FEMA Application

CONDITIONAL LETTER OF MAP REVISION
BUCHANAN WASH
RIORDAN RANCH DEVELOPMENT

JN 45-100428

Prepared for:
Richmond American Homes
3010 E. Camelback Road Suite 200
Phoenix, Arizona 85016
(602) 956-4100

Prepared By:
RBF Consulting
16605 North 28th Avenue, Suite 100
Phoenix, Arizona 85053-7550
(602) 467-2200

Engineer:
Kenneth M. Tarr, P.E.

November 2001

FEMA Application

CONDITIONAL LETTER OF MAP REVISION
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Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Prepared for:
Richmond American Homes
3010 E. Camelback Road Suite 200
Phoenix, Arizona 85016
(602) 956-4100

Registered Professional Engineer (Civil)
CERTIFICATE NO.
31317
KENNETH M.
TARR
Date Signed 11/21/01
ARIZONA, U.S.A.

Prepared By:
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Phoenix, Arizona 85053-7550
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Engineer:
Kenneth M. Tarr, P.E.

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Section 1- Introduction

The purpose of this study is to provide technical back up for the Conditional Letter of Map Revision (CLOMR) application for the proposed Riordan Ranch development located in northern Phoenix, Maricopa County, Arizona. Riordan Ranch is bisected by Buchanan Wash, a tributary to Skunk Creek. Roadway, roadway fill, a retention basin, and portions of some lots have been designed to encroach into the existing floodplain. Additionally, a roadway crossing has been designed at 35th Avenue. These improvements require that the developer apply for a floodplain use permit from the City of Phoenix and a letter of map revision from FEMA. This CLOMR is based on a revision to the hydraulic analysis only.

FEMA's Flood Insurance Rate Map (FIRM) 04013C1185F (See Section 7.3) classifies areas near Buchanan Wash in the project site as Zone AE, "Special flood hazard areas inundated by the 100-year flood with base flood elevations determined."

RBF Consulting is requesting a Conditional Letter of Map Revision, (CLOMR) for the property in behalf of the developer, Richmond American Homes. A CLOMR is necessary to remove lots from the floodplain due to improvements that will be made by the development of this property. The RBF Consulting Contract Number is 45-100428. Ken Tarr is the project manager. Information on RBF Consulting and Richmond American follows:

Engineer:

RBF Consulting
Contact: Kenneth M. Tarr, P.E.
16605 North 28th Avenue, Suite 100
Phoenix, Arizona 85053-7550
Phone: 602-467-2200
Fax: 602-467-2201

Developer:

Richmond American Homes
Contact: Tom Lemon
3010 East Camelback Road, Suite 200
Phoenix, Arizona 85016
Phone: 602-956-4100

Riordan Ranch is a proposed 160.0 gross acre, single-family residential development located south of Pinnacle Vista Drive and west of 35th Avenue. The project site is located in a portion of the south half of Section 34, Township 5 North, Range 2 East of the Gila and Salt River Base and Meridian, in the City of Phoenix, Maricopa County, Arizona.

Buchanan Wash enters the project site near 39th Avenue and Pinnacle Vista Drive. Buchanan Wash flows across the project site in a southeastern direction before leaving the project site at 35th Avenue about a quarter mile south of Pinnacle Vista Drive. Buchanan Wash joins with Skunk Creek approximately one mile downstream of 35th Avenue.

This area has been studied as part of the Hydrologic Analyses for Buchanan Wash by AGK Engineers, Inc. for the Flood Control District of Maricopa County in November 1987. In addition, a Flood Insurance Study for Buchanan Wash from Skunk Creek to C.A.P. Canal was performed by AGK Engineers, Inc. for the Flood Control District of Maricopa County in November 1987. Currently, the City of Phoenix is performing another study on Buchanan Wash from the confluence of Skunk Creek to the C.A.P. canal.

