DELINEATION OF SPILLWAY FLOWS

FOR

SADDLEBACK FLOOD RETARDING STRUCTURE

FCD CONTRACT NO. 97-16

May, 1998

PREPARED BY:

Entellus™
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Registered Professional Engineer (Civil)
CERTIFICATE NO.
29737
HERNAN A.
ARISTIZABAL
Date Signed 5-12-98
ARIZONA, U.S.A.

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FLOOD CONTROL DISTRICT

OF

MARICOPA COUNTY

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SECTION 1 - INTRODUCTION

1.1 Project Overview

In July 1997, the Flood Control District of Maricopa County retained Entellus, Inc. to perform spillway flow delineation for Harquahala and Saddleback Flood Retarding Structures. This report presents the results on the delineation study for the Saddleback structure only. The Harquahala delineation is presented under a separate report prepared by Dibble & Associates.

The study reach for the Saddleback project is from the outlet of the spillway to the confluence with Centennial Wash, approximately 6.5 miles in length. It consists of a 6-mile long man-made channel and a one-half mile loosely defined watercourse in the vicinity of the floodplain of Centennial Wash.

Saddleback Flood Retarding Structure (FRS) is located in west-central Maricopa County, on the south side of Interstate Highway 10, as shown on **Figure 1**. The structure has an uncontrolled spillway outlet in the form of a 10' (W) x 8' (H) concrete box. Storm water is released from the uncontrolled spillway southwesterly to Centennial Wash through the man-made channel.

1.2 Purpose of Study

The primary purpose of this study was to delineate the innundation limits downstream of the uncontrolled spillway. Another purpose of this study was to determine whether the capacity of the man-made channel is sufficient to convey the estimated project flow from the flood retarding structure as well as the lateral inflows from numerous side inlets along the east bank of the channel.

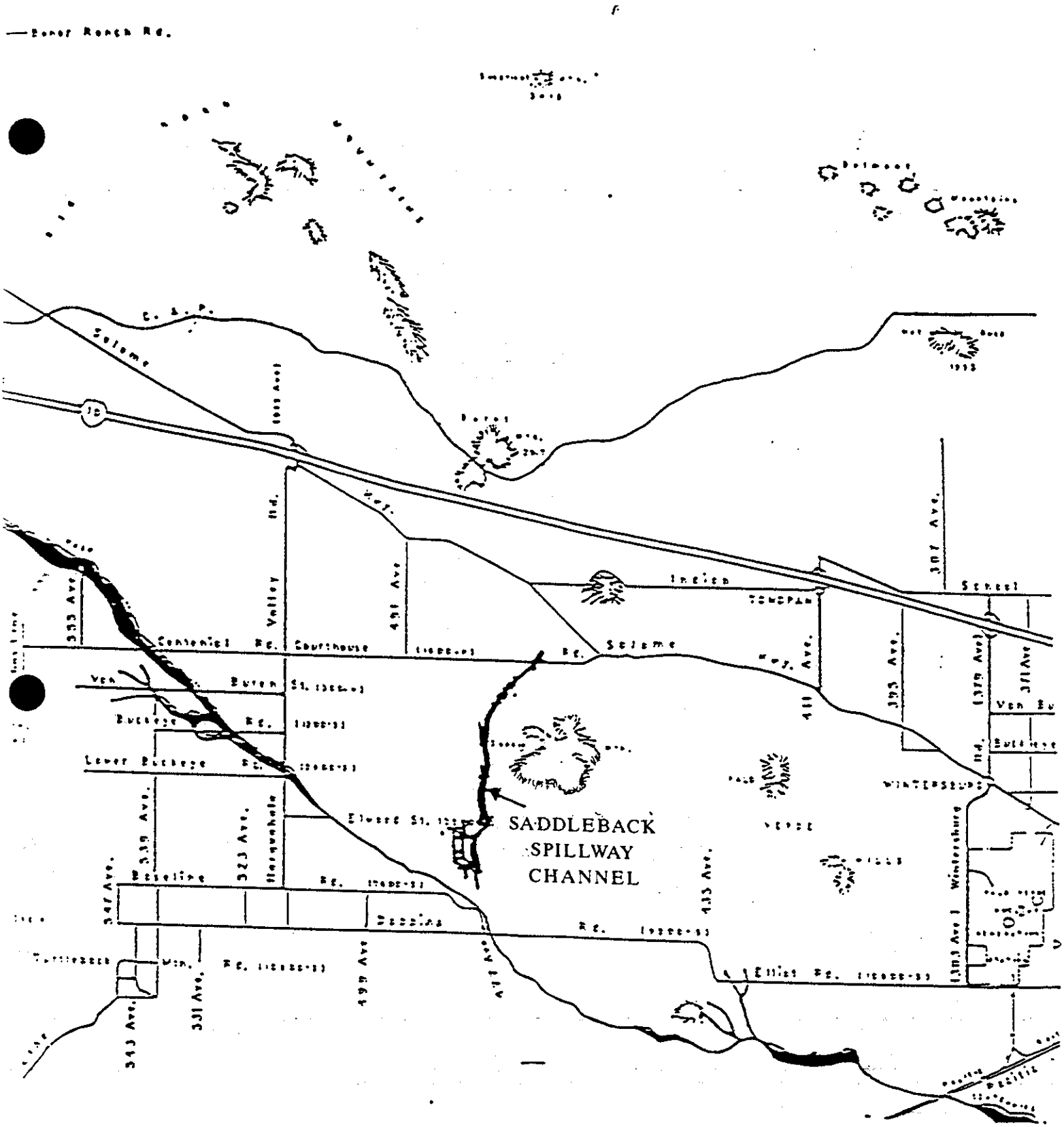

Figure 1 - Location Map

SECTION 2 - AREA OF STUDY

2.1 Scope of Study

The limits of inundation were determined using U.S. Army Corps of Engineers HEC-RAS computer model (Version 2.1). The project flows at various sections of the study reach were provided by the Flood Control District of Maricopa County (District). These flows were compatible to the 50-year storm runoff estimated by Soil Conservation Services (SCS) for the design of the spillway channel. Topographic information was developed by McLain Aerial, Inc. and was furnished to Entellus by the District.

Final deliverables include this report with data tables showing water surface elevation, depth of flow, flow velocity, and travel time; a set of delineation maps at a scale of 1"=200' depicting the inundation limits; and digital GIS coverages consistent with the District's Hydrologic Information System. A copy of the scope of work and contract are included in **Appendix A**.

2.2 Study Area Description

The spillway of Saddleback (FRS) outlets to a deep, shotcrete lined, trapezoidal channel. This configuration is maintained until the triple 10' x 6' RBC crossing at Courthouse Road. Downstream from Courthouse Road, the channel is an earthen trapezoidal channel with uniform cross-sections and controlled vegetation cover. The channel traverses an alluvial pediment on the west side of Saddle Mountain, and the east bank is partially above the natural ground. This condition creates a situation where the east embankment of the channel acts as a dike receiving lateral inflows from adjacent watersheds at various side inlets. The east maintenance road along the east channel bank serves as an interceptor channel, conveying runoff to these side inlets.

The channel daylights approximately one-half mile upstream of the northern branch of Centennial Wash. At this point, the study reach comprises numerous small natural flow paths gently sloping toward Centennial Wash. The area is covered with dense shrubs, bushes and small trees.

The following structures and roadway crossings are within the channel:

Description	Approximate Station
Saddleback FRS outlet	6.4
Courthouse Road Crossing (Triple 10' x 6' RCB)	6.2
Four (4) drop/grade-control structures	
Drop Structure No. 1	1.9
Drop Structure No. 2	3.7
Drop Structure No. 3	4.9
Drop Structure No. 4	6.0
One (1) wet roadway crossing	5.5

In addition to these structures, there are several minor pipe outlets along the west bank of the channel. These outlets were ignored during the hydraulic analysis because their impact to the total flow would be minimal.

SECTION 3 - TECHNICAL ANALYSIS

3.1 Hydrology

The project flows at various sections of the study reach were provided by the District. They were extracted by the District from the HEC-2 model developed for the Saddleback spillway channel design. These flows were compatible with the 50-year recurrent storm. As runoff from Saddle Mountain enters the channel, the flow in the channel increases significantly from 950-cfs at the spillway, to 6060-cfs at the confluence with Centennial Wash. **Table 1** summarizes the flows used in this study.

3.2 Topography

Topographic information used in this study was furnished by the District. It was provided in the form of digital contour maps and Digital Terrain Model (DTM). The original source of this mapping was developed by McLain Aerial, Inc. at a scale of 1"=200' with a contour interval of 2 feet. The work was performed for the District under contract FCD 93-51.

3.3 Hydraulic Analysis

The U.S. Army Corps of Engineers HEC-RAS, Version 2.1 computer program was used in performing the hydraulic analysis. The flow is expected to be subcritical everywhere except at grade control structures where supercritical flow occurs. Since both regimes are encountered in the channel, the mixed flow regime option of HEC-RAS was used.

The zero station for the hydraulic base line was set at the confluence with the main branch of Centennial Wash and increases in the upstream direction. The confluence with main channel was chosen as the zero point instead of the confluence with the north branch because the north branch lacks stationing.

Boss River Modeling System (RMS) software was use for extracting cross section information from the DTM provided by the District. Cross sections were placed with a maximum spacing of 500-feet. Additional cross sections were added at each structure location and whenever the topography required more detailed analysis. All cross sections were oriented perpendicular to the expected flow path. After initial runs, the cross sections were adjusted to better reflect the physical conditions encountered.

Table 1

Summary of Discharges

Station (miles from Centennial Wash)	HEC-2 Station (feet from spillway)	Discharge (cfs)
1.139	333+70	6060
2.003	246+00	5970
2.276	235+00	5750
2.514	220+00	5430
2.979	205+00	5110
3.152	185+00	4720
3.500	170+00	4320
3.677	155+00	3970
3.880	145+19	3740
4.066	135+00	3500
4.328	125+00	3250
4.492	110+00	2860
4.679	100+00	2590
5.091	90+00	2350
5.295	75+00	1900
5.650	60+00	1500
6.047	40+00	1370
6.161	20+31	1240
6.248	15+00	1160
6.318	10+90	1120
6.391	5+00	1120
6.428	0+82	1120

The roughness coefficients (Manning's n value) used in the analysis were estimated from field observation using procedures described in *Estimate Manning's Roughness Coefficient for Streams, Channels, and Flood Plains in Maricopa County, Arizona*. Detailed estimation for roughness coefficients is included in **Appendix B**.

Information on Courthouse Road culvert was obtained from the As-Built drawings for the Saddleback Diversion prepared by PRC Toups Corporation. A vertical datum difference was encountered between the As-Built drawings and the study mapping. PRC's elevations were adjusted by adding 2.21 feet in order to mach the vertical datum of this study.

The cross sections used in this study were extended beyond the channel banks. To prevent low areas outside the channel from becoming effective flow areas, the levee option of HEC-RAS was applied to maintain the flow in the channel unless the top of the bank was overtopped. The same option was also applied to exclude the conveyance calculation for the area of any tributary wash that was not hydraulically connected to the main channel in the upstream direction.

HEC-RAS input, output, summary tables, cross section plots, and reduced copies of the delineation maps are presented in **Appendix C**.

In addition to delineation up to the Centennial wash floodplain, the capacity of the North Branch was investigated to ensure that the branch has sufficient capacity for conveying the flows from Saddleback FRS to the main branch of Centennial Wash within the existing floodplain limits. Results of this investigation are presented in **Appendix D.**

REFERENCES

McLain Aerial, Inc., topographic mapping (scale 1 in. = 200 ft, 2 ft contour interval) for Harquahala FRS and Diversion Channel, March 9, 1996.

U.S. Army Corp of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Hydraulic Reference Manual, Version 2.0, Davis, CA, April 1997.

U.S. Army Corp of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, User's Manual, Version 2.0, Davis, CA, April 1997.

U.S. Geological Survey, Water Resources Division, for the Flood Control District of Maricopa County, Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona, Tucson, Arizona, April 1991.

U.S. Department of Agriculture, Soil Conservation Service, Harquahala Valley Watershed Protection and Flood Prevention Project for the Construction of Saddleback Diversion, Harquahala Valley, AZ, March, 1979.

DELINEATION OF SPILLWAY FLOWS
FOR
SADDLEBACK FLOOD RETARDING STRUCTURE

APPENDIX-A

GENERAL DOCUMENTATION

DELINEATION OF SPILLWAY FLOWS FOR SADDLEBACK FLOOD RETARDING STRUCTURE (FCD 97-16)

GENERAL DOCUMENTATION

1 Scope of Work

2 Contract

3 Correspondence/Transmittals

4 Meeting Minutes

EXHIBIT "A"

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
SCOPE OF WORK
DELINEATION OF SPILLWAY FLOWS FOR
THE SADDLEBACK AND HARQUAHALA FLOOD RETARDING STRUCTURES
FCD 97-16

GENERAL

The purpose of this study is to delineate the inundation limits downstream of the emergency spillways of the Harquahala and Saddleback Flood Retarding Structures. For the Harquahala Flood Retarding Structure the upstream limit will be the crest of the emergency spillway and the downstream limit will be Interstate-10 until the maximum depth of flow is less than one foot in depth. For the Saddleback Flood Retarding Structure the upstream limit will be the outlet of the structure and the downstream limit will be where flow is contained within the existing 100-year floodplain for Centennial Wash. Using these limits there is approximately eight (8) linear miles of emergency spillway delineations to be performed. The consultant will determine the inundation limits using the latest version of the U.S. Army Corps of Engineers HEC-RAS computer model. The consultant must use sound engineering judgement in the development of the inundation limits. The results of the HEC-RAS model must be analyzed carefully and refinements made to the input parameters in order to obtain the most realistic results. For Harquahala Flood Retarding Structure (FRS), the inundation limits shall be modeled for 1/3, 2/3, and full discharge values from the emergency spillway. For Saddleback FRS, the inundation limits shall be modeled for the 100-year discharge to be furnished by the District. The inundation limits for Saddleback FRS are expected to be confined within the existing channel cross sections.

All work must be completed within 210 days from the Notice to Proceed, which includes a minimum of 60 days for District reviews.

COORDINATION

The consultant will update the project schedule submitted during the proposal stage. The project schedule will show when coordination meetings are to occur, and the completion dates for each task in the scope. The consultant will update and resubmit this project schedule whenever changes in the schedule occur.

The consultant will submit a quarterly estimation of the projected billing within 14 days of the Notice To Proceed. Thereafter, this estimation will be updated and submitted to the District's Project Manager at least 10 days before the end of each quarter.

The consultant will obtain any necessary Rights of Entry. The consultant will furnish the District

with a list of all property owners notified and a sample Right of Entry letter.

DATA COLLECTION

The District will supply the topographic data for this study in either a GIS or AutoCAD format. The source of this topographic data is the Harquahala and Saddleback FRS Elevation Capacity Curves Aerial Topographic Mapping (FCD 93-51). This mapping was originally developed at a scale of 1" = 200' and a contour interval of 2 feet.

The District will supply the 3 discharge values to be modeled for the Harquahala FRS, and 100-year discharge to be modeled for the Saddleback FRS. The District will also supply a copy of the Centennial Wash Floodplain Delineation Study.

The consultant may need to obtain as-built plans for the portion Interstate-10 located in the study area.

The consultant will conduct a field reconnaissance of the full study reach. This will include observation of channel and floodplain conditions for estimation of Manning's "n" values, photographic documentation of floodplain characteristics, determination of channel bank stations, observation of possible overflow and split flow areas. A draft report on the field reconnaissance will be submitted to the District before beginning the HEC-RAS modeling. The report will present the determination of channel and overbank "n" values along with color photographs (or color photocopies) of these areas. Photo locations, structures and "n" values will be displayed on reduced scale mapping (maximum size 11" x 17"), and included in the final report.

HYDRAULIC ANALYSIS

The Consultant will do the hydraulic analysis using the latest version of the U.S. Army Corps of Engineers HEC-RAS River Analysis System computer model. In order to properly analyze the study reaches, the hydraulic models must begin far enough upstream and downstream of the study limits so that the effects of the starting conditions are minimized.

The initial location and alignment of cross sections and channel centerline will be submitted for the District's review and approval before the initial digitizing of the cross section data. Cross section stationing will be from left to right looking downstream with the thalweg at station 10,000. Cross sections will be spaced approximately every 500 feet, unless geographic or structural constraints dictate closer spacing, and will extend the full width of the inundated area. The orientation of the cross sections may need to be altered after running the HEC-RAS model to ensure that cross sections are perpendicular to flow. Also, to ensure good hydraulic modeling of the spillway discharges, additional cross sections may need to be added, or existing cross sections

may need to be moved. Interpolated cross sections will not be used in the HEC-RAS model.

Manning's n values are to be determined using the methodology in the USGS report, Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona, April 1991.

Prior to the completion of the final hydraulic models, all of the input data must be reviewed to ensure that it agrees with HEC-RAS model results. This includes: the location of the channel centerline, reach lengths, Manning's n values, ineffective flow limits, discharge values, etc.

The HEC-RAS models will usually be developed for subcritical flow. However, sometimes supercritical flow may be experienced and have to be modeled. The HEC-RAS model should be started far enough downstream to eliminate the effects of the starting conditions on the downstream limit of the study area; and reflect a minimized hazard from spillway flows.

For braided channels, each branch should be modeled with its highest anticipated discharge value. This might require more then one HEC-RAS model to delineate the inundation limits in these areas. A rating curve must be determined and the discharge contained within the channel. The percentage of discharge in each overbank and the main channel must be closely assessed within the split flow area, as well as upstream and downstream of it.

The existing CAP crossing located immediately downstream of the Harquahala FRS shall be ignored during the HEC-RAS modeling.

Cross sections will be plotted showing, computed water surface profiles, ineffective flow areas, "n" values, encroachments, channel stationing, and other pertinent information.

The consultant is to setup the computer models so that the cross sections are broken into as many segments as practical for determining the maximum depth and velocity along the cross section. The consultant will also need to calculate the time it takes for flows to travel from the spillway to each cross section.

For flows from the Harquahala Flood Retarding Structure the consultant must determine the limits of where flow overtops Interstate-10. If the flow overtops the Interstate in more then one location, the consultant must determine the amount of flow at each location.

The consultant is to make refinements to the HEC-RAS model based on review of the model by the District and other interested Agencies. Adjustments to the input parameters for obtaining the most realistic results is considered normal to the scope of work.

It may be necessary to update the supplied topographic mapping or do supplemental field surveys. None of this work will be done without approval from the District's Project Manager. All supplemental topographic and survey work will be on the same horizontal and vertical datum as the supplied mapping.

FINAL PRODUCTS

The consultant will develop an inundation limit exhibit using the supplied topographic data. The exhibits will be on standard size sheets with a maximum dimension on one side of 36 inches. These exhibits will use the District's standard border, title block, and legend format. On these exhibits show the inundation limits for the various discharges, cross section locations, thalweg location, supplied topographic data, any consultant developed topographic data or revisions, major and appropriate minor road names, elevation reference marks, and section lines. These exhibits will be plotted at the same scale as the originally supplied topographic data. A table must be included on this exhibit showing the computed water surface elevation of each cross section for each discharge modeled, and other pertinent information such as maximum depth, velocity, and travel time from the spillway to each cross section. For split or braided flow the maximum inundation limit should be shown and the maximum water surface elevation for each portion of the cross section listed. At the end of the study one complete set of inundation limit exhibits will be submitted on non-erasable mylar (3 mil or thicker) and will be sealed by the engineer. No "sticky backs" or other types of tape products shall be applied to the mylars.

Separate reports will be prepared for each structure. These reports will include, a narrative description of the purpose of the study, what steps were undertaken to complete the study, any assumptions made, minutes of meetings, the field reconnaissance report, and a copy of the inundation limit exhibit. Included as appendixes to these reports will be complete printouts of the HEC-RAS models, summary tables from the HEC-RAS models, cross section plots, supporting calculations for any other hydraulic analysis done, and a copy of any supplemental survey work performed.

The results of this study will also be submitted in a digital format for use in the District's Hydrologic Information System (HIS). The digital data will be prepared in conformance with the District's HIS Data Delivery Specifications, Revision 2.1 or later for the following themes.

1. FCD Project Map Index
2. FCD Project Boundary
3. Data Quality
4. Spillway Baseline Route System
5. Spillway Cross Section
6. Spillway Zone

The consultant is to completely fill out every item called for in the HIS specifications on the above layers. Since Arc-Cad will not work with some of the above layers, it cannot be used on this

project. The HIS data submitted by the consultant will be subject to a rigorous quality control (QC) check by District staff. The District makes use of a checklist and a computer program to document and automate the QC process. A copy of the of the checklist will be provided to the consultant. The consultant must use the checklist to review each HIS data submittal for compliance, and deliver a completed copy of the checklist to the District along with the data submittal. The computerized application that automates the QC process is also available from the District. The consultant is strongly urged to make use of the computer application to review the data prior to submittal. The application is available for Arc/Info on all UNIX platforms.

DELIVERABLES

1. One set of the inundation limit exhibits on mylar (3 mil or thicker) sealed by the engineer.

2. Three copies of each of the final reports sealed by the engineer, inundation limit exhibits, and copies of the HEC-RAS models on a diskette.

3. All of the HIS data called for in the Final Products Section.

FLOOD CONTROL DISTRICT
of
Maricopa County

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BOARD OF DIRECTORS
Jan Brewer
Fulton Brock
Andrew Kunasek
Don Stapley
Mary Rose Garrido Wilcox

RECEIVED
OCT 20 1997
Entellus

October 17, 1997

Edward A. Adair, P.E.
Entellus, Inc.
2255 North 44th Street, Suite 310
Phoenix, AZ 85008-8947

Subject: Contract FCD 97-16
Delineation of Spillway Flows for Saddleback and Harquahala

Dear Mr. Adair:

Congratulations on award to your firm of the subject contract. Enclosed is one fully executed contract for your files. This letter confirms our verbal notice to proceed with contract performance on October 21, 1997 and complete performance by May 19, 1998. A fully executed copy of the contract is enclosed for your files.

The Flood Control District welcomes your participation as a Consultant to the District and we look forward to a mutually beneficial contract agreement. We want to remind you, at this very early stage of award, of the importance we at the District place upon the contract completion date. Maintaining schedule milestones is imperative in meeting the District's planning and future funding goals. Your contract completion date is not only a contractual requirement, but is also a commitment on the part of your firm. Throughout the term of the contract it must be treated with a high degree of importance. We expect and anticipate that this will be the case.

If you have not already done so, we request that you submit your M/WBE Affidavit and Certificate of Insurance for this project. Enclosed is the Certificate of Performance, which you will need to furnish the District when the contract is completed.

Again, we welcome your participation as a Flood Control District Consultant and look forward to an enjoyable and profitable relationship.

Sincerely,

Dortha Klaahsen

Dortha Klaahsen
Contract Administrator

CONTRACT FOR CONSULTANT SERVICES

DELINEATION OF SPILLWAY FLOWS FOR SADDLEBACK AND HARQUAHALA FLOOD RETARDING STRUCTURES

CONTRACT FCD 97-16

C 69-98-026-S

Pursuant to the provisions of the Arizona Revised Statutes Section 48-3603, the Board of Directors has the authority to enter into contracts.

The Flood Control District of Maricopa County, Arizona, hereinafter called the "DISTRICT," is desirous of having certain professional services performed in connection with the Delineation of Spillway Flows for the Saddleback and Harquahala Flood Retarding Structures, hereinafter called the "PROJECT" and as more fully described in Exhibit "A," Scope of Work, attached; and

Entellus, Inc., hereinafter called "CONSULTANT" with local offices located at 2255 North 44th Street, Suite 310, Phoenix, Arizona 85008-8947, is desirous of performing said services;

THEREFORE, the parties hereto mutually agree as follows:

SECTION I - SERVICES OF THE CONSULTANT

The CONSULTANT, under the general supervision of the Manager, Engineering Division, shall prepare studies, reports, surveys, plans, drawings, specifications and cost estimates as are necessary for the PROJECT and according to the directions and designated standards of the DISTRICT and in accordance with Exhibit "A." It is understood and agreed that the DISTRICT's authorized representative shall be the Manager, Engineering Division, or his duly authorized representative, hereinafter called the "AGENT" and that he/she shall be the sole contact for administering this contract.

The CONSULTANT shall meet periodically with the AGENT so as to keep the DISTRICT informed of the progress of the work in accordance with the schedule defined in Exhibit "A."

The CONSULTANT shall promptly advise the AGENT of any factors, which may develop during the PROJECT, that would likely result in construction or design costs in excess of budgetary constraints.

SECTION II - PERIOD OF SERVICE

The CONSULTANT shall complete all work per the schedule provided in Exhibit "A," Scope of Work within 150 calendar days after receipt of the Notice to Proceed, exclusive of DISTRICT review time. The DISTRICT is expected to require up to 60 calendar days for review, for a total contract time period of 210 calendar days. Should extension of this contract period be necessary, and any such extension(s) continue the date of contract for a time period of more than one year from the date of contract expiration, adjustment(s) of the consultant's fee(s) may, upon agreement by both the DISTRICT and the CONSULTANT, be made in accordance with the Consumer Price Index for Urban Consumers, Western Division published by the U.S. Department of Labor, Bureau of Labor Statistics, using the published edition coinciding with the initial contract expiration date. Any such fee adjustment shall only apply to the extended contract time period.

SECTION III - PAYMENTS TO THE CONSULTANT

The CONSULTANT shall be paid for work under this Contract a lump sum fee of $79,945.00 plus a contingency fee of $5,000.00 for supplemental field survey work in accordance with the Scope of Work. A written authorization from the District Project Manager will be required prior to initiating any work related to the contingency fee. Contract value will not exceed $84,945.00 plus any adjustments that have been approved in writing in accordance with the Maricopa County Procurement Code.

The DISTRICT shall pay the CONSULTANT upon completion of the work as accepted by the DISTRICT, except that progress payments may be made as billed by the CONSULTANT based on approved monthly progress reports subject to the limitations set forth in Exhibit "A," Scope of Work. Ten percent (10%) of all contract payments made on an interim basis shall be retained by the DISTRICT as insurance of proper performance of the contract or, at the option of the CONSULTANT, a substitute security may be provided by the CONSULTANT in an authorized form pursuant to procedures established by the DISTRICT. The CONSULTANT is entitled to all interest from any such substitute security.

When the contract is fifty percent (50%) completed, one-half (1/2) of the amount retained will be paid to the CONSULTANT provided the CONSULTANT is making satisfactory progress on the contract and there is no specific cause or claim requiring a greater amount to be retained. After the contract is fifty percent (50%) completed, no more than five percent (5%) of the amount of any subsequent progress payments shall be retained providing the CONSULTANT is making satisfactory progress on the project, except if at any time the DISTRICT determines satisfactory progress is not being made, ten percent (10%) retention shall be reinstated for all progress payments made under the contract subsequent to the determination.

Any retention shall be paid or substitute security returned or released, as applicable, to the CONSULTANT within forty-five (45) calendar days after: (1) final completion of all work per Exhibit A, (2) acceptance of work under the contract, (3) receipt of a completed "Certificate of Performance" form, and (4) invoicing for any retained monies has been received by the DISTRICT.

SECTION IV - THE DISTRICT'S RESPONSIBILITIES

The DISTRICT shall furnish the CONSULTANT, at no cost to the CONSULTANT, the following information or services for this PROJECT:

A. One copy of on-hand maps, records, survey ties, bench marks or other data pertinent to the PROJECT. This does not, however, relieve the CONSULTANT of the responsibility of searching records for additional information, for requesting specific information or for verification of that information provided. The DISTRICT does not warrant the accuracy or comprehensiveness of any such information.

B. All available information and data relative to policies, standards, criteria, and studies, etc. impacting the PROJECT as identified by the CONSULTANT.

C. Availability of staff for consultation with the CONSULTANT during the performance of studies and plan development in order to identify the problems, needs, and other functional aspects of the PROJECT.

D. Examination of documents submitted by the CONSULTANT and rendering of decisions pertaining thereto promptly, to avoid unreasonable delay in the progress of the work by the CONSULTANT. The DISTRICT will keep the CONSULTANT advised concerning the progress of the DISTRICT's review of work.

SECTION V - ALTERATION IN SCOPE OF WORK

Any alteration in the scope of work that will result in a substantial change in the nature of the PROJECT so as to materially increase or decrease the contract fee will require negotiation of an amendment to the contract to be executed by the DISTRICT and the CONSULTANT. No work shall commence on the change until the contract amendment has been approved by the DISTRICT and the CONSULTANT has been notified to proceed by the AGENT. It is distinctly understood and agreed that no claim for extra work done or materials furnished by the CONSULTANT will be allowed by the DISTRICT except as provided herein, nor shall the CONSULTANT do any work or furnish any materials not covered by this agreement unless such work is first authorized in writing in accordance with the Maricopa County Procurement Code. Any such work or materials furnished by the CONSULTANT without such written authorization first being given shall be at his own risk, cost, and expense, and he hereby agrees that without such written authorization he will make no claim for compensation for such work or materials furnished.

SECTION VI - RECORDS

Records of the CONSULTANT's payroll expense pertaining to this PROJECT and records of accounts between the DISTRICT and the CONSULTANT shall be kept on a generally recognized accounting basis and shall be available upon request to the DISTRICT or its authorized representative for audit during normal business hours. The records shall be subject to audit by appropriate grantor agency if the PROJECT is funded all or in part by a grant.

SECTION VII - PROJECT COMPLETION

If during the course of this contract situations arise which prevent completion within the allotted time, an extension may be granted by the AGENT.

SECTION VIII - TERMINATION

The DISTRICT may terminate this contract at any time upon reimbursement to the CONSULTANT of expenses which include reasonable charges for time and material for the percentage of work satisfactorily completed and turned over to the DISTRICT.

The DISTRICT reserves the right to postpone, terminate or abandon this PROJECT for the CONSULTANT's failure to complete the PROJECT on time, or failure to comply with the provisions of the contract. The DISTRICT also reserves the right to terminate any or all parts of this contract for its own convenience as the DISTRICT may determine at its sole discretion.

The DISTRICT hereby gives notice that pursuant to A.R.S. Section 38-511, this contract may be canceled without penalty or further obligation within three years after execution if any person significantly involved in initiation, negotiation, securing, drafting, or creating this contract on behalf of the DISTRICT is, at any time while the contract or any extension of the contract is in effect, an employee or agent of any other party to the contract in any capacity or a consultant to any other party of the contract with respect to the subject matter of the contract. Cancellation under this section shall be effective when written notice from the Chief Engineer and General Manager is received by all of the parties of the contract. In addition, the DISTRICT may recoup any fee or commission paid or due to any person significantly involved in initiation, negotiation, securing, drafting, or creating the contract on behalf of the DISTRICT from any other party to the contract arising as a result of the contract.

The CONSULTANT may terminate this contract in the event of nonpayment of fees as specified in Section III, PAYMENTS TO THE CONSULTANT.

SECTION IX - OWNERSHIP OF DOCUMENTS

All original documents including, but not limited to studies, reports, tracings, drawings, physical and computer models, estimates, field notes, investigations, design analyses, calculations, computer software, and specifications, prepared in the performance of this Contract are to be and remain the property of the DISTRICT and are to be delivered to the AGENT before final payment is made to the CONSULTANT. The DISTRICT reserves the right to reuse the documents as it sees fit. However, the DISTRICT will not reuse, alter, or modify these documents without noting such alterations, modifications, or intent of their reuse, and will hold the CONSULTANT harmless from any claims arising from the reuse, alteration, or modification of the documents. The CONSULTANT may retain reproducible copies of all such documents delivered to the DISTRICT.

SECTION X - COMPLIANCE WITH LAWS

The CONSULTANT is required to comply with all Federal, State and local laws, local ordinances and regulations. The CONSULTANT's signature on this contract certifies compliance with the provisions of the I-9 requirements of the Immigration Reform and Control Act of 1986 for all personnel that the CONSULTANT and any subconsultants employ to complete this PROJECT. It is understood that the DISTRICT shall conduct itself in accordance with the provisions of the Maricopa County Procurement Code.

SECTION XI - GENERAL CONSIDERATIONS

A. Prior to beginning the work, the CONSULTANT shall furnish the DISTRICT for approval the names of its key employees, and of its subconsultants and their key employees to be used on this PROJECT. Any subsequent changes are subject to the written approval of the DISTRICT.

   The CONSULTANT in replacing a MBE/WBE subcontractor should attempt to contract with another MBE/WBE.

B. The failure of either party to enforce any of the provisions of this Contract or to require performance of the other party of any of the provisions hereof shall not be construed to be a waiver of such provisions, nor shall it affect the validity of this Contract or any part thereof, or the right of either party to thereafter enforce each and every provision.

C. The CONSULTANT shall be responsible for the cost of any additional design, field layout, testing, construction and supervision necessary to correct those errors or omissions attributable to the CONSULTANT and for any damage incurred by the DISTRICT as a result of additional construction costs caused by such CONSULTANT errors or omissions.

D. The fact that the DISTRICT has accepted or approved the CONSULTANT's work shall in no way relieve the CONSULTANT's responsibility.

E. It is mutually understood and agreed that this Contract shall be governed by the laws of the State of Arizona, both as to interpretation and performance. Any action at law, suit in equity, or judicial proceeding for the enforcement of this Contract, or any provision thereof, shall be instituted only in the courts of the State of Arizona.

SECTION XII - SUCCESSORS AND ASSIGNS

This Contract shall not be assigned by either party without prior written approval of the other except that the CONSULTANT may use in the performance of this Contract without prior approval of the DISTRICT, personnel or services of its related entities and affiliated companies as if they were an integral part of the CONSULTANT; and it shall extend to and be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto.

SECTION XIII - NO KICK-BACK CERTIFICATION

The CONSULTANT warrants that no person has been employed or retained to solicit or secure this Contract upon any agreement or understanding for a commission, percentage, brokerage, or contingent fee; and that no member of the Board of Directors/Supervisors or any employee of the DISTRICT has any interest, financially or otherwise, in the CONSULTANT firm.

For breach or violation of this warranty, the DISTRICT shall have the right to annul this Contract without liability, or at its discretion to deduct from the Contract price or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.

SECTION XIV - ANTI-DISCRIMINATION PROVISION

The Flood Control District of Maricopa County will endeavor to ensure in every way possible that minority and women-owned business enterprises shall have every opportunity to participate in providing professional services, purchased goods, and contractual services to the Flood Control District of Maricopa County without being discriminated against on the grounds of race, religion, sex, age, or national origin.

The CONSULTANT agrees not to discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, or disability and further agrees not to engage in any unlawful employment practices. The CONSULTANT further agrees to insert the foregoing provisions in all subcontracts hereunder.

SECTION XV - AMENDMENTS

This Contract may be amended by mutual written agreement of the DISTRICT and the CONSULTANT.

SECTION XVI - INDEMNIFICATION

To the fullest extent permitted by law, the CONSULTANT shall defend, indemnify and hold harmless the DISTRICT, Maricopa County, their agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses (including but not limited to attorney fees, court costs, and the cost of appellate proceedings), relating to, arising out of, or alleged to have resulted from the CONSULTANT'S acts, errors, mistakes, or omissions relating to professional services in the performance of this Contract. The CONSULTANT'S duty to defend, hold harmless and indemnify the DISTRICT, its agents, representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, or injury to, impairment, or destruction of property including loss of use resulting therefrom, caused by any acts, errors, mistakes or omissions related to professional services in the performance of this Contract including any person for whose acts, errors, mistakes or omissions the CONSULTANT may be legally liable.

The amount and type of insurance coverage requirements set forth below will in no way be construed as limiting the scope of the indemnity in this paragraph.

For all other hazards, liabilities, and exposures: To the fullest extent permitted by law, the CONSULTANT shall defend, indemnify and hold harmless the DISTRICT, its agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses (including but not limited to attorney fees, court costs, and the cost of appellate proceedings), relating to, arising out of or resulting from the CONSULTANT'S work or services. CONSULTANT'S duty to defend, hold harmless, and indemnify the DISTRICT, its agents, representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, injury to, impairment or destruction of property including loss of use resulting therefrom, caused in whole or in part by any act or omission of the CONSULTANT, anyone the CONSULTANT directly or indirectly employs, or anyone for whose acts the CONSULTANT may be liable, regardless of whether it is caused in part by a party indemnified hereunder, including the DISTRICT.

The amount and type of insurance coverage requirements set forth below will in no way be construed as limiting the scope of the indemnity in this paragraph.

SECTION XVII - INSURANCE

Required Coverage

General Clauses. The CONSULTANT, at its own expense, shall purchase and maintain the minimum insurance specified below with companies duly licensed, with a current A.M. Best, Inc. rating of B++6, or approved unlicensed by the State of Arizona Department of Insurance.

Additional Insured. The insurance coverage, except Workers' Compensation and Professional Liability, required by this Contract shall name the DISTRICT, its agents, representatives, officers, directors, officials, and employees as Additional Insureds.

Coverage Term. All insurance required herein shall be maintained in full force and effect until all work or service required to be performed under the terms of the Contract is satisfactorily completed and formally accepted; failure to do so may, at the sole discretion of the DISTRICT constitute a material breach of this Contract.

Primary Coverage. The CONSULTANT'S insurance shall be primary insurance as respects the DISTRICT, and any insurance or self insurance maintained by the DISTRICT shall not contribute to it.

Claim Reporting. Any failure to comply with the claim reporting provisions of the policies or any breach of the policy warranty shall not affect coverage afforded under the policies to protect the DISTRICT.

Waiver. The policies, except Workers' Compensation, shall contain a waiver of transfer rights of recovery (subrogation) against the DISTRICT, its agents, representatives, directors, officers, and employees for any claims arising out of the CONSULTANT'S work or service.

Deductible/Retention. The policies may provide coverage which contain deductibles or self insured retentions. Such deductible and/or self insured retentions shall not be applicable with respect to the coverage provided to the DISTRICT under such policies. The CONSULTANT shall be solely responsible for the deductible and/or self insured retention.

Copies of Policies. The DISTRICT reserves the right to request and to receive, within 10 working days, certified copies of any or all of the above policies and/or endorsements. The DISTRICT shall not be obligated, however, to review same or to advise CONSULTANT of any deficiencies in such policies and endorsements, and such receipt shall not relieve CONSULTANT from, or be deemed a waiver of the DISTRICT'S right to insist on, strict fulfillment of the CONSULTANT'S obligations under this Contract.

Commercial General Liability. The CONSULTANT shall maintain Commercial General Liability insurance with a limit of not less than $1,000,000 for each occurrence with a $1,000,000 General Aggregate limit. The policy shall include coverage for bodily injury, broad form property damage, personal injury, products and completed operations and blanket contractual covering, but not limited to, the liability assumed under the indemnification provisions of this Contract which coverage will be at least as broad as the Insurance Service Office, Inc. Policy Form CG 00011093 or any replacements thereof. The Commercial General liability additional insured endorsement will be at least as broad as the Insurance Service Office, Inc. Additional Insured, Form B, CG 20101093, or replacements thereof. Such policy shall contain a severability of interest provision, and shall not contain a sunset provision or commutation clause, nor any provision which would serve to limit third party action over claims.

Automobile Liability. The CONSULTANT shall maintain Commercial/Business Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than $1,000,000 each occurrence with respect to the CONSULTANT'S any owned, hired, and non-owned vehicles assigned to or used in performance of the CONSULTANT'S work or services. Coverage will be at least as broad as coverage code 1, "any auto" (Insurance Services Office, Inc. Policy Form CA 00011293, or any replacements thereof).

Workers' Compensation. The CONSULTANT shall carry Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of CONSULTANT'S employees engaged in the performance of the work or services; and Employer's liability insurance of not less than $100,000 for each accident, $100,000 disease for each employee, and $500,000 disease policy limit.

In case any work is subcontracted, the CONSULTANT will require the subcontractor to provide Workers' Compensation and Employer's Liability to at least the same extent as required of the CONSULTANT.

Professional Liability. The CONSULTANT retained by the DISTRICT will maintain Professional Liability insurance covering errors and omissions arising out of the work or services performed by the CONSULTANT or any person employed by the CONSULTANT, with a limit of not less than $1,000,000 each claim.

Certificates of Insurance

Prior to commencing work or services under this Contract, the CONSULTANT shall furnish the DISTRICT with Certificates of Insurance, or formal endorsements as required by the contract, issued by the CONSULTANT'S insurer(s), as evidence that policies providing the required coverages, conditions and limits required by this Contract are in full force and effect. Such certificates shall identify this Contract number and title.

In the event any insurance policy(ies) required by this Contract is(are) written on a "claims made" basis, coverage shall extend for two years past completion and acceptance of the work or services and as evidenced by annual Certificates of Insurance. All Certificates of Insurance shall be identified with a contract number and title. A $25.00 administrative fee will be assessed for all certificates received without the appropriate contract number and title.

Cancellation and Expiration Notice

Insurance evidenced by this Certificate shall not expire, be canceled, or materially changed without fifteen (15) days prior written notice to the DISTRICT. If a policy does expire during the life of the contract, a renewal Certificate must be sent to the DISTRICT fifteen (15) days prior to the expiration date.

All Certificates of Insurance required by this Contract shall be identified with a contract number and title. A $25.00 administrative fee shall be assessed for all Certificates received without the appropriate contract number and title.

IN WITNESS WHEREOF, the parties herein have executed this Contract.

ENTELLUS, INC.

Edward A. Adair

Principal (Signature)

Edward A. Adair

Printed Name

President

Title

August 27, 1997

Date

86-0529793

Federal Tax Identification Number

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY:

Michael S. Ellegood, P.E.
Chief Engineer and General Manager

9/10/97

Date

ACCEPTED AND APPROVED:

Don Stapley

Chairman, Board of Directors

ATTEST:

Clerk of the Board

10/8/97

Date

LEGAL REVIEW

Approved as to form and within the powers and authority granted under the laws of the State of Arizona to the Flood Control District of Maricopa County.

Julie M. Spencer 9/16/97

General Counsel, District

Date

FLOOD CONTROL DISTRICT of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
FAX (602) 506-4601

LETTER OF TRANSMITTAL

TO: July 30, 1997

Hernan Aristizabal
Entellus
2255 North 44th Street, Suite 330
Phoenix, Arizona 85008

SUBJECT: Centennial Wash

WE ARE SENDING YOU THE FOLLOWING ITEMS:
(X) Enclosed ( ) Under separate cover

	Shop Drawings		Prints		Legal Description		Samples
	Specification		Change Order		Copy of Letter		Plans
1.	One copy each of FIRM panels 1925, 1950, and 2425						
2.	Two copies each of the following work study drawings from the Centennial Wash FIS done by Cella Barr: Cover Sheet, 10, 13, 15, 16, 17, 18, 19, 20, 21, 22, and 23 of 30, and sheets 10, 11, 12, 13, 14, 19, and 20 of 20						
3.	Diskette with HEC-2 files R1FDWY and R2FDWY.R3 these seem to be the most pertinent HEC-2 files to your study. I've also included files R1FDPLN, R2FDPLN.R, and R2FDPLN.L just in case you might need them.						

THESE ARE TRANSMITTED:

	For approval		Approved as submitted
X	For your use		Approved as noted
	As requested		Returned for corrections
	Resubmit( )copies for approval		For review and comments
	Submit( )copies for distribution		Return( )corrected prints
	FOR ESTIMATE DUE:		Borrowed prints being returned

Remarks: I haven't come across a report for the Centennial Wash FIS yet, and I doubt that there is a report for it. But, I will continue to look for it. It will be a little while before I can have the Centennial Wash floodplain in a digital format. I should be able to get you our preliminary hydrology values that we will be using for this study by the end of this week. The principal outlet discharge is 1,100 cfs and the design discharge of the diversion channel at the downstream end is 6,060 cfs (50-year, 24-hour event). There was a storm event in which the flow in the channel at the downstream end was reported to be 12,000 cfs. When you cut your cross sections you wil probably want to go pretty wide at first, because it usually is easier to delete points than it is to add.

SIGNED: _____
Tim Murphy
Hydrologist

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
Since 1962

2633 East Indian School Road, Suite 401
Phoenix, Arizona 85016-6763
Tel. (602) 957-1155
Fax (602) 957-2838

CIVIL ENGINEERING ■ Transportation ■ Airports ■ Drainage/Flood Control ■ Water Resources ■ Land Development ■ Surveying

TRANSMITTAL

TO: Entellus
2255 N. 44th St., Suite 330
Phoenix, AZ 85008

DATE: November 3, 1997

RE: Harquahala FRS Spillway Delineation
Project Schedule

ATTENTION: Mr. Sam Kao

FAX TO: 244-8947

Transmitted herewith are the following items:

Copies	Date	I.D. Number	Description
1			Project Schedule
1			Projected Monthly Billing based on schedule.

These are transmitted as checked below:

___ For Approval	___ For Review and Comment	___ Approve
X For Your Use	___ For Information Only	___ Disapprove
X As Requested	___ For Use as Guideline Only	___ Approve with Comments
___ Returned	___ Other	

REMARKS:

Number of Pages (including transmittal cover page) 3 Originals to be ___ Mailed X Filed

Very truly yours,
DIBBLE & ASSOCIATES

Signed

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE CONTACT US AT THE ABOVE NUMBER IMMEDIATELY.

CONTRACT TASK/PHASE	Start Date 20-Oct-97	End Date	No. of Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
				WEEKS																													
TASK 1- COORDINATION																																	
1.1 Project Schedule																																	
1.2 Coordination Meetings	20-Oct-97	15-May-98	30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3 Billing Estimates																																	
1.4 Monthly Progress Reports																																	
1.5 Legal Advertising																																	
1.6 Notify Property Owners																																	
1.7 Public Works Coordination																																	
1.8 Public Meetings																																	
TASK 2- DATA COLLECTION																																	
2.1 Collect & Review Data	20-Oct-97	14-Nov-97	4	X	X	X	X																										
2.2 Field Reconnaissance Report	17-Nov-97	28-Nov-97	2					X	X																								
TASK 3- HYDRAULIC ANALYSIS																																	
3.1 HEC-RAS Modeling	01-Dec-97	26-Dec-97	4							X	X	X	X																				
3.2 Cross-Sections	03-Nov-97	12-Dec-97	6			X	X	X	X	X	X																						
3.3 Split Flow Analysis	01-Dec-97	26-Dec-97	4							X	X	X	X																				
3.4 HEC-RAS Refinements	19-Jan-98	30-Jan-98	2														X	X															
TASK 4- FINAL PRODUCTS																																	
4.1 Inundation Limits Exhibit	02-Feb-98	27-Feb-98	4																X	X	X	X											
4.2 Hydraulic Report	02-Feb-98	27-Feb-98	4																X	X	X	X											
4.3 HIS Data	23-Mar-98	15-May-98	8																							X	X	X	X	X	X	X	X

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
CONSULTANT/SUBCONSULTANT SCHEDULED PROJECT MANHOURS

CONSULTANT/SUBCONSULT. NAME: **DIBBLE & ASSOCIATES CONSULTING ENGINEERS**

PROJECT NAME: HARQUAHALA & SADDLEBACK FRS SPILLWAY DELINEATION

DATE: 03-Nov-97

	1997						1998								
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	TOTAL
Principal	0	0	0	0	2	0	0	4	0	0	0	0	0	0	8
Project Manager	0	0	0	4	25	19	5	44	3	1	1	0	0	0	102
Engineer	0	0	0	8	57	58	10	77	6	3	2	0	0	0	220
EIT/Designer	0	0	0	0	25	35	0	60	2	0	0	0	0	0	122
Administrative	0	0	0	1	3	0	0	0	0	0	0	0	0	0	4
Survey Crew	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	13	113	111	16	184	11	5	3	0	0	0	456

LABOR BILLING ($)	1002	8335	8026	1262	13486	867.2	370.7	210	$33,559
EXPENSES ($)		100	100	55	200				$455
TOTAL BILLING ($)	1002	8435	8126	1317	13686	867.2	370.7	210	$34,014

FLOC CONTROL DISTRICT of Maricopa C nty
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
FAX (602) 506-4601

LETTER OF TRANSMITTAL

TO: Hernan Aristizabal
Entellus
2255 North 44th Street, Suite 330
Phoenix, Arizona 85008

October 29, 1997

SUBJECT: FCD 97-16 Saddleback & Harquahala Spillway Studies

WE ARE SENDING YOU THE FOLLOWING ITEMS:
(X) Enclosed ( ) Under separate cover

	Shop Drawings		Prints		Legal Description		Samples
	Specification		Change Order		Copy of Letter		Plans
1.	As-Built Plans for Saddleback Diversion Channel						
2.	As-Built Plans for Saddleback Floodwater Retarding Structure						
3.	CD With Saddleback & Harquahala DTM files, and Centennial Wash AutoCAD files						

THESE ARE TRANSMITTED:

	For approval		Approved as submitted
X	For your use		Approved as noted
	As requested		Returned for corrections
	Resubmit( )copies for approval		For review and comments
	Submit( )copies for distribution		Return( )corrected prints
	FOR ESTIMATE DUE:		Borrowed prints being returned

Remarks: The CD has a file on it called READTHIS.TXT that explains the file naming convention. I highly recommend that you take a look at this file. When making the CD it was easier to include all the files. Therefore, the Harquahala files are on the CD even though you don't need them. The DTM files cover a couple of sections at a time, whereas the contour files covered only one section at a time. If there are any problems give me a call (506-4605).

SIGNED: Tim Murphy
Tim Murphy

Entellus
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
P (602)244-2566
Fax (602)244-8947

FACSIMILE TRANSMITTAL

DATE: 10/30/97 SEND TO: 506 - 4601 (FAX #)

PROJECT Name/Number: Harquahala / Saddleback / 310.002

TOTAL # of PAGES INCLUDING THE COVER SHEET: 3

⇨ ⇨ ⇨ ⇨ PLEASE DELIVER THE FOLLOWING PAGES TO:

ATTENTION: Mr. Tim Murphy

ORGANIZATION: FCDMC

Subject of Transmission: Minutes for Kick-off Meeting (10/22/97)

Comments: For your reference.

Sender: Samuel Kao

FAXED 10/30/97

IF YOU HAVE ANY PROBLEMS RECEIVING THIS DOCUMENT
PLEASE CALL US AT (602) 244-2566

Entellus™
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
P (602)244-2566
Fax (602)244-8947

FACSIMILE TRANSMITTAL

DATE: 11/4/97 SEND TO: 506 - 4601 (FAX #)

PROJECT Name/Number: Harquahala / Saddleback / 310.002

TOTAL # of PAGES INCLUDING THE COVER SHEET: 3

⇨ ⇨ ⇨ ⇨ PLEASE DELIVER THE FOLLOWING PAGES TO:

ATTENTION: Mr. Tim Murphy

ORGANIZATION: FCDMC

Subject of Transmission: ① Estimated Schedule (11/04/97)
② Estimated Billing (11/04/97)

Comments:
Hard Copy is in the mail.

Sender: Sam Kao

FAXED 11/4/97

IF YOU HAVE ANY PROBLEMS RECEIVING THIS DOCUMENT
PLEASE CALL US AT (602) 244-2566

DELINEATION OF SPILLWAY FLOWS
FOR SADDLEBACK AND HARQUAHALA
FCD 97-16

ESTIMATED SCHEDULE
(11/04/97)

TASK DESCRIPTION	1997			1998				
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
1. Coordination								
2. Data Collection								
3. Field Survey Coordination					DISTRICT REVIEW TIME		DISTRICT REVIEW TIME	
4. Hydraulic Analysis								
5. HIS/GIS								
6. Deliverables								

DELINEATION OF SPILLWAY FLOWS
FOR SADDLEBACK AND HARQUAHALA
FCD 97-16

ESTIMATED BILLING SCHEDULE
(11/04/97)

Year	Month	Estimated Billing	Cumulative Billing
1997	October	4,200	4,200
	November	14,300	18,500
	December	15,520	34,020
1998	January	23,300	57,320
	February	3,820	61,140
	March	12,450	73,590
	April	2,900	76,490
	May	8,455	84,945

Entellus
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
(602)244-2566
Fax (602)244-6947

FACSIMILE TRANSMITTAL

DATE: 11/4/97 SEND TO: 957-2838 (FAX #)

PROJECT Name/Number: Harquahala / Saddleback ; 310.002

TOTAL # of PAGES *INCLUDING THE COVER SHEET:* 2

⇨ ⇨ ⇨ ⇨ PLEASE DELIVER THE FOLLOWING PAGES TO:

ATTENTION: Mr. Brian Fry, P.E.

ORGANIZATION: Dibble & Associates

Subject of Transmission: Estimated Schedule (11/04/97)

Comments:

For your reference.

I didn't attend the meeting this morning due to a bad cold. Sorry about that.

Sender: Sam Kao

FAXED 11/4/97

IF YOU HAVE ANY PROBLEMS RECEIVING THIS DOCUMENT
PLEASE CALL US AT (602) 244-2566

FLOC CONTROL DISTRICT of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
FAX (602) 506-4601

LETTER OF TRANSMITTAL

TO: Hernan Aristizabal
Entellus, Inc.
2255 North 44th Street, Suite 330
Phoenix, Arizona 85008

November 25, 1997

SUBJECT: FCD 97-16 (Saddleback & Harquahala FRS)

WE ARE SENDING YOU THE FOLLOWING ITEMS:
(X) Enclosed ( ) Under separate cover

	Shop Drawings		Prints		Legal Description		Samples
	Specification		Change Order		Copy of Letter		Plans
1.	9" x 9" Aerial Photos for Saddleback FRS and Diversion Channel						

THESE ARE TRANSMITTED:

	For approval		Approved as submitted
X	For your use		Approved as noted
	As requested		Returned for corrections
	Resubmit( )copies for approval		For review and comments
	Submit( )copies for distribution		Return( )corrected prints
	FOR ESTIMATE DUE:		Borrowed prints being returned

Remarks: These photos don't need to be returned until the end of the study.

SIGNED: Tim Murphy
Tim Murphy
Hydrologist

CC:

Entellus
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947

LETTER OF TRANSMITTAL

DATE December 11, 1997	JOB NO. 310.002
ATTENTION Mr. Brian Fry	
RE: Delineation of Spillway Flows for Harquahala and Saddleback Flood Retarding Structures FCD 97-16	

TO: Dibble & Associates

2633 East Indian School Road Suite 401

Phoenix, Arizona 851016-6763

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of Letter ☐ Change Order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1	Nov-97	1	Harquahala field Reconnaissance Report (returning)
1	Dec-97	1	Saddleback Field Reconnaissance Report (for Review)

THESE ARE TRANSMITTED as checked below:

☐ For Approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval

☑ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution

☐ As Requested ☐ Returned for corrections ☐ Return ____ corrected prints

☑ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: I'm returning Harquahala's report with a few suggestions, also the saddleback report is included for your review

COPY TO: _____

SIGNED Hernan A. Aristizabal

Hernan A. Aristizabal P.E.

(If enclosures are not as noted, kindly notify us at once.)

Entellus™
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947

LETTER OF TRANSMITTAL

DATE December 19, 1997	JOB NO. 310.002
ATTENTION Mr. Timothy Murphy	
RE: Delineation of Spillway Flows for Harquahala and Saddleback Flood Retarding Structures FCD 97-16	

TO: Flood Control District of Maricopa County
2801 west Durango
Phoenix, AZ 85009

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of Letter ☐ Change Order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1	Dec-97	1	Harquahala field Reconnaissance Report
1	Dec-97	1	Saddleback Field Reconnaissance Report

THESE ARE TRANSMITTED as checked below:

☐ For Approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval

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☐ As Requested ☐ Returned for corrections ☐ Return ____ corrected prints

☑ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

COPY TO: Brian Fry

SIGNED _____
Hernan A. Aristizabal P.E.

(If enclosures are not as noted, kindly notify us at once.)

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS
Since 1962

2633 East Indian School Road, Suite 401
Phoenix, Arizona 85016-6763
Tel. (602) 957-1155
Fax (602) 957-2838

CIVIL ENGINEERING ■ Transportation ■ Airports ■ Drainage/Flood Control ■ Water Resources ■ Land Development ■ Surveying

LETTER OF TRANSMITTAL

TO: Entellus
2255 N. 44th St., Suite 330
Phoenix, Arizona 85008

ATTENTION: Hernan A. Aristizabal, P.E.

DATE: December 18, 1997

RE: Delineation of Spillway Flows for Harqauahala
And Saddleback Flood Retarding Structures
Contract FCD 97-16

Transmitted herewith are the following items:

__ Plans	__ Specifications	__ Prints	__ Copy of Letter
▼ Report	__ Estimate	__ Change Order	__ Shop Drawings
__ Details	__ Calculations	__ Other	

Copies	Date	I.D. Number	Description
Four (4)	12/18/97		Harquahala Field Reconnaissance Report (for submittal)
One (1)	12/10/97		Saddleback Field Reconnaissance Report (returning)

These are transmitted as checked below:

__ For Approval	__ For Review and Comment	__ Approve
▼ For Your Use	__ For Information Only	__ Disapprove
__ As Requested	__ For Use as Guideline Only	__ Approve with Comments
__ Returned	__ Other	

REMARKS: Four copies of the final Harqauahala Field Reconnaissance Report are enclosed. We are also returning the Saddleback Field Reconnaissance Report with minor suggestions.

cc:

Sincerely,

DIBBLE & ASSOCIATES

Jason L. Mikkelsen, E.I.T.

Entellus™
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947

LETTER OF TRANSMITTAL

DATE December 19, 1997	JOB NO. 310.002
ATTENTION Mr. Timothy Murphy	
RE: Delineation of Spillway Flows for Harquahala and Saddleback Flood Retarding Structures FCD 97-16	

TO: Flood Control District of Maricopa County
2801 west Durango
Phoenix, AZ 85009

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☐ Copy of Letter ☐ Change Order ☑ Reports

COPIES	DATE	NO.	DESCRIPTION
1	Dec-97	1	Harquahala field Reconnaissance Report
1	Dec-97	1	Saddleback Field Reconnaissance Report

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REMARKS:

COPY TO: Brian Fry

SIGNED Hernan A. Aristizabal P.E.

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Entellus™
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947

LETTER OF TRANSMITTAL

DATE [illegible] | JOB NO [illegible]
ATTENTION [illegible] PE
RE. Hayden Lake & Sandlock
FED 97-16

TO: Dibble and Associates
2633 E Indian School Rd
Phoenix AZ

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	—	1	ADOT I-10 Architect Drawings

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☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

COPY TO: _____

SIGNED [signature]

(If enclosures are not as noted, kindly notify us at once.)

FLOOD CONTROL DISTRICT of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501 (Office)
(602) 506-4601 (Fax)

COVER SHEET

TO: Hernan Aristizabal

COMPANY: Entellus Fax # 244-8947

FROM: Tim Murphy

Number of pages being sent including the cover sheet: 2

COMMENTS: Attached is the table that I put together from the old HEC-2 model printout. I just included in the table the cross sections where either the discharge value or the Manning's N values were changed. The cross section stationing begins at the outlet, and the ID's appear to be in 100's of feet. Therefore, cross section 0.82 is 82 feet from the principal outlet of the Saddleback Flood Retarding Structure. Cross section 249.000 is the downstream end of the Diversion Channel, and cross section 10.400 is identified as the Courthouse Road Bridge. This information comes from the Design Report for the Diversion Channel. There is another report which estimates that a storm on September 2, 1984 produced a discharge at the diversion channel outlet of 12,355 cfs. Because of this event, I would like to have the cross sections in the downstream be long enough to contain this discharge. This information will all be contained in the copies of the reports that I'll be giving you.

MARICOPA CO. FCD 602 506 4601 11/17/97 15:15 001/002

Cross Section ID	Discharge Values			Manning's N Values		
	10-Year	50-Year	Outlet Only	LOB	ROB	Channel
333.700	3,550	6,060	1,120	0.035	0.035	0.035
249.000	"	"	"	0.035	0.030	0.030
246.000	3,490	5,970	"	"	"	"
237.610	"	"	"	0.035	0.035	0.035
236.920	"	"	"	0.035	0.030	0.030
235.000	3,360	5,750	"	"	"	"
220.000	3,180	5,430	"	"	"	"
205.000	2,990	5,110	"	"	"	"
185.000	2,760	4,720	"	"	"	"
170.000	2,520	4,320	"	"	"	"
155.000	2,310	3,970	"	"	"	"
145.190	2,170	3,740	"	0.035	0.035	0.035
144.000	"	"	"	0.035	0.030	0.030
135.000	2,030	3,500	"	"	"	"
125.000	1,890	3,250	"	"	"	"
110.000	1,660	2,860	"	"	"	"
100.000	1,500	2,590	"	"	"	"
90.000	1,360	2,350	"	"	"	"
82.180	"	"	"	0.035	0.035	0.035
81.640	"	"	"	0.035	0.030	0.030
75.000	1,060	1,900	"	"	"	"
60.000	790	1,500	"	"	"	"
40.000	760	1,370	"	"	"	"
20.310	730	1,240	"	0.035	0.035	0.035
19.000	"	"	"	0.035	0.030	0.030
15.000	730	1,160	"	"	"	"
10.900	730	1,090	"	0.035	0.035	0.035
10.400	"	"	"	"	"	0.012
9.890	"	"	"	"	"	0.035
5.000	730	1,020	"	0.030	0.030	0.030
0.820	730	950	"	"	"	"

Entellus™
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
(602)244-2566
Fax (602)244-8947

LETTER OF TRANSMITTAL

DATE	JOB NO.
January 23, 1998	310.002

ATTENTION: Mr. Timothy Murphy

RE: Delineation of Spillway Flows for Harquahala and Saddleback Flood Retarding Structures

FCD 97-16

TO: Flood Control District of Maricopa County
2801 west Durango
Phoenix, AZ 85009

WE ARE SENDING YOU ☑ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of Letter ☐ Change Order ☑ Memorandum

COPIES	DATE	NO.	DESCRIPTION
1	1-22-97	1	Minutes for January 13 meeting

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REMARKS:

COPY TO: Brian Fry

SIGNED Hernan A. Aristizabal P.E.

(If enclosures are not as noted, kindly notify us at once.)

Entellus
1255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947
Website www.entellus.com

TO: Attendees/File

FROM: S. E. Kao

JOB NO.: 310.002

JOB: FCDMC-Harquahala & Saddleback (FCD97-16)

DATE: 10/22/97

MEMORANDUM

Reference: Project Kick-off Meeting at the District
10:00 A.M., October 22, 1997

Attendees:

Tim Murphy	FCDMC
Sam Kao	Entellus
Hernan Aristizabal	Entellus
Brian Fry	Dibble

The following is a summary of items that were discussed and concluded during the kick-off meeting of the above referenced project.

Technical Issues

1. HEC-RAS Model: Hydraulic computation will be performed initially using Version 1.2. The files will be converted to Version 2.0 for final runs.

2. Flows: For Harquahala, the inundation limits will be modeled for ⅓ , ⅔ and full discharge values from the emergency spillway. For Saddleback, since no emergency spillway is available, the inundation limits will be modeled for the 100-year discharge to be furnished by the District.

3. Stationing: For Harquahala, the station at the emergency spillway will be Mile 20. For Saddleback, the initial station at the confluence of Centennial Wash will be Mile 0.

4. X-sections: X-sections will be generated from the digital terrain model.

5. Travel Time: Travel time will be estimated based on the channel velocity.

6. HIS/GIS: Information on velocity distribution in each x-section will be included in the HIS/GIS files

7. Reports: Separate reports will be prepared for Harquahala and Saddleback. The source of topographic mapping will be documented not only in the report, but also on each sheet of the delineation plans. In addition, the assumptions for flow modeling over the CAP Canal shall be addressed in the Harquahala report.

Administrative Issues

1. Schedule and Projected Billing: A project schedule and projected billing will be submitted to the District by November 4, 1997.

2. Field Trip: A field trip is tentatively scheduled for the week of November 3 or November 10. Entellus and Dibble will have an in-house meeting to review some issues prior to the field trip.

3. Review Meetings: Review meetings and milestone meetings for this project will be informal. Most meetings will be held at the office of the Consultants.

4. Information to be furnished by the District: The District will furnish the digital terrain mapping information on CD. The District will also furnish the FIRM map of Centennial Wash in Auto CAD format and lend the FIS report to Entellus.

5. I-10 As-built Plans: Entellus will obtain the I-10 as-built plans from ADOT.

Entellus
2255 N. 44th St., Suite 330
Phoenix, AZ 85008
Phone (602)244-2566
Fax (602)244-8947

TO: Attendees/File

FROM: Hernan Aristizabal

JOB NO.: 310.002

JOB: Delineation of Spillway Flows for Harquahala and Saddleback FRS

DATE: January 23, 1998

MEMORANDUM

Reference: PROGRESS MEETING
10:00 am on Tuesday, January 13, 1998 at Entellus' Office

Attendees:

Timothy Murphy	FCDMC
Joe Tram	FCDMC
Brian Fry	Dibble and Associates
Jason Mikkelsen	Dibble and Associates
Hernan Aristizabal	Entellus

The following is a summary of the Items that were discussed and concluded during the above referenced meeting:

District Comments on Field Reconnaissance Reports:

1. The pictures used for Reach-1 of the Saddleback Field Reconnaissance Report are more representative of Reach-2. The District will provide Entellus with new pictures that are more representative of Reach-1.

2. The n-value for Saddleback Reach-1 shown in the report is a composite value for the entire cross-section. The value of 0.07 is lower than the value used for the vegetated portion of the wash in the Harquahala report. The n-value for this reach will be reevaluated once the new pictures are received.

3. The description of the channel-bank location in the Harquahala report would be easier to understand by using a sketch of the cross-section. Also, the location of the bank stations need to be shown in the pictures in the Saddleback report.

4. A 15% meandering factor was included in the Harquahala Report. Tim didn't feel there was an appreciable degree of meandering to justify this value. He suggested using a lesser value.

Saddleback Delineation

1. Entellus presented inundation limits for two different starting water surface elevations. The first one used normal depth and the second used the Centennial Wash floodplain elevation. The two scenarios gave very similar results; therefore, the Centennial Wash elevation will be used because it is more conservative and produced a larger inundation area.

2. After plotting the digitized floodplain from the Centennial Wash Flood Insurance Study into the project's mapping, it was discovered that the elevation of the floodplain does not match the mapping. Entellus plotted a new floodplain using the project's mapping and found the new line to be outside of the Flood Insurance Study floodplain. The original floodplain will be used to tie into Centennial Wash.

3. Entellus will perform a separate analysis for the branch of Centennial Wash to determine if the existing FEMA floodplain boundaries are wide enough to include the flow from the spillway channel. To perform this analysis, the model will be extended temporarily to the main channel of Centennial Wash.

4. Two major tributaries enter the inundation area at the downstream end of the project between the end of the improved channel and Centennial Wash. These tributaries are not hydraulicly connected to the Saddleback Spillway channel in the upstream direction. Therefore, Entellus will exclude their cross-sectional area.

5. Cross-sections 1.364, 1.430 and 1.158 will be modified by increasing the length of the cross-section before it bends.

Harquahala Delineation

1. Dibble presented a draft version of the inundation limits for the largest flow (15000 cfs) of the Harquahala floodplain. The methodology of the analysis was explained.

2. Initial runs of the HEC-RAS model show that water will split to the west of the hill immediately downstream of the emergency spillway. It was agreed that an analysis of the split flow should be done to the west of the hill. Dibble will create cross-sections for this split and include it in the HEC-RAS model.

3. A second split flow was found to occur approximately at cross section 17.6702. This split runs to a borrow pit just upstream of Interstate 10. Several methods of analysis through this borrow pit were discussed. It was agreed that the water will most likely fill the borrow pit and then overtop the southwest corner of the pit. The split flow will return to the main flow at cross section 16.8902

4. There is insufficient mapping near the western downstream area of the floodplain to contain the flow (cross sections 16.8902 through 16.7242). The HEC-RAS model vertically extends the cross-sections to accommodate the flow. It was agreed that the use of As-Built drawings for Interstate 10 along with USGS maps will be used to approximate an inundation limit in this area.

DELINEATION OF SPILLWAY FLOWS
FOR
SADDLEBACK FLOOD RETARDING STRUCTURE

APPENDIX-B

HYDRAULIC PARAMETERS ESTIMATION

DELINEATION OF SPILLWAY FLOWS FOR SADDLEBACK FLOOD RETARDING STRUCTURE (FCD 97-16)

HYDRAULIC PARAMETERS ESTIMATION

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INTRODUCTION

This section presents the basis for the estimation and use of Manning "n" values or "roughness coefficient" for the Saddleback FRS spillway channel. The Channel was divided into three reaches of similar hydraulic characteristics and Manning's n values assigned to the reaches based on their typical characteristics. Each reach was identified with a four-character identifier. The first three characters represent the name of the wash, and the fourth is the reach number. For example, SDB2 denotes Saddleback channel, Reach 2. The reach numbers start with "1" at the downstream end and increases in the upstream direction.

The limits, location of photographs and n values for each reach are shown on **Exhibit 1** entitled, "Manning's n Value Map". In calculating the n Value, the following factors were considered:

Bed material particle size

Degree of irregularity

Effect of obstruction

Degree of meandering

Vegetation

The density and type of vegetation have significant impact on the roughness coefficient (n value). The channel is maintained by the Flood Control District of Maricopa County.

Therefore, large brushes are unlikely to be allowed to grow in the channel. However, at the downstream end, between the end of the channel and Centennial Wash, a well-established vegetation cover was observed. At this location, vegetation is crucial on the calculation of the n value.

Methodology

Each reach was identified in the field. The discerning characteristics were channel liner material, vegetation density and bed materials. Each reach was photographed during the field reconnaissance at a representative location. The photography locations are summarized in **Exhibit 1.**

Manning's roughness coefficients were determined in accordance with the methodology described in *Estimated Manning's Roughness Coefficient for Streams, Channels, and Floodplains in Maricopa County, Arizona* (USGS, Water Resources Division, April 1991). The method described in this publication selects a base value for the roughness coefficient based exclusively on bed material. This base value is then adjusted to account for vegetation, irregularities, obstructions and cross-section variations. In addition, a multiplier can be applied to the adjusted n-value if meandering of the reach is significant.

