0.07	0.07	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.39	9987.02	2.18	1.07	2.59	0.72	0.44	2.04
2	LOB	9987.02	9993.65	44.49	9.56	6.72	14.78	1.44	4.65
3	Chan	9993.65	9995.22	21.03	3.05	1.58	6.99	1.95	6.90
4	Chan	9995.22	9996.78	24.56	3.34	1.58	8.16	2.14	7.34
5	Chan	9996.78	9998.34	28.33	3.64	1.58	9.41	2.33	7.77
6	Chan	9998.34	9999.91	32.30	3.94	1.58	10.73	2.52	8.19
7	Chan	9999.91	10001.47	32.80	3.99	1.58	10.90	2.55	8.23
8	Chan	10001.47	10003.04	27.64	3.60	1.58	9.18	2.30	7.68
9	Chan	10003.04	10004.60	22.79	3.21	1.58	7.57	2.05	7.11
10	ROB	10004.60	10011.71	62.16	9.02	7.23	20.65	1.27	6.89
11	ROB	10011.71	10018.82	2.72	1.02	3.38	0.90	0.31	2.67

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9980.39	9987.02	2.35	1.14	2.61	0.78	0.47	2.06
2	LOB	9987.02	9993.65	44.76	9.75	6.72	14.87	1.47	4.59
3	Chan	9993.65	9995.22	20.93	3.09	1.58	6.95	1.98	6.76
4	Chan	9995.22	9996.78	24.38	3.39	1.58	8.10	2.17	7.19
5	Chan	9996.78	9998.34	28.07	3.69	1.58	9.33	2.36	7.61
6	Chan	9998.34	9999.91	31.96	3.99	1.58	10.62	2.55	8.01
7	Chan	9999.91	10001.47	32.45	4.03	1.58	10.78	2.58	8.04
8	Chan	10001.47	10003.04	27.39	3.64	1.58	9.10	2.33	7.52
9	Chan	10003.04	10004.60	22.65	3.25	1.58	7.53	2.08	6.97
10	ROB	10004.60	10011.71	62.99	9.23	7.23	20.93	1.30	6.82
11	ROB	10011.71	10018.82	3.07	1.12	3.41	1.02	0.34	2.75

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: 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: X5
REACH: Reach 1 RS: 0.409

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9966.525	2162.459971.985	2161.229975.245	2160.639975.975	2160.519978.735	2159.87				
9979.085	2159.799980.615	2159.479980.625	2159.469980.645	2159.469984.385	2158.9				
9985.765	2158.759991.175	2158.419993.235	2158.29 9994.04	2158.269994.045	2158.26				
9996.255	2157.8810002.08	2158.12 10005.5	2158.0810006.84	2158.1110016.32	2158.2				
10020.83	2158.5210025.73	2158.7710030.97	2158.9610032.87	2159.07 10039.9	2159.66				
10041.59	2160.0210042.41	2160.16 10044.2	2160.4110050.43	2161.4310054.96	2161.83				
10055.21	2161.8510060.17	216210065.35	2162.3710065.46	2162.38					

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9966.525	.0559985.765	.03	10039.9	.06	

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.0410002.08		85.52	84.3	89.11	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

E.G. Elev (ft)	2159.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.032	0.030	0.030
W.S. Elev (ft)	2159.48	Reach Len. (ft)	85.52	84.30	89.11
Crit W.S. (ft)	2159.48	Flow Area (sq ft)	10.23	11.76	33.47
E.G. Slope (ft/ft)	0.011835	Area (sq ft)	10.23	11.76	33.47
Q Total (cfs)	301.00	Flow (cfs)	46.94	81.43	172.63
Top Width (ft)	57.23	Top Width (ft)	13.48	8.04	35.71
Vel Total (ft/s)	5.43	Avg. Vel. (ft/s)	4.59	6.92	5.16
Max Chl Dpth (ft)	1.60	Hydr. Depth (ft)	0.76	1.46	0.94
Conv. Total (cfs)	2766.8	Conv. (cfs)	431.5	748.5	1586.8
Length Wtd. (ft)	86.49	Wetted Per. (ft)	13.55	8.08	35.75
Min Ch El (ft)	2157.88	Shear (lb/sq ft)	0.56	1.08	0.69
Alpha	1.07	Stream Power (lb/ft s)	2.56	7.45	3.57
Frctn Loss (ft)	1.28	Cum Volume (acre-ft)	0.02	0.04	0.05
C & E Loss (ft)	0.01	Cum SA (acres)	0.02	0.02	0.05

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

CROSS SECTION OUTPUT Profile #profile 2

E.G. Elev (ft)	2160.59	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.73	Wt. n-Val.	0.033	0.030	0.030
W.S. Elev (ft)	2159.86	Reach Len. (ft)	85.52	84.30	89.11
Crit W.S. (ft)	2159.86	Flow Area (sq ft)	15.30	14.79	15.38
E.G. Slope (ft/ft)	0.011148	Area (sq ft)	15.30	14.79	15.38
Q Total (cfs)	301.00	Flow (cfs)	81.70	115.71	103.59
Top Width (ft)	30.33	Top Width (ft)	13.48	8.04	8.81
Vel Total (ft/s)	6.62	Avg. Vel. (ft/s)	5.34	7.83	6.74
Max Chl Dpth (ft)	1.98	Hydr. Depth (ft)	1.13	1.84	1.75
Conv. Total (cfs)	2850.8	Conv. (cfs)	773.8	1095.9	981.1
Length Wtd. (ft)	85.42	Wetted Per. (ft)	13.93	8.08	10.52
Min Ch El (ft)	2157.88	Shear (lb/sq ft)	0.76	1.27	1.02
Alpha	1.07	Stream Power (lb/ft s)	4.08	9.97	6.85
Frctn Loss (ft)	1.22	Cum Volume (acre-ft)	0.03	0.05	0.02
C & E Loss (ft)	0.00	Cum SA (acres)	0.02	0.02	0.01

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

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.53	9983.03	0.46	0.48	2.51	0.15	0.19	0.96
2	LOB	9983.03	9988.54	13.61	3.83	5.53	4.52	0.70	3.55
3	LOB	9988.54	9994.04	32.86	5.92	5.51	10.92	1.07	5.56
4	Chan	9994.04	9995.19	9.72	1.52	1.17	3.23	1.32	6.41
5	Chan	9995.19	9996.34	12.26	1.74	1.16	4.07	1.52	7.04
6	Chan	9996.34	9997.49	13.17	1.81	1.15	4.37	1.58	7.28
7	Chan	9997.49	9998.64	12.52	1.76	1.15	4.16	1.53	7.13
8	Chan	9998.64	9999.78	11.87	1.70	1.15	3.94	1.48	6.98
9	Chan	9999.78	10000.93	11.25	1.65	1.15	3.74	1.43	6.83
10	Chan	10000.93	10002.08	10.64	1.59	1.15	3.53	1.39	6.68
11	ROB	10002.08	10014.76	102.92	17.15	12.68	34.19	1.35	6.00
12	ROB	10014.76	10027.43	59.41	12.34	12.69	19.74	0.97	4.81
13	ROB	10027.43	10040.11	10.29	3.98	10.38	3.42	0.38	2.59

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

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9977.53	9983.03	2.48	1.41	2.88	0.82	0.57	1.76
2	LOB	9983.03	9988.54	26.30	5.90	5.53	8.74	1.07	4.46
3	LOB	9988.54	9994.04	52.92	7.98	5.51	17.58	1.45	6.63
4	Chan	9994.04	9995.19	14.33	1.95	1.17	4.76	1.70	7.36
5	Chan	9995.19	9996.34	17.22	2.17	1.16	5.72	1.89	7.92
6	Chan	9996.34	9997.49	18.27	2.24	1.15	6.07	1.95	8.15
7	Chan	9997.49	9998.64	17.55	2.19	1.15	5.83	1.90	8.02
8	Chan	9998.64	9999.78	16.82	2.13	1.15	5.59	1.86	7.89
9	Chan	9999.78	10000.93	16.11	2.08	1.15	5.35	1.81	7.75
10	Chan	10000.93	10002.08	15.41	2.02	1.15	5.12	1.76	7.62
11	ROB	10002.08	10014.76	103.59	15.38	10.52	34.41	1.75	6.74