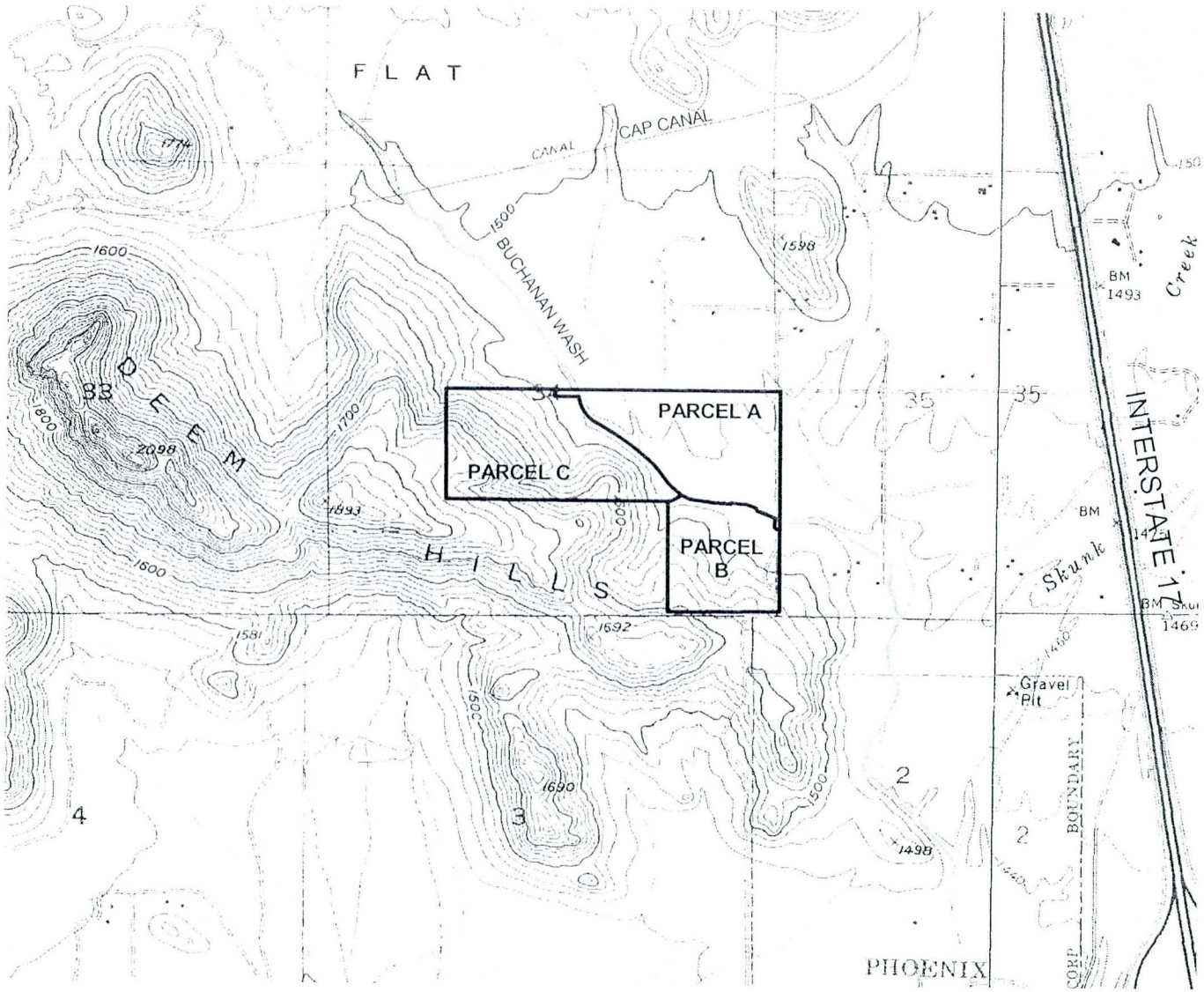
RBF Consulting used HEC-2, as requested by the City of Phoenix, to create a duplicate effective model of the Flood Insurance Study HEC-2 (DEM), a corrected effective conditions model (CEM), an existing conditions model, and a proposed conditions model. The FIS hydraulic analysis and floodplain delineation was performed by AGK Engineers.

A roadway crossing was built on Pinnacle Vista Drive after the AGK Engineers' study was performed. The crossing is a 4 barrel concrete box culvert with barrel spans of approximately 8 feet and a rise of 3 feet. The FIS was not updated when the culvert was constructed, so its effects

are not shown on the effective FIRM. The Pinnacle Vista crossing was modeled within the existing model in order to truly analyze the effects of the proposed development on Buchanan Wash.