The base roughness coefficient in this study was selected based on the average particle size observed in the field. The typical bed materials in the study area range from pneumatically applied concrete to gravel; and typical values of the base roughness coefficients range from 0.018 to 0.030.

n Value Determination

The base values, adjustments, and the adjusted values for Manning's roughness coefficient are shown in the following tables:

Photo 1 - Reach 1 (SDB-1)
From right side of channel near the end towards Centennial Wash

Photo 2 - Reach 1 (SDB-1)
From right side of channel near the end. Typical vegetation near Centennial Wash

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Delineation of Spillway Flows for Saddleback Flood Retarding Structures (FCD 97-16)
Stream: Saddleback Spillway Channel
Location: **Reach-1 (SDB1)** - Between Outlet and Centennial Wash
Photo No: **Photos 1 - 2**

Channel Conditions		Manning's n Adjustment		Left Overbank (East)	Channel	Right Overbank (West)
Channel Material	Concrete	n_1	.012 - .018			
	Firm Soil		.025 -.032			
	Coarse Sand		.026 - .035			
	Gravel		.028 - .035	0.030	0.030	0.030
	Cobble		.030 - .050			
	Boulder		.040 - .070			
Degree of Irregularity	Smooth	n_2	0			
	Minor		.001 - .005	0.004	.004	0.004
	Moderate		.006 - .010			
	Severe		.011 - .020			
Effects of Obstruction	Negligible	n_3	.000 - .004	0	0	0
	Minor		.005 - .015			
	Appreciable		.020 - .030			
	Severe		.040 - .060			
Vegetation	Small	n_4	.002 - .010			
	Medium		.010 - .025			
	Large		.025 - .050	0.030	0.030	0.030
	Very Large		.050 - .100			
Variations in Channel Cross section	Gradual	n_5	0			
	Occ. Alt.		.001 - .005	.006	.006	.006
	Freq. Alt.		.010 - .015			
				0.07	0.07	0.07
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
$n = (n_1+n_2+n_3+n_4+n_5)m$				0.07	0.07	0.07

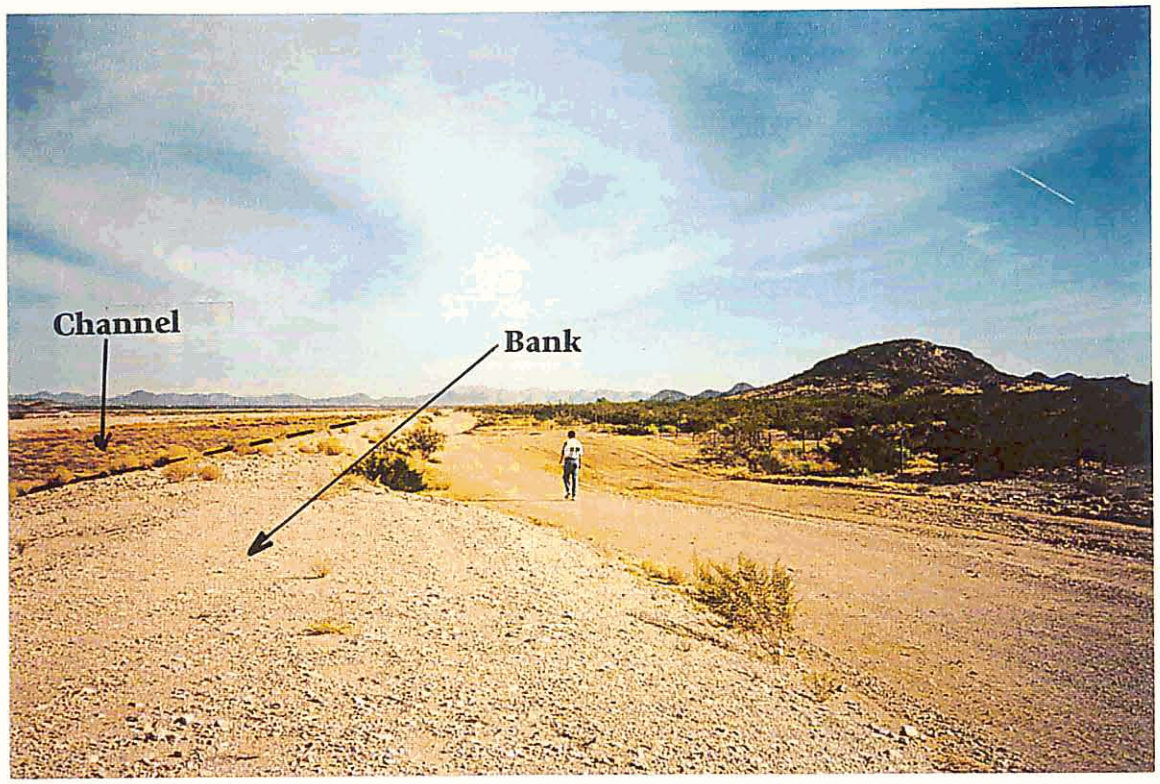


Photo 3 -Reach 2 (SDB-2)
Saddleback Channel Left bank looking upstream

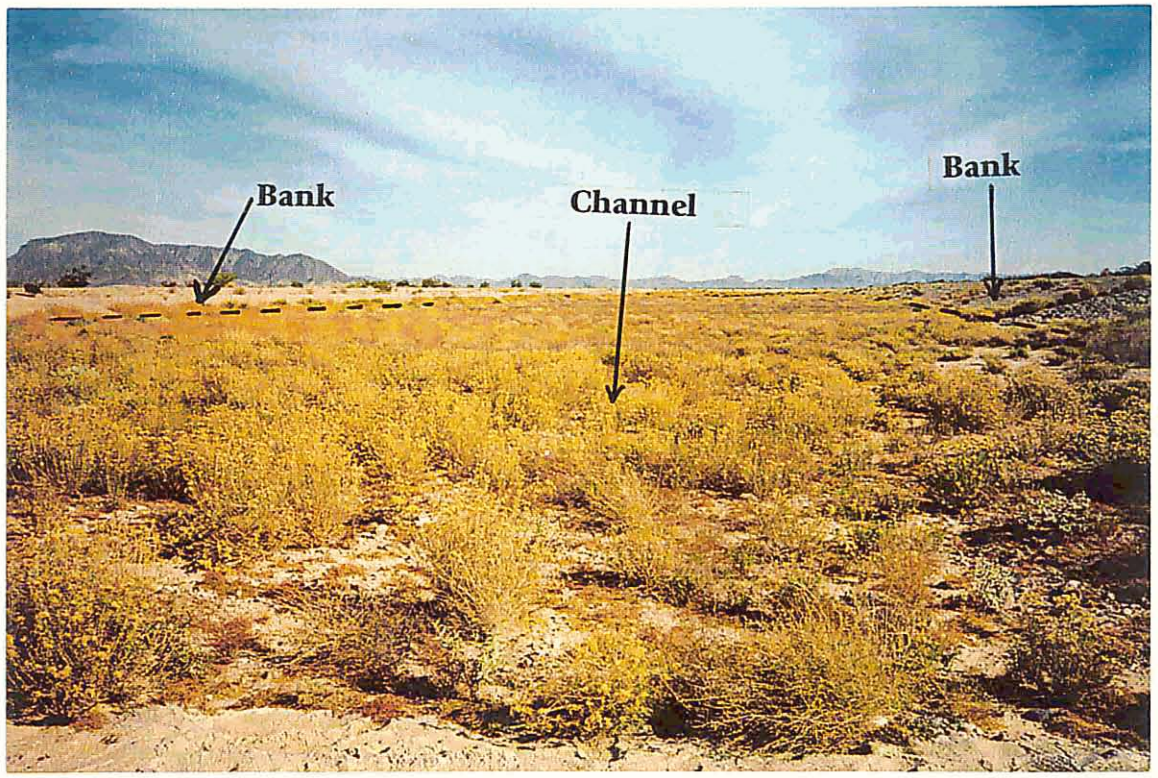


Photo 4 - Reach 2 (SDB-2)
Saddleback Channel looking downstream

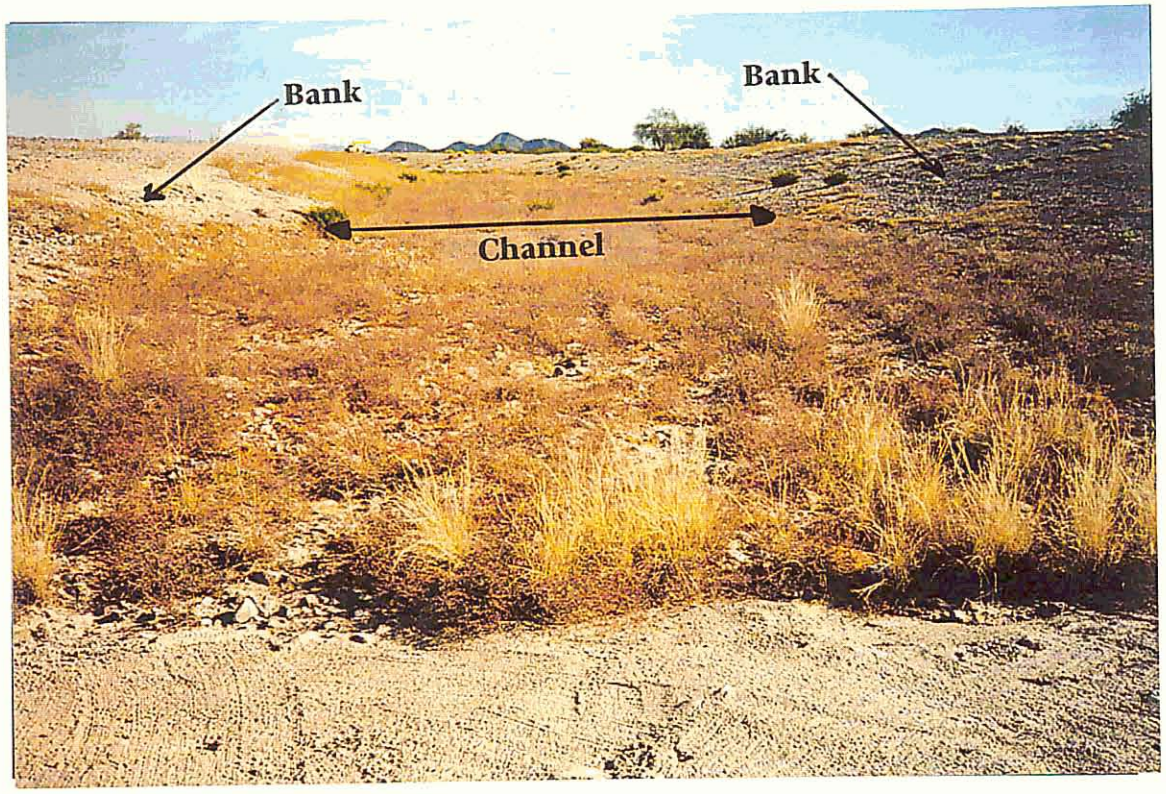


Photo 5 - Reach 2 (SDB-2)
Saddleback Channel looking downstream from drop structure

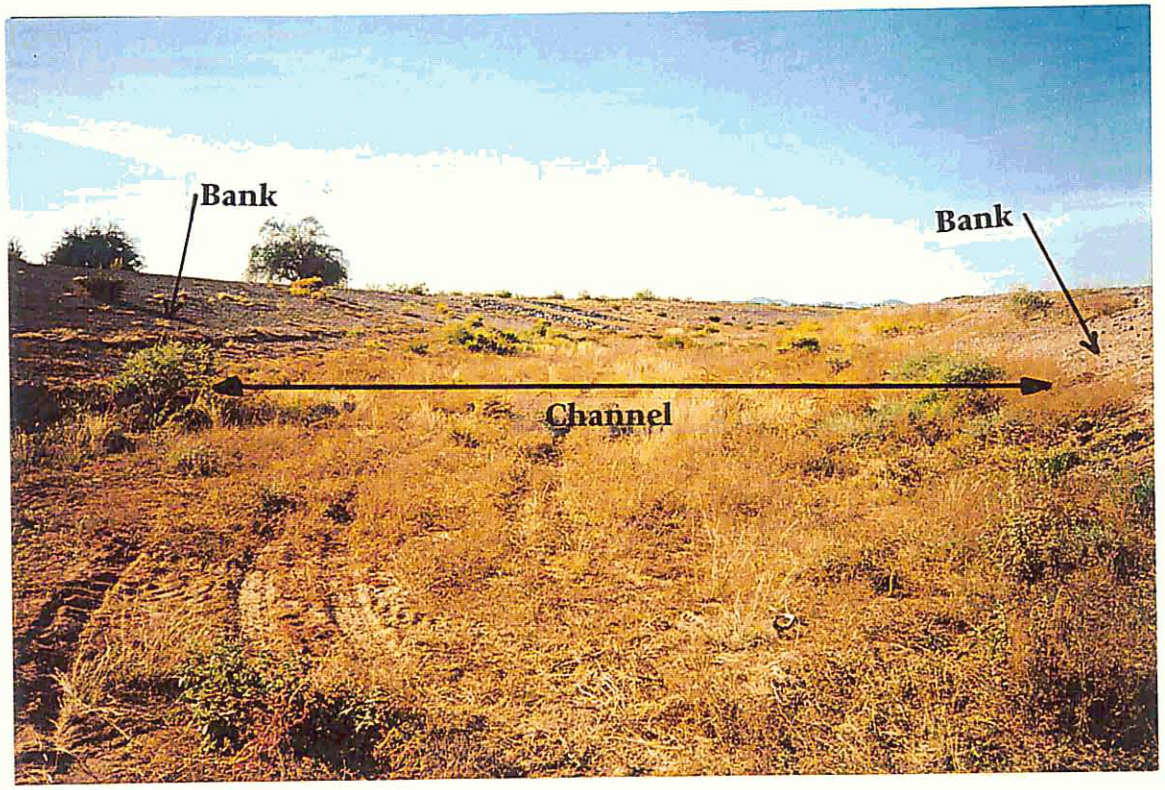


Photo 6 - Reach 2 (SDB-2)
Saddleback Channel looking downstream from Courthouse Road

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Delineation of Spillway Flows for Saddleback Flood Retarding Structures (FCD 97-16)
Stream: Saddleback Spillway Channel
Location: **Reach-2 (SDB2)** - Between Courthouse Road and Outlet
Photo No: **Photos 3 - 6**

Channel Conditions		Manning's n Adjustment		Left Overbank (East)	Channel	Right Overbank (West)
Channel Material	Concrete	n_1	.012 - .018			
	Firm Soil		.025 -.032			
	Coarse Sand		.026 - .035			
	Gravel		.028 - .035	0.028	0.028	0.028
	Cobble		.030 - .050			
	Boulder		.040 - .070			
Degree of Irregularity	Smooth	n_2	0	0	0	0
	Minor		.001 - .005			
	Moderate		.006 - .010			
	Severe		.011 - .020			
Effects of Obstruction	Negligible	n_3	.000 - .004	0	0	0
	Minor		.005 - .015			
	Appreciable		.020 - .030			
	Severe		.040 - .060			
Vegetation	Small	n_4	.002 - .010	.002	.007	.002
	Medium		.010 - .025			
	Large		.025 - .050			
	Very Large		.050 - .100			
Variations in Channel Cross section	Gradual	n_5	0	0	0	0
	Occ. Alt.		.001 - .005			
	Freq. Alt.		.010 - .015			
				0.03	0.035	0.03
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
$n = (n_1+n_2+n_3+n_4+n_5)m$				0.03	0.035	0.03

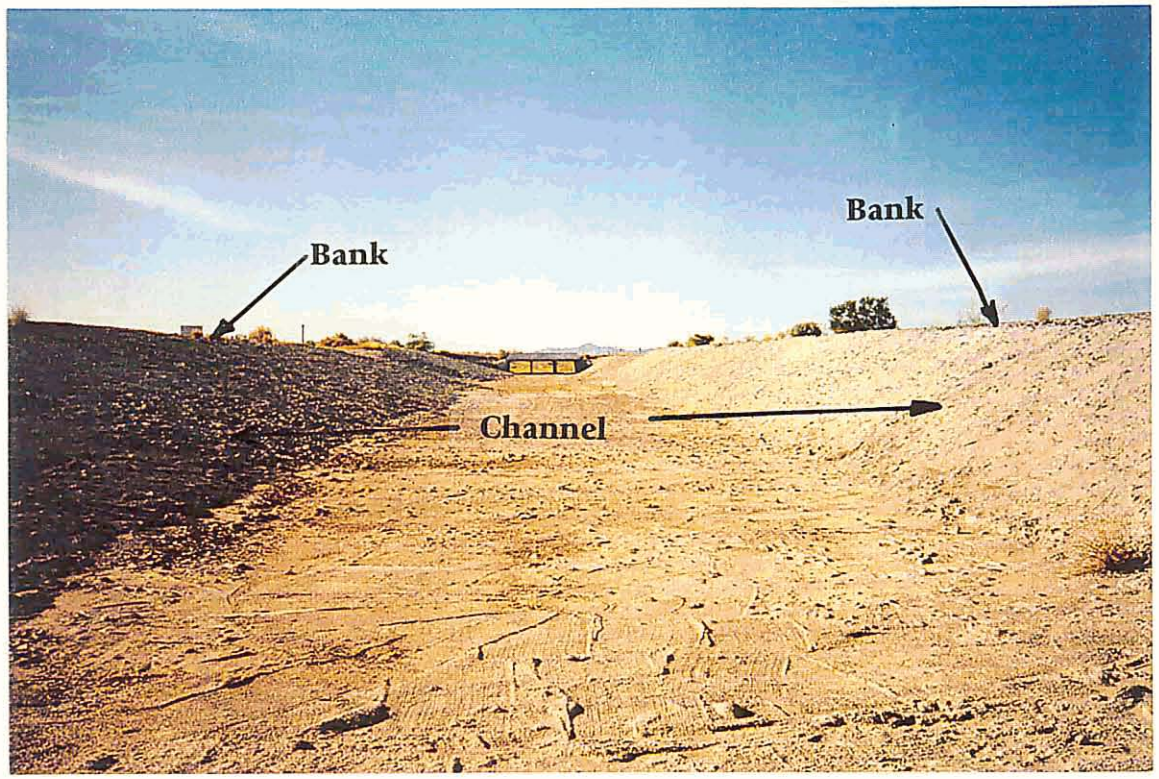


Photo 7 - Reach 3 (SDB-3)
Saddleback Channel looking downstream toward Courthouse Road

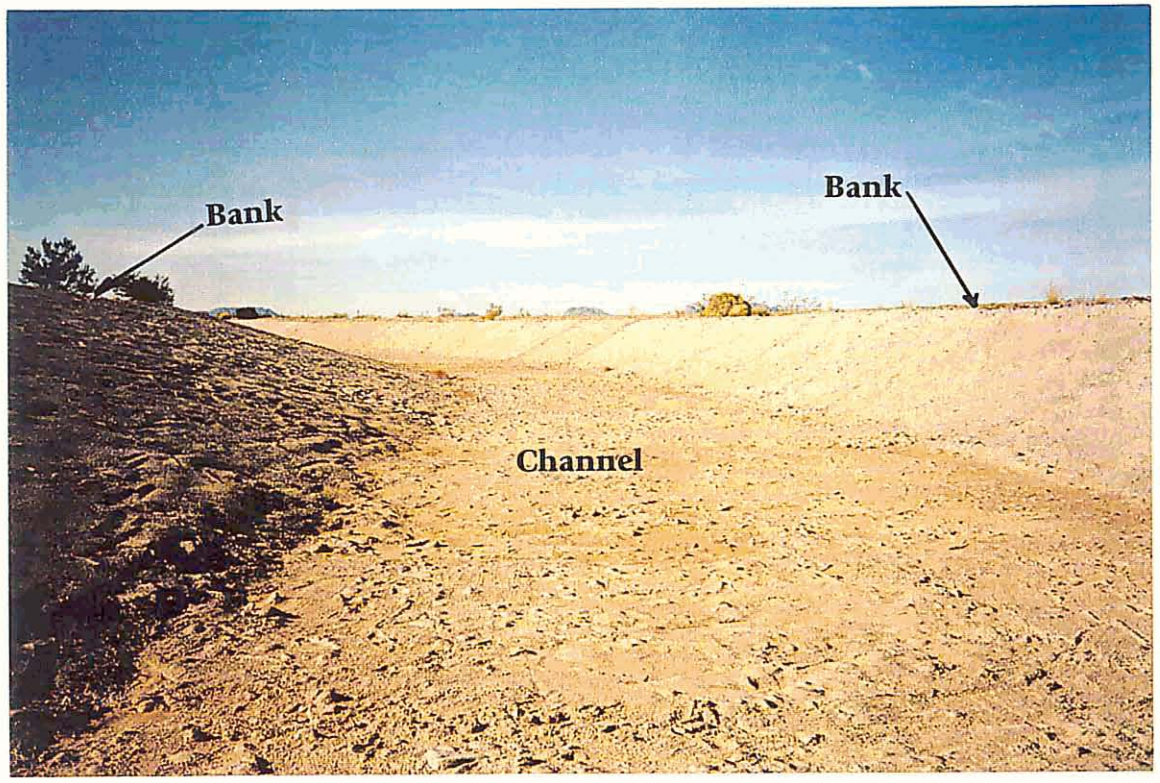
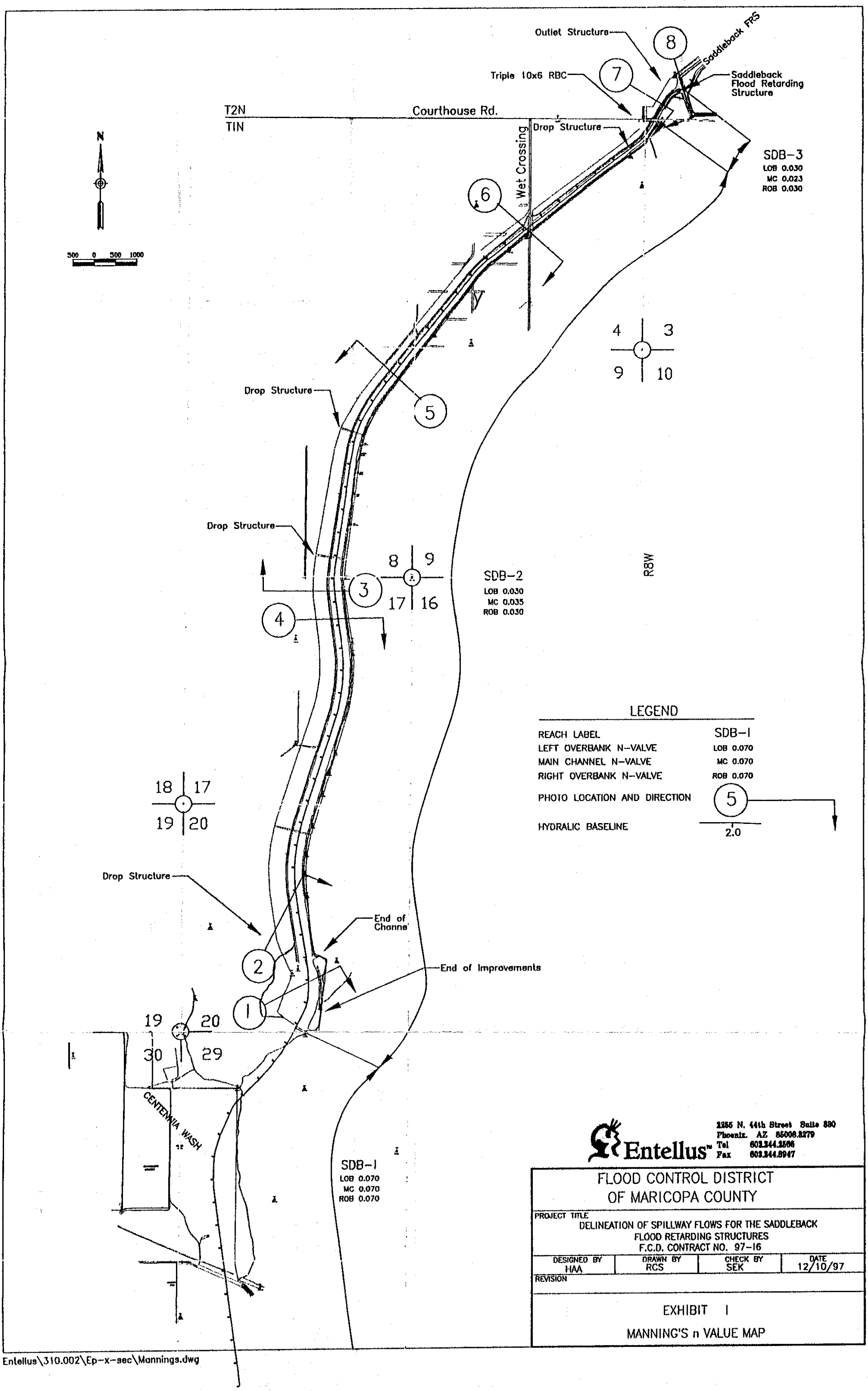


Photo 8 - Reach 3 (SDB-3)
Saddleback Channel looking downstream near Saddleback structure outlet

DETERMINATION OF MANNING'S ROUGHNESS COEFFICIENTS BY FCDMC METHOD

Project: Delineation of Spillway Flows for Saddleback Flood Retarding Structures (FCD 97-16)
Stream: Saddleback Spillway Channel
Location: **Reach-3 (SDB3)** - Between Saddleback spillway and Courthouse Road
Photo No: **Photo 7 - 8**

Channel Conditions		Manning's n Adjustment		Left Overbank (East)	Channel	Right Overbank (West)
Channel Material	Concrete	n_1	.012 - .018		.018	
	Firm Soil		.025 -.032	.025		0.025
	Coarse Sand		.026 - .035			
	Gravel		.028 - .035			
	Cobble		.030 - .050			
	Boulder		.040 - .070			
Degree of Irregularity	Smooth	n_2	0	0		0
	Minor		.001 - .005		.005	
	Moderate		.006 - .010			
	Severe		.011 - .020			
Effects of Obstruction	Negligible	n_3	.000 - .004	0	0	0
	Minor		.005 - .015			
	Appreciable		.020 - .030			
	Severe		.040 - .060			
Vegetation	Small	n_4	.002 - .010	.005	0	.005
	Medium		.010 - .025			
	Large		.025 - .050			
	Very Large		.050 - .100			
Variations in Channel Cross section	Gradual	n_5	0	0	0	0
	Occ. Alt.		.001 - .005			
	Freq. Alt.		.010 - .015			
				0.03	0.023	0.03
Degree of Meandering	Minor	m	1	1	1	1
	Appreciable		1.15			
	Severe		1.3			
$n = (n_1+n_2+n_3+n_4+n_5)m$				0.03	0.023	0.03


Outlet Structure
Saddleback FRS
Triple 10x6 RBC
Saddleback Flood Retarding Structure
T2N
TIN
Courthouse Rd.
Drop Structure
Wet Crossing
SDB-3
LOB 0.030
MC 0.023
ROB 0.030
N
500 0 500 1000
4 3
9 10
Drop Structure
Drop Structure
8 9
17 16
SDB-2
LOB 0.030
MC 0.035
ROB 0.030
R8W
18 17
19 20
Drop Structure
End of Channel
End of Improvements
19 20
30 29
CENTENNIA WASH
SDB-1
LOB 0.070
MC 0.070
ROB 0.070
LEGEND
REACH LABEL SDB-1
LEFT OVERBANK N-VALVE LOB 0.070
MAIN CHANNEL N-VALVE MC 0.070
RIGHT OVERBANK N-VALVE ROB 0.070
PHOTO LOCATION AND DIRECTION
HYDRALIC BASELINE
2.0
Entellus
2255 N. 44th Street Suite 330
Phoenix, AZ 85008-3279
Tel 602.344.2556
Fax 602.344.8947
FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
PROJECT TITLE
DELINEATION OF SPILLWAY FLOWS FOR THE SADDLEBACK
FLOOD RETARDING STRUCTURES
F.C.D. CONTRACT NO. 97-16
DESIGNED BY HAA
DRAWN BY RCS
CHECK BY SEK
DATE 12/10/97
REVISION
EXHIBIT 1
MANNING'S n VALUE MAP
Entellus\310.002\Ep-x-sec\Mannings.dwg

DELINEATION OF SPILLWAY FLOWS
FOR
SADDLEBACK FLOOD RETARDING STRUCTURE

APPENDIX-C

ANALYSIS & DELINEATION

DELINEATION OF SPILLWAY FLOWS FOR SADDLEBACK FLOOD RETARDING STRUCTURE (FCD 97-16)

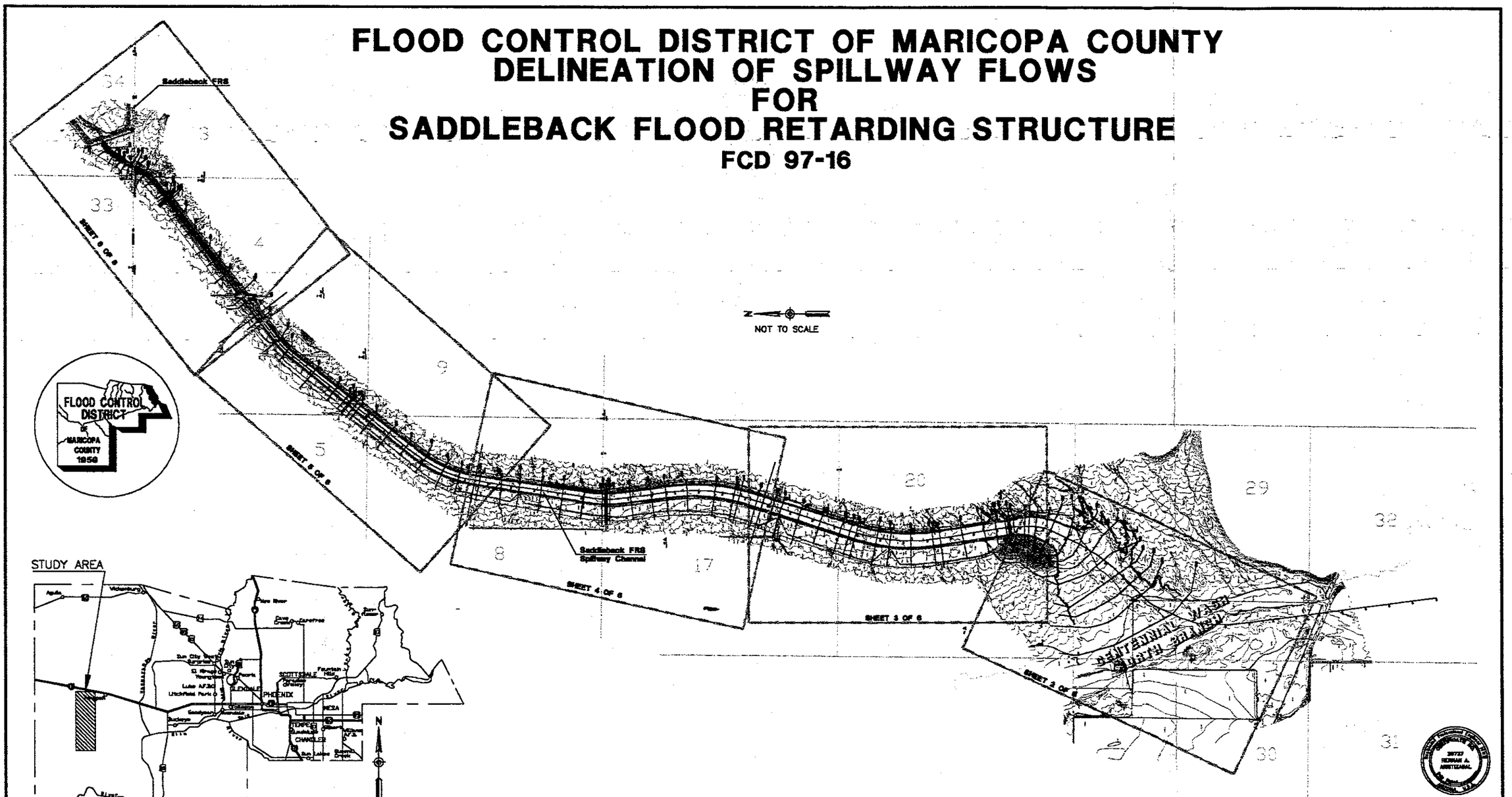
ANALYSIS & DELINEATION

1 Delineation Map Exhibit (11 X 17)

2 HEC-RAS Printout

3 HEC-RAS Cross-Section Plots

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DELINEATION OF SPILLWAY FLOWS
FOR
SADDLEBACK FLOOD RETARDING STRUCTURE
FCD 97-16

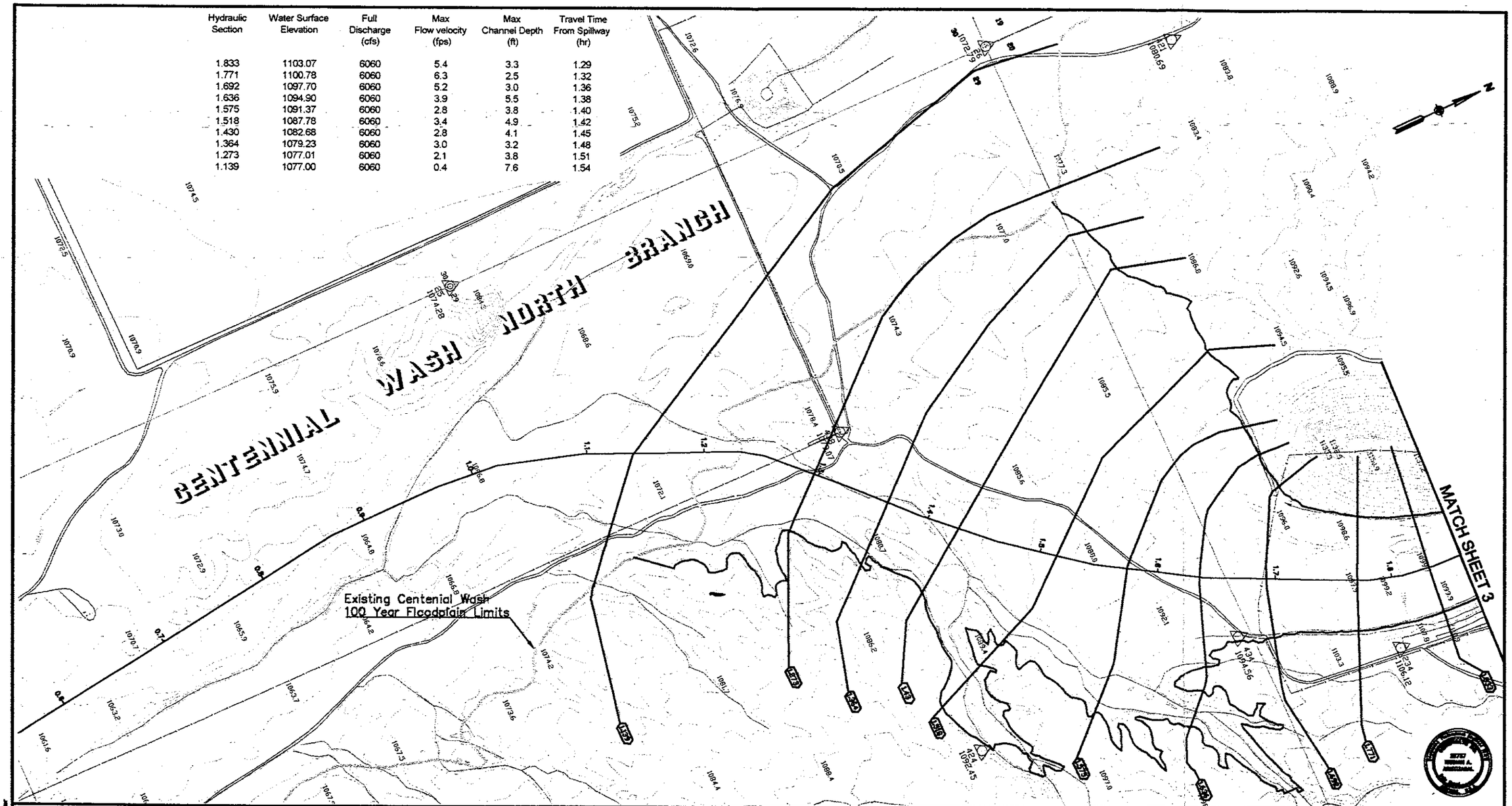


MODEL	HAA	–	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
MODEL CHK.	HAA	–	RECOMMENDED BY: DATE
PLANS	WAL	–	APPROVED BY: DATE
PLANS CHK.	SEK	–	CHIEF ENGINEER AND GENERAL MANAGER
SUBMITTED BY: DATE:			SHEET 1 OF 6

Entellus

Original Source of Mapping is contract FCD 93-51 prepared by McLain Aerial, Inc. (Photo Date: March 1996)

Hydraulic Section	Water Surface Elevation	Full Discharge (cfs)	Max Flow velocity (fps)	Max Channel Depth (ft)	Travel Time From Spillway (hr)
1.833	1103.07	6060	5.4	3.3	1.29
1.771	1100.78	6060	6.3	2.5	1.32
1.692	1097.70	6060	5.2	3.0	1.36
1.636	1094.90	6060	3.9	5.5	1.38
1.575	1091.37	6060	2.8	3.8	1.40
1.518	1087.78	6060	3.4	4.9	1.42
1.430	1082.68	6060	2.8	4.1	1.45
1.364	1079.23	6060	3.0	3.2	1.48
1.273	1077.01	6060	2.1	3.8	1.51
1.139	1077.00	6060	0.4	7.6	1.54



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR THE SADDELBACK FLOOD RETARDING STRUCTURE

F.C.D. CONTRACT NO. FCD 97-16

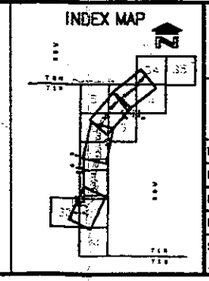
LEGEND

- Cross-section (1.139)
- Inundation Limits
- Centennial Wash Floodplain
- Elevation Reference Mark (434 1094.56)
- Section Lines
- Existing Fence

ELEVATION REFERENCE MARKS

25	1074.28	Quarter section cor. for sec's 29 & 30, T. 1 N., R. 8 W., monumented with a 1 in. iron post 0.5 ft. above ground surface, firmly set with the GLO brass cap property mkd.
26	1072.79	Section cor. for sec's 19, 20, 29 & 30, T. 1 N., R. 8 W., monumented with a 2 ins. iron post 0.4 ft. above ground surface, firmly set with the GLO brass cap property mkd.
234	1106.12	Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. 245+00.00 ELEV. (1103.79).
421	1080.69	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 770 ft. north and 390 ft. east from the SW corner of section 20, T. 1 N., R. 8 W..
424	1092.45	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 1350 ft. south and 2588 ft. east from the NW corner of section 29, T. 1 N., R. 8 W..
434	1094.56	Set 60d nail flush with ground surface located approximately 92 ft. south and 2887 ft. east from the NW corner of section 29, T. 1 N., R. 8 W..
438	1078.07	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 1326 ft. south and 1302 ft. east from the NW corner of section 29, T. 1 N., R. 8 W..

INDEX MAP



0 200' 400' 600'

CONTOUR INTERVAL = 2' FEET

Entellus

	BY	DATE
MODEL	HAA	–
MODEL CHK.	HAA	–
PLANS	WAL	–
PLANS CHK.	SEK	–
SUBMITTED BY:		DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

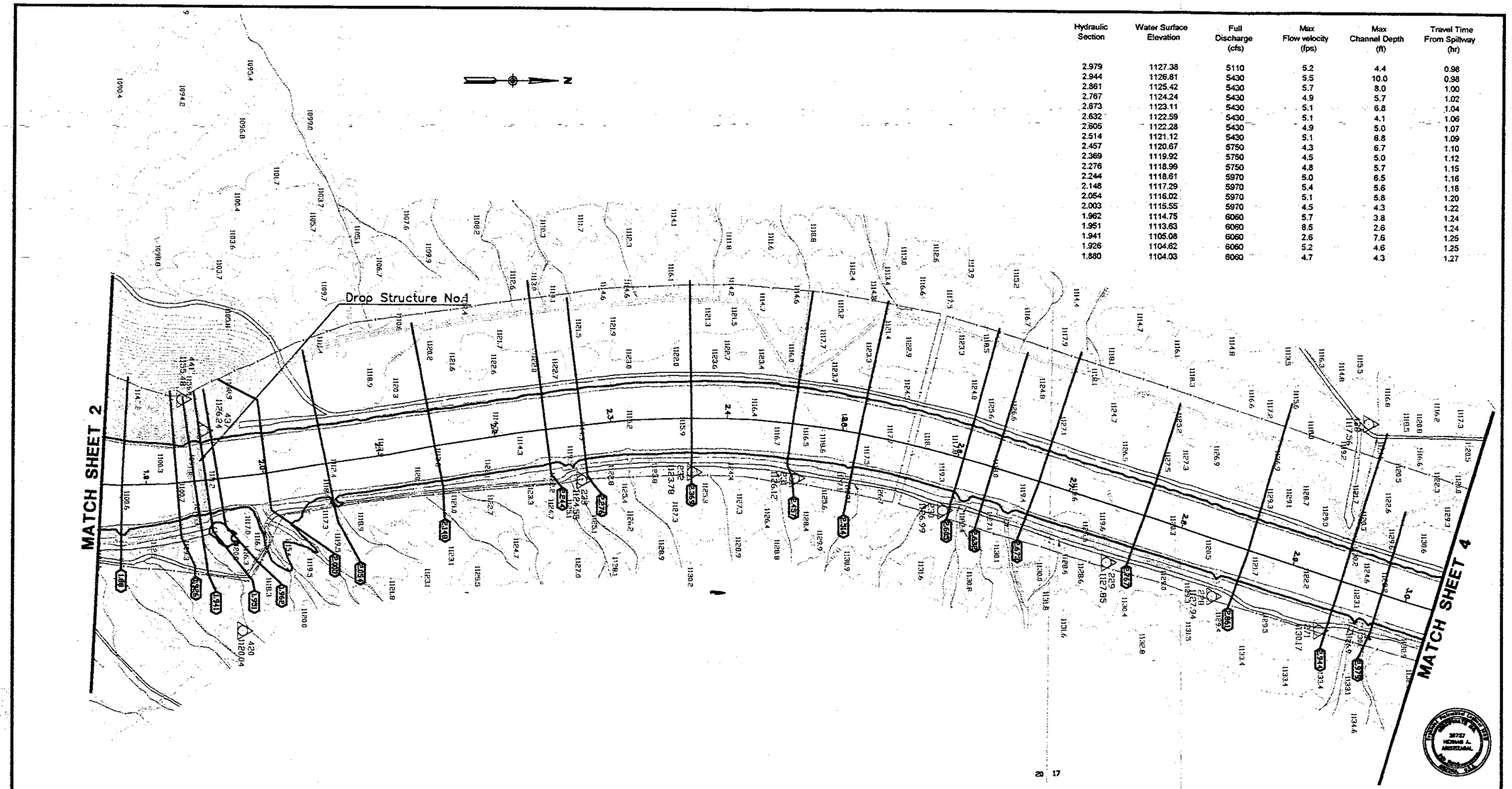
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 2 OF 6

Original Source of Mapping is contract FCD 93-51 prepared by McLain Aerial, Inc. (Photo Date: March 1996)



Hydraulic Section	Water Surface Elevation	Full Discharge (cfs)	Max Flow velocity (fps)	Max Channel Depth (ft)	Travel Time From Spillway (hr)
2.979	1127.38	5110	5.2	4.4	0.98
2.944	1126.81	5430	5.5	10.0	0.98
2.861	1125.42	5430	5.7	8.0	1.00
2.767	1124.24	5430	4.9	5.7	1.02
2.673	1123.11	5430	5.1	6.8	1.04
2.632	1122.59	5430	5.1	4.1	1.06
2.605	1122.28	5430	4.9	5.0	1.07
2.514	1121.12	5430	5.1	6.8	1.09
2.457	1120.67	5750	4.3	6.7	1.10
2.369	1119.92	5750	4.5	5.0	1.12
2.276	1118.99	5750	4.8	5.7	1.15
2.244	1118.61	5970	5.0	6.5	1.16
2.148	1117.29	5970	5.4	5.6	1.18
2.054	1116.02	5970	5.1	5.8	1.20
2.003	1115.55	5970	4.5	4.3	1.22
1.962	1114.75	6060	5.7	3.8	1.24
1.951	1113.63	6060	8.5	2.6	1.24
1.941	1105.08	6060	2.6	7.6	1.25
1.926	1104.62	6060	5.2	4.6	1.25
1.880	1104.03	6060	4.7	4.3	1.27

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR THE SADDELBACK FLOOD RETARDING STRUCTURE

F.C.D. CONTRACT NO. FCD 97-16

LEGEND

- 1139 — Cross-section
- Inundation Limits
- Centennial Wash Floodplain
- 434 1094.36 — Elevation Reference Mark
- Section Lines
- Existing Fence

ELEVATION REFERENCE MARKS

228 1127.94 Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 190+00.00 ELEV. 1125.68".

229 1127.85 Bench Mark, monumented with a FCDMC brass cap in concrete, 0.2 ft. above ground surface mkd. "Sta. 195+00.00 ELEV. 1125.56".

230 1126.99 Bench Mark, monumented with a FCDMC brass cap in concrete, 0.2 ft. above ground surface mkd. "Sta. 202+74.10 ELEV. 1124.71".

231 1126.12 Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 210+00.00 ELEV. 1123.86".

232 1123.78 Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 215+00.00 ELEV. 1121.53".

233 1124.55 Bench Mark, monumented with a FCDMC brass cap in concrete, 0.4 ft. above ground surface mkd. "Sta. 220+32.69 ELEV. 1122.27".

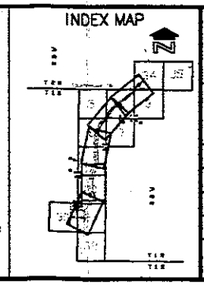
271 1130.17 Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 185+00.00 ELEV. 1127.84".

420 1120.04 Set 1/2 x 18 ins. rebar flush with ground surface located approximately 1610 ft. north and 3620 ft. east from the SW corner of section 20, T. 1 N., R. 8 W..

428 1117.56 Set 60d nail flush with ground surface located approximately 1250 ft. north and 2610 ft. east from the SW corner of section 17, T. 1 N., R. 8 W..

441 1155.48 Set 1/2 x 18 ins. rebar 0.7 ft. above ground surface, located approximately 1330 ft. north and 2584 ft. east of the SW corner of section 20, T. 1 N., R. 8 W..

INDEX MAP



0 200' 400' 600'

CONTOUR INTERVAL = 2' FEET

Entellus

	BY	DATE
MODEL	HAA	–
MODEL CHK.	HAA	–
PLANS	WAL	–
PLANS CHK.	SEX	–

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

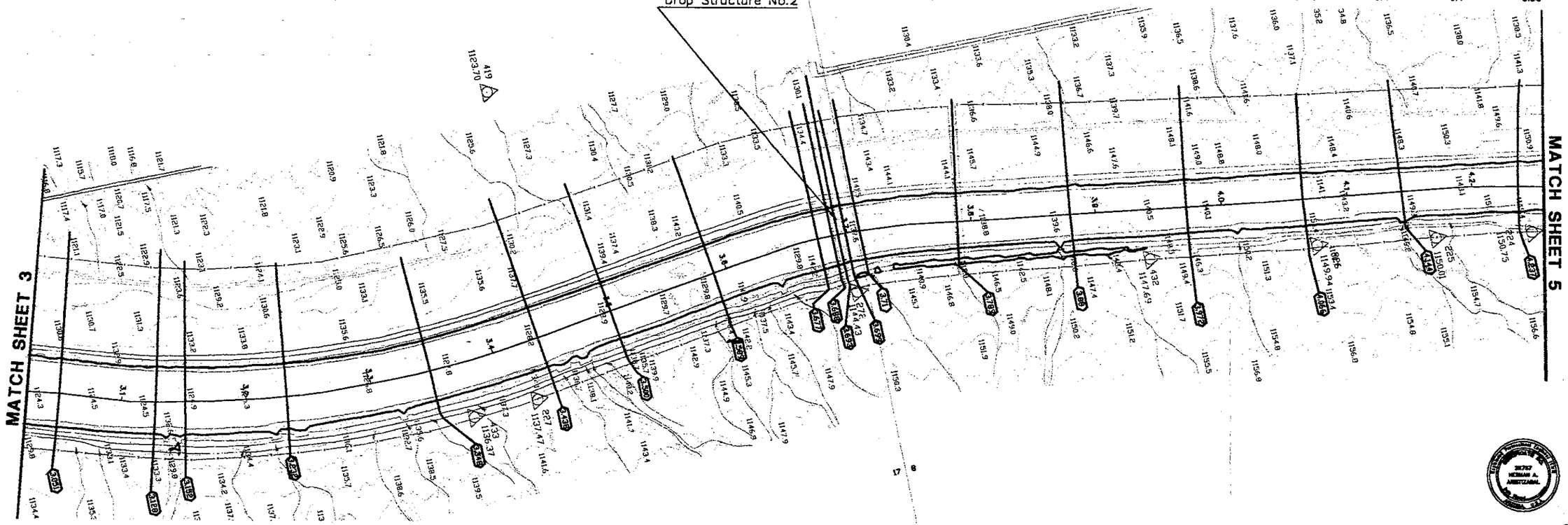
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 3 OF 6

Original Source of Mapping is contract FCD 93-51 prepared by McLain Aerial, Inc. (Photo Date: March 1996)

Hydraulic Section	Water Surface Elevation	Full Discharge (cfs)	Max Flow velocity (fps)	Max Channel Depth (ft)	Travel Time From Spillway (hr)
4.237	1147.40	3500	5.1	5.8	0.68
4.144	1146.18	3500	4.9	6.7	0.70
4.066	1145.55	3500	4.1	8.2	0.71
3.972	1144.66	3740	4.7	5.5	0.74
3.880	1143.67	3740	4.7	9.6	0.75
3.789	1142.47	3970	5.2	7.6	0.77
3.710	1140.60	3970	6.5	8.2	0.78
3.699	1139.54	3970	8.3	6.9	0.78
3.693	1135.60	3970	3.1	6.0	0.79
3.688	1135.31	3970	4.8	4.0	0.79
3.677	1135.34	3970	3.8	5.1	0.79
3.589	1134.59	4320	4.6	4.5	0.82
3.500	1133.65	4320	4.8	4.3	0.85
3.438	1132.94	4720	4.9	5.5	0.87
3.348	1131.58	4720	5.6	4.7	0.89
3.232	1130.36	4720	4.6	6.6	0.92
3.152	1129.72	4720	4.3	7.5	0.94
3.128	1129.43	5110	4.8	7.8	0.94
3.051	1128.37	5110	5.4	8.1	0.95



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR THE SADDELBACK FLOOD RETARDING STRUCTURE

F.C.D. CONTRACT NO. FCD 97-16

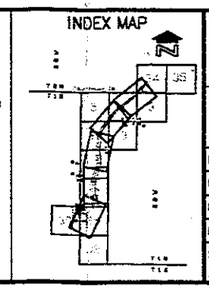
LEGEND

- Cross-section
- Inundation Limits
- Centennial Wash Floodplain
- Elevation Reference Mark
- Section Lines
- Existing Fence

ELEVATION REFERENCE MARKS

224	1150.75	Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. " Sta. 115+94.68 ELEV. 1148.47" .
225	1150.01	Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 120+00 ELEV. 1147.71" .
226	1149.94	Bench Mark, monumented with a FCDMC brass cap in concrete, 0.2 ft. above ground surface mkd. " Sta. 125+00.00 ELEV. 1147.64"
227	1137.47	Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. " Sta. 159+47.27 ELEV. 1135.14".
272	1144.43	Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. " Sta. 144+82.00 ELEV. 1142.14".
419	1123.70	Set 1/2 x 18 ins. rebar flush with ground surface located approximately 3840 ft. north and 2620 ft. east from the SW corner of section 17, T. 1 N., R. 8 W..
432	1147.69	Set 60d nail flush with ground surface located approximately 1210 ft. north and 1430 ft. west from the SE corner of section 8, T. 1 N., R. 8 W..
433	1135.37	Set 60d nail flush with ground surface located approximately 1732 ft. south and 1385 ft. west from the NE corner of section 17, T. 1 N., R. 8 W..

INDEX MAP



0 200' 400' 600'

CONTOUR INTERVAL = 2' FEET

Entellus

	BY	DATE
MODEL	HAA	–
MODEL CHK.	HAA	–
PLANS	WAL	–
PLANS CHK.	SEK	–

SUBMITTED BY: DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

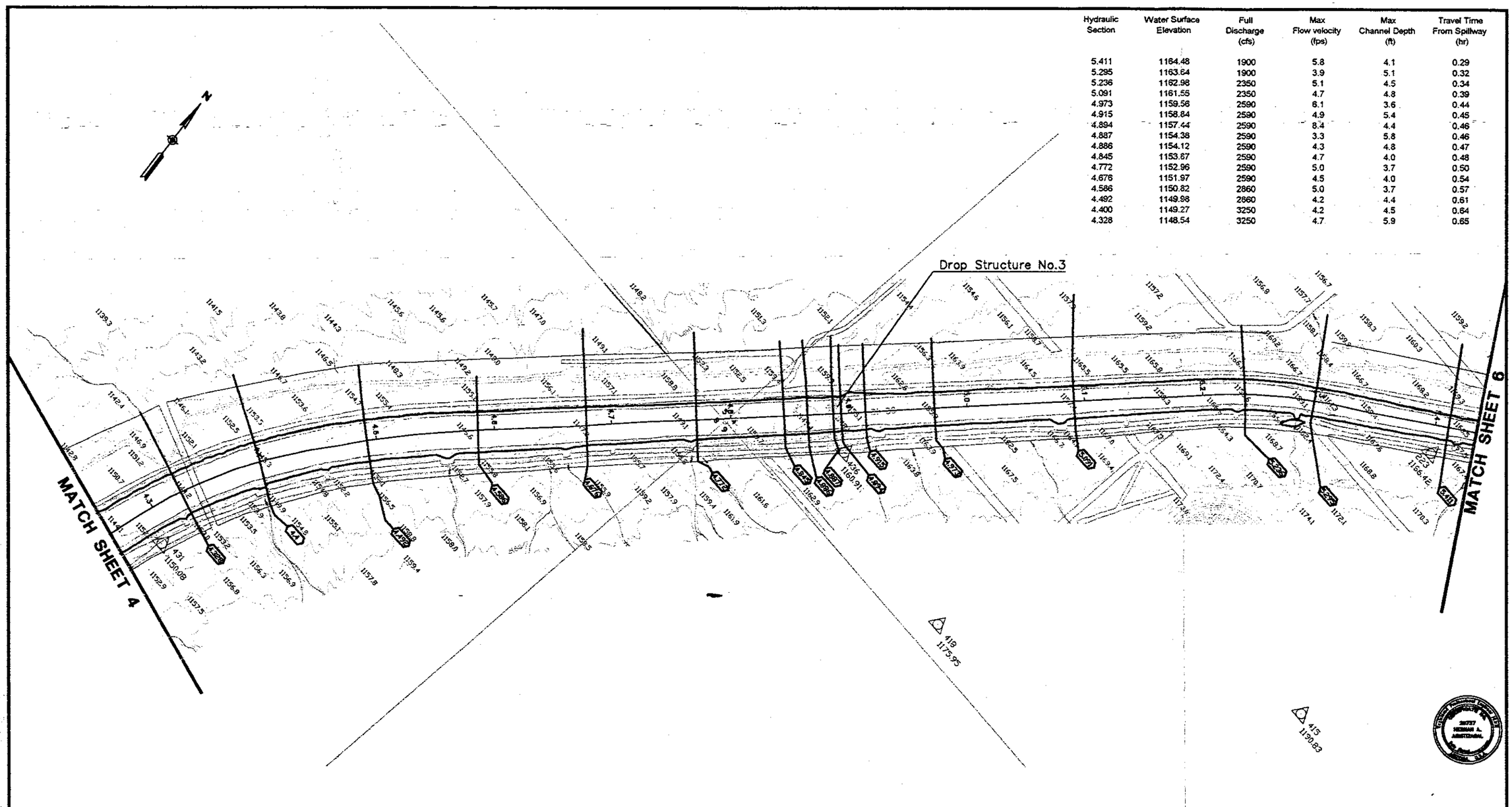
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 4 OF 6

Original Source of Mapping is contract FCD 93-51 prepared by McLain Aerial, Inc. (Photo Date: March 1996)

Hydraulic Section	Water Surface Elevation	Full Discharge (cfs)	Max Flow velocity (fps)	Max Channel Depth (ft)	Travel Time From Spillway (hr)
5.411	1164.48	1900	5.8	4.1	0.29
5.295	1163.64	1900	3.9	5.1	0.32
5.236	1162.98	2350	5.1	4.5	0.34
5.091	1161.55	2350	4.7	4.8	0.39
4.973	1159.56	2590	6.1	3.6	0.44
4.915	1158.84	2590	4.9	5.4	0.45
4.894	1157.44	2590	8.4	4.4	0.46
4.887	1154.38	2590	3.3	5.8	0.46
4.886	1154.12	2590	4.3	4.8	0.47
4.845	1153.87	2590	4.7	4.0	0.48
4.772	1152.96	2590	5.0	3.7	0.50
4.676	1151.97	2590	4.5	4.0	0.54
4.586	1150.82	2860	5.0	3.7	0.57
4.492	1149.98	2860	4.2	4.4	0.61
4.400	1149.27	3250	4.2	4.5	0.64
4.328	1148.54	3250	4.7	5.9	0.65



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR THE SADDELBACK FLOOD RETARDING STRUCTURE

F.C.D. CONTRACT NO. FCD 97-16

LEGEND

- 1.139 — Cross-section
- Inundation Limits
- Centennial Wash Floodplain
- 434 1094.56 — Elevation Reference Mark
- Section Lines
- Existing Fence

ELEVATION REFERENCE MARKS

223 1166.42 Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 55+00 ELEV. 1164.21".

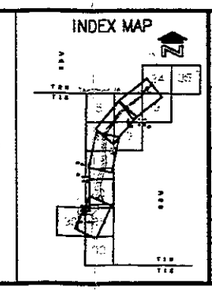
415 1190.83 Set 60d nail flush with ground surface located approximately 1120 ft. north and 2410 ft. west from the SE corner of section 4, T. 1 N., R. 8 W..

418 1175.95 Set 1/2 x 18 ins. rebar flush with ground surface located approximately 175 ft. north and 3780 ft. west from the SE corner of section 4, T. 1 N., R. 8 W..

431 1150.08 Set 1/2 x 18 ins. rebar flush with ground surface located approximately 3038 ft. north and 1200 ft. west from the SE corner of section 8, T. 1 N., R. 8 W..

436 1160.91 Set 1/2 x 18 ins. rebar flush with ground surface and adjacent to spillway located approximately 370 ft. north and 4630 ft. west from the SE corner of section 4, T. 1 N., R. 8 W..

INDEX MAP



0 200' 400' 600'

CONTOUR INTERVAL = 2' FEET

Entellus

	BY	DATE
MODEL	HAA	–
MODEL CHK.	HAA	–
PLANS	WAL	–
PLANS CHK.	SEK	–
SUBMITTED BY:		DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

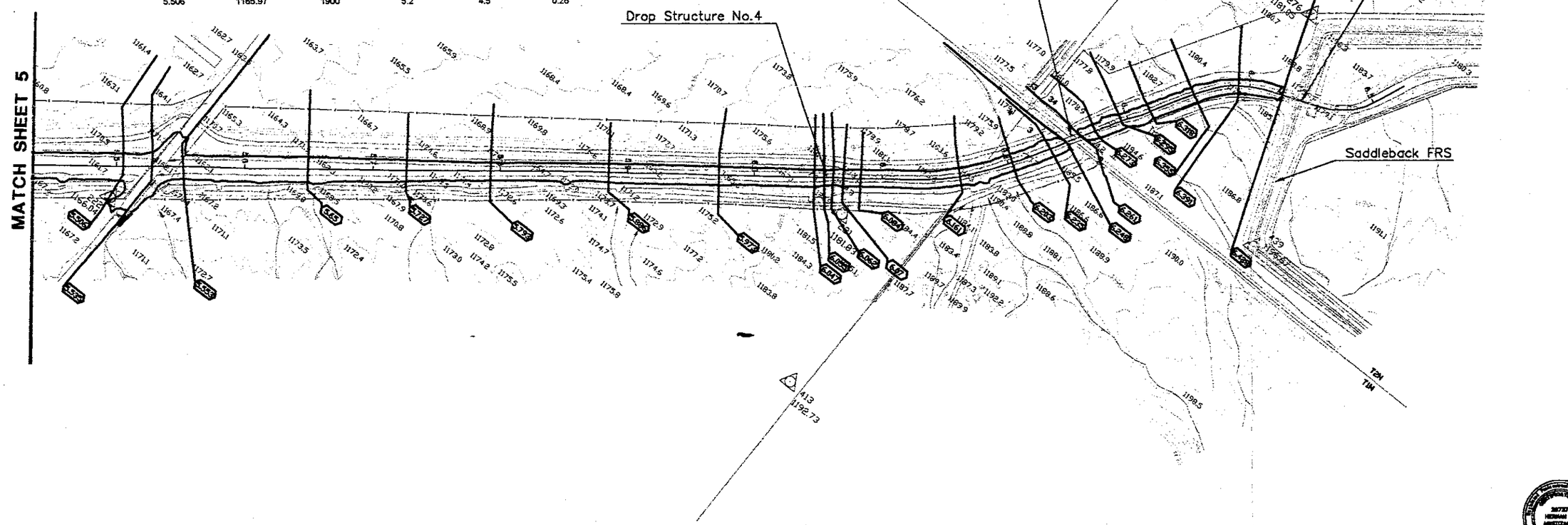
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 5 OF 6

Original Source of Mapping is contract FCD 93-51 prepared by McLain Aerial, Inc. (Photo Date: March 1996)

Hydraulic Section	Water Surface Elevation	Full Discharge (cfs)	Max Flow velocity (fps)	Max Channel Depth (ft)	Travel Time From Spillway (hr)
6.428	1181.62	1120	5.0	6.0	0.00
6.391	1181.37	1120	4.9	5.9	0.01
6.355	1181.24	1120	4.1	6.2	0.02
6.318	1181.12	1120	3.7	6.8	0.03
6.295	1180.89	1160	4.6	6.3	0.03
6.273	1180.81	1160	4.2	7.0	0.04
6.261	1180.42	1160	6.1	6.1	0.04
6.248	1179.76	1160	6.7	6.0	0.04
6.235	1179.75	1240	5.1	6.0	0.04
6.203	1179.49	1240	4.8	6.1	0.05
6.161	1179.11	1240	5.3	5.7	0.06
6.084	1177.93	1370	6.7	4.9	0.09
6.070	1176.66	1370	9.9	3.5	0.09
6.062	1172.36	1370	4.2	8.4	0.09
6.055	1171.56	1370	7.7	4.3	0.10
6.047	1171.82	1370	5.4	4.8	0.10
5.973	1170.95	1500	5.6	5.1	0.12
5.886	1169.89	1500	6.0	5.2	0.14
5.793	1168.38	1500	6.5	4.5	0.17
5.727	1167.80	1500	4.9	4.7	0.19
5.650	1167.45	1500	3.8	5.4	0.22
5.553	1166.53	1900	4.6	5.2	0.24
5.535	1166.46	1900	3.4	4.6	0.25
5.506	1165.97	1900	5.2	4.5	0.26



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR THE SADDELBACK FLOOD RETARDING STRUCTURE

F.C.D. CONTRACT NO. FCD 97-16

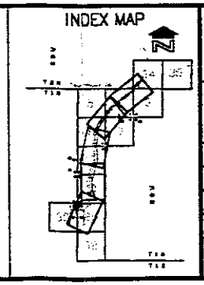
LEGEND

- Cross-section
- Inundation Limits
- Centennial Wash Floodplain
- Elevation Reference Mark
- Section Lines
- Existing Fence

ELEVATION REFERENCE MARKS

221	1181.83	Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 19+69.00 ELEV. 1179.62 ".
222	1166.04	Bench Mark, monumented with a FCDMC brass cap in concrete, flush with ground surface mkd. "Sta. 50+00 ELEV. 1163.83" .
276	1181.05	Reference point, monumented with a FCDMC brass cap in concrete, flush with ground surface, mkd. Sta. 18+83.00.
413	1192.73	Set 60d nail flush with ground surface located approximately 3784 ft. north and 200 ft. west from the SE corner of section 4, T. 1 N., R. 8 W..
414	1160.99	Set PK nail in Courthouse Road flush with asphalt paving located approximately 1770 ft. west from the NE corner of section 4, T. 1 N., R. 8 W..
439	1196.67	Set 1/2 x 18 ins. rebar flush with ground surface, next to Sta Marker 10+00 on top of Saddleback FRS, located approximately 200 ft. north and 4130 ft. west from the SE corner of section 34, T. 2 N., R. 8 W..

INDEX MAP



0 200' 400' 600'

CONTOUR INTERVAL = 2' FEET

Entellus

	BY	DATE
MODEL	HAA	–
MODEL CHK.	HAA	–
PLANS	WAL	–
PLANS CHK.	SEK	–

SUBMITTED BY: DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 6 OF 6

Original Source of Mapping is contract FCD 93-51 prepared by McLain Aerial, Inc. (Photo Date: March 1996)

HEC-RAS Version 2.1 October 1997
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
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: Saddleback Spillway Evaluation032498
Project File : sd-ras-final.prj
Run Date and Time: 6/30/98 3:05:24 PM

Project in English units

PLAN DATA

Plan Title: Plan 02
Plan File : e:\entellus\310002\hecras\sd-ras-final.p02

Geometry Title: Base Conditions Geometry
Geometry File : e:\entellus\310002\hecras\sd-ras-final.g01

Flow Title : Inisial WSE 1077
Flow File : e:\entellus\310002\hecras\sd-ras-final.f03

Plan Description:
Delineation of Spillway Flows for the Saddleback Flood Retarding Structure
FCD
97-16

Prepared by Entellus, Inc.

This study delineated the flooding
limits of the Saddleback FRS channel from the outlet of the structure to the confluence with Cenntenial Wash.

Plan Summary Information:

Number of:	Cross Sections	= 89	Mulitple Openings	=	0
	Culverts	= 1	Inline Weirs	=	0
	Bridges	= 0			

Computational Information

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

Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Inisial WSE 1077
Flow File : e:\entellus\310002\hecras\sd-ras-final.f03

Flow Data (cfs)

Saddleback	Spillway	6.428	1120
Saddleback	Spillway	6.295	1160
Saddleback	Spillway	6.235	1240
Saddleback	Spillway	6.084	1370
Saddleback	Spillway	5.973	1500
Saddleback	Spillway	5.553	1900
Saddleback	Spillway	5.236	2350
Saddleback	Spillway	4.973	2590
Saddleback	Spillway	4.586	2860
Saddleback	Spillway	4.4	3250
Saddleback	Spillway	4.237	3500
Saddleback	Spillway	3.972	3740
Saddleback	Spillway	3.789	3970
Saddleback	Spillway	3.589	4320
Saddleback	Spillway	3.438	4720
Saddleback	Spillway	3.128	5110
Saddleback	Spillway	2.944	5430
Saddleback	Spillway	2.457	5750
Saddleback	Spillway	2.244	5970
Saddleback	Spillway	1.962	6060
Saddleback	Spillway	1.692	6060

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Saddleback	Spillway	PF#1	Critical	Known WS = 1077

GEOMETRY DATA

Geometry Title: Base Conditions Geometry
Geometry File : e:\entellus\310002\hecras\sd-ras-final.g01

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 6.428**

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9319.89	1187.9	9347.23	1187.56	9366.62	1186.76	9388.67	1187.7	9583.47	1187.66
9601.04	1186.9	9617.1	1187.7	9773.18	1186.41	9815.03	1186.49	9857.26	1185.89
9913.15	1184.87	9950.92	1184.4	9969.58	1184.69	9988.92	1175.98	10001.21	1176.12
10014.01	1175.62	10035.8	1183.92	10041.91	1185.34	10054.64	1184.75	10084.73	1183.63
10146.76	1183.1	10189.2	1182.76	10262.76	1182.29	10352.2	1181.35	10444.67	1179.99

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9319.89	.03	9969.58	.028	10035.8	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.58	10035.8	191.21	191.21	191.21	.1	.3

Right Levee Station= 10041.9 Elevation= 1185.34

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1181.62	Element			
Vel Head (ft)	0.39	Wt. n-Val.		0.028	
E.G. Elev (ft)	1182.01	Reach Len. (ft)	191.21	191.21	191.21
Crit W.S. (ft)	1179.40	Flow Area (sq ft)		224.63	
E.G. Slope (ft/ft)	0.001375	Area (sq ft)		224.63	
Q Total (cfs)	1120.00	Flow (cfs)		1120.00	
Top Width (ft)	53.37	Top Width (ft)		53.37	
Vel Total (ft/s)	4.99	Avg. Vel. (ft/s)		4.99	
Max Chl Dpth (ft)	6.00	Hydr. Depth (ft)		4.21	
Conv. Total (cfs)	30206.2	Conv. (cfs)		30206.2	
Length Wtd. (ft)	191.21	Wetted Per. (ft)		55.69	
Min Ch El (ft)	1175.62	Shear (lb/sq ft)		0.35	
Alpha	1.00	Stream Power (lb/ft s)		1.73	
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	33.41	537.75	123.67
C & E Loss (ft)	0.00	Cum SA (acres)	18.40	161.86	53.24

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9969.58 LB	9991.65	199.31	50.69	16.47	17.80	3.32	3.93
9991.65	10013.73	737.57	124.99	22.08	65.85	5.66	5.90
10013.73	10035.80 RB	183.12	48.95	17.14	16.35	3.05	3.74

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 6.391**

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9398.39	1188.23	9422.29	1186.83	9436.04	1186.07	9453.4	1185.64	9470.93	1185.38

```
 9491.32 1184.87 9509.44 1184.48 9520.82 1185.27 9540.97 1182.43 9555.13 1183.79
 9622.05 1183.53 9705.68 1185.38 9762.34 1184.65 9778.48 1183.42 9788.51 1184.42
 9852.22 1183.26 9892.57 1183.43 9934.57 1183.93  9946.5 1184.31 9954.86 1184.72
 9988.61 1175.7110011.06 1175.4610027.33 1182.6410038.67 1184.4710046.34 1183.49
10073.81 1183.0710141.43 1181.9310208.05 1181.2110246.14 1181.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9398.39     .03 9954.86    .02810038.67     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9954.8610038.67           166.12  188.33  200.43            .1       .3
Right Levee     Station= 10038.7      Elevation= 1184.47
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1181.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.		0.028	
E.G. Elev (ft)	1181.74	Reach Len. (ft)	166.12	188.33	200.43
Crit W.S. (ft)	1179.18	Flow Area (sq ft)		229.26	
E.G. Slope (ft/ft)	0.001388	Area (sq ft)		229.26	
Q Total (cfs)	1120.00	Flow (cfs)		1120.00	
Top Width (ft)	57.02	Top Width (ft)		57.02	
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)		4.89	
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)		4.02	
Conv. Total (cfs)	30067.5	Conv. (cfs)		30067.5	
Length Wtd. (ft)	188.33	Wetted Per. (ft)		59.01	
Min Ch El (ft)	1175.46	Shear (lb/sq ft)		0.34	
Alpha	1.00	Stream Power (lb/ft s)		1.64	
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	33.41	536.75	123.67
C & E Loss (ft)	0.03	Cum SA (acres)	18.40	161.62	53.24

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9954.86 LB	9982.80	89.76	31.56	15.91	8.01	2.05	2.84
9982.80	10010.73	882.82	156.25	28.14	78.82	5.59	5.65
10010.73	10038.67 RB	147.42	41.46	14.96	13.16	3.02	3.56

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.355

```
INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9570.3 1184.65 9581.84 1184.24  9600.9 1185.11 9618.16  1182.1 9635.36 1183.33
 9708.48 1183.34 9783.72 1185.07  9822.3 1184.62 9839.66 1183.19 9854.32 1184.18
 9870.99 1183.92 9940.32 1183.51 9949.62 1184.13 9958.11 1182.84 9987.83 1175.13
10012.67 1175.0610035.14 1183.7110048.04 1183.4110079.56  1181.510245.19 1180.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9570.3     .03 9958.11    .02810035.14     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9958.1110035.14           195.25  195.25  195.25            .1       .3
Right Levee     Station= 10035.1      Elevation= 1183.71
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1181.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.028	

E.G. Elev (ft)	1181.50	Reach Len. (ft)	195.25	195.25	195.25
Crit W.S. (ft)	1178.49	Flow Area (sq ft)		274.02	
E.G. Slope (ft/ft)	0.000895	Area (sq ft)		274.02	
Q Total (cfs)	1120.00	Flow (cfs)		1120.00	
Top Width (ft)	64.43	Top Width (ft)		64.43	
Vel Total (ft/s)	4.09	Avg. Vel. (ft/s)		4.09	
Max Chl Dpth (ft)	6.18	Hydr. Depth (ft)		4.25	
Conv. Total (cfs)	37429.9	Conv. (cfs)		37429.9	
Length Wtd. (ft)	195.25	Wetted Per. (ft)		66.35	
Min Ch El (ft)	1175.06	Shear (lb/sq ft)		0.23	
Alpha	1.00	Stream Power (lb/ft s)		0.94	
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	33.41	535.67	123.67
C & E Loss (ft)	0.01	Cum SA (acres)	18.40	161.36	53.24

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9958.11 LB	9983.79	131.94	49.32	20.14	11.78	2.53	2.68
9983.79	10009.46	757.09	155.35	25.81	67.60	6.05	4.87
10009.46	10035.14 RB	230.96	69.36	20.40	20.62	3.60	3.33

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.318

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9730.38	1184.28	9744.42	1183.91	9766.81	1184.24	9786.27	1181.99	9941.11	1183.3
9952.76	1183.53	9988.71	1174.51	10012.31	1174.32	10034.22	1183.21	10050.42	1183.69
10065.88	1180.55	10075.49	1180.59	10085.69	1180.77	10096.48	1180.08	10119.17	1179.41
10157.04	1180.56	10220.69	1179.81						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9730.38	.03	9952.76	.028	10034.22	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9952.76	10034.22	123.79	123.79	123.79	.1	.3

Right Levee Station= 10050.4 Elevation= 1183.69

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1181.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.028	
E.G. Elev (ft)	1181.33	Reach Len. (ft)	123.79	123.79	123.79
Crit W.S. (ft)	1177.91	Flow Area (sq ft)		302.23	
E.G. Slope (ft/ft)	0.000678	Area (sq ft)		302.23	
Q Total (cfs)	1120.00	Flow (cfs)		1120.00	
Top Width (ft)	66.71	Top Width (ft)		66.71	
Vel Total (ft/s)	3.71	Avg. Vel. (ft/s)		3.71	
Max Chl Dpth (ft)	6.80	Hydr. Depth (ft)		4.53	
Conv. Total (cfs)	42998.4	Conv. (cfs)		42998.4	
Length Wtd. (ft)	123.79	Wetted Per. (ft)		68.85	
Min Ch El (ft)	1174.32	Shear (lb/sq ft)		0.19	
Alpha	1.00	Stream Power (lb/ft s)		0.69	
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	33.41	534.37	123.67
C & E Loss (ft)	0.01	Cum SA (acres)	18.40	161.06	53.24

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta	Right Sta	Flow	Area	W.P.	% Conv.	Hydr D.	Velocity

(ft)	(ft)	(cfs)	(sq ft)	(ft)		(ft)	(ft/s)
9952.76 LB	9979.91	81.85	38.60	18.08	7.31	2.20	2.12
9979.91	10007.07	741.58	171.08	27.43	66.21	6.30	4.33
10007.07	10034.22 RB	296.57	92.55	23.34	26.48	4.20	3.20

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.295

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9796.84	1184.4	9812.72	1184.34	9876.14	1184.32	9939.5	1185.06	9951.38	1184.49
9979.84	1177.19	9990.17	1174.61	10011.67	1174.95	10031.91	1183.06	10048.21	1183.66
10061.39	1182.63	10075.87	1181.31	10097.19	1181.54	10142.51	1181.68	10179.14	1181.23
10221.43	1180.82	10256.35	1180.85	10272.28	1180.74	10309.22	1180.13		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9796.84	.03	9951.38	.02	10031.91	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9951.38	10031.91	115.69	115.69	115.69	.1	.3

Right Levee Station= 10048.2 Elevation= 1183.66

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1180.89	Element			
Vel Head (ft)	0.33	Wt. n-Val.		0.028	
E.G. Elev (ft)	1181.21	Reach Len. (ft)	115.69	115.69	115.69
Crit W.S. (ft)	1178.44	Flow Area (sq ft)		253.39	
E.G. Slope (ft/ft)	0.001163	Area (sq ft)		253.39	
Q Total (cfs)	1160.00	Flow (cfs)		1160.00	
Top Width (ft)	61.05	Top Width (ft)		61.05	
Vel Total (ft/s)	4.58	Avg. Vel. (ft/s)		4.58	
Max Chl Dpth (ft)	6.28	Hydr. Depth (ft)		4.15	
Conv. Total (cfs)	34014.3	Conv. (cfs)		34014.3	
Length Wtd. (ft)	115.69	Wetted Per. (ft)		62.99	
Min Ch El (ft)	1174.61	Shear (lb/sq ft)		0.29	
Alpha	1.00	Stream Power (lb/ft s)		1.34	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	33.41	533.59	123.67
C & E Loss (ft)	0.02	Cum SA (acres)	18.40	160.88	53.24

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9951.38 LB	9978.22	48.02	20.99	13.21	4.14	1.64	2.29
9978.22	10005.07	776.36	148.88	27.21	66.93	5.55	5.21
10005.07	10031.91 RB	335.62	83.52	22.56	28.93	3.90	4.02

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.273

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9881.53	1183.8	9909.02	1185.1	9933.3	1185.07	9946.15	1185.13	9980.47	1176.62
9991.74	1173.92	10009.36	1173.84	10029.81	1182.62	10055.78	1183.33	10066.33	1182.81
10082.42	1182.98	10123.11	1182.24	10160.01	1180.33	10185.74	1179.91	10206.13	1179.66
10228.74	1179.44	10256.51	1179.15	10276.03	1178.79	10300.41	1178.1		

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9881.53     .03 9946.15    .02810029.81     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9946.1510029.81            61.94   61.94   61.94            .1        .3
Right Levee     Station= 10055.8      Elevation= 1183.33

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1180.80   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.27   Wt. n-Val.                            0.028
  E.G. Elev (ft)            1181.08   Reach Len. (ft)              61.94     61.94      61.94
  Crit W.S. (ft)            1177.86   Flow Area (sq ft)                     276.21
  E.G. Slope (ft/ft)       0.000896   Area (sq ft)                          276.21
  Q Total (cfs)             1160.00   Flow (cfs)                           1160.00
  Top Width (ft)              61.99   Top Width (ft)                        61.99
  Vel Total (ft/s)             4.20   Avg. Vel. (ft/s)                       4.20
  Max Chl Dpth (ft)            6.96   Hydr. Depth (ft)                       4.46
  Conv. Total (cfs)         38753.0   Conv. (cfs)                          38753.0
  Length Wtd. (ft)            61.94   Wetted Per. (ft)                      64.25
  Min Ch El (ft)            1173.84   Shear (lb/sq ft)                       0.24
  Alpha                        1.00   Stream Power (lb/ft s)                 1.01
  Frctn Loss (ft)              0.06   Cum Volume (acre-ft)         33.41    532.88     123.67
  C & E Loss (ft)              0.03   Cum SA (acres)               18.40    160.72      53.24


FLOW DISTRIBUTION OUTPUT    Profile #PF#1

  Left Sta      Right Sta        Flow       Area       W.P.    % Conv.    Hydr D.   Velocity
  (ft)          (ft)            (cfs)    (sq ft)      (ft)                 (ft)      (ft/s)
  9946.15 LB    9974.04         23.42      13.52     10.76       2.02      1.29       1.73
  9974.04       10001.92       710.61     154.51     28.40      61.26      5.54       4.60
  10001.92      10029.81 RB    425.98     108.17     25.09      36.72      4.57       3.94
```

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.261

```
INPUT
Description: Upstream Courthouse Road culvert
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9600    1187    9650 1186.42 9709.32 1186.08 9727.71 1186.01 9760.21 1185.91
 9770.51 1185.86 9851.64 1184.78 9876.54  1184.7 9914.52 1184.42 9935.08 1184.35
 9956.22  1181.2 9984.17 1174.3610015.83 1174.3610026.86 1182.3710116.66  1181.9
10142.61 1181.5710216.49 1180.0310235.92 1179.5310252.81 1179.53 10262.6 1179.71
10281.13 1180.0410287.41 1180.6710291.56  1180.910303.14 1180.27

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9600     .03 9984.17    .02810015.83     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9984.1710015.83            68.74   68.74   68.74            .3        .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    9600 9984.16    118510015.8310303.14  1183.5
Right Levee     Station= 10026.2      Elevation=  1182.3

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)            1180.42   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.57   Wt. n-Val.                   0.000      0.028
  E.G. Elev (ft)            1180.99   Reach Len. (ft)              68.74      68.74      68.74
  Crit W.S. (ft)            1177.82   Flow Area (sq ft)             0.06     191.82
```

E.G. Slope (ft/ft)	0.001175	Area (sq ft)	75.00	191.82	25.27
Q Total (cfs)	1160.00	Flow (cfs)	0.33	1159.67	
Top Width (ft)	64.76	Top Width (ft)	24.76	31.66	8.34
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)	5.53	6.05	
Max Chl Dpth (ft)	6.06	Hydr. Depth (ft)	6.06	6.06	
Conv. Total (cfs)	33840.8	Conv. (cfs)	9.5	33831.2	
Length Wtd. (ft)	68.74	Wetted Per. (ft)	0.01	31.66	
Min Ch El (ft)	1174.36	Shear (lb/sq ft)	0.43	0.44	
Alpha	1.00	Stream Power (lb/ft s)	2.38	2.69	
Frctn Loss (ft)		Cum Volume (acre-ft)	33.36	532.55	123.65
C & E Loss (ft)		Cum SA (acres)	18.38	160.65	53.23

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9600.00	9984.17	0.33	0.06	0.01	0.03	6.06	5.53
9984.17 LB	9994.72	386.57	63.94	10.55	33.32	6.06	6.05
9994.72	10005.28	386.53	63.94	10.55	33.32	6.06	6.05
10005.28	10015.83 RB	386.57	63.94	10.55	33.32	6.06	6.05

```
CULVERT                    RIVER: Saddleback
REACH: Spillway               RS: 6.2545

INPUT
Description:
Distance from Upstream XS =      14
Deck/Roadway Width        =      24
Weir Coefficient          =     2.9
Bridge Deck/Roadway Skew  =
Upstream  Deck/Roadway Coordinates
    num=        5
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9600    1188          9851.64    1186          9984.17    1184
10216.49    1182         10291.56    1180

Upstream Bridge Cross Section Data
Station Elevation Data    num=       24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9600    1187    9650 1186.42 9709.32 1186.08 9727.71 1186.01 9760.21 1185.91
 9770.51 1185.86 9851.64 1184.78 9876.54  1184.7 9914.52 1184.42 9935.08 1184.35
 9956.22  1181.2 9984.17 1174.3610015.83 1174.3610026.86 1182.3710116.66  1181.9
10142.61 1181.5710216.49 1180.0310235.92 1179.5310252.81 1179.53 10262.6 1179.71
10281.13 1180.0410287.41 1180.6710291.56  1180.910303.14 1180.27

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9600     .03 9984.17    .02810015.83     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
       9984.1710015.83             .3        .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    9600 9984.16    118510015.8310303.14  1183.5
Right Levee     Station= 10026.2      Elevation=  1182.3

Downstream  Deck/Roadway Coordinates
    num=        6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
    9609    1188          9851.65    1186          9984.17    1184
10150.89    1182         10286.46    1180         10374.58 1177.93

Downstream Bridge Cross Section Data
Station Elevation Data    num=       44
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9609 1186.92 9628.09    1186 9651.59 1185.06 9718.25 1184.65 9743.28 1184.91
 9755.58 1185.23 9787.66  1184.6 9851.65 1184.98 9867.71 1184.67 9885.32    1184
 9889.12 1183.86 9901.65    1184 9904.67 1184.06 9907.21    1184 9919.66 1183.81
  9942.8 1182.66 9949.77    1182 9969.11 1180.14  9970.3    1180 9976.27    1178
 9983.07    1176 9984.17 1174.2610011.46 1174.2610012.43 1174.2610015.83 1174.26
10020.51    118010121.09 1180.9310138.01 1180.6110150.89 1180.3710162.81    1180
10286.46 1178.2310321.06    117810327.39    117810332.29    117810348.19    1178
 10351.2    117810374.58 1177.9310420.06 1177.0410468.11 1176.6510493.83 1176.56
10534.15    117610590.46 1174.65 10626.2  1174.110647.86 1173.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9609    .055 9983.07    .04510015.83    .055

Bank Sta: Left   Right    Coeff Contr.   Expan.
       9983.0710015.83              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    9609 9984.17    118410015.8310647.86    1181
Right Levee     Station= 10121.1      Elevation= 1180.93

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =    1182
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       6      10
FHWA Chart # 11- Skewed headwall; Chamfered or beveled Inlet
FHWA Scale # 3 - Headwall skewed 15 deg.; inlet edges chamfered 3/4 inch
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    n Value   Entrance Loss Coef   Exit Loss Coef
                  5      65       .013                   .5                1
Number of Barrels =  3
Upstream   Elevation =  1174.36
Centerline Stations
    Sta.    Sta.    Sta.
 9989.17   1000010010.83
Downstream Elevation =  1174.26
Centerline Stations
    Sta.    Sta.    Sta.
 9989.17   1000010010.83