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The 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: X5
REACH: Reach 1 RS: 0.393

INPUT
Description: Limit of Study, Cline Creek Confluence
Boundary condition =
Normal Depth, Slope = 0.019 ft/ft. Both the Normal Depth method and using a known CWSEL of 2157 from the FDS of Cline Creek by JEF, 2004) resulted in the same solution which was critical depth.
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9956.24	2160.7	9963.18	2159.96	9964.46	2159.89	9974.83	2158.57	9987.08	2156.7
9994.82	2155.7	9998.99	2155.24	10005.5	2155.52	10010.36	2155.67	10011.46	2155.57
10013.88	2155.41	10017.63	2156.154	10019.7	2156.57	10024.85	2157.59	10029.89	2157.62
10035.87	2157.65	10043.56	2157.71	10048.98	2157.71	10055.42	2158.03	10077.83	2158.92

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9956.24	.06	9994.82	.045	10017.63	.05	10055.42	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.82	10010.36	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #profile 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2157.87	Element			
Vel Head (ft)	0.59	Wt. n-Val.	0.060	0.045	0.046
W.S. Elev (ft)	2157.28	Reach Len. (ft)			
Crit W.S. (ft)	2157.20	Flow Area (sq ft)	9.49	28.14	15.01
E.G. Slope (ft/ft)	0.019010	Area (sq ft)	9.49	28.14	15.01
Q Total (cfs)	301.00	Flow (cfs)	28.24	190.11	82.65
Top Width (ft)	40.03	Top Width (ft)	11.56	15.54	12.94
Vel Total (ft/s)	5.72	Avg. Vel. (ft/s)	2.98	6.75	5.51
Max Chl Dpth (ft)	2.04	Hydr. Depth (ft)	0.82	1.81	1.16
Conv. Total (cfs)	2183.1	Conv. (cfs)	204.8	1378.8	599.4
Length Wtd. (ft)		Wetted Per. (ft)	11.66	15.57	13.13
Min Ch El (ft)	2155.24	Shear (lb/sq ft)	0.97	2.14	1.36
Alpha	1.16	Stream Power (lb/ft s)	2.87	14.49	7.47
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #profile 2

			Left OB	Channel	Right OB
E.G. Elev (ft)	2158.37	Element			
Vel Head (ft)	0.76	Wt. n-Val.	0.060	0.045	0.045
W.S. Elev (ft)	2157.60	Reach Len. (ft)			
Crit W.S. (ft)	2157.56	Flow Area (sq ft)	13.20	33.13	1.27
E.G. Slope (ft/ft)	0.019005	Area (sq ft)	13.20	33.13	1.27
Q Total (cfs)	301.00	Flow (cfs)	48.03	249.40	3.57
Top Width (ft)	27.75	Top Width (ft)	11.56	15.54	0.65
Vel Total (ft/s)	6.32	Avg. Vel. (ft/s)	3.64	7.53	2.80
Max Chl Dpth (ft)	2.36	Hydr. Depth (ft)	1.14	2.13	1.96
Conv. Total (cfs)	2183.4	Conv. (cfs)	348.4	1809.1	25.9
Length Wtd. (ft)		Wetted Per. (ft)	11.99	15.57	2.64
Min Ch El (ft)	2155.24	Shear (lb/sq ft)	1.31	2.52	0.57
Alpha	1.23	Stream Power (lb/ft s)	4.75	19.00	1.60
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The cross section had to be extended vertically during the critical depth calculations.
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.

Profile #profile 1

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.39	9987.10	1.50	1.13	3.88	0.50	0.29	1.33
2	LOB	9987.10	9994.82	26.74	8.36	7.78	8.88	1.08	3.20
3	Chan	9994.82	9997.04	24.43	3.78	2.23	8.12	1.70	6.46
4	Chan	9997.04	9999.26	30.52	4.32	2.23	10.14	1.95	7.06
5	Chan	9999.26	10001.48	31.54	4.40	2.22	10.48	1.98	7.16
6	Chan	10001.48	10003.70	29.05	4.19	2.22	9.65	1.89	6.93
7	Chan	10003.70	10005.92	26.65	3.98	2.22	8.85	1.79	6.70
8	Chan	10005.92	10008.14	24.78	3.81	2.22	8.23	1.72	6.51
9	Chan	10008.14	10010.36	23.14	3.66	2.22	7.69	1.65	6.33
10	ROB	10010.36	10023.85	82.65	15.01	13.13	27.46	1.16	5.51

Profile #profile 2

	Pos	Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	Percent Conv	Hydr Depth(ft)	Velocity (ft/s)
1	LOB	9979.39	9987.10	5.09	2.36	4.21	1.69	0.61	2.16
2	LOB	9987.10	9994.82	42.94	10.84	7.78	14.27	1.40	3.96
3	Chan	9994.82	9997.04	32.58	4.50	2.23	10.82	2.03	7.25
4	Chan	9997.04	9999.26	39.36	5.04	2.23	13.08	2.27	7.82
5	Chan	9999.26	10001.48	40.50	5.11	2.22	13.46	2.30	7.92
6	Chan	10001.48	10003.70	37.75	4.90	2.22	12.54	2.21	7.70
7	Chan	10003.70	10005.92	35.08	4.69	2.22	11.65	2.11	7.48
8	Chan	10005.92	10008.14	32.99	4.52	2.22	10.96	2.04	7.30
9	Chan	10008.14	10010.36	31.15	4.37	2.22	10.35	1.97	7.13
10	ROB	10010.36	10023.85	3.57	1.27	2.64	1.19	1.96	2.80

Warning: The cross section had to be extended vertically during the critical depth calculations.
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:C6

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7
Reach 1	1.525	.05	.045	.055	.05	.065	.04	
Reach 1	1.484	.055	.045	.06	.055	.05	.06	
Reach 1	1.461	.055	.03	.05	.06			
Reach 1	1.437	.065	.05	.065				
Reach 1	1.395	.055	.045	.03	.055			
Reach 1	1.389	.055	.03	.06	.05	.04		
Reach 1	1.349	.035	.05	.04				
Reach 1	1.306	.06	.05	.025	.04			
Reach 1	1.292	.055	.05	.055				
Reach 1	1.252	.06	.05	.055				
Reach 1	1.202	.055	.04	.065	.05	.06		
Reach 1	1.170	.055	.04	.05	.06			
Reach 1	1.126	.06	.045	.06	.045	.06		
Reach 1	1.094	.045	.05	.06				
Reach 1	1.058	.055	.05	.06				
Reach 1	1.052	.025	.025	.025				
Reach 1	1.022	.05	.05	.06	.04			
Reach 1	0.990	.045	.05	.055	.05	.05		
Reach 2	0.946	.045	.05	.055	.045	.055		
Reach 2	0.909	.06	.045	.055	.045	.06		
Reach 2	0.871	.045	.05	.06				
Reach 2	0.832	.045	.055	.05	.06			
Reach 2	0.791	.055	.05	.06				
Reach 2	0.759	.04	.05	.04				
Reach 2	0.753	Culvert						
Reach 2	0.747	.04	.05	.04				
Reach 2	0.706	.055	.045	.05				
Reach 2	0.669	.07	.05	.045	.06			
Reach 2	0.631	.06	.05	.055	.045	.055		
Reach 2	0.608	.06	.05	.055	.045	.055		
Reach 2	0.584	.065	.05	.06				
Reach 2	0.544	.06	.05	.055				
Reach 2	0.506	.06	.05	.055				
Reach 2	0.466	.065	.045	.065	.05	.055		
Reach 2	0.426	.05	.06	.05	.055			
Reach 2	0.39	.05	.06	.05	.06	.04		
Reach 2	0.349	.05	.055	.05	.065			
Reach 2	0.311	.065	.045	.05	.065			
Reach 2	0.274	.05	.05	.06				
Reach 3	0.248	.06	.05	.05	.06			
Reach 3	0.213	.065	.035	.055	.035	.055	.05	.065
Reach 3	0.175	.03	.055	.035	.05	.06	.05	.065
Reach 3	0.134	.06	.05	.06	.05	.065		