The results of the study show that the improvements do not cause the water surface elevations to rise above the acceptable limit. The largest increase of water surface elevation is just upstream of the proposed 35th Avenue culvert. The surrounding property is part of the Riordan Ranch development, and all adjacent structures are designed so that the lowest floors will be a minimum of 1 foot above the water surface elevation.

LOCATION OF RIORDAN RANCH



2000 0 2000 Feet

PROPERTY BOUNDARY

Section 2- Conditional Letter of Map Revision Forms

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

Section 2.1: Study Documentation Abstract for FEMA Submittals		
2.1.1	Date Study Accepted	
2.1.2	Study Contractor Contact(s) Address Phone Internal Reference Number	RBF Consulting Ken Tarr, P.E. 16605 North 28th Ave. Suite 100 Phoenix, Arizona 85053-7550 (602)467-2200 45-100428
2.1.3	FEMA Technical Review Contractor Contact(s) Address Phone Internal Reference Number	
2.1.4	FEMA Regional Reviewer Phone	
2.1.5	State Technical Reviewer Phone	
2.1.6	Local Technical Reviewer Phone	
2.1.7	Reach Description	Buchanan Wash between 0.710 and 2.2 miles from the confluence of Skunk Creek Wash, City of Phoenix, AZ FIRM Panel 1185F
2.1.8	USGS Quad Sheet(s) Original photo date Latest photo revision date	Hedgpeth Hills, Arizona 7.5' Quadrangle 1957 1981
2.1.9	Unique Conditions and Problems	The effects of an existing 4 barrel box culvert is not shown on the effective FIRM
2.1.10	Coordination of Q's Discharges (Agency, Date, Comments)	

Section 2.2 FEMA Forms

FEDERAL EMERGENCY MANAGEMENT AGENCY **REVISION REQUESTER AND COMMUNITY OFFICIAL**	O.M.B No. 3067-0148 Expires April 30, 2001

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

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

☐ LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. LOMRs typically decrease flood hazards. (See 44 CFR Ch. 1 Parts 60 & 65.)

☐ Other Describe: _____

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

☒ Physical Change ☐ Improved Methodology/Data ☐ Floodway Revision

☐ Other Describe: _____

Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: Rainfall Runoff

3. Project Name/Identifier: Buchanan Wash, Riordan Ranch Development

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

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

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	Katy, City Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
40051	Phoenix, City of	AZ	04013C	1185F	04/15/88

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
☒ Riverine	☐ Channelization
☐ Coastal	☐ Levee/Floodwall
☐ Alluvial fan	☒ Bridge/Culvert
☐ Shallow Flooding (e.g. Zones AO and AH)	☐ Dam
☐ Lakes	☒ Fill
☐ Other (describe)	☐ Other (describe)

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP?
   ☐ Yes ☒ No

If Yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☒ Yes ☐ No ☐ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - even if a floodway has not been delineated by FEMA)? ☒ Yes ☐ No

If the answer to either items is Yes, please attach documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☒ performing ☐ overseeing compliance with the maintenance and operation plans of the 35th Avenue Roadway Crossing
(Name)
flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Operation and maintenance plans are attached. ☐ Yes ☒ No ☐ N/A

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☒ Yes Fee amount: $3,100

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is based on detailed hydrologic and hydraulic studies conducted by Federal, State, or local agencies to replace approximate studies conducted by FEMA and shown on the effective FIRM; thus the project is fee exempt. ☐ Yes

Please see Instructions for Fee Amounts

7. SIGNATURE

Note: **I understand that my signature indicates that all information submitted in support of this request is correct**

Signature of Revision Requester

EDWARD P. DEPINTO - V.P. LAND DEV.
Printed Name and Title of Revision Requester

Richmond American Homes
Company Name

Telephone No.: (602)956-4100 Date:

Note: **Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.**

Signature of Community Official

HASAN MUSHTAQ, FLOODPLAIN MANAGER
Printed Name and Title of Community Official

CITY OF PHOENIX
Community Name

Telephone No.: (602) 262 4026 Date: 11/27/01

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is in accordance with 44 CFR Ch. 1, Sect 65.2

Kenneth M. Tarr
Signature

Kenneth M. Tarr, Senior Project Manager
Printed Name and Title of Revision Requester

Registr No. 31317 Expires (Date) 6/30/2003 State Arizona

Type of License/Expertise: P.E.