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

  Culv Q (cfs)            1160.00   Culv Vel In (ft/s)        7.09
  # Barrels                     3   Culv Vel Out (ft/s)       7.03
  Q Barrel (cfs)           386.67   Culv Inv El Up (ft)    1174.36
  W.S. US. (ft)           1180.42   Culv Inv El Dn (ft)    1174.26
  E.G. US. (ft)           1180.99   Culv Frctn Ls (ft)        0.07
  Delta WS (ft)              0.66   Culv Ext Lss (ft)         0.08
  Delta EG (ft)              0.54   Culv Ent Lss (ft)         0.39
  E.G. IC (ft)            1180.33   Q Weir (cfs)
  E.G. OC (ft)            1180.99   Weir Sta Lft (ft)
  Culv WS In (ft)         1179.82   Weir Sta Rgt (ft)
  Culv WS Out (ft)        1179.76   Weir Submerg
  Culv Nml Depth (ft)        4.76   Weir Max Depth (ft)
  Culv Crt Depth (ft)        3.59   Weir Avg Depth (ft)
  Culv Ful Lngh (ft)                Min Top Rd (ft)        1183.50
```

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 6.248**

INPUT
Description: Downstream Courthouse road culvert
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9609	1186.92	9628.09	1186	9651.59	1185.06	9718.25	1184.65	9743.28	1184.91
9755.58	1185.23	9787.66	1184.6	9851.65	1184.98	9867.71	1184.67	9885.32	1184
9889.12	1183.86	9901.65	1184	9904.67	1184.06	9907.21	1184	9919.66	1183.81
9942.8	1182.66	9949.77	1182	9969.11	1180.14	9970.3	1180	9976.27	1178
9983.07	1176	9984.17	1174.26	10011.46	1174.26	10012.43	1174.26	10015.83	1174.26
10020.51	1180	10121.09	1180.93	10138.01	1180.61	10150.89	1180.37	10162.81	1180
10286.46	1178.23	10321.06	1178	10327.39	1178	10332.29	1178	10348.19	1178
10351.2	1178	10374.58	1177.93	10420.06	1177.04	10468.11	1176.65	10493.83	1176.56
10534.15	1176	10590.46	1174.65	10626.2	1174.11	10647.86	1173.78		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9609	.055	9983.07	.045	10015.83	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.07	10015.83	69.1	69.1	69.1	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9609	9984.17	1184	10015.83	10647.86	1181

Right Levee Station= 10121.1 Elevation= 1180.93

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1179.76	Element			
Vel Head (ft)	0.69	Wt. n-Val.		0.045	
E.G. Elev (ft)	1180.45	Reach Len. (ft)	69.10	69.10	69.10
Crit W.S. (ft)	1177.71	Flow Area (sq ft)		174.15	
E.G. Slope (ft/ft)	0.004191	Area (sq ft)	23.40	179.24	12.33
Q Total (cfs)	1160.00	Flow (cfs)		1160.00	
Top Width (ft)	49.30	Top Width (ft)	12.06	32.76	4.48
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)		6.66	
Max Chl Dpth (ft)	5.98	Hydr. Depth (ft)		5.50	
Conv. Total (cfs)	17918.3	Conv. (cfs)		17918.3	
Length Wtd. (ft)	69.10	Wetted Per. (ft)		31.66	
Min Ch El (ft)	1174.26	Shear (lb/sq ft)		1.44	
Alpha	1.00	Stream Power (lb/ft s)		9.59	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	33.28	532.26	123.62
C & E Loss (ft)	0.19	Cum SA (acres)	18.35	160.60	53.22

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9983.07 LB	9993.99	359.81	54.02	9.82	31.02	5.50	6.66
9993.99	10004.91	400.10	60.06	10.92	34.49	5.50	6.66
10004.91	10015.83 RB	400.10	60.06	10.92	34.49	5.50	6.66

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.

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 6.235**

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9766.91	1186.18	9827.83	1184.43	9864.26	1183.74	9883.59	1184.94	9909.8	1184.88
9923.02	1185.99	9932.19	1185.54	9946.83	1183.61	9970.67	1177.67	9986.63	1173.9
10016.49	1173.7310038.07		1179.9510064.26		1182.310075.03		1181.910087.15		1180.96
10116.6	1180.5910164.42		1180.0210236.73		1178	10247.3	1177.98	10275.7	1178.13

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9766.91	.055	9986.63	.04510016.49		.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.6310016.49		165.57	165.57	165.57	.3	.5

Right Levee Station= 10064.3 Elevation= 1182.3

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1179.75	Element			
Vel Head (ft)	0.32	Wt. n-Val.	0.055	0.045	0.055
E.G. Elev (ft)	1180.06	Reach Len. (ft)	165.57	165.57	165.57
Crit W.S. (ft)	1177.19	Flow Area (sq ft)	71.87	177.10	62.79
E.G. Slope (ft/ft)	0.002185	Area (sq ft)	71.87	177.10	62.79
Q Total (cfs)	1240.00	Flow (cfs)	183.54	895.59	160.87
Top Width (ft)	75.03	Top Width (ft)	24.29	29.86	20.87
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)	2.55	5.06	2.56
Max Chl Dpth (ft)	6.02	Hydr. Depth (ft)	2.96	5.93	3.01
Conv. Total (cfs)	26530.3	Conv. (cfs)	3926.9	19161.5	3441.9
Length Wtd. (ft)	165.57	Wetted Per. (ft)	24.99	29.86	21.72
Min Ch El (ft)	1173.73	Shear (lb/sq ft)	0.39	0.81	0.39
Alpha	1.28	Stream Power (lb/ft s)	1.00	4.09	1.01
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	33.20	531.97	123.56
C & E Loss (ft)	0.01	Cum SA (acres)	18.32	160.55	53.20

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9766.91	9986.63	183.54	71.87	24.99	14.80	2.96	2.55
9986.63 LB	9996.58	293.77	58.47	9.95	23.69	5.87	5.02
9996.58	10006.54	298.54	59.04	9.95	24.08	5.93	5.06
10006.54	10016.49 RB	303.28	59.60	9.95	24.46	5.99	5.09
10016.49	10275.70	160.87	62.79	21.72	12.97	3.01	2.56

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 6.203**

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9876.68	1182.38	9898.12	1182.15	9909.69	1181.6	9920.07	1182.18	9931.79	1184.54
9941.06	1183.7	9954.17	1180.84	9972.82	1177.33	9986.39	1173.3810015.83		1173.63
10034.28	1180.110045.72		1180.9110062.76		1182.5110079.95		1183.0510087.12		1181.8
10104.19	1179.3610120.35		1177.7210161.34		1176.0610193.79		1175.46		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9876.68	.03	9986.39	.03510015.83		.03

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       9986.3910015.83            224.43  224.43  224.43            .1        .3
Right Levee     Station=   10080      Elevation= 1183.05
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1179.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1179.79	Reach Len. (ft)	224.43	224.43	224.43
Crit W.S. (ft)	1176.88	Flow Area (sq ft)	68.56	176.26	49.00
E.G. Slope (ft/ft)	0.001189	Area (sq ft)	68.56	176.26	49.00
Q Total (cfs)	1240.00	Flow (cfs)	224.47	850.66	164.87
Top Width (ft)	71.21	Top Width (ft)	25.06	29.44	16.72
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	3.27	4.83	3.36
Max Chl Dpth (ft)	6.11	Hydr. Depth (ft)	2.74	5.99	2.93
Conv. Total (cfs)	35965.4	Conv. (cfs)	6510.7	24672.7	4781.9
Length Wtd. (ft)	224.43	Wetted Per. (ft)	25.82	29.44	17.71
Min Ch El (ft)	1173.38	Shear (lb/sq ft)	0.20	0.44	0.21
Alpha	1.09	Stream Power (lb/ft s)	0.65	2.14	0.69
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	32.94	531.30	123.35
C & E Loss (ft)	0.01	Cum SA (acres)	18.23	160.44	53.13

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9876.68	9986.39	224.47	68.56	25.82	18.10	2.74	3.27
9986.39 LB	9996.20	290.14	59.57	9.81	23.40	6.07	4.87
9996.20	10006.02	283.53	58.75	9.81	22.87	5.99	4.83
10006.02	10015.83 RB	276.99	57.94	9.81	22.34	5.90	4.78
10015.83	10193.79	164.87	49.00	17.71	13.30	2.93	3.36

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.161

```
INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9830.71 1184.78 9839.65  1184.2 9850.27 1183.24 9859.05  1183.2 9878.03 1182.82
 9903.11 1183.12 9914.25 1182.94 9934.38 1182.69 9940.28 1182.25 9953.21 1181.04
 9972.94 1177.42 9986.44 1173.8310014.35 1173.3910040.51 1180.7810051.58 1181.77
 10067.9 1184.2710083.78 1183.82 10095.1 1183.8310098.94 1183.56 10110.8  1183.4
10134.99 1179.3910148.35 1180.2410148.36 1180.2410188.73 1178.5510224.51 1177.09
10250.55 1177.99

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9830.71     .03 9986.44    .03510014.35     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       9986.4410014.35            408.28  408.28  408.28            .3        .1
Right Levee     Station= 10067.9      Elevation= 1184.27
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1179.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1179.48	Reach Len. (ft)	408.28	408.28	408.28
Crit W.S. (ft)	1177.03	Flow Area (sq ft)	54.86	153.53	57.93
E.G. Slope (ft/ft)	0.001626	Area (sq ft)	54.86	153.53	57.93
Q Total (cfs)	1240.00	Flow (cfs)	193.68	819.04	227.28
Top Width (ft)	70.88	Top Width (ft)	22.72	27.91	20.25
Vel Total (ft/s)	4.66	Avg. Vel. (ft/s)	3.53	5.33	3.92

Max Chl Dpth (ft)	5.72	Hydr. Depth (ft)	2.41	5.50	2.86
Conv. Total (cfs)	30749.6	Conv. (cfs)	4802.9	20310.5	5636.2
Length Wtd. (ft)	408.28	Wetted Per. (ft)	23.34	27.91	21.04
Min Ch El (ft)	1173.39	Shear (lb/sq ft)	0.24	0.56	0.28
Alpha	1.09	Stream Power (lb/ft s)	0.84	2.98	1.10
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	32.62	530.45	123.07
C & E Loss (ft)	0.07	Cum SA (acres)	18.10	160.29	53.03

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9830.71	9986.44	193.68	54.86	23.34	15.62	2.41	3.53
9986.44 LB	9995.74	260.91	49.81	9.30	21.04	5.35	5.24
9995.74	10005.05	272.96	51.18	9.30	22.01	5.50	5.33
10005.05	10014.35 RB	285.17	52.54	9.30	23.00	5.65	5.43
10014.35	10250.55	227.28	57.93	21.04	18.33	2.86	3.92

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.084

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9779.95	1184.07	9867.63	1183.58	9877.53	1182.72	9892.02	1180.52	9904.65	1180.38
9914.88	1182.06	9924.71	1182.27	9931.34	1181.45	9944.62	1181.48	9954.98	1180.35
9972.9	1176.56	9985	1173.01	10015.33	1173.27	10039.98	1179.34	10050.51	1180.05
10061.03	1181.02	10076.43	1181.03	10095.48	1180.62	10105.79	1180.91	10126.67	1180.38
10143.76	1178.94	10161.21	1178.29	10190.04	1177.57				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9779.95	.03	9985	.03	10015.33	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985	10015.33	71.22	71.22	71.22	.3	.1

Right Levee Station= 10076.4 Elevation= 1181.03

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1177.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1178.51	Reach Len. (ft)	71.22	71.22	71.22
Crit W.S. (ft)	1176.62	Flow Area (sq ft)	42.43	145.18	44.03
E.G. Slope (ft/ft)	0.003045	Area (sq ft)	42.43	145.18	44.03
Q Total (cfs)	1370.00	Flow (cfs)	196.65	966.05	207.31
Top Width (ft)	67.80	Top Width (ft)	18.56	30.33	18.91
Vel Total (ft/s)	5.91	Avg. Vel. (ft/s)	4.63	6.65	4.71
Max Chl Dpth (ft)	4.92	Hydr. Depth (ft)	2.29	4.79	2.33
Conv. Total (cfs)	24825.3	Conv. (cfs)	3563.4	17505.4	3756.5
Length Wtd. (ft)	71.22	Wetted Per. (ft)	19.21	30.33	19.48
Min Ch El (ft)	1173.01	Shear (lb/sq ft)	0.42	0.91	0.43
Alpha	1.08	Stream Power (lb/ft s)	1.95	6.06	2.02
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	32.16	529.05	122.59
C & E Loss (ft)	0.21	Cum SA (acres)	17.91	160.02	52.85

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9779.95	9985.00	196.65	42.43	19.21	14.35	2.29	4.63
9985.00 LB	9995.11	331.76	49.27	10.11	24.22	4.87	6.73
9995.11	10005.22	321.96	48.39	10.11	23.50	4.79	6.65
10005.22	10015.33 RB	312.33	47.52	10.11	22.80	4.70	6.57
10015.33	10190.04	207.31	44.03	19.48	15.13	2.33	4.71

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 RIVER: Saddleback
REACH: Spillway RS: 6.07

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9869.97	1182.88	9875.3	1181.62	9886.43	1179.44	9896.59	1179.43	9908.47	1182.05
9916.44	1181.42	9926.1	1180.93	9939.22	1180.83	9945.3	1179.5	9958.76	1178.2
9987.72	1173.18	10014.85	1173.13	10033.48	1177.65	10043.37	1178.53	10052.77	1179.27
10063.72	1180.31	10081.43	1180.29	10096.47	1180.12	10105.39	1180.56	10122.51	1180.11
10138.68	1178.87	10158.39	1178.13	10187.58	1177.88	10220.48	1177.06		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9869.97	.03	9987.72	.03	10014.85	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.72	10014.85	42.67	42.67	42.67	.3	.1

Right Levee Station=10105.39 Elevation= 1180.56

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1176.66	Element			
Vel Head (ft)	1.28	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1177.94	Reach Len. (ft)	42.67	42.67	42.67
Crit W.S. (ft)	1176.66	Flow Area (sq ft)	34.98	95.15	25.71
E.G. Slope (ft/ft)	0.010098	Area (sq ft)	34.98	95.15	25.71
Q Total (cfs)	1370.00	Flow (cfs)	249.48	937.05	183.47
Top Width (ft)	61.78	Top Width (ft)	20.09	27.13	14.56
Vel Total (ft/s)	8.79	Avg. Vel. (ft/s)	7.13	9.85	7.14
Max Chl Dpth (ft)	3.53	Hydr. Depth (ft)	1.74	3.51	1.77
Conv. Total (cfs)	13633.2	Conv. (cfs)	2482.6	9324.9	1825.7
Length Wtd. (ft)	42.67	Wetted Per. (ft)	20.39	27.13	14.98
Min Ch El (ft)	1173.13	Shear (lb/sq ft)	1.08	2.21	1.08
Alpha	1.07	Stream Power (lb/ft s)	7.71	21.77	7.72
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	32.10	528.86	122.54
C & E Loss (ft)	0.06	Cum SA (acres)	17.88	159.97	52.82

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 velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9869.97	9987.72	249.48	34.98	20.39	18.21	1.74	7.13
9987.72 LB	9996.76	309.87	31.56	9.04	22.62	3.49	9.82
9996.76	10005.81	312.37	31.72	9.04	22.80	3.51	9.85
10005.81	10014.85 RB	314.81	31.87	9.04	22.98	3.52	9.88
10014.85	10220.48	183.47	25.71	14.98	13.39	1.77	7.14

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 velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.062

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9868.4	1182.04	9882.73	1179.44	9892.07	1179.16	9904.49	1181.59	9913.54	1181.37
9921.06	1180.72	9939.62	1178.77	9953.72	1176.34	9962.48	1173.79	9976.18	1168.45
9986.34	1164.51	10014.15	1163.94	10020.9	1167.69	10036.97	1175.71	10048.7	1179.17
10057.05	1179.83	10068.33	1180.62	10084.89	1181.41	10097.95	1181.12	10103.47	1181.36
10118.73	1180.38	10131.29	1178.22	10151.32	1178.03	10177.98	1177.45	10214.2	1176.68
10238.05	1176.44	10265.08	1176.03						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9868.4	.03	9986.34	.03	10014.15	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.34	10014.15	36.71	36.71	36.71	.3	.1

Right Levee Station= 10084.9 Elevation= 1181.4

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1172.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1172.59	Reach Len. (ft)	36.71	36.71	36.71
Crit W.S. (ft)	1168.07	Flow Area (sq ft)	79.30	226.17	65.99
E.G. Slope (ft/ft)	0.000601	Area (sq ft)	79.30	226.17	65.99
Q Total (cfs)	1370.00	Flow (cfs)	228.79	951.91	189.31
Top Width (ft)	64.10	Top Width (ft)	20.18	27.81	16.10
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)	2.89	4.21	2.87
Max Chl Dpth (ft)	8.42	Hydr. Depth (ft)	3.93	8.13	4.10
Conv. Total (cfs)	55877.5	Conv. (cfs)	9331.4	38825.0	7721.2
Length Wtd. (ft)	36.71	Wetted Per. (ft)	21.66	27.82	18.17
Min Ch El (ft)	1163.94	Shear (lb/sq ft)	0.14	0.31	0.14
Alpha	1.09	Stream Power (lb/ft s)	0.40	1.28	0.39
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	32.04	528.70	122.49
C & E Loss (ft)	0.17	Cum SA (acres)	17.86	159.94	52.81

Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9868.40	9986.34	228.79	79.30	21.66	16.70	3.93	2.89
9986.34 LB	9995.61	304.99	73.63	9.27	22.26	7.94	4.14
9995.61	10004.88	317.22	75.38	9.27	23.15	8.13	4.21
10004.88	10014.15 RB	329.70	77.15	9.27	24.07	8.32	4.27
10014.15	10265.08	189.31	65.99	18.17	13.82	4.10	2.87

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 6.055

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9806.16	1181.95	9827.6	1181.52	9869.08	1181.74	9883.12	1179.27	9892.56	1178.87
9903.46	1181.3	9915.31	1181.2	9923.25	1179.93	9935.75	1177.79	9953.29	1174.75
9983.83	1167.61	10015.97	1167.31	10035.96	1173.15	10050.5	1179.61	10061.11	1180.1
10071.4	1181	10088.37	1181.94	10100.05	1181.86	10114.9	1180.76	10129.92	1177.64
10151.28	1177.89	10174.72	1177.12	10209.79	1176.77	10238.54	1176.37	10260.63	1175.73

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9806.16	.03	9983.83	.03	10015.97	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.83	10015.97	41.17	41.17	41.17	.3	.1

Right Levee Station= 10088.4 Elevation= 1181.94

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1171.56	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.80	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1172.37	Reach Len. (ft)	41.17	41.17	41.17
Crit W.S. (ft)	1170.82	Flow Area (sq ft)	33.45	131.93	30.98
E.G. Slope (ft/ft)	0.004991	Area (sq ft)	33.45	131.93	30.98
Q Total (cfs)	1370.00	Flow (cfs)	181.15	1014.35	174.49
Top Width (ft)	63.62	Top Width (ft)	16.92	32.14	14.56
Vel Total (ft/s)	6.98	Avg. Vel. (ft/s)	5.42	7.69	5.63
Max Chl Dpth (ft)	4.25	Hydr. Depth (ft)	1.98	4.10	2.13
Conv. Total (cfs)	19392.8	Conv. (cfs)	2564.3	14358.5	2470.0
Length Wtd. (ft)	41.17	Wetted Per. (ft)	17.37	32.14	15.17
Min Ch El (ft)	1167.31	Shear (lb/sq ft)	0.60	1.28	0.64
Alpha	1.06	Stream Power (lb/ft s)	3.25	9.83	3.58
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	32.00	528.55	122.45
C & E Loss (ft)	0.04	Cum SA (acres)	17.84	159.92	52.79

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9806.16	9983.83	181.15	33.45	17.37	13.22	1.98	5.42
9983.83 LB	9994.54	324.42	42.90	10.71	23.68	4.00	7.56
9994.54	10005.26	338.06	43.98	10.71	24.68	4.10	7.69
10005.26	10015.97 RB	351.87	45.05	10.71	25.68	4.20	7.81
10015.97	10260.63	174.49	30.98	15.17	12.74	2.13	5.63

Warning - The conveyance ratio (upstream 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: Saddleback
REACH: Spillway RS: 6.047

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9749.89	1181.95	9869.44	1181.28	9882.81	1179.01	9893.14	1178.75	9980.45	1167.07
9992.15	1167.31	10018.71	1167.31	10050.91	1179.56	10062.56	1180.01	10072.47	1181.25
10088.93	1181.53	10099.9	1181.64	10110.74	1180.82	10130.4	1177.21	10147.28	1177.89
10173.32	1177.01	10206.43	1176.79	10237.87	1176.37	10255.83	1175.53		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9749.89	.03	9980.45	.035	10018.71	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.45	10018.71	393.72	393.72	393.72	.3	.1

Right Levee Station= 10099.9 Elevation= 1181.64

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1171.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1172.20	Reach Len. (ft)	393.72	393.72	393.72
Crit W.S. (ft)	1170.21	Flow Area (sq ft)	84.19	173.80	26.69
E.G. Slope (ft/ft)	0.002116	Area (sq ft)	84.19	173.80	26.69
Q Total (cfs)	1370.00	Flow (cfs)	339.23	930.89	99.88
Top Width (ft)	85.58	Top Width (ft)	35.48	38.26	11.84
Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)	4.03	5.36	3.74
Max Chl Dpth (ft)	4.75	Hydr. Depth (ft)	2.37	4.54	2.25

Conv. Total (cfs)	29784.8	Conv. (cfs)	7375.1	20238.3	2171.4
Length Wtd. (ft)	393.72	Wetted Per. (ft)	35.79	38.26	12.67
Min Ch El (ft)	1167.07	Shear (lb/sq ft)	0.31	0.60	0.28
Alpha	1.06	Stream Power (lb/ft s)	1.25	3.21	1.04
Frctn Loss (ft)	0.81	Cum Volume (acre-ft)	31.94	528.40	122.42
C & E Loss (ft)	0.01	Cum SA (acres)	17.82	159.89	52.78

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9749.89	9980.45	339.23	84.19	35.79	24.76	2.37	4.03
9980.45 LB	9993.20	318.64	58.87	12.76	23.26	4.62	5.41
9993.20	10005.96	306.14	57.47	12.75	22.35	4.51	5.33
10005.96	10018.71 RB	306.11	57.46	12.75	22.34	4.51	5.33
10018.71	10255.83	99.88	26.69	12.67	7.29	2.25	3.74

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 5.973

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9717.59	1177.91	9835.65	1175.65	9855.23	1175.35	9874.61	1176.22	9899.86	1173.75
9909.16	1173.84	9917.05	1176.22	9930.22	1177.06	9943.92	1173.95	9968.69	1168.31
9983.06	1165.81	10019.03	1165.88	10049.14	1175.51	10058.49	1175.62	10072.29	1178.04
10090.75	1178.15	10101.41	1177.13	10122.31	1173.84	10164.95	1172.45	10195.68	1172.49
10234.47	1172.73	10276.47	1172.23						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9717.59	.03	9983.06	.035	10019.03	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.06	10019.03	459.38	459.38	459.38	.3	.1

Right Levee Station= 10077.6 Elevation= 1178

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1170.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1171.38	Reach Len. (ft)	459.38	459.38	459.38
Crit W.S. (ft)	1169.14	Flow Area (sq ft)	71.22	183.66	40.20
E.G. Slope (ft/ft)	0.002002	Area (sq ft)	71.22	183.66	40.20
Q Total (cfs)	1500.00	Flow (cfs)	305.25	1034.40	160.35
Top Width (ft)	77.79	Top Width (ft)	25.97	35.97	15.85
Vel Total (ft/s)	5.08	Avg. Vel. (ft/s)	4.29	5.63	3.99
Max Chl Dpth (ft)	5.14	Hydr. Depth (ft)	2.74	5.11	2.54
Conv. Total (cfs)	33527.3	Conv. (cfs)	6822.8	23120.4	3584.0
Length Wtd. (ft)	459.38	Wetted Per. (ft)	26.48	35.97	16.65
Min Ch El (ft)	1165.81	Shear (lb/sq ft)	0.34	0.64	0.30
Alpha	1.06	Stream Power (lb/ft s)	1.44	3.59	1.20
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	31.24	526.79	122.12
C & E Loss (ft)	0.02	Cum SA (acres)	17.54	159.55	52.66

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)

9717.59	9983.06	305.25	71.22	26.48	20.35	2.74	4.29
9983.06 LB	9995.05	347.43	61.50	11.99	23.16	5.13	5.65
9995.05	10007.04	344.80	61.22	11.99	22.99	5.11	5.63
10007.04	10019.03 RB	342.18	60.94	11.99	22.81	5.08	5.61
10019.03	10276.47	160.35	40.20	16.65	10.69	2.54	3.99

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 RIVER: Saddleback
REACH: Spillway RS: 5.886

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9882.73	1173.13	9898.69	1171.23	9907.24	1171.13	9918.14	1174.35	9930.3	1173.53
9941.99	1173.03	9962.94	1168.84	9982.67	1164.69	10017.51	1165.08	10046.59	1173.44
10059.32	1173.91	10075.73	1176.41	10091.93	1176.51	10101.55	1175.96	10125.57	1170.15
10151.93	1169.81	10202.69	1168.66						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9882.73	.03	9982.67	.035	10017.51	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.67	10017.51	490.15	490.15	490.15	.3	.1

Right Levee Station= 10091.9 Elevation= 1176.51

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1169.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1170.37	Reach Len. (ft)	490.15	490.15	490.15
Crit W.S. (ft)	1168.27	Flow Area (sq ft)	64.35	174.29	40.20
E.G. Slope (ft/ft)	0.002337	Area (sq ft)	64.35	174.29	40.20
Q Total (cfs)	1500.00	Flow (cfs)	285.58	1046.21	168.21
Top Width (ft)	76.53	Top Width (ft)	24.97	34.84	16.72
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	4.44	6.00	4.18
Max Chl Dpth (ft)	5.20	Hydr. Depth (ft)	2.58	5.00	2.40
Conv. Total (cfs)	31031.6	Conv. (cfs)	5908.0	21643.8	3479.9
Length Wtd. (ft)	490.15	Wetted Per. (ft)	25.50	34.84	17.40
Min Ch El (ft)	1164.69	Shear (lb/sq ft)	0.37	0.73	0.34
Alpha	1.07	Stream Power (lb/ft s)	1.63	4.38	1.41
Frctn Loss (ft)	1.36	Cum Volume (acre-ft)	30.52	524.90	121.70
C & E Loss (ft)	0.03	Cum SA (acres)	17.27	159.18	52.49

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9882.73	9982.67	285.58	64.35	25.50	19.04	2.58	4.44
9982.67 LB	9994.28	363.88	59.61	11.61	24.26	5.13	6.10
9994.28	10005.90	348.65	58.10	11.61	23.24	5.00	6.00
10005.90	10017.51 RB	333.68	56.59	11.61	22.25	4.87	5.90
10017.51	10202.69	168.21	40.20	17.40	11.21	2.40	4.18

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 **RIVER: Saddleback**
REACH: Spillway **RS: 5.793**

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9787.41	1172.02	9871.24	1171.39	9898.31	1169.77	9907.17	1169.7	9917.9	1173.16
9928.29	1172.89	9944.36	1171.28	9962.74	1167.81	9978	1164.18	10019.49	1163.85
10046.91	1172.95	10058.59	1173	10081.66	1175.08	10104.2	1174.81	10111.58	1174.62
10143.28	1169.13	10164.64	1169.03	10227.09	1168.99	10274.18	1168.5		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9787.41	.03	9978	.035	10019.49	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978	10019.49	349.21	349.21	349.21	.3	.1

Right Levee Station= 10081.7 Elevation= 1175.08

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1168.38	Element			
Vel Head (ft)	0.59	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1168.98	Reach Len. (ft)	349.21	349.21	349.21
Crit W.S. (ft)	1167.16	Flow Area (sq ft)	37.28	181.16	30.94
E.G. Slope (ft/ft)	0.003324	Area (sq ft)	37.28	181.16	30.94
Q Total (cfs)	1500.00	Flow (cfs)	168.23	1184.59	147.18
Top Width (ft)	73.43	Top Width (ft)	18.29	41.49	13.65
Vel Total (ft/s)	6.02	Avg. Vel. (ft/s)	4.51	6.54	4.76
Max Chl Dpth (ft)	4.53	Hydr. Depth (ft)	2.04	4.37	2.27
Conv. Total (cfs)	26016.5	Conv. (cfs)	2917.9	20545.9	2552.7
Length Wtd. (ft)	349.21	Wetted Per. (ft)	18.77	41.49	14.39
Min Ch El (ft)	1163.85	Shear (lb/sq ft)	0.41	0.91	0.45
Alpha	1.06	Stream Power (lb/ft s)	1.86	5.92	2.12
Frctn Loss (ft)	0.81	Cum Volume (acre-ft)	29.95	522.90	121.30
C & E Loss (ft)	0.03	Cum SA (acres)	17.03	158.75	52.31

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9787.41	9978.00	168.23	37.28	18.77	11.22	2.04	4.51
9978.00 LB	9991.83	378.33	58.86	13.83	25.22	4.26	6.43
9991.83	10005.66	394.77	60.39	13.83	26.32	4.37	6.54
10005.66	10019.49 RB	411.49	61.91	13.83	27.43	4.48	6.65
10019.49	10274.18	147.18	30.94	14.39	9.81	2.27	4.76

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 5.727**

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9871.81	1169.92	9889.73	1169.84	9896.67	1168.65	9912.81	1168.43	9921.98	1171.03
9931.92	1170.79	9945.45	1169.36	9958.34	1166.87	9974.72	1163.11	10026.97	1163.06
10053.64	1172.16	10064.82	1172.34	10086.95	1174.14	10107.47	1174.27	10122.67	1173.92
10153.04	1167.51	10179.79	1167.48	10232.43	1167.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9871.81	.03	9974.72	.035	10026.97	.03

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Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       9974.7210026.97           407.37  407.37  407.37            .3        .1
Right Levee      Station= 10107.5       Elevation= 1174.27
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1167.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1168.14	Reach Len. (ft)	407.37	407.37	407.37
Crit W.S. (ft)	1165.85	Flow Area (sq ft)	48.17	246.11	32.86
E.G. Slope (ft/ft)	0.001716	Area (sq ft)	48.17	246.11	32.86
Q Total (cfs)	1500.00	Flow (cfs)	168.25	1216.30	115.45
Top Width (ft)	87.30	Top Width (ft)	21.17	52.25	13.88
Vel Total (ft/s)	4.59	Avg. Vel. (ft/s)	3.49	4.94	3.51
Max Chl Dpth (ft)	4.74	Hydr. Depth (ft)	2.28	4.71	2.37
Conv. Total (cfs)	36208.3	Conv. (cfs)	4061.5	29360.0	2786.8
Length Wtd. (ft)	407.37	Wetted Per. (ft)	21.68	52.25	14.66
Min Ch El (ft)	1163.06	Shear (lb/sq ft)	0.24	0.50	0.24
Alpha	1.05	Stream Power (lb/ft s)	0.83	2.49	0.84
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	29.61	521.19	121.04
C & E Loss (ft)	0.01	Cum SA (acres)	16.87	158.37	52.20

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9871.81	9974.72	168.25	48.17	21.68	11.22	2.28	3.49
9974.72 LB	9992.14	403.05	81.75	17.42	26.87	4.69	4.93
9992.14	10009.55	405.41	82.03	17.42	27.03	4.71	4.94
10009.55	10026.97 RB	407.83	82.33	17.42	27.19	4.73	4.95
10026.97	10232.43	115.45	32.86	14.66	7.70	2.37	3.51

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 5.65

```
INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9877.63 1168.87 9896.76 1167.44 9913.92 1166.99  9924.9 1168.93  9936.2 1169.07
 9943.97 1167.99 9958.02 1164.75 9973.71 1162.2110030.32 1162.0210054.66 1169.16
10065.82 1170.4210092.04  1172.310112.94  1172.710133.23 1172.2210163.77 1165.08
10258.57 1164.4210324.93 1164.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9877.63     .03 9973.71    .03510030.32     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
       9973.7110030.32           511.85  511.85  511.85            .3        .1
Left Levee       Station=  9936.7      Elevation=    1169
Right Levee      Station= 10112.9      Elevation=  1172.7
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1167.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1167.65	Reach Len. (ft)	511.85	511.85	511.85
Crit W.S. (ft)	1164.72	Flow Area (sq ft)	78.12	302.07	50.27
E.G. Slope (ft/ft)	0.000846	Area (sq ft)	78.12	302.07	50.27
Q Total (cfs)	1500.00	Flow (cfs)	223.57	1139.26	137.17
Top Width (ft)	102.53	Top Width (ft)	27.40	56.61	18.51
Vel Total (ft/s)	3.48	Avg. Vel. (ft/s)	2.86	3.77	2.73
Max Chl Dpth (ft)	5.43	Hydr. Depth (ft)	2.85	5.34	2.72

Conv. Total (cfs)	51559.4	Conv. (cfs)	7684.7	39159.7	4715.1
Length Wtd. (ft)	511.85	Wetted Per. (ft)	27.91	56.61	19.29
Min Ch El (ft)	1162.02	Shear (lb/sq ft)	0.15	0.28	0.14
Alpha	1.05	Stream Power (lb/ft s)	0.42	1.06	0.38
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	29.02	518.62	120.65
C & E Loss (ft)	0.04	Cum SA (acres)	16.64	157.86	52.05

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9877.63	9973.71	223.57	78.12	27.91	14.90	2.85	2.86
9973.71 LB	9992.58	372.26	99.50	18.87	24.82	5.27	3.74
9992.58	10011.45	379.73	100.69	18.87	25.32	5.34	3.77
10011.45	10030.32 RB	387.27	101.88	18.87	25.82	5.40	3.80
10030.32	10324.93	137.17	50.27	19.29	9.14	2.72	2.73

Warning - The conveyance ratio (upstream 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: Saddleback
REACH: Spillway RS: 5.553

INPUT
Description:
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9518.94	1173.07	9586.5	1172.27	9662.57	1170.98	9704.74	1170.03	9733.85	1170.18
9798.56	1169.48	9857.64	1169.37	9878.75	1168.5	9889.42	1167.93	9900.35	1167.38
9911.53	1171.06	9922.33	1170.67	9931.79	1169.74	9957.56	1164.2	9970.41	1162.27
10026.75	1162.38	10037.53	1165.33	10080.3	1164.29	10094.5	1165.56	10176.59	1169.63
10192.94	1170.26	10219.08	1171.2	10230.6	1171.32	10287.32	1170.29	10310.79	1169.11
10338.98	1168.15	10355.97	1167.49	10370.39	1166.88	10383.79	1166.39	10421.16	1165.51
10498.32	1164.14	10524.33	1163.22	10664.75	1161.3				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9518.94	.03	9970.41	.035	10080.3	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970.41	10080.3	128.13	128.13	128.13	.3	.1

Right Levee Station= 10230.6 Elevation= 1171.32

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1166.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1166.85	Reach Len. (ft)	128.13	128.13	128.13
Crit W.S. (ft)	1165.37	Flow Area (sq ft)	55.04	339.62	32.37
E.G. Slope (ft/ft)	0.002666	Area (sq ft)	55.04	339.62	32.37
Q Total (cfs)	1900.00	Flow (cfs)	244.12	1575.60	80.28
Top Width (ft)	167.41	Top Width (ft)	23.70	109.89	33.82
Vel Total (ft/s)	4.45	Avg. Vel. (ft/s)	4.44	4.64	2.48
Max Chl Dpth (ft)	5.23	Hydr. Depth (ft)	2.32	3.09	0.96
Conv. Total (cfs)	36799.9	Conv. (cfs)	4728.1	30516.7	1555.0
Length Wtd. (ft)	128.13	Wetted Per. (ft)	24.09	110.30	33.90
Min Ch El (ft)	1162.27	Shear (lb/sq ft)	0.38	0.51	0.16
Alpha	1.04	Stream Power (lb/ft s)	1.69	2.38	0.39
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	28.24	514.85	120.17

C & E Loss (ft)	0.02	Cum SA (acres)	16.34	156.89	51.75

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9518.94	9970.41	244.12	55.04	24.09	12.85	2.32	4.44
9970.41 LB	10007.04	838.03	154.84	36.63	44.11	4.23	5.41
10007.04	10043.67	536.09	118.94	37.03	28.22	3.25	4.51
10043.67	10080.30 RB	201.48	65.84	36.64	10.60	1.80	3.06
10080.30	10664.75	80.28	32.37	33.90	4.23	0.96	2.48

Warning - The conveyance ratio (upstream 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: Saddleback
REACH: Spillway RS: 5.535

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9373.46	1170.53	9389.03	1170.55	9406.68	1170.83	9456.61	1171.08	9486.88	1170.97
9505.09	1170.59	9545.46	1170.35	9556.04	1170.35	9610.37	1169.84	9661.93	1169.21
9702.51	1168.64	9747.73	1167.29	9763.08	1166.89	9786.24	1166.46	9836.55	1165.29
9861.56	1164.46	9874.01	1164.13	9912.89	1163.99	9938.44	1163.82	10000.5	1162.99
10010.49	1162.19	10032.08	1161.82	10055.43	1166.31	10075.29	1168.75	10084.4	1170.56
10100.86	1171.59	10123.01	1171.71	10147.09	1171.34	10164.7	1170.17	10188.33	1166.22
10201.44	1164.55	10294.73	1163.02	10365.13	1163.15	10431.47	1162.25		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9373.46	.03	9938.44	.03	10032.08	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9938.44	10032.08	120.5	120.5	120.5	.3	.1

Right Levee Station= 10123 Elevation= 1171.71

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1166.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1166.61	Reach Len. (ft)	120.50	120.50	120.50
Crit W.S. (ft)	1165.01	Flow Area (sq ft)	255.34	324.88	56.13
E.G. Slope (ft/ft)	0.001229	Area (sq ft)	255.34	324.88	56.13
Q Total (cfs)	1900.00	Flow (cfs)	625.22	1107.87	166.91
Top Width (ft)	270.71	Top Width (ft)	152.46	93.64	24.61
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)	2.45	3.41	2.97
Max Chl Dpth (ft)	4.64	Hydr. Depth (ft)	1.67	3.47	2.28
Conv. Total (cfs)	54196.4	Conv. (cfs)	17833.9	31601.3	4761.1
Length Wtd. (ft)	120.50	Wetted Per. (ft)	152.49	93.68	25.05
Min Ch El (ft)	1161.82	Shear (lb/sq ft)	0.13	0.27	0.17
Alpha	1.07	Stream Power (lb/ft s)	0.31	0.91	0.51
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	27.78	513.88	120.04
C & E Loss (ft)	0.07	Cum SA (acres)	16.09	156.59	51.66

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9373.46	9938.44	625.21	255.34	152.49	32.91	1.67	2.45
9938.44 LB	9969.65	262.36	89.07	31.22	13.81	2.85	2.95
9969.65	10000.87	329.43	102.10	31.22	17.34	3.27	3.23
10000.87	10032.08 RB	516.08	133.71	31.25	27.16	4.28	3.86
10032.08	10431.47	166.91	56.13	25.05	8.78	2.28	2.97

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 5.506

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9732.34	1166.86	9750.29	1168.45	9757.75	1166.58	9766.64	1167.44	9782.53	1167.15
9807.97	1166.84	9826.52	1166.8	9849.07	1167.09	9867.25	1166.76	9886.91	1166.85
9909.18	1166.36	9919.69	1167.67	9929.58	1167.13	9939.18	1166.18	9950.78	1163.93
9964.8	1161.9	10037.08	1161.5	10058.22	1168.49	10069.15	1169.41	10089.38	1171.5
10120.96	1171.3	10130.9	1170.89	10141.82	1170.97	10158.44	1170.51	10179.43	1166.7
10195.74	1164.47	10244.78	1163.51	10298.92	1162.91	10361.09	1162.37	10431.75	1162.21
10499.37	1161.73								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9732.34	.03	9964.8	.03	10037.08	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9964.8	10037.08	497.85	497.85	497.85	.3	.1

Right Levee Station= 10089.4 Elevation= 1171.5

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1165.97	Element			
Vel Head (ft)	0.38	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1166.35	Reach Len. (ft)	497.85	497.85	497.85
Crit W.S. (ft)	1164.35	Flow Area (sq ft)	53.30	306.69	30.00
E.G. Slope (ft/ft)	0.002152	Area (sq ft)	53.30	306.69	30.00
Q Total (cfs)	1900.00	Flow (cfs)	203.59	1582.93	113.48
Top Width (ft)	110.30	Top Width (ft)	24.53	72.28	13.49
Vel Total (ft/s)	4.87	Avg. Vel. (ft/s)	3.82	5.16	3.78
Max Chl Dpth (ft)	4.45	Hydr. Depth (ft)	2.17	4.24	2.22
Conv. Total (cfs)	40961.2	Conv. (cfs)	4389.0	34125.7	2446.5
Length Wtd. (ft)	497.85	Wetted Per. (ft)	24.87	72.28	14.21
Min Ch El (ft)	1161.52	Shear (lb/sq ft)	0.29	0.57	0.28
Alpha	1.04	Stream Power (lb/ft s)	1.10	2.94	1.07
Frctn Loss (ft)	1.35	Cum Volume (acre-ft)	27.35	513.00	119.92
C & E Loss (ft)	0.03	Cum SA (acres)	15.84	156.36	51.61

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9732.34	9964.80	203.59	53.30	24.87	10.72	2.17	3.82
9964.80 LB	9988.89	499.44	98.94	24.09	26.29	4.11	5.05
9988.89	10012.99	527.43	102.23	24.09	27.76	4.24	5.16
10012.99	10037.08 RB	556.06	105.52	24.09	29.27	4.38	5.27
10037.08	10499.37	113.48	30.00	14.21	5.97	2.22	3.78

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 RIVER: Saddleback
REACH: Spillway RS: 5.411

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9725.48	1167.96	9733.43	1168.46	9831.34	1167.49	9866.77	1166.99	9880.43	1165.19
9896.71	1164.86	9908.93	1167.57	9920.77	1167.49	9932	1166.18	9947.76	1162.81
9962.76	1161.31	10041.64	1160.61	10058.2	1166.24	10070.85	1167.33	10085.24	1168.48
10109.29	1169.13	10123.08	1169.06	10147.28	1168.92	10168.81	1168.51	10188.95	1165.29
10204.53	1162.91	10238.22	1161.95	10286.21	1161.84	10307.77	1161.33	10326.15	1161.4
10376.96	1160.39								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9725.48	.03	9962.76	.03	10041.64	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9962.76	10041.64	613.04	613.04	613.04	.3	.1

Left Levee Station= 9920.48 Elevation= 1168
Right Levee Station= 10109.3 Elevation= 1169.13

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1164.48	Element			
Vel Head (ft)	0.49	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1164.97	Reach Len. (ft)	613.04	613.04	613.04
Crit W.S. (ft)	1163.43	Flow Area (sq ft)	42.71	277.27	21.97
E.G. Slope (ft/ft)	0.003518	Area (sq ft)	42.71	277.27	21.97
Q Total (cfs)	1900.00	Flow (cfs)	189.35	1614.09	96.56
Top Width (ft)	113.04	Top Width (ft)	22.79	78.88	11.37
Vel Total (ft/s)	5.56	Avg. Vel. (ft/s)	4.43	5.82	4.39
Max Chl Dpth (ft)	4.09	Hydr. Depth (ft)	1.87	3.52	1.93
Conv. Total (cfs)	32033.1	Conv. (cfs)	3192.3	27212.8	1628.0
Length Wtd. (ft)	613.04	Wetted Per. (ft)	23.04	78.88	12.01
Min Ch El (ft)	1160.61	Shear (lb/sq ft)	0.41	0.77	0.40
Alpha	1.03	Stream Power (lb/ft s)	1.81	4.49	1.77
Frctn Loss (ft)	1.08	Cum Volume (acre-ft)	26.80	509.67	119.62
C & E Loss (ft)	0.03	Cum SA (acres)	15.57	155.49	51.46

Warning - The conveyance ratio (upstream conveyance 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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9725.48	9962.76	189.35	42.71	23.04	9.97	1.87	4.43
9962.76 LB	9989.05	479.04	86.29	26.29	25.21	3.28	5.55
9989.05	10015.35	537.17	92.43	26.29	28.27	3.52	5.81
10015.35	10041.64 RB	597.88	98.56	26.29	31.47	3.75	6.07
10041.64	10376.96	96.56	21.97	12.01	5.08	1.93	4.39

Warning - The conveyance ratio (upstream conveyance 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: Saddleback**
REACH: Spillway **RS: 5.295**

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9606.22	1170.12	9615.13	1170.98	9722.58	1169.5	9822.14	1167.59	9830.06	1167.19
9863.95	1165.61	9869.32	1165.39	9882.95	1164.21	9899.48	1164.05	9909.18	1165.52
9917.5	1165.94	9931.68	1163.88	9943.26	1160.76	9954.94	1158.56	10019.57	1158.8
10031.49	1160.48	10043.3	1158.77	10058.26	1163.81	10069.13	1165.36	10081.76	1166.35
10104.18	1166.03	10121.68	1161.31	10135.07	1158.81	10179.65	1158.81	10228.31	1158.65
10318.29	1158.89	10356.63	1159.14	10389.51	1159.38				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9606.22	.03	9954.94	.035	10043.3	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9954.94	10043.3	312.35	312.35	312.35	.3	.1

Left Levee Station= 9911.22 Elevation= 1167
Right Levee Station= 10086.2 Elevation= 1167

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1163.64	Element			
Vel Head (ft)	0.22	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1163.86	Reach Len. (ft)	312.35	312.35	312.35
Crit W.S. (ft)	1161.23	Flow Area (sq ft)	61.93	415.84	35.23
E.G. Slope (ft/ft)	0.001056	Area (sq ft)	61.93	415.84	35.23
Q Total (cfs)	1900.00	Flow (cfs)	193.08	1607.90	99.02
Top Width (ft)	125.20	Top Width (ft)	22.38	88.36	14.46
Vel Total (ft/s)	3.70	Avg. Vel. (ft/s)	3.12	3.87	2.81
Max Chl Dpth (ft)	5.08	Hydr. Depth (ft)	2.77	4.71	2.44
Conv. Total (cfs)	58480.0	Conv. (cfs)	5942.7	49489.5	3047.9
Length Wtd. (ft)	312.35	Wetted Per. (ft)	22.96	88.60	15.26
Min Ch El (ft)	1158.56	Shear (lb/sq ft)	0.18	0.31	0.15
Alpha	1.02	Stream Power (lb/ft s)	0.55	1.20	0.43
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	26.07	504.79	119.22
C & E Loss (ft)	0.05	Cum SA (acres)	15.25	154.32	51.28

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9606.22	9954.94	193.08	61.93	22.96	10.16	2.77	3.12
9954.94 LB	9984.39	597.00	148.07	29.45	31.42	5.03	4.03
9984.39	10013.85	575.51	144.85	29.45	30.29	4.92	3.97
10013.85	10043.30 RB	435.38	122.92	29.69	22.91	4.17	3.54
10043.30	10389.51	99.02	35.23	15.26	5.21	2.44	2.81

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 5.236**

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9664.1	1170.02	9703.54	1169.33	9745.95	1167.92	9770.96	1167.81	9794.21	1167.39
9815.8	1166.76	9821.09	1166.67	9853.1	1166.06	9867.4	1164.61	9885.69	1164.3
9897.51	1166.47	9908.08	1166.86	9920.32	1164.62	9941.78	1160.78	9954.38	1159.05
10049.66	1158.47	10064.59	1162.88	10074.84	1164.51	10089.76	1165.77	10114.32	1166.04
10134.86	1166.14	10159.24	1166.02	10174.67	1165.21	10202.03	1161.05	10220.08	1160.98

```
10246.22 1160.0510277.64 1159.91 10281.2  1160.610285.23 1159.7810307.48  1159.4

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9664.1     .03 9954.38    .03510049.66     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9954.3810049.66           762.37  762.37  762.37            .3        .1
Left Levee       Station=  9904.1       Elevation=  1166.8
Right Levee      Station= 10134.9       Elevation= 1166.14
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1162.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1163.35	Reach Len. (ft)	762.37	762.37	762.37
Crit W.S. (ft)	1161.31	Flow Area (sq ft)	52.05	401.73	34.39
E.G. Slope (ft/ft)	0.002081	Area (sq ft)	52.05	401.73	34.39
Q Total (cfs)	2350.00	Flow (cfs)	190.82	2030.73	128.44
Top Width (ft)	135.69	Top Width (ft)	24.87	95.28	15.54
Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)	3.67	5.05	3.74
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)	2.09	4.22	2.21
Conv. Total (cfs)	51510.3	Conv. (cfs)	4182.7	44512.2	2815.4
Length Wtd. (ft)	762.37	Wetted Per. (ft)	25.19	95.28	16.18
Min Ch El (ft)	1158.47	Shear (lb/sq ft)	0.27	0.55	0.28
Alpha	1.03	Stream Power (lb/ft s)	0.98	2.77	1.03
Frctn Loss (ft)	1.47	Cum Volume (acre-ft)	25.66	501.86	118.97
C & E Loss (ft)	0.01	Cum SA (acres)	15.08	153.66	51.18

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9664.10	9954.38	190.82	52.05	25.19	8.12	2.09	3.67
9954.38 LB	9986.14	625.47	127.77	31.76	26.62	4.02	4.90
9986.14	10017.90	676.40	133.91	31.76	28.78	4.22	5.05
10017.90	10049.66 RB	728.86	140.05	31.76	31.02	4.41	5.20
10049.66	10307.48	128.44	34.39	16.18	5.47	2.21	3.74

Warning - The energy loss was 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: Saddleback
REACH: Spillway RS: 5.091

```
INPUT
Description:
Station Elevation Data     num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9775.87 1167.17 9818.42 1166.38 9832.62 1166.37 9845.31 1165.11 9864.37  1164.7
 9877.13 1167.04 9889.11 1167.19  9901.5  1165.2 9933.41 1159.28 9944.35 1157.48
10052.79 1157.3210068.77 1162.5510080.85 1163.3810092.16 1165.3210118.76 1165.27
10149.87 1165.0310178.26 1164.9910192.99 1165.1710226.15 1160.2110277.05 1159.21
10289.05 1159.1210294.51 1159.1410433.08 1157.02 10476.5 1156.73

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9775.87     .03 9944.35    .03510052.79     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9944.3510052.79           625.46  625.46  625.46            .3        .1
```

Right Levee Station= 10092.2 Elevation= 1165.32

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1161.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1161.87	Reach Len. (ft)	625.46	625.46	625.46
Crit W.S. (ft)	1159.76	Flow Area (sq ft)	48.62	450.30	27.37
E.G. Slope (ft/ft)	0.001796	Area (sq ft)	48.62	450.30	27.37
Q Total (cfs)	2350.00	Flow (cfs)	165.50	2092.97	91.52
Top Width (ft)	144.56	Top Width (ft)	23.19	108.44	12.93
Vel Total (ft/s)	4.47	Avg. Vel. (ft/s)	3.40	4.65	3.34
Max Chl Dpth (ft)	4.82	Hydr. Depth (ft)	2.10	4.15	2.12
Conv. Total (cfs)	55455.3	Conv. (cfs)	3905.5	49390.0	2159.8
Length Wtd. (ft)	625.46	Wetted Per. (ft)	23.54	108.44	13.61
Min Ch El (ft)	1157.32	Shear (lb/sq ft)	0.23	0.47	0.23
Alpha	1.03	Stream Power (lb/ft s)	0.79	2.16	0.75
Frctn Loss (ft)	1.69	Cum Volume (acre-ft)	24.78	494.40	118.43
C & E Loss (ft)	0.07	Cum SA (acres)	14.66	151.87	50.93

Warning - The conveyance ratio (upstream conveyance 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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9775.87	9944.35	165.50	48.62	23.54	7.04	2.10	3.40
9944.35 LB	9980.50	682.74	148.17	36.15	29.05	4.10	4.61
9980.50	10016.64	697.63	150.10	36.15	29.69	4.15	4.65
10016.64	10052.79 RB	712.61	152.03	36.15	30.32	4.21	4.69
10052.79	10476.50	91.52	27.37	13.61	3.89	2.12	3.34

Warning - The conveyance ratio (upstream conveyance 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: Saddleback
REACH: Spillway RS: 4.973

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9796.01	1164.58	9826.73	1164.01	9842.36	1163.3	9853.89	1163.71	9864.13	1161.52
9870.49	1161.82	9882.15	1164.51	9893.28	1164.1	9907.73	1162.04	9923.07	1158.95
9935.03	1156.41	10057.1	1156.241	10071.61	1160.021	10082.27	1160.591	10095.31	1162.31
10132.8	1163.11	10146.45	1163.341	10167.47	1163.131	10180.65	1162.41	10206.21	1158.05
10244.65	1157.241	10277.59	1157.111	10295.06	115610	10310.31	1156.1		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9796.01	.03	9935.03	.035	10057.1	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9935.03	10057.1	307.39	307.39	307.39	.3	.1

Left Levee Station= 9879.94 Elevation= 1164.5
Right Levee Station= 10146.5 Elevation= 1163.34

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1159.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1160.11	Reach Len. (ft)	307.39	307.39	307.39
Crit W.S. (ft)	1158.67	Flow Area (sq ft)	23.34	394.36	21.10
E.G. Slope (ft/ft)	0.004288	Area (sq ft)	23.34	394.36	21.10
Q Total (cfs)	2590.00	Flow (cfs)	100.37	2395.85	93.78
Top Width (ft)	149.76	Top Width (ft)	14.97	122.07	12.73
Vel Total (ft/s)	5.90	Avg. Vel. (ft/s)	4.30	6.08	4.44
Max Chl Dpth (ft)	3.56	Hydr. Depth (ft)	1.56	3.23	1.66
Conv. Total (cfs)	39554.0	Conv. (cfs)	1532.8	36589.0	1432.3
Length Wtd. (ft)	307.39	Wetted Per. (ft)	15.29	122.07	13.15
Min Ch El (ft)	1156.24	Shear (lb/sq ft)	0.41	0.86	0.43
Alpha	1.02	Stream Power (lb/ft s)	1.76	5.25	1.91
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)	24.26	488.34	118.08
C & E Loss (ft)	0.02	Cum SA (acres)	14.39	150.22	50.74

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9796.01	9935.03	100.37	23.34	15.29	3.88	1.56	4.30
9935.03 LB	9975.72	775.30	129.15	40.69	29.93	3.17	6.00
9975.72	10016.41	798.54	131.46	40.69	30.83	3.23	6.07
10016.41	10057.10 RB	822.01	133.76	40.69	31.74	3.29	6.15
10057.10	10310.31	93.78	21.10	13.15	3.62	1.66	4.44

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.915

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9821.45	1162.83	9843.14	1160.86	9865.41	1160.85	9875.72	1163.09	9885.57	1164.53
9899.28	1162.87	9916.99	1159.98	9927.21	1157.32	9941.4	1155.01	10059.47	1154.72
10074.28	1157.85	10087.54	1158.81	10101.09	1160.47	10125.17	1160.86	10145.34	1160.19
10161.66	1160.62	10184.67	1160.19	10217.52	1155.15	10256.27	1154.49	10284.3	1153.98
10304.09	1153.41								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9821.45	.03	9941.4	.03	10059.47	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9941.41	10059.47	110.15	110.15	110.15	.3	.1

Right Levee Station= 10125.2 Elevation= 1160.86

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1158.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1159.19	Reach Len. (ft)	110.15	110.15	110.15
Crit W.S. (ft)	1157.24	Flow Area (sq ft)	42.48	469.83	44.73
E.G. Slope (ft/ft)	0.002102	Area (sq ft)	42.48	469.83	44.73
Q Total (cfs)	2590.00	Flow (cfs)	157.17	2296.34	136.48
Top Width (ft)	166.47	Top Width (ft)	20.05	118.07	28.35
Vel Total (ft/s)	4.65	Avg. Vel. (ft/s)	3.70	4.89	3.05
Max Chl Dpth (ft)	5.43	Hydr. Depth (ft)	2.12	3.98	1.58
Conv. Total (cfs)	56493.0	Conv. (cfs)	3428.3	50087.8	2976.9
Length Wtd. (ft)	110.15	Wetted Per. (ft)	20.43	118.07	28.71
Min Ch El (ft)	1154.72	Shear (lb/sq ft)	0.27	0.52	0.20
Alpha	1.04	Stream Power (lb/ft s)	1.01	2.55	0.62

Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	24.03	485.29	117.85
C & E Loss (ft)	0.22	Cum SA (acres)	14.26	149.37	50.60

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9821.45	9941.40	157.17	42.48	20.43	6.07	2.12	3.70
9941.40 LB	9980.76	734.54	152.80	39.36	28.36	3.88	4.81
9980.76	10020.11	765.28	156.61	39.36	29.55	3.98	4.89
10020.11	10059.47 RB	796.52	160.41	39.36	30.75	4.08	4.97
10059.47	10304.09	136.48	44.73	28.71	5.27	1.58	3.05

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.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.894

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9816.73	1161.73	9832.36	1160.76	9856.24	1160.66	9868.24	1163.01	9878.86	1164.26
9897.7	1161.61	9919.76	1158.52	9933.19	1155.02	10059.62	1155.27	10073.5	1157.64
10091.28	1158.12	10102.77	1159.32	10123.28	1159.47	10145.55	1159.29	10167.37	1159.08
10187.79	1159.04	10218.5	1154.71	10254.73	1154.09	10287.45	1153.86	10306.55	1153.07

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9816.73	.03	9933.19	.03	10059.62	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9933.19	10059.62	35.82	35.82	35.82	.3	.1

Right Levee Station= 10123.3 Elevation= 1159.47

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1157.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.07	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1158.51	Reach Len. (ft)	35.82	35.82	35.82
Crit W.S. (ft)	1157.44	Flow Area (sq ft)	11.19	289.53	13.73
E.G. Slope (ft/ft)	0.013040	Area (sq ft)	11.19	289.53	13.73
Q Total (cfs)	2590.00	Flow (cfs)	70.22	2438.71	81.07
Top Width (ft)	148.38	Top Width (ft)	9.27	126.43	12.68
Vel Total (ft/s)	8.24	Avg. Vel. (ft/s)	6.27	8.42	5.91
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)	1.21	2.29	1.08
Conv. Total (cfs)	22680.5	Conv. (cfs)	614.9	21355.7	709.9
Length Wtd. (ft)	35.82	Wetted Per. (ft)	9.58	126.43	12.86
Min Ch El (ft)	1155.02	Shear (lb/sq ft)	0.95	1.86	0.87
Alpha	1.02	Stream Power (lb/ft s)	5.97	15.70	5.13
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	23.96	484.33	117.77
C & E Loss (ft)	0.09	Cum SA (acres)	14.23	149.06	50.54

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9816.73	9933.19	70.22	11.19	9.58	2.71	1.21	6.27
9933.19 LB	9975.33	862.37	100.02	42.14	33.30	2.37	8.62
9975.33	10017.48	812.49	96.51	42.14	31.37	2.29	8.42
10017.48	10059.62 RB	763.84	93.00	42.14	29.49	2.21	8.21
10059.62	10306.55	81.07	13.73	12.86	3.13	1.08	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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the 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: Saddleback
REACH: Spillway RS: 4.887

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9818.52	1162.06	9835.08	1160.49	9855.37	1160.41	9867.52	1162.69	9876.89	1163.63
9894.36	1161.17	9916.23	1155.41	9932.72	1148.6210062.33	1148.6810082.16	1157.31		
10095.5	1157.9810103.38	1159.2310123.89	1159.1910145.18	1159.1610171.69	1159.03				
10189.58	1158.810218.08	1154.4110249.75	1153.99 10288.2	1153.6110306.04	1152.89				
10334.28	1153.2910346.91	1153.9							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

9818.52 .03 9932.72 .03510062.33 .03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9932.7210062.33 113.45 113.45 113.45 .3 .1
Right Levee Station= 10103.4 Elevation= 1159.23

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1154.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1154.54	Reach Len. (ft)	113.45	113.45	113.45
Crit W.S. (ft)	1150.93	Flow Area (sq ft)	40.27	742.51	37.31
E.G. Slope (ft/ft)	0.000572	Area (sq ft)	40.27	742.51	37.31
Q Total (cfs)	2590.00	Flow (cfs)	91.66	2414.47	83.86
Top Width (ft)	156.69	Top Width (ft)	13.99	129.61	13.09
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)	2.28	3.25	2.25
Max Chl Dpth (ft)	5.76	Hydr. Depth (ft)	2.88	5.73	2.85
Conv. Total (cfs)	108262.7	Conv. (cfs)	3831.6	100925.6	3505.6
Length Wtd. (ft)	113.45	Wetted Per. (ft)	15.12	129.61	14.28
Min Ch El (ft)	1148.62	Shear (lb/sq ft)	0.10	0.20	0.09
Alpha	1.02	Stream Power (lb/ft s)	0.22	0.67	0.21
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	23.94	483.90	117.75
C & E Loss (ft)	0.04	Cum SA (acres)	14.22	148.96	50.53

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9818.52	9932.72	91.66	40.27	15.12	3.54	2.88	2.28
9932.72 LB	9975.92	809.51	248.37	43.20	31.26	5.75	3.26
9975.92	10019.13	804.83	247.51	43.20	31.07	5.73	3.25
10019.13	10062.33 RB	800.13	246.64	43.20	30.89	5.71	3.24
10062.33	10346.91	83.86	37.31	14.28	3.24	2.85	2.25

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.886

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9712.58	1162.04	9806.74	1160.28	9814.39	1161.02	9822.58	1161.46	9834.81	1158.91
9855.07	1158.86	9863.78	1161.21	9875.81	1162.25	9890.35	1159.27	9912.33	1154.74
9928.16	1150.63	10000	1149.35	10063.67	1150.36	10085.12	1156.49	10099.89	1157.8
10108.16	1158.62	10125.67	1159.11	10141.9	1159.11	10173.53	1158.87	10189.96	1158.62
10219.35	1154.22	10250.16	1153.78	10284.72	1153.06	10300.97	1152.96	10332.33	1153.62

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9712.58	.03	9928.16	.03	10063.67	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9928.1610063.67 106.07 106.07 106.07 .3 .1
Right Levee Station= 10125.7 Elevation= 1159.11

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1154.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1154.40	Reach Len. (ft)	106.07	106.07	106.07
Crit W.S. (ft)	1152.16	Flow Area (sq ft)	23.44	568.12	24.72
E.G. Slope (ft/ft)	0.001532	Area (sq ft)	23.44	568.12	24.72
Q Total (cfs)	2590.00	Flow (cfs)	64.45	2454.44	71.11
Top Width (ft)	162.10	Top Width (ft)	13.44	135.51	13.15
Vel Total (ft/s)	4.20	Avg. Vel. (ft/s)	2.75	4.32	2.88
Max Chl Dpth (ft)	4.77	Hydr. Depth (ft)	1.74	4.19	1.88
Conv. Total (cfs)	66168.8	Conv. (cfs)	1646.5	62705.4	1816.8
Length Wtd. (ft)	106.07	Wetted Per. (ft)	13.88	135.53	13.68
Min Ch El (ft)	1149.35	Shear (lb/sq ft)	0.16	0.40	0.17
Alpha	1.02	Stream Power (lb/ft s)	0.44	1.73	0.50
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	23.86	482.20	117.67
C & E Loss (ft)	0.01	Cum SA (acres)	14.18	148.61	50.50

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9712.58	9928.16	64.45	23.44	13.88	2.49	1.74	2.75
9928.16 LB	9973.33	720.79	175.78	45.18	27.83	3.89	4.10
9973.33	10018.50	941.77	206.37	45.18	36.36	4.57	4.56
10018.50	10063.67 RB	791.88	185.98	45.18	30.57	4.12	4.26
10063.67	10332.33	71.11	24.72	13.68	2.75	1.88	2.88

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.845

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9763.91	1160.02	9811.42	1160.33	9819.12	1160.18	9830.95	1157.96	9855.78	1157.97
9866.12	1160.26	9874.78	1161.48	9892.58	1158.54	9914.57	1154	9928.04	1149.84
10063.7	1150.25	10085.67	1156.44	10098.62	1157.81	10107.21	1158.83	10124.31	1159.02
10140.79	1158.78	10171.83	1159.17	10190.04	1158.68	10225.96	1154.05	10252.67	1153.36
10282.87	1153.09	10302.93	1152.43	10333.83	1153.46				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9763.91	.03	9928.04	.035	10063.7	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9928.04	10063.7	389.82	389.82	389.82	.3	.1

Right Levee Station=10124.31 Elevation= 1159.02

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1153.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1154.20	Reach Len. (ft)	389.82	389.82	389.82
Crit W.S. (ft)	1152.24	Flow Area (sq ft)	26.34	519.42	23.30
E.G. Slope (ft/ft)	0.002017	Area (sq ft)	26.34	519.42	23.30
Q Total (cfs)	2590.00	Flow (cfs)	90.76	2424.12	75.12
Top Width (ft)	161.58	Top Width (ft)	13.06	135.66	12.86
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)	3.45	4.67	3.22
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)	2.02	3.83	1.81
Conv. Total (cfs)	57662.6	Conv. (cfs)	2020.6	53969.5	1672.4
Length Wtd. (ft)	389.82	Wetted Per. (ft)	13.67	135.66	13.36
Min Ch El (ft)	1149.84	Shear (lb/sq ft)	0.24	0.48	0.22
Alpha	1.02	Stream Power (lb/ft s)	0.84	2.25	0.71

Frctn Loss (ft)	0.86	Cum Volume (acre-ft)	23.80	480.87	117.61
C & E Loss (ft)	0.01	Cum SA (acres)	14.15	148.28	50.47

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.772

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9732.01	1158.5	9765.69	1157.95	9814.72	1156.98	9823.01	1157.67	9837.5	1155.47
9858.57	1155.63	9867.72	1157.75	9880.23	1158.1	9896.62	1156.05	9917.17	1151.78
9931.35	1149.25	10060.92	1149.34	10084.42	1155.56	10098.11	1156.59	10108.66	1157.56
10123.39	1158.11	10145.12	1158.25	10173.14	1158.46	10190.53	1157.75	10226.01	1152.44
10246.62	1152.11	10283.9	1151.13	10296.61	1151.15	10391.89	1150.33		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9732.01	.03	9931.35	.03	10060.92	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9931.35	10060.92	490.14	490.14	490.14	.3	.1

Right Levee Station= 10173 Elevation= 1158.46

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1152.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1153.33	Reach Len. (ft)	490.14	490.14	490.14
Crit W.S. (ft)	1151.54	Flow Area (sq ft)	38.03	474.92	24.76
E.G. Slope (ft/ft)	0.002426	Area (sq ft)	38.03	474.92	24.76
Q Total (cfs)	2590.00	Flow (cfs)	141.41	2360.87	87.72
Top Width (ft)	163.11	Top Width (ft)	19.86	129.57	13.68
Vel Total (ft/s)	4.82	Avg. Vel. (ft/s)	3.72	4.97	3.54
Max Chl Dpth (ft)	3.71	Hydr. Depth (ft)	1.91	3.67	1.81
Conv. Total (cfs)	52583.7	Conv. (cfs)	2871.0	47931.8	1780.9
Length Wtd. (ft)	490.14	Wetted Per. (ft)	20.21	129.57	14.15
Min Ch El (ft)	1149.25	Shear (lb/sq ft)	0.29	0.56	0.27
Alpha	1.02	Stream Power (lb/ft s)	1.06	2.76	0.94
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	23.51	476.42	117.40
C & E Loss (ft)	0.01	Cum SA (acres)	14.00	147.10	50.35

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9732.01	9931.35	141.41	38.03	20.21	5.46	1.91	3.72
9931.35 LB	9974.54	797.70	159.60	43.19	30.80	3.70	5.00
9974.54	10017.73	786.93	158.30	43.19	30.38	3.67	4.97
10017.73	10060.92 RB	776.25	157.01	43.19	29.97	3.64	4.94
10060.92	10391.89	87.72	24.76	14.15	3.39	1.81	3.54

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

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.676

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9786.41	1155.85	9825.73	1155.74	9837.63	1153.07	9860.23	1152.99	9870.36	1156.16
9880.3	1155.58	9894.56	1154.69	9914.73	1150.97	9928.15	1148.37	10066.9	1147.94
10087.82	1153.89	10098.43	1154.31	10113.07	1156.03	10126.94	1156.62	10144.32	1156.27
10187.71	1156.01	10201.74	1156.17	10234.61	1150.05	10299.08	1149.36	10333.91	1148.97
10431.1	1148.48								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9786.41	.03	9928.15	.035	10066.9	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9928.15	10066.9	490.05	490.05	490.05	.3	.1

Right Levee Station= 10126.9 Elevation= 1156.62

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1151.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1152.28	Reach Len. (ft)	490.05	490.05	490.05
Crit W.S. (ft)	1150.31	Flow Area (sq ft)	33.59	529.43	28.56
E.G. Slope (ft/ft)	0.001895	Area (sq ft)	33.59	529.43	28.56
Q Total (cfs)	2590.00	Flow (cfs)	105.20	2389.07	95.74
Top Width (ft)	171.77	Top Width (ft)	18.85	138.75	14.17
Vel Total (ft/s)	4.38	Avg. Vel. (ft/s)	3.13	4.51	3.35
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)	1.78	3.82	2.02
Conv. Total (cfs)	59501.4	Conv. (cfs)	2416.7	54885.3	2199.4
Length Wtd. (ft)	490.05	Wetted Per. (ft)	19.19	138.75	14.73
Min Ch El (ft)	1147.94	Shear (lb/sq ft)	0.21	0.45	0.23
Alpha	1.02	Stream Power (lb/ft s)	0.65	2.04	0.77
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	23.11	470.77	117.10
C & E Loss (ft)	0.02	Cum SA (acres)	13.79	145.59	50.19

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9786.41	9928.15	105.20	33.59	19.19	4.06	1.78	3.13
9928.15 LB	9974.40	746.72	169.85	46.25	28.83	3.67	4.40
9974.40	10020.65	795.94	176.48	46.25	30.73	3.82	4.51
10020.65	10066.90 RB	846.41	183.11	46.25	32.68	3.96	4.62
10066.90	10431.10	95.74	28.56	14.73	3.70	2.02	3.35

Warning - The energy loss was 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: Saddleback
REACH: Spillway RS: 4.586

INPUT
Description:
Station Elevation Data num= 17

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9810.85 1156.09 9824.22 1154.22 9844.27 1153.87 9856.77 1156.55 9865.85 1156.41
 9883.86 1153.87 9905.99 1149.39 9920.35 1147.31 10064.7  1147.110088.62 1152.72
10098.46 1153.7810111.52  1155.1 10124.5  1155.710145.27 1155.0810186.25 1154.84
10203.62 1154.5210237.86 1149.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9810.85     .03 9920.35    .035 10064.7     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9920.35 10064.7            496.55  496.55  496.55            .3        .1
Right Levee     Station= 10124.5      Elevation=  1155.7

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1150.82   Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.37   Wt. n-Val.                0.030      0.035      0.030
  E.G. Elev (ft)          1151.19   Reach Len. (ft)          496.55     496.55     496.55
  Crit W.S. (ft)          1149.44   Flow Area (sq ft)         40.51     521.75      29.44
  E.G. Slope (ft/ft)     0.002485   Area (sq ft)              40.51     521.75      29.44
  Q Total (cfs)           2860.00   Flow (cfs)               151.55    2600.47     107.98
  Top Width (ft)           181.60   Top Width (ft)            21.42     144.35      15.83
  Vel Total (ft/s)           4.83   Avg. Vel. (ft/s)           3.74       4.98       3.67
  Max Chl Dpth (ft)          3.72   Hydr. Depth (ft)           1.89       3.61       1.86
  Conv. Total (cfs)       57375.7   Conv. (cfs)              3040.3    52169.2     2166.2
  Length Wtd. (ft)         496.55   Wetted Per. (ft)          21.71     144.35      16.26
  Min Ch El (ft)          1147.10   Shear (lb/sq ft)           0.29       0.56       0.28
  Alpha                      1.02   Stream Power (lb/ft s)     1.08       2.79       1.03
  Frctn Loss (ft)            0.94   Cum Volume (acre-ft)      22.69     464.86     116.77
  C & E Loss (ft)            0.01   Cum SA (acres)            13.56     143.99      50.02


FLOW DISTRIBUTION OUTPUT    Profile #PF#1

  Left Sta      Right Sta        Flow       Area       W.P.    % Conv.    Hydr D.   Velocity
  (ft)          (ft)            (cfs)    (sq ft)      (ft)                 (ft)     (ft/s)
  9810.85       9920.35        151.55      40.51     21.71       5.30       1.89       3.74
  9920.35 LB    9968.47        838.91     170.55     48.12      29.33       3.54       4.92
  9968.47       10016.58       866.69     173.91     48.12      30.30       3.61       4.98
  10016.58      10064.70 RB    894.87     177.29     48.12      31.29       3.68       5.05
  10064.70      10237.86       107.98      29.44     16.26       3.78       1.86       3.67
```

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.492

```
INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9588.61  1158.9 9640.63 1158.12  9742.1 1156.29 9807.95  1155.2 9829.19 1153.16
 9849.72 1152.94 9859.32 1155.58 9874.74 1155.91 9894.07 1152.38 9913.78 1147.87
 9929.44 1145.5810013.89 1145.9610079.35 1146.0510098.31 1151.8910111.57 1153.15
10121.71 1154.4310141.74 1154.68 10161.1 1154.2510184.48 1154.4310215.56 1154.68
10237.15 1153.9610272.46 1148.8510294.48  1147.810309.88 1147.9210337.55  1148.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9588.61     .03 9929.44    .03510079.35     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9929.4410079.35            486.3   486.3   486.3            .3        .1
Right Levee     Station= 10141.7      Elevation= 1154.68