River:C8

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8
Reach 1	2.959	.06	.055	.065					
Reach 1	2.928	.06	.065	.055	.06				
Reach 1	2.904	.06	.055	.06					
Reach 1	2.870	.06	.055	.065	.055	.06			
Reach 1	2.828	.065	.055	.065	.06				
Reach 1	2.791	.06	.055	.06					
Reach 1	2.748	.06	.055	.065	.055	.06			
Reach 1	2.711	.065	.055	.06	.055	.06			
Reach 1	2.675	.065	.055	.065	.055	.06			
Reach 1	2.640	.06	.055	.065	.06				
Reach 1	2.595	.06	.065	.055	.065	.06			
Reach 1	2.563	.06	.065	.055	.06				
Reach 1	2.526	.06	.065	.055	.06				
Reach 1	2.498	.06	.055	.065	.06				
Reach 1	2.453	.06	.055	.065	.06				
Reach 1	2.415	.06	.065	.055	.06				
Reach 1	2.374	.06	.055	.065					
Reach 1	2.338	.06	.055	.065	.055	.065	.06		
Reach 1	2.300	.06	.065	.055	.065				
Reach 1	2.256	.06	.055	.065	.055	.065			
Reach 1	2.215	.062	.055	.065	.055	.065			
Reach 1	2.175	.06	.055	.065	.055	.06			
Reach 1	2.125	.06	.055	.065	.055	.065	.055	.065	
Reach 1	2.090	.06	.055	.065	.055	.065			
Reach 1	2.066	.06	.055	.065	.055	.065			
Reach 1	2.023	.06	.055	.06					
Reach 1	1.988	.03	.03	.03					
Reach 1	1.985	.07	.055	.065					
Reach 1	1.966	.07	.055	.065					
Reach 1	1.929	.06	.055	.065					
Reach 1	1.915	.06	.055	.065					
Reach 1	1.883	.06	.055	.06					
Reach 1	1.847	.06	.055	.06	.055	.06			
Reach 1	1.810	.06	.055	.06					
Reach 1	1.775	.06	.055	.06					
Reach 1	1.734	.06	.05	.06	.055	.065			
Reach 1	1.695	.04	.05	.035	.055	.06			
Reach 1	1.654	.06	.05	.06	.06	.065			
Reach 1	1.625	.06	.05	.06					
Reach 1	1.609	.055	.05	.06					
Reach 1	1.596	.055	.05	.06					
Reach 1	1.574	.055	.05	.06					
Reach 1	1.552	.055	.05	.06					
Reach 1	1.536	.055	.05	.06					

Reach 1	1.517	.055	.05	.06					
Reach 1	1.488	.055	.05	.06					
Reach 1	1.430	.04	.05	.04					
Reach 1	1.384	.055	.05	.055					
Reach 1	1.362	.03	.06	.05	.06				
Reach 1	1.306	.04	.06	.04	.062	.05	.062		
Reach 1	1.267	.055	.05	.06	.05	.065	.05	.065	
Reach 1	1.241	.05	.065	.05	.065	.055	.05	.06	
Reach 1	1.210	.06	.05	.06	.05	.055			
Reach 1	1.173	.06	.05	.06	.05	.06			
Reach 1	1.122	.021	.06	.05	.06				
Reach 1	1.066	.04	.05	.05					
Reach 1	1.026	.045	.05	.05	.06				
Reach 1	0.995	.05	.05	.06					
Reach 1	0.966	.05	.05	.055					
Reach 1	0.931	.045	.05	.06					
Reach 1	0.890	.06	.05	.04					
Reach 1	0.853	.06	.05	.055	.06	.04			
Reach 1	0.811	.04	.03	.06					
Reach 1	0.807	Culvert							
Reach 1	0.805	.04	.045	.05					
Reach 1	0.767	.055	.045	.055					
Reach 1	0.725	.05	.045	.03					
Reach 1	0.709	.04	.045	.03					
Reach 1	0.691	.05	.045	.03					
Reach 1	0.662	.055	.05	.045	.06	.03			
Reach 1	0.632	.055	.05	.045	.05				
Reach 1	0.613	.055	.05	.045	.05				
Reach 1	0.583	.055	.045	.055					
Reach 1	0.552	.055	.045	.055					
Reach 1	0.505	.055	.045	.04					
Reach 1	0.464	.06	.045	.04					
Reach 1	0.413	Lat Struct							
Reach 1	0.410	.06	.045	.03					
Reach 1	0.395	Lat Struct							
Reach 1	0.379	.055	.035	.05	.025				
Reach 1	0.357	Culvert							
Reach 1	0.334	.055	.025	.06					
Reach 1	0.287	.055	.025	.055	.04	.055			
Reach 1	0.247	.055	.025	.05	.04	.06	.05	.055	
Reach 1	0.199	.055	.025	.055	.04	.055			
Reach 1	0.151	.03	.06	.04	.055				
Reach 2	0.112	.05	.045	.05	.03	.06	.04	.065	
Reach 2	0.097	.05	.04	.05	.03	.05	.06	.045	.065

River:X1

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7
Reach 1	1.270	.065	.055	.06				
Reach 1	1.247	.065	.055	.06				
Reach 1	1.223	.065	.055	.06				
Reach 1	1.191	.065	.055	.06				
Reach 1	1.150	.065	.055	.06				
Reach 1	1.118	.065	.055	.055				
Reach 1	1.093	.055	.065	.055	.055			
Reach 1	1.053	.065	.055	.06				
Reach 1	1.047	.065	.055	.06				
Reach 1	1.028	.06	.05	.055				
Reach 1	1.002	.06	.05	.055				
Reach 1	0.979	.06	.055	.06				
Reach 1	0.956	.035	.065	.05	.055			
Reach 1	0.931	.035	.065	.05				
Reach 1	0.894	.03	.065	.05	.06	.035		
Reach 1	0.858	.065	.05	.055				
Reach 1	0.827	.055	.05	.055				
Reach 1	0.796	.05	.05	.055				
Reach 1	0.776	.055	.055	.055				
Reach 1	0.763	.065	.05	.05				
Reach 1	0.759	.06	.05	.055				
Reach 1	0.731	.06	.045	.06	.05	.06		
Reach 1	0.688	.055	.03	.055				
Reach 1	0.684	.03	.06	.05	.055			
Reach 1	0.661	.06	.05	.06				
Reach 1	0.628	.055	.05	.05				
Reach 1	0.587	.03	.065	.05	.06			
Reach 1	0.561	.065	.05	.05				
Reach 1	0.545	Lat Struct						
Reach 1	0.528	.06	.05	.05				
Reach 1	0.522	.06	.05	.05				
Reach 1	0.476	.06	.05	.06				
Reach 1	0.459	.055	.05	.06				
Reach 1	0.438	.06	.05	.055				
Reach 1	0.420	Lat Struct						
Reach 1	0.403	.055	.05	.06	.045	.055		
Reach 1	0.390	Lat Struct						
Reach 1	0.377	.06	.05	.055				
Reach 1	0.342	.055	.05	.06				
Reach 1	0.322	.05	.03	.055	.05	.055		
Overflow 1	0.174	.04	.045	.04				
Overflow 1	0.173	Lat Struct						
Overflow 1	0.151	.05						
Overflow 1	0.121	.06	.05	.05				
Overflow 1	0.092	.05	.055	.05				
Overflow 1	0.047	.03	.05	.05				

Overflow 1	0.018	.05	.025	.065	.05			
Split 1 Upper	0.161	.025	.055	.05	.055			
Split 1 Upper	0.125	.055	.045	.055	.045	.05		
Split 1 Lower	0.104	.055	.045	.055	.055	.045	.055	
Split 1 Lower	0.070	.065	.045	.06				
Split 1 Lower	0.046	.07	.06	.07				
Reach 2	0.309	.06	.05	.06				
Reach 2	0.276	.055	.05	.06				
Reach 2	0.241	.065	.06	.055				
Reach 2	0.209	.06	.05	.055	.05	.05		
Reach 3	0.163	.06	.05	.055	.05	.055	.05	.06
Reach 3	0.113	.055	.03					
Reach 3	0.110	.03	.055	.05	.55	.05	.065	.04
Reach 3	0.082	.055	.045	.055				
Reach 3	0.048	.025	.045	.06				
Reach 3	0.040	.06	.05	.045	.025	.06		
Reach 3	0.015	.05	.045	.065				