Check which forms have been included with this request

Form Name and (Number)	Required if .....
☐ **Hydrologic** (3)	new or revised discharges
☒ **Hydraulic** (4)	new or revised water-surface elevations
☒ **Mapping** (5)	floodplain/floodway changes
☐ **Channelization** (6)	channel is modified
☒ **Bridge/Culvert** (7)	addition/revision of bridge/culvert
☐ **Levee/Floodwall** (8)	addition/revision of levee/floodwall
☐ **Coastal** (9)	new or revised coastal elevations
☐ **Coastal Structures** (10)	addition/revision of coastal structure
☐ **Dam** (11)	addition/revision of dam
☐ **Alluvial Fan** (12)	structures proposed on alluvial fan

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE HYDRAULIC ANALYSIS**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: City of Phoenix, Maricopa County, Arizona

Flooding Source: Rainfall Runoff

Project Name/Identifier: Buchanan Wash, Riordan Ranch Development

1. REACH TO BE REVISED

Describe the limits of the revision OR submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: Buchanan Wash 1.045 miles upstream from the confluence of Skunk Creek

Upstream Limit: Buchanan Wash 1.695 miles upstream from the confluence of Skunk Creek

2. MODELS SUBMITTED

Requirements: for areas which have detailed flooding:	for areas which do not have detailed flooding:
Full input and output listings along with files on diskette for each of the models listed below (items 1-4) and a summary of the source of input parameters used in the models must be provided. The summary must include a description of any changes made from model to model (e.g., Duplicate Effective model to Corrected Effective model). At a minimum, the Duplicate Effective (item 1) and the Revised or Post-Project Conditions (item 4) models must be submitted. See instructions for directions on when other models may be required.	Only the 100-year (Base) flood profile is required. A hydraulic model is not required for areas which do not have detailed flooding; however, BFEs may not be added to the revised FIRM. If a hydraulic model is developed for the area, items 3 and 4 described below must be submitted.

If hydraulic models are not developed, hydraulic analyses (including all calculations) for existing or pre-project conditions and revised or post-project conditions must be submitted.

1. Duplicate Effective Model ☒ **Natural** **File Name** BUCHNWFP.I ☒ **Floodway** **File Name** BUCHNWFW.I
Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models (10-, 50-, 100-, and 500-year multi-profile runs and the floodway run) must be obtained and then reproduced on the requester's equipment to produce the Duplicate Effective model. This is required to assure that the effective models input data has been transferred correctly to the requester's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

2. Corrected Effective Model ☒ **Natural** **File Name** CEM.IH2 ☐ **Floodway** **File Name** _____
The Corrected Effective model is the model that corrects any errors that occur in the Duplicate Effective model, adds any additional cross sections to the Duplicate Effective model, or incorporates more detailed topographic information than that used in the currently effective model. The Correctly Effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

3. Existing or Pre-Project Conditions Model ☒ **Natural** **File Name** EXIST.IH2 ☒ **Floodway** **File Name** EXISTFW.IH2
The Duplicate Effective model or Corrective Effective model is modified to produce the Existing or Pre-Project Conditions model to reflect any modifications that have occurred within the floodplain since the date of the Effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the Corrected Effective model or Duplicate Effective model.

4. Revised or Post-Project Conditions Model ☒ **Natural** **File Name** PROPOSED.IH2 ☒ **Floodway** **File Name** PROPFW.IH2
The Existing or Pre-Project Conditions model (or Duplicate Effective model or Corrected Effective model, as appropriate) is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for the proposed project this model must reflect proposed conditions.

5. Other – Please attach a sheet describing all other models submitted along with the file names. ☐ **Natural** ☐ **Floodway**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

3. STARTING WATER-SURFACE ELEVATIONS

Explain how they were determined. Explanation Attached? ☒ Yes ☐ No

NOTE: If the effective study is an approximate study, the slope/area method is recommended.
For detailed analysis studies, using a known water-surface elevation is recommended.