CROSS SECTION OUTPUT    Profile #PF#1
```

W.S. Elev (ft)	1149.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1150.24	Reach Len. (ft)	486.30	486.30	486.30
Crit W.S. (ft)	1148.04	Flow Area (sq ft)	60.67	615.53	25.05
E.G. Slope (ft/ft)	0.001482	Area (sq ft)	60.67	615.53	25.05
Q Total (cfs)	2860.00	Flow (cfs)	207.38	2579.91	72.70
Top Width (ft)	187.54	Top Width (ft)	24.88	149.91	12.75
Vel Total (ft/s)	4.08	Avg. Vel. (ft/s)	3.42	4.19	2.90
Max Chl Dpth (ft)	4.40	Hydr. Depth (ft)	2.44	4.11	1.96
Conv. Total (cfs)	74282.6	Conv. (cfs)	5386.4	67007.9	1888.4
Length Wtd. (ft)	486.30	Wetted Per. (ft)	25.28	149.91	13.35
Min Ch El (ft)	1145.58	Shear (lb/sq ft)	0.22	0.38	0.17
Alpha	1.02	Stream Power (lb/ft s)	0.76	1.59	0.50
Frctn Loss (ft)	0.72	Cum Volume (acre-ft)	22.11	458.38	116.46
C & E Loss (ft)	0.00	Cum SA (acres)	13.29	142.32	49.86

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9588.61	9929.44	207.38	60.67	25.28	7.25	2.44	3.42
9929.44 LB	9979.41	923.24	214.18	49.97	32.28	4.29	4.31
9979.41	10029.38	846.54	203.32	49.97	29.60	4.07	4.16
10029.38	10079.35 RB	810.13	198.03	49.97	28.33	3.96	4.09
10079.35	10337.55	72.71	25.05	13.35	2.54	1.96	2.90

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.4

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9675.03	1154.98	9749.19	1152.96	9801.12	1152.1	9801.86	1152.09	9815.87	1149.93
9839.55	1150.02	9921.54	1145.03	10005.34	1144.99	10073.57	1145.27	10090.7	1149.94
10102.31	1151.09	10118.99	1152.86	10133.69	1153.27	10166.76	1152.91	10187.47	1153.08
10209.97	1152.86	10248.81	1152.65	10268.17	1152.57	10299.84	1145.82	10322.48	1145.62
10350.18	1144.86	10404.18	1144.75						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9675.03	.03	9921.54	.03	10073.57	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9921.54	10073.57	381.76	381.76	381.76	.3	.1

Right Levee Station= 10133.7 Elevation= 1153.27

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1149.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1149.52	Reach Len. (ft)	381.76	381.76	381.76
Crit W.S. (ft)	1147.36	Flow Area (sq ft)	147.63	639.31	29.33
E.G. Slope (ft/ft)	0.001461	Area (sq ft)	147.63	639.31	29.33
Q Total (cfs)	3250.00	Flow (cfs)	460.67	2703.27	86.07
Top Width (ft)	236.35	Top Width (ft)	69.65	152.03	14.67
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)	3.12	4.23	2.93
Max Chl Dpth (ft)	4.52	Hydr. Depth (ft)	2.12	4.21	2.00
Conv. Total (cfs)	85014.1	Conv. (cfs)	12050.2	70712.6	2251.3
Length Wtd. (ft)	381.76	Wetted Per. (ft)	69.78	152.03	15.20
Min Ch El (ft)	1144.99	Shear (lb/sq ft)	0.19	0.38	0.18
Alpha	1.04	Stream Power (lb/ft s)	0.60	1.62	0.52
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	20.95	451.37	116.16

C & E Loss (ft)	0.02	Cum SA (acres)	12.77	140.63	49.71

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9675.03	9921.54	460.67	147.63	69.78	14.17	2.12	3.12
9921.54 LB	9972.22	917.40	215.43	50.68	28.23	4.25	4.26
9972.22	10022.89	921.11	215.95	50.68	28.34	4.26	4.27
10022.89	10073.57 RB	864.76	207.93	50.68	26.61	4.10	4.16
10073.57	10404.18	86.07	29.33	15.20	2.65	2.00	2.93

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.328

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9728.12	1153.71	9778.72	1152.54	9803.43	1152.02	9815.51	1150.65	9841	1150.23
9852.3	1152.23	9865.57	1152.88	9880.15	1151.01	9900.9	1147.42	9917.75	1144.09
10014.87	1144.45	10029.92	1145.69	10072.2	1143.99	10091.38	1149.18	10102.05	1149.55
10115.85	1151.27	10131.76	1151.19	10150.56	1147.09	10154.66	1146.41	10165.16	1143.28
10188.18	1143.32	10192.83	1143.32	10232.5	1143.32	10300.34	1143.15	10323.01	1143.1
10332.74	1143.06	10396.4	1142.66	10400.56	1142.63				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9728.12	.03	9917.75	.035	10072.2	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9917.75	10072.2	477.03	477.03	477.03	.3	.1

Right Levee Station= 10115.9 Elevation= 1151.27

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1148.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1148.87	Reach Len. (ft)	477.03	477.03	477.03
Crit W.S. (ft)	1146.79	Flow Area (sq ft)	50.49	622.96	38.21
E.G. Slope (ft/ft)	0.001912	Area (sq ft)	50.49	622.96	38.21
Q Total (cfs)	3250.00	Flow (cfs)	180.90	2929.34	139.76
Top Width (ft)	194.56	Top Width (ft)	23.31	154.45	16.80
Vel Total (ft/s)	4.57	Avg. Vel. (ft/s)	3.58	4.70	3.66
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)	2.17	4.03	2.27
Conv. Total (cfs)	74322.8	Conv. (cfs)	4137.0	66989.7	3196.1
Length Wtd. (ft)	477.03	Wetted Per. (ft)	23.73	154.54	17.41
Min Ch El (ft)	1143.99	Shear (lb/sq ft)	0.25	0.48	0.26
Alpha	1.02	Stream Power (lb/ft s)	0.91	2.26	0.96
Frctn Loss (ft)	1.06	Cum Volume (acre-ft)	20.08	445.84	115.86
C & E Loss (ft)	0.02	Cum SA (acres)	12.36	139.29	49.57

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9728.12	9917.75	180.90	50.49	23.73	5.57	2.17	3.58
9917.75 LB	9969.23	1105.05	224.06	51.48	34.00	4.35	4.93
9969.23	10020.72	1014.51	212.89	51.50	31.22	4.14	4.77
10020.72	10072.20 RB	809.77	186.02	51.55	24.92	3.61	4.35

10072.20	10400.56	139.76	38.21	17.41	4.30	2.27	3.66

Warning - The energy loss was 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: Saddleback
REACH: Spillway RS: 4.237

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9686.22	1153.51	9754.26	1152.24	9818.29	1150.8	9829.57	1150.12	9837.75	1151.73
9843.76	1151.37	9852.88	1150.21	9870.7	1148.91	9885.25	1148.48	9902.97	1145.38
9921.88	1143.82	10003.8	1143.73	10086.54	1143.53	10103.97	1148.17	10114.8	1148.71
10126.51	1150.71	10152.65	1150.78	10195.01	1150.31	10209.91	1150.71	10256.06	1149.78
10306.37	1150.02	10338.43	1143.76	10449.7	1141.59				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9686.22	.03	9921.88	.03	10086.54	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9921.88	10086.54	493.21	493.21	493.21	.3	.1

Right Levee Station= 10146.2 Elevation= 1150.76

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1147.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1147.79	Reach Len. (ft)	493.21	493.21	493.21
Crit W.S. (ft)	1146.02	Flow Area (sq ft)	64.58	608.74	28.12
E.G. Slope (ft/ft)	0.002561	Area (sq ft)	64.58	608.74	28.12
Q Total (cfs)	3500.00	Flow (cfs)	265.84	3127.20	106.96
Top Width (ft)	209.64	Top Width (ft)	30.45	164.66	14.53
Vel Total (ft/s)	4.99	Avg. Vel. (ft/s)	4.12	5.14	3.80
Max Chl Dpth (ft)	5.81	Hydr. Depth (ft)	2.12	3.70	1.93
Conv. Total (cfs)	69155.8	Conv. (cfs)	5252.7	61789.7	2113.3
Length Wtd. (ft)	493.21	Wetted Per. (ft)	30.69	164.66	15.04
Min Ch El (ft)	1143.53	Shear (lb/sq ft)	0.34	0.59	0.30
Alpha	1.02	Stream Power (lb/ft s)	1.39	3.04	1.14
Frctn Loss (ft)	1.24	Cum Volume (acre-ft)	19.45	439.10	115.50
C & E Loss (ft)	0.00	Cum SA (acres)	12.07	137.54	49.40

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9686.22	9921.88	265.84	64.58	30.69	7.60	2.12	4.12
9921.88 LB	9976.77	1001.27	198.10	54.89	28.61	3.61	5.05
9976.77	10031.65	1033.64	201.92	54.89	29.53	3.68	5.12
10031.65	10086.54 RB	1092.29	208.72	54.89	31.21	3.80	5.23
10086.54	10449.70	106.96	28.12	15.04	3.06	1.93	3.80

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: Saddleback
REACH: Spillway RS: 4.144

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9716.91	1150.46	9803.15	1149.09	9844.24	1146.76	9855.11	1146.36	9870.9	1146.37
9895.39	1143.11	9912.92	1142.76	10004.22	1142.45	10081.11	1142.61	10100.48	1146.88
10113.39	1147.78	10129.99	1149.18	10155.16	1149.59	10192.27	1148.99	10211.22	1148.6
10267.21	1148.25	10313.64	1147.86	10346.96	1141.66	10403.08	1139.51	10472.59	1139.44

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9716.91	.03	9895.39	.03	10081.11	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9895.39	10081.11	412.84	412.84	412.84	.3	.1

Right Levee Station= 10155.2 Elevation= 1149.59

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1146.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1146.55	Reach Len. (ft)	412.84	412.84	412.84
Crit W.S. (ft)	1144.80	Flow Area (sq ft)	35.38	663.74	28.89
E.G. Slope (ft/ft)	0.002482	Area (sq ft)	35.38	663.74	28.89
Q Total (cfs)	3500.00	Flow (cfs)	115.45	3281.32	103.23
Top Width (ft)	224.96	Top Width (ft)	23.05	185.72	16.19
Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)	3.26	4.94	3.57
Max Chl Dpth (ft)	6.74	Hydr. Depth (ft)	1.53	3.57	1.78
Conv. Total (cfs)	70258.7	Conv. (cfs)	2317.4	65869.0	2072.3
Length Wtd. (ft)	412.84	Wetted Per. (ft)	23.26	185.72	16.58
Min Ch El (ft)	1142.45	Shear (lb/sq ft)	0.24	0.55	0.27
Alpha	1.02	Stream Power (lb/ft s)	0.77	2.74	0.96
Frctn Loss (ft)	0.73	Cum Volume (acre-ft)	18.89	431.90	115.18
C & E Loss (ft)	0.01	Cum SA (acres)	11.76	135.56	49.22

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9716.91	9895.39	115.44	35.38	23.26	3.30	1.53	3.26
9895.39 LB	9957.30	1017.57	211.93	61.91	29.07	3.42	4.80
9957.30	10019.20	1139.99	226.88	61.91	32.57	3.66	5.02
10019.20	10081.11 RB	1123.76	224.94	61.91	32.11	3.63	5.00
10081.11	10472.59	103.23	28.89	16.58	2.95	1.78	3.57

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 4.066

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9599.3	1153.2	9703.76	1150.86	9762.27	1149.55	9792.61	1148.37	9825.08	1149.02
9836.67	1148.29	9845.61	1148.33	9852.91	1149.93	9864.63	1149.56	9875.11	1148.29
9894.52	1143.23	9911.55	1141.66	9993.98	1140.74	10065	1141.15	10073.55	1142.56
10090.92	1141.51	10108.59	1145.82	10121.9	1146.71	10134.34	1147.94	10151.65	1148.52
10164.02	1143.71	10173.18	1142.96	10264.48	1139.68	10352.14	1139	10447.01	1137.39

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9599.3	.03	9911.55	.03	10090.92	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9911.55	10090.92	493.4	493.4	493.4	.3	.1

Right Levee Station= 10151.7 Elevation= 1148.52

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1145.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1145.80	Reach Len. (ft)	493.40	493.40	493.40
Crit W.S. (ft)	1143.45	Flow Area (sq ft)	63.23	778.53	33.56
E.G. Slope (ft/ft)	0.001326	Area (sq ft)	63.23	778.53	33.56
Q Total (cfs)	3500.00	Flow (cfs)	204.62	3200.34	95.04
Top Width (ft)	221.87	Top Width (ft)	25.93	179.37	16.57
Vel Total (ft/s)	4.00	Avg. Vel. (ft/s)	3.24	4.11	2.83
Max Chl Dpth (ft)	8.16	Hydr. Depth (ft)	2.44	4.34	2.03
Conv. Total (cfs)	96127.1	Conv. (cfs)	5619.9	87897.1	2610.2
Length Wtd. (ft)	493.40	Wetted Per. (ft)	26.30	179.52	17.06
Min Ch El (ft)	1140.74	Shear (lb/sq ft)	0.20	0.36	0.16
Alpha	1.02	Stream Power (lb/ft s)	0.64	1.48	0.46
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	18.42	425.06	114.88
C & E Loss (ft)	0.02	Cum SA (acres)	11.53	133.83	49.07

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9599.30	9911.55	204.62	63.23	26.30	5.85	2.44	3.24
9911.55 LB	9971.34	1018.32	252.59	59.79	29.09	4.22	4.03
9971.34	10031.13	1214.89	280.81	59.79	34.71	4.70	4.33
10031.13	10090.92 RB	967.14	245.13	59.94	27.63	4.10	3.95
10090.92	10447.01	95.04	33.56	17.06	2.72	2.03	2.83

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.972

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9593.09	1151.19	9802.32	1148.11	9820.79	1145.91	9840.29	1145.87	9850.47	1148.57
9865.88	1148.63	9874.29	1148.11	9896.52	1142.96	9910.91	1140.65	10008.11	1140.8
10100.69	1140.67	10116.59	1145.93	10130.48	1146.74	10143.12	1148.48	10161.72	1148.79
10189.02	1148.49	10234.01	1148.13	10268.95	1148.09	10310.28	1147.51	10328.47	1147.96
10340.91	1147.93	10376.95	1140.75	10435.49	1140.91	10510.36	1139.15		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9593.09	.03	9910.91	.03	10100.69	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9910.91	10100.69	486.76	486.76	486.76	.3	.1

Left Levee Station= 9873.09 Elevation= 1148.6
Right Levee Station= 10161.7 Elevation= 1148.79

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1144.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1144.99	Reach Len. (ft)	486.76	486.76	486.76
Crit W.S. (ft)	1142.97	Flow Area (sq ft)	47.28	745.44	24.03
E.G. Slope (ft/ft)	0.001959	Area (sq ft)	47.28	745.44	24.03
Q Total (cfs)	3740.00	Flow (cfs)	172.09	3487.28	80.63
Top Width (ft)	223.55	Top Width (ft)	21.72	189.78	12.05
Vel Total (ft/s)	4.58	Avg. Vel. (ft/s)	3.64	4.68	3.35
Max Chl Dpth (ft)	5.51	Hydr. Depth (ft)	2.18	3.93	1.99
Conv. Total (cfs)	84495.4	Conv. (cfs)	3887.8	78785.9	1821.6

Length Wtd. (ft)	486.76	Wetted Per. (ft)	22.10	189.78	12.70
Min Ch El (ft)	1140.65	Shear (lb/sq ft)	0.26	0.48	0.23
Alpha	1.01	Stream Power (lb/ft s)	0.95	2.25	0.78
Frctn Loss (ft)	0.98	Cum Volume (acre-ft)	17.79	416.43	114.55
C & E Loss (ft)	0.00	Cum SA (acres)	11.26	131.74	48.91

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9593.09	9910.91	172.09	47.28	22.10	4.60	2.18	3.64
9910.91 LB	9974.17	1177.74	250.44	63.26	31.49	3.96	4.70
9974.17	10037.43	1139.53	245.54	63.26	30.47	3.88	4.64
10037.43	10100.69 RB	1170.01	249.46	63.26	31.28	3.94	4.69
10100.69	10510.36	80.63	24.03	12.70	2.16	1.99	3.35

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.88

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9691.4	1147.98	9808.5	1146.36	9825.58	1142.74	9846.07	1143.35	9858.99	1146.63
9871.42	1146.93	9882.52	1144.88	9899.45	1141.35	9910.37	1139.91	10005.44	1139.77
10103.56	1139.94	10120.21	1144.59	10132	1145.81	10146.72	1146.83	10168.07	1147.12
10196.78	1146.42	10243.96	1146.67	10285.06	1145.44	10310.92	1145.54	10338.03	1145.94
10356.25	1145.73	10378.92	1138.79	10499.73	1136.41	10562.25	1134.05		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9691.4	.03	9910.37	.035	10103.56	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9910.37	10103.56	479.95	479.95	479.95	.3	.1

Left Levee Station= 9871.4 Elevation= 1147
Right Levee Station= 10138.1 Elevation= 1147.12

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1143.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1144.01	Reach Len. (ft)	479.95	479.95	479.95
Crit W.S. (ft)	1142.06	Flow Area (sq ft)	46.19	739.19	24.93
E.G. Slope (ft/ft)	0.002065	Area (sq ft)	46.19	739.19	24.93
Q Total (cfs)	3740.00	Flow (cfs)	168.48	3488.59	82.93
Top Width (ft)	228.60	Top Width (ft)	22.05	193.19	13.36
Vel Total (ft/s)	4.62	Avg. Vel. (ft/s)	3.65	4.72	3.33
Max Chl Dpth (ft)	9.62	Hydr. Depth (ft)	2.09	3.83	1.87
Conv. Total (cfs)	82303.1	Conv. (cfs)	3707.6	76770.6	1825.0
Length Wtd. (ft)	479.95	Wetted Per. (ft)	22.39	193.19	13.87
Min Ch El (ft)	1139.77	Shear (lb/sq ft)	0.27	0.49	0.23
Alpha	1.01	Stream Power (lb/ft s)	0.97	2.33	0.77
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	17.27	408.13	114.28
C & E Loss (ft)	0.02	Cum SA (acres)	11.02	129.60	48.77

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)

9691.40	9910.37	168.48	46.19	22.39	4.50	2.09	3.65
9910.37 LB	9974.77	1157.31	245.70	64.40	30.94	3.82	4.71
9974.77	10039.16	1188.17	249.61	64.40	31.77	3.88	4.76
10039.16	10103.56 RB	1143.12	243.88	64.40	30.56	3.79	4.69
10103.56	10562.25	82.93	24.93	13.87	2.22	1.87	3.33

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.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.789

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9648.38	1146.77	9686.32	1146.33	9808.45	1144.22	9825.99	1141.31	9841.17	1141.49
9853.62	1145.58	9866.74	1145.78	9878.61	1143.9	9892.11	1141.12	9904.98	1139.14
10008.21	1138.32	10104.96	1139.43	10120.5	1143.38	10132.55	1143.92	10147.05	1145.46
10166.62	1145.86	10194.63	1145.04	10244.88	1145.18	10274.56	1145.12	10309.35	1144.9
10342.37	1144.79	10357.73	1144.61	10391.87	1136.31	10515.05	1134.9		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9648.38	.03	9904.98	.035	10104.96	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9904.98	10104.96	415.45	415.45	415.45	.3	.1

Left Levee Station= 9868.38 Elevation= 1145.8
Right Levee Station= 10166.6 Elevation= 1145.86

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1142.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1142.88	Reach Len. (ft)	415.45	415.45	415.45
Crit W.S. (ft)	1141.08	Flow Area (sq ft)	34.61	734.60	18.22
E.G. Slope (ft/ft)	0.002597	Area (sq ft)	34.61	734.60	18.22
Q Total (cfs)	3970.00	Flow (cfs)	127.04	3783.37	59.59
Top Width (ft)	231.40	Top Width (ft)	19.44	199.98	11.97
Vel Total (ft/s)	5.04	Avg. Vel. (ft/s)	3.67	5.15	3.27
Max Chl Dpth (ft)	7.57	Hydr. Depth (ft)	1.78	3.67	1.52
Conv. Total (cfs)	77908.5	Conv. (cfs)	2493.1	74246.0	1169.3
Length Wtd. (ft)	415.45	Wetted Per. (ft)	19.73	199.99	12.35
Min Ch El (ft)	1138.32	Shear (lb/sq ft)	0.28	0.60	0.24
Alpha	1.02	Stream Power (lb/ft s)	1.04	3.07	0.78
Frctn Loss (ft)	1.56	Cum Volume (acre-ft)	16.82	400.02	114.04
C & E Loss (ft)	0.07	Cum SA (acres)	10.79	127.43	48.63

Warning - The conveyance ratio (upstream conveyance 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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9648.38	9904.98	127.04	34.61	19.73	3.20	1.78	3.67
9904.98 LB	9971.64	1215.62	239.86	66.66	30.62	3.60	5.07
9971.64	10038.30	1447.66	266.37	66.66	36.46	4.00	5.43
10038.30	10104.96 RB	1120.10	228.37	66.66	28.21	3.43	4.90
10104.96	10515.05	59.59	18.22	12.35	1.50	1.52	3.27

Warning - The conveyance ratio (upstream conveyance 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: Saddleback
REACH: Spillway RS: 3.71

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9756.64	1142.83	9810.87	1140.51	9829.39	1140.57	9839.93	1143.19	9853.78	1144.2
9865.19	1141.96	9878.83	1140.56	9895.49	1138.21	10006.06	1137.26	10103.75	1138.34
10116.1	1141.45	10128.19	1141.88	10151.97	1143.59	10174.46	1143.58	10188.87	1143.75
10239.97	1143.34	10282.48	1143.09	10312.01	1142.84	10340.89	1142.32	10357.89	1142.33
10393.74	1135.21	10483.93	1134.13	10562.84	1132.43				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9756.64	.03	9895.49	.035	10103.75	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9895.49	10103.75	60.12	60.12	60.12	.3	.1

Left Levee Station= 9851.04 Elevation= 1144.3
Right Levee Station= 10188.9 Elevation= 1143.75

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1140.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1141.24	Reach Len. (ft)	60.12	60.12	60.12
Crit W.S. (ft)	1139.99	Flow Area (sq ft)	20.17	589.30	10.10
E.G. Slope (ft/ft)	0.005898	Area (sq ft)	20.17	589.30	10.10
Q Total (cfs)	3970.00	Flow (cfs)	85.40	3843.83	40.77
Top Width (ft)	234.22	Top Width (ft)	17.00	208.26	8.96
Vel Total (ft/s)	6.41	Avg. Vel. (ft/s)	4.23	6.52	4.04
Max Chl Dpth (ft)	8.17	Hydr. Depth (ft)	1.19	2.83	1.13
Conv. Total (cfs)	51692.0	Conv. (cfs)	1112.0	50049.3	530.8
Length Wtd. (ft)	60.12	Wetted Per. (ft)	17.17	208.27	9.23
Min Ch El (ft)	1137.26	Shear (lb/sq ft)	0.43	1.04	0.40
Alpha	1.02	Stream Power (lb/ft s)	1.83	6.80	1.63
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	16.56	393.70	113.91
C & E Loss (ft)	0.12	Cum SA (acres)	10.61	125.48	48.53

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9756.64	9895.49	85.40	20.17	17.17	2.15	1.19	4.23
9895.49 LB	9964.91	1168.20	186.28	69.42	29.43	2.68	6.27
9964.91	10034.33	1539.55	219.83	69.42	38.78	3.17	7.00
10034.33	10103.75 RB	1136.08	183.19	69.42	28.62	2.64	6.20
10103.75	10562.84	40.77	10.10	9.23	1.03	1.13	4.04

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.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.699

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9783.79	1143.35	9798.68	1139.48	9818.72	1139.74	9829.74	1143.18	9843.46	1143.52
9857.05	1142.44	9872.85	1140.99	9888.48	1137.91	9907.87	1137.08	10051.49	1137.6
10067.07	1137.49	10101.91	1137.27	10117.41	1140.61	10132.18	1141.13	10153.85	1143.6
10175.04	1143.39	10192.68	1143.18	10235.35	1142.89	10275.25	1142.34	10306.62	1142.38
10333.54	1142.11	10361.42	1141.77	10396.61	1134.88	10527.18	1132.64		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9783.79	.03	9907.87	.03	10101.91	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9907.87	10101.91	32.02	32.02	32.02	.3	.1

Left Levee Station= 9843.79 Elevation= 1143.45
Right Levee Station= 10153.9 Elevation= 1143.6

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1139.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.06	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1140.60	Reach Len. (ft)	32.02	32.02	32.02
Crit W.S. (ft)	1139.54	Flow Area (sq ft)	46.50	423.02	12.00
E.G. Slope (ft/ft)	0.013576	Area (sq ft)	46.50	423.02	12.00
Q Total (cfs)	3970.00	Flow (cfs)	377.56	3518.17	74.27
Top Width (ft)	232.27	Top Width (ft)	27.68	194.04	10.55
Vel Total (ft/s)	8.24	Avg. Vel. (ft/s)	8.12	8.32	6.19
Max Chl Dpth (ft)	6.90	Hydr. Depth (ft)	1.68	2.18	1.14
Conv. Total (cfs)	34073.1	Conv. (cfs)	3240.4	30195.2	637.5
Length Wtd. (ft)	32.02	Wetted Per. (ft)	27.86	194.04	10.79
Min Ch El (ft)	1137.08	Shear (lb/sq ft)	1.41	1.85	0.94
Alpha	1.00	Stream Power (lb/ft s)	11.49	15.37	5.83
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	16.52	393.00	113.89
C & E Loss (ft)	0.09	Cum SA (acres)	10.58	125.21	48.51

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta	Right Sta	Flow	Area	W.P.	% Conv.	Hydr D.	Velocity

(ft)	(ft)	(cfs)	(sq ft)	(ft)		(ft)	(ft/s)
9783.79	9907.87	377.56	46.50	27.86	9.51	1.68	8.12
9907.87 LB	9972.55	1323.65	151.78	64.68	33.34	2.35	8.72
9972.55	10037.23	1110.91	136.63	64.68	27.98	2.11	8.13
10037.23	10101.91 RB	1083.61	134.61	64.68	27.29	2.08	8.05
10101.91	10527.18	74.28	12.00	10.79	1.87	1.14	6.19

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 velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates
that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid,
water surface was used.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.693

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9778.01	1143.35	9793.74	1139.24	9812.73	1139.46	9825.9	1142.79	9838.58	1142.76
9851.34	1141.62	9863.89	1139.37	9888.06	1130.22	10102.56	1129.57	10124.6	1139.65
10139.05	1140.21	10154.06	1143.13	10175.35	1143.07	10198.7	1142.65	10235.19	1142.71
10276.66	1142.34	10300.44	1142.18	10336.89	1142.09	10364.15	1141.66	10398.95	1134.8
10578.2	1132	10680.75	1130.04						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9778.01	.03	9888.06	.035	10102.56	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9888.06	10102.56	24.99	24.99	24.99	.3	.1

Right Levee Station= 10154.1 Elevation= 1143.13

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1135.60	Element			
Vel Head (ft)	0.15	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1135.75	Reach Len. (ft)	24.99	24.99	24.99
Crit W.S. (ft)	1132.07	Flow Area (sq ft)	38.22	1223.54	39.74
E.G. Slope (ft/ft)	0.000525	Area (sq ft)	38.22	1223.54	39.74
Q Total (cfs)	3970.00	Flow (cfs)	80.25	3801.36	88.38
Top Width (ft)	241.89	Top Width (ft)	14.21	214.50	13.18
Vel Total (ft/s)	3.05	Avg. Vel. (ft/s)	2.10	3.11	2.22
Max Chl Dpth (ft)	6.03	Hydr. Depth (ft)	2.69	5.70	3.01
Conv. Total (cfs)	173190.4	Conv. (cfs)	3501.0	165833.7	3855.7
Length Wtd. (ft)	24.99	Wetted Per. (ft)	15.19	214.50	14.50
Min Ch El (ft)	1129.57	Shear (lb/sq ft)	0.08	0.19	0.09
Alpha	1.01	Stream Power (lb/ft s)	0.17	0.58	0.20
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	16.49	392.40	113.87
C & E Loss (ft)	0.06	Cum SA (acres)	10.57	125.06	48.50

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9778.01	9888.06	80.25	38.22	15.19	2.02	2.69	2.10
9888.06 LB	9959.56	1187.29	392.36	71.50	29.91	5.49	3.03
9959.56	10031.06	1266.44	407.85	71.50	31.90	5.70	3.11
10031.06	10102.56 RB	1347.63	423.34	71.50	33.95	5.92	3.18
10102.56	10680.75	88.38	39.74	14.50	2.23	3.01	2.22

Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.688

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9772.86	1143.31	9789.96	1139.24	9808.06	1139.24	9822.68	1142.53	9833.42	1142.6
9844.95	1140.83	9863.33	1137.69	9887.94	1131.89	10101.88	1131.36	10128.54	1139.7
10142.31	1139.79	10153.93	1142.68	10179.01	1143.03	10202.67	1142.43	10238.2	1142.6
10279.01	1142.34	10299.92	1142.3	10339	1141.96	10367.21	1141.51	10400.72	1134.79
10567.59	1131.78								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9772.86	.03	9887.94	.035	10101.88	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9887.94	10101.88	61.33	61.33	61.33	.3	.1

Right Levee Station= 10179 Elevation= 1143.03

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1135.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1135.66	Reach Len. (ft)	61.33	61.33	61.33
Crit W.S. (ft)	1133.80	Flow Area (sq ft)	24.75	787.47	24.88
E.G. Slope (ft/ft)	0.002271	Area (sq ft)	24.75	787.47	24.88
Q Total (cfs)	3970.00	Flow (cfs)	82.00	3798.42	89.57
Top Width (ft)	241.05	Top Width (ft)	14.49	213.94	12.61
Vel Total (ft/s)	4.74	Avg. Vel. (ft/s)	3.31	4.82	3.60
Max Chl Dpth (ft)	3.95	Hydr. Depth (ft)	1.71	3.68	1.97
Conv. Total (cfs)	83298.7	Conv. (cfs)	1720.6	79698.7	1879.4
Length Wtd. (ft)	61.33	Wetted Per. (ft)	14.89	213.94	13.22
Min Ch El (ft)	1131.36	Shear (lb/sq ft)	0.24	0.52	0.27
Alpha	1.01	Stream Power (lb/ft s)	0.78	2.52	0.96
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	16.47	391.82	113.86
C & E Loss (ft)	0.01	Cum SA (acres)	10.56	124.93	48.50

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9772.86	9887.94	82.00	24.75	14.89	2.07	1.71	3.31
9887.94 LB	9959.25	1165.48	249.89	71.31	29.36	3.50	4.66
9959.25	10030.57	1265.05	262.49	71.31	31.87	3.68	4.82
10030.57	10101.88 RB	1367.89	275.09	71.31	34.46	3.86	4.97
10101.88	10567.59	89.57	24.88	13.22	2.26	1.97	3.60

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.677

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9782.87	1139.01	9803.24	1138.81	9815.97	1142.24	9827.65	1142.62	9845.54	1139.94
9868.95	1134.93	9887.16	1131.24	9924.02	1131.06	9944.22	1130.43	9973.58	1130.27
9991.17	1130.27	10026.7	1130.59	10101.88	1130.87	10130.87	1139.13	10146.6	1139.71
10156.34	1142.42	10181.89	1142.67	10209.81	1142.11	10246.46	1142.26	10286.11	1141.97
10299.1	1141.95	10343.79	1141.43	10372.22	1141.21	10406.4	1134.35	10550.18	1132.29

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9782.87	.03	9887.16	.03	10101.88	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9887.16	10101.88	460.71	460.71	460.71	.3	.1

Right Levee Station= 10181.9 Elevation= 1142.67

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1135.34	Element			
Vel Head (ft)	0.21	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1135.56	Reach Len. (ft)	460.71	460.71	460.71
Crit W.S. (ft)	1132.84	Flow Area (sq ft)	41.52	1004.71	35.12
E.G. Slope (ft/ft)	0.001001	Area (sq ft)	41.52	1004.71	35.12
Q Total (cfs)	3970.00	Flow (cfs)	103.96	3774.36	91.68
Top Width (ft)	250.56	Top Width (ft)	20.14	214.72	15.70
Vel Total (ft/s)	3.67	Avg. Vel. (ft/s)	2.50	3.76	2.61
Max Chl Dpth (ft)	5.07	Hydr. Depth (ft)	2.06	4.68	2.24
Conv. Total (cfs)	125508.9	Conv. (cfs)	3286.6	119323.8	2898.4
Length Wtd. (ft)	460.71	Wetted Per. (ft)	20.56	214.73	16.33
Min Ch El (ft)	1130.27	Shear (lb/sq ft)	0.13	0.29	0.13
Alpha	1.02	Stream Power (lb/ft s)	0.32	1.10	0.35
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	16.42	390.56	113.81
C & E Loss (ft)	0.03	Cum SA (acres)	10.53	124.63	48.48

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9782.87	9887.16	103.96	41.52	20.56	2.62	2.06	2.50
9887.16 LB	9958.73	1160.77	319.34	71.58	29.24	4.46	3.63
9958.73	10030.31	1389.15	355.65	71.57	34.99	4.97	3.91
10030.31	10101.88 RB	1224.44	329.72	71.57	30.84	4.61	3.71
10101.88	10550.18	91.68	35.12	16.33	2.31	2.24	2.61

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 3.589**

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9710.57	1142.56	9775.6	1141.05	9794.33	1137.86	9816.59	1137.78	9831.53	1140.81
9838.93	1140.41	9851.43	1139.09	9876.18	1134.22	9896.24	1130.31	9977.7	1130.56
10015.74	1130.121	10047.43	1130.481	10107.66	1130.71	10136.38	1138.031	10151.15	1138.77
10167.49	1140.571	10187.61	1140.651	10215.09	1140.771	10258.09	1139.811	10299.94	1139.01
10340.07	1139.481	10374.47	1138.53	10397.9	1138.411	10424.69	1133.361	10496.23	1131.39
10522.83	1131.29								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9710.57	.03	9896.24	.035	10107.66	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9896.24	10107.66	470.62	470.62	470.62	.3	.1

Right Levee Station= 10210.6 Elevation= 1140.75

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1134.59	Element			
Vel Head (ft)	0.32	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1134.91	Reach Len. (ft)	470.62	470.62	470.62
Crit W.S. (ft)	1132.75	Flow Area (sq ft)	46.94	876.51	29.61
E.G. Slope (ft/ft)	0.001791	Area (sq ft)	46.94	876.51	29.61
Q Total (cfs)	4320.00	Flow (cfs)	161.38	4063.96	94.66
Top Width (ft)	248.58	Top Width (ft)	21.93	211.42	15.23
Vel Total (ft/s)	4.53	Avg. Vel. (ft/s)	3.44	4.64	3.20
Max Chl Dpth (ft)	4.47	Hydr. Depth (ft)	2.14	4.15	1.94
Conv. Total (cfs)	102081.5	Conv. (cfs)	3813.4	96031.4	2236.7
Length Wtd. (ft)	470.62	Wetted Per. (ft)	22.34	211.43	15.72
Min Ch El (ft)	1130.12	Shear (lb/sq ft)	0.23	0.46	0.21
Alpha	1.02	Stream Power (lb/ft s)	0.81	2.15	0.67
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	15.95	380.61	113.47
C & E Loss (ft)	0.01	Cum SA (acres)	10.31	122.38	48.31

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9710.57	9896.24	161.38	46.94	22.34	3.74	2.14	3.44
9896.24 LB	9966.71	1367.20	293.84	70.47	31.65	4.17	4.65
9966.71	10037.19	1409.13	299.21	70.48	32.62	4.25	4.71
10037.19	10107.66 RB	1287.63	283.45	70.47	29.81	4.02	4.54
10107.66	10522.83	94.66	29.61	15.72	2.19	1.94	3.20

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 3.5**

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9659.95	1141.95	9691.75	1141.34	9777.22	1139.87	9797.19	1135.88	9816.9	1136.01
9829.93	1139.43	9840.69	1139.23	9853.88	1137.74	9880.31	1132.49	9891.12	1129.71
10008.77	1129.711	10109.37	1129.791	10139.22	1137.11	10151.84	1137.031	10166.22	1139.46
10184.29	1139.711	10216.89	1139.251	10255.18	1138.731	10298.02	1137.751	10339.59	1137.74
10372.76	1137.541	10393.59	1137.381	10424.34	1131.511	10441.62	1130.841	10476.48	1130.2
10524.97	1129.641	10567.19	1129.37						

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
 9659.95     .03 9891.12    .03510109.37     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9891.1210109.37           328.45  328.45  328.45            .3        .1
Right Levee     Station= 10184.3      Elevation= 1139.71

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1133.65   Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.35   Wt. n-Val.                0.030      0.035      0.030
  E.G. Elev (ft)          1134.00   Reach Len. (ft)          328.45     328.45     328.45
  Crit W.S. (ft)          1131.99   Flow Area (sq ft)         30.93     855.52      30.39
  E.G. Slope (ft/ft)     0.002074   Area (sq ft)              30.93     855.52      30.39
  Q Total (cfs)           4320.00   Flow (cfs)               103.52    4112.28     104.20
  Top Width (ft)           250.65   Top Width (ft)            16.64     218.25      15.75
  Vel Total (ft/s)           4.71   Avg. Vel. (ft/s)           3.35       4.81       3.43
  Max Chl Dpth (ft)          4.28   Hydr. Depth (ft)           1.86       3.92       1.93
  Conv. Total (cfs)       94858.1   Conv. (cfs)              2273.2    90296.9     2288.0
  Length Wtd. (ft)         328.45   Wetted Per. (ft)          17.11     218.25      16.22
  Min Ch El (ft)          1129.71   Shear (lb/sq ft)           0.23       0.51       0.24
  Alpha                      1.02   Stream Power (lb/ft s)     0.78       2.44       0.83
  Frctn Loss (ft)            0.69   Cum Volume (acre-ft)      15.53     371.26     113.15
  C & E Loss (ft)            0.00   Cum SA (acres)            10.10     120.06      48.15

FLOW DISTRIBUTION OUTPUT    Profile #PF#1

  Left Sta     Right Sta       Flow       Area       W.P.    % Conv.   Hydr D.   Velocity
  (ft)         (ft)            (cfs)    (sq ft)      (ft)                (ft)     (ft/s)
  9659.95      9891.12        103.52      30.93      17.11      2.40      1.86      3.35
  9891.12 LB   9963.87       1381.51     286.52      72.75     31.98      3.94      4.82
  9963.87      10036.62      1379.03     286.21      72.75     31.92      3.93      4.82
  10036.62     10109.37 RB   1351.74     282.79      72.75     31.29      3.89      4.78
  10109.37     10567.19       104.20      30.39      16.22      2.41      1.93      3.43
```

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.438

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INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9689.18 1139.21 9720.45 1138.78 9755.56  1138.8 9782.77 1138.21 9799.22 1134.81
 9814.95 1135.01 9829.89  1137.8 9841.71 1137.71 9851.72 1136.57 9873.32 1131.81
  9888.7  1129.110003.53 1128.95 10115.9 1128.7910142.95  1135.910157.11 1136.11
10169.24 1137.9510190.75 1138.2110214.42 1138.1210255.26 1137.6210296.21 1137.47
 10347.5 1136.5410384.06 1135.7810404.63 1135.4410435.49 1130.6110466.84  1129.5
10616.64 1127.47

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
 9689.18     .03  9888.7    .035 10115.9     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9888.7 10115.9            473.4   473.4   473.4            .3        .1
Right Levee     Station= 10190.8      Elevation= 1138.21

CROSS SECTION OUTPUT    Profile #PF#1

  W.S. Elev (ft)          1132.94   Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.36   Wt. n-Val.                0.030      0.035      0.030
  E.G. Elev (ft)          1133.31   Reach Len. (ft)          473.40     473.40     473.40
  Crit W.S. (ft)          1131.28   Flow Area (sq ft)         41.18     907.67      32.81
```

E.G. Slope (ft/ft)	0.002107	Area (sq ft)	41.18	907.67	32.81
Q Total (cfs)	4720.00	Flow (cfs)	147.27	4453.96	118.77
Top Width (ft)	263.52	Top Width (ft)	20.52	227.20	15.80
Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)	3.58	4.91	3.62
Max Chl Dpth (ft)	5.47	Hydr. Depth (ft)	2.01	4.00	2.08
Conv. Total (cfs)	102817.5	Conv. (cfs)	3208.1	97022.2	2587.3
Length Wtd. (ft)	473.40	Wetted Per. (ft)	20.88	227.20	16.34
Min Ch El (ft)	1128.79	Shear (lb/sq ft)	0.26	0.53	0.26
Alpha	1.01	Stream Power (lb/ft s)	0.93	2.58	0.96
Frctn Loss (ft)	1.22	Cum Volume (acre-ft)	15.26	364.61	112.91
C & E Loss (ft)	0.03	Cum SA (acres)	9.96	118.38	48.03

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9689.18	9888.70	147.27	41.18	20.88	3.12	2.01	3.58
9888.70 LB	9964.43	1421.56	294.82	75.73	30.12	3.89	4.82
9964.43	10040.17	1482.92	302.39	75.73	31.42	3.99	4.90
10040.17	10115.90 RB	1549.48	310.46	75.73	32.83	4.10	4.99
10115.90	10616.64	118.77	32.81	16.34	2.52	2.08	3.62

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.348

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9619	1138.14	9722.61	1136.72	9777.54	1135.98	9792.33	1134.49	9814.92	1134.13
9828.79	1136.89	9839.32	1136.7	9854.84	1134.97	9873.48	1131.36	9888.52	1127.92
10015.74	1128.04	10116.63	1128.21	10140.91	1134.09	10156.94	1134.58	10169.34	1136.65
10193.71	1136.54	10217.89	1136.06	10258.63	1135.41	10291.39	1135.41	10351.8	1135.31
10416.5	1134.46	10440.02	1133.59	10474.37	1127.59	10490.32	1126.91		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9619	.03	9888.52	.035	10116.63	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9888.52	10116.63	612.11	612.11	612.11	.3	.1

Right Levee Station= 10169.3 Elevation= 1136.65

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1131.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1132.05	Reach Len. (ft)	612.11	612.11	612.11
Crit W.S. (ft)	1130.37	Flow Area (sq ft)	29.31	807.22	23.56
E.G. Slope (ft/ft)	0.003208	Area (sq ft)	29.31	807.22	23.56
Q Total (cfs)	4720.00	Flow (cfs)	120.19	4507.79	92.02
Top Width (ft)	258.23	Top Width (ft)	16.18	228.11	13.94
Vel Total (ft/s)	5.49	Avg. Vel. (ft/s)	4.10	5.58	3.91
Max Chl Dpth (ft)	4.67	Hydr. Depth (ft)	1.81	3.54	1.69
Conv. Total (cfs)	83329.6	Conv. (cfs)	2122.0	79583.2	1624.5
Length Wtd. (ft)	612.11	Wetted Per. (ft)	16.59	228.11	14.34
Min Ch El (ft)	1127.92	Shear (lb/sq ft)	0.35	0.71	0.33
Alpha	1.01	Stream Power (lb/ft s)	1.45	3.96	1.29

Frctn Loss (ft)	1.37	Cum Volume (acre-ft)	14.88	355.29	112.60
C & E Loss (ft)	0.02	Cum SA (acres)	9.76	115.90	47.87

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9619.00	9888.52	120.20	29.31	16.59	2.55	1.81	4.10
9888.52 LB	9964.56	1563.58	275.62	76.04	33.13	3.62	5.67
9964.56	10040.59	1510.50	269.96	76.04	32.00	3.55	5.60
10040.59	10116.63 RB	1433.71	261.64	76.04	30.38	3.44	5.48
10116.63	10490.32	92.02	23.56	14.34	1.95	1.69	3.91

Warning - The energy loss was 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: Saddleback
REACH: Spillway RS: 3.232

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9747.17	1134.6	9790.93	1132.18	9814.13	1131.64	9827.36	1134.47	9839.65	1134.51
9851.73	1132.58	9894.83	1126.06	10005.07	1125.73	10121.38	1126.71	10144.18	1132.2
10160.97	1132.48	10169.61	1134.21	10198.76	1134.82	10223.69	1134.02	10263.45	1133.71
10302.45	1133.14	10342.35	1132.15	10397.76	1130.81	10443.22	1129.83	10463.64	1129.48
10491.67	1123.85	10514.58	1124.43	10560.08	1123.76				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9747.17	.03	9894.83	.035	10121.38	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9894.83	10121.38	427.24	427.24	427.24	.3	.1

Right Levee Station= 10198.8 Elevation= 1134.82

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1130.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1130.67	Reach Len. (ft)	427.24	427.24	427.24
Crit W.S. (ft)	1128.40	Flow Area (sq ft)	60.99	973.36	27.70
E.G. Slope (ft/ft)	0.001650	Area (sq ft)	60.99	973.36	27.70
Q Total (cfs)	4720.00	Flow (cfs)	202.71	4435.54	81.75
Top Width (ft)	270.10	Top Width (ft)	28.40	226.55	15.15
Vel Total (ft/s)	4.44	Avg. Vel. (ft/s)	3.32	4.56	2.95
Max Chl Dpth (ft)	6.60	Hydr. Depth (ft)	2.15	4.30	1.83
Conv. Total (cfs)	116214.7	Conv. (cfs)	4991.1	109210.7	2012.9
Length Wtd. (ft)	427.24	Wetted Per. (ft)	28.72	226.55	15.59
Min Ch El (ft)	1125.73	Shear (lb/sq ft)	0.22	0.44	0.18
Alpha	1.02	Stream Power (lb/ft s)	0.73	2.02	0.54
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	14.24	342.78	112.24
C & E Loss (ft)	0.00	Cum SA (acres)	9.45	112.71	47.66

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9747.17	9894.83	202.71	60.99	28.72	4.29	2.15	3.32

9894.83 LB	9970.35	1540.93	332.93	75.52	32.65	4.41	4.63
9970.35	10045.86	1600.34	340.57	75.52	33.91	4.51	4.70
10045.86	10121.38 RB	1294.27	299.85	75.52	27.42	3.97	4.32
10121.38	10560.08	81.75	27.70	15.59	1.73	1.83	2.95

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.152

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9681.46	1133.7	9766.18	1132.17	9787.4	1130.21	9810.11	1130.64	9824.5	1132.75
9837.49	1132.82	9852.77	1131.21	9874.47	1127.31	9886.04	1125.111	10009.39	1125.35
10126.77	1125.89	10146.27	1131.12	10163.5	1132.02	10174.45	1133.63	10198.41	1133.66
10217.41	1133.33	10228.97	1132.46	10268.61	1132.76	10312.41	1132.11	10348.02	1132.39
10361.95	1131.87	10415.66	1130.24	10452.46	1129.09	10472.06	1128.161	10496.63	1123.4
10510.48	1123.07	10535.6	1122.21	10565.32	1123.21	10588.25	1122.74		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9681.46	.03	9886.04	.03	10126.77	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9886.04	10126.77	125.95	125.95	125.95	.3	.1

Right Levee Station= 10174.3 Elevation= 1133.63

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1129.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1130.00	Reach Len. (ft)	125.95	125.95	125.95
Crit W.S. (ft)	1127.67	Flow Area (sq ft)	56.76	1034.98	27.34
E.G. Slope (ft/ft)	0.001472	Area (sq ft)	56.76	1034.98	27.34
Q Total (cfs)	4720.00	Flow (cfs)	184.36	4457.37	78.28
Top Width (ft)	279.98	Top Width (ft)	24.98	240.73	14.28
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	3.25	4.31	2.86
Max Chl Dpth (ft)	7.52	Hydr. Depth (ft)	2.27	4.30	1.91
Conv. Total (cfs)	123023.0	Conv. (cfs)	4805.1	116177.7	2040.2
Length Wtd. (ft)	125.95	Wetted Per. (ft)	25.40	240.73	14.78
Min Ch El (ft)	1125.11	Shear (lb/sq ft)	0.21	0.40	0.17
Alpha	1.02	Stream Power (lb/ft s)	0.67	1.70	0.49
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	13.67	332.93	111.97
C & E Loss (ft)	0.02	Cum SA (acres)	9.19	110.42	47.52

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9681.46	9886.04	184.36	56.76	25.40	3.91	2.27	3.25
9886.04 LB	9966.28	1619.63	363.62	80.24	34.31	4.53	4.45
9966.28	10046.53	1514.44	349.26	80.24	32.09	4.35	4.34
10046.53	10126.77 RB	1323.30	322.10	80.24	28.04	4.01	4.11
10126.77	10588.25	78.28	27.34	14.78	1.66	1.91	2.86

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.128

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
 9621.65 1134.63  9777.4 1132.44  9797.6 1130.11 9818.76 1130.34 9831.57 1132.67
    9845 1132.26    9859 1130.47  9875.9 1127.13 9892.21 1124.7210009.51 1125.37
10129.64 1125.51 10151.3  1131.2 10167.5 1131.86 10176.8 1133.4910203.46 1133.57
10219.13 1133.1110233.51 1131.8810275.51 1132.46 10321.1 1132.0910352.81 1131.66
10401.16 1131.0210422.57 1130.5510461.83 1129.5210480.12 1128.7910506.87 1123.98
10552.35 1123.3910595.83 1122.9210639.26 1121.65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9621.65     .03 9892.21    .03510129.64     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9892.2110129.64           406.97  406.97  406.97             .3       .1
Right Levee     Station= 10203.5      Elevation= 1133.57
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1129.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1129.77	Reach Len. (ft)	406.97	406.97	406.97
Crit W.S. (ft)	1127.60	Flow Area (sq ft)	70.49	993.20	29.22
E.G. Slope (ft/ft)	0.001872	Area (sq ft)	70.49	993.20	29.22
Q Total (cfs)	5110.00	Flow (cfs)	277.36	4736.77	95.88
Top Width (ft)	280.28	Top Width (ft)	27.94	237.43	14.92
Vel Total (ft/s)	4.68	Avg. Vel. (ft/s)	3.93	4.77	3.28
Max Chl Dpth (ft)	7.78	Hydr. Depth (ft)	2.52	4.18	1.96
Conv. Total (cfs)	118095.9	Conv. (cfs)	6409.9	109470.1	2215.8
Length Wtd. (ft)	406.97	Wetted Per. (ft)	28.34	237.43	15.42
Min Ch El (ft)	1124.72	Shear (lb/sq ft)	0.29	0.49	0.22
Alpha	1.01	Stream Power (lb/ft s)	1.14	2.33	0.73
Frctn Loss (ft)	0.94	Cum Volume (acre-ft)	13.48	330.00	111.89
C & E Loss (ft)	0.03	Cum SA (acres)	9.11	109.73	47.47

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9621.65	9892.21	277.36	70.49	28.34	5.43	2.52	3.93
9892.21 LB	9971.35	1773.01	355.25	79.14	34.70	4.49	4.99
9971.35	10050.50	1522.45	324.21	79.14	29.79	4.10	4.70
10050.50	10129.64 RB	1441.31	313.73	79.14	28.21	3.96	4.59
10129.64	10639.26	95.88	29.22	15.42	1.88	1.96	3.28

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 3.051

```
INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9679.12 1133.37 9797.49 1132.01 9812.43 1130.56 9817.24 1130.67 9825.96 1131.74
 9839.22 1131.82 9851.77 1129.26 9864.33 1126.63 9880.89 1124.52 9996.03 1124.76
10128.74    112510145.84 1129.2710160.99 1129.6310175.47 1132.0910191.79  1132.4
10202.32 1132.1710222.95 1131.0710271.34 1130.99 10303.7 1130.7310337.81 1130.28
10391.22 1129.5510429.59 1129.5110464.96 1127.9510486.78 1127.3410514.53 1122.18
10678.78 1120.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9679.12     .03 9880.89    .03510128.74     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9880.8910128.74           376.42  376.42  376.42             .3       .1
Right Levee     Station= 10191.8      Elevation=  1132.4
```

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1128.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1128.81	Reach Len. (ft)	376.42	376.42	376.42
Crit W.S. (ft)	1127.07	Flow Area (sq ft)	53.59	893.35	22.78
E.G. Slope (ft/ft)	0.002886	Area (sq ft)	53.59	893.35	22.78
Q Total (cfs)	5110.00	Flow (cfs)	235.80	4790.03	84.17
Top Width (ft)	286.24	Top Width (ft)	24.88	247.85	13.51
Vel Total (ft/s)	5.27	Avg. Vel. (ft/s)	4.40	5.36	3.69
Max Chl Dpth (ft)	8.09	Hydr. Depth (ft)	2.15	3.60	1.69
Conv. Total (cfs)	95116.6	Conv. (cfs)	4389.2	89160.7	1566.7
Length Wtd. (ft)	376.42	Wetted Per. (ft)	25.20	247.85	13.92
Min Ch El (ft)	1124.52	Shear (lb/sq ft)	0.38	0.65	0.29
Alpha	1.01	Stream Power (lb/ft s)	1.69	3.48	1.09
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)	12.90	321.19	111.65
C & E Loss (ft)	0.00	Cum SA (acres)	8.87	107.46	47.34

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9679.12	9880.89	235.80	53.59	25.20	4.61	2.15	4.40
9880.89 LB	9963.51	1717.11	311.20	82.62	33.60	3.77	5.52
9963.51	10046.12	1591.37	297.32	82.62	31.14	3.60	5.35
10046.12	10128.74 RB	1481.55	284.83	82.62	28.99	3.45	5.20
10128.74	10678.78	84.17	22.78	13.92	1.65	1.69	3.69

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: Saddleback
REACH: Spillway RS: 2.979

INPUT
Description: shows part of diagonal dike
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9698.12	1128.51	9805.43	1127.54	9819.69	1127.2	9835.54	1130.29	9845.78	1130.34
9859.12	1128.34	9874.38	1125.8	9887.55	1123.02	9902.11	1123.39	9913.99	1124.59
9930.55	1122.95	10016.9	1123.73	10133.73	1123.8	10150.47	1128.41	10163.94	1128.89
10177.81	1130.59	10192.59	1130.96	10223.15	1130.5	10269.47	1130.52	10321.94	1130.1
10345.21	1129.31	10384.08	1123.02						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9698.12	.03	9887.55	.03	10133.73	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9887.55	10133.73	188.65	188.65	188.65	.3	.1

Right Levee Station= 10192.6 Elevation= 1130.96

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1127.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1127.79	Reach Len. (ft)	188.65	188.65	188.65
Crit W.S. (ft)	1125.91	Flow Area (sq ft)	47.35	931.83	23.26
E.G. Slope (ft/ft)	0.002540	Area (sq ft)	47.35	931.83	23.26
Q Total (cfs)	5110.00	Flow (cfs)	186.17	4840.32	83.51
Top Width (ft)	290.27	Top Width (ft)	31.09	246.18	13.00

Vel Total (ft/s)	5.10	Avg. Vel. (ft/s)	3.93	5.19	3.59
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	1.52	3.79	1.79
Conv. Total (cfs)	101397.0	Conv. (cfs)	3694.0	96045.8	1657.1
Length Wtd. (ft)	188.65	Wetted Per. (ft)	31.53	246.33	13.48
Min Ch El (ft)	1122.95	Shear (lb/sq ft)	0.24	0.60	0.27
Alpha	1.01	Stream Power (lb/ft s)	0.94	3.12	0.98
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	12.47	313.30	111.45
C & E Loss (ft)	0.01	Cum SA (acres)	8.62	105.32	47.23

Warning - Divided flow computed for this cross-section.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9698.12	9887.55	186.17	47.35	31.53	3.64	1.52	3.93
9887.55 LB	9969.61	1754.13	326.92	82.21	34.33	3.98	5.37
9969.61	10051.67	1600.32	309.19	82.06	31.32	3.77	5.18
10051.67	10133.73 RB	1485.87	295.72	82.06	29.08	3.60	5.02
10133.73	10384.08	83.51	23.26	13.48	1.63	1.79	3.59

Warning - Divided flow computed for this cross-section.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 2.944

INPUT
Description: Pipe side spillway CL
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9681.12	1131.25	9728.31	1130.8	9766.01	1130.13	9801.15	1130.14	9827.17	1129.53
9841.12	1129.77	9856.28	1127.69	9869.11	1124.57	9884.14	1122.91	10011.91	1123.21
10102.78	1122.66	10113.55	1124.69	10131.34	1122.69	10151.34	1127.99	10162.72	1128.4
10174.71	1130.04	10189.16	1130.19	10212.23	1123.83	10220.04	1122.37	10402.66	1121.95
10560.94	1118.98	10644.48	1117.65	10655.41	1116.82	10675.24	1121.25	10687.95	1121.61
10696.94	1119.28								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9681.12	.03	9884.14	.03	10131.34	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9884.14	10131.34	437.29	437.29	437.29	.3	.1

Right Levee Station= 10189.2 Elevation= 1130.19

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1126.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1127.26	Reach Len. (ft)	437.29	437.29	437.29
Crit W.S. (ft)	1125.46	Flow Area (sq ft)	56.49	920.91	32.05
E.G. Slope (ft/ft)	0.002875	Area (sq ft)	56.49	920.91	32.05
Q Total (cfs)	5430.00	Flow (cfs)	261.13	5034.09	134.78
Top Width (ft)	287.00	Top Width (ft)	24.25	247.20	15.55
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	4.62	5.47	4.21
Max Chl Dpth (ft)	9.99	Hydr. Depth (ft)	2.33	3.73	2.06
Conv. Total (cfs)	101261.5	Conv. (cfs)	4869.7	93878.3	2513.4
Length Wtd. (ft)	437.29	Wetted Per. (ft)	24.61	247.50	16.09
Min Ch El (ft)	1122.66	Shear (lb/sq ft)	0.41	0.67	0.36
Alpha	1.01	Stream Power (lb/ft s)	1.91	3.65	1.50
Frctn Loss (ft)	1.35	Cum Volume (acre-ft)	12.24	309.29	111.33
C & E Loss (ft)	0.01	Cum SA (acres)	8.50	104.26	47.17

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9681.12	9884.14	261.13	56.49	24.61	4.81	2.33	4.62
9884.14 LB	9966.54	1739.25	313.51	82.40	32.03	3.80	5.55
9966.54	10048.94	1646.13	303.33	82.40	30.32	3.68	5.43
10048.94	10131.34 RB	1648.70	304.06	82.70	30.36	3.69	5.42
10131.34	10696.94	134.78	32.05	16.09	2.48	2.06	4.21

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: Saddleback
REACH: Spillway RS: 2.861

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9722.92	1129.96	9760.53	1129.18	9793.24	1129.02	9816.3	1128.82	9836.42	1128.72
9852.94	1125.56	9861.48	1123.37	9875.24	1121.97	9992.38	1121.75	10131.33	1122.04
10148.86	1126.82	10163.78	1127.61	10180.09	1129.41	10208.05	1128.55	10236.1	1127.91
10252.2	1128.51	10283.44	1128.33	10314.09	1128.29	10359.32	1127.61	10394.41	1127.44
10419.37	1127.07	10439.65	1126.47	10476.99	1126.63	10496.36	1127.11	10527.42	1119.32
10551.45	1118.63	10689.52	1117.42						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9722.92	.03	9875.24	.03	10131.33	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9875.24	10131.33	494.68	494.68	494.68	.3	.1

Right Levee Station= 10180.1 Elevation= 1129.41

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1125.42	Element			
Vel Head (ft)	0.49	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1125.90	Reach Len. (ft)	494.68	494.68	494.68
Crit W.S. (ft)	1124.23	Flow Area (sq ft)	45.95	905.86	20.90
E.G. Slope (ft/ft)	0.003307	Area (sq ft)	45.95	905.86	20.90
Q Total (cfs)	5430.00	Flow (cfs)	213.42	5134.16	82.42
Top Width (ft)	290.21	Top Width (ft)	21.74	256.09	12.38
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)	4.64	5.67	3.94
Max Chl Dpth (ft)	8.00	Hydr. Depth (ft)	2.11	3.54	1.69
Conv. Total (cfs)	94426.8	Conv. (cfs)	3711.4	89282.2	1433.2
Length Wtd. (ft)	494.68	Wetted Per. (ft)	22.07	256.09	12.83
Min Ch El (ft)	1121.75	Shear (lb/sq ft)	0.43	0.73	0.34
Alpha	1.01	Stream Power (lb/ft s)	2.00	4.14	1.33
Frctn Loss (ft)	1.28	Cum Volume (acre-ft)	11.73	300.12	111.06
C & E Loss (ft)	0.01	Cum SA (acres)	8.27	101.73	47.02

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9722.92	9875.24	213.42	45.95	22.07	3.93	2.11	4.64

9875.24 LB	9960.60	1702.35	301.03	85.36	31.35	3.53	5.66
9960.60	10045.97	1778.34	309.02	85.36	32.75	3.62	5.75
10045.97	10131.33 RB	1653.48	295.81	85.36	30.45	3.47	5.59
10131.33	10689.52	82.42	20.90	12.83	1.52	1.69	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.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 2.767

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9761.04	1128.95	9777.83	1127.02	9791.95	1125.83	9805.35	1130.07	9819.5	1128.97
9829.99	1127.8	9849.13	1123.07	9859.83	1120.13	9993.77	1120.08	10127.43	1120.7
10145.36	1124.75	10158.89	1125.07	10175.62	1126.71	10192.65	1127.29	10215.97	1126.8
10258.01	1126.58	10312.13	1126.65	10367.75	1125.68	10391.46	1125.45	10429.94	1124.97
10458.43	1124.87	10481.9	1125.07	10503.19	1124.81	10529.42	1118.55		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9761.04	.03	9859.83	.03	10127.43	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9859.83	10127.43	495.28	495.28	495.28	.3	.1

Right Levee Station= 10192.7 Elevation= 1127.29

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1124.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1124.61	Reach Len. (ft)	495.28	495.28	495.28
Crit W.S. (ft)	1122.56	Flow Area (sq ft)	31.09	1069.61	27.81
E.G. Slope (ft/ft)	0.002091	Area (sq ft)	31.09	1069.61	27.81
Q Total (cfs)	5430.00	Flow (cfs)	109.66	5229.62	90.72
Top Width (ft)	298.74	Top Width (ft)	15.45	267.60	15.69
Vel Total (ft/s)	4.81	Avg. Vel. (ft/s)	3.53	4.89	3.26
Max Chl Dpth (ft)	5.69	Hydr. Depth (ft)	2.01	4.00	1.77
Conv. Total (cfs)	118752.6	Conv. (cfs)	2398.2	114370.3	1984.1
Length Wtd. (ft)	495.28	Wetted Per. (ft)	15.99	267.60	16.09
Min Ch El (ft)	1120.08	Shear (lb/sq ft)	0.25	0.52	0.23
Alpha	1.01	Stream Power (lb/ft s)	0.90	2.55	0.74
Frctn Loss (ft)	1.10	Cum Volume (acre-ft)	11.29	288.90	110.79
C & E Loss (ft)	0.01	Cum SA (acres)	8.06	98.76	46.87

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9761.04	9859.83	109.66	31.09	15.99	2.02	2.01	3.53
9859.83 LB	9949.03	1839.73	368.49	89.20	33.88	4.13	4.99
9949.03	10038.23	1823.27	366.51	89.20	33.58	4.11	4.97
10038.23	10127.43 RB	1566.62	334.62	89.20	28.85	3.75	4.68
10127.43	10529.42	90.72	27.81	16.09	1.67	1.77	3.26

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 **RIVER: Saddleback**
REACH: Spillway **RS: 2.673**

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9718.26	1128.63	9774.66	1124.81	9789.22	1124.02	9803.79	1127.89	9818.07	1127.13
9831.52	1125.1	9847.68	1121.87	9857.03	1119.43	9998.78	1119.06	10125.44	1119.48
10145.53	1123.99	10160.02	1124.59	10174.88	1126.06	10191.02	1126.88	10216.96	1126.66
10250.39	1126.76	10308.49	1126.56	10376.8	1125.89	10409.59	1124.95	10443.96	1124.83
10466.12	1124.25	10481.98	1124.13	10510.15	1123.02	10534.87	1117.89	10612.08	1116.35

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9718.26	.03	9857.03	.035	10125.44	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9857.03	10125.44	217.49	217.49	217.49	.3	.1

Right Levee Station= 10191 Elevation= 1126.88

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1123.11	Element			
Vel Head (ft)	0.39	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1123.50	Reach Len. (ft)	217.49	217.49	217.49
Crit W.S. (ft)	1121.56	Flow Area (sq ft)	26.92	1035.40	29.42
E.G. Slope (ft/ft)	0.002345	Area (sq ft)	26.92	1035.40	29.42
Q Total (cfs)	5430.00	Flow (cfs)	91.27	5235.37	103.36
Top Width (ft)	300.18	Top Width (ft)	15.58	268.41	16.19
Vel Total (ft/s)	4.97	Avg. Vel. (ft/s)	3.39	5.06	3.51
Max Chl Dpth (ft)	6.76	Hydr. Depth (ft)	1.73	3.86	1.82
Conv. Total (cfs)	112140.4	Conv. (cfs)	1884.8	108120.9	2134.6
Length Wtd. (ft)	217.49	Wetted Per. (ft)	16.01	268.41	16.59
Min Ch El (ft)	1119.06	Shear (lb/sq ft)	0.25	0.56	0.26
Alpha	1.01	Stream Power (lb/ft s)	0.83	2.86	0.91
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	10.96	276.93	110.46
C & E Loss (ft)	0.00	Cum SA (acres)	7.89	95.71	46.68

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9718.26	9857.03	91.27	26.92	16.01	1.68	1.73	3.39
9857.03 LB	9946.50	1702.21	340.08	89.47	31.35	3.80	5.01
9946.50	10035.97	1844.64	356.88	89.47	33.97	3.99	5.17
10035.97	10125.44 RB	1688.52	338.44	89.47	31.10	3.78	4.99
10125.44	10612.08	103.36	29.42	16.59	1.90	1.82	3.51

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 2.632**

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9705.74	1127.62	9752.03	1128.05	9776.21	1124.27	9789.89	1123.52	9806.95	1127.35
9821.01	1126.89	9834.48	1125.03	9852.53	1120.79	9864.67	1118.68	9996.13	1118.67
10130.28	1119.05	10148.63	1123.57	10162.9	1124.14	10174.6	1125.44	10194.71	1126.09
10219.26	1126.53	10262.2	1126.56	10307.74	1126.21	10337.81	1125.86	10385.17	1125.05
10411.96	1124.69	10453.44	1123.89	10470.66	1123.48	10491.72	1123.13	10513.54	1123.19
10538.54	1118.54								

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9705.74     .03 9864.67    .03510130.28     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9864.6710130.28           140.06  140.06  140.06            .3        .1
Right Levee     Station= 10262.2      Elevation= 1126.56
```

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1122.59	Element			
Vel Head (ft)	0.40	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1122.98	Reach Len. (ft)	140.06	140.06	140.06
Crit W.S. (ft)	1121.08	Flow Area (sq ft)	41.50	1014.34	25.40
E.G. Slope (ft/ft)	0.002422	Area (sq ft)	41.50	1014.34	25.40
Q Total (cfs)	5430.00	Flow (cfs)	163.59	5177.62	88.79
Top Width (ft)	299.76	Top Width (ft)	19.79	265.61	14.36
Vel Total (ft/s)	5.02	Avg. Vel. (ft/s)	3.94	5.10	3.50
Max Chl Dpth (ft)	4.05	Hydr. Depth (ft)	2.10	3.82	1.77
Conv. Total (cfs)	110342.1	Conv. (cfs)	3324.3	105213.6	1804.2
Length Wtd. (ft)	140.06	Wetted Per. (ft)	20.18	265.61	14.79
Min Ch El (ft)	1118.67	Shear (lb/sq ft)	0.31	0.58	0.26
Alpha	1.01	Stream Power (lb/ft s)	1.23	2.95	0.91
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	10.79	271.82	110.32
C & E Loss (ft)	0.00	Cum SA (acres)	7.80	94.38	46.61

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9705.74	9864.67	163.59	41.50	20.18	3.01	2.10	3.94
9864.67 LB	9953.21	1794.72	346.24	88.54	33.05	3.91	5.18
9953.21	10041.74	1773.78	343.81	88.54	32.67	3.88	5.16
10041.74	10130.28 RB	1609.12	324.29	88.54	29.63	3.66	4.96
10130.28	10538.54	88.79	25.40	14.79	1.64	1.77	3.50

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 2.605

INPUT
Description:

```
Station Elevation Data     num=       28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9752.79 1126.53  9770.9 1124.18 9783.79 1123.56 9800.01 1127.06 9813.55 1126.89
 9829.63  1125.3 9848.39 1121.42 9860.07 1118.57 9902.83 1118.4910001.36 1118.33
10056.52 1118.4110135.07 1118.4910153.97  1122.910168.69  1123.7 10184.6 1125.51
10197.23 1125.7210224.71 1126.0810269.49 1125.49 10314.8 1125.6710342.12 1125.15
10387.92 1124.3910413.44 1124.1810455.51 1123.6310474.52 1123.7810503.53 1123.05
10522.06  1123.110548.55 1118.3710607.48 1117.32

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9752.79     .03 9860.07    .03510135.07     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9860.0710135.07           480.07  480.07  480.07            .3        .1
Right Levee     Station= 10221.7      Elevation= 1126.08
```

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1122.28	Element			
Vel Head (ft)	0.37	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1122.66	Reach Len. (ft)	480.07	480.07	480.07
Crit W.S. (ft)	1120.70	Flow Area (sq ft)	28.55	1059.50	30.86

E.G. Slope (ft/ft)	0.002233	Area (sq ft)	28.55	1059.50	30.86
Q Total (cfs)	5430.00	Flow (cfs)	97.16	5224.09	108.76
Top Width (ft)	307.12	Top Width (ft)	15.86	275.00	16.26
Vel Total (ft/s)	4.85	Avg. Vel. (ft/s)	3.40	4.93	3.52
Max Chl Dpth (ft)	4.96	Hydr. Depth (ft)	1.80	3.85	1.90
Conv. Total (cfs)	114903.1	Conv. (cfs)	2055.9	110545.9	2301.4
Length Wtd. (ft)	480.07	Wetted Per. (ft)	16.29	275.00	16.70
Min Ch El (ft)	1118.33	Shear (lb/sq ft)	0.24	0.54	0.26
Alpha	1.01	Stream Power (lb/ft s)	0.83	2.65	0.91
Frctn Loss (ft)	1.14	Cum Volume (acre-ft)	10.68	268.48	110.23
C & E Loss (ft)	0.01	Cum SA (acres)	7.74	93.51	46.56

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9752.79	9860.07	97.16	28.55	16.29	1.79	1.80	3.40
9860.07 LB	9951.74	1699.68	348.09	91.67	31.30	3.80	4.88
9951.74	10043.40	1791.40	359.24	91.67	32.99	3.92	4.99
10043.40	10135.07 RB	1733.01	352.17	91.67	31.92	3.84	4.92
10135.07	10607.48	108.76	30.86	16.70	2.00	1.90	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: Saddleback
REACH: Spillway RS: 2.514

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9623.52	1127.96	9751.41	1126.16	9772.3	1124.01	9785.19	1123.31	9802.82	1127.14
9816.41	1127.01	9864.98	1117.29	9949.19	1117.3	9981.3	1117.68	10021.83	1117.51
10079.07	1117.17	10139.39	1117.74	10160.27	1121.86	10174.94	1122.29	10186.55	1123.93
10202.86	1124.51	10220.13	1123.74	10250.01	1123.62	10279.76	1124.54	10326.53	1123.86
10366.77	1122.94	10395.72	1122.48	10502.65	1121.81	10535.62	1121.51	10575.28	1115.59
10608.53	1114.34								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9623.52	.03	9864.98	.03	10139.39	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9864.98	10139.39	303.44	303.44	303.44	.3	.1

Right Levee Station= 10202.9 Elevation= 1124.5

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1121.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1121.51	Reach Len. (ft)	303.44	303.44	303.44
Crit W.S. (ft)	1119.67	Flow Area (sq ft)	36.56	1017.62	28.87
E.G. Slope (ft/ft)	0.002516	Area (sq ft)	36.56	1017.62	28.87
Q Total (cfs)	5430.00	Flow (cfs)	138.11	5191.52	100.36
Top Width (ft)	310.63	Top Width (ft)	19.11	274.41	17.10
Vel Total (ft/s)	5.01	Avg. Vel. (ft/s)	3.78	5.10	3.48
Max Chl Dpth (ft)	6.78	Hydr. Depth (ft)	1.91	3.71	1.69
Conv. Total (cfs)	108259.8	Conv. (cfs)	2753.6	103505.2	2001.0
Length Wtd. (ft)	303.44	Wetted Per. (ft)	19.49	274.42	17.43
Min Ch El (ft)	1117.17	Shear (lb/sq ft)	0.29	0.58	0.26

Alpha	1.01	Stream Power (lb/ft s)	1.11	2.97	0.90
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	10.32	257.04	109.90
C & E Loss (ft)	0.01	Cum SA (acres)	7.55	90.48	46.37

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9623.52	9864.98	138.11	36.56	19.49	2.54	1.91	3.78
9864.98 LB	9956.45	1814.56	349.07	91.47	33.42	3.82	5.20
9956.45	10047.92	1633.68	327.76	91.47	30.09	3.58	4.98
10047.92	10139.39 RB	1743.28	340.78	91.47	32.10	3.73	5.12
10139.39	10608.53	100.36	28.87	17.43	1.85	1.69	3.48

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 2.457

INPUT
Description: Pipe side spillway CL
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9653.9	1127.67	9754.5	1125.49	9769.15	1125	9783.68	1125.14	9792.07	1123.33
9805.26	1125.2	9818.69	1124.31	9833.36	1121.99	9849.08	1118.52	9862.69	1116.07
9988.89	1116.1	10121.5	1116.151	0129.73	1117.721	0144.28	1116.251	0163.87	1121.07
10172.52	1121.371	0185.26	1122.361	0199.15	1123.271	0205.01	1122.86	10218.7	1119.25
10230.16	1117.631	0600.26	1113.99						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9653.9	.03	9862.69	.03	10144.28	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9862.69	10144.28	462.83	462.83	462.83	.3	.1

Right Levee Station= 10193.9 Elevation= 1123.4

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1120.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1120.95	Reach Len. (ft)	462.83	462.83	462.83
Crit W.S. (ft)	1118.48	Flow Area (sq ft)	56.39	1265.47	39.69
E.G. Slope (ft/ft)	0.001386	Area (sq ft)	56.39	1265.47	39.69
Q Total (cfs)	5750.00	Flow (cfs)	184.77	5443.51	121.73
Top Width (ft)	322.90	Top Width (ft)	23.35	281.59	17.96
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	3.28	4.30	3.07
Max Chl Dpth (ft)	6.68	Hydr. Depth (ft)	2.42	4.49	2.21
Conv. Total (cfs)	154465.0	Conv. (cfs)	4963.5	146231.5	3270.0
Length Wtd. (ft)	462.83	Wetted Per. (ft)	23.80	281.81	18.50
Min Ch El (ft)	1116.07	Shear (lb/sq ft)	0.20	0.39	0.19
Alpha	1.01	Stream Power (lb/ft s)	0.67	1.67	0.57
Frctn Loss (ft)	0.70	Cum Volume (acre-ft)	9.99	249.08	109.67
C & E Loss (ft)	0.01	Cum SA (acres)	7.40	88.54	46.25

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9653.90	9862.69	184.77	56.39	23.80	3.21	2.42	3.28
9862.69 LB	9956.55	1878.46	430.65	93.86	32.67	4.59	4.36
9956.55	10050.42	1861.34	428.29	93.86	32.37	4.56	4.35
10050.42	10144.28 RB	1703.70	406.53	94.09	29.63	4.33	4.19
10144.28	10600.26	121.73	39.69	18.50	2.12	2.21	3.07

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 2.369**

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9755.48	1123.59	9781.91	1122.2	9798.72	1121.48	9812.16	1124.41	9825.65	1123.67
9835.12	1121.95	9849.59	1118.75	9863.12	1115.72	10010.45	1115.63	10147.92	1115.73
10168.1	1120.31	10182.93	1120.86	10191.28	1122.36	10211.14	1123.27	10234.26	1122.55
10292.85	1122.44	10370.93	1122.26	10432.8	1121.12	10495.5	1120.81	10524.07	1120.72
10555.28	1115.34	10619.14	1114.97						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9755.48	.03	9863.12	.03	10147.92	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9863.12	10147.92	495.82	495.82	495.82	.3	.1

Right Levee Station= 10211.1 Elevation= 1123.27

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1119.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1120.24	Reach Len. (ft)	495.82	495.82	495.82
Crit W.S. (ft)	1117.98	Flow Area (sq ft)	39.51	1209.62	38.76
E.G. Slope (ft/ft)	0.001665	Area (sq ft)	39.51	1209.62	38.76
Q Total (cfs)	5750.00	Flow (cfs)	128.71	5495.06	126.22
Top Width (ft)	322.12	Top Width (ft)	18.84	284.80	18.48
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)	3.26	4.54	3.26
Max Chl Dpth (ft)	4.95	Hydr. Depth (ft)	2.10	4.25	2.10
Conv. Total (cfs)	140933.1	Conv. (cfs)	3154.8	134684.6	3093.7
Length Wtd. (ft)	495.82	Wetted Per. (ft)	19.31	284.80	18.95
Min Ch El (ft)	1115.63	Shear (lb/sq ft)	0.21	0.44	0.21
Alpha	1.01	Stream Power (lb/ft s)	0.69	2.01	0.69
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)	9.49	235.94	109.25
C & E Loss (ft)	0.01	Cum SA (acres)	7.18	85.53	46.06

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9755.48	9863.12	128.71	39.51	19.31	2.24	2.10	3.26
9863.12 LB	9958.05	1821.91	401.92	94.93	31.69	4.23	4.53
9958.05	10052.99	1854.44	406.21	94.93	32.25	4.28	4.57
10052.99	10147.92 RB	1818.71	401.50	94.93	31.63	4.23	4.53
10147.92	10619.14	126.22	38.76	18.95	2.20	2.10	3.26

CROSS SECTION **RIVER: Saddleback**
REACH: Spillway **RS: 2.276**

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9666.39	1124.14	9725.37	1123.93	9771.07	1122.88	9786.26	1120.42	9804.78	1120
9815.78	1122.54	9823.47	1122.59	9837.57	1121.01	9854.22	1117.1	9863.33	1115.11
10026.84	1114.91	10146.2	1114.66	10165.66	1119.89	10182.05	1120.46	10193.29	1121.69
10211.25	1122.51	10229.99	1121.94	10306.18	1121.81	10353.71	1122.02	10431.94	1121.61
10491.14	1121.27	10514.49	1121.05	10547.87	1114.51	10576.71	1113.32		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9666.39	.03	9863.33	.035	10146.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9863.33 10146.2 164.12 164.12 164.12 .3 .1
Right Levee Station= 10211.3 Elevation= 1122.51

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1118.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1119.33	Reach Len. (ft)	164.12	164.12	164.12
Crit W.S. (ft)	1117.22	Flow Area (sq ft)	33.81	1151.32	34.80
E.G. Slope (ft/ft)	0.001956	Area (sq ft)	33.81	1151.32	34.80
Q Total (cfs)	5750.00	Flow (cfs)	114.57	5510.87	124.57
Top Width (ft)	316.10	Top Width (ft)	17.14	282.87	16.09
Vel Total (ft/s)	4.71	Avg. Vel. (ft/s)	3.39	4.79	3.58
Max Chl Dpth (ft)	5.67	Hydr. Depth (ft)	1.97	4.07	2.16
Conv. Total (cfs)	130010.7	Conv. (cfs)	2590.4	124603.8	2816.5
Length Wtd. (ft)	164.12	Wetted Per. (ft)	17.57	282.87	16.66
Min Ch El (ft)	1114.66	Shear (lb/sq ft)	0.23	0.50	0.26
Alpha	1.01	Stream Power (lb/ft s)	0.80	2.38	0.91
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	9.07	222.50	108.83
C & E Loss (ft)	0.01	Cum SA (acres)	6.97	82.30	45.86

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9666.39	9863.33	114.56	33.81	17.57	1.99	1.97	3.39
9863.33 LB	9957.62	1734.05	370.84	94.29	30.16	3.93	4.68
9957.62	10051.91	1821.77	381.98	94.29	31.68	4.05	4.77
10051.91	10146.20 RB	1955.06	398.51	94.29	34.00	4.23	4.91
10146.20	10576.71	124.56	34.80	16.66	2.17	2.16	3.58

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 2.244

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9719.2	1123.24	9747.45	1123.34	9760.14	1121.39	9766.66	1121.44	9777.03	1124.73
9789.75	1122.53	9804.05	1122.46	9815.27	1121.96	9829.32	1121.06	9837.65	1119.78
9848.46	1118.07	9857.03	1117.25	9860.56	1116.29	9872.9	1114.31	10020.86	1114.47
10144.15	1114.59	10165.06	1119.81	10178.26	1120.46	10192.42	1121.88	10207.62	1122.67
10224.54	1121.95	10303.08	1122.32	10355.16	1121.85	10442.51	1121.44	10496.5	1121.46
10517.8	1121.71	10553.95	1113.43	10586.39	1113.18	10620.31	1113.02	10672.82	1112.09

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9719.2	.03	9872.9	.03	10144.15	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9872.91 10144.15 507.78 507.78 507.78 .3 .1
Right Levee Station= 10207.6 Elevation= 1122.67

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1118.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1118.99	Reach Len. (ft)	507.78	507.78	507.78
Crit W.S. (ft)	1116.87	Flow Area (sq ft)	56.61	1129.51	32.51
E.G. Slope (ft/ft)	0.002074	Area (sq ft)	56.61	1129.51	32.51

Q Total (cfs)	5970.00	Flow (cfs)	202.92	5652.51	114.57
Top Width (ft)	315.29	Top Width (ft)	27.89	271.25	16.15
Vel Total (ft/s)	4.90	Avg. Vel. (ft/s)	3.58	5.00	3.52
Max Chl Dpth (ft)	6.53	Hydr. Depth (ft)	2.03	4.16	2.01
Conv. Total (cfs)	131088.1	Conv. (cfs)	4455.7	124116.8	2515.6
Length Wtd. (ft)	507.78	Wetted Per. (ft)	28.26	271.25	16.65
Min Ch El (ft)	1114.30	Shear (lb/sq ft)	0.26	0.54	0.25
Alpha	1.02	Stream Power (lb/ft s)	0.93	2.70	0.89
Frctn Loss (ft)	1.23	Cum Volume (acre-ft)	8.90	218.20	108.70
C & E Loss (ft)	0.02	Cum SA (acres)	6.89	81.26	45.80

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9719.20	9872.90	202.92	56.61	28.26	3.40	2.03	3.58
9872.90 LB	9963.32	1958.97	385.45	90.42	32.81	4.26	5.08
9963.32	10053.73	1880.87	376.15 *	90.42	31.51	4.16	5.00
10053.73	10144.15 RB	1812.68	367.91	90.42	30.36	4.07	4.93
10144.15	10672.82	114.57	32.51	16.65	1.92	2.01	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: Saddleback
REACH: Spillway RS: 2.148

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9780.37	1120.44	9790.31	1119.06	9797.55	1118.72	9807.73	1121	9816.85	1121
9826.63	1119.24	9843.33	1116.43	9853.38	1113.89	10009.23	1113.43	10146.8	1113.79
10167.34	1119.32	10182.49	1119.46	10196.61	1121.46	10212.45	1121.88	10233.85	1121.08
10303.17	1121.02	10357.62	1121.06	10444.94	1120.23	10496.76	1119.79	10521.51	1119.68
10560.46	1111.67								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9780.37	.03	9853.38	.035	10146.8	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9853.38	10146.8	495.44	495.44	495.44	.3	.1

Right Levee Station= 10212.5 Elevation= 1121.88

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1117.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1117.74	Reach Len. (ft)	495.44	495.44	495.44
Crit W.S. (ft)	1115.96	Flow Area (sq ft)	23.67	1073.35	22.81
E.G. Slope (ft/ft)	0.002875	Area (sq ft)	23.67	1073.35	22.81
Q Total (cfs)	5970.00	Flow (cfs)	83.11	5800.86	86.02
Top Width (ft)	321.63	Top Width (ft)	15.19	293.42	13.02
Vel Total (ft/s)	5.33	Avg. Vel. (ft/s)	3.51	5.40	3.77
Max Chl Dpth (ft)	5.62	Hydr. Depth (ft)	1.56	3.66	1.75
Conv. Total (cfs)	111340.4	Conv. (cfs)	1550.1	108186.0	1604.3
Length Wtd. (ft)	495.44	Wetted Per. (ft)	15.58	293.42	13.48
Min Ch El (ft)	1113.43	Shear (lb/sq ft)	0.27	0.66	0.30
Alpha	1.01	Stream Power (lb/ft s)	0.96	3.55	1.15
Frctn Loss (ft)	1.33	Cum Volume (acre-ft)	8.43	205.36	108.38

C & E Loss (ft)	0.01	Cum SA (acres)	6.63	77.97	45.63

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9780.37	9853.38	83.11	23.67	15.58	1.39	1.56	3.51
9853.38 LB	9951.19	1837.69	347.12	97.81	30.78	3.55	5.29
9951.19	10048.99	2052.75	370.95	97.81	34.38	3.79	5.53
10048.99	10146.80 RB	1910.42	355.30	97.81	32.00	3.63	5.38
10146.80	10560.46	86.02	22.81	13.48	1.44	1.75	3.77

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: Saddleback
REACH: Spillway RS: 2.054

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9524.19	1119.79	9584.49	1119.79	9694.98	1117.66	9722.99	1118.15	9735.6	1118.23
9773.79	1117.83	9807.84	1115.53	9817.27	1115.52	9872.32	1112.08	10030.2	1112.27
10158.3	1112.66	10177.66	1117.38	10193.74	1117.32	10205.55	1118.91	10218.26	1119.44
10245.06	1119.24	10287.46	1118.75	10340.83	1118.83	10390.33	1118.42	10441.87	1118.02
10458.54	1118.06	10477.95	1117.85	10519.37	1110.23				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9524.19	.03	9872.32	.035	10158.3	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9872.32	10158.3	271.75	271.75	271.75	.3	.1