River:X2

Reach	River Sta.	n1	n2	n3	n4	n5
Reach 1	1.028	.065	.055	.065		
Reach 1	1.014	.065	.055	.065		
Reach 1	0.994	.065	.055	.065		
Reach 1	0.973	.065	.055	.065		
Reach 1	0.949	.065	.055	.065		
Reach 1	0.933	.065	.055	.065		
Reach 1	0.915	.06	.055	.065		
Reach 1	0.897	.06	.055	.065		
Reach 1	0.881	.055	.055	.065		
Reach 1	0.857	.035	.05	.06		
Reach 1	0.838	.055	.05	.06		
Reach 1	0.808	.055	.05	.06		
Reach 1	0.784	.055	.03	.055		
Reach 1	0.773	.03	.055	.05	.055	
Reach 1	0.747	.065	.05	.06		
Reach 1	0.724	.055	.05	.06		
Reach 1	0.698	.055	.05	.06		
Reach 1	0.676	.065	.05	.06	.05	.065
Reach 1	0.657	.045	.05	.035	.055	
Reach 1	0.655	.045	.05	.035	.05	
Reach 1	0.646	.055	.065	.05	.065	.03
Reach 1	0.623	.03	.06	.05	.06	.035
Reach 1	0.595	.055	.05	.06		
Reach 1	0.569	.045	.05	.055		
Reach 1	0.550	.035	.06	.05	.06	
Reach 1	0.530	.06	.045	.045		
Reach 1	0.510	.035	.05			
Reach 1	0.504	.055	.045	.055		
Reach 1	0.481	.065	.045	.06		
Reach 1	0.462	.06	.045	.055		
Reach 1	0.423	.055	.03	.045	.06	
Reach 1	0.403	.065	.045	.05		
Reach 1	0.367	.055	.045	.06		
Reach 1	0.326	.045	.065	.045	.065	.055
Reach 1	0.294	.055	.05	.055		
Reach 1	0.256	.05	.05	.055		
Reach 1	0.211	.055	.05	.06		
Reach 1	0.179	.065	.05	.065		
Reach 1	0.149	.065	.05	.065		
Reach 1	0.118	.065	.05	.065		
Reach 1	0.083	.065	.05	.06		
Reach 1	0.046	.065	.04	.06		
Reach 1	0.014	.065	.05	.065		

River:X3

Reach	River Sta.	n1	n2	n3	n4	n5	n6
Reach 1	1.168	.03	.05	.055			
Reach 1	1.146	.05	.05	.055			
Reach 1	1.126	.05	.05	.055			
Reach 1	1.097	.055	.05	.055			
Reach 1	1.082	.055	.05	.055			
Reach 1	1.068	.05	.05	.055			
Reach 1	1.044	.04	.025	.05	.055		
Reach 1	1.029	.055	.05	.055			
Reach 1	1.011	.055	.05	.055			
Reach 1	0.991	.055	.05	.055			
Reach 1	0.964	.055	.05	.055			
Reach 1	0.930	.055	.05	.055			
Reach 1	0.896	.055	.05	.05			
Reach 1	0.867	.06	.05	.06			
Reach 1	0.843	.055	.05	.055			
Reach 1	0.819	.055	.05	.06			
Reach 1	0.790	.055	.035	.055	.06	.05	.06
Reach 1	0.750	.05	.05	.06			
Reach 1	0.718	.055	.06	.05	.065		
Reach 1	0.685	.035	.065	.05	.065		
Reach 1	0.647	.03	.05	.06			
Reach 1	0.626	.065	.05	.055			
Reach 1	0.595	.065	.05	.06	.03		
Reach 1	0.582	.055	.05	.055			

Reach 1	0.553	.06	.055	.05	.06	
Reach 1	0.521	.055	.05	.055		
Reach 1	0.510	.055	.05	.055		
Reach 1	0.468	.035	.06	.05	.065	.055
Reach 1	0.440	.055	.05	.05		
Reach 1	0.410	.055	.05	.06	.03	
Reach 1	0.380	.025	.055			
Reach 1	0.373	.055	.05	.055		
Reach 1	0.343	.035	.045	.065		
Reach 1	0.302	.05	.045	.055		
Reach 1	0.267	.055	.045	.055		
Reach 1	0.238	.055	.045	.055		
Reach 1	0.200	.06	.055	.055		
Reach 1	0.161	.035	.045	.06		
Reach 1	0.122	.065	.045	.055	.05	
Reach 1	0.099	.03	.055	.045	.055	
Reach 1	0.076	.03	.03	.03		
Reach 1	0.051	.055	.05	.055		
Reach 1	0.013	.055	.05	.055		

River:X4A

Reach	River Sta.	n1	n2	n3	n4	n5	n6
Reach 1	0.812	.05	.04	.05			
Reach 1	0.777	.05	.04	.05			
Reach 1	0.740	.05	.04	.05			
Reach 1	0.706	.05	.04	.045			
Reach 1	0.670	.04	.045	.04			
Reach 1	0.631	.04	.045	.04			
Reach 1	0.587	.04	.045	.045			
Reach 1	0.558	.045	.03	.05			
Reach 1	0.515	.05	.045	.05			
Reach 1	0.473	.05	.045	.05			
Reach 1	0.437	.055	.045	.05			
Reach 1	0.402	.055	.045	.05			
Reach 1	0.368	.05	.045	.05			
Reach 1	0.327	.045	.045	.06			
Reach 2	0.287	.055	.045	.05	.03	.04	
Reach 2	0.257	.05	.045	.04			
Reach 2	0.213	.035	.045	.05			
Reach 2	0.186	.05	.045	.05			
Reach 2	0.170	Lat Struct					
Reach 2	0.153	.04	.03	.04	.045	.055	.03
Reach 2	0.130	Lat Struct					
Reach 2	0.113	.05	.045	.05			
Reach 2	0.082	.055	.045	.05			
Reach 2	0.051	.055	.045	.05			
Reach 2	0.033	.055	.045	.05			

River:X4B

Reach	River Sta.	n1	n2	n3	n4	n5	n6
Reach 1	0.525	.035	.03	.035			
Reach 1	0.486	.035	.03	.035			
Reach 1	0.453	.038	.03	.035			
Reach 1	0.417	.035	.03	.035			
Reach 1	0.390	.03	.03	.03			
Reach 1	0.359	.035	.04	.03			
Reach 1	0.315	.035	.03	.035	.03	.035	.03
Reach 1	0.281	.05	.04	.05	.04	.03	
Reach 1	0.264	.045	.045	.045			
Reach 1	0.235	.055	.045	.05			
Reach 1	0.194	.05	.04	.05			
Reach 1	0.159	.05	.04	.05			
Reach 1	0.144	.05	.04	.05			
Reach 1	0.111	.05	.045	.055			
Reach 1	0.088	.05	.045	.05	.055	.04	.055
Reach 1	0.054	.05	.045	.05	.055	.04	.055

River:X5

Reach	River Sta.	n1	n2	n3	n4
Reach 1	0.975	.055	.045	.06	.055
Reach 1	0.951	.06	.045	.055	
Reach 1	0.927	.055	.045	.055	
Reach 1	0.915	.055	.045	.055	
Reach 1	0.900	.055	.045	.055	
Reach 1	0.883	.055	.03	.055	
Reach 1	0.871	.055	.045	.055	
Reach 1	0.840	.055	.045	.05	
Reach 1	0.823	.055	.045	.05	
Reach 1	0.799	.03	.06	.045	.05
Reach 1	0.769	.03	.045	.055	
Reach 1	0.745	.035	.045	.055	
Reach 1	0.722	.055	.045	.055	
Reach 1	0.701	.06	.025	.045	.03
Reach 1	0.688	.055	.05	.055	
Reach 1	0.661	.03	.05	.05	
Reach 1	0.643	.055	.05	.035	
Reach 1	0.622	.06	.05	.055	

Reach 1	0.588	.055	.045	.055	
Reach 1	0.555	.055	.05	.055	
Reach 1	0.519	.055	.045	.03	.055
Reach 1	0.486	.065	.045	.05	
Reach 1	0.446	.05	.045	.03	
Reach 1	0.409	.055	.03	.06	
Reach 1	0.393	.06	.045	.05	.03