4. RESULTS (from the model used to revise the 100-year water surface elevations)

If the results indicate any of the following, attach an explanation - to this form, or to the hydraulic model printout- as to the reasonableness of the situation.

☐ Supercritical depth ☒ Critical Depth ☐ Drawdowns ☐ Negative Floodway Surcharges

☐ Floodway Surcharges Greater Than Maximum Allowed by Community/State

☐ Water surface elevations higher than the end points of cross sections.

☒ Floodway discharge is different than the Natural 100-year (base) flood discharge.

☒ Project causes 100-year floodplain or floodway elevations to increase (state if increases are located off the requester's property)

Explanation attached with Form ☐ **Explanation provided on attached printout** ☒

If Hydraulic model used is HEC-2, has it been checked with FEMA'S CHECK-2 computer program? ☒ **Yes** ☐ **No**
(see instructions for information on how to obtain CHECK-2)

5. REVISED FIRM/FBFM AND FLOOD PROFILES

1. **Profile Transition**

   a. 100-Year Water-Surface Elevations - indicate the difference in water surface elevations where the project 100-year elevations tie into the existing 100-year water surface elevations at each end of the project.

   Downstream End 0.985 within 0.00 (feet) *Cross-Section #* Upstream End 1.695 within 0.10 (feet) *Cross-Section #*

   b. Floodway Elevations - indicate the difference in water surface elevations where the project floodway elevations tie into the existing floodway water surface elevations at each end of the project.

   Downstream End 0.985 within 0.00 (feet) *Cross-Section #* Upstream End 1.761 within 0.10 (feet) *Cross-Section #*

   c. Floodway widths - indicate the difference in floodway widths where the project floodway widths tie into the existing floodway width at each end of the project.

   Downstream End 0.985 within 0.00 (feet) *Cross-Section #* Upstream End 1.695 within 0.00 (feet) *Cross-Section #*

2. **Profile Checklist (check box if information has been provided on profile)**

   The following information (unless in parentheses) must be included at the same scale as the existing profiles for this project:

   ☒ Stream Name ☒ Community Name ☐ Corporate Limits labeled ☒ Study limits labeled

   ☐ Confluences labeled ☒ Channel Stationing ☒ Streambed profiled ☒ Cross Sections labeled

   ☒ Horizontal/Vertical Scales indicated ☒ 100-year elevs profiled*

   ☒ Road Crossings ☒ Labeled ☒ Low Chord Elevations ☒ Top of Road Elevations

   *All recurrence intervals in the effective study must also be profiled.

   Floodway Data Table

   Attach a Floodway Data Table for each cross section listed in the published Floodway Data table in the FIS report.

   Floodway Data Table Attached ☒ **Yes** ☐ **Not Required**

FEDERAL EMERGENCY MANAGEMENT AGENCY **RIVERINE / COASTAL MAPPING**	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: City of Phoenix, Maricopa County, Arizona

Flooding Source: Rainfall Runoff

Project Name/Identifier: Buchanan Wash, Riordan Ranch Development

This is a ☒ Manual ☐ Digital submission. *Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance as possible.*

1. MAPPING CHANGES

1. A topographic workmap must be submitted showing the following information (check N/A when not applicable):

a. Revised approximate 100-year floodplain boundaries (Zone A)	☐ Yes	☐ No	☒ N/A
b. Revised detailed 100- and 500-year floodplain boundaries.	☒ Yes	☐ No	☐ N/A
c. Revised floodway boundaries	☒ Yes	☐ No	☐ N/A
d. Location and alignment of all cross sections with stationing control indicated.	☒ Yes	☐ No	☐ N/A
e. Stream alignments, road alignments and dam alignments.	☒ Yes	☐ No	☐ N/A
f. Current community boundaries.	☐ Yes	☐ No	☒ N/A
g. Effective 100- year floodplain and floodway boundaries from FIRM/FBFM reduced or enlarged to the scale of the topographic workmap	☒ Yes	☐ No	☐ N/A
h. Tie-ins between the effective and revised 100-, 500-year and floodway boundaries	☒ Yes	☐ No	☐ N/A
i. The requester's property boundaries and community easements	☒ Yes	☐ No	☐ N/A
j. The signed certification of a registered professional engineer	☒ Yes	☐ No	☐ N/A
k. Location and description of reference marks	☒ Yes	☐ No	☐ N/A
l. Vertical datum (example: NGVD, NAVD)	☒ Yes	☐ No	☐ N/A
m. Coastal zone designations tie into adjacent areas not being revised	☐ Yes	☐ No	☒ N/A
n. Location and alignment of all coastal transects used to revise the coastal analyze	☐ Yes	☐ No	☒ N/A
o. V-zone has been delineated to extend landward to the heel of the primary frontal dune	☐ Yes	☐ No	☒ N/A