Right Levee Station= 10224.2 Elevation= 1119.4

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1116.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1116.41	Reach Len. (ft)	271.75	271.75	271.75
Crit W.S. (ft)	1114.61	Flow Area (sq ft)	128.77	1062.90	23.18
E.G. Slope (ft/ft)	0.002505	Area (sq ft)	128.77	1062.90	23.18
Q Total (cfs)	5970.00	Flow (cfs)	470.90	5419.42	79.68
Top Width (ft)	371.53	Top Width (ft)	71.76	285.98	13.79
Vel Total (ft/s)	4.91	Avg. Vel. (ft/s)	3.66	5.10	3.44
Max Chl Dpth (ft)	5.79	Hydr. Depth (ft)	1.79	3.72	1.68
Conv. Total (cfs)	119273.9	Conv. (cfs)	9408.1	108273.9	1591.8
Length Wtd. (ft)	271.75	Wetted Per. (ft)	71.88	285.98	14.19
Min Ch El (ft)	1112.08	Shear (lb/sq ft)	0.28	0.58	0.26
Alpha	1.03	Stream Power (lb/ft s)	1.02	2.96	0.88
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)	7.56	193.21	108.12
C & E Loss (ft)	0.01	Cum SA (acres)	6.14	74.67	45.48

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9524.19	9872.32	470.90	128.77	71.88	7.89	1.79	3.66
9872.32 LB	9967.65	1942.31	370.27	95.33	32.53	3.88	5.25

9967.65	10062.97	1839.17	358.35	95.33	30.81	3.76	5.13
10062.97	10158.30 RB	1637.95	334.28	95.33	27.44	3.51	4.90
10158.30	10519.37	79.68	23.18	14.19	1.33	1.68	3.44

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 2.003

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9482.65	1119.34	9572.56	1118.02	9611.18	1117.23	9827.7	1113.59	9836.02	1113.39
9848.33	1113.01	9868.34	1111.97	9952.4	1111.22	10028.3	1111.31	10103.13	1111.74
10167.92	1111.99	10184.03	1116.89	10198.42	1116.56	10211.92	1118.75	10236.35	1118.86
10253.46	1118.33	10283.15	1118.21	10331.1	1118.37	10346.37	1118.55	10361.95	1118.49
10385.21	1120.75	10438.32	1127.31	10487.68	1133.65	10507.99	1138.51	10528.29	1140.55

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9482.65	.03	9868.34	.03	10167.92	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9868.34	10167.92	218.45	218.45	218.45	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1115.55	Element			
Vel Head (ft)	0.29	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1115.83	Reach Len. (ft)	218.45	218.45	218.45
Crit W.S. (ft)		Flow Area (sq ft)	221.24	1197.02	20.81
E.G. Slope (ft/ft)	0.001738	Area (sq ft)	221.24	1197.02	20.81
Q Total (cfs)	5970.00	Flow (cfs)	573.84	5334.91	61.26
Top Width (ft)	468.39	Top Width (ft)	157.11	299.58	11.70
Vel Total (ft/s)	4.15	Avg. Vel. (ft/s)	2.59	4.46	2.94
Max Chl Dpth (ft)	4.33	Hydr. Depth (ft)	1.41	4.00	1.78
Conv. Total (cfs)	143196.5	Conv. (cfs)	13764.1	127963.1	1469.3
Length Wtd. (ft)	218.45	Wetted Per. (ft)	157.16	299.59	12.23
Min Ch El (ft)	1111.22	Shear (lb/sq ft)	0.15	0.43	0.18
Alpha	1.07	Stream Power (lb/ft s)	0.40	1.93	0.54
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	6.47	186.16	107.98
C & E Loss (ft)	0.06	Cum SA (acres)	5.43	72.85	45.40

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9482.65	9868.34	573.84	221.24	157.16	9.61	1.41	2.59
9868.34 LB	9968.20	1787.44	400.52	99.86	29.94	4.01	4.46
9968.20	10068.06	1940.80	420.80	99.86	32.51	4.21	4.61
10068.06	10167.92 RB	1606.67	375.70	99.86	26.91	3.76	4.28
10167.92	10528.29	61.26	20.81	12.23	1.03	1.78	2.94

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.962

INPUT
Description: Upstream of Drop structure
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9559.75	1116.6	9566.21	1115.59	9575.94	1115.24	9584.36	1116.97	9596.1	1116.07
9615.64	1116.28	9649.74	1115.75	9678.54	1115.01	9697.09	1114.62	9715.82	1118.93
9725.26	1119.22	9737.63	1114.44	9755.12	1114.96	9783.85	1114.68	9812.99	1115.83

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 9831.18  1117.7 9843.71 1117.07 9859.56 1114.46 9867.74 1110.91 9887.95 1111.27
 9910.85 1111.2510022.51 1111.2610098.63 1111.1110164.26 1111.6710181.57 1115.93
10192.02 1119.0610202.29  1122.110211.69 1124.0210234.87 1126.1410269.46 1130.68
10297.93 1135.87 10331.2 1139.95 10373.9 1144.1710405.75  1146.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9559.75     .03 9867.74    .03510164.26     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9867.7410164.26            53.73   53.73   53.73            .3        .1
Left Levee      Station= 9824.37      Elevation=  1117.8
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CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1114.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1115.25	Reach Len. (ft)	53.73	53.73	53.73
Crit W.S. (ft)	1113.58	Flow Area (sq ft)	17.20	1037.47	19.33
E.G. Slope (ft/ft)	0.003400	Area (sq ft)	17.20	1037.47	19.33
Q Total (cfs)	6060.00	Flow (cfs)	68.01	5918.90	73.10
Top Width (ft)	319.03	Top Width (ft)	9.97	296.52	12.54
Vel Total (ft/s)	5.64	Avg. Vel. (ft/s)	3.95	5.71	3.78
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)	1.72	3.50	1.54
Conv. Total (cfs)	103930.7	Conv. (cfs)	1166.3	101510.7	1253.6
Length Wtd. (ft)	53.73	Wetted Per. (ft)	10.73	296.53	12.91
Min Ch El (ft)	1110.91	Shear (lb/sq ft)	0.34	0.74	0.32
Alpha	1.01	Stream Power (lb/ft s)	1.34	4.24	1.20
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	5.87	180.56	107.88
C & E Loss (ft)	0.19	Cum SA (acres)	5.01	71.35	45.34

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9559.75	9867.74	68.01	17.20	10.73	1.12	1.72	3.95
9867.74 LB	9966.58	2005.86	349.29	98.84	33.10	3.53	5.74
9966.58	10065.42	1987.76	347.39	98.84	32.80	3.51	5.72
10065.42	10164.26 RB	1925.27	340.80	98.84	31.77	3.45	5.65
10164.26	10405.75	73.10	19.33	12.91	1.21	1.54	3.78

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 RIVER: Saddleback
REACH: Spillway RS: 1.951

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INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9440.02 1116.69 9485.34 1116.81 9502.57 1116.64 9509.32 1115.66 9520.33 1114.95
 9533.91 1116.73 9549.18 1116.15 9615.87 1114.55 9735.93 1113.09 9765.81 1111.08
 9782.84 1111.93 9800.89 1113.82 9824.35 1117.17 9829.03 1117.03 9845.06 1114.22
 9860.67 1111.2610161.24 1111.3910177.35 1115.6910188.52 1120.6210195.98  1123.1
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10219.44 1126.9310240.22 1130.0610271.54 1135.6710296.85 1139.5710324.85 1144.74
10349.89 1148.7410375.56 1152.0910402.96 1152.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9440.02	.03	9860.67	.03	10161.24	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9860.67	10161.24	51.68	51.68	51.68	.3	.1

Left Levee Station= 9829.2 Elevation= 1117

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1113.63	Element			
Vel Head (ft)	1.12	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1114.75	Reach Len. (ft)	51.68	51.68	51.68
Crit W.S. (ft)	1113.63	Flow Area (sq ft)	14.83	693.14	9.41
E.G. Slope (ft/ft)	0.013238	Area (sq ft)	14.83	693.14	9.41
Q Total (cfs)	6060.00	Flow (cfs)	93.53	5909.94	56.53
Top Width (ft)	321.47	Top Width (ft)	12.50	300.57	8.40
Vel Total (ft/s)	8.45	Avg. Vel. (ft/s)	6.31	8.53	6.01
Max Chl Dpth (ft)	2.55	Hydr. Depth (ft)	1.19	2.31	1.12
Conv. Total (cfs)	52669.2	Conv. (cfs)	812.9	51365.0	491.3
Length Wtd. (ft)	51.68	Wetted Per. (ft)	12.73	300.57	8.69
Min Ch El (ft)	1111.26	Shear (lb/sq ft)	0.96	1.91	0.89
Alpha	1.01	Stream Power (lb/ft s)	6.07	16.25	5.38
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	5.85	179.49	107.86
C & E Loss (ft)	0.03	Cum SA (acres)	4.99	70.98	45.33

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 velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates
that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid,
water surface was used.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9440.02	9860.67	93.53	14.83	12.73	1.54	1.19	6.31
9860.67 LB	9960.86	2031.81	235.39	100.19	33.53	2.35	8.63
9960.86	10061.05	1969.71	231.05	100.19	32.50	2.31	8.53
10061.05	10161.24 RB	1908.43	226.71	100.19	31.49	2.26	8.42
10161.24	10402.96	56.53	9.41	8.69	0.93	1.12	6.01

Warning - The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.941

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9492.63	1116.12	9576.78	1115.41	9585.29	1115.04	9601.97	1115.6	9620.72	1114.04
9659.74	1113.9	9696.87	1113.2	9729.8	1112.53	9748.87	1110.23	9775.24	1110.68
9789.63	1114.28	9806.64	1113.79	9821.95	1112.19	9833.67	1108.53	9841.24	1106.33
9849.38	1101.88	9861.68	1097.79	10159.71	1097.51	10186.24	1109.83	10212.85	1122.4
10226.9	1129.31	10245.89	1131.78	10277.45	1137.75	10305.79	1143.85	10329.95	1148.94
10347.94	1151.81	10363.05	1154.51	10379.34	1155.69				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9492.63	.03	9861.68	.03	10159.71	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9861.68	10159.71	80.13	80.13	80.13	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1105.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1105.18	Reach Len. (ft)	80.13	80.13	80.13
Crit W.S. (ft)	1099.97	Flow Area (sq ft)	73.85	2215.40	61.79
E.G. Slope (ft/ft)	0.000262	Area (sq ft)	73.85	2215.40	61.79
Q Total (cfs)	6060.00	Flow (cfs)	143.35	5803.75	112.91
Top Width (ft)	332.49	Top Width (ft)	18.15	298.03	16.31
Vel Total (ft/s)	2.58	Avg. Vel. (ft/s)	1.94	2.62	1.83
Max Chl Dpth (ft)	7.58	Hydr. Depth (ft)	4.07	7.43	3.79
Conv. Total (cfs)	374056.8	Conv. (cfs)	8848.1	358239.5	6969.2
Length Wtd. (ft)	80.13	Wetted Per. (ft)	19.63	298.03	17.98
Min Ch El (ft)	1097.50	Shear (lb/sq ft)	0.06	0.12	0.06
Alpha	1.01	Stream Power (lb/ft s)	0.12	0.32	0.10
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	5.80	177.77	107.82
C & E Loss (ft)	0.09	Cum SA (acres)	4.98	70.63	45.31

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

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9492.63	9861.68	143.35	73.85	19.63	2.37	4.07	1.94
9861.68 LB	9961.02	1892.72	728.86	99.34	31.23	7.34	2.60

9961.02	10060.37	1934.45	738.46	99.34	31.92	7.43	2.62
10060.37	10159.71 RB	1976.58	748.07	99.34	32.62	7.53	2.64
10159.71	10379.34	112.91	61.79	17.98	1.86	3.79	1.83

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.926

INPUT
Description: Downstream from drop structure
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9579.75	1114.61	9589.31	1115.03	9608.1	1114.87	9648.29	1113.19	9675.46	1112.57
9693.08	1112.69	9711.87	1113.11	9735.96	1109.53	9762.88	1110.5	9776.04	1113.34
9787.71	1112.97	9801.59	1111.77	9825.03	1105.95	9843.81	1101.21	9863.95	1101.84
9888.43	1101.06	9908.29	1101.56	9951.07	1101.3	9983.04	1101.09	10028.82	1101.15
10085.82	1100.63	10118.48	1100.62	10139.81	1100.99	10159.6	1100.01	10175.61	1105.96
10205.53	1121.01	10227	1129.11	10247.83	1132.14	10266.29	1135.14	10285.23	1138.58
10312.57	1143.5	10333.98	1147.6	10359.5	1151.31	10380.99	1153.89	10392.93	1154.95
10412.47	1151.93								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9579.75	.03	9843.81	.035	10159.6	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9843.81	10159.6	246.74	246.74	246.74	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1104.62	Element			
Vel Head (ft)	0.42	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1105.04	Reach Len. (ft)	246.74	246.74	246.74
Crit W.S. (ft)		Flow Area (sq ft)	23.02	1117.51	28.58
E.G. Slope (ft/ft)	0.002820	Area (sq ft)	23.02	1117.51	28.58
Q Total (cfs)	6060.00	Flow (cfs)	84.63	5849.76	125.61
Top Width (ft)	341.70	Top Width (ft)	13.51	315.79	12.40
Vel Total (ft/s)	5.18	Avg. Vel. (ft/s)	3.68	5.23	4.40
Max Chl Dpth (ft)	4.61	Hydr. Depth (ft)	1.70	3.54	2.30
Conv. Total (cfs)	114119.6	Conv. (cfs)	1593.8	110160.4	2365.4
Length Wtd. (ft)	246.74	Wetted Per. (ft)	13.93	315.85	13.23
Min Ch El (ft)	1100.01	Shear (lb/sq ft)	0.29	0.62	0.38
Alpha	1.01	Stream Power (lb/ft s)	1.07	3.26	1.67
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	5.71	174.70	107.74
C & E Loss (ft)	0.01	Cum SA (acres)	4.95	70.06	45.28

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9579.75	9843.81	84.63	23.02	13.93	1.40	1.70	3.68
9843.81 LB	9949.07	1630.19	335.41	105.29	26.90	3.19	4.86
9949.07	10054.34	1900.76	367.74	105.26	31.37	3.49	5.17
10054.34	10159.60 RB	2318.81	414.37	105.29	38.26	3.94	5.60
10159.60	10412.47	125.61	28.58	13.23	2.07	2.30	4.40

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.88

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9687.98	1109.08	9708.08	1107.7	9727.23	1107.59	9745.47	1106.62	9755.41	1106.9
9796.16	1099.76	9820.44	1100.61	9851.87	1100.97	9884.18	1100.76	9925.41	1100.77
9974.22	1101.55	10030.79	1101.26	10070.83	1100.76	10110.59	1100.57	10143.91	1100.62
10167.48	1100.91	10186.14	1100.02	10200.73	1104.53	10237.92	1117.05	10254.53	1118.56
10286.91	1123.12	10322.31	1127.34	10351.68	1131.18	10374.2	1133.74	10402.61	1138.63
10424.3	1140.91	10452.09	1144.63	10465.17	1145	10484.48	1142.53		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9687.98	.03	9796.16	.035	10186.14	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9796.16	10186.14	246.52	246.52	246.52	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1104.03	Element			
Vel Head (ft)	0.33	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1104.36	Reach Len. (ft)	246.52	246.52	246.52
Crit W.S. (ft)		Flow Area (sq ft)	52.09	1234.42	26.04
E.G. Slope (ft/ft)	0.002585	Area (sq ft)	52.09	1234.42	26.04
Q Total (cfs)	6060.00	Flow (cfs)	215.38	5743.44	101.19
Top Width (ft)	427.34	Top Width (ft)	24.38	389.98	12.98
Vel Total (ft/s)	4.62	Avg. Vel. (ft/s)	4.13	4.65	3.89
Max Chl Dpth (ft)	4.27	Hydr. Depth (ft)	2.14	3.17	2.01
Conv. Total (cfs)	119197.2	Conv. (cfs)	4236.3	112970.5	1990.3
Length Wtd. (ft)	246.52	Wetted Per. (ft)	24.76	390.03	13.59
Min Ch El (ft)	1099.76	Shear (lb/sq ft)	0.34	0.51	0.31
Alpha	1.00	Stream Power (lb/ft s)	1.40	2.38	1.20
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	5.50	168.04	107.58
C & E Loss (ft)	0.03	Cum SA (acres)	4.84	68.07	45.21

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.833

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9448.13	1111.09	9567.22	1108.81	9660.29	1109.07	9676.92	1109.23	9697.14	1107.06
9725.58	1108.31	9735.29	1110.24	9749	1111.43	9768.37	1107.78	9785.52	1104.1
9800.87	1100.77	9836.84	1100.53	9908.56	1100.65	9956.19	1100.46	10021.72	1101.14
10080.59	1099.95	10118.19	1100.64	10162.57	1099.95	10185.11	1099.77	10211.62	1100.66
10233	1100.13	10264.87	1108.87	10283.81	1110.63	10322.58	1114.09	10353.84	1117.91
10405.06	1122.78	10452.17	1129.21	10482.48	1133.93	10515.49	1139.33	10541.65	1143.38
10556.63	1144.32	10568.9	1143.46						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9448.13	.03	9800.87	.035	10233	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9800.87	10233	388.34	329.24	254.7	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1103.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1103.51	Reach Len. (ft)	388.34	329.24	254.70
Crit W.S. (ft)		Flow Area (sq ft)	12.15	1112.96	15.71
E.G. Slope (ft/ft)	0.004493	Area (sq ft)	12.15	1112.96	15.71
Q Total (cfs)	6060.00	Flow (cfs)	43.54	5950.69	65.77
Top Width (ft)	453.42	Top Width (ft)	10.58	432.13	10.71
Vel Total (ft/s)	5.31	Avg. Vel. (ft/s)	3.58	5.35	4.19
Max Chl Dpth (ft)	3.30	Hydr. Depth (ft)	1.15	2.58	1.47
Conv. Total (cfs)	90403.9	Conv. (cfs)	649.6	88773.2	981.1
Length Wtd. (ft)	329.15	Wetted Per. (ft)	10.83	432.18	11.10
Min Ch El (ft)	1099.77	Shear (lb/sq ft)	0.31	0.72	0.40
Alpha	1.00	Stream Power (lb/ft s)	1.13	3.86	1.66
Frctn Loss (ft)	2.06	Cum Volume (acre-ft)	5.32	161.40	107.47
C & E Loss (ft)	0.05	Cum SA (acres)	4.74	65.74	45.15

Warning - The conveyance ratio (upstream conveyance 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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9448.13	9800.87	43.54	12.15	10.83	0.72	1.15	3.58
9800.87 LB	9944.91	1837.71	354.90	144.04	30.33	2.46	5.18
9944.91	10088.96	1807.68	351.42	144.06	29.83	2.44	5.14
10088.96	10233.00 RB	2305.30	406.64	144.08	38.04	2.82	5.67
10233.00	10400.95	65.77	15.71	11.10	1.09	1.47	4.19

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.771

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9273.7	1105.7	9350.39	1104.12	9367.22	1103.5	9392.57	1104.22	9422.53	1104.6
9472.31	1105.2	9539.33	1103.12	9553.97	1103.12	9567.06	1104.61	9603.74	1104.49
9656.5	1104.5	9693.33	1104.1	9720.13	1104.01	9760	1103.3	9780.59	1098.6
9825.11	1098.73	9923.76	1098.89	9970.25	1098.94	10049.59	1098.84	10102.02	1098.76
10139.02	1099.3	10157.3	1098.28	10176.49	1098.85	10224.19	1099.08	10262.31	1099.29
10280.18	1099.03	10307.91	1106.23	10325.63	1107.72	10363.42	1111.47	10403.46	1115.93
10454.15	1123.51	10478.4	1127.56	10521.35	1135.87	10555.92	1144.23		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9273.7	.03	9780.59	.03	10280.18	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9780.59	10280.18	386.03	410.19	414.24	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1100.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.61	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1101.40	Reach Len. (ft)	386.03	410.19	414.24
Crit W.S. (ft)		Flow Area (sq ft)	10.44	950.59	5.92
E.G. Slope (ft/ft)	0.009321	Area (sq ft)	10.44	950.59	5.92
Q Total (cfs)	6060.00	Flow (cfs)	52.05	5982.58	25.37
Top Width (ft)	515.91	Top Width (ft)	9.56	499.59	6.75
Vel Total (ft/s)	6.27	Avg. Vel. (ft/s)	4.98	6.29	4.29
Max Chl Dpth (ft)	2.50	Hydr. Depth (ft)	1.09	1.90	0.88
Conv. Total (cfs)	62767.6	Conv. (cfs)	539.1	61965.7	262.8
Length Wtd. (ft)	410.00	Wetted Per. (ft)	9.81	499.63	6.98
Min Ch El (ft)	1098.28	Shear (lb/sq ft)	0.62	1.11	0.49
Alpha	1.00	Stream Power (lb/ft s)	3.09	6.97	2.12
Frctn Loss (ft)	3.27	Cum Volume (acre-ft)	5.22	153.60	107.40
C & E Loss (ft)	0.02	Cum SA (acres)	4.65	62.22	45.09

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9273.70	9780.59	52.05	10.44	9.81	0.86	1.09	4.98
9780.59 LB	9947.12	2162.98	332.91	166.53	35.69	2.00	6.50
9947.12	10113.65	2021.53	319.67	166.53	33.36	1.92	6.32
10113.65	10280.18 RB	1798.07	298.01	166.57	29.67	1.79	6.03
10280.18	10418.05	25.37	5.92	6.98	0.42	0.88	4.29

Warning - The energy loss was 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: Saddleback
REACH: Spillway RS: 1.692

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9085.48	1101.9	9109.24	1100.69	9222.97	1099.82	9247.25	1098.6	9289.26	1099.55
9386.49	1100.23	9446.72	1099.06	9509.17	1099.2	9574.07	1099.06	9598.16	1097.82
9630.06	1099.35	9684.7	1098.79	9730.36	1098.82	9748.95	1095.51	9786.25	1095.46
9882.98	1096.83	9954.99	1095.81	10060.49	1095.37	10090.02	1095.89	10102.31	1096.41
10163.38	1096.28	10203.29	1095.72	10224.04	1094.69	10246.03	1096.47	10284.94	1096.3
10324.55	1095.41	10369.71	1095.83	10398.66	1096.35	10423.5	1097.39	10449.11	1098.38
10506.41	1102.43	10556.82	1106.67	10613.34	1114.31	10650.58	1120.15		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9085.48	.03	9748.95	.03	10398.66	.03

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9748.95	10398.66	299.8	296.96	300.45	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1097.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.030	0.035	0.030
E.G. Elev (ft)	1098.11	Reach Len. (ft)	299.80	296.96	300.45
Crit W.S. (ft)		Flow Area (sq ft)	13.48	1150.96	21.89
E.G. Slope (ft/ft)	0.006880	Area (sq ft)	13.48	1150.96	21.89
Q Total (cfs)	6060.00	Flow (cfs)	58.25	5933.20	68.55
Top Width (ft)	694.90	Top Width (ft)	12.31	649.71	32.89
Vel Total (ft/s)	5.11	Avg. Vel. (ft/s)	4.32	5.16	3.13

Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)	1.10	1.77	0.67
Conv. Total (cfs)	73057.3	Conv. (cfs)	702.3	71528.7	826.4
Length Wtd. (ft)	297.17	Wetted Per. (ft)	12.50	649.86	32.91
Min Ch El (ft)	1094.69	Shear (lb/sq ft)	0.46	0.76	0.29
Alpha	1.01	Stream Power (lb/ft s)	2.00	3.92	0.89
Frctn Loss (ft)	2.97	Cum Volume (acre-ft)	5.11	143.71	107.27
C & E Loss (ft)	0.02	Cum SA (acres)	4.55	56.81	44.91

Warning - The conveyance ratio (upstream conveyance 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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9085.48	9748.95	58.25	13.48	12.50	0.96	1.10	4.32
9748.95 LB	9965.52	1720.45	353.23	216.59	28.39	1.63	4.87
9965.52	10182.09	2073.33	395.07	216.59	34.21	1.82	5.25
10182.09	10398.66 RB	2139.42	402.66	216.69	35.30	1.86	5.31
10398.66	10524.62	68.55	21.89	32.91	1.13	0.67	3.13

Warning - The conveyance ratio (upstream conveyance 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: Saddleback
REACH: Spillway RS: 1.636

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8979.63	1097.95	9016.3	1098.83	9076.61	1097.31	9108.01	1096.98	9151.08	1097.31
9262.98	1096.93	9305.1	1095.94	9328.05	1093.29	9355.73	1089.45	9374.77	1090.52
9387.66	1089.69	9419.7	1091.39	9433.49	1093.18	9512.34	1095.34	9551.11	1095.74
9581.97	1095.66	9599.28	1094.77	9614.58	1093.61	9645.35	1094.74	9697.27	1094.38
9731.18	1093.66	9765.44	1093.29	9861.74	1094.11	9968.23	1092.37	10054.98	1092.69
10094.46	1092.04	10128.29	1091.67	10161.05	1091.75	10207.38	1093.38	10266.33	1093.37
10310.24	1093.83	10354.16	1093.49	10385	1094.31	10461.55	1093.21	10502.63	1093.31
10541.6	1093.74	10637.59	1093.21	10652.58	1095.44	10667.99	1096.59	10698.22	1098.39
10725.79	1099.81	10769.68	1103.95	10791.1	1106.29				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
8979.63	.07	9731.18	.07	10541.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9731.18	10541.6	396.33	327.58	246.94	.3	.1

Left Levee Station= 9559.63 Elevation= 1096

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1094.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1095.12	Reach Len. (ft)	396.33	327.58	246.94
Crit W.S. (ft)	1094.32	Flow Area (sq ft)	81.16	1406.16	146.65
E.G. Slope (ft/ft)	0.015835	Area (sq ft)	81.16	1406.16	146.65
Q Total (cfs)	6060.00	Flow (cfs)	154.77	5423.35	481.88
Top Width (ft)	1052.26	Top Width (ft)	134.48	810.42	107.37

Vel Total (ft/s)	3.71	Avg. Vel. (ft/s)	1.91	3.86	3.29
Max Chl Dpth (ft)	5.45	Hydr. Depth (ft)	0.60	1.74	1.37
Conv. Total (cfs)	48156.7	Conv. (cfs)	1229.9	43097.4	3829.4
Length Wtd. (ft)	324.47	Wetted Per. (ft)	134.55	810.50	107.49
Min Ch El (ft)	1091.67	Shear (lb/sq ft)	0.60	1.72	1.35
Alpha	1.04	Stream Power (lb/ft s)	1.14	6.62	4.43
Frctn Loss (ft)	3.63	Cum Volume (acre-ft)	4.78	134.99	106.69
C & E Loss (ft)	0.01	Cum SA (acres)	4.05	51.83	44.42

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
8979.63	9731.18	154.77	81.16	134.55	2.55	0.60	1.91
9731.18 LB	10001.32	1470.23	423.52	270.16	24.26	1.57	3.47
10001.32	10271.46	2910.06	637.96	270.18	48.02	2.36	4.56
10271.46	10541.60 RB	1043.05	344.69	270.16	17.21	1.28	3.03
10541.60	10666.35	481.88	146.65	107.49	7.95	1.37	3.29

Warning - The energy loss was 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: Saddleback
REACH: Spillway RS: 1.575

INPUT
Description:
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9709.23	1095	9771.04	1094.84	9954.09	1090.5	9980.61	1088.41	10034.07	1088.66
10104.31	1087.53	10121.52	1089.47	10167.08	1089.56	10206.94	1089.25	10273.24	1089.52
10393.61	1090.81	10540.57	1089.39	10607.1	1089.67	10675.52	1089.64	10739.27	1089.44
10815.98	1090.12	10845.56	1089.59	10893.1	1089.11	10913.33	1090.79	10958.76	1090.92
10974.95	1088.65	11011.05	1089.41	11027.21	1090.66	11089.64	1089.99	11163.21	1089.92
11239.6	1090.61	11285.24	1090.41	11375.05	1091.18	11475.39	1090.82	11499.62	1092.32
11531.33	1093.56	11573.96	1095.59	11630.27	1098.29				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9709.23	.07	10034.07	.07	11027.21	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
10034.07	11027.21	407.1	317.21	258.94	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1091.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1091.48	Reach Len. (ft)	407.10	317.21	258.94
Crit W.S. (ft)		Flow Area (sq ft)	218.65	1709.71	385.27
E.G. Slope (ft/ft)	0.008313	Area (sq ft)	218.65	1709.71	385.27
Q Total (cfs)	6060.00	Flow (cfs)	642.96	4751.69	665.35
Top Width (ft)	1566.85	Top Width (ft)	116.65	993.14	457.06
Vel Total (ft/s)	2.62	Avg. Vel. (ft/s)	2.94	2.78	1.73
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)	1.87	1.72	0.84
Conv. Total (cfs)	66465.2	Conv. (cfs)	7051.9	52115.8	7297.4
Length Wtd. (ft)	311.35	Wetted Per. (ft)	116.75	993.57	457.08
Min Ch El (ft)	1087.53	Shear (lb/sq ft)	0.97	0.89	0.44
Alpha	1.06	Stream Power (lb/ft s)	2.86	2.48	0.76
Frctn Loss (ft)	3.53	Cum Volume (acre-ft)	3.42	123.27	105.18
C & E Loss (ft)	0.01	Cum SA (acres)	2.91	45.05	42.82

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9709.23	10034.07	642.96	218.65	116.75	10.61	1.87	2.94
10034.07 LB	10365.12	2192.93	698.79	331.17	36.19	2.11	3.14
10365.12	10696.16	1188.87	483.89	331.05	19.62	1.46	2.46
10696.16	11027.21 RB	1369.89	527.03	331.34	22.61	1.59	2.60
11027.21	11328.74	612.79	327.67	301.54	10.11	1.09	1.87
11328.74	11630.27	52.56	57.60	155.55	0.87	0.37	0.91

Warning - The conveyance ratio (upstream conveyance 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: Saddleback
REACH: Spillway RS: 1.518

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9072.85	1089.89	9115.31	1089.51	9137.16	1088	9148.62	1087.16	9268.74	1086.36
9277.18	1086	9306.96	1084.87	9325.58	1085.72	9339.46	1084.45	9374.38	1086
9393.26	1088	9414.13	1090	9417.79	1090.42	9440.38	1090	9464.3	1089.18
9483.22	1089.28	9509.46	1088	9509.56	1087.98	9526.08	1086.67	9553.89	1087.8
9567.72	1086	9581.47	1084	9588.76	1082.85	9630.47	1083.68	9661.09	1084
9662.64	1083.96	9679.26	1085.13	9721.25	1086	9746.26	1086.54	9877.79	1086.56
9948.97	1086.65	10008.63	1087.47	10093.29	1087.54	10156.75	1087.31	10189.89	1087.2
10228.48	1087.21	10287	1086.12	10321.86	1086.78	10353.32	1086	10370.16	1085.59
10376.75	1086	10389.69	1087.02	10436.28	1087.48	10452.43	1086	10466.15	1084.74
10486.28	1086	10493.28	1086.27	10545.13	1086.69	10590.16	1087.41	10713.01	1087.06
10787.59	1087.31	10869.29	1086.04	10998.68	1086.91	1084.69	1086.54	11171.79	1088
11191.33	1088.47	11311.81	1090	11373.82	1091.05	11460.42	1092		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9072.85	.07	9553.89	.07	10486.28	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9553.89	10486.28	467.68	458.94	425.19	.3	.1

Left Levee Station= 9414.13 Elevation= 1090.35

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1087.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1087.94	Reach Len. (ft)	467.68	458.94	425.19
Crit W.S. (ft)	1087.32	Flow Area (sq ft)	22.80	1294.20	618.64
E.G. Slope (ft/ft)	0.016679	Area (sq ft)	22.80	1294.20	618.64
Q Total (cfs)	6060.00	Flow (cfs)	42.09	4413.32	1604.59
Top Width (ft)	1645.61	Top Width (ft)	41.20	932.21	672.20
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)	1.85	3.41	2.59
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)	0.55	1.39	0.92
Conv. Total (cfs)	46923.3	Conv. (cfs)	325.9	34172.9	12424.5

Length Wtd. (ft)	446.33	Wetted Per. (ft)	41.26	932.89	672.23
Min Ch El (ft)	1082.85	Shear (lb/sq ft)	0.58	1.44	0.96
Alpha	1.05	Stream Power (lb/ft s)	1.06	4.93	2.49
Frctn Loss (ft)	5.14	Cum Volume (acre-ft)	2.29	112.34	102.20
C & E Loss (ft)	0.01	Cum SA (acres)	2.17	38.04	39.47

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9072.85	9553.89	42.09	22.80	41.26	0.69	0.55	1.85
9553.89 LB	9864.69	3065.33	726.33	311.04	50.58	2.34	4.22
9864.69	10175.48	349.29	197.26	310.80	5.76	0.63	1.77
10175.48	10486.28 RB	998.71	370.61	311.05	16.48	1.19	2.69
10486.28	10973.35	1203.27	457.77	487.09	19.86	0.94	2.63
10973.35	11460.42	401.32	160.87	185.14	6.62	0.87	2.49

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.

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.43

INPUT
Description:
Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9243.93	1087.79	9320.36	1087.67	9393.28	1086.6	9434.72	1086	9483.59	1084
9485.11	1083.87	9527.79	1083.83	9533.2	1084	9598.76	1085.15	9652.13	1084
9661.45	1083.75	9674	1082	9690.55	1080.25	9707.26	1082	9712.28	1082.55
9731.8	1082	9750.92	1081.33	9812.22	1080	9825.22	1079.71	9848.04	1078.86
9909.94	1078.62	9925.56	1080	9931.32	1080.39	9975.83	1082	9981.35	1082.2
10002.19	1082	10040.25	1081.36	10066.77	1082	10107.75	1082.98	10133.07	1084
10153.78	1084.56	10173.49	1084.83	10179.88	1082	10189.94	1082.49	10233.6	1083.14
10286.08	1082.13	10349.93	1082.72	10387.85	1082	10407.82	1084.71	0413.69	1084
10435.3	1082	10440.86	1081.48	10471.33	1080.93	10538.82	1081.76	10573.93	1080
10588.89	1079.15	10607.25	1080	10615.8	1080.25	10669.03	1080.93	10712.39	1080.75
10783.19	1081.04	10860.73	1081.14	10979.32	1081.2	11105.65	1081.07	11213.15	1081.76
11300.17	1080.87	11313.13	1080.36	11334.4	1081.59	11352.71	1082	11427.3	1083.36
11497.52	1084	11687.42	1086						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9243.93	.07	9750.92	.07	10615.8	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9750.92	10615.8	323.89	339.26	354.19	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1082.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1082.79	Reach Len. (ft)	323.89	339.26	354.19
Crit W.S. (ft)		Flow Area (sq ft)	82.93	1062.60	1163.57
E.G. Slope (ft/ft)	0.008442	Area (sq ft)	82.93	1062.60	1163.57
Q Total (cfs)	6060.00	Flow (cfs)	162.83	2920.13	2977.05
Top Width (ft)	1491.13	Top Width (ft)	81.81	634.98	774.34
Vel Total (ft/s)	2.62	Avg. Vel. (ft/s)	1.96	2.75	2.56
Max Chl Dpth (ft)	4.06	Hydr. Depth (ft)	1.01	1.67	1.50

Conv. Total (cfs)	65956.6	Conv. (cfs)	1772.2	31782.5	32401.9
Length Wtd. (ft)	345.61	Wetted Per. (ft)	82.09	635.32	774.41
Min Ch El (ft)	1078.62	Shear (lb/sq ft)	0.53	0.88	0.79
Alpha	1.01	Stream Power (lb/ft s)	1.05	2.42	2.03
Frctn Loss (ft)	3.44	Cum Volume (acre-ft)	1.73	99.92	93.50
C & E Loss (ft)	0.00	Cum SA (acres)	1.51	29.78	32.41

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9243.93	9750.92	162.83	82.93	82.09	2.69	1.01	1.96
9750.92 LB	10039.21	2051.11	667.37	288.44	33.85	2.31	3.07
10039.21	10327.51	63.05	61.94	140.48	1.04	0.44	1.02
10327.51	10615.80 RB	805.97	333.29	206.40	13.30	1.62	2.42
10615.80	11151.61	2376.46	883.51	535.82	39.22	1.65	2.69
11151.61	11687.42	600.58	280.06	238.60	9.91	1.17	2.14

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.364

INPUT
Description:
Station Elevation Data num= 74

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9099.51	1086	9116.01	1085.84	9192.61	1084	9254.83	1082.3	9334.78	1082.38
9418.26	1082.82	9469.14	1084	9475.15	1084.15	9530.2	1084	9584.08	1082
9606.04	1082	9616.93	1082.1	9619.11	1082	9678.87	1080	9703.55	1078.88
9736.29	1079.33	9760.13	1078.33	9799.04	1079.96	9800.58	1080	9839.68	1081.42
9862.52	1080	9889.5	1078.32	9894.13	1078	9908.16	1077.6	9947.34	1076.4
9981.18	1077.96	9983.3	107810005.94	1078.4810011.57	107810025.94	1076.81			
10036.21	107810041.51	1078.6810074.57	1078.6710099.69	107810104.53	1077.83				
10126.52	1076.0710183.75	1076.2510207.69	107810218.64	1078.74	10255.8	1078.61			
10355.1	1078.310379.79	107810396.88	1077.8810440.95	1077.2110454.58	1078				
10462.31	1078.3510477.32	107810534.81	1076.69	10560.1	1077.7910606.65	1076.19			
10618.09	107810619.13	1078.2210667.65	107810738.36	1077.4210807.85	1077.91				
10895.59	1076.5410920.63	107810924.31	1078.1910989.44	1078.22	11023.7	1078			
11077.71	1077.5911115.94	1078	11192.2	1078.7811310.13	1078.9511401.84	1078.63			
11415.49	107811431.08	1077.26	11454.2	107811461.56	1078.17	11512.8	1078.67		
11592.81	108011653.29	1081.0411771.49	108211806.37	1082.34					

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9099.51	.07	9760.13	.07	10667.65	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9760.13	10667.65	355.29	354.62	410.17	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1079.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1079.35	Reach Len. (ft)	355.29	354.62	410.17
Crit W.S. (ft)		Flow Area (sq ft)	15.39	1219.72	962.94
E.G. Slope (ft/ft)	0.011811	Area (sq ft)	15.39	1219.72	962.94
Q Total (cfs)	6060.00	Flow (cfs)	17.17	3681.84	2361.00

Top Width (ft)	1747.42	Top Width (ft)	54.48	814.20	878.75
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)	1.12	3.02	2.45
Max Chl Dpth (ft)	3.16	Hydr. Depth (ft)	0.28	1.50	1.10
Conv. Total (cfs)	55759.9	Conv. (cfs)	158.0	33877.7	21724.2
Length Wtd. (ft)	378.46	Wetted Per. (ft)	54.50	814.95	878.88
Min Ch El (ft)	1076.07	Shear (lb/sq ft)	0.21	1.10	0.81
Alpha	1.04	Stream Power (lb/ft s)	0.23	3.33	1.98
Frctn Loss (ft)	2.27	Cum Volume (acre-ft)	1.36	91.03	84.85
C & E Loss (ft)	0.01	Cum SA (acres)	1.00	24.14	25.69

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9099.51	9760.13	17.17	15.39	54.50	0.28	0.28	1.12
9760.13 LB	10062.64	826.94	289.80	209.49	13.65	1.39	2.85
10062.64	10365.14	1240.58	428.27	302.68	20.47	1.42	2.90
10365.14	10667.65 RB	1614.32	501.65	302.78	26.64	1.66	3.22
10667.65	11237.01	2038.95	764.89	569.43	33.65	1.34	2.67
11237.01	11806.37	322.05	198.05	309.45	5.31	0.64	1.63

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.273

INPUT
Description:
Station Elevation Data num= 72

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9109.13	1084.71	9166.22	1084	9194.02	1083.78	9244.29	1082	9267.22	1080.41
9272.21	1080	9321.25	1078.34	9332.83	1078	9345.72	1078	9416.66	1079.48
9459.94	1078	9482.29	1077.23	9540.72	1078	9568.51	1079.31	9641.66	1079.8
9709.62	1078.8	9714.53	1078	9726.71	1076	9733.6	1074.99	9773.98	1075.3
9858.28	1074.91	9888.87	1076	9899.46	1076.44	9977.62	107	610003.16	1075.52
10018.04	1075.26	10036.69	1075.31	10055.58	107	610066.97	1076.59	10120.13	1077.29
10197.87	1077.76	10205.15	107	810240.28	1078.12	10277.47	107	810317.97	1077.24
10387.39	1076.68	10392.97	107	610405.58	107	410411.26	1073.25	10459.63	1073.24
10488.32	1073.36	10530.34	1073.75	10554.08	107	410613.47	1074.49	10737.74	1074
10775.7	1073.8	10791.9	107	410884.93	107	410940.33	107	410951.94	1074.17
11093.41	1075.36	11249.69	1075.29	11343.9	107	611440.75	1076.89	11609.51	1077.61
11639.49	1076.2	11693.8	1076.75	11743.65	107	811751.02	1078.41	11775.28	1078
11801.13	1077.73	11839.3	1077.14	11868.21	107	811871.11	1078.18	11930.31	1079.25
11978.52	108	012035.36	1080.52	12115.94	1081.02	12133.64	1080.68	12151.72	1080.65
12257.76	108	212261.67	1082.14						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9109.13	.07	9773.98	.07	10737.74	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9773.98	10737.74	915.04	820	548.84	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1077.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1077.07	Reach Len. (ft)	915.04	820.00	548.84
Crit W.S. (ft)		Flow Area (sq ft)	88.93	1479.19	1453.68
E.G. Slope (ft/ft)	0.003621	Area (sq ft)	88.93	1479.19	1453.68
Q Total (cfs)	6060.00	Flow (cfs)	159.23	3062.53	2838.25
Top Width (ft)	1583.34	Top Width (ft)	53.43	716.44	813.47
Vel Total (ft/s)	2.01	Avg. Vel. (ft/s)	1.79	2.07	1.95
Max Chl Dpth (ft)	3.77	Hydr. Depth (ft)	1.66	2.06	1.79
Conv. Total (cfs)	100711.9	Conv. (cfs)	2646.2	50896.6	47169.2
Length Wtd. (ft)	680.61	Wetted Per. (ft)	53.59	716.76	813.51
Min Ch El (ft)	1073.24	Shear (lb/sq ft)	0.38	0.47	0.40
Alpha	1.00	Stream Power (lb/ft s)	0.67	0.97	0.79
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	0.93	80.05	73.48
C & E Loss (ft)	0.01	Cum SA (acres)	0.56	17.91	17.72

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.

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9109.13	9773.98	159.23	88.93	53.59	2.63	1.66	1.79
9773.98 LB	10095.23	546.91	407.48	321.32	9.02	1.27	1.34
10095.23	10416.49	86.38	74.91	74.18	1.43	1.01	1.15
10416.49	10737.74 RB	2429.23	996.80	321.26	40.09	3.10	2.44
10737.74	11499.71	2809.82	1416.18	731.49	46.37	1.94	1.98
11499.71	12261.67	28.43	37.50	82.02	0.47	0.46	0.76

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

CROSS SECTION RIVER: Saddleback
REACH: Spillway RS: 1.139

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8743.78	1077.15	8876.61	1077.26	8982.87	1075.17	9074.14	1076	9160.1	1075.85
9232.33	1074.96	9268.14	1072.62	9315.14	1072.8	9367.25	1070.72	9393.75	1070.57
9424.51	1071.54	9463.84	1071.54	9522.75	1071.43	9563.41	1072.16	9588.3	1070.44
9641.35	1070.58	9667.67	1069.96	9684.89	1071.05	9738.13	1070.26	9881.25	1071.66
9924.9	1071.57	9992.73	1070.82	10048.93	1072.06	10190.72	1071.71	10217.85	1070.67
10238.68	1072.09	10258.41	1072.08	10344.68	1070.92	10442.16	1070.22	10470.65	1071.18
10517.64	1071.84	10569.23	1069.41	10604.31	1070.41	10708.98	1070.58	10891.93	1070.9
11009.92	1070.77	11160.79	1071.42	11484.32	1070.38	11796.64	1071.66	12284.58	1073.28
12305.1	1073.31	12425.07	1073.23	12708.09	1074.62				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
8743.78	.07	9522.75	.07	10708.98	.07

Bank Sta: Left	Right	Coeff Contr.	Expan.
9522.75	10708.98	.3	.1

Left Levee Station= 9522.8 Elevation= 1078

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1077.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.070	0.070
E.G. Elev (ft)	1077.00	Reach Len. (ft)			
Crit W.S. (ft)	1071.54	Flow Area (sq ft)		7025.46	10209.60
E.G. Slope (ft/ft)	0.000029	Area (sq ft)		7025.46	10209.60
Q Total (cfs)	6060.00	Flow (cfs)		2612.26	3447.74
Top Width (ft)	3185.29	Top Width (ft)		1186.18	1999.11
Vel Total (ft/s)	0.35	Avg. Vel. (ft/s)		0.37	0.34
Max Chl Dpth (ft)	7.60	Hydr. Depth (ft)		5.92	5.11
Conv. Total (cfs)	1128789.0	Conv. (cfs)		486582.6	642206.4
Length Wtd. (ft)		Wetted Per. (ft)		1192.06	2001.50
Min Ch El (ft)	1069.40	Shear (lb/sq ft)		0.01	0.01
Alpha	1.01	Stream Power (lb/ft s)		0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

FLOW DISTRIBUTION OUTPUT Profile #PF#1

Left Sta (ft)	Right Sta (ft)	Flow (cfs)	Area (sq ft)	W.P. (ft)	% Conv.	Hydr D. (ft)	Velocity (ft/s)
9522.75 LB	9918.16	891.42	2387.26	401.05	14.71	6.04	0.37
9918.16	10313.57	745.41	2132.39	395.50	12.30	5.39	0.35
10313.57	10708.98 RB	975.43	2505.82	395.51	16.10	6.34	0.39
10708.98	11708.54	2282.49	6118.36	999.56	37.66	6.12	0.37
11708.54	12708.09	1165.25	4091.24	1001.94	19.23	4.09	0.28

SUMMARY OF MANNING'S N VALUES

River:Saddleback

Reach	River Sta.	n1	n2	n3
Spillway	6.428	.03	.028	.03
Spillway	6.391	.03	.028	.03
Spillway	6.355	.03	.028	.03
Spillway	6.318	.03	.028	.03
Spillway	6.295	.03	.028	.03
Spillway	6.273	.03	.028	.03
Spillway	6.261	.03	.028	.03
Spillway	6.2545	Culvert		
Spillway	6.248	.055	.045	.055
Spillway	6.235	.055	.045	.055
Spillway	6.203	.03	.035	.03
Spillway	6.161	.03	.035	.03
Spillway	6.084	.03	.035	.03
Spillway	6.07	.03	.035	.03
Spillway	6.062	.03	.035	.03
Spillway	6.055	.03	.035	.03
Spillway	6.047	.03	.035	.03
Spillway	5.973	.03	.035	.03
Spillway	5.886	.03	.035	.03
Spillway	5.793	.03	.035	.03
Spillway	5.727	.03	.035	.03
Spillway	5.65	.03	.035	.03
Spillway	5.553	.03	.035	.03
Spillway	5.535	.03	.035	.03
Spillway	5.506	.03	.035	.03
Spillway	5.411	.03	.035	.03
Spillway	5.295	.03	.035	.03
Spillway	5.236	.03	.035	.03
Spillway	5.091	.03	.035	.03
Spillway	4.973	.03	.035	.03
Spillway	4.915	.03	.035	.03
Spillway	4.894	.03	.035	.03
Spillway	4.887	.03	.035	.03
Spillway	4.886	.03	.035	.03
Spillway	4.845	.03	.035	.03
Spillway	4.772	.03	.035	.03
Spillway	4.676	.03	.035	.03
Spillway	4.586	.03	.035	.03
Spillway	4.492	.03	.035	.03
Spillway	4.4	.03	.035	.03
Spillway	4.328	.03	.035	.03
Spillway	4.237	.03	.035	.03
Spillway	4.144	.03	.035	.03
Spillway	4.066	.03	.035	.03
Spillway	3.972	.03	.035	.03
Spillway	3.88	.03	.035	.03
Spillway	3.789	.03	.035	.03
Spillway	3.71	.03	.035	.03
Spillway	3.699	.03	.035	.03
Spillway	3.693	.03	.035	.03
Spillway	3.688	.03	.035	.03
Spillway	3.677	.03	.035	.03
Spillway	3.589	.03	.035	.03
Spillway	3.5	.03	.035	.03
Spillway	3.438	.03	.035	.03
Spillway	3.348	.03	.035	.03
Spillway	3.232	.03	.035	.03
Spillway	3.152	.03	.035	.03

Spillway	3.128	.03	.035	.03
Spillway	3.051	.03	.035	.03
Spillway	2.979	.03	.035	.03
Spillway	2.944	.03	.035	.03
Spillway	2.861	.03	.035	.03
Spillway	2.767	.03	.035	.03
Spillway	2.673	.03	.035	.03
Spillway	2.632	.03	.035	.03
Spillway	2.605	.03	.035	.03
Spillway	2.514	.03	.035	.03
Spillway	2.457	.03	.035	.03
Spillway	2.369	.03	.035	.03
Spillway	2.276	.03	.035	.03
Spillway	2.244	.03	.035	.03
Spillway	2.148	.03	.035	.03
Spillway	2.054	.03	.035	.03
Spillway	2.003	.03	.035	.03
Spillway	1.962	.03	.035	.03
Spillway	1.951	.03	.035	.03
Spillway	1.941	.03	.035	.03
Spillway	1.926	.03	.035	.03
Spillway	1.88	.03	.035	.03
Spillway	1.833	.03	.035	.03
Spillway	1.771	.03	.035	.03
Spillway	1.692	.03	.035	.03
Spillway	1.636	.07	.07	.07
Spillway	1.575	.07	.07	.07
Spillway	1.518	.07	.07	.07
Spillway	1.43	.07	.07	.07
Spillway	1.364	.07	.07	.07
Spillway	1.273	.07	.07	.07
Spillway	1.139	.07	.07	.07

SUMMARY OF REACH LENGTHS

River: Saddleback

Reach	River Sta.	Left	Channel	Right
Spillway	6.428	191.21	191.21	191.21
Spillway	6.391	166.12	188.33	200.43
Spillway	6.355	195.25	195.25	195.25
Spillway	6.318	123.79	123.79	123.79
Spillway	6.295	115.69	115.69	115.69
Spillway	6.273	61.94	61.94	61.94
Spillway	6.261	68.74	68.74	68.74
Spillway	6.2545	Culvert		
Spillway	6.248	69.1	69.1	69.1
Spillway	6.235	165.57	165.57	165.57
Spillway	6.203	224.43	224.43	224.43
Spillway	6.161	408.28	408.28	408.28
Spillway	6.084	71.22	71.22	71.22
Spillway	6.07	42.67	42.67	42.67
Spillway	6.062	36.71	36.71	36.71
Spillway	6.055	41.17	41.17	41.17
Spillway	6.047	393.72	393.72	393.72
Spillway	5.973	459.38	459.38	459.38
Spillway	5.886	490.15	490.15	490.15
Spillway	5.793	349.21	349.21	349.21
Spillway	5.727	407.37	407.37	407.37
Spillway	5.65	511.85	511.85	511.85
Spillway	5.553	128.13	128.13	128.13
Spillway	5.535	120.5	120.5	120.5
Spillway	5.506	497.85	497.85	497.85
Spillway	5.411	613.04	613.04	613.04
Spillway	5.295	312.35	312.35	312.35
Spillway	5.236	762.37	762.37	762.37
Spillway	5.091	625.46	625.46	625.46
Spillway	4.973	307.39	307.39	307.39
Spillway	4.915	110.15	110.15	110.15
Spillway	4.894	35.82	35.82	35.82
Spillway	4.887	113.45	113.45	113.45
Spillway	4.886	106.07	106.07	106.07
Spillway	4.845	389.82	389.82	389.82
Spillway	4.772	490.14	490.14	490.14
Spillway	4.676	490.05	490.05	490.05
Spillway	4.586	496.55	496.55	496.55
Spillway	4.492	486.3	486.3	486.3
Spillway	4.4	381.76	381.76	381.76
Spillway	4.328	477.03	477.03	477.03
Spillway	4.237	493.21	493.21	493.21
Spillway	4.144	412.84	412.84	412.84
Spillway	4.066	493.4	493.4	493.4
Spillway	3.972	486.76	486.76	486.76
Spillway	3.88	479.95	479.95	479.95
Spillway	3.789	415.45	415.45	415.45
Spillway	3.71	60.12	60.12	60.12
Spillway	3.699	32.02	32.02	32.02
Spillway	3.693	24.99	24.99	24.99
Spillway	3.688	61.33	61.33	61.33
Spillway	3.677	460.71	460.71	460.71
Spillway	3.589	470.62	470.62	470.62
Spillway	3.5	328.45	328.45	328.45
Spillway	3.438	473.4	473.4	473.4
Spillway	3.348	612.11	612.11	612.11
Spillway	3.232	427.24	427.24	427.24
Spillway	3.152	125.95	125.95	125.95
Spillway	3.128	406.97	406.97	406.97
Spillway	3.051	376.42	376.42	376.42

Spillway	2.979	188.65	188.65	188.65
Spillway	2.944	437.29	437.29	437.29
Spillway	2.861	494.68	494.68	494.68
Spillway	2.767	495.28	495.28	495.28
Spillway	2.673	217.49	217.49	217.49
Spillway	2.632	140.06	140.06	140.06
Spillway	2.605	480.07	480.07	480.07
Spillway	2.514	303.44	303.44	303.44
Spillway	2.457	462.83	462.83	462.83
Spillway	2.369	495.82	495.82	495.82
Spillway	2.276	164.12	164.12	164.12
Spillway	2.244	507.78	507.78	507.78
Spillway	2.148	495.44	495.44	495.44
Spillway	2.054	271.75	271.75	271.75
Spillway	2.003	218.45	218.45	218.45
Spillway	1.962	53.73	53.73	53.73
Spillway	1.951	51.68	51.68	51.68
Spillway	1.941	80.13	80.13	80.13
Spillway	1.926	246.74	246.74	246.74
Spillway	1.88	246.52	246.52	246.52
Spillway	1.833	388.34	329.24	254.7
Spillway	1.771	386.03	410.19	414.24
Spillway	1.692	299.8	296.96	300.45
Spillway	1.636	396.33	327.58	246.94
Spillway	1.575	407.1	317.21	258.94
Spillway	1.518	467.68	458.94	425.19
Spillway	1.43	323.89	339.26	354.19
Spillway	1.364	355.29	354.62	410.17
Spillway	1.273	915.04	820	548.84
Spillway	1.139			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Saddleback

Reach	River Sta.	Contr.	Expan.
Spillway	6.428	.1	.3
Spillway	6.391	.1	.3
Spillway	6.355	.1	.3
Spillway	6.318	.1	.3
Spillway	6.295	.1	.3
Spillway	6.273	.1	.3
Spillway	6.261	.3	.5
Spillway	6.2545	Culvert	
Spillway	6.248	.3	.5
Spillway	6.235	.3	.5
Spillway	6.203	.1	.3
Spillway	6.161	.3	.1
Spillway	6.084	.3	.1
Spillway	6.07	.3	.1
Spillway	6.062	.3	.1
Spillway	6.055	.3	.1
Spillway	6.047	.3	.1
Spillway	5.973	.3	.1
Spillway	5.886	.3	.1
Spillway	5.793	.3	.1
Spillway	5.727	.3	.1
Spillway	5.65	.3	.1
Spillway	5.553	.3	.1
Spillway	5.535	.3	.1
Spillway	5.506	.3	.1
Spillway	5.411	.3	.1
Spillway	5.295	.3	.1
Spillway	5.236	.3	.1
Spillway	5.091	.3	.1
Spillway	4.973	.3	.1
Spillway	4.915	.3	.1
Spillway	4.894	.3	.1
Spillway	4.887	.3	.1
Spillway	4.886	.3	.1
Spillway	4.845	.3	.1
Spillway	4.772	.3	.1
Spillway	4.676	.3	.1
Spillway	4.586	.3	.1
Spillway	4.492	.3	.1
Spillway	4.4	.3	.1
Spillway	4.328	.3	.1
Spillway	4.237	.3	.1
Spillway	4.144	.3	.1
Spillway	4.066	.3	.1
Spillway	3.972	.3	.1
Spillway	3.88	.3	.1
Spillway	3.789	.3	.1
Spillway	3.71	.3	.1
Spillway	3.699	.3	.1
Spillway	3.693	.3	.1
Spillway	3.688	.3	.1
Spillway	3.677	.3	.1
Spillway	3.589	.3	.1
Spillway	3.5	.3	.1
Spillway	3.438	.3	.1
Spillway	3.348	.3	.1
Spillway	3.232	.3	.1
Spillway	3.152	.3	.1
Spillway	3.128	.3	.1
Spillway	3.051	.3	.1

Spillway	2.979	.3	.1
Spillway	2.944	.3	.1
Spillway	2.861	.3	.1
Spillway	2.767	.3	.1
Spillway	2.673	.3	.1
Spillway	2.632	.3	.1
Spillway	2.605	.3	.1
Spillway	2.514	.3	.1
Spillway	2.457	.3	.1
Spillway	2.369	.3	.1
Spillway	2.276	.3	.1
Spillway	2.244	.3	.1
Spillway	2.148	.3	.1
Spillway	2.054	.3	.1
Spillway	2.003	.3	.1
Spillway	1.962	.3	.1
Spillway	1.951	.3	.1
Spillway	1.941	.3	.1
Spillway	1.926	.3	.1
Spillway	1.88	.3	.1
Spillway	1.833	.3	.1
Spillway	1.771	.3	.1
Spillway	1.692	.3	.1
Spillway	1.636	.3	.1
Spillway	1.575	.3	.1
Spillway	1.518	.3	.1
Spillway	1.43	.3	.1
Spillway	1.364	.3	.1
Spillway	1.273	.3	.1
Spillway	1.139	.3	.1

Profile Output Table - Standard Table 1

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Spillway	6.428	1120.00	1175.62	1181.62	1179.40	1182.01	0.001375	4.99	224.63	53.37	0.43
Spillway	6.391	1120.00	1175.46	1181.37	1179.18	1181.74	0.001388	4.89	229.26	57.02	0.43
Spillway	6.355	1120.00	1175.06	1181.24	1178.49	1181.50	0.000895	4.09	274.02	64.43	0.35
Spillway	6.318	1120.00	1174.32	1181.12	1177.91	1181.33	0.000678	3.71	302.23	66.71	0.31
Spillway	6.295	1160.00	1174.61	1180.89	1178.44	1181.21	0.001163	4.58	253.39	61.05	0.40
Spillway	6.273	1160.00	1173.84	1180.80	1177.86	1181.08	0.000896	4.20	276.21	61.99	0.35
Spillway	6.261	1160.00	1174.36	1180.42	1177.82	1180.99	0.001175	6.05	191.88	64.76	0.43
Spillway	6.2545	Culvert									
Spillway	6.248	1160.00	1174.26	1179.76	1177.71	1180.45	0.004191	6.66	174.15	49.30	0.50
Spillway	6.235	1240.00	1173.73	1179.75	1177.19	1180.06	0.002185	5.06	311.76	75.03	0.37
Spillway	6.203	1240.00	1173.38	1179.49	1176.88	1179.79	0.001189	4.83	293.82	71.21	0.35
Spillway	6.161	1240.00	1173.39	1179.11	1177.03	1179.48	0.001626	5.33	266.32	70.88	0.40
Spillway	6.084	1370.00	1173.01	1177.93	1176.62	1178.51	0.003045	6.65	231.64	67.80	0.54
Spillway	6.07	1370.00	1173.13	1176.66	1176.66	1177.94	0.010098	9.85	155.84	61.78	0.93
Spillway	6.062	1370.00	1163.94	1172.36	1168.07	1172.59	0.000601	4.21	371.46	64.10	0.26
Spillway	6.055	1370.00	1167.31	1171.56	1170.82	1172.37	0.004991	7.69	196.36	63.62	0.67
Spillway	6.047	1370.00	1167.07	1171.82	1170.21	1172.20	0.002116	5.36	284.68	85.58	0.44
Spillway	5.973	1500.00	1165.81	1170.95	1169.14	1171.38	0.002002	5.63	295.09	77.79	0.44
Spillway	5.886	1500.00	1164.69	1169.89	1168.27	1170.37	0.002337	6.00	278.85	76.53	0.47
Spillway	5.793	1500.00	1163.85	1168.38	1167.16	1168.98	0.003324	6.54	249.37	73.43	0.55
Spillway	5.727	1500.00	1163.06	1167.80	1165.85	1168.14	0.001716	4.94	327.14	87.30	0.40
Spillway	5.65	1500.00	1162.02	1167.45	1164.72	1167.65	0.000846	3.77	430.47	102.53	0.29
Spillway	5.553	1900.00	1162.27	1166.53	1165.37	1166.85	0.002666	4.64	427.03	167.41	0.47
Spillway	5.535	1900.00	1161.82	1166.46	1165.01	1166.61	0.001229	3.41	636.35	270.71	0.32
Spillway	5.506	1900.00	1161.52	1165.97	1164.35	1166.35	0.002152	5.16	390.00	110.30	0.44
Spillway	5.411	1900.00	1160.61	1164.48	1163.43	1164.97	0.003518	5.82	341.95	113.04	0.55
Spillway	5.295	1900.00	1158.56	1163.64	1161.23	1163.86	0.001056	3.87	513.00	125.20	0.31
Spillway	5.236	2350.00	1158.47	1162.98	1161.31	1163.35	0.002081	5.05	488.17	135.69	0.43
Spillway	5.091	2350.00	1157.32	1161.55	1159.76	1161.87	0.001796	4.65	526.29	144.56	0.40
Spillway	4.973	2590.00	1156.24	1159.56	1158.67	1160.11	0.004288	6.08	438.81	149.76	0.60
Spillway	4.915	2590.00	1154.72	1158.84	1157.24	1159.19	0.002102	4.89	557.04	166.47	0.43
Spillway	4.894	2590.00	1155.02	1157.44	1157.44	1158.51	0.013040	8.42	314.45	148.38	0.98
Spillway	4.887	2590.00	1148.62	1154.38	1150.93	1154.54	0.000572	3.25	820.09	156.69	0.24
Spillway	4.886	2590.00	1149.35	1154.12	1152.16	1154.40	0.001532	4.32	616.29	162.10	0.37
Spillway	4.845	2590.00	1149.84	1153.87	1152.24	1154.20	0.002017	4.67	569.06	161.58	0.42
Spillway	4.772	2590.00	1149.25	1152.96	1151.54	1153.33	0.002426	4.97	537.71	163.11	0.46
Spillway	4.676	2590.00	1147.94	1151.97	1150.31	1152.28	0.001895	4.51	591.59	171.77	0.41
Spillway	4.586	2860.00	1147.10	1150.82	1149.44	1151.19	0.002485	4.98	591.69	181.60	0.46
Spillway	4.492	2860.00	1145.58	1149.98	1148.04	1150.24	0.001482	4.19	701.26	187.54	0.36
Spillway	4.4	3250.00	1144.99	1149.27	1147.36	1149.52	0.001461	4.23	816.27	236.35	0.36
Spillway	4.328	3250.00	1143.99	1148.54	1146.79	1148.87	0.001912	4.70	711.66	194.56	0.41
Spillway	4.237	3500.00	1143.53	1147.40	1146.02	1147.79	0.002561	5.14	701.43	209.64	0.47
Spillway	4.144	3500.00	1142.45	1146.18	1144.80	1146.55	0.002482	4.94	728.01	224.96	0.46
Spillway	4.066	3500.00	1140.74	1145.55	1143.45	1145.80	0.001326	4.11	875.33	221.87	0.35
Spillway	3.972	3740.00	1140.65	1144.66	1142.97	1144.99	0.001959	4.68	816.75	223.55	0.42
Spillway	3.88	3740.00	1139.77	1143.67	1142.06	1144.01	0.002065	4.72	810.30	228.60	0.43

Spillway	3.789	3970.00	1138.32	1142.47	1141.08	1142.88	0.002597	5.15	787.43	231.40	0.47
Spillway	3.71	3970.00	1137.26	1140.60	1139.99	1141.24	0.005898	6.52	619.56	234.22	0.68
Spillway	3.699	3970.00	1137.08	1139.54	1139.54	1140.60	0.013576	8.32	481.52	232.27	0.99
Spillway	3.693	3970.00	1129.57	1135.60	1132.07	1135.75	0.000525	3.11	1301.50	241.89	0.23
Spillway	3.688	3970.00	1131.36	1135.31	1133.80	1135.66	0.002271	4.82	837.10	241.05	0.44
Spillway	3.677	3970.00	1130.27	1135.34	1132.84	1135.56	0.001001	3.76	1081.35	250.56	0.31
Spillway	3.589	4320.00	1130.12	1134.59	1132.75	1134.91	0.001791	4.64	953.05	248.58	0.40
Spillway	3.5	4320.00	1129.71	1133.65	1131.99	1134.00	0.002074	4.81	916.84	250.65	0.43
Spillway	3.438	4720.00	1128.79	1132.94	1131.28	1133.31	0.002107	4.91	981.67	263.52	0.43
Spillway	3.348	4720.00	1127.92	1131.58	1130.37	1132.05	0.003208	5.58	860.09	258.23	0.52
Spillway	3.232	4720.00	1125.73	1130.36	1128.40	1130.67	0.001650	4.56	1062.05	270.10	0.39
Spillway	3.152	4720.00	1125.11	1129.72	1127.67	1130.00	0.001472	4.31	1119.07	279.98	0.37
Spillway	3.128	5110.00	1124.72	1129.43	1127.60	1129.77	0.001872	4.77	1092.91	280.28	0.41
Spillway	3.051	5110.00	1124.52	1128.37	1127.07	1128.81	0.002886	5.36	969.72	286.24	0.50
Spillway	2.979	5110.00	1122.95	1127.38	1125.91	1127.79	0.002540	5.19	1002.44	290.27	0.47
Spillway	2.944	5430.00	1122.66	1126.81	1125.46	1127.26	0.002875	5.47	1009.45	287.00	0.50
Spillway	2.861	5430.00	1121.75	1125.42	1124.23	1125.90	0.003307	5.67	972.71	290.21	0.53
Spillway	2.767	5430.00	1120.08	1124.24	1122.56	1124.61	0.002091	4.89	1128.51	298.74	0.43
Spillway	2.673	5430.00	1119.06	1123.11	1121.56	1123.50	0.002345	5.06	1091.74	300.18	0.45
Spillway	2.632	5430.00	1118.67	1122.59	1121.08	1122.98	0.002422	5.10	1081.25	299.76	0.46
Spillway	2.605	5430.00	1118.33	1122.28	1120.70	1122.66	0.002233	4.93	1118.91	307.12	0.44
Spillway	2.514	5430.00	1117.17	1121.12	1119.67	1121.51	0.002516	5.10	1083.04	310.63	0.47
Spillway	2.457	5750.00	1116.07	1120.67	1118.48	1120.95	0.001386	4.30	1361.54	322.90	0.36
Spillway	2.369	5750.00	1115.63	1119.92	1117.98	1120.24	0.001665	4.54	1287.90	322.12	0.39
Spillway	2.276	5750.00	1114.66	1118.99	1117.22	1119.33	0.001956	4.79	1219.93	316.10	0.42
Spillway	2.244	5970.00	1114.30	1118.61	1116.87	1118.99	0.002074	5.00	1218.63	315.29	0.43
Spillway	2.148	5970.00	1113.43	1117.29	1115.96	1117.74	0.002875	5.40	1119.84	321.63	0.50
Spillway	2.054	5970.00	1112.08	1116.02	1114.61	1116.41	0.002505	5.10	1214.85	371.53	0.47
Spillway	2.003	5970.00	1111.22	1115.55		1115.83	0.001738	4.46	1439.07	468.39	0.39
Spillway	1.962	6060.00	1110.91	1114.75	1113.58	1115.25	0.003400	5.71	1074.00	319.03	0.54
Spillway	1.951	6060.00	1111.26	1113.63	1113.63	1114.75	0.013238	8.53	717.38	321.47	0.99
Spillway	1.941	6060.00	1097.50	1105.08	1099.97	1105.18	0.000262	2.62	2351.04	332.49	0.17
Spillway	1.926	6060.00	1100.01	1104.62		1105.04	0.002820	5.23	1169.11	341.70	0.49
Spillway	1.88	6060.00	1099.76	1104.03		1104.36	0.002585	4.65	1312.55	427.34	0.46
Spillway	1.833	6060.00	1099.77	1103.07		1103.51	0.004493	5.35	1140.82	453.42	0.59
Spillway	1.771	6060.00	1098.28	1100.78		1101.40	0.009321	6.29	966.96	515.91	0.80
Spillway	1.692	6060.00	1094.69	1097.70		1098.11	0.006880	5.16	1186.34	694.90	0.68
Spillway	1.636	6060.00	1091.67	1094.90	1094.32	1095.12	0.015835	3.86	1633.97	1052.26	0.52
Spillway	1.575	6060.00	1087.53	1091.37		1091.48	0.008313	2.78	2313.63	1566.85	0.37
Spillway	1.518	6060.00	1082.85	1087.78	1087.32	1087.94	0.016679	3.41	1935.64	1645.61	0.51
Spillway	1.43	6060.00	1078.62	1082.68		1082.79	0.008442	2.75	2309.10	1491.13	0.37
Spillway	1.364	6060.00	1076.07	1079.23		1079.35	0.011811	3.02	2198.05	1747.42	0.43
Spillway	1.273	6060.00	1073.24	1077.01		1077.07	0.003621	2.07	3021.80	1583.34	0.25
Spillway	1.139	6060.00	1069.40	1077.00	1071.54	1077.00	0.000029	0.37	17235.07	3185.29	0.03

Profile Output Table - Standard Table 2

Reach	River Sta	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Spillway	6.428	1182.01	1181.62	0.39	0.26	0.00		1120.00		53.37
Spillway	6.391	1181.74	1181.37	0.37	0.21	0.03		1120.00		57.02
Spillway	6.355	1181.50	1181.24	0.26	0.15	0.01		1120.00		64.43
Spillway	6.318	1181.33	1181.12	0.21	0.11	0.01		1120.00		66.71
Spillway	6.295	1181.21	1180.89	0.33	0.12	0.02		1160.00		61.05
Spillway	6.273	1181.08	1180.80	0.27	0.06	0.03		1160.00		61.99
Spillway	6.261	1180.99	1180.42	0.57			0.33	1159.67		64.76
Spillway	6.2545	Culvert								
Spillway	6.248	1180.45	1179.76	0.69	0.20	0.19		1160.00		49.30
Spillway	6.235	1180.06	1179.75	0.32	0.26	0.01	183.54	895.59	160.87	75.03
Spillway	6.203	1179.79	1179.49	0.30	0.31	0.01	224.47	850.66	164.87	71.21
Spillway	6.161	1179.48	1179.11	0.37	0.90	0.07	193.68	819.04	227.28	70.88
Spillway	6.084	1178.51	1177.93	0.58	0.36	0.21	196.65	966.05	207.31	67.80
Spillway	6.07	1177.94	1176.66	1.28	0.06	0.06	249.48	937.05	183.47	61.78
Spillway	6.062	1172.59	1172.36	0.23	0.05	0.17	228.79	951.91	189.31	64.10
Spillway	6.055	1172.37	1171.56	0.80	0.13	0.04	181.15	1014.35	174.49	63.62
Spillway	6.047	1172.20	1171.82	0.38	0.81	0.01	339.23	930.89	99.88	85.58
Spillway	5.973	1171.38	1170.95	0.42	0.99	0.02	305.25	1034.40	160.35	77.79
Spillway	5.886	1170.37	1169.89	0.48	1.36	0.03	285.58	1046.21	168.21	76.53
Spillway	5.793	1168.98	1168.38	0.59	0.81	0.03	168.23	1184.59	147.18	73.43
Spillway	5.727	1168.14	1167.80	0.34	0.48	0.01	168.25	1216.30	115.45	87.30
Spillway	5.65	1167.65	1167.45	0.20	0.76	0.04	223.57	1139.26	137.17	102.53
Spillway	5.553	1166.85	1166.53	0.32	0.22	0.02	244.12	1575.60	80.28	167.41
Spillway	5.535	1166.61	1166.46	0.15	0.19	0.07	625.22	1107.87	166.91	270.71
Spillway	5.506	1166.35	1165.97	0.38	1.35	0.03	203.59	1582.93	113.48	110.30
Spillway	5.411	1164.97	1164.48	0.49	1.08	0.03	189.35	1614.09	96.56	113.04
Spillway	5.295	1163.86	1163.64	0.22	0.47	0.05	193.08	1607.90	99.02	125.20
Spillway	5.236	1163.35	1162.98	0.37	1.47	0.01	190.82	2030.73	128.44	135.69
Spillway	5.091	1161.87	1161.55	0.32	1.69	0.07	165.50	2092.97	91.52	144.56
Spillway	4.973	1160.11	1159.56	0.55	0.89	0.02	100.37	2395.85	93.78	149.76
Spillway	4.915	1159.19	1158.84	0.35	0.47	0.22	157.17	2296.34	136.48	166.47
Spillway	4.894	1158.51	1157.44	1.07	0.06	0.09	70.22	2438.71	81.07	148.38
Spillway	4.887	1154.54	1154.38	0.16	0.10	0.04	91.66	2414.47	83.86	156.69
Spillway	4.886	1154.40	1154.12	0.28	0.19	0.01	64.45	2454.44	71.11	162.10
Spillway	4.845	1154.20	1153.87	0.33	0.86	0.01	90.76	2424.12	75.12	161.58
Spillway	4.772	1153.33	1152.96	0.37	1.05	0.01	141.41	2360.87	87.72	163.11
Spillway	4.676	1152.28	1151.97	0.30	1.07	0.02	105.20	2389.07	95.74	171.77
Spillway	4.586	1151.19	1150.82	0.37	0.94	0.01	151.55	2600.47	107.98	181.60
Spillway	4.492	1150.24	1149.98	0.26	0.72	0.00	207.38	2579.91	72.70	187.54
Spillway	4.4	1149.52	1149.27	0.26	0.64	0.02	460.67	2703.27	86.07	236.35
Spillway	4.328	1148.87	1148.54	0.33	1.06	0.02	180.90	2929.34	139.76	194.56
Spillway	4.237	1147.79	1147.40	0.39	1.24	0.00	265.84	3127.20	106.96	209.64
Spillway	4.144	1146.55	1146.18	0.37	0.73	0.01	115.45	3281.32	103.23	224.96
Spillway	4.066	1145.80	1145.55	0.25	0.79	0.02	204.62	3200.34	95.04	221.87
Spillway	3.972	1144.99	1144.66	0.33	0.98	0.00	172.09	3487.28	80.63	223.55
Spillway	3.88	1144.01	1143.67	0.34	1.11	0.02	168.48	3488.59	82.93	228.60

Spillway	3.789	1142.88	1142.47	0.40	1.56	0.07	127.04	3783.37	59.59	231.40
Spillway	3.71	1141.24	1140.60	0.65	0.51	0.12	85.40	3843.83	40.77	234.22
Spillway	3.699	1140.60	1139.54	1.06	0.05	0.09	377.56	3518.17	74.27	232.27
Spillway	3.693	1135.75	1135.60	0.15	0.02	0.06	80.25	3801.36	88.38	241.89
Spillway	3.688	1135.66	1135.31	0.35	0.09	0.01	82.00	3798.42	89.57	241.05
Spillway	3.677	1135.56	1135.34	0.21	0.61	0.03	103.96	3774.36	91.68	250.56
Spillway	3.589	1134.91	1134.59	0.32	0.91	0.01	161.38	4063.96	94.66	248.58
Spillway	3.5	1134.00	1133.65	0.35	0.69	0.00	103.52	4112.28	104.20	250.65
Spillway	3.438	1133.31	1132.94	0.36	1.22	0.03	147.27	4453.96	118.77	263.52
Spillway	3.348	1132.05	1131.58	0.47	1.37	0.02	120.19	4507.79	92.02	258.23
Spillway	3.232	1130.67	1130.36	0.31	0.67	0.00	202.71	4435.54	81.75	270.10
Spillway	3.152	1130.00	1129.72	0.28	0.21	0.02	184.36	4457.37	78.28	279.98
Spillway	3.128	1129.77	1129.43	0.34	0.94	0.03	277.36	4736.77	95.88	280.28
Spillway	3.051	1128.81	1128.37	0.44	1.02	0.00	235.80	4790.03	84.17	286.24
Spillway	2.979	1127.79	1127.38	0.41	0.51	0.01	186.17	4840.32	83.51	290.27
Spillway	2.944	1127.26	1126.81	0.45	1.35	0.01	261.13	5034.09	134.78	287.00
Spillway	2.861	1125.90	1125.42	0.49	1.28	0.01	213.42	5134.16	82.42	290.21
Spillway	2.767	1124.61	1124.24	0.36	1.10	0.01	109.66	5229.62	90.72	298.74
Spillway	2.673	1123.50	1123.11	0.39	0.52	0.00	91.27	5235.37	103.36	300.18
Spillway	2.632	1122.98	1122.59	0.40	0.32	0.00	163.59	5177.62	88.79	299.76
Spillway	2.605	1122.66	1122.28	0.37	1.14	0.01	97.16	5224.09	108.76	307.12
Spillway	2.514	1121.51	1121.12	0.40	0.55	0.01	138.11	5191.52	100.36	310.63
Spillway	2.457	1120.95	1120.67	0.28	0.70	0.01	184.77	5443.51	121.73	322.90
Spillway	2.369	1120.24	1119.92	0.31	0.89	0.01	128.71	5495.06	126.22	322.12
Spillway	2.276	1119.33	1118.99	0.35	0.33	0.01	114.57	5510.87	124.57	316.10
Spillway	2.244	1118.99	1118.61	0.38	1.23	0.02	202.92	5652.51	114.57	315.29
Spillway	2.148	1117.74	1117.29	0.45	1.33	0.01	83.11	5800.86	86.02	321.63
Spillway	2.054	1116.41	1116.02	0.39	0.56	0.01	470.90	5419.42	79.68	371.53
Spillway	2.003	1115.83	1115.55	0.29	0.52	0.06	573.84	5334.91	61.26	468.39
Spillway	1.962	1115.25	1114.75	0.50	0.32	0.19	68.01	5918.90	73.10	319.03
Spillway	1.951	1114.75	1113.63	1.12	0.03	0.03	93.53	5909.94	56.53	321.47
Spillway	1.941	1105.18	1105.08	0.10	0.05	0.09	143.35	5803.75	112.91	332.49
Spillway	1.926	1105.04	1104.62	0.42	0.67	0.01	84.63	5849.76	125.61	341.70
Spillway	1.88	1104.36	1104.03	0.33	0.83	0.03	215.38	5743.44	101.19	427.34
Spillway	1.833	1103.51	1103.07	0.44	2.06	0.05	43.54	5950.69	65.77	453.42
Spillway	1.771	1101.40	1100.78	0.61	3.27	0.02	52.05	5982.58	25.37	515.91
Spillway	1.692	1098.11	1097.70	0.41	2.97	0.02	58.25	5933.20	68.55	694.90
Spillway	1.636	1095.12	1094.90	0.22	3.63	0.01	154.77	5423.35	481.88	1052.26
Spillway	1.575	1091.48	1091.37	0.11	3.53	0.01	642.96	4751.69	665.35	1566.85
Spillway	1.518	1087.94	1087.78	0.16	5.14	0.01	42.09	4413.32	1604.59	1645.61
Spillway	1.43	1082.79	1082.68	0.11	3.44	0.00	162.83	2920.13	2977.05	1491.13
Spillway	1.364	1079.35	1079.23	0.12	2.27	0.01	17.17	3681.84	2361.00	1747.42
Spillway	1.273	1077.07	1077.01	0.06	0.07	0.01	159.23	3062.53	2838.25	1583.34
Spillway	1.139	1077.00	1077.00	0.00				2612.26	3447.74	3185.29

Profile Output Table - HEC-FDA

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Spillway	6.428	1120.00	1175.62	1181.62
Spillway	6.391	1120.00	1175.46	1181.37
Spillway	6.355	1120.00	1175.06	1181.24
Spillway	6.318	1120.00	1174.32	1181.12
Spillway	6.295	1160.00	1174.61	1180.89
Spillway	6.273	1160.00	1173.84	1180.80
Spillway	6.261	1160.00	1174.36	1180.42
Spillway	6.2545	Culvert		
Spillway	6.248	1160.00	1174.26	1179.76
Spillway	6.235	1240.00	1173.73	1179.75
Spillway	6.203	1240.00	1173.38	1179.49
Spillway	6.161	1240.00	1173.39	1179.11
Spillway	6.084	1370.00	1173.01	1177.93
Spillway	6.07	1370.00	1173.13	1176.66
Spillway	6.062	1370.00	1163.94	1172.36
Spillway	6.055	1370.00	1167.31	1171.56
Spillway	6.047	1370.00	1167.07	1171.82
Spillway	5.973	1500.00	1165.81	1170.95
Spillway	5.886	1500.00	1164.69	1169.89
Spillway	5.793	1500.00	1163.85	1168.38
Spillway	5.727	1500.00	1163.06	1167.80
Spillway	5.65	1500.00	1162.02	1167.45
Spillway	5.553	1900.00	1162.27	1166.53
Spillway	5.535	1900.00	1161.82	1166.46
Spillway	5.506	1900.00	1161.52	1165.97
Spillway	5.411	1900.00	1160.61	1164.48
Spillway	5.295	1900.00	1158.56	1163.64
Spillway	5.236	2350.00	1158.47	1162.98
Spillway	5.091	2350.00	1157.32	1161.55
Spillway	4.973	2590.00	1156.24	1159.56
Spillway	4.915	2590.00	1154.72	1158.84
Spillway	4.894	2590.00	1155.02	1157.44
Spillway	4.887	2590.00	1148.62	1154.38
Spillway	4.886	2590.00	1149.35	1154.12
Spillway	4.845	2590.00	1149.84	1153.87
Spillway	4.772	2590.00	1149.25	1152.96
Spillway	4.676	2590.00	1147.94	1151.97
Spillway	4.586	2860.00	1147.10	1150.82
Spillway	4.492	2860.00	1145.58	1149.98
Spillway	4.4	3250.00	1144.99	1149.27
Spillway	4.328	3250.00	1143.99	1148.54
Spillway	4.237	3500.00	1143.53	1147.40
Spillway	4.144	3500.00	1142.45	1146.18
Spillway	4.066	3500.00	1140.74	1145.55
Spillway	3.972	3740.00	1140.65	1144.66
Spillway	3.88	3740.00	1139.77	1143.67
Spillway	3.789	3970.00	1138.32	1142.47
Spillway	3.71	3970.00	1137.26	1140.60
Spillway	3.699	3970.00	1137.08	1139.54
Spillway	3.693	3970.00	1129.57	1135.60
Spillway	3.688	3970.00	1131.36	1135.31
Spillway	3.677	3970.00	1130.27	1135.34
Spillway	3.589	4320.00	1130.12	1134.59
Spillway	3.5	4320.00	1129.71	1133.65
Spillway	3.438	4720.00	1128.79	1132.94
Spillway	3.348	4720.00	1127.92	1131.58
Spillway	3.232	4720.00	1125.73	1130.36
Spillway	3.152	4720.00	1125.11	1129.72
Spillway	3.128	5110.00	1124.72	1129.43
Spillway	3.051	5110.00	1124.52	1128.37
Spillway	2.979	5110.00	1122.95	1127.38
Spillway	2.944	5430.00	1122.66	1126.81
Spillway	2.861	5430.00	1121.75	1125.42
Spillway	2.767	5430.00	1120.08	1124.24
Spillway	2.673	5430.00	1119.06	1123.11

Spillway	2.632	5430.00	1118.67	1122.59
Spillway	2.605	5430.00	1118.33	1122.28
Spillway	2.514	5430.00	1117.17	1121.12
Spillway	2.457	5750.00	1116.07	1120.67
Spillway	2.369	5750.00	1115.63	1119.92
Spillway	2.276	5750.00	1114.66	1118.99
Spillway	2.244	5970.00	1114.30	1118.61
Spillway	2.148	5970.00	1113.43	1117.29
Spillway	2.054	5970.00	1112.08	1116.02
Spillway	2.003	5970.00	1111.22	1115.55
Spillway	1.962	6060.00	1110.91	1114.75
Spillway	1.951	6060.00	1111.26	1113.63
Spillway	1.941	6060.00	1097.50	1105.08
Spillway	1.926	6060.00	1100.01	1104.62
Spillway	1.88	6060.00	1099.76	1104.03
Spillway	1.833	6060.00	1099.77	1103.07
Spillway	1.771	6060.00	1098.28	1100.78
Spillway	1.692	6060.00	1094.69	1097.70
Spillway	1.636	6060.00	1091.67	1094.90
Spillway	1.575	6060.00	1087.53	1091.37
Spillway	1.518	6060.00	1082.85	1087.78
Spillway	1.43	6060.00	1078.62	1082.68
Spillway	1.364	6060.00	1076.07	1079.23
Spillway	1.273	6060.00	1073.24	1077.01
Spillway	1.139	6060.00	1069.40	1077.00

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : 310.002

River: Saddleback Reach: Spillway RS: 6.248 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 6.084 Profile: PF#1

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

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

River: Saddleback Reach: Spillway RS: 6.07 Profile: PF#1

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

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

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

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

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

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

River: Saddleback Reach: Spillway RS: 6.062 Profile: PF#1

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

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

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

River: Saddleback Reach: Spillway RS: 6.055 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 5.973 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 5.886 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 5.65 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 5.553 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 5.506 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 5.411 Profile: PF#1

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

This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 5.236 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 5.091 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 4.915 Profile: PF#1
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 4.894 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Saddleback Reach: Spillway RS: 4.887 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Saddleback Reach: Spillway RS: 4.772 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 4.676 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 4.328 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 4.237 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 3.88 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 3.789 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 3.71 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 3.699 Profile: PF#1
Warning - The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning - The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning - During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note - Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
River: Saddleback Reach: Spillway RS: 3.693 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note - Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Saddleback Reach: Spillway RS: 3.688 Profile: PF#1
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 3.438 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 3.348 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 3.051 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 2.979 Profile: PF#1
Warning - Divided flow computed for this cross-section.
River: Saddleback Reach: Spillway RS: 2.944 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 2.861 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 2.767 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 2.605 Profile: PF#1
Warning - The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Saddleback Reach: Spillway RS: 2.244 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 2.148 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 1.962 Profile: PF#1

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

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

River: Saddleback Reach: Spillway RS: 1.951 Profile: PF#1

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

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

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

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

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

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

River: Saddleback Reach: Spillway RS: 1.941 Profile: PF#1

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

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

River: Saddleback Reach: Spillway RS: 1.833 Profile: PF#1

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

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

River: Saddleback Reach: Spillway RS: 1.771 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 1.692 Profile: PF#1

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

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

River: Saddleback Reach: Spillway RS: 1.636 Profile: PF#1

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

River: Saddleback Reach: Spillway RS: 1.575 Profile: PF#1

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

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

River: Saddleback Reach: Spillway RS: 1.518 Profile: PF#1

Warning - Divided flow computed for this cross-section.