SUMMARY OF REACH LENGTHS

River: C6

Reach	River Sta.	Left	Channel	Right
Reach 1	1.525	196.51	217.04	227.85
Reach 1	1.484	126.76	120.59	117.31
Reach 1	1.461	131.74	128.49	126.75
Reach 1	1.437	212.63	220.64	224.94
Reach 1	1.395	22.77	32.46	37.6
Reach 1	1.389	213.73	210.03	208.05
Reach 1	1.349	266.56	227.66	206.36
Reach 1	1.306	59.78	74.56	82.97
Reach 1	1.292	196.49	209.48	216.43
Reach 1	1.252	252	267.52	264
Reach 1	1.202	168.98	164.83	166.02
Reach 1	1.170	222.76	235.44	242.15
Reach 1	1.126	159.53	169.92	175.44
Reach 1	1.094	211.58	190	178.51
Reach 1	1.058	31.65	30.85	30.43
Reach 1	1.052	170.22	159.42	153.69
Reach 1	1.022	218.44	169.43	143.28
Reach 1	0.990	0	0	0
Reach 2	0.946	183.08	191.75	192.76
Reach 2	0.909	190.44	200.48	202.96
Reach 2	0.871	172.26	209.8	220.83
Reach 2	0.832	189.58	212.63	218.23
Reach 2	0.791	235.51	172.38	159.5
Reach 2	0.759	62.35	62.35	62.35
Reach 2	0.753	Culvert		
Reach 2	0.747	236.1	217.01	194.97
Reach 2	0.706	187.77	192.95	192.08
Reach 2	0.669	195.55	200.48	203.96
Reach 2	0.631	123.68	122.72	149.56
Reach 2	0.608	101.48	127.28	117.96
Reach 2	0.584	231.48	208.97	193.08
Reach 2	0.544	234.95	202.17	178.78
Reach 2	0.506	201.34	210.67	216.58
Reach 2	0.466	190.02	209.57	224.29
Reach 2	0.426	196.72	193.44	190.9
Reach 2	0.39	230.23	216.14	206.54
Reach 2	0.349	207.96	200.32	194.8
Reach 2	0.311	208.78	190.99	178.52
Reach 2	0.274	138.47	139.73	175.99
Reach 3	0.248	148	184.27	169
Reach 3	0.213	191.7	200.66	212.3
Reach 3	0.175	215.13	218.88	223.76
Reach 3	0.134	170	169.01	166

River: C8

Reach	River Sta.	Left	Channel	Right
Reach 1	2.959	154.75	162.83	169.6
Reach 1	2.928	126.28	129.45	130.75
Reach 1	2.904	200.71	178.95	177.97
Reach 1	2.870	224.23	220.84	209.86
Reach 1	2.828	187.59	196.38	204.66
Reach 1	2.791	221.2	227.79	233.24
Reach 1	2.748	189.81	193.36	196.77
Reach 1	2.711	184.92	189.71	196.61
Reach 1	2.675	202.27	185.17	160.66
Reach 1	2.640	259.24	237.58	219.38
Reach 1	2.595	163.61	169.79	193.18
Reach 1	2.563	83.4	193.64	225.04
Reach 1	2.526	142.65	148.22	149.27
Reach 1	2.498	270.58	237.62	211.88
Reach 1	2.453	196.39	199.85	193.73
Reach 1	2.415	219.54	217.04	215.39
Reach 1	2.374	190.49	189.84	189.86
Reach 1	2.338	195.86	202.48	210.4
Reach 1	2.300	231.5	232.37	224.59
Reach 1	2.256	223.7	217.63	211.44
Reach 1	2.215	217.59	208.15	197.53
Reach 1	2.175	299.65	264.97	229.97
Reach 1	2.125	171.63	186.19	198.66
Reach 1	2.090	118.45	124.56	131.13
Reach 1	2.066	108.74	225.81	250.69
Reach 1	2.023	204.55	187.52	166.91
Reach 1	1.988	17.56	18.19	18.86
Reach 1	1.985	101.61	96	90.64
Reach 1	1.966	210.3	196.08	177.17
Reach 1	1.929	69	76.64	83.89

Reach 1	1.915	157.11	167.03	181.16
Reach 1	1.883	110.72	192.78	203.57
Reach 1	1.847	198.48	195.37	194.01
Reach 1	1.810	200.02	184.36	158.15
Reach 1	1.775	220.69	213.85	203.02
Reach 1	1.734	215.03	208.88	204.49
Reach 1	1.695	219.3	216.6	218.19
Reach 1	1.654	130.3	151.26	178.03
Reach 1	1.625	81.85	82.55	82.49
Reach 1	1.609	72.4	71.56	71.55
Reach 1	1.596	104.71	114.78	102.68
Reach 1	1.574	131.85	114.63	106.54
Reach 1	1.552	91.63	84.58	86.15
Reach 1	1.536	100.96	103.09	100.96
Reach 1	1.517	154.97	150.76	151.13
Reach 1	1.488	333.41	308.72	307.05
Reach 1	1.430	242.48	239.43	235.3
Reach 1	1.384	128.91	119.28	98.49
Reach 1	1.362	283.18	292.19	301.01
Reach 1	1.306	193.78	206.31	221.65
Reach 1	1.267	142.49	140.06	135.5
Reach 1	1.241	172.98	162.13	138.13
Reach 1	1.210	201.35	197.38	198.63
Reach 1	1.173	248.33	266.79	275.28
Reach 1	1.122	307.59	296.11	275.86
Reach 1	1.066	218.11	213.39	176.28
Reach 1	1.026	209.4	159.41	139.66
Reach 1	0.995	68.52	154.72	192.89
Reach 1	0.966	135.92	187.53	175.08
Reach 1	0.931	219.03	213.09	175.14
Reach 1	0.890	220.55	198.91	127.55
Reach 1	0.853	186.45	217.91	285.2
Reach 1	0.811	35.71	32.81	29.82
Reach 1	0.807	Culvert		
Reach 1	0.805	230.91	199.02	118.47
Reach 1	0.767	230.75	225.69	220.36
Reach 1	0.725	74.88	83.46	84.39
Reach 1	0.709	89.41	96.06	96.8
Reach 1	0.691	136.8	149.73	143.35
Reach 1	0.662	143.61	159.62	156.58
Reach 1	0.632	82.01	98.44	102.85
Reach 1	0.613	166.24	158.59	155.17
Reach 1	0.583	181.48	168.28	157.18
Reach 1	0.552	255.21	247.1	238.91
Reach 1	0.505	219.58	216.5	213.06
Reach 1	0.464	291.04	283.58	284.19
Reach 1	0.413	Lat Struct		
Reach 1	0.410	189	162.22	94.38
Reach 1	0.395	Lat Struct		
Reach 1	0.379	232	234.77	241
Reach 1	0.357	Culvert		
Reach 1	0.334	232	250.58	281
Reach 1	0.287	207.7	214.73	221.56
Reach 1	0.247	247.21	253.66	259.74
Reach 1	0.199	248.67	254.19	259.62
Reach 1	0.151	0	0	0
Reach 2	0.112	81	80.07	48
Reach 2	0.097	0	0	0

River: X1

Reach	River Sta.	Left	Channel	Right
Reach 1	1.270	112.54	125.97	134.14
Reach 1	1.247	133.02	126.66	116.43
Reach 1	1.223	161.37	166.25	177.37
Reach 1	1.191	198.91	215.69	241.71
Reach 1	1.150	182.13	171.46	144.86
Reach 1	1.118	123.57	130.05	141.11
Reach 1	1.093	202.31	209.85	224.04
Reach 1	1.053	43.41	34.9	22.04
Reach 1	1.047	96.67	96.63	87.86
Reach 1	1.028	129.83	137.38	138.71
Reach 1	1.002	135.7	126.19	116.46
Reach 1	0.979	127.74	120.17	119.73
Reach 1	0.956	125.71	131.05	158.06
Reach 1	0.931	157.38	196.9	251.07
Reach 1	0.894	189.39	189.42	190.05
Reach 1	0.858	165.85	162.58	142.38
Reach 1	0.827	178.77	163.21	144.18
Reach 1	0.796	55.34	106.78	111.87
Reach 1	0.776	53.33	69.62	79.65
Reach 1	0.763	29.09	20.8	22.17
Reach 1	0.759	157.65	147.2	126.51
Reach 1	0.731	219.69	223.83	228.11
Reach 1	0.688	21.33	25.9	29.98
Reach 1	0.684	96.77	118.45	136.94
Reach 1	0.661	148.33	174	198.62
Reach 1	0.628	245.17	215.57	185.65
Reach 1	0.587	113.51	139.18	165.48
Reach 1	0.561	188.04	173.12	162.64
Reach 1	0.545	Lat Struct		
Reach 1	0.528	49.02	33.33	13.99
Reach 1	0.522	203.79	234.92	265.68
Reach 1	0.476	90.47	93.3	94.92

Reach 1	0.459	108.45	109.95	105.09
Reach 1	0.438	197.63	188.15	169.4
Reach 1	0.420	Lat Struct		
Reach 1	0.403	156.19	136.86	123.63
Reach 1	0.390	Lat Struct		
Reach 1	0.377	169.24	184.26	196.28
Reach 1	0.342	106.74	104.71	94
Reach 1	0.322	0	0	0
Overflow 1	0.174	60	119.3	130
Overflow 1	0.173	Lat Struct		
Overflow 1	0.151	155	159.19	140
Overflow 1	0.121	140	147.35	120
Overflow 1	0.092	245	240.57	215
Overflow 1	0.047	150	154.4	145
Overflow 1	0.018	95	95.39	95
Split 1 Upper	0.161	216.33	190.82	154.26
Split 1 Upper	0.125	117	109.39	106
Split 1 Lower	0.104	185.64	179.73	138.78
Split 1 Lower	0.070	145	126	119
Split 1 Lower	0.046	0	0	0
Reach 2	0.309	146.43	175.57	219.49
Reach 2	0.276	181.13	182.29	174.87
Reach 2	0.241	174.7	173.04	146.42
Reach 2	0.209	0	0	0
Reach 3	0.163	249.82	261.89	269.1
Reach 3	0.113	15.54	15.56	15.56
Reach 3	0.110	136.68	147.12	153.14
Reach 3	0.082	216.42	181.85	161.31
Reach 3	0.048	46.39	42.02	39.3
Reach 3	0.040	131.49	130.36	129.7
Reach 3	0.015	0	0	0

River: X2

Reach	River Sta.	Left	Channel	Right
Reach 1	1.028	68.25	72.07	73.75
Reach 1	1.014	125.78	108.14	90.6
Reach 1	0.994	101.83	110.79	120.64
Reach 1	0.973	131.53	126.78	119.75
Reach 1	0.949	87.09	82.53	81.4
Reach 1	0.933	64.06	97.19	125.9
Reach 1	0.915	114.74	94.56	79.24
Reach 1	0.897	95.39	84.93	75.65
Reach 1	0.881	121.95	127.25	137.58
Reach 1	0.857	87.28	96.09	105.77
Reach 1	0.838	134.8	158.8	177.47
Reach 1	0.808	134.08	125.96	119.89
Reach 1	0.784	58.55	61.69	64.13
Reach 1	0.773	133.13	134.89	136.97
Reach 1	0.747	138.68	124.62	112.62
Reach 1	0.724	131.86	137.16	141.14
Reach 1	0.698	107.5	116.45	116.84
Reach 1	0.676	94.27	100.51	103.04
Reach 1	0.657	10.4	10.55	10.5
Reach 1	0.655	22.93	45.91	55.58
Reach 1	0.646	102.61	123.09	110.9
Reach 1	0.623	150.46	145.35	134.29
Reach 1	0.595	141.76	139.12	136.39
Reach 1	0.569	97.4	100.58	102.99
Reach 1	0.550	102.52	104.51	105.28
Reach 1	0.530	135.76	104.15	71.85
Reach 1	0.510	35.46	32.08	28.02
Reach 1	0.504	108.44	123.12	137.95
Reach 1	0.481	88.61	100.35	119.98
Reach 1	0.462	195.19	204.23	220.3
Reach 1	0.423	125.8	104.85	97.11
Reach 1	0.403	202.27	189.64	180.37
Reach 1	0.367	226.95	215.86	206.9
Reach 1	0.326	153.36	169	181.53
Reach 1	0.294	209.36	200.5	194.1
Reach 1	0.256	201.32	241.26	270.87
Reach 1	0.211	200.87	167.86	144.07
Reach 1	0.179	124.31	156.35	161.23
Reach 1	0.149	150.19	163.61	175.09
Reach 1	0.118	208.67	186.94	171.89
Reach 1	0.083	183.04	192.89	199.82
Reach 1	0.046	212.38	170.68	143.56
Reach 1	0.014	0	0	0

River: X3

Reach	River Sta.	Left	Channel	Right
Reach 1	1.168	107.43	115.69	117.41
Reach 1	1.146	108.72	105.93	103.96
Reach 1	1.126	152.69	152.46	162.09
Reach 1	1.097	81.05	79.14	78.76
Reach 1	1.082	82.83	76.18	64.65
Reach 1	1.068	139.57	124.31	123.85
Reach 1	1.044	71.67	81.98	92.03
Reach 1	1.029	64.6	95.01	103.66
Reach 1	1.011	116.52	107.73	75.48
Reach 1	0.991	143.03	141.28	135.29

Reach 1	0.964	180.51	175.69	160.66
Reach 1	0.930	143.58	183.19	224.55
Reach 1	0.896	144.24	153.09	157.49
Reach 1	0.867	142.98	125.28	117.59
Reach 1	0.843	109.85	128.3	140.24
Reach 1	0.819	172.55	149.98	126.76
Reach 1	0.790	172.76	211.63	250.13
Reach 1	0.750	188.91	168.48	159.55
Reach 1	0.718	191.18	177.96	169.58
Reach 1	0.685	172.4	198.39	218.37
Reach 1	0.647	116.23	112.98	97.47
Reach 1	0.626	166.69	164.58	159.59
Reach 1	0.595	98.4	68.37	23.54
Reach 1	0.582	124.01	150.03	160.11
Reach 1	0.553	154.28	169.39	181.05
Reach 1	0.521	60.08	59.8	59.89
Reach 1	0.510	279.59	219.2	156.3
Reach 1	0.468	121.17	146.71	173.88
Reach 1	0.440	153.2	160.56	168.2
Reach 1	0.410	173.64	158.58	145.9
Reach 1	0.380	43.04	35.74	25.64
Reach 1	0.373	133.01	160.35	190.31
Reach 1	0.343	212.12	216.67	221.12
Reach 1	0.302	183.12	181.83	180.68
Reach 1	0.267	141.55	156.8	172.21
Reach 1	0.238	212.08	198.6	184.94
Reach 1	0.200	219.35	204.72	189.77
Reach 1	0.161	206.2	206.97	195.41
Reach 1	0.122	113	118.34	121
Reach 1	0.099	124	123.05	135
Reach 1	0.076	141.65	134.25	126.29
Reach 1	0.051	189.94	200.56	213.52
Reach 1	0.013	0	0	0

River: X4A

Reach	River Sta.	Left	Channel	Right
Reach 1	0.812	183.3	187.56	188.18
Reach 1	0.777	176.72	191.46	209.66
Reach 1	0.740	185.59	179.86	174.94
Reach 1	0.706	173.63	192.36	207.37
Reach 1	0.670	203.91	206.7	192.32
Reach 1	0.631	226.96	229.43	239.19
Reach 1	0.587	174.23	152.62	135.79
Reach 1	0.558	205.12	226.5	243.32
Reach 1	0.515	210.77	223.47	233.8
Reach 1	0.473	200.58	188.21	177.89
Reach 1	0.437	209.73	188.39	171.8
Reach 1	0.402	192.5	175.42	162.25
Reach 1	0.368	207.12	219	228.15
Reach 1	0.327	0	0	0
Reach 2	0.287	155.7	161.52	165.06
Reach 2	0.257	229.03	231.06	176.02
Reach 2	0.213	134.79	142.36	149.99
Reach 2	0.186	168.71	172.72	164.96
Reach 2	0.170	Lat Struct		
Reach 2	0.153	229.61	209.53	131.4
Reach 2	0.130	Lat Struct		
Reach 2	0.113	163.39	161.95	149.78
Reach 2	0.082	159.01	161.49	164.23
Reach 2	0.051	84.81	96.14	116.22
Reach 2	0.033	0	0	0