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

River: Saddleback Reach: Spillway RS: 1.43 Profile: PF#1

Warning - Divided flow computed for this cross-section.

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

River: Saddleback Reach: Spillway RS: 1.364 Profile: PF#1

Warning - Divided flow computed for this cross-section.

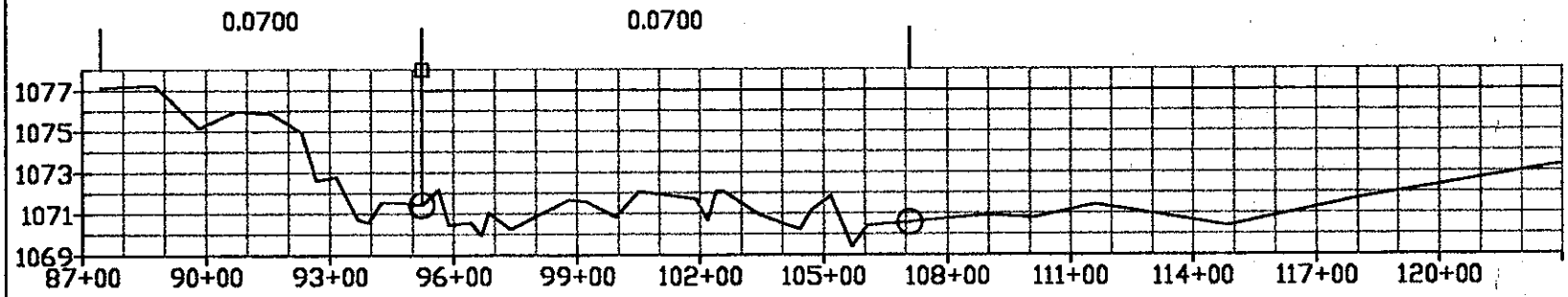
Warning - The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

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

River: Saddleback Reach: Spillway RS: 1.273 Profile: PF#1

Warning - Divided flow computed for this cross-section.

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



SECTION: 1.139

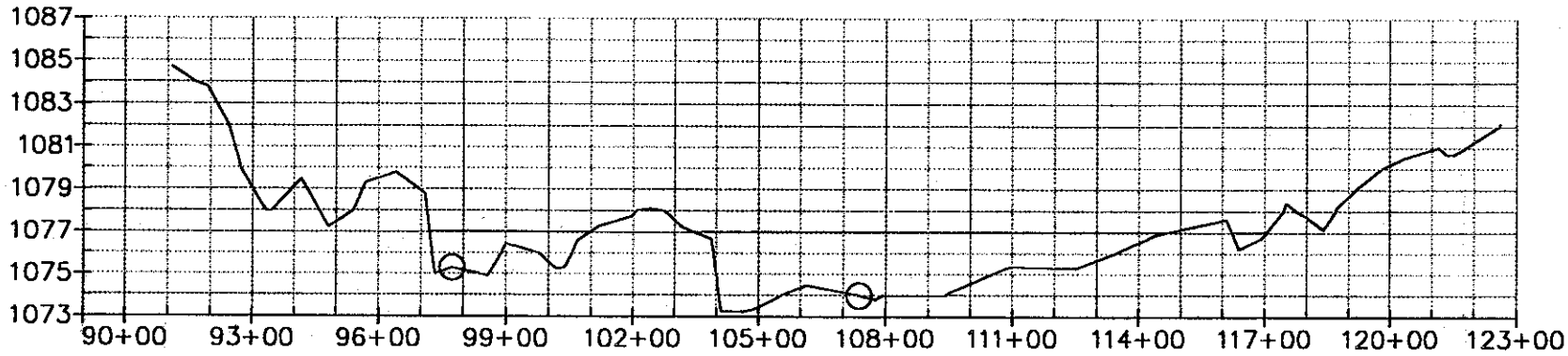
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1077.00 ft



SECTION: 1.273

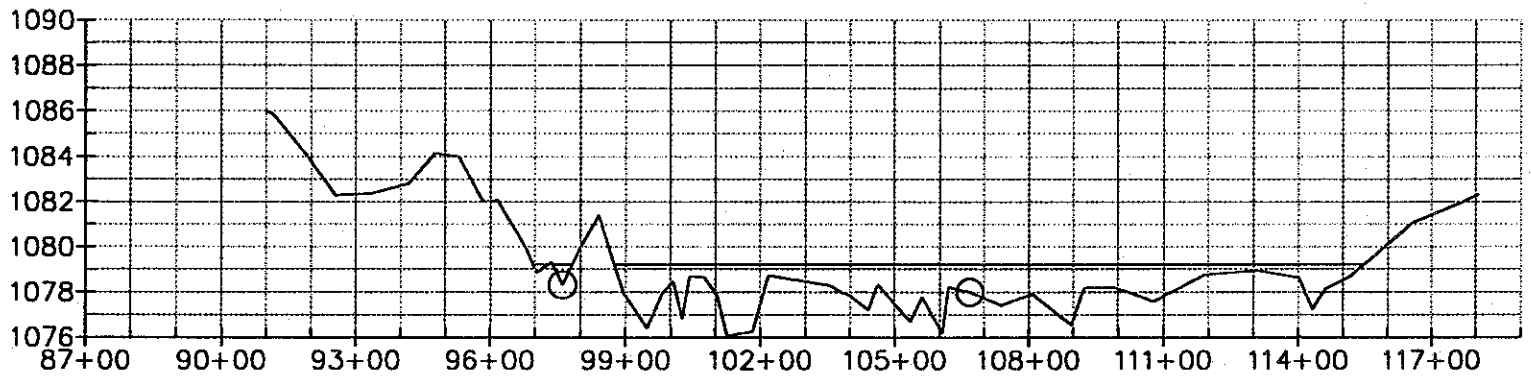
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1077.01 ft



SECTION: 1.364

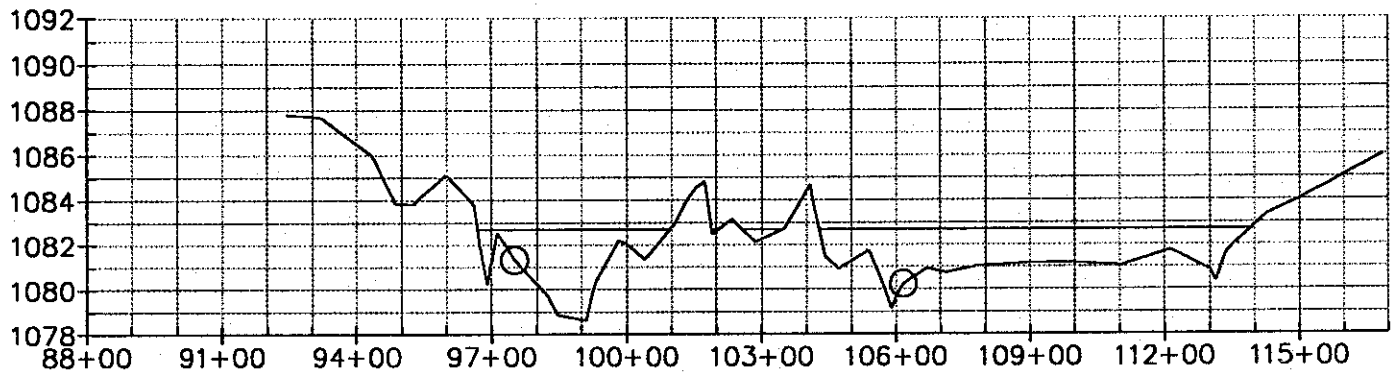
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1079.22 ft



SECTION: 1.430

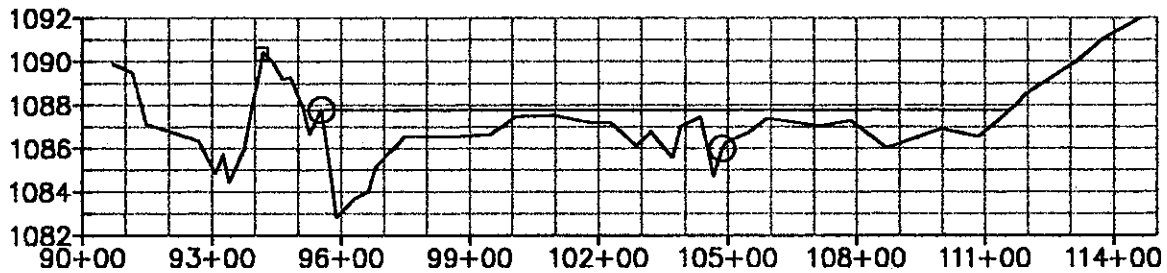
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1082.68 ft



SECTION: 1.518

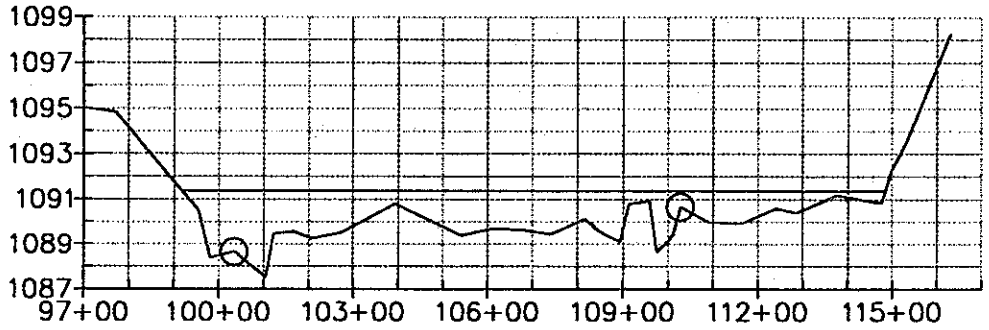
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1087.77 ft



SECTION: 1.575

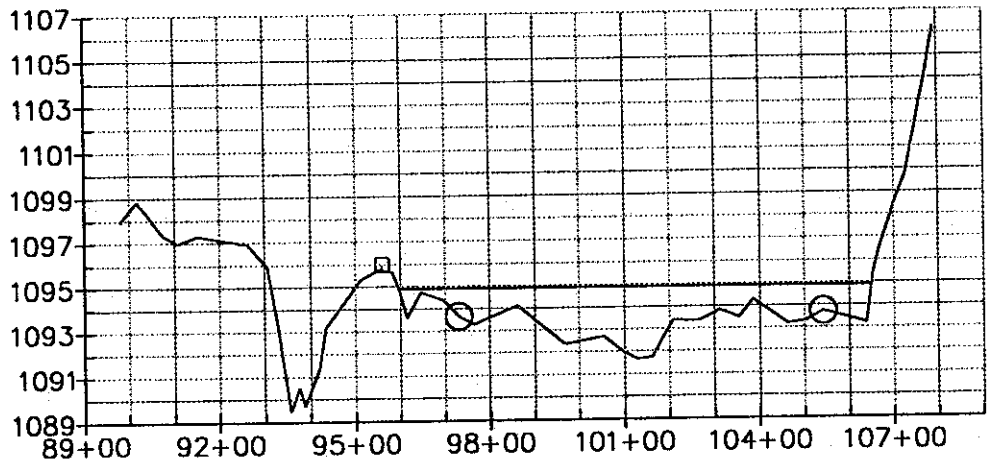
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1091.37 ft



SECTION: 1.636

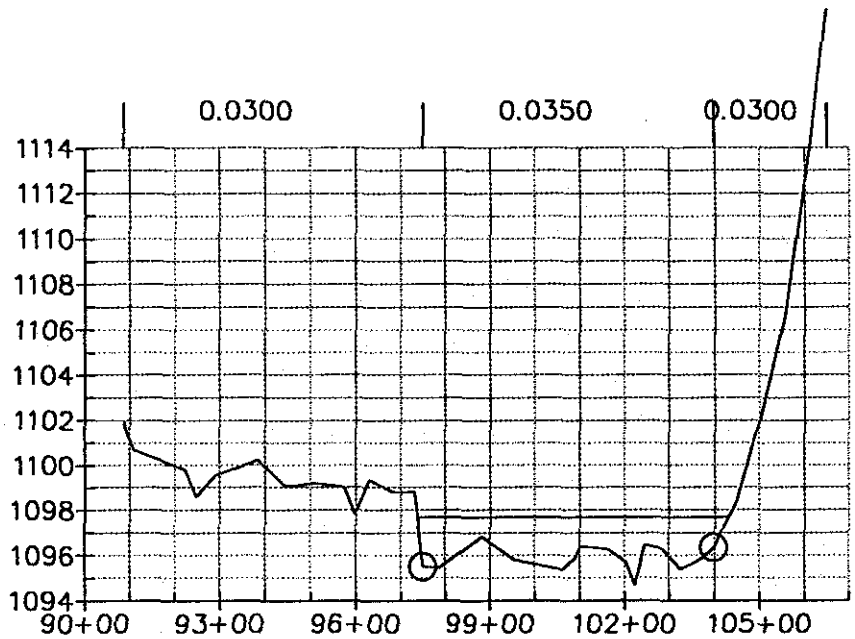
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1094.90 ft



SECTION: 1.692

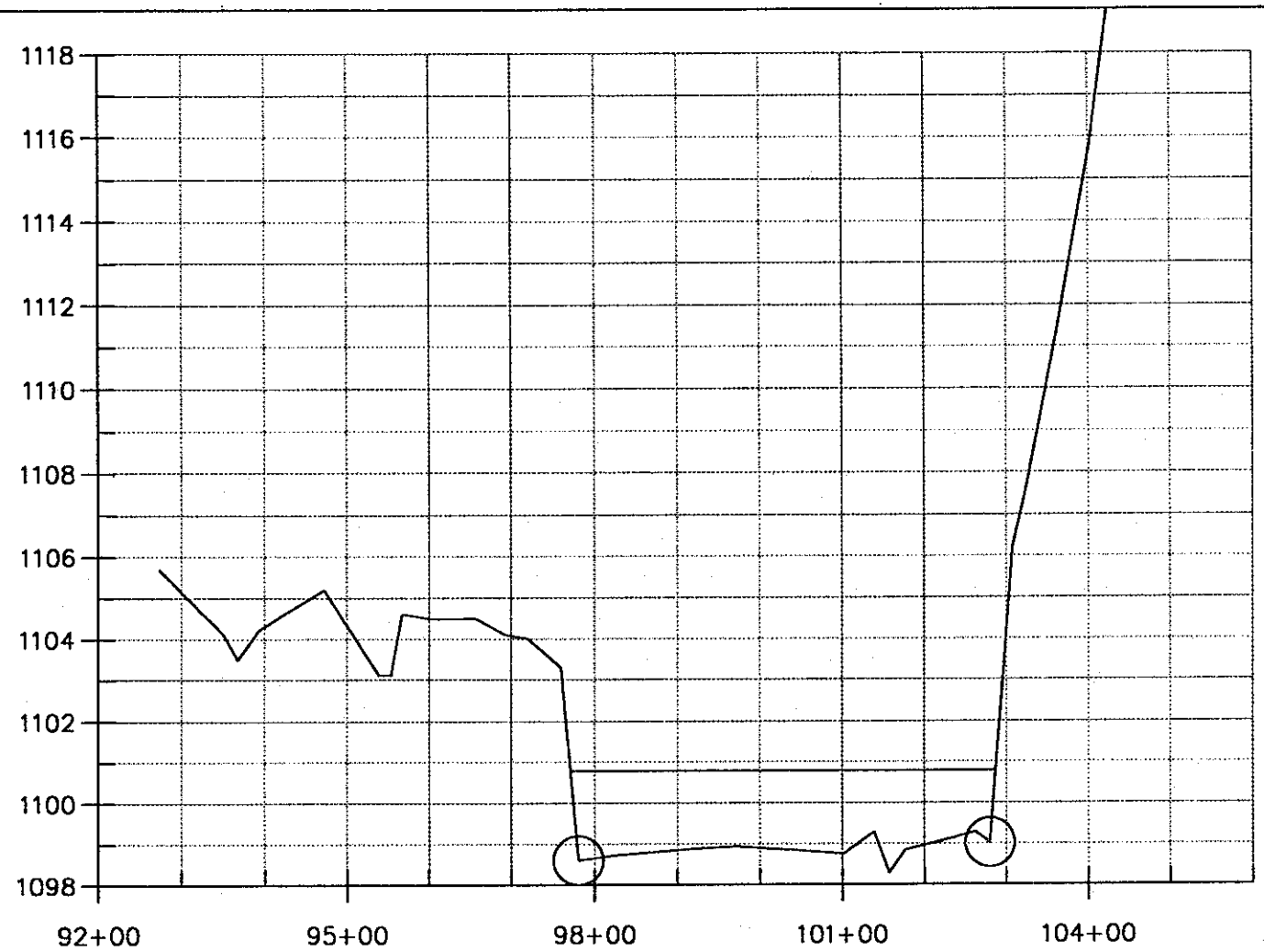
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1097.70 ft



SECTION: 1.771

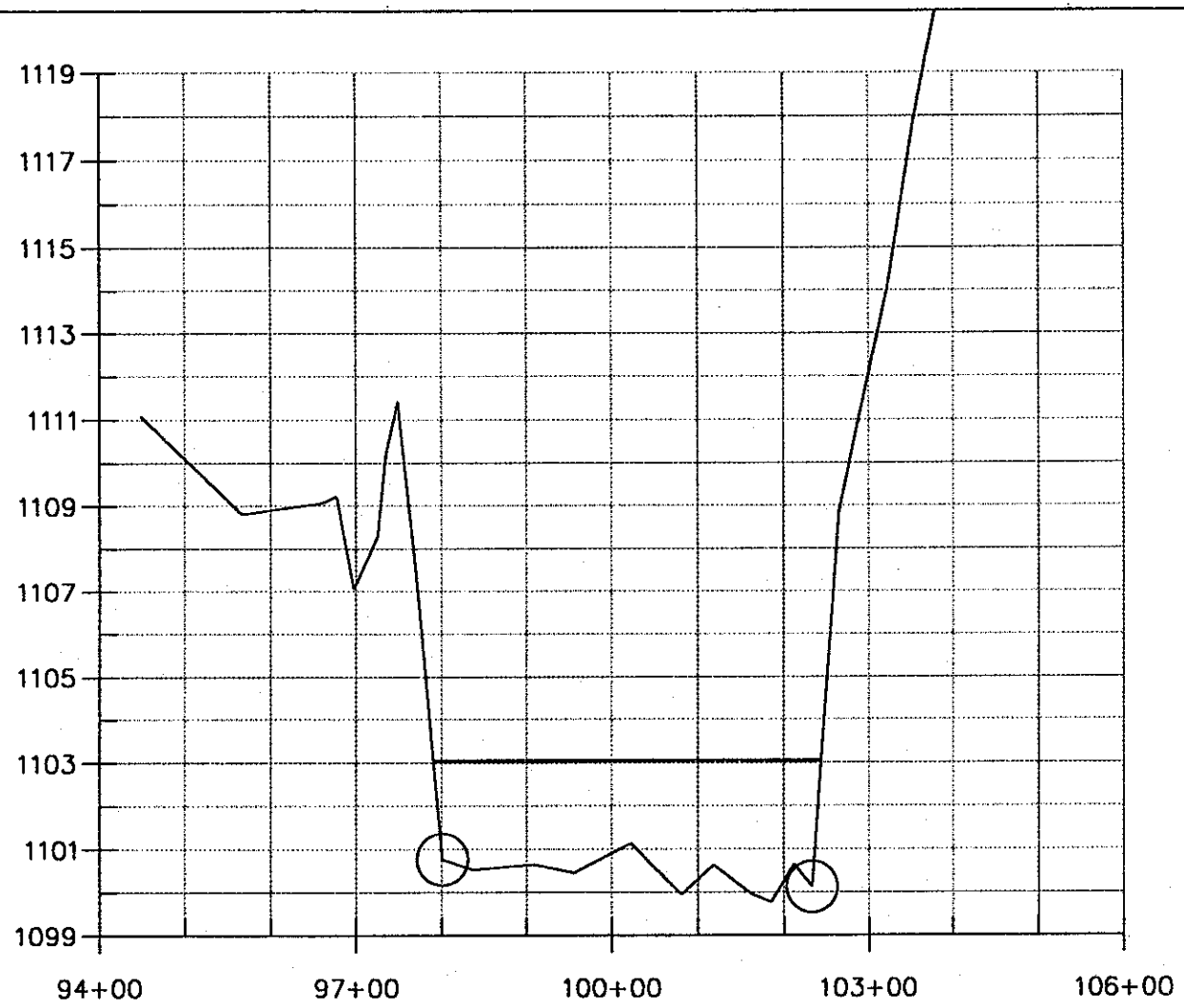
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1100.78 ft



SECTION: 1.833

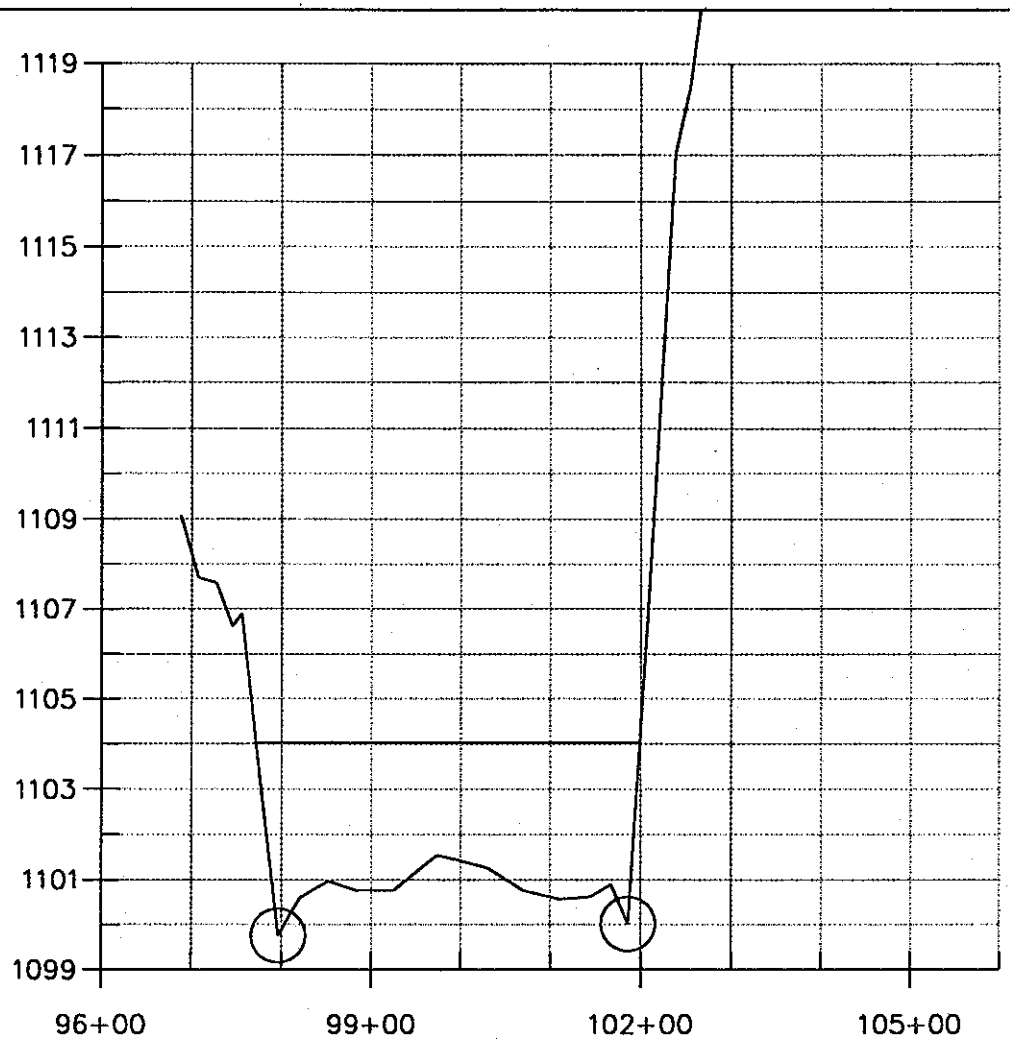
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1103.06 ft



SECTION: 1.880

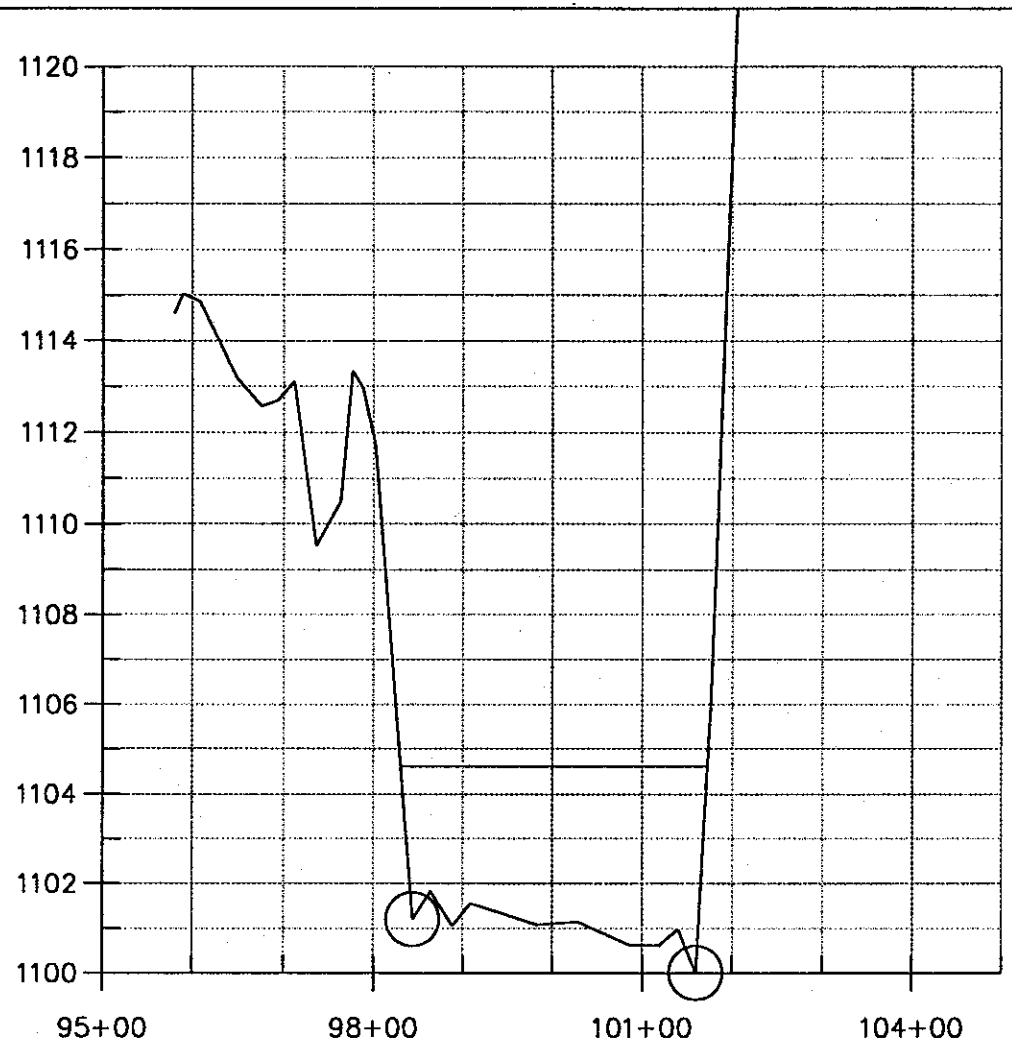
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1104.03 ft



SECTION: 1.926

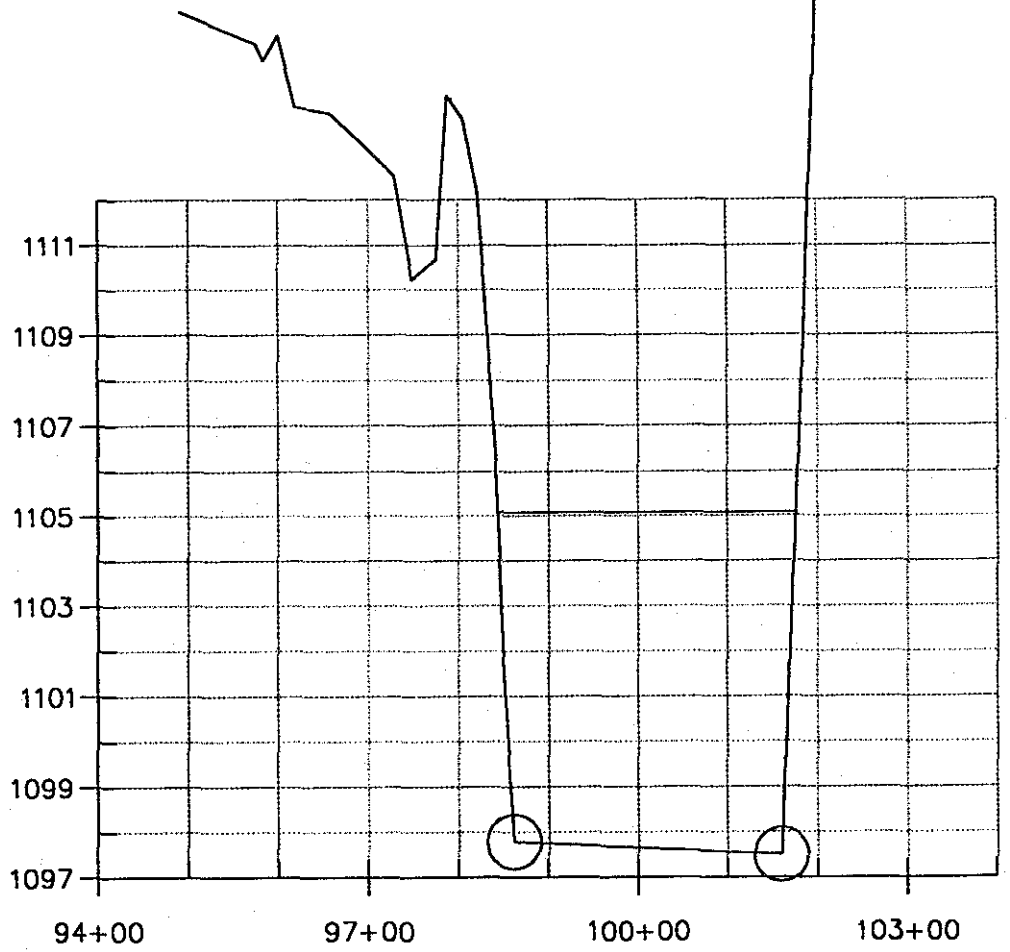
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1104.61 ft



SECTION: 1.941

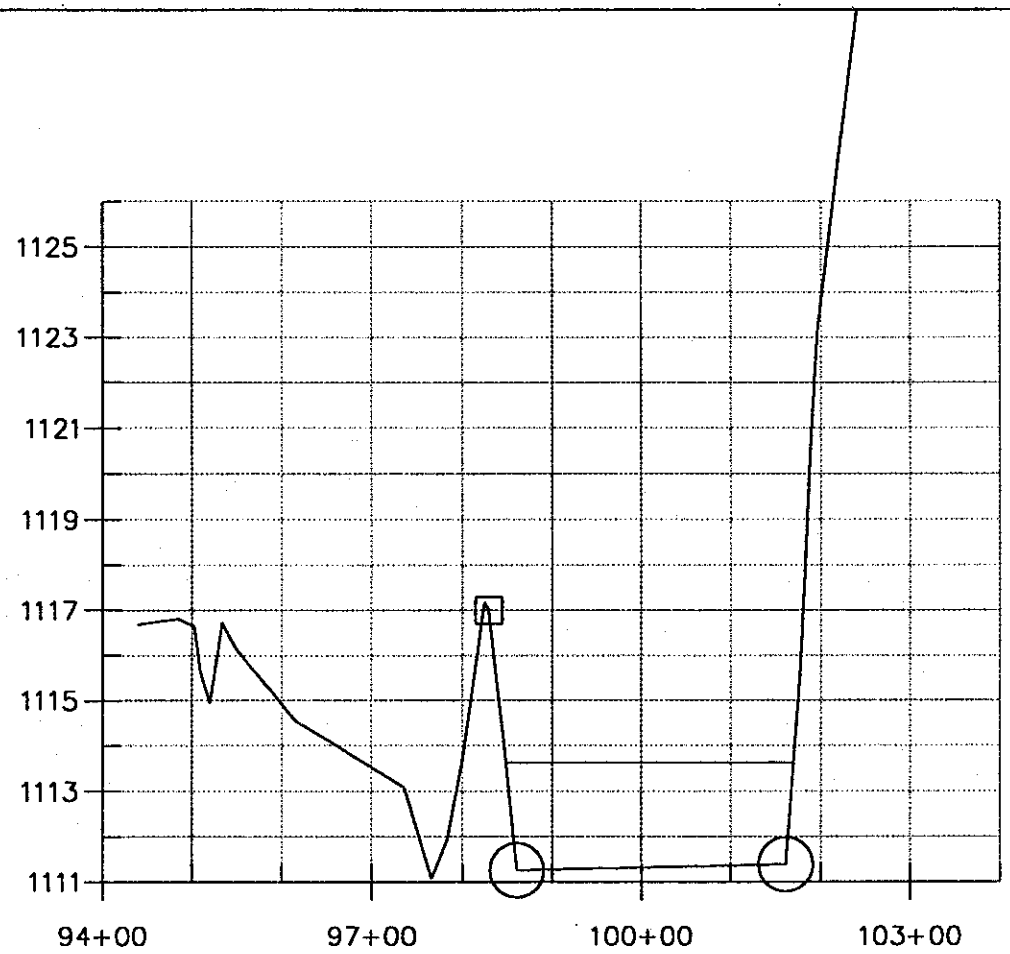
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1105.07 ft



SECTION: 1.951

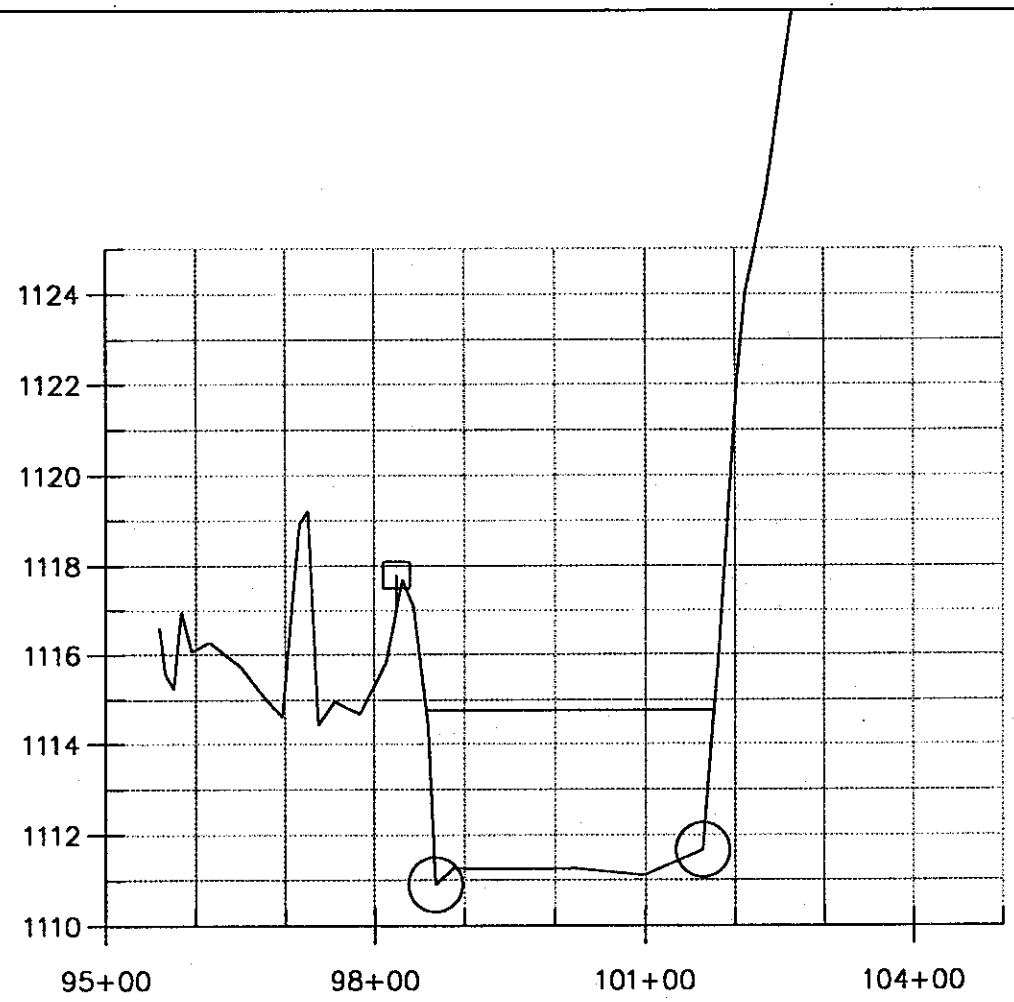
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1113.63 ft



SECTION: 1.962

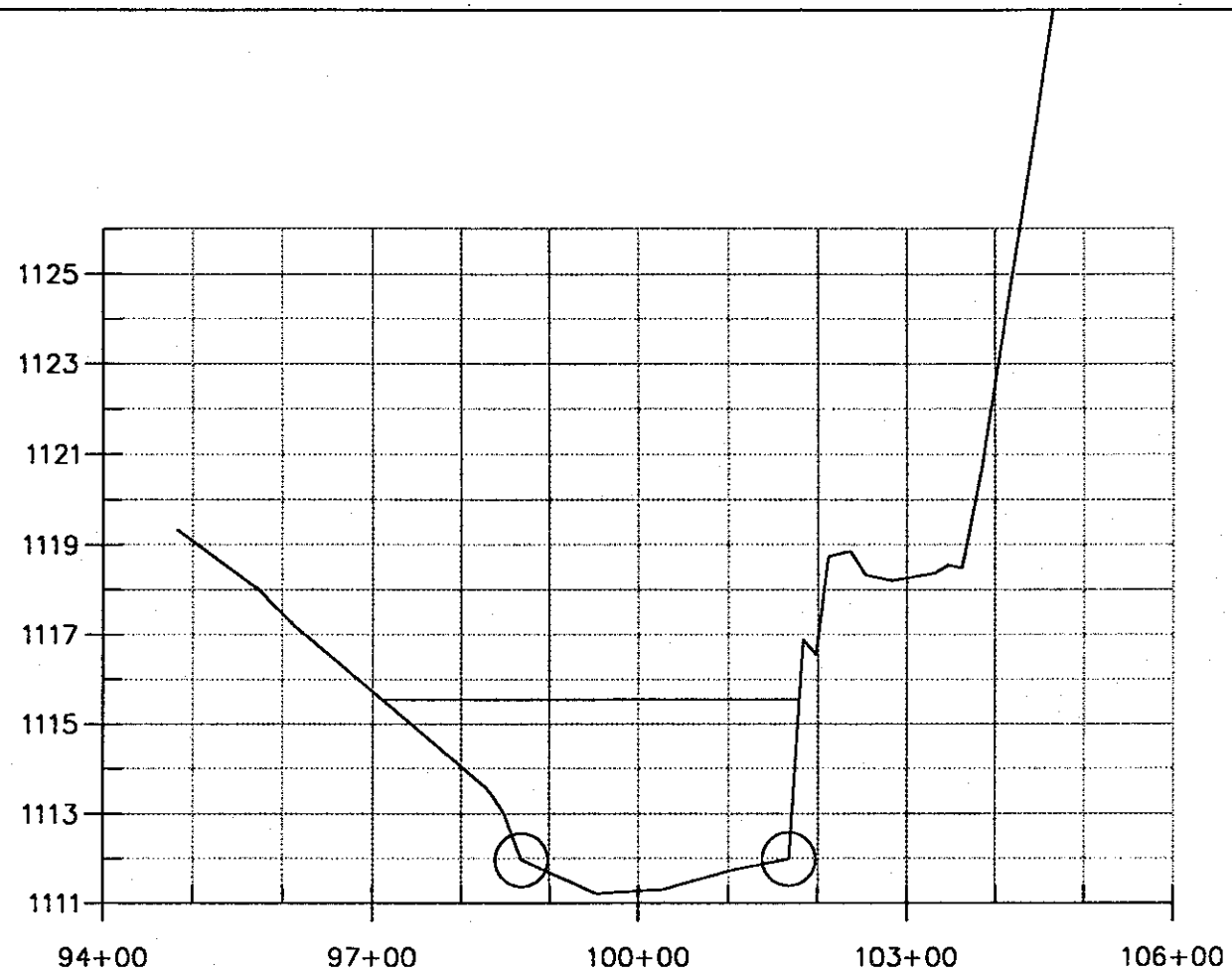
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 6060.00 cfs

Computed Water Surface = 1114.75 ft



SECTION: 2.003

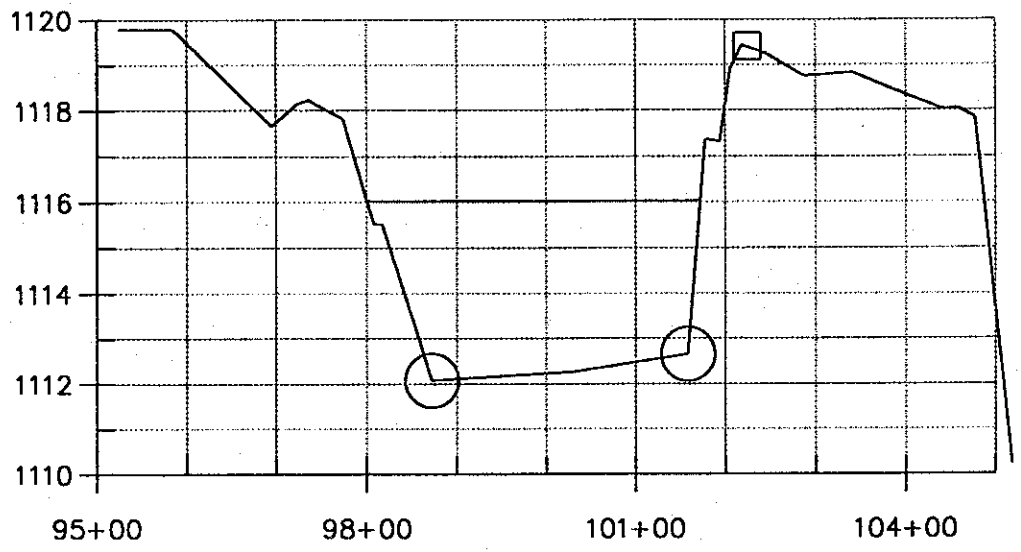
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5970.00 cfs

Computed Water Surface = 1115.54 ft



SECTION: 2.054

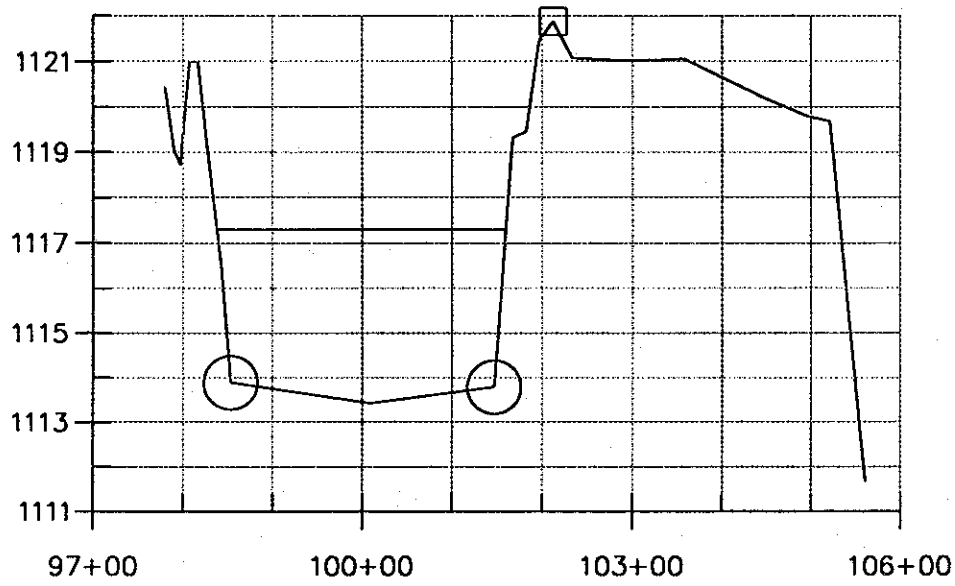
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5970.00 cfs

Computed Water Surface = 1116.02 ft



SECTION: 2.148

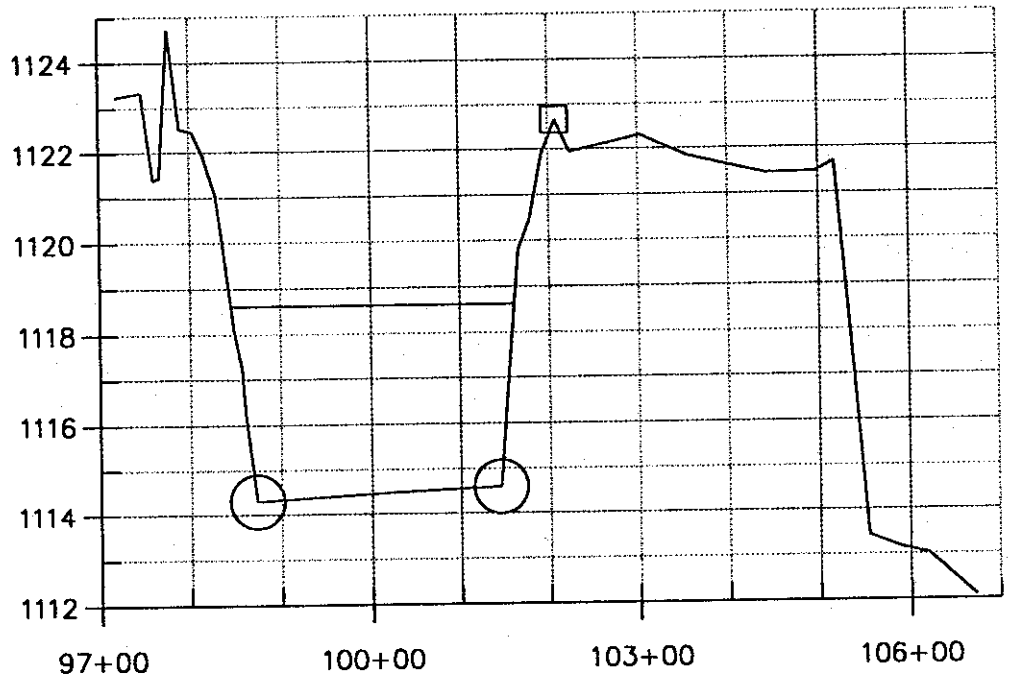
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5970.00 cfs

Computed Water Surface = 1117.29 ft



SECTION: 2.244

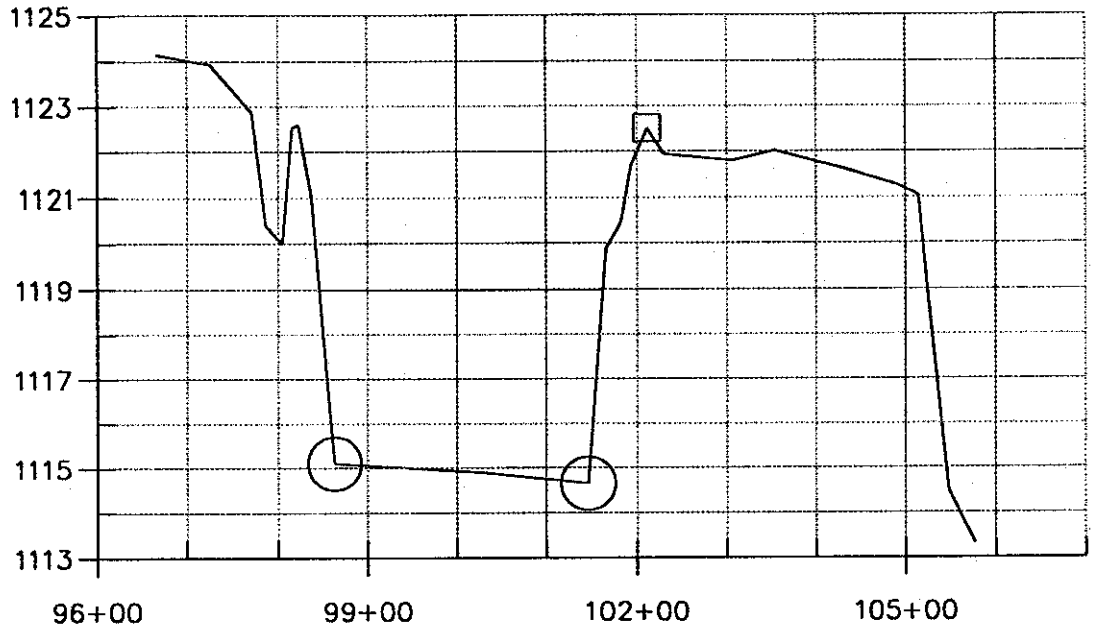
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5970.00 cfs

Computed Water Surface = 1118.61 ft



SECTION: 2.276

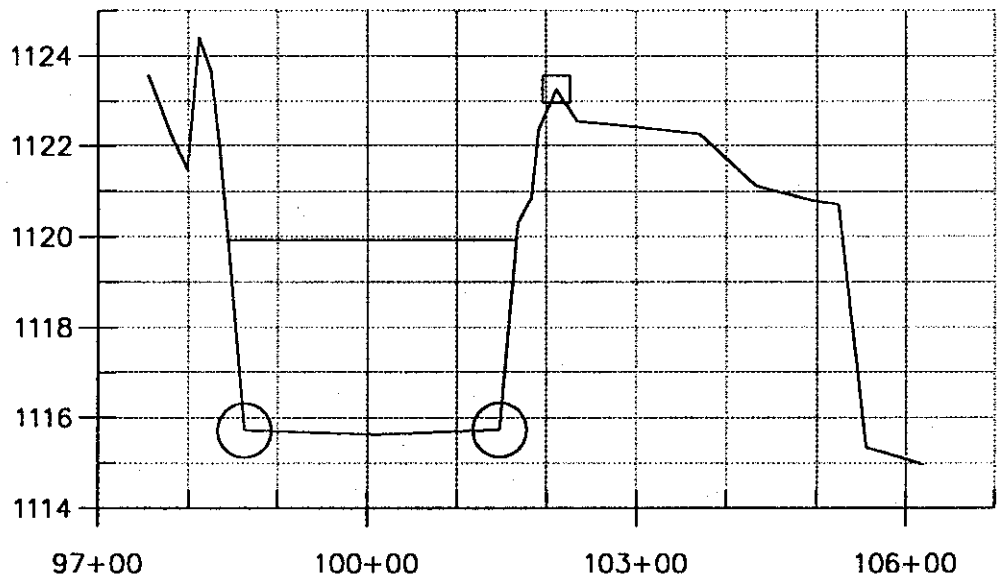
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5750.00 cfs

Computed Water Surface = 1118.98 ft



SECTION: 2.369

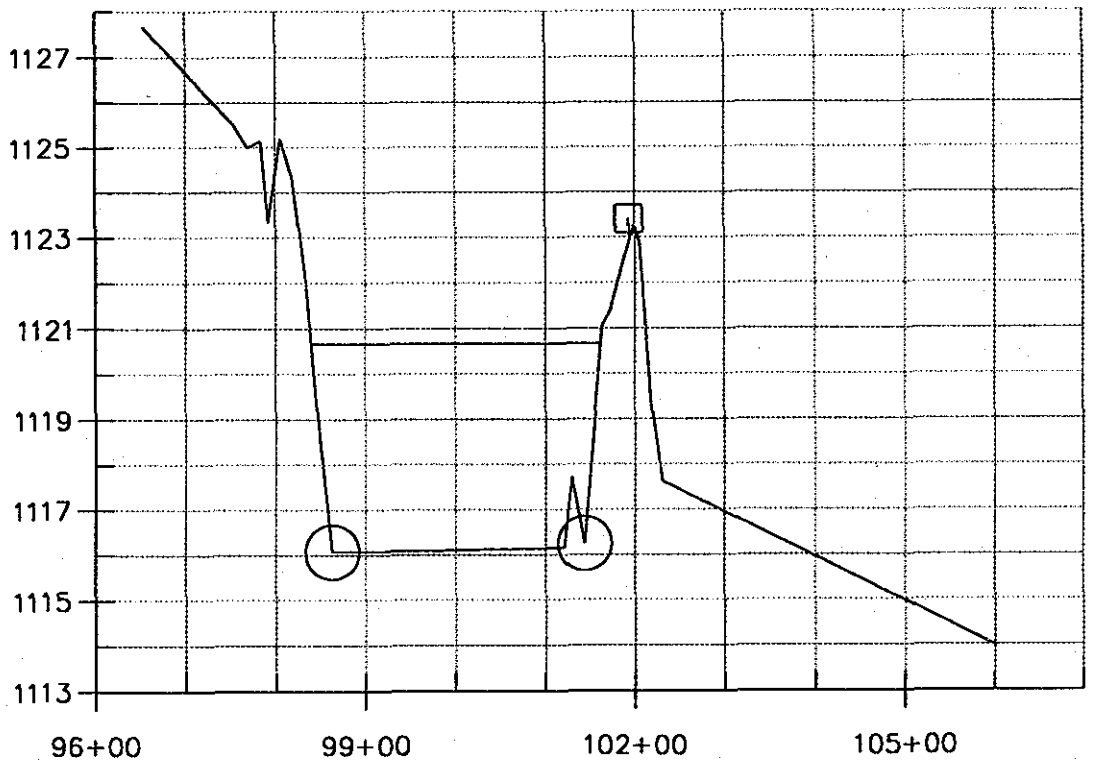
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5750.00 cfs

Computed Water Surface = 1119.92 ft



SECTION: 2.457

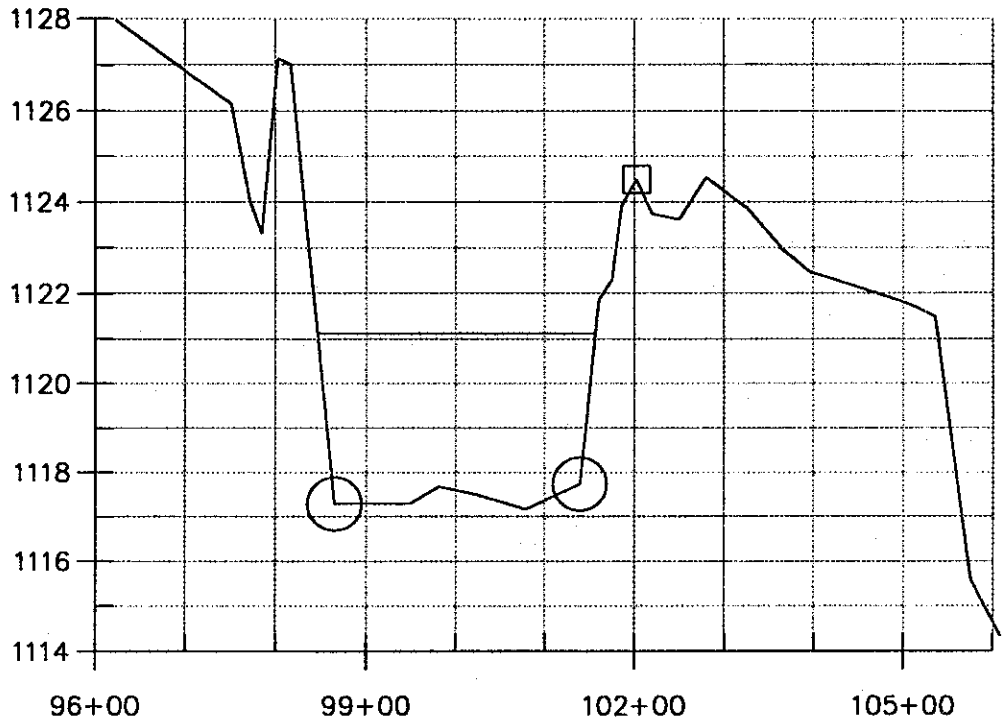
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5750.00 cfs

Computed Water Surface = 1120.67 ft



SECTION: 2.514

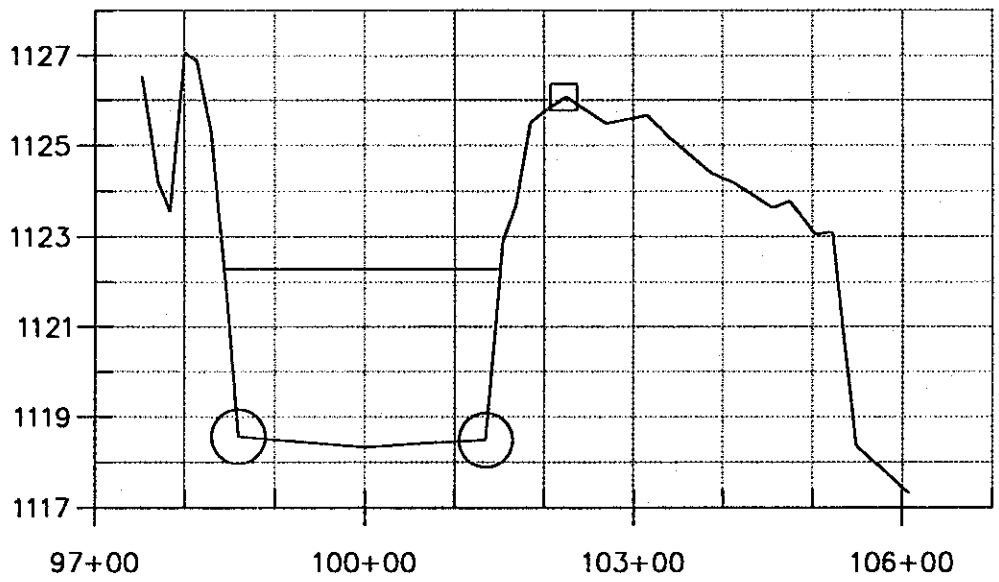
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5430.00 cfs

Computed Water Surface = 1121.11 ft



SECTION: 2.605

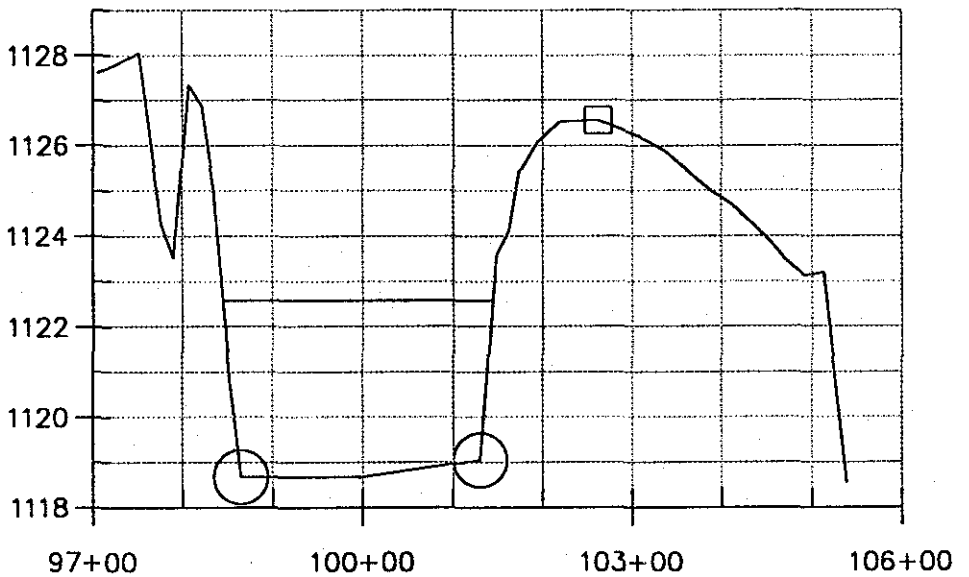
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5430.00 cfs

Computed Water Surface = 1122.28 ft



SECTION: 2.632

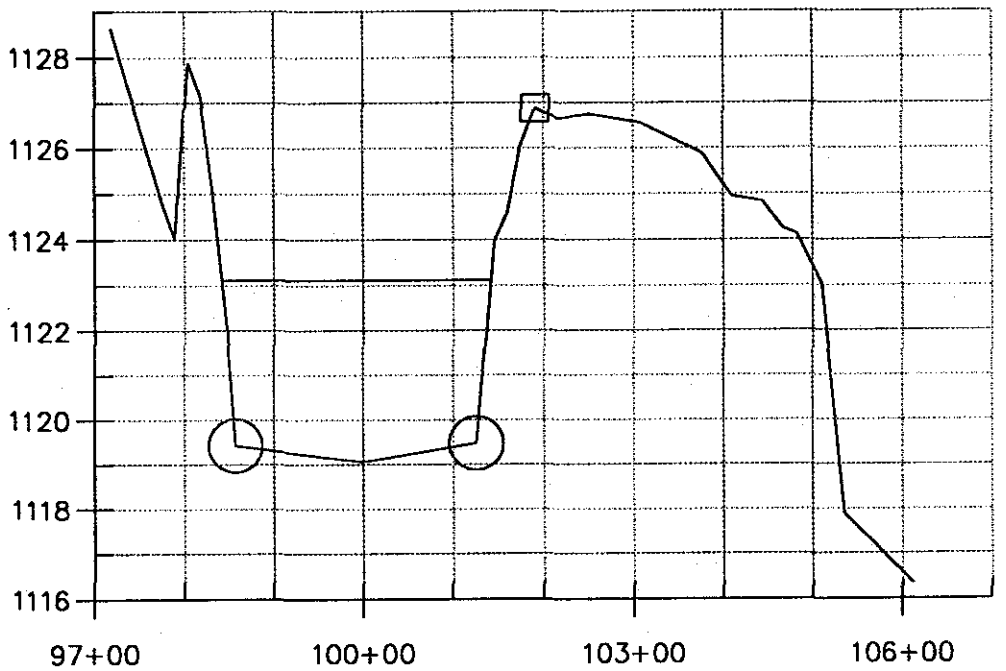
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5430.00 cfs

Computed Water Surface = 1122.58 ft



SECTION: 2.673

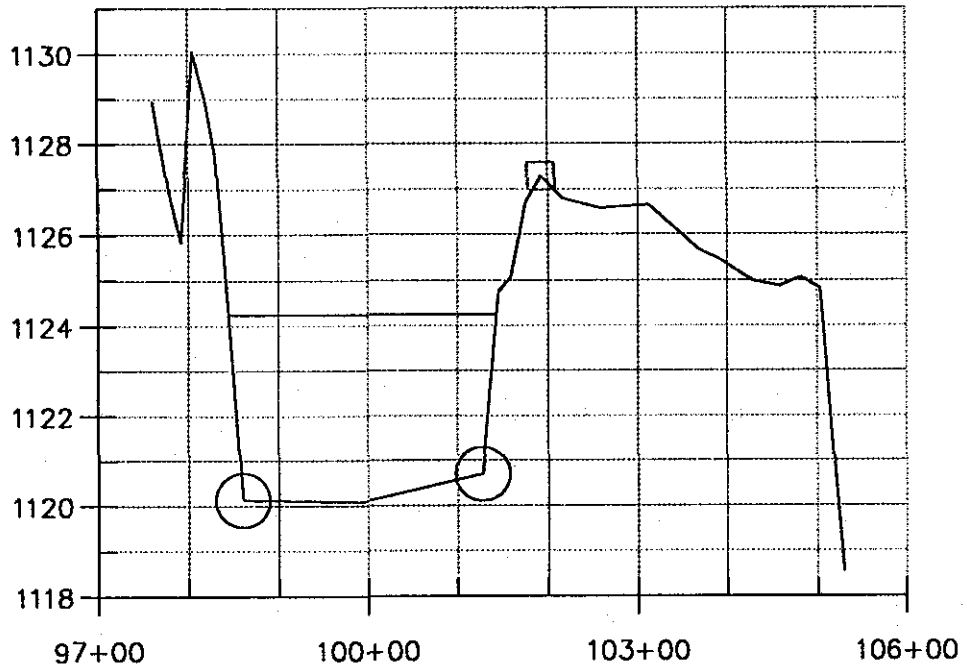
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5430.00 cfs

Computed Water Surface = 1123.11 ft



SECTION: 2.767

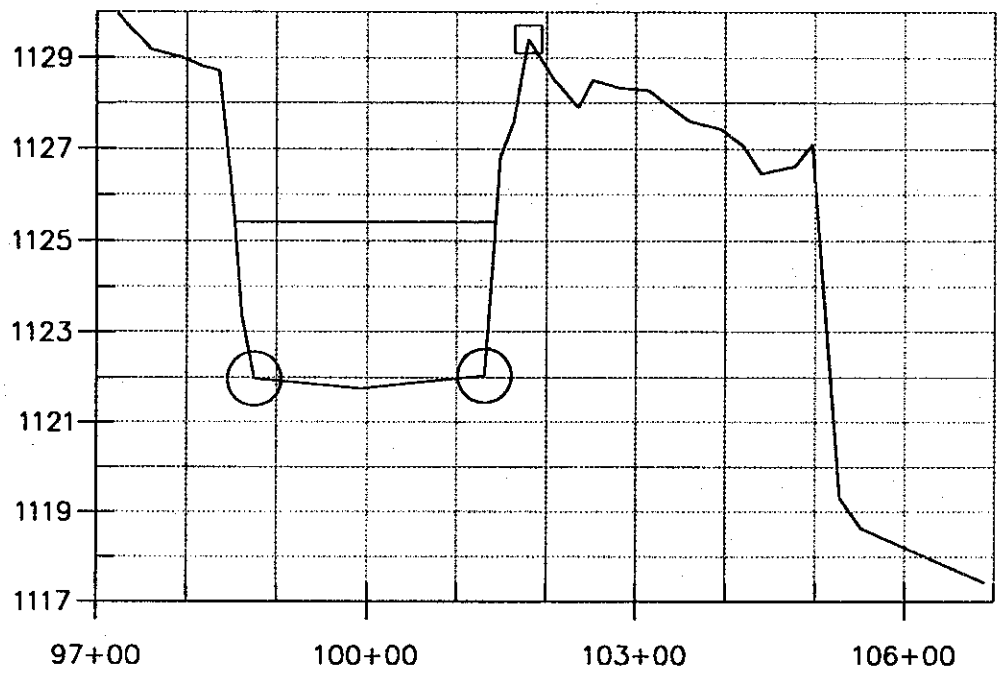
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5430.00 cfs

——— Computed Water Surface = 1124.24 ft



SECTION: 2.861

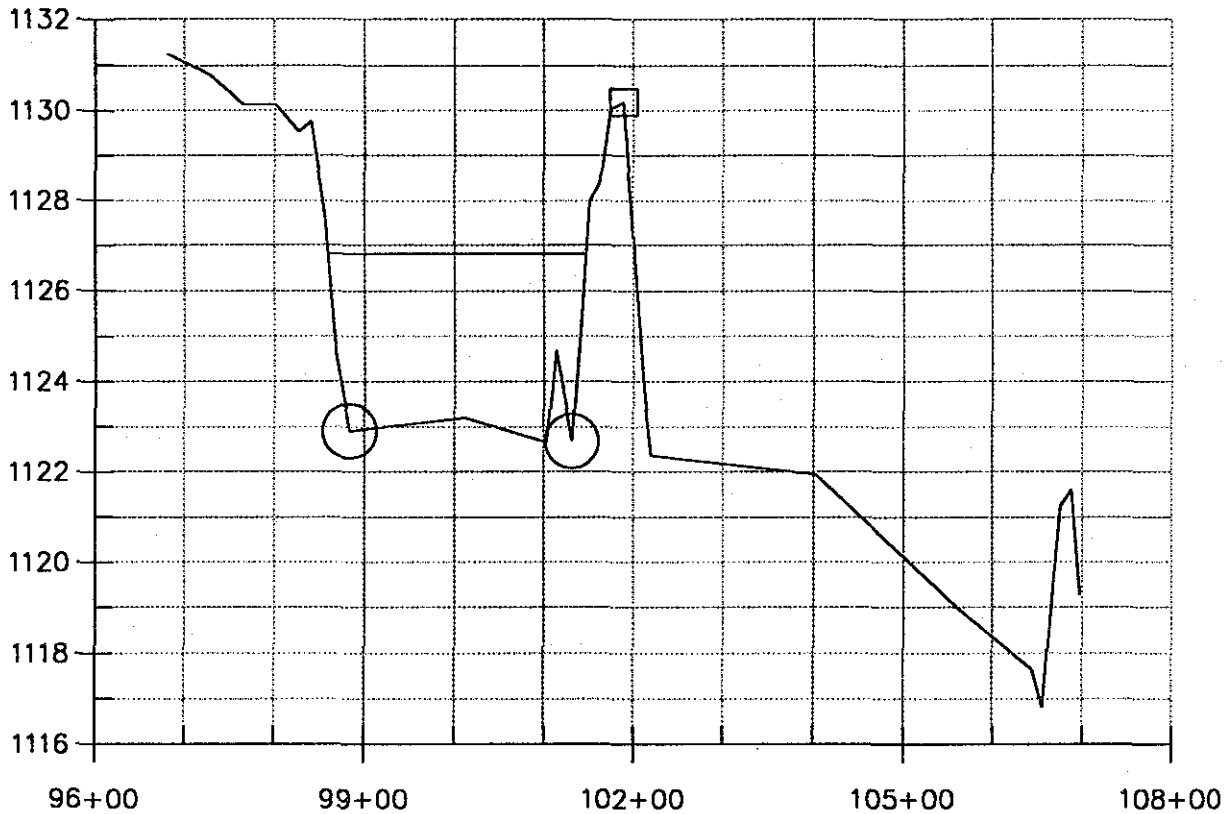
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5430.00 cfs

Computed Water Surface = 1125.41 ft



SECTION: 2.944

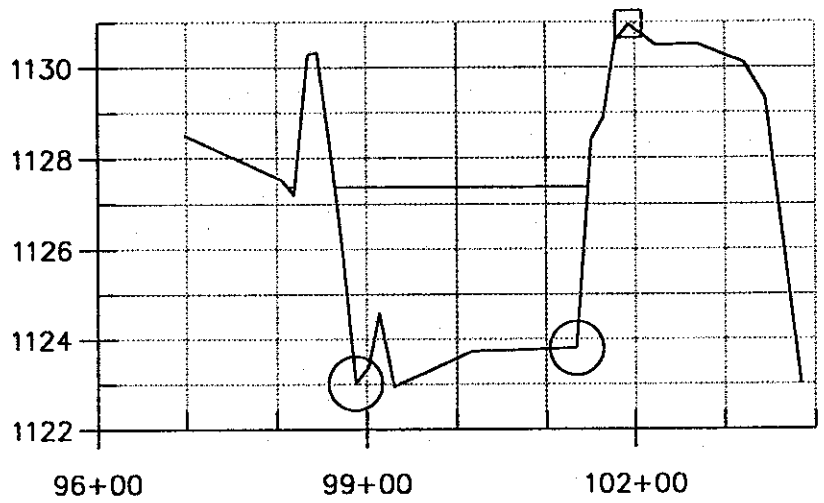
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5430.00 cfs