River: X4B

Reach	River Sta.	Left	Channel	Right
Reach 1	0.525	202.64	207.47	213.27
Reach 1	0.486	163.18	171.76	182.25
Reach 1	0.453	174.79	189.69	205.44
Reach 1	0.417	145.66	143.28	145.18
Reach 1	0.390	158.71	164.57	174.78
Reach 1	0.359	242.1	233.19	218.9
Reach 1	0.315	169.91	177.4	189.15
Reach 1	0.281	87	88.27	90
Reach 1	0.264	157	153.86	124
Reach 1	0.235	215	219.49	227
Reach 1	0.194	163	184.99	170
Reach 1	0.159	70	74.98	60
Reach 1	0.144	170.69	178.73	185.63
Reach 1	0.111	112.56	116.71	97.97
Reach 1	0.088	186.83	181.89	164.53
Reach 1	0.054	0	0	0

River: X5

Reach	River Sta.	Left	Channel	Right
Reach 1	0.975	122.4	126.08	132.71
Reach 1	0.951	125.11	126.48	127.87
Reach 1	0.927	64.86	60.58	52.35
Reach 1	0.915	77.84	82.94	82.36

Reach 1	0.900	64.44	86.99	110.42
Reach 1	0.883	68.78	64.28	57.52
Reach 1	0.871	151.31	164	175.1
Reach 1	0.840	86.27	89.08	88.92
Reach 1	0.823	129.25	128.57	128.44
Reach 1	0.799	154.9	156.43	165.74
Reach 1	0.769	136.5	125.75	114.67
Reach 1	0.745	141.53	122.83	117.72
Reach 1	0.722	101.54	111.22	121.42
Reach 1	0.701	68.88	67.86	66.39
Reach 1	0.688	143.97	142.09	136.83
Reach 1	0.661	73.73	94.34	102.6
Reach 1	0.643	120.3	114.17	101.45
Reach 1	0.622	177.43	179.01	180.79
Reach 1	0.588	174.79	174.75	189.45
Reach 1	0.555	200.81	185.84	173.26
Reach 1	0.519	178.06	175.24	164.08
Reach 1	0.486	211.92	213.14	199.57
Reach 1	0.446	194.56	194.47	193.24
Reach 1	0.409	85.52	84.3	89.11
Reach 1	0.393	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: C6

Reach	River Sta.	Contr.	Expan.
Reach 1	1.525	.1	.3
Reach 1	1.484	.1	.3
Reach 1	1.461	.1	.3
Reach 1	1.437	.1	.3
Reach 1	1.395	.1	.3
Reach 1	1.389	.1	.3
Reach 1	1.349	.1	.3
Reach 1	1.306	.1	.3
Reach 1	1.292	.1	.3
Reach 1	1.252	.1	.3
Reach 1	1.202	.1	.3
Reach 1	1.170	.1	.3
Reach 1	1.126	.1	.3
Reach 1	1.094	.1	.3
Reach 1	1.058	.1	.3
Reach 1	1.052	.1	.3
Reach 1	1.022	.1	.3
Reach 1	0.990	.1	.3
Reach 2	0.946	.1	.3
Reach 2	0.909	.1	.3
Reach 2	0.871	.1	.3
Reach 2	0.832	.1	.3
Reach 2	0.791	.3	.5
Reach 2	0.759	.3	.5
Reach 2	0.753	Culvert	
Reach 2	0.747	.3	.5
Reach 2	0.706	.1	.3
Reach 2	0.669	.1	.3
Reach 2	0.631	.1	.3
Reach 2	0.608	.1	.3
Reach 2	0.584	.1	.3
Reach 2	0.544	.1	.3
Reach 2	0.506	.1	.3
Reach 2	0.466	.1	.3
Reach 2	0.426	.1	.3
Reach 2	0.39	.1	.3
Reach 2	0.349	.1	.3
Reach 2	0.311	.1	.3
Reach 2	0.274	.1	.3
Reach 3	0.248	.1	.3
Reach 3	0.213	.1	.3
Reach 3	0.175	.1	.3
Reach 3	0.134	.1	.3

River: C8

Reach	River Sta.	Contr.	Expan.
Reach 1	2.959	.1	.3
Reach 1	2.928	.1	.3
Reach 1	2.904	.1	.3
Reach 1	2.870	.1	.3
Reach 1	2.828	.1	.3
Reach 1	2.791	.1	.3
Reach 1	2.748	.1	.3
Reach 1	2.711	.1	.3
Reach 1	2.675	.1	.3
Reach 1	2.640	.1	.3
Reach 1	2.595	.1	.3
Reach 1	2.563	.1	.3
Reach 1	2.526	.1	.3
Reach 1	2.498	.1	.3
Reach 1	2.453	.1	.3
Reach 1	2.415	.1	.3

Reach 1	2.374	.1	.3
Reach 1	2.338	.1	.3
Reach 1	2.300	.1	.3
Reach 1	2.256	.1	.3
Reach 1	2.215	.1	.3
Reach 1	2.175	.1	.3
Reach 1	2.125	.1	.3
Reach 1	2.090	.1	.3
Reach 1	2.066	.1	.3
Reach 1	2.023	.1	.3
Reach 1	1.988	.1	.3
Reach 1	1.985	.1	.3
Reach 1	1.966	.1	.3
Reach 1	1.929	.1	.3
Reach 1	1.915	.1	.3
Reach 1	1.883	.1	.3
Reach 1	1.847	.1	.3
Reach 1	1.810	.1	.3
Reach 1	1.775	.1	.3
Reach 1	1.734	.1	.3
Reach 1	1.695	.1	.3
Reach 1	1.654	.1	.3
Reach 1	1.625	.1	.3
Reach 1	1.609	.1	.3
Reach 1	1.596	.1	.3
Reach 1	1.574	.1	.3
Reach 1	1.552	.1	.3
Reach 1	1.536	.1	.3
Reach 1	1.517	.1	.3
Reach 1	1.488	.1	.3
Reach 1	1.430	.1	.3
Reach 1	1.384	.1	.3
Reach 1	1.362	.1	.3
Reach 1	1.306	.1	.3
Reach 1	1.267	.1	.3
Reach 1	1.241	.1	.3
Reach 1	1.210	.1	.3
Reach 1	1.173	.1	.3
Reach 1	1.122	.1	.3
Reach 1	1.066	.1	.3
Reach 1	1.026	.1	.3
Reach 1	0.995	.1	.3
Reach 1	0.966	.1	.3
Reach 1	0.931	.1	.3
Reach 1	0.890	.1	.3
Reach 1	0.853	.1	.3
Reach 1	0.811	.1	.3
Reach 1	0.807	Culvert	
Reach 1	0.805	.1	.3
Reach 1	0.767	.1	.3
Reach 1	0.725	.1	.3
Reach 1	0.709	.1	.3
Reach 1	0.691	.1	.3
Reach 1	0.662	.1	.3
Reach 1	0.632	.1	.3
Reach 1	0.613	.1	.3
Reach 1	0.583	.1	.3
Reach 1	0.552	.1	.3
Reach 1	0.505	.1	.3
Reach 1	0.464	.1	.3
Reach 1	0.413	Lat Struct	
Reach 1	0.410	.3	.5
Reach 1	0.395	Lat Struct	
Reach 1	0.379	.3	.5
Reach 1	0.357	Culvert	
Reach 1	0.334	.3	.5
Reach 1	0.287	.3	.5
Reach 1	0.247	.1	.3
Reach 1	0.199	.1	.3
Reach 1	0.151	.1	.3
Reach 2	0.112	.1	.3
Reach 2	0.097	.1	.3

River: X1

Reach	River Sta.	Contr.	Expan.
Reach 1	1.270	.1	.3
Reach 1	1.247	.1	.3
Reach 1	1.223	.1	.3
Reach 1	1.191	.1	.3
Reach 1	1.150	.1	.3
Reach 1	1.118	.1	.3
Reach 1	1.093	.1	.3
Reach 1	1.053	.1	.3
Reach 1	1.047	.1	.3
Reach 1	1.028	.1	.3
Reach 1	1.002	.1	.3
Reach 1	0.979	.1	.3
Reach 1	0.956	.1	.3
Reach 1	0.931	.1	.3
Reach 1	0.894	.1	.3
Reach 1	0.858	.1	.3
Reach 1	0.827	.1	.3
Reach 1	0.796	.1	.3