Computed Water Surface = 1126.81 ft



SECTION: 2.979

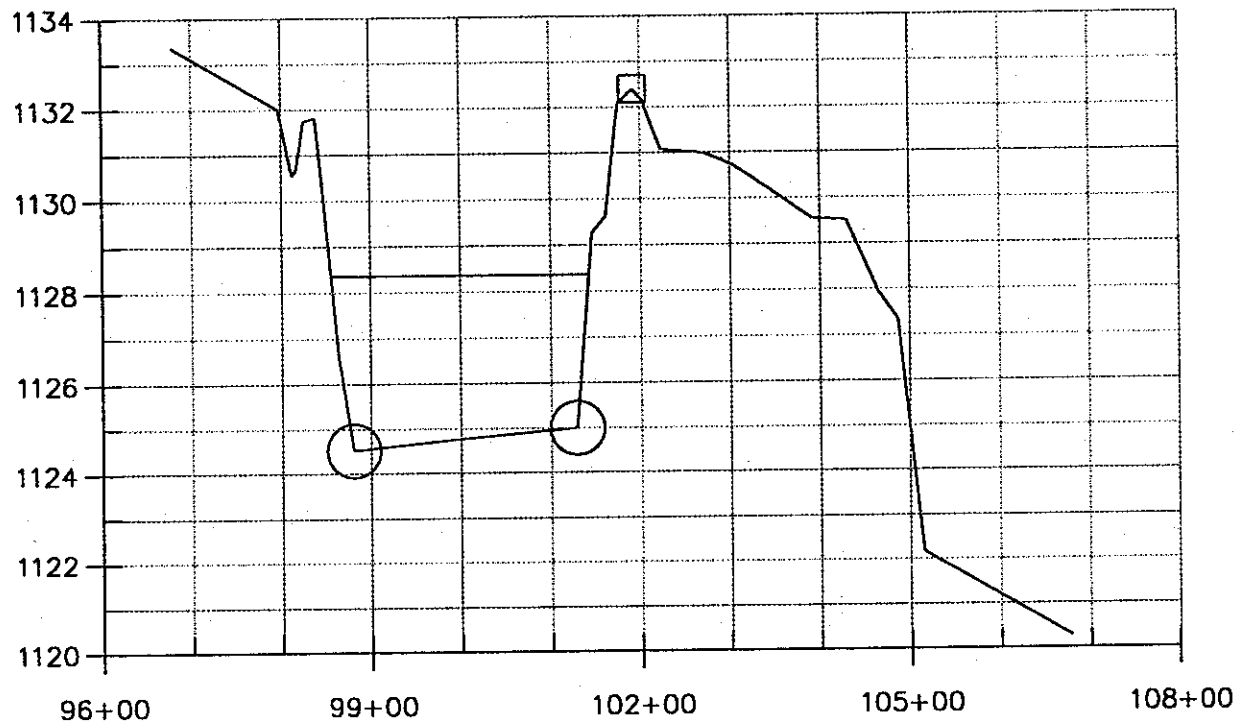
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5110.00 cfs

Computed Water Surface = 1127.38 ft



SECTION: 3.051

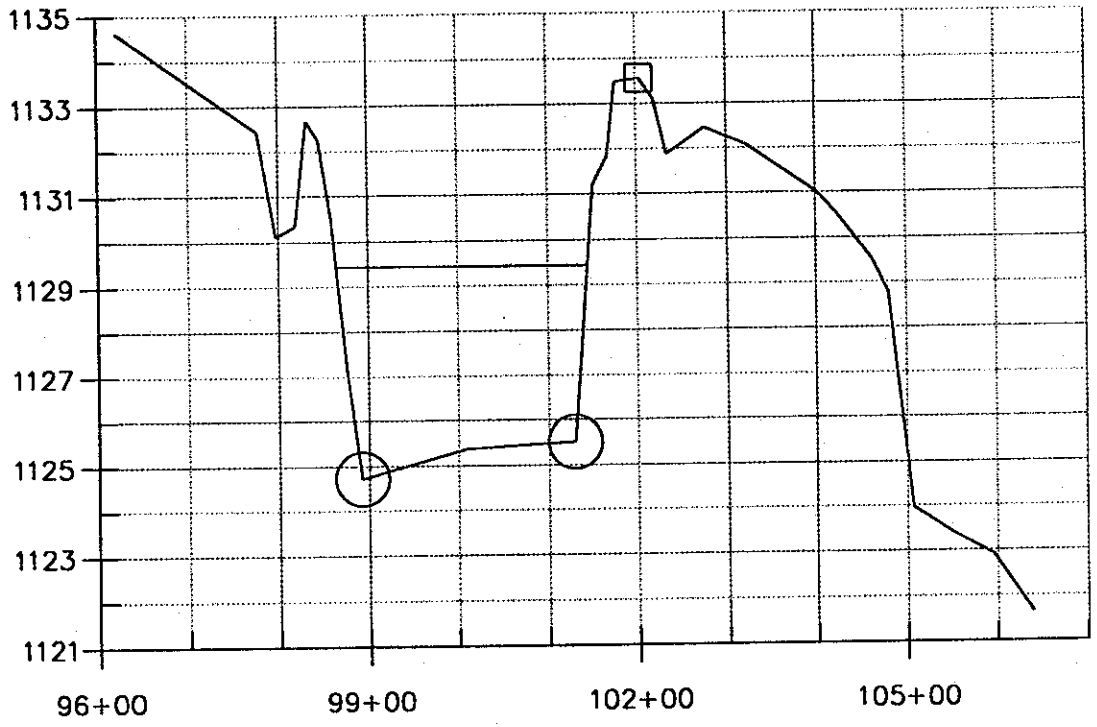
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5110.00 cfs

Computed Water Surface = 1128.37 ft



SECTION: 3.128

SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 5110.00 cfs

Computed Water Surface = 1129.42 ft

SECTION: 3.152

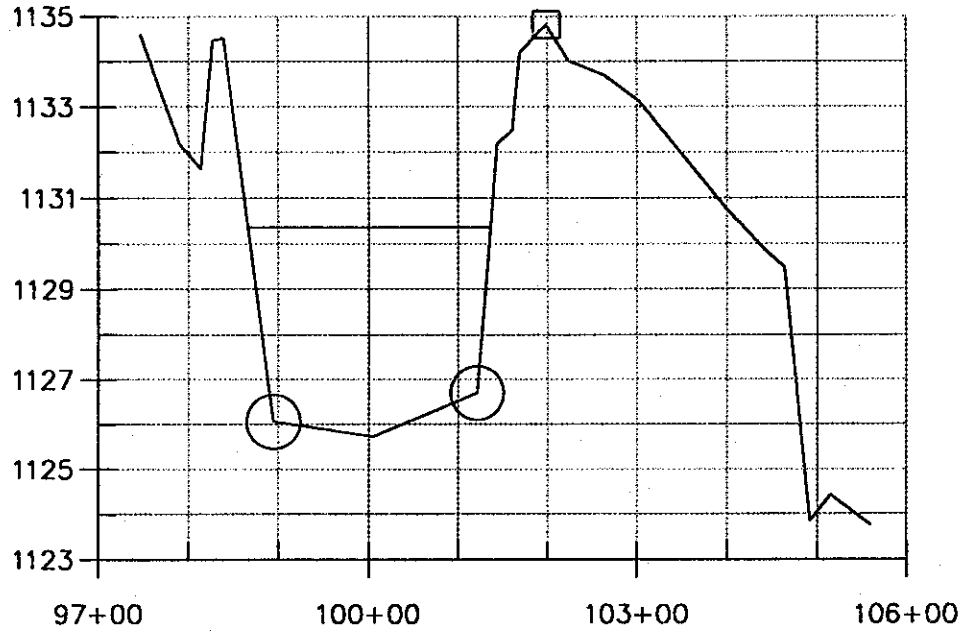
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 4720.00 cfs

Computed Water Surface = 1129.72 ft



SECTION: 3.232

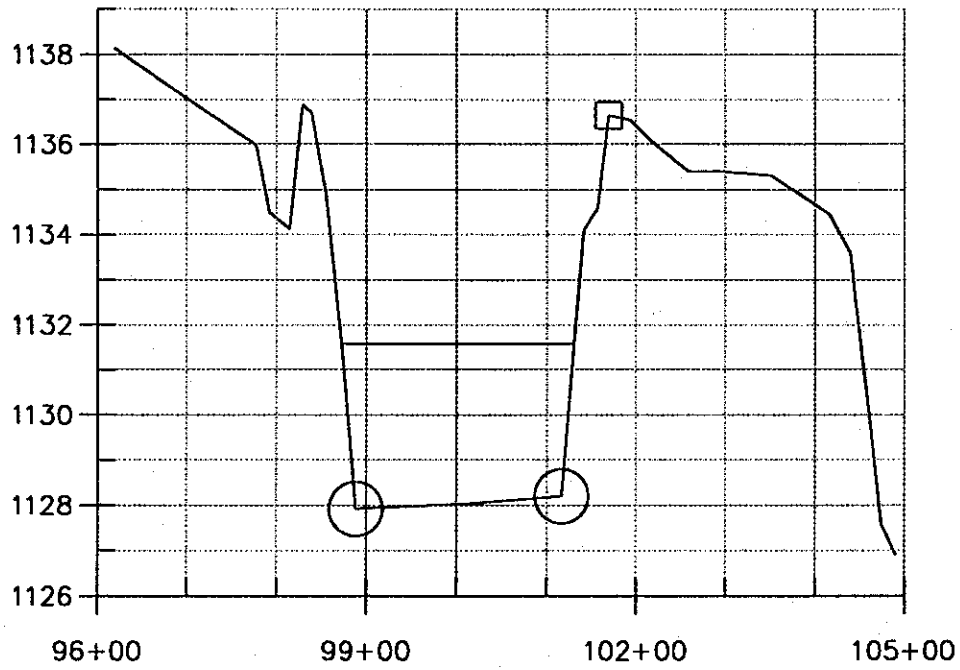
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 4720.00 cfs

Computed Water Surface = 1130.35 ft



SECTION: 3.348

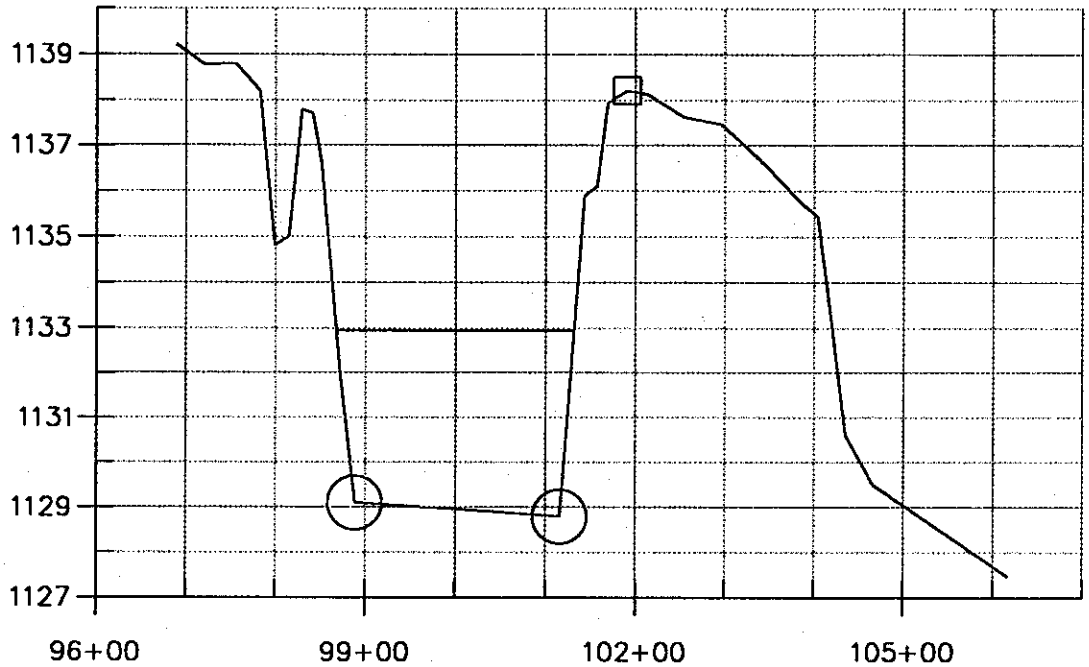
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 4720.00 cfs

Computed Water Surface = 1131.58 ft



SECTION: 3.438

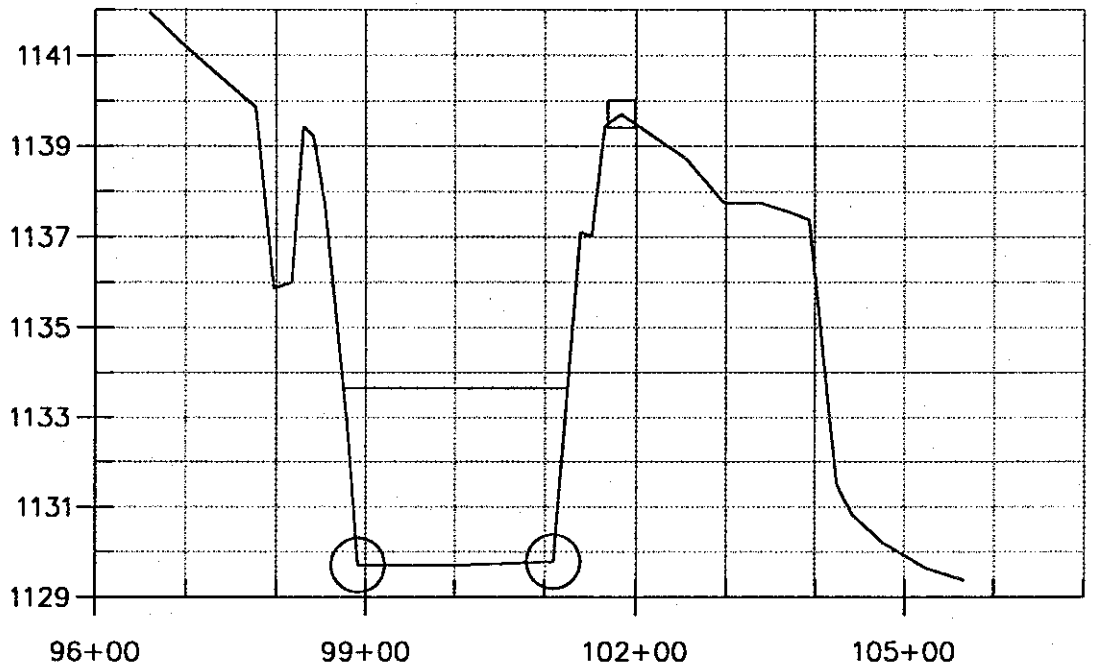
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 4720.00 cfs

Computed Water Surface = 1132.94 ft



SECTION: 3.500

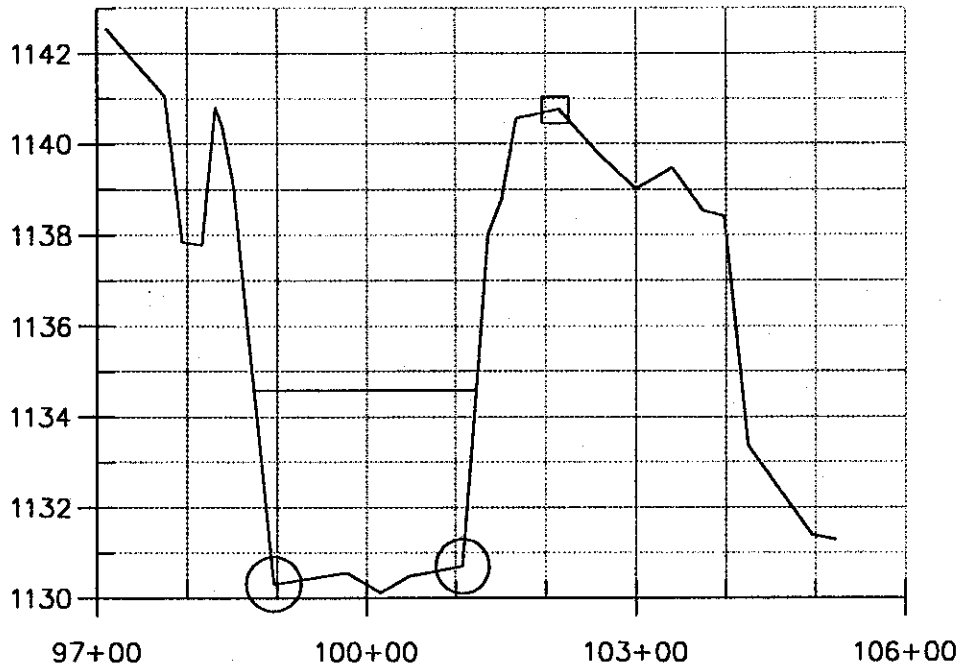
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 4320.00 cfs

Computed Water Surface = 1133.64 ft



SECTION: 3.589

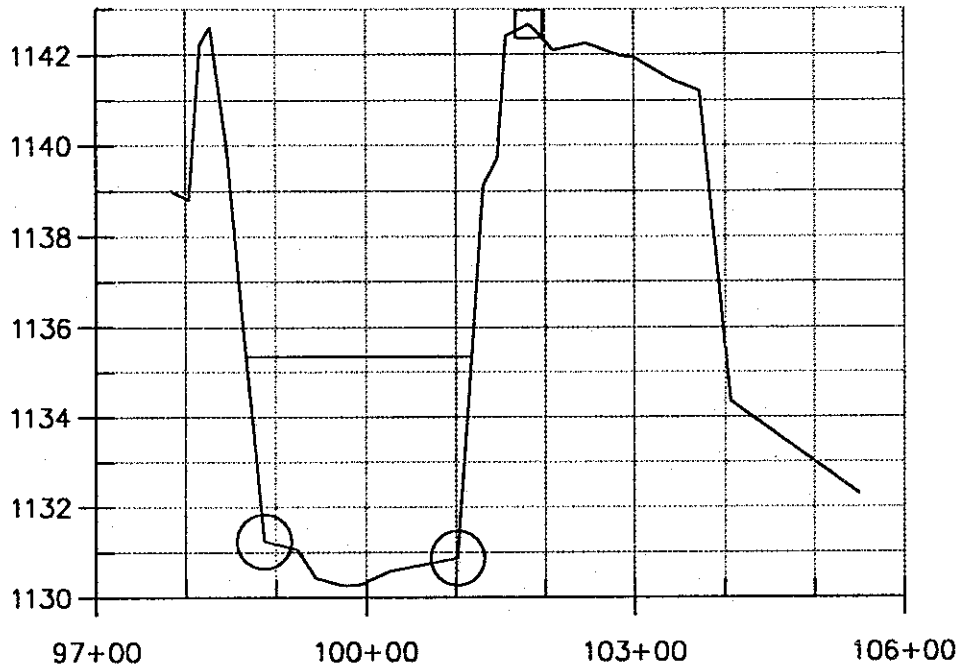
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 4320.00 cfs

Computed Water Surface = 1134.58 ft



SECTION: 3.677

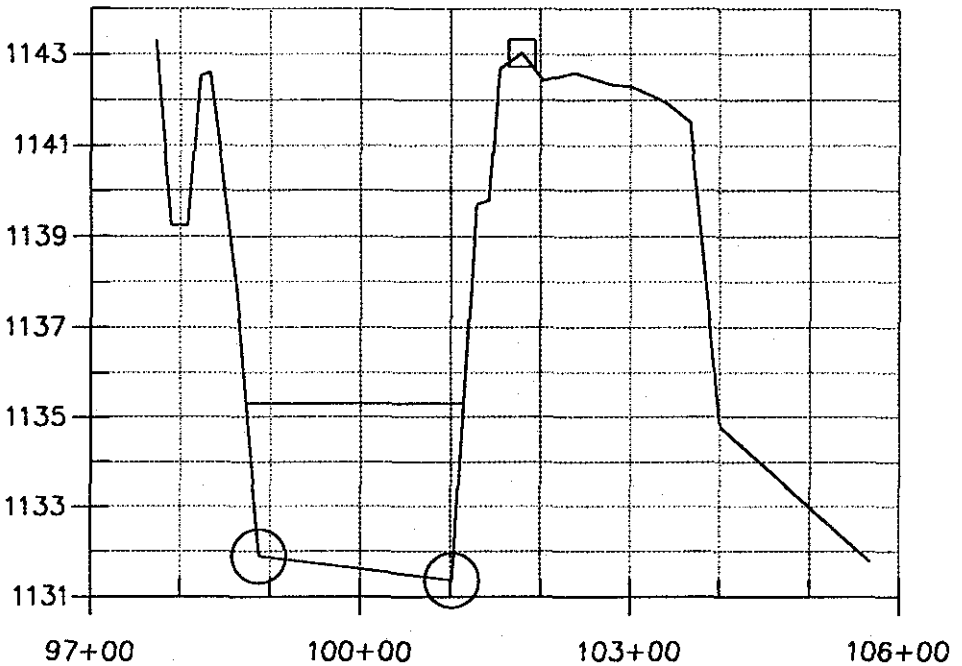
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3970.00 cfs

Computed Water Surface = 1135.34 ft



SECTION: 3.688

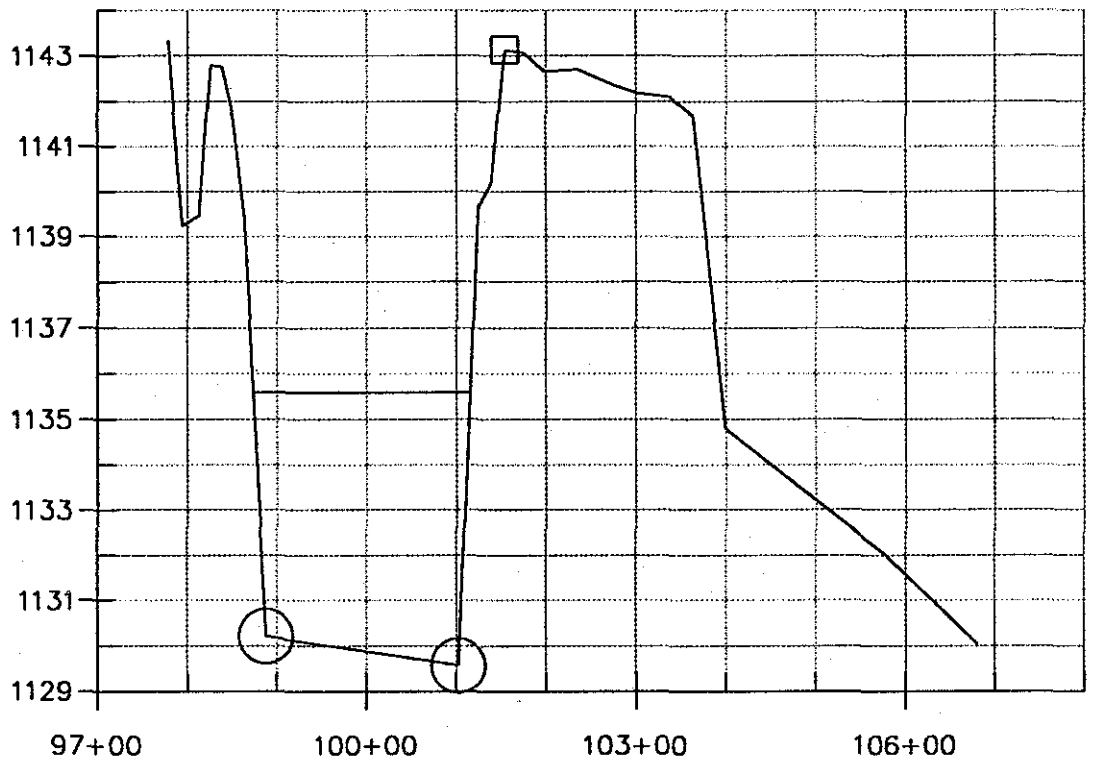
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3970.00 cfs

Computed Water Surface = 1135.30 ft



SECTION: 3.693

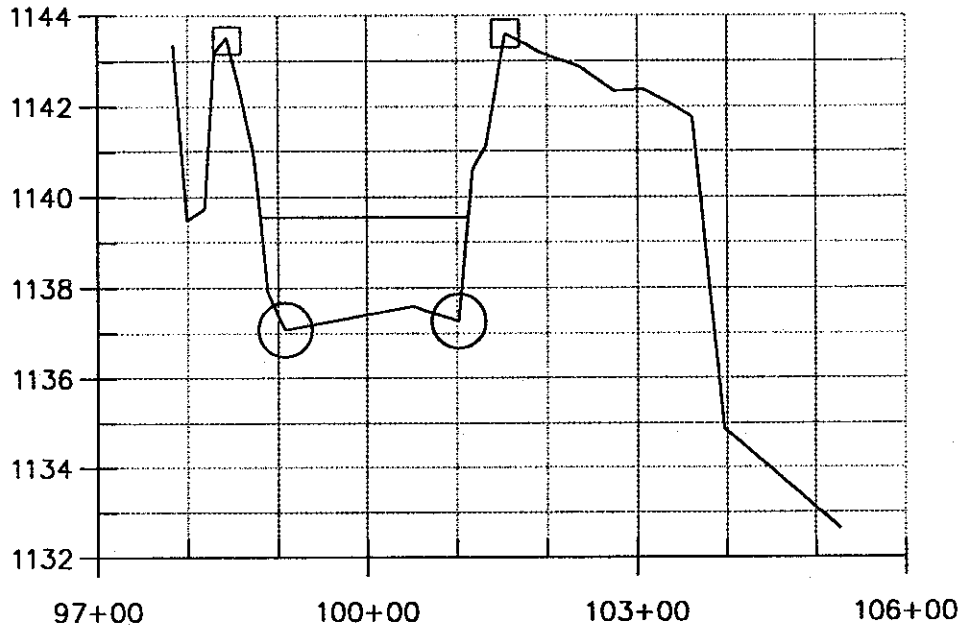
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3970.00 cfs

Computed Water Surface = 1135.60 ft



SECTION: 3.699

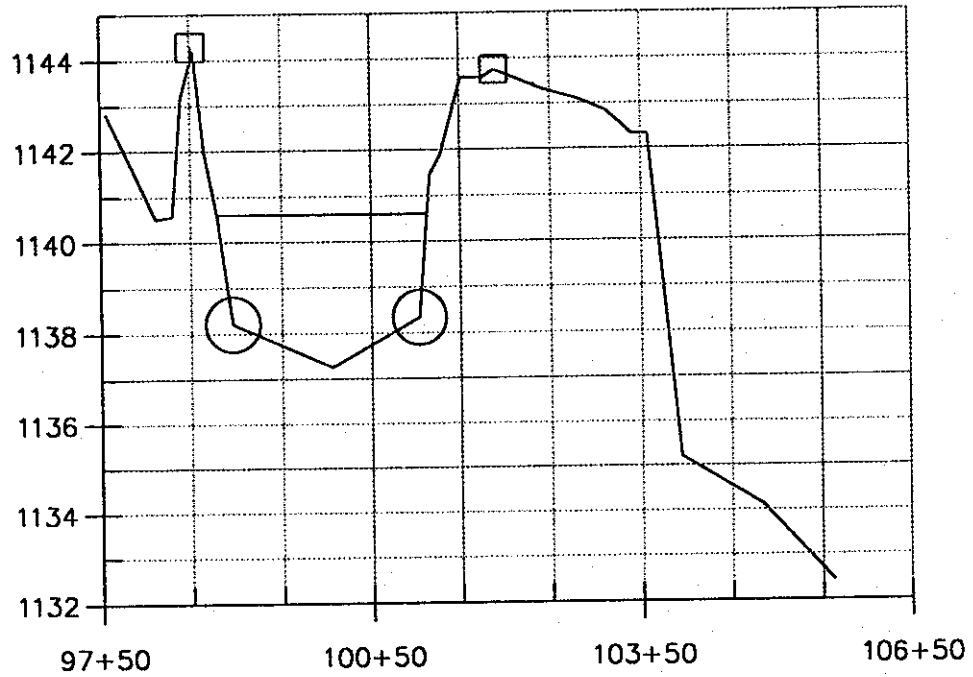
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3970.00 cfs

Computed Water Surface = 1139.54 ft



SECTION: 3.710

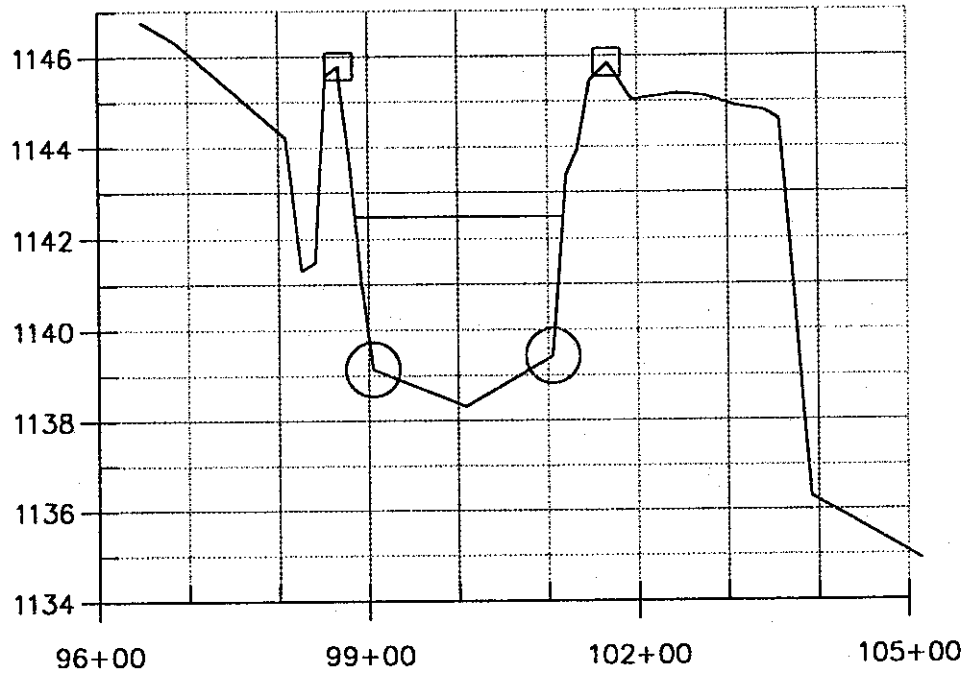
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3970.00 cfs

Computed Water Surface = 1140.59 ft



SECTION: 3.789

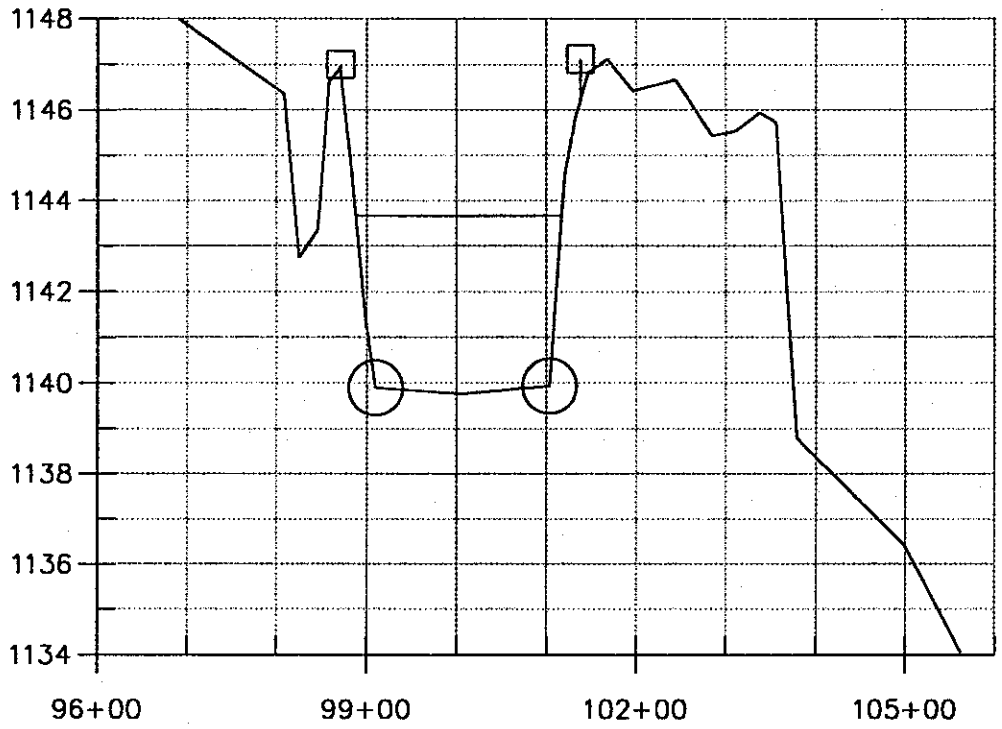
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3970.00 cfs

Computed Water Surface = 1142.47 ft



SECTION: 3.880

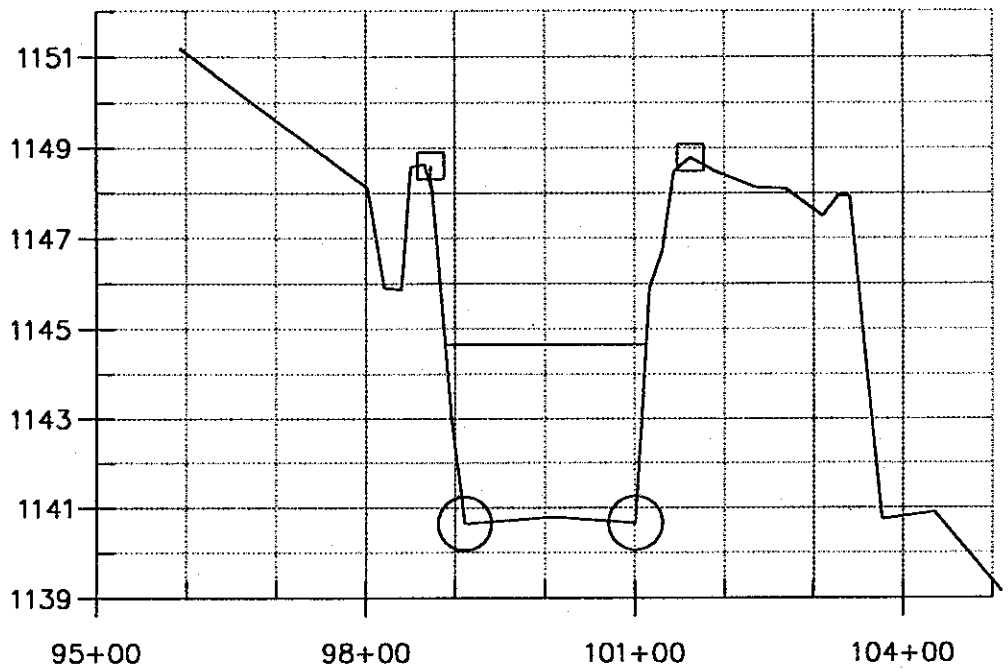
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3740.00 cfs

Computed Water Surface = 1143.67 ft



SECTION: 3.972

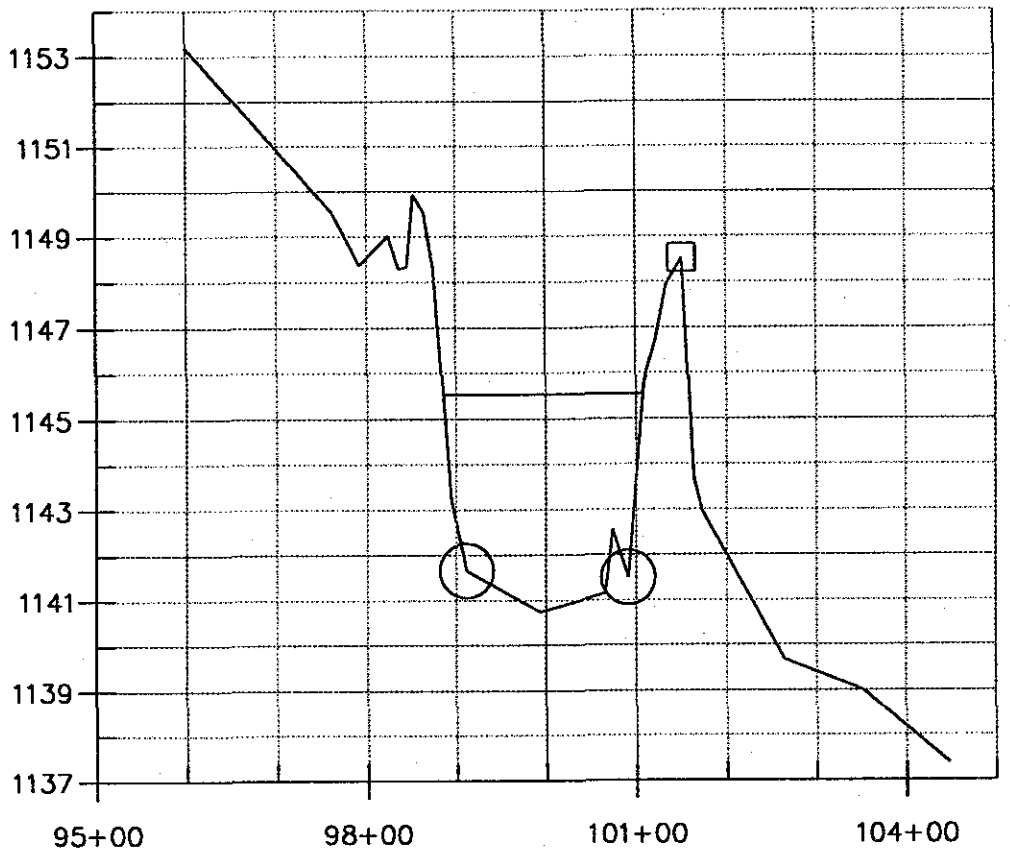
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3740.00 cfs

Computed Water Surface = 1144.65 ft



SECTION: 4.066

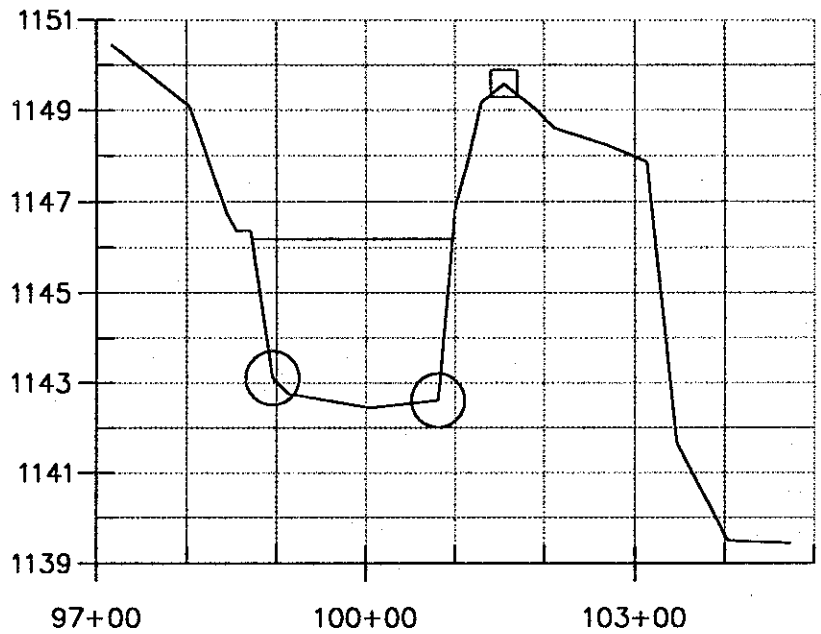
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3500.00 cfs

Computed Water Surface = 1145.55 ft



SECTION: 4.144

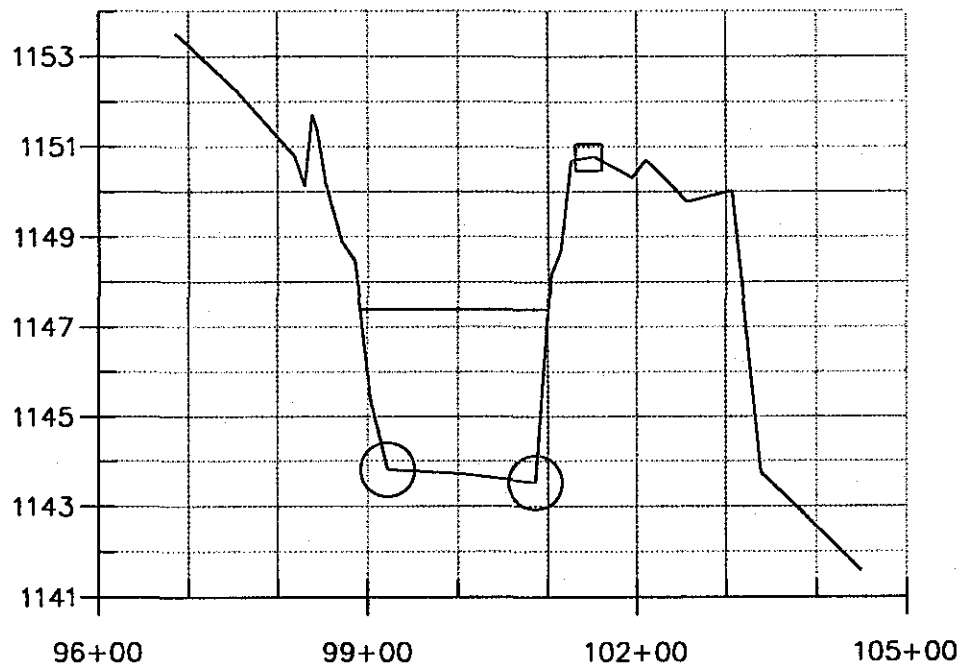
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3500.00 cfs

Computed Water Surface = 1146.17 ft



SECTION: 4.237

SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3500.00 cfs

Computed Water Surface = 1147.40 ft

SECTION: 4.328

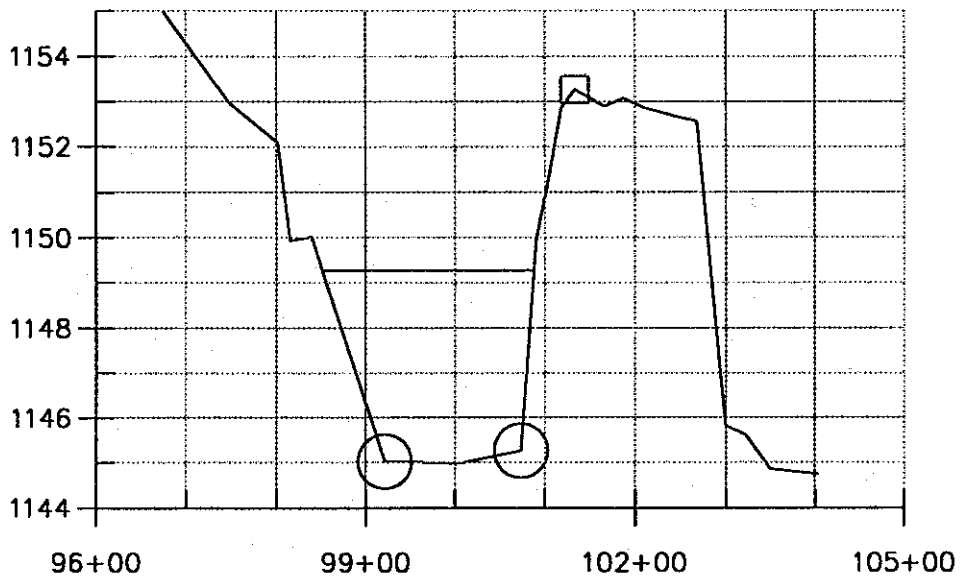
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3250.00 cfs

Computed Water Surface = 1148.53 ft



SECTION: 4.400

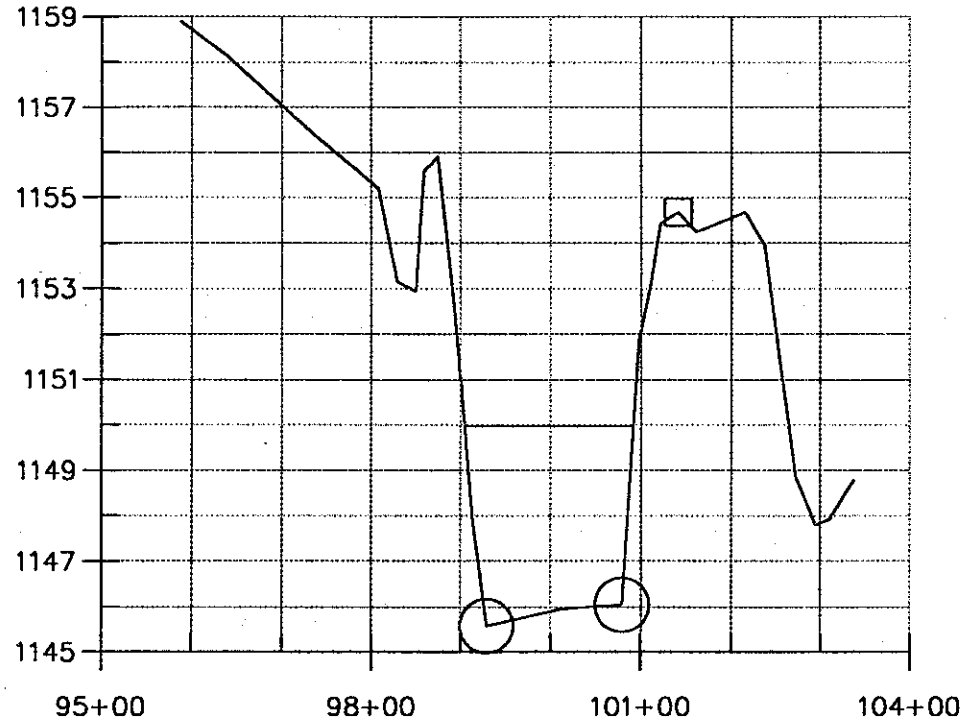
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 3250.00 cfs

Computed Water Surface = 1149.27 ft



SECTION: 4.492

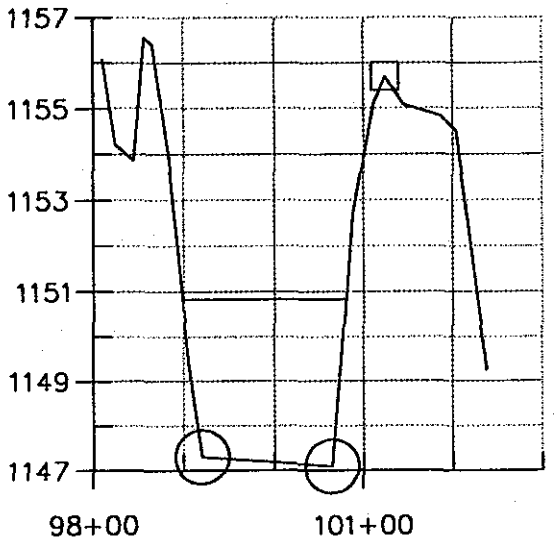
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2860.00 cfs

Computed Water Surface = 1149.97 ft



SECTION: 4.586

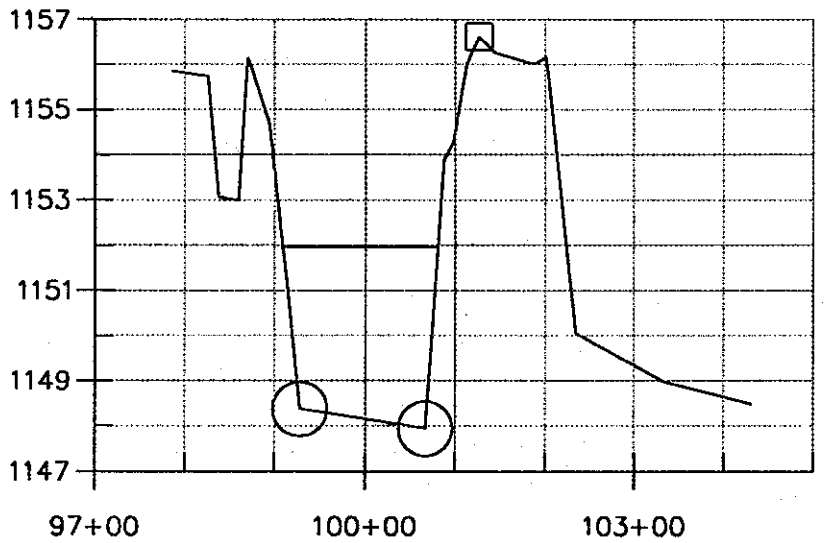
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2860.00 cfs

Computed Water Surface = 1150.82 ft



SECTION: 4.676

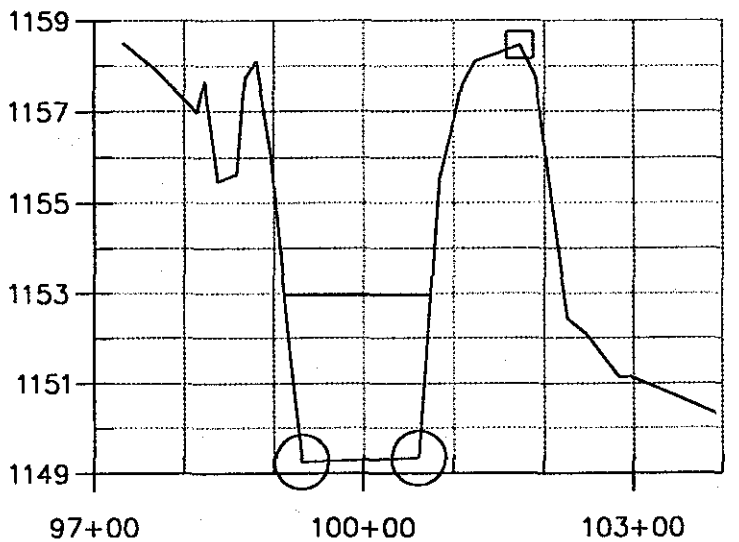
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

Computed Water Surface = 1151.97 ft



SECTION: 4.772

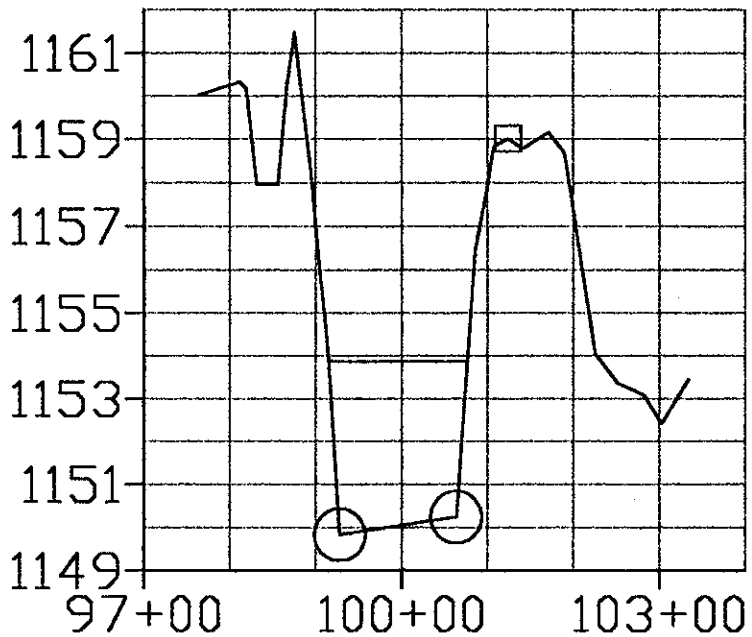
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

Computed Water Surface = 1152.96 ft



SECTION: 4.845

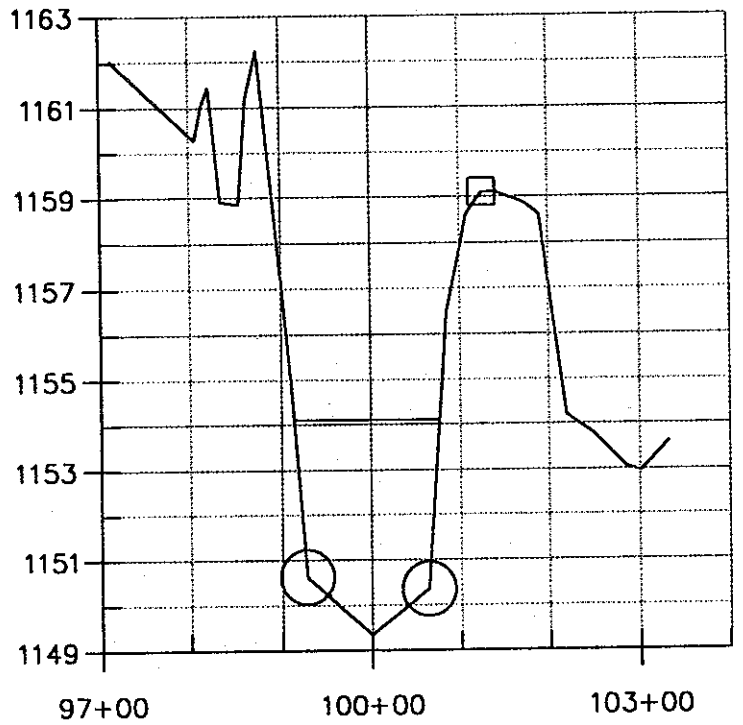
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

Computed Water Surface = 1153.87 ft



SECTION: 4.886

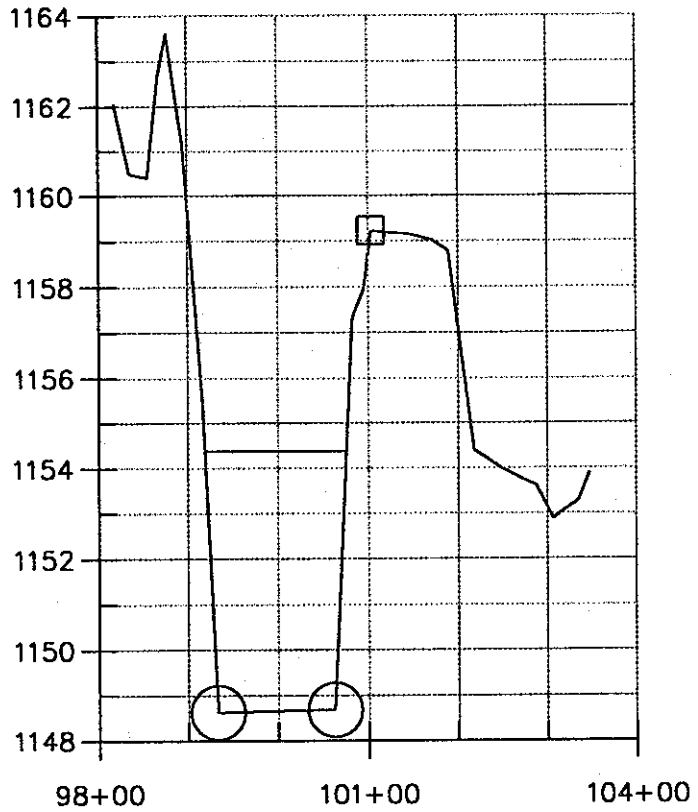
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

Computed Water Surface = 1154.12 ft



SECTION: 4.887

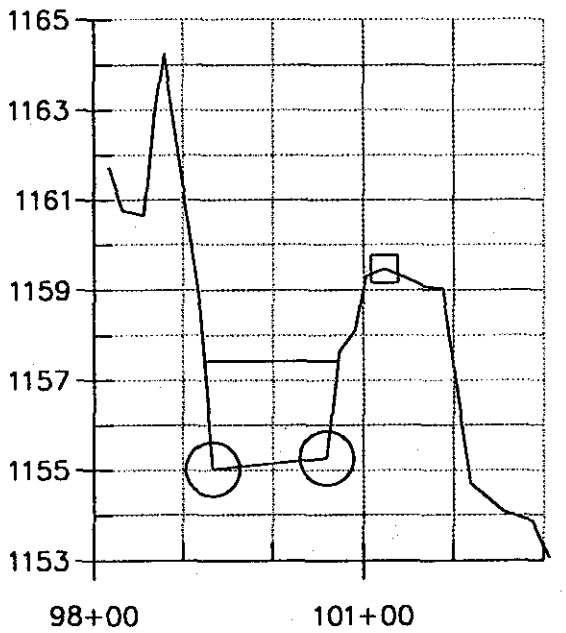
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

Computed Water Surface = 1154.38 ft



SECTION: 4.894

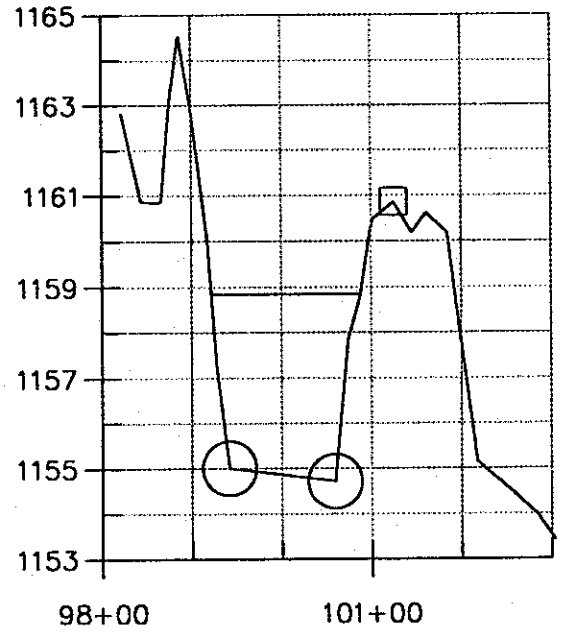
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

——— Computed Water Surface = 1157.43 ft



SECTION: 4.915

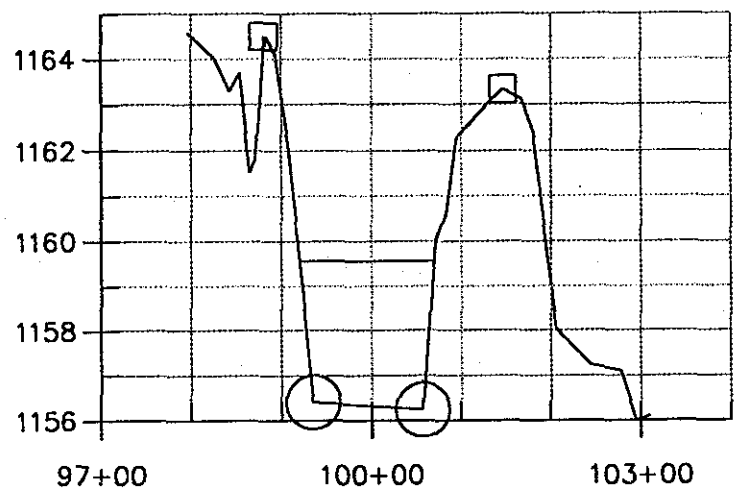
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

Computed Water Surface = 1158.84 ft



SECTION: 4.973

SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2590.00 cfs

Computed Water Surface = 1159.55 ft

SECTION: 5.091

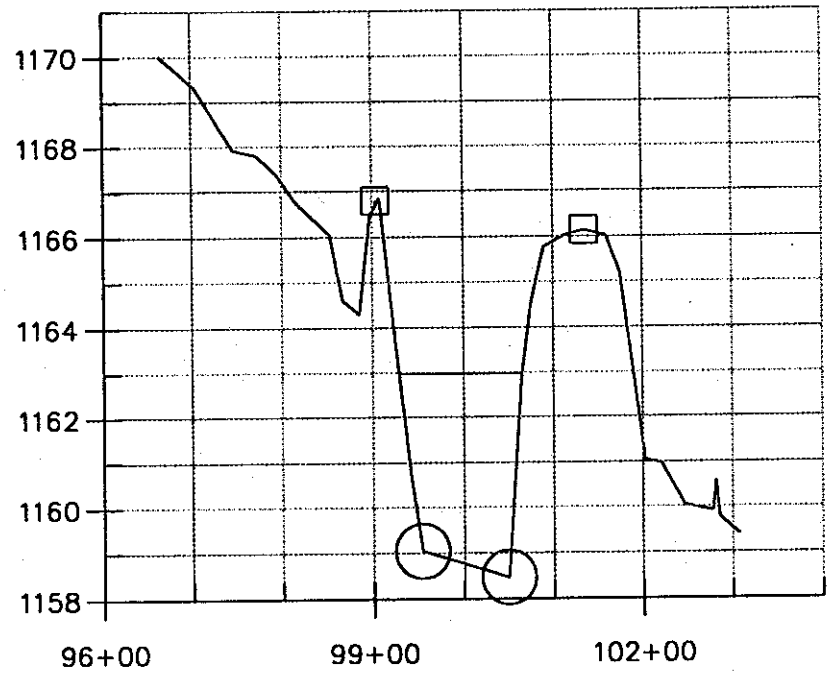
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2350.00 cfs

——— Computed Water Surface = 1161.55 ft



SECTION: 5.236

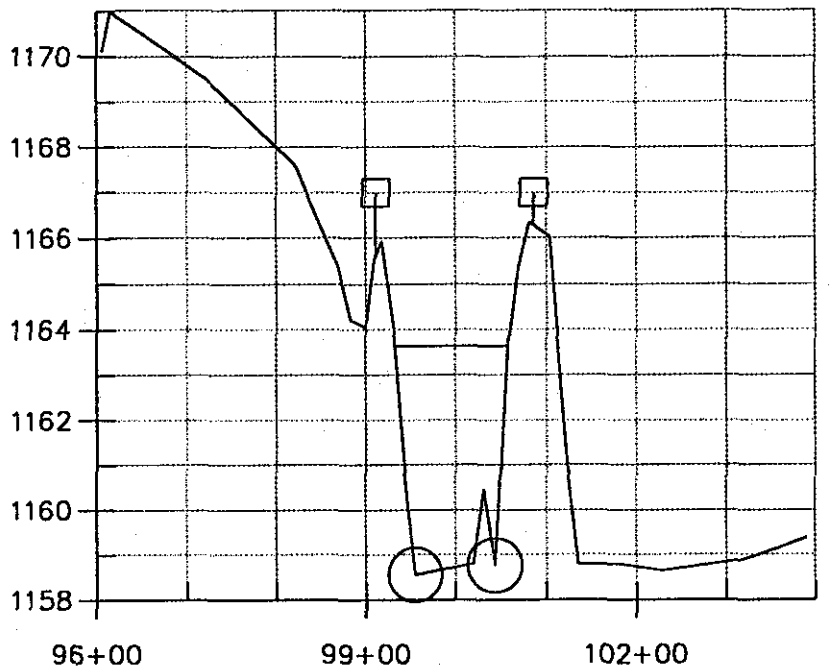
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 2350.00 cfs

Computed Water Surface = 1162.97 ft



SECTION: 5.295

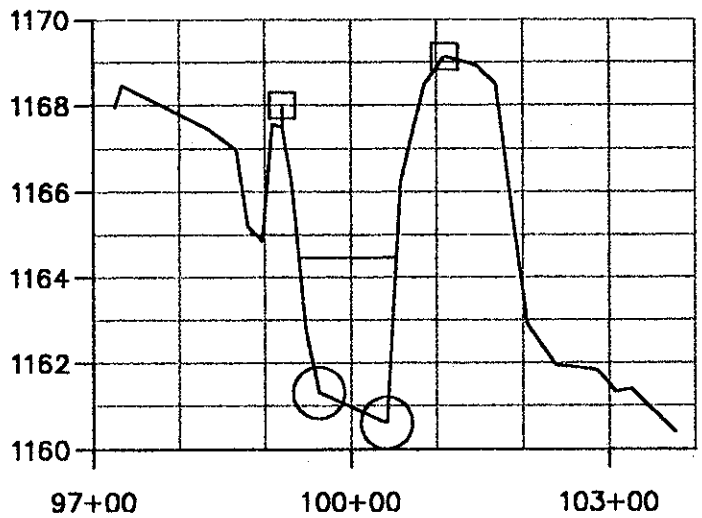
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1900.00 cfs

——— Computed Water Surface = 1163.64 ft



SECTION: 5.411

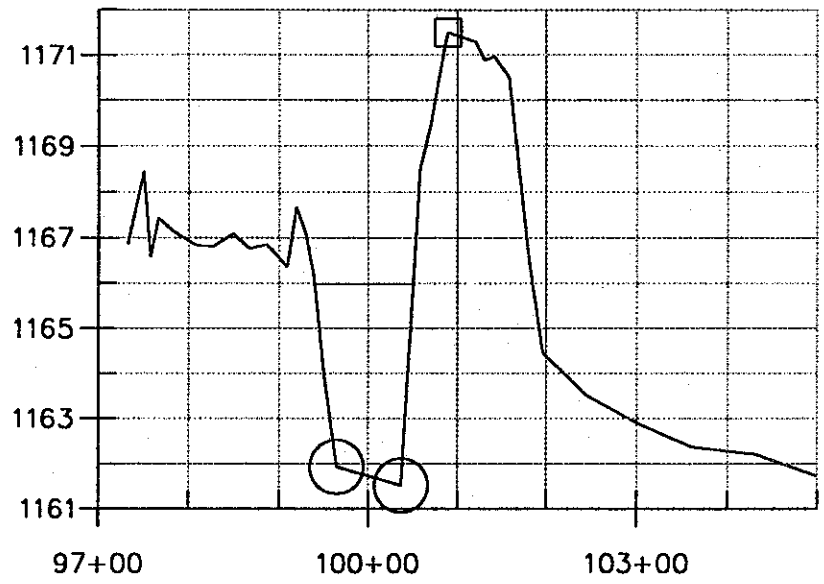
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1900.00 cfs

Computed Water Surface = 1164.48 ft



SECTION: 5.506

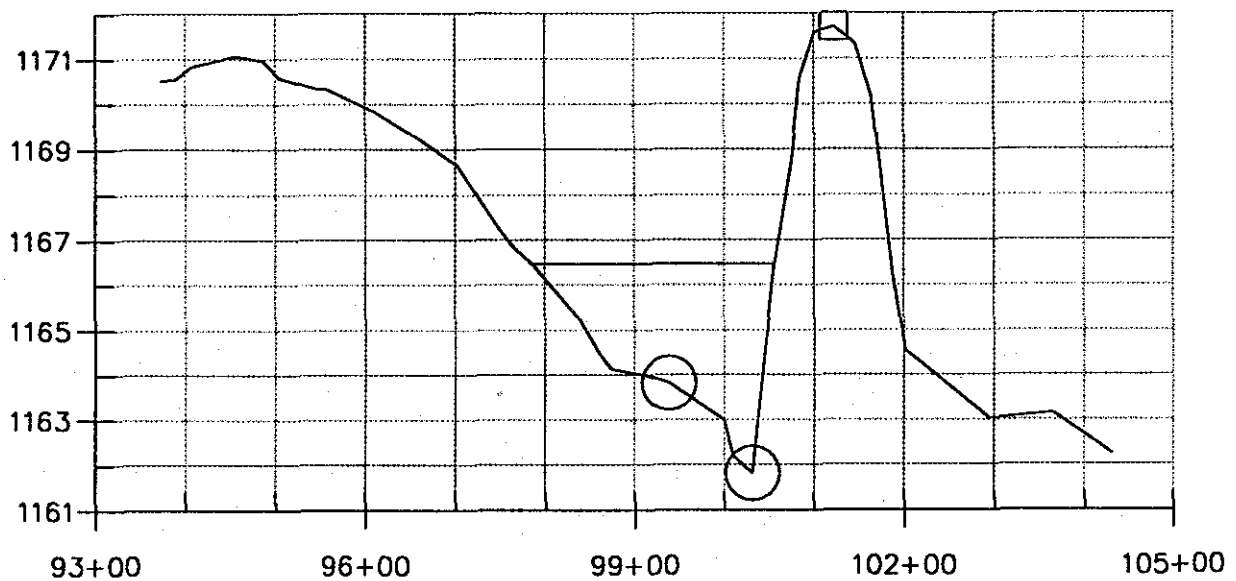
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1900.00 cfs

Computed Water Surface = 1165.98 ft



SECTION: 5.535

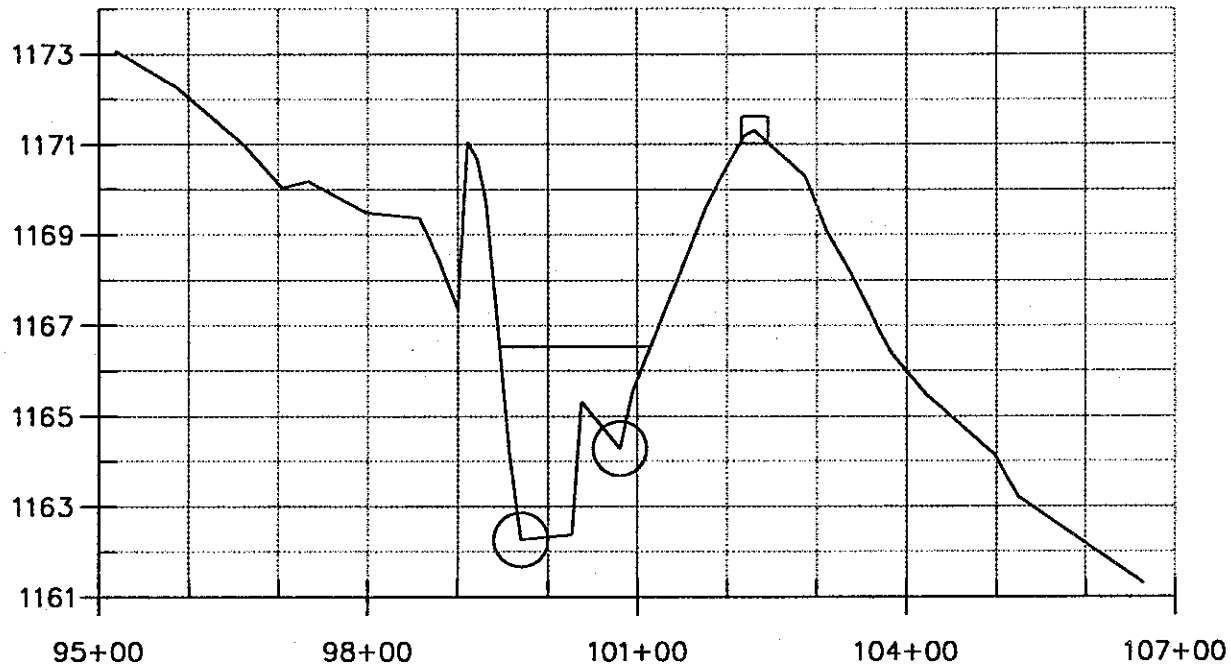
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1900.00 cfs

——— Computed Water Surface = 1166.47 ft



SECTION: 5.553

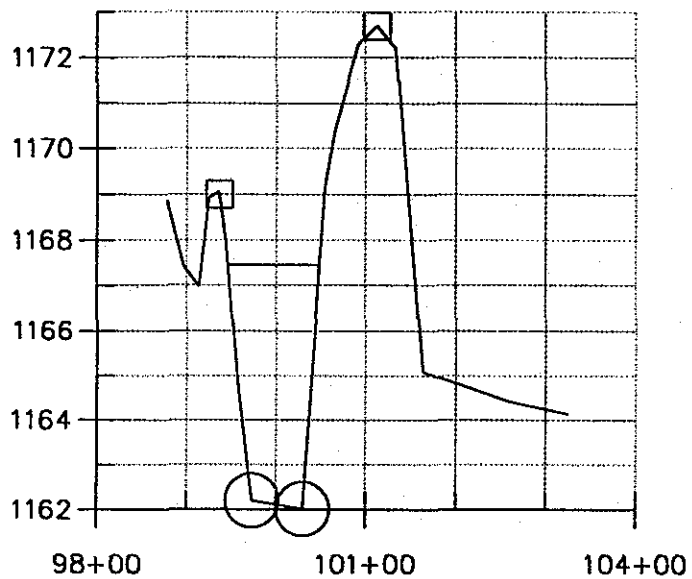
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1900.00 cfs

Computed Water Surface = 1166.54 ft



SECTION: 5.650

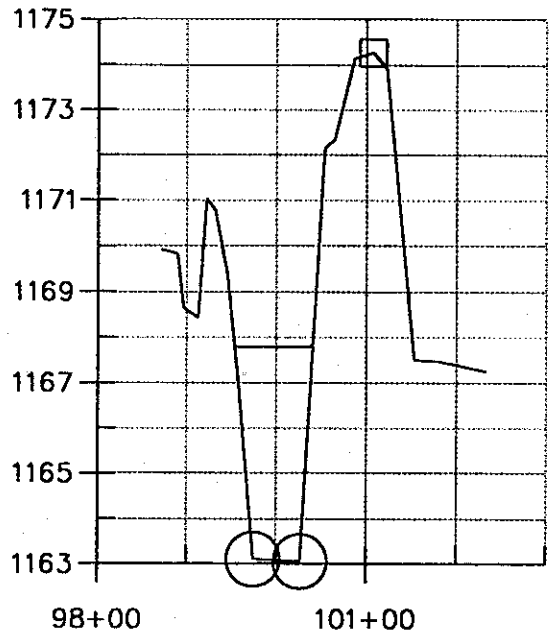
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1500.00 cfs

Computed Water Surface = 1167.45 ft



SECTION: 5.727

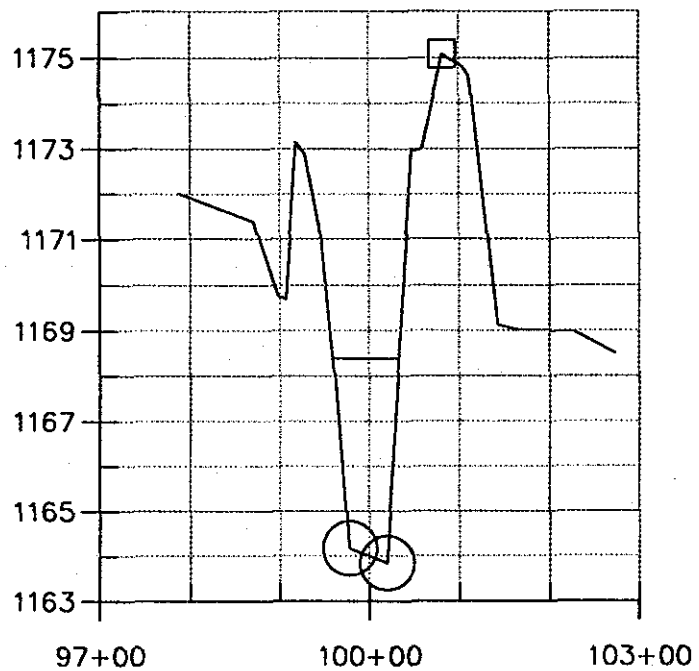
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1500.00 cfs

——— Computed Water Surface = 1167.79 ft



SECTION: 5.793

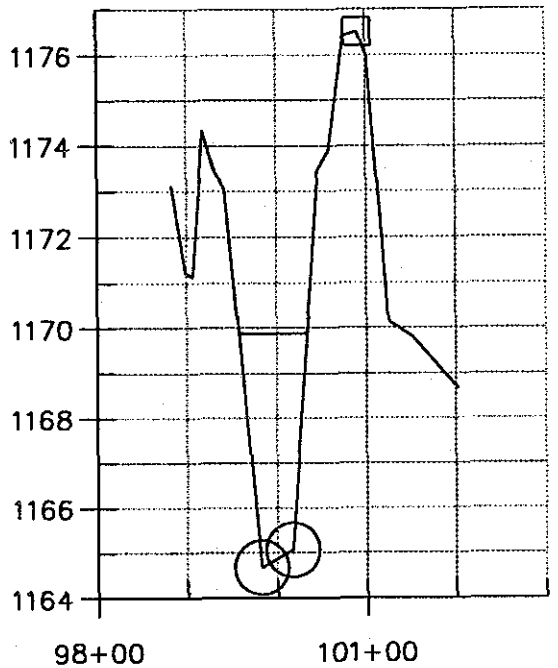
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1500.00 cfs

Computed Water Surface = 1168.38 ft



SECTION: 5.886

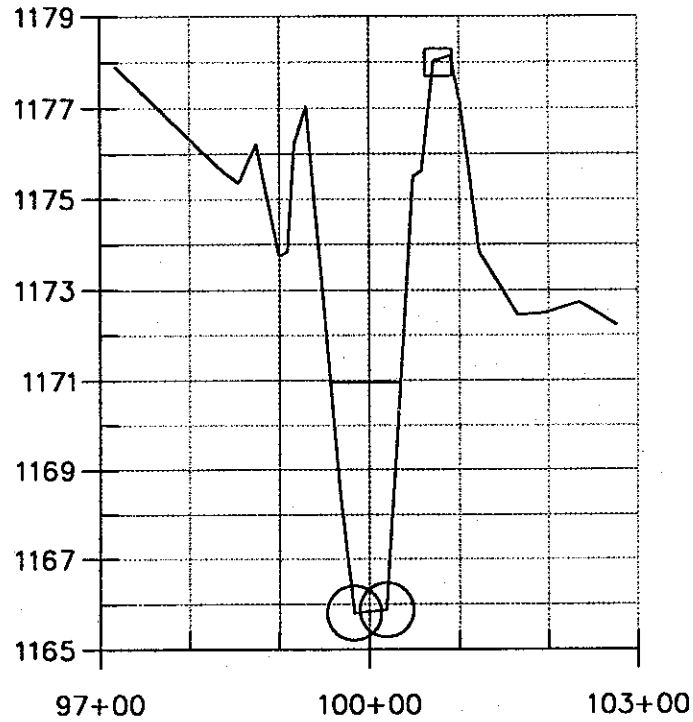
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1500.00 cfs

Computed Water Surface = 1169.88 ft



SECTION: 5.973

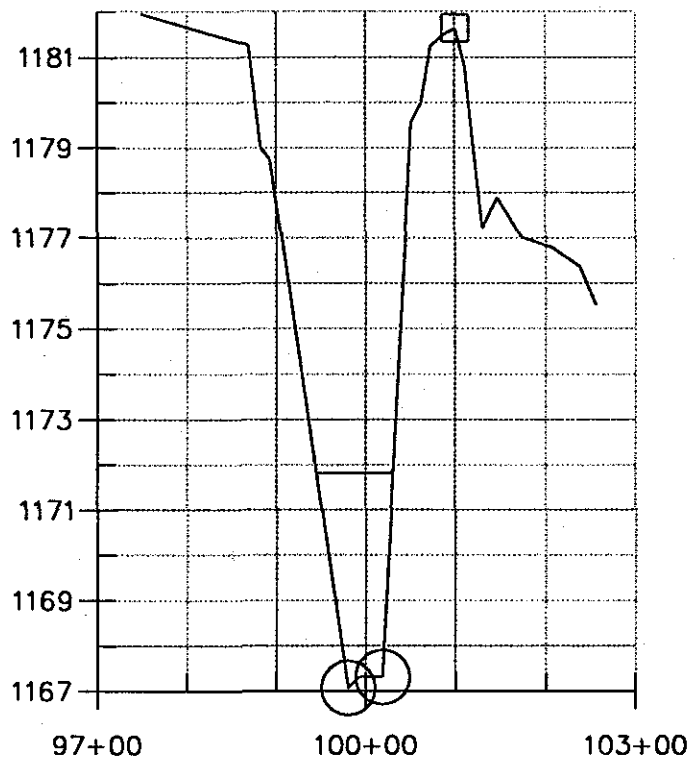
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1500.00 cfs

Computed Water Surface = 1170.95 ft



SECTION: 6.047

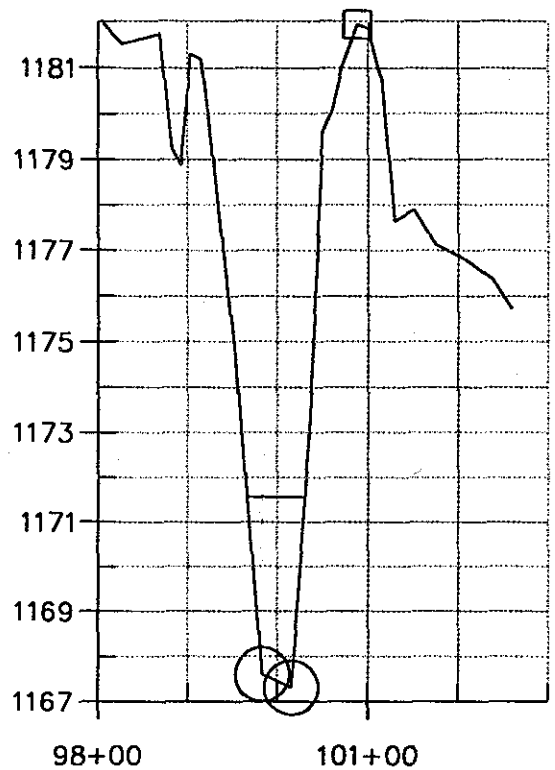
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1370.00 cfs

Computed Water Surface = 1171.81 ft



SECTION: 6.055

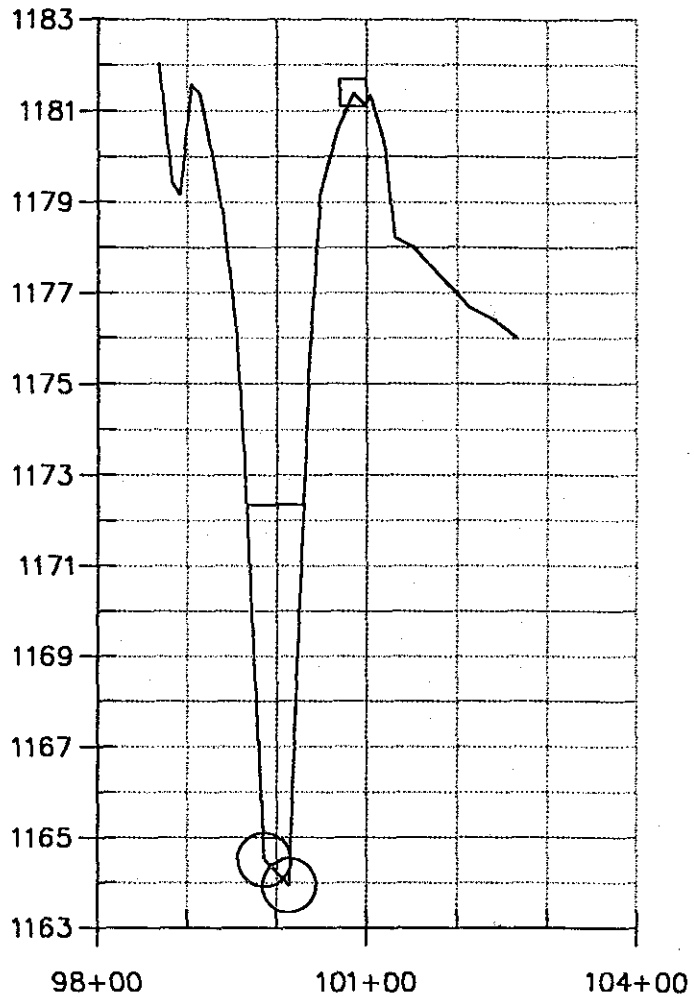
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1370.00 cfs

Computed Water Surface = 1171.56 ft



SECTION: 6.062

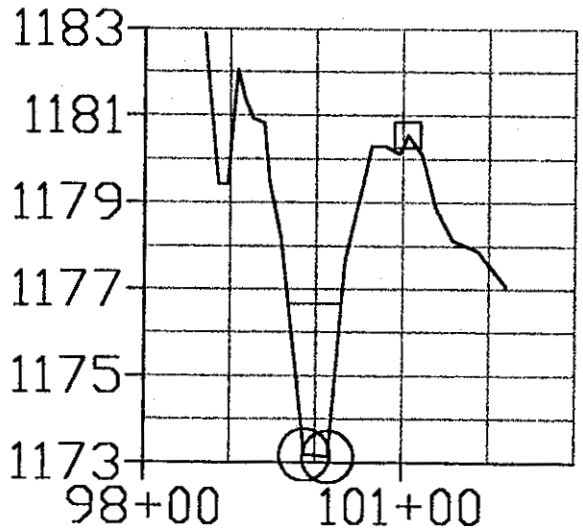
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1370.00 cfs

Computed Water Surface = 1172.35 ft



SECTION: 6.070

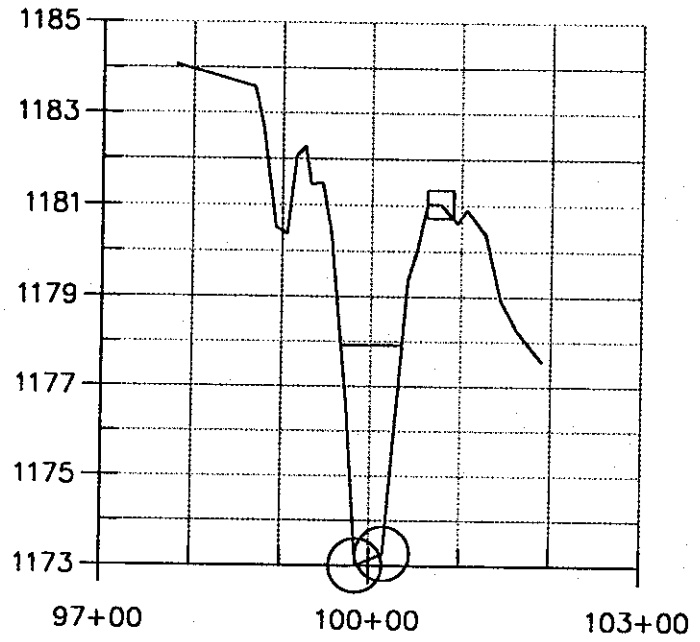
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1370.00 cfs

——— Computed Water Surface = 1176.65 ft



SECTION: 6.084

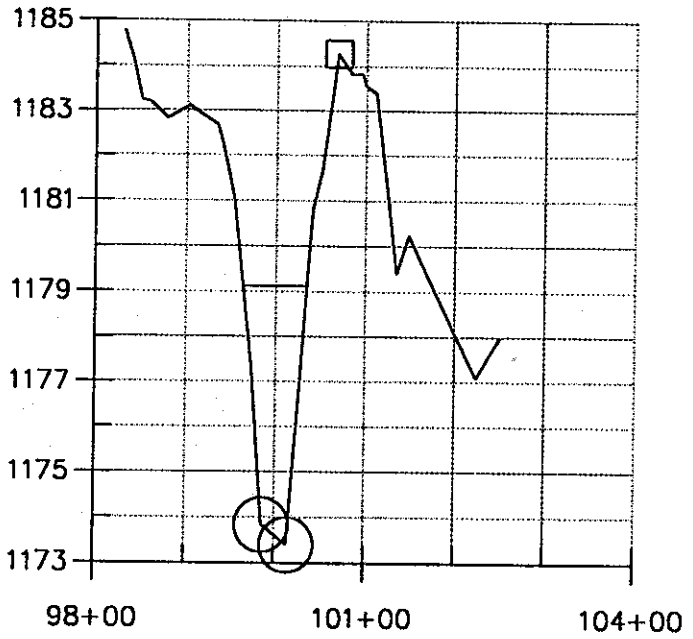
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1370.00 cfs

Computed Water Surface = 1177.92 ft



SECTION: 6.161

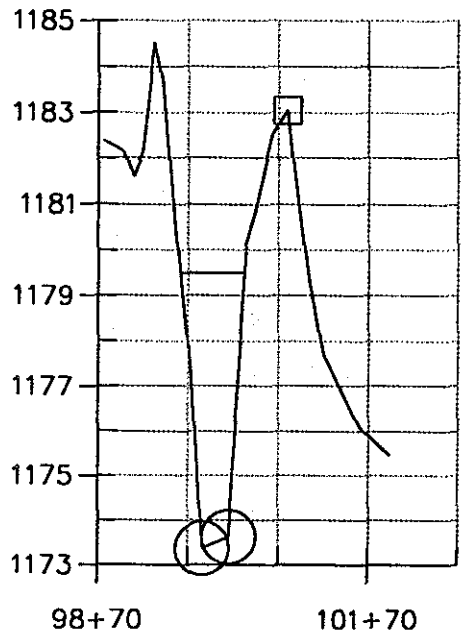
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1240.00 cfs

Computed Water Surface = 1179.11 ft



SECTION: 6.203

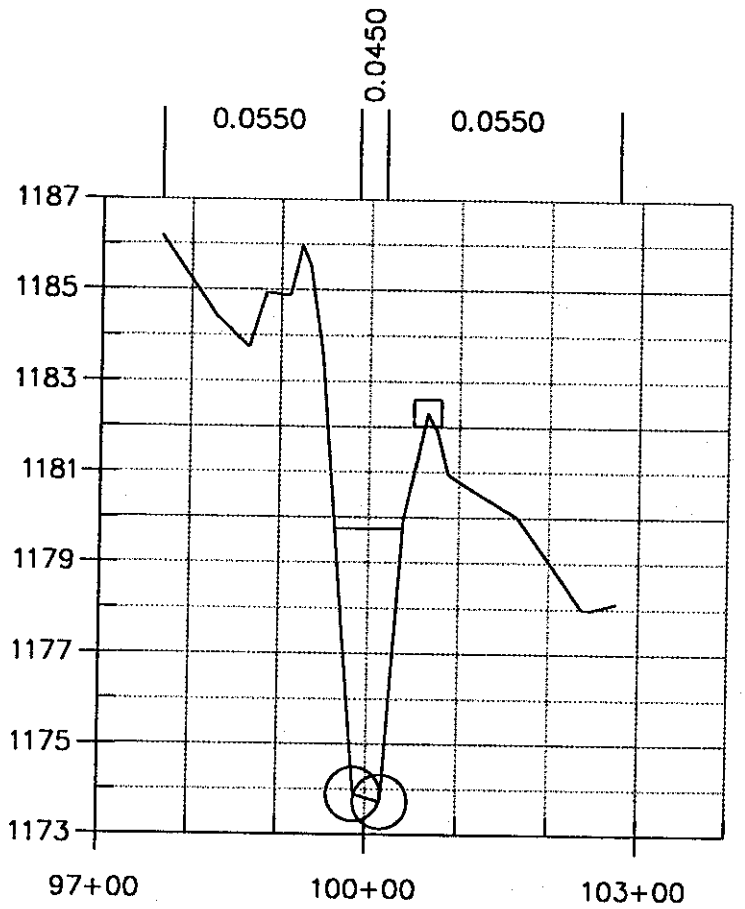
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1240.00 cfs

——— Computed Water Surface = 1179.49 ft



SECTION: 6.235

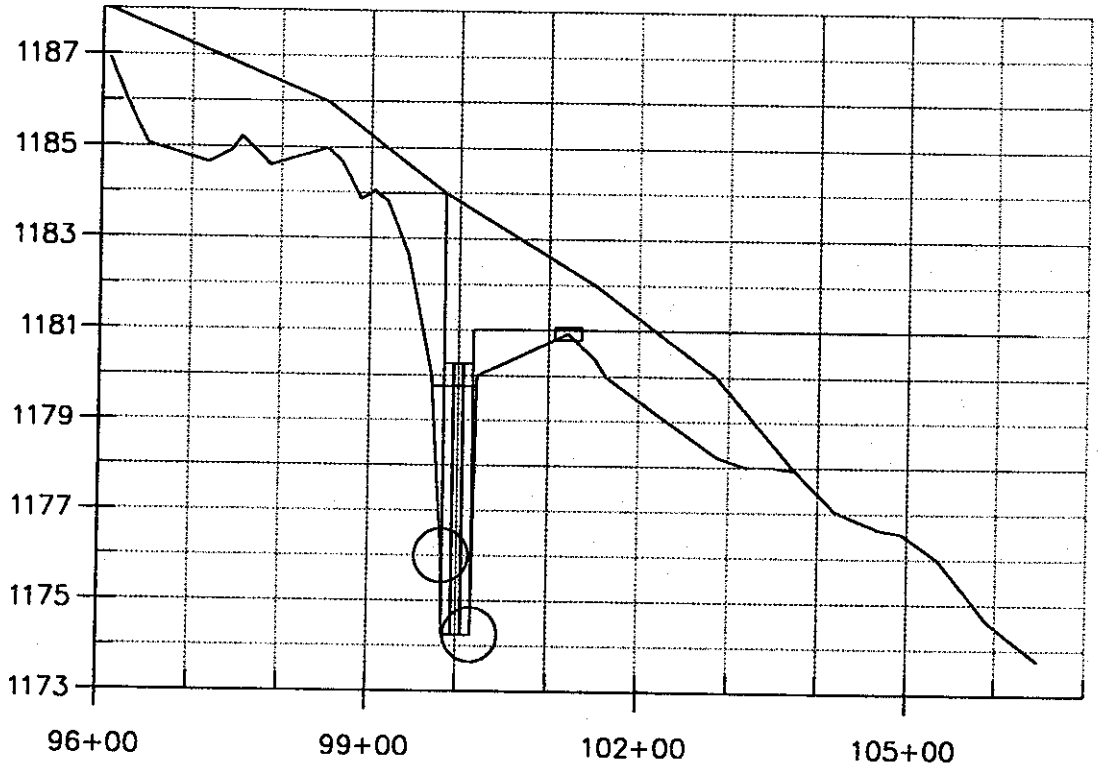
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1240.00 cfs

Computed Water Surface = 1179.74 ft



SECTION: 6.248

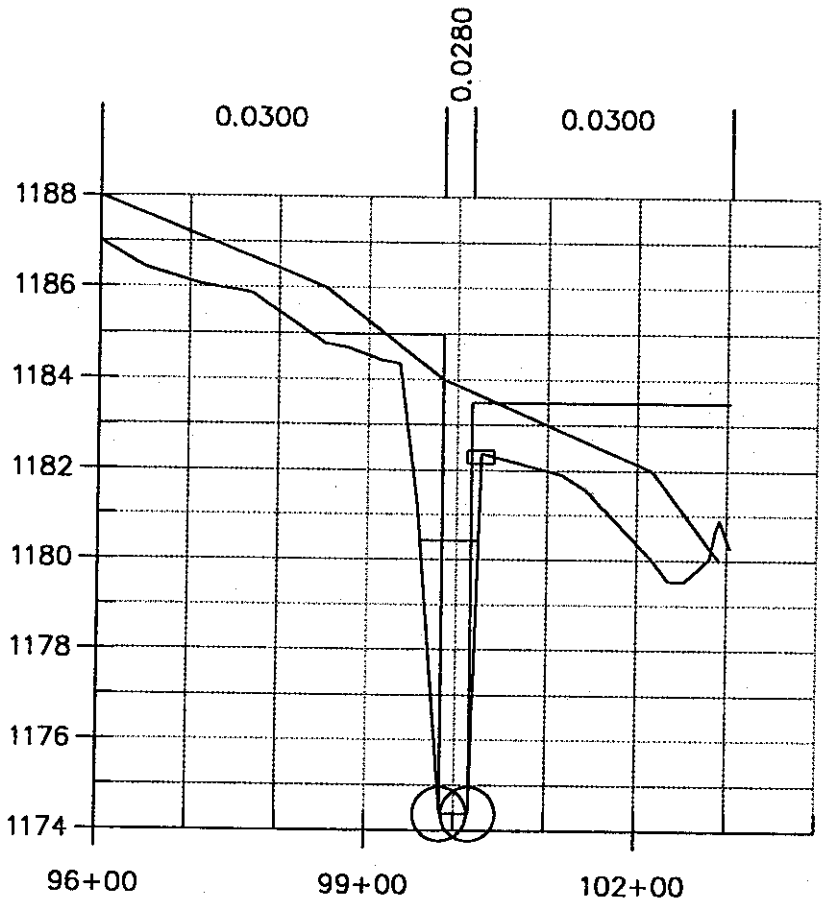
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1160.00 cfs

Computed Water Surface = 1179.76 ft



SECTION: 6.261

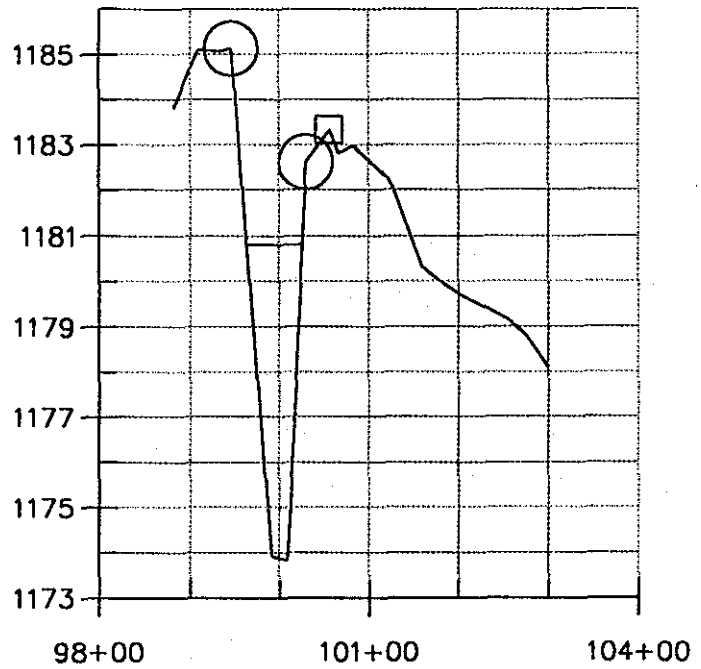
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1160.00 cfs

Computed Water Surface = 1180.41 ft



SECTION: 6.273

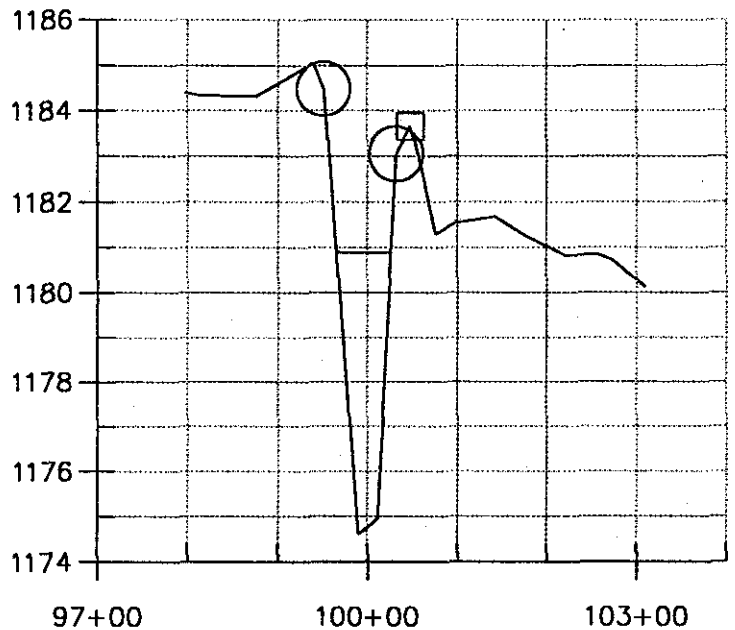
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1160.00 cfs

Computed Water Surface = 1180.80 ft



SECTION: 6.295

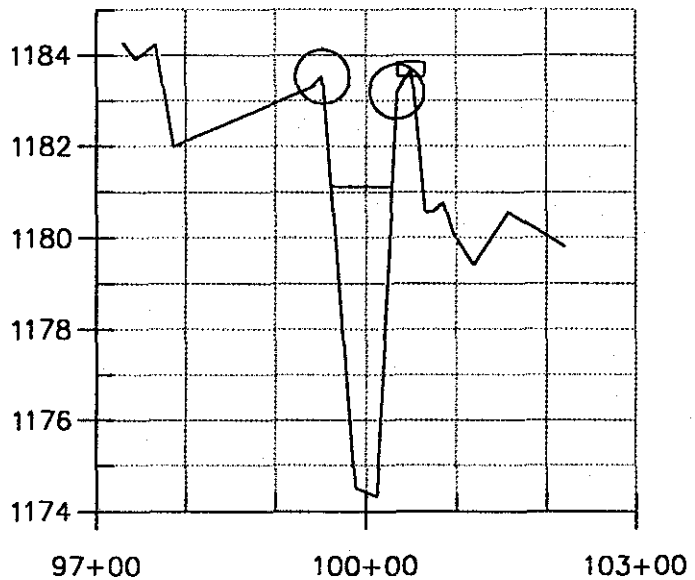
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1160.00 cfs

Computed Water Surface = 1180.88 ft



SECTION: 6.318

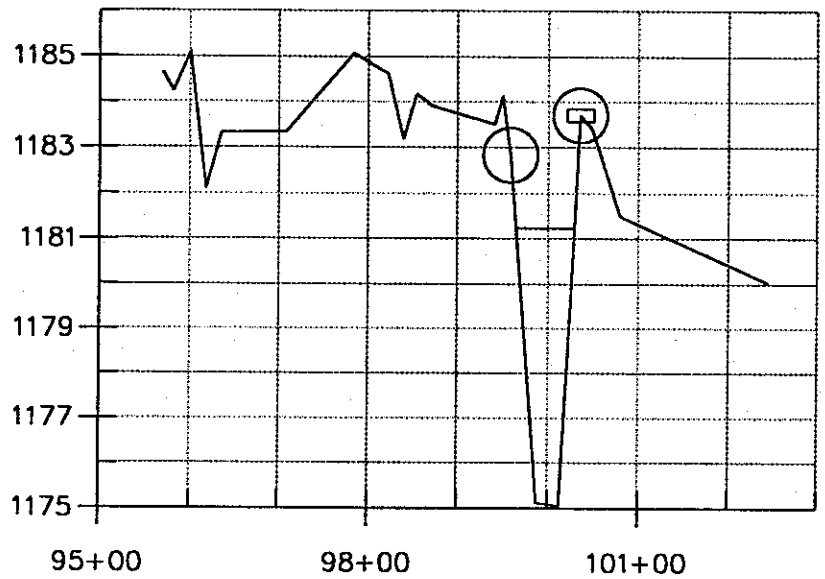
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1120.00 cfs

——— Computed Water Surface = 1181.11 ft



SECTION: 6.355

SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1120.00 cfs

——— Computed Water Surface = 1181.23 ft

SECTION: 6.391

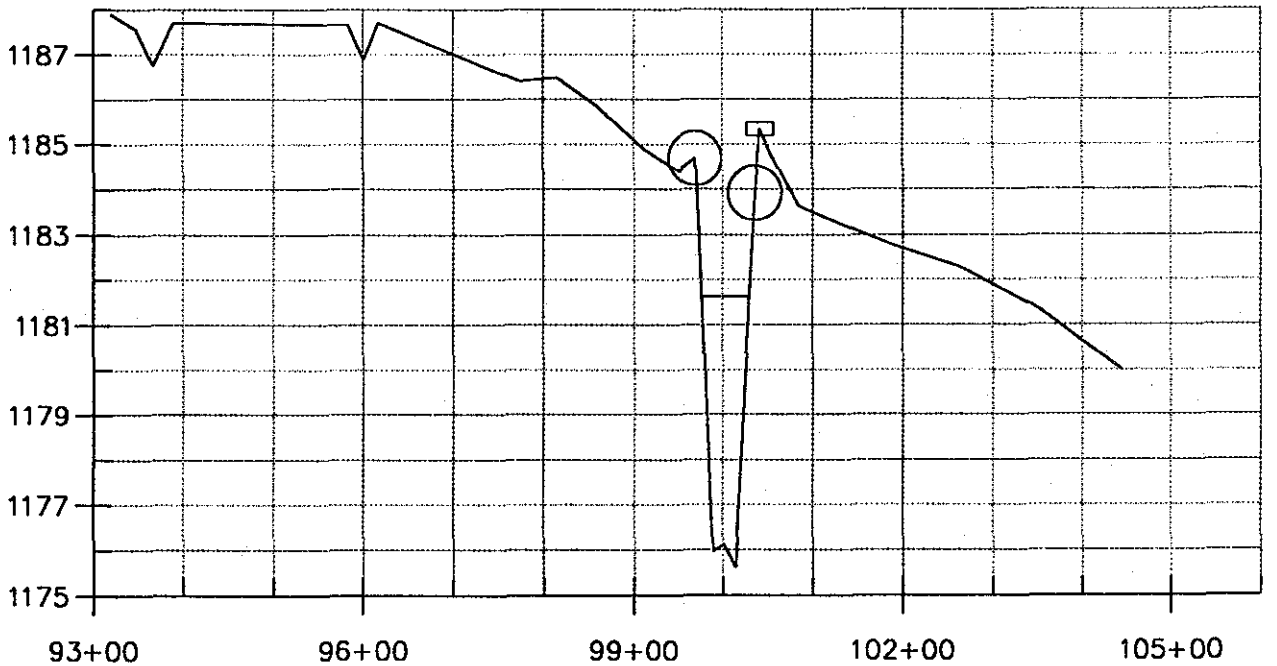
SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1120.00 cfs

Computed Water Surface = 1181.36 ft



SECTION: 6.428

SADDLEBACK SPILLWAY

CHANNEL 1

Profile 1

Flow Discharge = 1120.00 cfs

Computed Water Surface = 1181.62 ft

DELINEATION OF SPILLWAY FLOWS
FOR
SADDLEBACK FLOOD RETARDING STRUCTURE

APPENDIX-D

ADDITIONAL HYDRAULIC CALCULATIONS

APPENDIX D

ADDITIONAL HYDRAULIC CALCULATIONS

Capacity of North Branch of Centennial Wash

Additional cross-sections were added downstream of the original model to verify that the capacity of the North branch of Centennial Wash is adequate to convey the spillway flows within the current Centennial Wash floodplain boundaries. The model's downstream boundary condition was set to a known water surface elevation. The water surfaced elevation used was 1071. This elevation was obtained from the closest upstream base flow elevation for Centennial Wash Flood Insurance. The Flood Insurance model does not divide the flow between the north channel and the main channel but treated it as a single channel. Therefore, the flow in the North channel is not known. Since the this flow was unknown, the same flow used in the last reach of the spillway was used for the North channell in this analysis.

HEC-RAS Version 2.1 October 1997
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X      X  XXXXXX    XXXX        XXXX        XX       XXXX
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XXXXXXX   XXXX     X       XXX XXXX      XXXXXX     XXXX
X      X  X        X           X  X      X    X        X
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X      X  XXXXXX    XXXX       X    X    X    X    XXXXX
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PROJECT DATA
Project Title: Saddleback Spillway Evaluation
Project File : sd-ras-drawing-7.prj
Run Date and Time: 3/20/98 3:39:40 PM

Project in English units

FLOW DATA

Flow Title: 1 Flow Profiles
Flow File : e:\entellus\310002\hecras\sd-ras-drawing-7.f01

Flow Data (cfs)

River	Reach	RS	PF#1
Job1	Job1	6.428	950
Job1	Job1	6.391	1020
Job1	Job1	6.355	1090
Job1	Job1	6.295	1160
Job1	Job1	6.235	1240
Job1	Job1	6.084	1370
Job1	Job1	5.973	1500
Job1	Job1	5.553	1900
Job1	Job1	5.236	2350
Job1	Job1	4.973	2590
Job1	Job1	4.586	2860
Job1	Job1	4.4	3250
Job1	Job1	4.237	3500
Job1	Job1	3.972	3740
Job1	Job1	3.789	3970
Job1	Job1	3.589	4320
Job1	Job1	3.438	4720
Job1	Job1	3.128	5110

Job1	Job1	2.944	5430
Job1	Job1	2.457	5750
Job1	Job1	2.244	5970
Job1	Job1	1.962	6060
Job1	Job1	1.692	6060
Job1	Job1	1.111	6060

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Job1	Job1	PF#1	Critical
Known WS = 1071			

GEOMETRY DATA

Geometry Title: Base Conditions Geometry
Geometry File : e:\entellus\310002\hecras\sd-ras-drawing-7.g01

CROSS SECTION RIVER: Job1
REACH: Job1 RS: 1.518

INPUT
Description:
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1089.89	42.46	1089.51	64.31	1088	75.77	1087.16	195.89	1086.36
204.33	1086	234.11	1084.87	252.73	1085.72	266.61	1084.45	301.53	1086
320.41	1088	341.28	1090	344.94	1090.42	367.53	1090	391.45	1089.18
410.37	1089.28	436.61	1088	436.71	1087.98	453.23	1086.67	481.04	1087.8
494.87	1086	508.62	1084	515.91	1082.85	557.62	1083.68	588.24	1084
589.79	1083.96	606.41	1085.13	648.4	1086	673.41	1086.54	804.94	1086.56
876.12	1086.65	935.78	1087.47	1020.44	1087.54	1083.9	1087.3	1117.04	1087.2
1155.63	1087.21	1214.15	1086.12	1249.01	1086.78	1280.47	1086	1297.31	1085.59
1303.9	1086	1316.84	1087.02	1363.43	1087.48	1379.58	1086	1393.3	1084.74
1413.43	1086	1420.43	1086.27	1472.28	1086.69	1517.31	1087.4	1640.16	1087.06
1714.74	1087.31	1796.44	1086.04	1925.83	1086.9	2011.84	1086.54	2098.94	1088
2118.48	1088.47	2238.96	1090	2300.97	1091.05	2387.57	1092		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	481.04	.07	1413.43	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
481.04	1413.43	379.983	379.983	379.983	.3	.1

Left Levee Station= 341.28 Elevation= 1090.35

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1087.67	Element			
Vel Head (ft)	0.19	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1087.87	Reach Len. (ft)	379.98	379.98	379.98
Crit W.S. (ft)	1087.32	Flow Area (sq ft)	18.73	1197.74	549.38
E.G. Slope (ft/ft)	0.022324	Area (sq ft)	18.73	1197.74	549.38
Q Total (cfs)	6060.00	Flow (cfs)	37.47	4490.06	1532.47
Top Width (ft)	1634.78	Top Width (ft)	37.34	931.42	666.02

Vel Total (ft/s)	3.43	Avg. Vel. (ft/s)	2.00	3.75	2.79
Max Chl Dpth (ft)	4.82	Hydr. Depth (ft)	0.50	1.29	0.82
Conv. Total (cfs)	40559.0	Conv. (cfs)	250.8	30051.5	10256.7
Length Wtd. (ft)	379.98	Wetted Per. (ft)	37.40	932.08	666.06
Min Ch El (ft)	1082.85	Shear (lb/sq ft)	0.70	1.79	1.15
Alpha	1.05	Stream Power (lb/ft s)	1.40	6.71	3.21
Frctn Loss (ft)	4.78	Cum Volume (acre-ft)	6.14	118.02	123.81
C & E Loss (ft)	0.01	Cum SA (acres)	5.64	62.66	67.43

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

CROSS SECTION RIVER: Job1
REACH: Job1 RS: 1.43

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1091.24	68.87	1091.56	139.64	1090	229.16	1088	259.39	1087.35
339.91	1087.92	411.91	1087.73	488.03	1087.51	560.47	1086.67	598.79	1086
646.37	1084	653.74	1083.63	697.22	1083.74	705.65	1084	745.65	1085.34
786.16	1085.97	797.02	1084	808.85	1082	812.09	1081.42	817.68	1082
834.53	1083.54	886.38	1083.58	927.89	1082	928.58	1081.79	1048.78	1081.35
1065.09	1080	1074.43	1079.15	1091.35	1080	1125.37	1081.66	1137.3	1082
1183.7	1083.28	1265.18	1082.66	1339.8	1084	1340.71	1083.99	1358.46	1085.29
1390.4	1085.64	1400.83	1084	1407.3	1083.28	1441.21	1083.55	1489.86	1082.76
1553.96	1082.77	1587.51	1084	1615.04	1085.06	1625.71	1084	1646.58	1082
1650.03	1081.68	1683.76	1080.93	1752.11	1081.78	1788.04	1080	1804.39	1079.07
1824.4	1080	1830.47	1080.22	1883.79	1080.84	1927.04	1080.68	1997.89	1080.99
2075.97	1081.1	2194.3	1081.15	2320.35	1081.03	2428.26	1081.59	2514.77	1080.85
2528.12	1080.34	2549.46	1081.57	2568.94	1082	2632.55	1083.2	2722.02	1084
2907.91	1086								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	808.85	.07	1824.4	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
808.85	1824.4	422.874	422.874	422.874	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1082.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1083.08	Reach Len. (ft)	422.87	422.87	422.87
Crit W.S. (ft)		Flow Area (sq ft)	2.76	823.90	1449.54
E.G. Slope (ft/ft)	0.008146	Area (sq ft)	2.76	823.90	1449.54
Q Total (cfs)	6060.00	Flow (cfs)	3.22	1914.56	4142.22
Top Width (ft)	1417.72	Top Width (ft)	5.71	616.29	795.72
Vel Total (ft/s)	2.66	Avg. Vel. (ft/s)	1.17	2.32	2.86
Max Chl Dpth (ft)	3.90	Hydr. Depth (ft)	0.48	1.34	1.82
Conv. Total (cfs)	67141.1	Conv. (cfs)	35.7	21212.1	45893.2
Length Wtd. (ft)	422.87	Wetted Per. (ft)	5.79	616.81	795.79
Min Ch El (ft)	1079.07	Shear (lb/sq ft)	0.24	0.68	0.93
Alpha	1.03	Stream Power (lb/ft s)	0.28	1.58	2.65
Frctn Loss (ft)	3.64	Cum Volume (acre-ft)	6.05	109.20	115.09
C & E Loss (ft)	0.00	Cum SA (acres)	5.46	55.91	61.06

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: Job1
REACH: Job1 RS: 1.364

INPUT
Description:
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	1090	28.43	1089.81	64.01	1088.48	146.11	1089.64	229.48	1088
278.51	1087.16	291.84	1086.91	336.97	1086	353.47	1085.84	430.07	1084
492.29	1082.3	572.24	1082.38	655.72	1082.82	706.6	1084	712.61	1084.15
767.66	1084	821.54	1082	843.5	1082	854.39	1082.1	856.57	1082
916.33	1080	941.01	1078.88	973.75	1079.33	997.59	1078.33	1036.5	1079.96
1038.04	1080	1077.14	1081.42	1099.98	1080	1126.96	1078.32	1131.59	1078
1145.62	1077.6	1184.8	1076.4	1218.64	1077.96	1220.76	1078	1243.4	1078.48
1249.03	1078	1263.4	1076.81	1273.67	1078	1278.97	1078.68	1312.03	1078.67
1337.15	1078	1341.99	1077.83	1363.98	1076.07	1421.21	1076.25	1445.15	1078
1456.1	1078.74	1493.26	1078.61	1592.56	1078.3	1617.25	1078	1634.34	1077.88
1678.41	1077.21	1692.04	1078	1699.77	1078.35	1714.78	1078	1772.27	1076.69
1797.56	1077.79	1844.11	1076.19	1855.55	1078	1856.59	1078.22	1905.11	1078
1975.82	1077.42	2045.31	1077.91	2133.05	1076.54	2158.09	1078	2161.77	1078.19
2226.9	1078.22	2261.16	1078	2315.17	1077.59	2353.4	1078	2429.66	1078.78
2547.59	1078.95	2639.3	1078.63	2652.95	1078	2668.54	1077.26	2691.66	1078
2699.02	1078.17	2750.26	1078.67	2830.27	1080	2890.75	1081.04	3008.95	1082
3043.83	1082.34								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	997.59	.07	1905.11	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
997.59	1905.11	554.961	464.263	421.673	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

			Left OB	Channel	Right OB
W.S. Elev (ft)	1079.34	Element			
Vel Head (ft)	0.10	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1079.44	Reach Len. (ft)	554.96	464.26	421.67
Crit W.S. (ft)		Flow Area (sq ft)	21.88	1306.92	1057.15
E.G. Slope (ft/ft)	0.009149	Area (sq ft)	21.88	1306.92	1057.15
Q Total (cfs)	6060.00	Flow (cfs)	21.14	3622.96	2415.90
Top Width (ft)	1770.26	Top Width (ft)	66.62	818.46	885.18
Vel Total (ft/s)	2.54	Avg. Vel. (ft/s)	0.97	2.77	2.29
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	0.33	1.60	1.19
Conv. Total (cfs)	63355.9	Conv. (cfs)	221.1	37877.2	25257.7
Length Wtd. (ft)	449.05	Wetted Per. (ft)	66.65	819.22	885.31
Min Ch El (ft)	1076.07	Shear (lb/sq ft)	0.19	0.91	0.68
Alpha	1.04	Stream Power (lb/ft s)	0.18	2.53	1.56
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	5.93	98.86	102.93
C & E Loss (ft)	0.00	Cum SA (acres)	5.11	48.95	52.90

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 RIVER: Job1
REACH: Job1 RS: 1.273

INPUT
Description:
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1085.68	1064.39	1085.87	1092.59	1084.98	1119.35	1086.31	1187.7	1085.95
1234.71	1085.6	1324.04	1083.77	1377.96	1083.05	1411.08	1082.86	1467.19	1082.17
1504.13	1082.93	1674.6	1077.46	1803.07	1075.24	1876.09	1074.93	1948.75	1074.96

1990.48	1074.85	2006.79	1073.9	2079.79	1074.63	2147.18	1074.72	2182.63	1075.28
2276.6	1076.63	2327.5	1076.32	2364.01	1074.78	2405.45	1076.25	2467.79	1078.38
2533.08	1076.41	2586.73	1077.63	2716.54	1074.31	2759.72	1073.15	2810.87	1073.05
2832.82	1073.05	2873.09	1073.58	2952.66	1074.47	3116.15	1073.8	3292.04	1074.16
3434.42	1075.37	3588.89	1075.25	3780.59	1076.85	3952.2	1077.6	3982.13	1076.17
4036.05	1076.75	4093.24	1078.39	4144.18	1077.73	4184.16	1077.16	4216.88	1078.24
4276.02	1079.31	4383.55	1080.53	4463.38	1081.1	4482.19	1080.71	4503.8	1080.7
4706.18	1082.79								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.07	2006.79	.07	2873.09	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
2006.79	2873.09	859.901	723.153	545.018	.2	.4

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1076.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1076.53	Reach Len. (ft)	859.90	723.15	545.02
Crit W.S. (ft)		Flow Area (sq ft)	351.83	1035.72	1519.54
E.G. Slope (ft/ft)	0.004845	Area (sq ft)	351.83	1035.72	1519.54
Q Total (cfs)	6060.00	Flow (cfs)	613.82	2180.95	3265.22
Top Width (ft)	1776.15	Top Width (ft)	274.19	608.68	893.28
Vel Total (ft/s)	2.08	Avg. Vel. (ft/s)	1.74	2.11	2.15
Max Chl Dpth (ft)	3.41	Hydr. Depth (ft)	1.28	1.70	1.70
Conv. Total (cfs)	87057.7	Conv. (cfs)	8818.2	31331.5	46908.1
Length Wtd. (ft)	637.67	Wetted Per. (ft)	274.23	608.81	893.31
Min Ch El (ft)	1073.05	Shear (lb/sq ft)	0.39	0.51	0.51
Alpha	1.01	Stream Power (lb/ft s)	0.68	1.08	1.11
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	3.55	86.37	90.45
C & E Loss (ft)	0.00	Cum SA (acres)	2.94	41.34	44.29

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

CROSS SECTION RIVER: Job1
REACH: Job1 RS: 1.139

INPUT
Description:
Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1080.89	1042.76	1080.62	1076.09	1079.73	1151.28	1078.9	1167.4	1077.73
1224.21	1078.5	1265.99	1077.15	1398.82	1077.26	1505.08	1075.17	1596.35	1076
1682.31	1075.85	1754.54	1074.96	1790.35	1072.62	1837.35	1072.8	1889.46	1070.72
1915.96	1070.57	1946.72	1071.54	1986.05	1071.54	2044.96	1071.43	2085.62	1072.16
2110.51	1070.44	2163.56	1070.58	2189.88	1069.96	2207.1	1071.05	2260.34	1070.26
2403.46	1071.66	2447.11	1071.57	2514.94	1070.82	2571.14	1072.06	2712.93	1071.7
2740.06	1070.67	2760.89	1072.09	2780.62	1072.08	2866.89	1070.92	2964.37	1070.22
2992.86	1071.18	3039.85	1071.84	3091.44	1069.4	3126.52	1070.41	3231.19	1070.58
3414.14	1070.9	3532.13	1070.77	3683	1071.42	4006.53	1070.38	4318.85	1071.66
4806.79	1073.28	4827.31	1073.3	4947.28	1073.23	5230.3	1074.62		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.07	1837.35	.07	3231.19	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1837.35	3231.19	75.326	153.114	582.21	.3	.1

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1072.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.070	0.070
E.G. Elev (ft)	1072.20	Reach Len. (ft)	75.33	153.11	582.21
Crit W.S. (ft)		Flow Area (sq ft)		1405.68	1339.61
E.G. Slope (ft/ft)	0.010067	Area (sq ft)		1405.68	1339.61
Q Total (cfs)	6060.00	Flow (cfs)		3037.92	3022.08
Top Width (ft)	2603.68	Top Width (ft)		1374.83	1228.85
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)		2.16	2.26
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)		1.02	1.09
Conv. Total (cfs)	60398.9	Conv. (cfs)		30278.4	30120.6
Length Wtd. (ft)	393.42	Wetted Per. (ft)		1375.18	1228.85
Min Ch El (ft)	1069.40	Shear (lb/sq ft)		0.64	0.69
Alpha	1.00	Stream Power (lb/ft s)		1.39	1.55
Frctn Loss (ft)	0.66	Cum Volume (acre-ft)	0.08	66.11	72.57
C & E Loss (ft)	0.01	Cum SA (acres)	0.23	24.88	31.01

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

CROSS SECTION RIVER: Job1
REACH: Job1 RS: 1.111

INPUT
Description:
Station Elevation Data num= 112

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1080	1076.08	1078	1088.57	1077.78	1131.84	1076.28	1196.18	1076.21
1227.46	1076	1258.92	1075.53	1276.18	1076	1355.68	1077.84	1405.96	1076
1445.34	1074	1472.9	1072.64	1508.8	1074	1537.26	1074.7	1627.57	1074.82
1655.14	1074	1664.26	1073.61	1696.81	1072.05	1699.34	1072	1816.89	1070
1836.84	1069.84	1856.73	1069.68	1868.91	1070	1887.18	1070.39	1902.21	1070.97
1948.76	1070	1950.68	1069.94	1989.56	1070	2025.55	1070.06	2040.7	1070
2047.79	1069.83	2060.06	1070	2104.69	1070.49	2115.97	1070	2137.64	1069.03
2145.9	1070	2147.58	1070.19	2176.69	1070	2195.1	1069.86	2233.82	1070
2300.83	1070.18	2324.85	1070	2395.6	1069.51	2437.6	1069.48	2520.89	1068.75
2655.5	1068.7	2691.99	1069.1	2719.79	1069.5	2762.49	1068.6	2808.01	1069.35
2873.33	1068.67	2924.38	1069.49	3068.95	1069.26	3121.34	1068.75	3282.96	1068.25
3358.64	1068.26	3363.74	1068	3389.91	1067.19	3410.06	1068	3449.35	1068.46
3520.67	1068.28	3668.82	1068.51	3892.51	1070	4108.56	1072	4118.78	1074
4130.8	1076	4139.28	1077.33	4152.69	1076.98	4157.76	1076	4167.82	1074
4176.8	1072	4186.98	1070	4196.98	1068	4207.1	1066	4219.04	1064
4223.26	1063.31	4272.07	1063.31	4275.96	1064	4287.86	1066	4299.77	1068
4311.76	1070	4322.52	1072	4334.41	1074	4339.77	1074.84	4361.16	1075.79
4370.5	1075.28	4382.73	1076	4403.17	1077.09	4437.41	1076	4478.2	1074.8
4897.69	1075.66	4910.68	1076	4951.34	1077.55	4957.36	1078	4980.04	1080
5002.41	1082	5023.57	1084	5030.89	1084.74	5040.44	1084	5055.91	1082.87
5061.09	1082	5072.52	1080	5076.4	1079.26	5140.27	1079.23	5182.36	1080
5226.58	1081.01	5264.67	1082	5311.58	1082.84	5328.83	1083.24	5339.29	1083.42
5452.9	1082.65	5635.48	1082.75						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.07	1696.81	.07	3121.34	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1696.81	3121.34	139.589	285.175	480.506	.2	.4

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1071.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.070	0.070
E.G. Elev (ft)	1071.54	Reach Len. (ft)	139.59	285.17	480.51

Crit W.S. (ft)		Flow Area (sq ft)		2709.49	3175.06
E.G. Slope (ft/ft)	0.000656	Area (sq ft)		2709.49	3175.06
Q Total (cfs)	6060.00	Flow (cfs)		2294.82	3765.18
Top Width (ft)	2470.74	Top Width (ft)		1394.08	1076.66
Vel Total (ft/s)	1.03	Avg. Vel. (ft/s)		0.85	1.19
Max Chl Dpth (ft)	8.21	Hydr. Depth (ft)		1.94	2.95
Conv. Total (cfs)	236519.3	Conv. (cfs)		89565.9	146953.4
Length Wtd. (ft)	377.66	Wetted Per. (ft)		1394.27	1078.17
Min Ch El (ft)	1068.60	Shear (lb/sq ft)		0.08	0.12
Alpha	1.08	Stream Power (lb/ft s)		0.07	0.14
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.08	58.87	42.40
C & E Loss (ft)	0.00	Cum SA (acres)	0.23	20.01	15.61

Warning - Divided flow computed for this cross-section.

CROSS SECTION RIVER: Job1
REACH: Job1 RS: 1.057

INPUT
Description:
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1078.33	1046.15	1078	1077.29	1077.38	1171.21	1076.65	1255.11	1077.12
1282.49	1076	1314.18	1074.71	1326.97	1074	1345.81	1072.57	1401.39	1074
1419.05	1074.53	1457.43	1074	1473.8	1073.75	1507.47	1074	1540.61	1074.21
1560.42	1074	1603.9	1072	1627.16	1070.94	1681.61	1071.89	1766.24	1070.31
1802.36	1070	1901.05	1068.96	1979.8	1069.8	2055.9	1068.34	2218.3	1069.17
2230.48	1068	2235.82	1067.54	2240	1068	2248.54	1068.81	2324.54	1068.35
2374.43	1068	2386.06	1067.96	2511.64	1067.53	2571.58	1067.18	2583.87	1066.49
2605.97	1067.96	2688.1	1067.51	2784.18	1067.89	2975.3	1067.01	3108.72	1068
3138.88	1068.82	3146.82	1068	3160.75	1066	3165.16	1065.26	3169.9	1066
3178.49	1067.41	3180.86	1067.41	3207.66	1066.37	3229.41	1068	3238.48	1068.38
3256.24	1068	3261.27	1067.9	3341.01	1067.58	3370.66	1068	3434.25	1069.13
3471.6	1070	3485.48	1070.28	3625	1070.38	3688.77	1071.31	3691.78	1072
3701.65	1074	3705.02	1074.77	3712.83	1074.81	3724.87	1074.05	3959.34	1075.66
4006.99	1076	4174.11	1077.19	4269.58	1078	4396.42	1078.97	4574.86	1080
4615.93	1080.26	4813.16	1080.61	4830.2	1080.92				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.07	1681.61	.07	2975.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1681.61	2975.3	238.134	393.443	616.527	.2	.4

CROSS SECTION OUTPUT Profile #PF#1

W.S. Elev (ft)	1071.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1071.29	Reach Len. (ft)	238.13	393.44	616.53
Crit W.S. (ft)		Flow Area (sq ft)	4.36	3640.57	1871.79
E.G. Slope (ft/ft)	0.000680	Area (sq ft)	4.36	3640.57	1871.79
Q Total (cfs)	6060.00	Flow (cfs)	0.73	4085.12	1974.15
Top Width (ft)	1997.68	Top Width (ft)	26.29	1260.57	710.83
Vel Total (ft/s)	1.10	Avg. Vel. (ft/s)	0.17	1.12	1.05
Max Chl Dpth (ft)	6.01	Hydr. Depth (ft)	0.17	2.89	2.63
Conv. Total (cfs)	232458.9	Conv. (cfs)	27.9	156703.4	75727.5
Length Wtd. (ft)	432.26	Wetted Per. (ft)	26.30	1260.82	711.39
Min Ch El (ft)	1066.49	Shear (lb/sq ft)	0.01	0.12	0.11
Alpha	1.00	Stream Power (lb/ft s)	0.00	0.14	0.12
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	0.07	38.09	14.56
C & E Loss (ft)	0.00	Cum SA (acres)	0.19	11.32	5.75

Warning - Divided flow computed for this cross-section.

CROSS SECTION RIVER: Job1
REACH: Job1 RS: 0.983

INPUT
Description:
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	1075.66	1048.39	1075.94	1099.8	1074.88	1140.61	1074	1323.09	1072
1407.04	1070	1452.54	1069.08	1494.6	1068.94	1533.9	1068.69	1563.72	1068.59
1693.75	1068.27	1715.97	1068	1736.55	1067.75	1758.05	1068	1804.39	1068
1808.04	1068.08	1836.57	1067.9	1883.76	1068	1896.16	1068.13	1902.46	1068
1994.72	1066.29	2097.65	1066.99	2121.25	1066.15	2144.51	1067.14	2181.54	1066.33
2198.94	1066	2218.14	1065.76	2263.47	1066	2280.51	1066	2341.66	1065.51
2383.3	1066	2422.04	1066.48	2437.53	1066.44	2440.67	1066	2455.11	1064
2460.12	1063.35	2464.65	1064	2479.72	1066	2485.46	1066.67	2493.28	1066
2499.17	1065.52	2539.36	1066	2602.37	1066.4	2652.94	1068	2720.11	1069.28
2732.06	1070	2776.22	1072	2896.89	1074	2916.77	1074.22	2954.54	1076
2981.68	1076.81	3029.31	1076	3102.8	1076	3134.54	1076	3230.98	1075.71
3305.95	1075.88	3311.58	1075.82	3325.23	1075.93	3332.68	1074	3337.62	1072.49
3472.7	1074	3557.34	1074.96	3795.43	1075.87	3813.73	1076	3980.69	1076.72
4204.03	1078	4212.05	1078.04	4417.73	1079.31	4421.93	1080	4424.65	1080.46
4430.54	1080	4433.45	1079.7	4607.2	1079.25				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.07	1407.04	.07	2652.94	.07

Bank Sta: Left	Right	Coeff Contr.	Expan.
1407.04	2652.94	.2	.4

CROSS SECTION OUTPUT Profile #PF#1

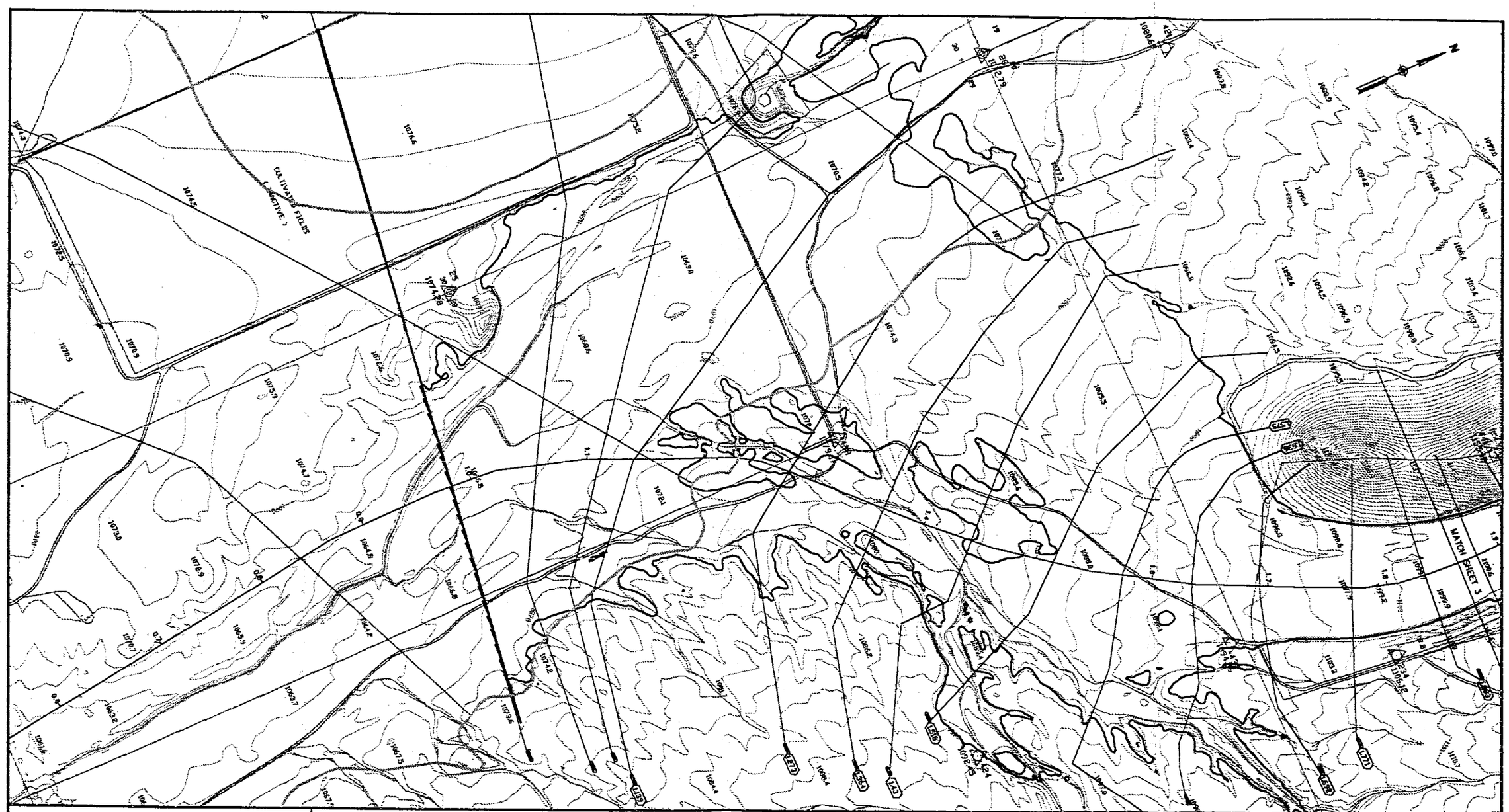
W.S. Elev (ft)	1071.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.070	0.070	0.070
E.G. Elev (ft)	1071.02	Reach Len. (ft)			
Crit W.S. (ft)	1067.52	Flow Area (sq ft)	20.99	4793.31	185.81
E.G. Slope (ft/ft)	0.000561	Area (sq ft)	20.99	4793.31	185.81
Q Total (cfs)	6060.00	Flow (cfs)	6.64	5913.37	139.98
Top Width (ft)	1389.08	Top Width (ft)	41.98	1245.90	101.20
Vel Total (ft/s)	1.21	Avg. Vel. (ft/s)	0.32	1.23	0.75
Max Chl Dpth (ft)	7.65	Hydr. Depth (ft)	0.50	3.85	1.84
Conv. Total (cfs)	255936.1	Conv. (cfs)	280.6	249743.5	5912.1
Length Wtd. (ft)		Wetted Per. (ft)	41.99	1246.50	101.26
Min Ch El (ft)	1063.35	Shear (lb/sq ft)	0.02	0.13	0.06
Alpha	1.02	Stream Power (lb/ft s)	0.01	0.17	0.05
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Profile Output Table - Standard Table 2

Reach	River Sta	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Job1	6.428	1181.89	1181.61	0.28	0.20	0.00		950.00		53.34
Job1	6.391	1181.69	1181.38	0.31	0.18	0.02		1020.00		57.11
Job1	6.355	1181.49	1181.24	0.25	0.14	0.01		1090.00		64.45
Job1	6.318	1181.33	1181.13	0.20	0.11	0.01		1090.00		66.78
Job1	6.295	1181.21	1180.89	0.33	0.12	0.02		1160.00		61.06
Job1	6.273	1181.08	1180.81	0.27	0.06	0.03		1160.00		61.99
Job1	6.261	1180.99	1180.42	0.57			0.33	1159.67		64.76
Job1	6.2545	Culvert								
Job1	6.248	1180.45	1179.76	0.69	0.20	0.19		1160.00		49.30
Job1	6.235	1180.06	1179.75	0.31	0.26	0.01	183.54	895.58	160.88	75.03
Job1	6.203	1179.79	1179.49	0.30	0.31	0.01	224.49	850.64	164.87	71.22
Job1	6.161	1179.48	1179.11	0.37	0.90	0.07	193.69	819.03	227.28	70.88
Job1	6.084	1178.51	1177.93	0.58	0.36	0.21	196.71	965.93	207.36	67.82
Job1	6.07	1177.94	1176.66	1.28	0.06	0.06	249.39	937.28	183.33	61.75
Job1	6.062	1172.59	1172.36	0.23	0.05	0.17	228.78	951.91	189.31	64.10
Job1	6.055	1172.37	1171.56	0.80	0.13	0.04	181.15	1014.36	174.49	63.62
Job1	6.047	1172.20	1171.82	0.38	0.81	0.01	339.23	930.90	99.88	85.58
Job1	5.973	1171.38	1170.95	0.42	0.99	0.02	305.27	1034.38	160.35	77.79
Job1	5.886	1170.37	1169.89	0.48	1.36	0.03	285.58	1046.21	168.21	76.53
Job1	5.793	1168.98	1168.38	0.59	0.81	0.03	168.24	1184.58	147.18	73.43
Job1	5.727	1168.14	1167.80	0.34	0.48	0.01	168.26	1216.30	115.45	87.30
Job1	5.65	1167.65	1167.45	0.20	0.76	0.04	223.56	1139.26	137.18	102.53
Job1	5.553	1166.85	1166.53	0.32	0.22	0.02	244.11	1575.61	80.28	167.41
Job1	5.535	1166.61	1166.46	0.15	0.19	0.07	625.21	1107.87	166.92	270.71
Job1	5.506	1166.35	1165.97	0.38	1.35	0.03	203.59	1582.92	113.49	110.30
Job1	5.441	1164.97	1164.48	0.49	1.08	0.03	189.44	1613.97	96.60	113.05
Job1	5.295	1163.86	1163.64	0.22	0.47	0.05	193.06	1607.91	99.02	125.20
Job1	5.236	1163.35	1162.98	0.37	1.47	0.01	190.83	2030.73	128.45	135.69
Job1	5.091	1161.87	1161.55	0.32	1.69	0.07	165.51	2092.96	91.53	144.56
Job1	4.973	1160.11	1159.56	0.55	0.89	0.02	100.37	2395.85	93.78	149.76
Job1	4.915	1159.19	1158.84	0.35	0.47	0.22	157.17	2296.35	136.48	166.47
Job1	4.894	1158.51	1157.44	1.07	0.06	0.09	70.22	2438.71	81.07	148.38
Job1	4.887	1154.54	1154.38	0.16	0.10	0.04	91.67	2414.46	83.87	156.69
Job1	4.886	1154.40	1154.12	0.28	0.19	0.01	64.45	2454.43	71.12	162.10
Job1	4.845	1154.20	1153.87	0.33	0.86	0.01	90.84	2424.04	75.12	161.58
Job1	4.772	1153.33	1152.96	0.37	1.05	0.01	141.41	2360.87	87.72	163.11
Job1	4.676	1152.28	1151.97	0.30	1.07	0.02	105.20	2389.07	95.74	171.77
Job1	4.586	1151.19	1150.82	0.37	0.94	0.01	151.56	2600.47	107.98	181.60
Job1	4.492	1150.24	1149.98	0.26	0.72	0.00	207.38	2579.91	72.71	187.54
Job1	4.4	1149.52	1149.27	0.26	0.64	0.02	460.66	2703.27	86.07	236.35
Job1	4.328	1148.87	1148.54	0.33	1.06	0.02	180.91	2929.33	139.76	194.56
Job1	4.237	1147.79	1147.40	0.39	1.24	0.00	265.84	3127.20	106.95	209.64
Job1	4.144	1146.55	1146.18	0.37	0.73	0.01	115.45	3281.32	103.23	224.96

Job1	4.066	1145.80	1145.55	0.25	0.79	0.02	204.62	3200.34	95.04	221.87
Job1	3.972	1144.99	1144.66	0.33	0.98	0.00	172.08	3487.29	80.63	223.55
Job1	3.88	1144.01	1143.67	0.34	1.11	0.02	168.48	3488.59	82.93	228.60
Job1	3.789	1142.88	1142.47	0.40	1.56	0.07	127.05	3783.37	59.59	231.40
Job1	3.71	1141.24	1140.59	0.65	0.51	0.12	85.40	3843.84	40.77	234.21
Job1	3.699	1140.60	1139.54	1.06	0.05	0.09	377.56	3518.17	74.27	232.27
Job1	3.693	1135.75	1135.60	0.15	0.02	0.06	80.25	3801.37	88.38	241.89
Job1	3.688	1135.66	1135.31	0.35	0.09	0.01	82.00	3798.43	89.57	241.05
Job1	3.677	1135.56	1135.34	0.21	0.61	0.03	103.96	3774.36	91.68	250.56
Job1	3.589	1134.91	1134.59	0.32	0.91	0.01	161.38	4063.96	94.66	248.58
Job1	3.5	1134.00	1133.65	0.35	0.69	0.00	103.52	4112.27	104.21	250.65
Job1	3.438	1133.31	1132.94	0.36	1.22	0.03	147.27	4453.95	118.78	263.53
Job1	3.348	1132.05	1131.58	0.47	1.37	0.02	120.20	4507.78	92.01	258.23
Job1	3.232	1130.67	1130.36	0.31	0.67	0.00	202.71	4435.54	81.75	270.10
Job1	3.152	1130.00	1129.72	0.28	0.21	0.02	184.35	4457.38	78.28	279.98
Job1	3.128	1129.77	1129.43	0.34	0.94	0.03	277.36	4736.76	95.88	280.28
Job1	3.051	1128.81	1128.37	0.44	1.02	0.00	235.81	4790.02	84.17	286.24
Job1	2.979	1127.79	1127.38	0.41	0.51	0.01	186.17	4840.32	83.51	290.27
Job1	2.944	1127.26	1126.81	0.45	1.35	0.01	261.15	5034.08	134.77	287.00
Job1	2.861	1125.90	1125.42	0.49	1.28	0.01	213.42	5134.16	82.41	290.21
Job1	2.767	1124.61	1124.24	0.36	1.10	0.01	109.66	5229.63	90.72	298.74
Job1	2.673	1123.50	1123.11	0.39	0.52	0.00	91.26	5235.38	103.36	300.18
Job1	2.632	1122.98	1122.59	0.40	0.32	0.00	163.60	5177.62	88.78	299.76
Job1	2.605	1122.66	1122.28	0.37	1.14	0.01	97.15	5224.09	108.76	307.12
Job1	2.514	1121.51	1121.12	0.40	0.55	0.01	138.11	5191.53	100.36	310.63
Job1	2.457	1120.95	1120.67	0.28	0.70	0.01	184.76	5443.51	121.73	322.90
Job1	2.369	1120.24	1119.92	0.31	0.89	0.01	128.71	5495.07	126.22	322.12
Job1	2.276	1119.33	1118.99	0.35	0.33	0.01	114.56	5510.87	124.57	316.10
Job1	2.244	1118.99	1118.62	0.38	1.23	0.02	202.92	5652.51	114.57	315.29
Job1	2.148	1117.74	1117.29	0.45	1.33	0.01	83.11	5800.87	86.02	321.63
Job1	2.054	1116.41	1116.02	0.39	0.56	0.01	470.86	5419.47	79.67	371.52
Job1	2.003	1115.83	1115.55	0.29	0.52	0.06	573.64	5335.11	61.25	468.34
Job1	1.962	1115.25	1114.76	0.50	0.32	0.19	69.86	5917.03	73.11	347.32
Job1	1.951	1114.75	1113.63	1.12	0.03	0.03	93.53	5909.94	56.53	321.47
Job1	1.941	1105.18	1105.08	0.10	0.05	0.09	143.35	5803.74	112.91	332.49
Job1	1.926	1105.04	1104.62	0.42	0.66	0.01	84.65	5849.74	125.61	341.70
Job1	1.88	1104.37	1104.03	0.33	0.82	0.03	215.40	5743.41	101.19	427.35
Job1	1.833	1103.52	1103.08	0.43	2.07	0.06	43.89	5950.07	66.04	453.55
Job1	1.771	1101.39	1100.76	0.63	3.24	0.02	51.60	5983.45	24.96	515.70
Job1	1.692	1098.12	1097.73	0.40	3.03	0.02	58.69	5930.76	70.55	695.80
Job1	1.636	1095.08	1094.83	0.24	3.51	0.01	137.11	5446.40	476.50	1050.48
Job1	1.575	1091.55	1091.45	0.10	3.66	0.03	623.86	4723.69	712.46	1571.56
Job1	1.518	1087.87	1087.67	0.19	4.78	0.01	37.47	4490.06	1532.47	1634.78
Job1	1.43	1083.08	1082.97	0.11	3.64	0.00	3.22	1914.56	4142.22	1417.72
Job1	1.364	1079.44	1079.34	0.10	2.91	0.00	21.14	3622.96	2415.90	1770.26
Job1	1.273	1076.53	1076.46	0.07	4.32	0.00	613.82	2180.95	3265.22	1776.15
Job1	1.139	1072.20	1072.13	0.08	0.66	0.01		3037.92	3022.08	2603.68
Job1	1.111	1071.54	1071.53	0.02	0.25	0.00		2294.82	3765.18	2470.74

Job1	1.057	1071.29	1071.27	0.02	0.27	0.00	0.73	4085.12	1974.15	1997.68
Job1	0.983	1071.02	1071.00	0.02			6.64	5913.37	139.98	1389.08



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

DELINEATION OF SPILLWAY FLOWS FOR THE SADDELBACK FLOOD RETARDING STRUCTURE

F.C.D. CONTRACT NO. FCD 97-16

LEGEND

- Cross-section
- Inundation Limits
- Centennial Wash Floodway
- Elevation Reference Mark
- Section Lines

ELEVATION REFERENCE MARKS

INDEX MAP

0 200' 400' 600'

SCALE: 1" = 200'

CONTOUR INTERVAL = 2' FEET

Entellus

	BY	DATE
DESIGN	HAA	–
DESIGN CHK.	HAA	–
PLANS	WAL	–
PLANS CHK.	SEK	–

SUBMITTED BY: DATE

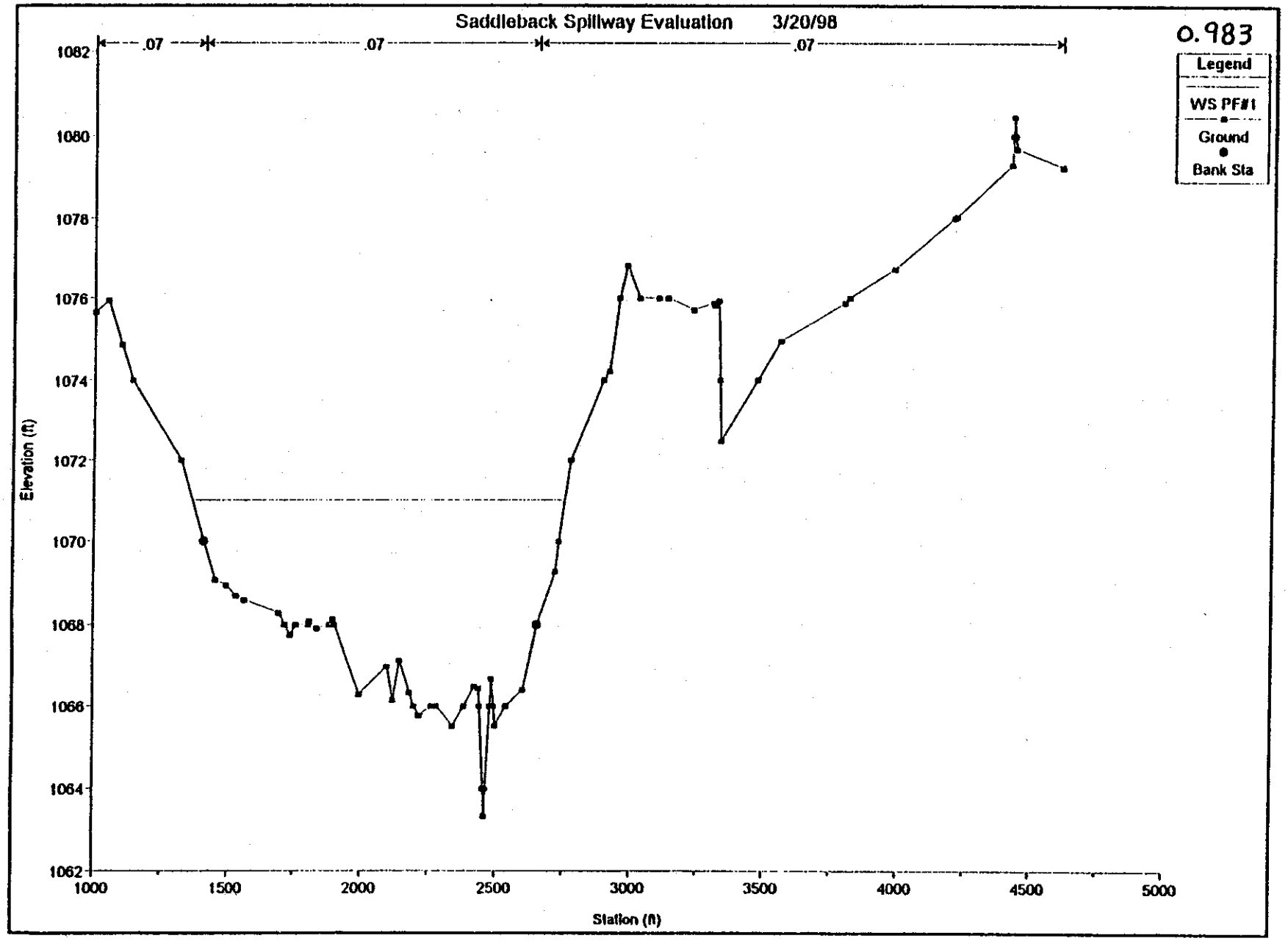
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND REGIONAL MANAGER

SHEET — OF —


Saddleback Spillway Evaluation 3/20/98
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.07
.07
Legend
WS PF#1
Ground
Bank Sta
Elevation (ft)
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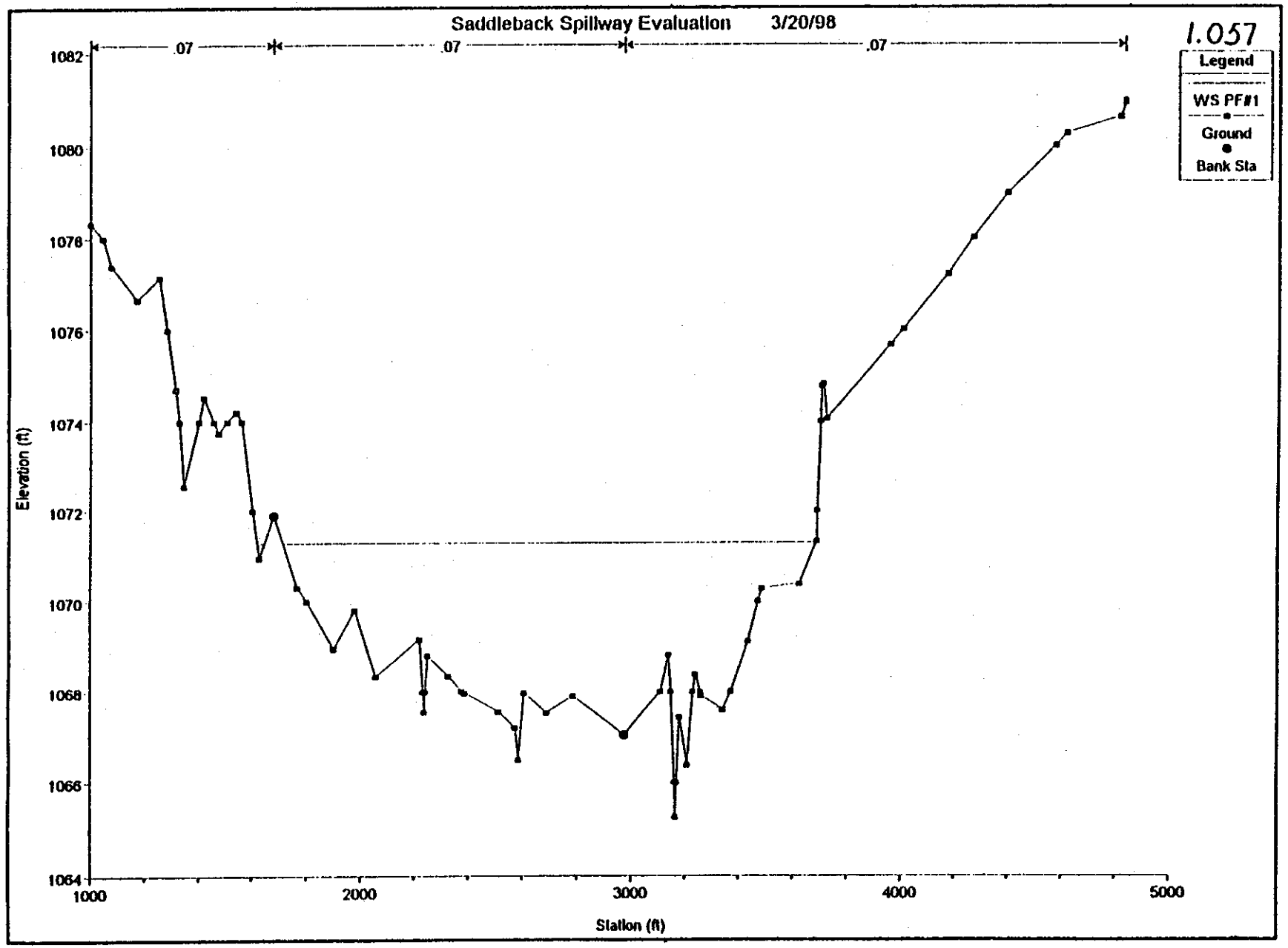
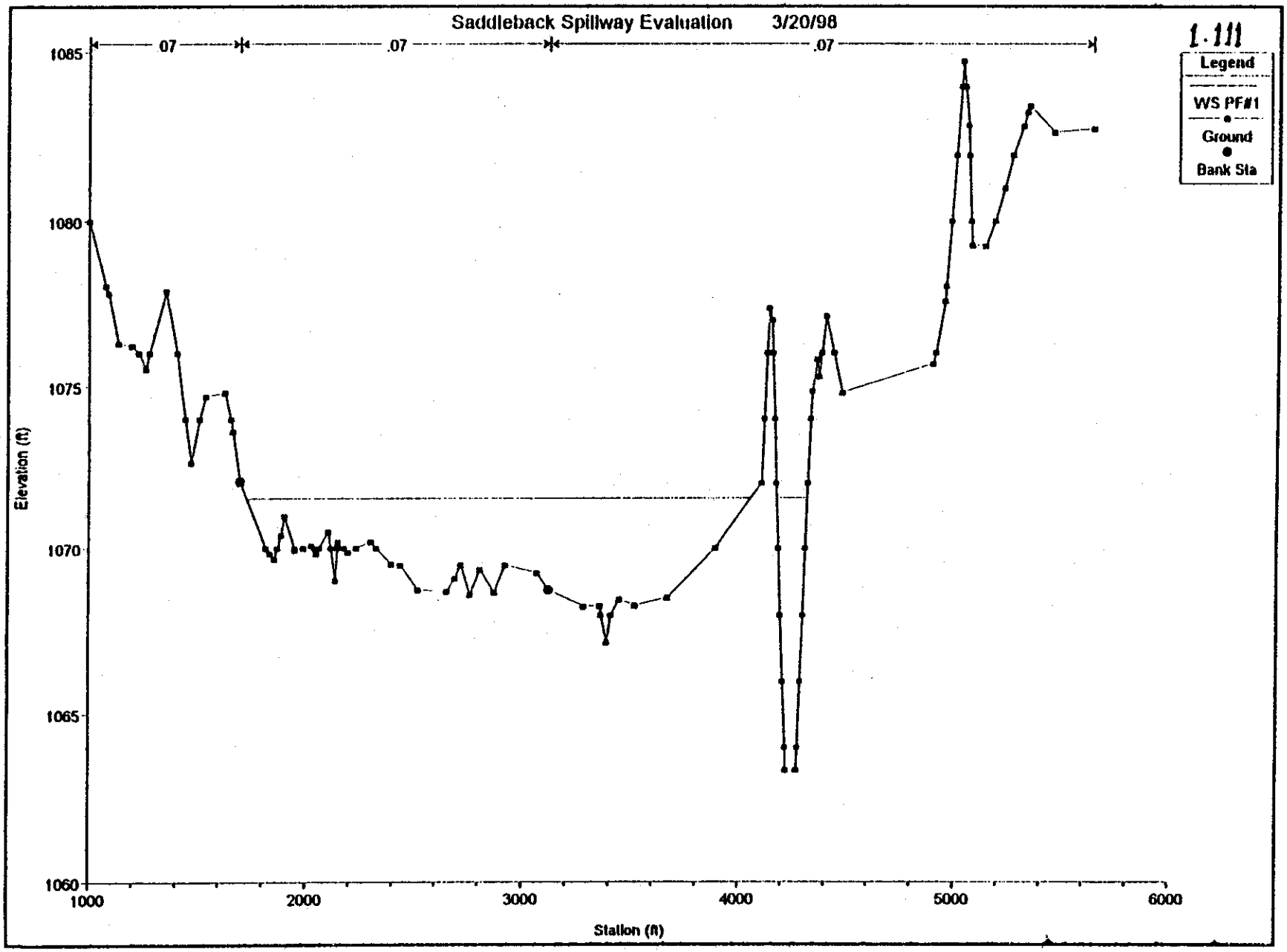
1080
1078
1076
1074
1072
1070
1068
1066
1064
1062
1000
1500
2000
2500
3000
3500
4000
4500
5000
Station (ft)


Saddleback Spillway Evaluation 3/20/98
1.057
.07
.07
.07
Legend
WS PF#1
Ground
Bank Sta
Elevation (ft)
1082
1080
1078
1076
1074
1072
1070
1068
1066
1064
1000
2000
3000
4000
5000
Station (ft)


Saddleback Spillway Evaluation 3/20/98
1.111
.07
.07
.07
Legend
WS PF#1
Ground
Bank Sta
Elevation (ft)
1085
1080
1075
1070
1065
1060
1000
2000
3000
4000
5000
6000
Station (ft)