Reach 1	0.776	.1	.3
Reach 1	0.763	.1	.3
Reach 1	0.759	.1	.3
Reach 1	0.731	.1	.3
Reach 1	0.688	.1	.3
Reach 1	0.684	.1	.3
Reach 1	0.661	.1	.3
Reach 1	0.628	.1	.3
Reach 1	0.587	.1	.3
Reach 1	0.561	.1	.3
Reach 1	0.545	Lat Struct	
Reach 1	0.528	.1	.3
Reach 1	0.522	.1	.3
Reach 1	0.476	.1	.3
Reach 1	0.459	.1	.3
Reach 1	0.438	.1	.3
Reach 1	0.420	Lat Struct	
Reach 1	0.403	.1	.3
Reach 1	0.390	Lat Struct	
Reach 1	0.377	.1	.3
Reach 1	0.342	.1	.3
Reach 1	0.322	.1	.3
Overflow 1	0.174	.1	.3
Overflow 1	0.173	Lat Struct	
Overflow 1	0.151	.1	.3
Overflow 1	0.121	.1	.3
Overflow 1	0.092	.1	.3
Overflow 1	0.047	.1	.3
Overflow 1	0.018	.1	.3
Split 1 Upper	0.161	.1	.3
Split 1 Upper	0.125	.1	.3
Split 1 Lower	0.104	.1	.3
Split 1 Lower	0.070	.1	.3
Split 1 Lower	0.046	.1	.3
Reach 2	0.309	.1	.3
Reach 2	0.276	.1	.3
Reach 2	0.241	.1	.3
Reach 2	0.209	.1	.3
Reach 3	0.163	.1	.3
Reach 3	0.113	.1	.3
Reach 3	0.110	.1	.3
Reach 3	0.082	.1	.3
Reach 3	0.048	.1	.3
Reach 3	0.040	.1	.3
Reach 3	0.015	.1	.3

River: X2

Reach	River Sta.	Contr.	Expan.
Reach 1	1.028	.1	.3
Reach 1	1.014	.1	.3
Reach 1	0.994	.1	.3
Reach 1	0.973	.1	.3
Reach 1	0.949	.1	.3
Reach 1	0.933	.1	.3
Reach 1	0.915	.1	.3
Reach 1	0.897	.1	.3
Reach 1	0.881	.1	.3
Reach 1	0.857	.1	.3
Reach 1	0.838	.1	.3
Reach 1	0.808	.1	.3
Reach 1	0.784	.1	.3
Reach 1	0.773	.1	.3
Reach 1	0.747	.1	.3
Reach 1	0.724	.1	.3
Reach 1	0.698	.1	.3
Reach 1	0.676	.1	.3
Reach 1	0.657	.1	.3
Reach 1	0.655	.1	.3
Reach 1	0.646	.1	.3
Reach 1	0.623	.1	.3
Reach 1	0.595	.1	.3
Reach 1	0.569	.1	.3
Reach 1	0.550	.1	.3
Reach 1	0.530	.1	.3
Reach 1	0.510	.1	.3
Reach 1	0.504	.1	.3
Reach 1	0.481	.1	.3
Reach 1	0.462	.1	.3
Reach 1	0.423	.1	.3
Reach 1	0.403	.1	.3
Reach 1	0.367	.1	.3
Reach 1	0.326	.1	.3
Reach 1	0.294	.1	.3
Reach 1	0.256	.1	.3
Reach 1	0.211	.1	.3
Reach 1	0.179	.1	.3
Reach 1	0.149	.1	.3
Reach 1	0.118	.1	.3
Reach 1	0.083	.1	.3
Reach 1	0.046	.1	.3
Reach 1	0.014	.1	.3

River: X3

Reach	River Sta.	Contr.	Expan.
Reach 1	1.168	.1	.3
Reach 1	1.146	.1	.3
Reach 1	1.126	.1	.3
Reach 1	1.097	.1	.3
Reach 1	1.082	.1	.3
Reach 1	1.068	.1	.3
Reach 1	1.044	.1	.3
Reach 1	1.029	.1	.3
Reach 1	1.011	.1	.3
Reach 1	0.991	.1	.3
Reach 1	0.964	.1	.3
Reach 1	0.930	.1	.3
Reach 1	0.896	.1	.3
Reach 1	0.867	.1	.3
Reach 1	0.843	.1	.3
Reach 1	0.819	.1	.3
Reach 1	0.790	.1	.3
Reach 1	0.750	.1	.3
Reach 1	0.718	.1	.3
Reach 1	0.685	.1	.3
Reach 1	0.647	.1	.3
Reach 1	0.626	.1	.3
Reach 1	0.595	.1	.3
Reach 1	0.582	.1	.3
Reach 1	0.553	.1	.3
Reach 1	0.521	.1	.3
Reach 1	0.510	.1	.3
Reach 1	0.468	.1	.3
Reach 1	0.440	.1	.3
Reach 1	0.410	.1	.3
Reach 1	0.380	.1	.3
Reach 1	0.373	.1	.3
Reach 1	0.343	.1	.3
Reach 1	0.302	.1	.3
Reach 1	0.267	.1	.3
Reach 1	0.238	.1	.3
Reach 1	0.200	.1	.3
Reach 1	0.161	.1	.3
Reach 1	0.122	.1	.3
Reach 1	0.099	.1	.3
Reach 1	0.076	.1	.3
Reach 1	0.051	.1	.3
Reach 1	0.013	.1	.3

River: X4A

Reach	River Sta.	Contr.	Expan.
Reach 1	0.812	.1	.3
Reach 1	0.777	.1	.3
Reach 1	0.740	.1	.3
Reach 1	0.706	.1	.3
Reach 1	0.670	.1	.3
Reach 1	0.631	.1	.3
Reach 1	0.587	.1	.3
Reach 1	0.558	.1	.3
Reach 1	0.515	.1	.3
Reach 1	0.473	.1	.3
Reach 1	0.437	.1	.3
Reach 1	0.402	.1	.3
Reach 1	0.368	.1	.3
Reach 1	0.327	.1	.3
Reach 2	0.287	.1	.3
Reach 2	0.257	.1	.3
Reach 2	0.213	.1	.3
Reach 2	0.186	.1	.3
Reach 2	0.170	Lat Struct	
Reach 2	0.153	.1	.3
Reach 2	0.130	Lat Struct	
Reach 2	0.113	.1	.3
Reach 2	0.082	.1	.3
Reach 2	0.051	.1	.3
Reach 2	0.033	.1	.3

River: X4B

Reach	River Sta.	Contr.	Expan.
Reach 1	0.525	.1	.3
Reach 1	0.486	.1	.3
Reach 1	0.453	.1	.3
Reach 1	0.417	.1	.3
Reach 1	0.390	.1	.3
Reach 1	0.359	.1	.3
Reach 1	0.315	.1	.3
Reach 1	0.281	.1	.3
Reach 1	0.264	.1	.3
Reach 1	0.235	.1	.3
Reach 1	0.194	.1	.3
Reach 1	0.159	.1	.3

Reach 1	0.144	.1	.3
Reach 1	0.111	.1	.3
Reach 1	0.088	.1	.3
Reach 1	0.054	.1	.3

River: X5

Reach	River Sta.	Contr.	Expan.
Reach 1	0.975	.1	.3
Reach 1	0.951	.1	.3
Reach 1	0.927	.1	.3
Reach 1	0.915	.1	.3
Reach 1	0.900	.1	.3
Reach 1	0.883	.1	.3
Reach 1	0.871	.1	.3
Reach 1	0.840	.1	.3
Reach 1	0.823	.1	.3
Reach 1	0.799	.1	.3
Reach 1	0.769	.1	.3
Reach 1	0.745	.1	.3
Reach 1	0.722	.1	.3
Reach 1	0.701	.1	.3
Reach 1	0.688	.1	.3
Reach 1	0.661	.1	.3
Reach 1	0.643	.1	.3
Reach 1	0.622	.1	.3
Reach 1	0.588	.1	.3
Reach 1	0.555	.1	.3
Reach 1	0.519	.1	.3
Reach 1	0.486	.1	.3
Reach 1	0.446	.1	.3
Reach 1	0.409	.1	.3
Reach 1	0.393	.1	.3

APPENDIX F: EROSION/SEDIMENT TRANSPORT ANALYSIS SUPPORTING DOCUMENTATION

Erosion/Sediment Transport Analysis is not part of this Study.