If any items are marked No or N/A please attach an explanation.

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; filed survey, May 1979, beach profile, June 1987 etc.)? Aerial Survey, February 2000

3. What is the scale and contour interval of the following workmaps?

Effective FIS Scale 1":200' Contour Interval 2 feet

Revision Request Scale 1":100' Contour Interval 1feet

NOTE: Revised topographic information must be of equal or greater detail than effective.

4. Attach an annotated FIRM/FBFM at the scale of the effective FIRM/FBFM showing the revised 100- and 500-year floodplain and the floodway boundaries and how they tie into those shown on the effective FIRM/FBFM downstream and upstream of the revisions or adjacent to the area of revision for coastal studies. **FIRM/FBFM attached?** ☒ **Yes** ☐ **No**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☒ Proposed

2. Has fill been/will be placed in the regulatory floodway? ☒ Yes ☐ No
If Yes, please attach completed Riverine Hydraulic Analysis Form (Form 4).

3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? ☒ Yes ☐ No

If Yes, then complete A, B, C, and D below.

a. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ☐ Yes ☒ No

If Yes, justify steeper slopes _____

b. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.*)

☒ Yes ☐ No

If No, describe erosion protection provided _____

c. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☒ Yes ☐ No

d. Can structures conceivably be constructed on the fill at any time in the future? ☒ Yes ☐ No

If Yes, attach certification of fill compaction (item 3c. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer in accordance with Subparagraph 65.5(a)(6) of the NFIP regulations.

Fill certification attached ☐ **Yes** ☒ **No**

4. Has fill been/will be placed in a V zone? ☐ Yes ☒ No

If Yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall?

☐ Yes ☐ No

If Yes, attach the Coastal Structures Form (Form 10).

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

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You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: City of Phoenix, Maricopa County, Arizona

Flooding Source: Rainfall Runoff

Project Name/Identifier: Buchanan Wash, Riordan Ranch Development

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Buchanan Wash Pinnacle Vista Drive Culvert

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   Station 1.610

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS EXISTING

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HEC-2 With Special Culvert Routine

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ Yes ☐ No ☒ N/A

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

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

SEE IMPROVEMENT PLANS

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information **(Check the box if provided):**

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

FEDERAL EMERGENCY MANAGEMENT AGENCY **BRIDGE/CULVERT**	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

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Community Name: City of Phoenix, Maricopa County, Arizona

Flooding Source: Rainfall Runoff

Project Name/Identifier: Buchanan Wash, Riordan Ranch Development

1. IDENTIFIER

1. Name of structure (roadway, railroad, etc.): Buchanan Wash 35th Avenue Culvert

2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier):

   Station 1.067

3. This revision reflects (check one of the following):

   ☒ New bridge/culvert not modeled in the FIS PROPOSED

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ New analysis of bridge/culvert previously modeled in the FIS

4. Hydraulic model used to analyze the structure *(e.g., HEC-2 with special bridge routine, WSPRO, HY8)*

   HEC-2 With Special Bridge Routine

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

   Justification attached ☐ Yes ☐ No ☒ N/A

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. DRAWING CHECKLIST

Attach plans of the structure(s) certified by a registered professional engineer. The plan detail and information should include the following (check the boxes if the information has been provided):

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

SEE IMPROVEMENT PLANS

3. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood elevations, then provide the following information **(Check the box if provided):**

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

Section 3- Survey and Mapping

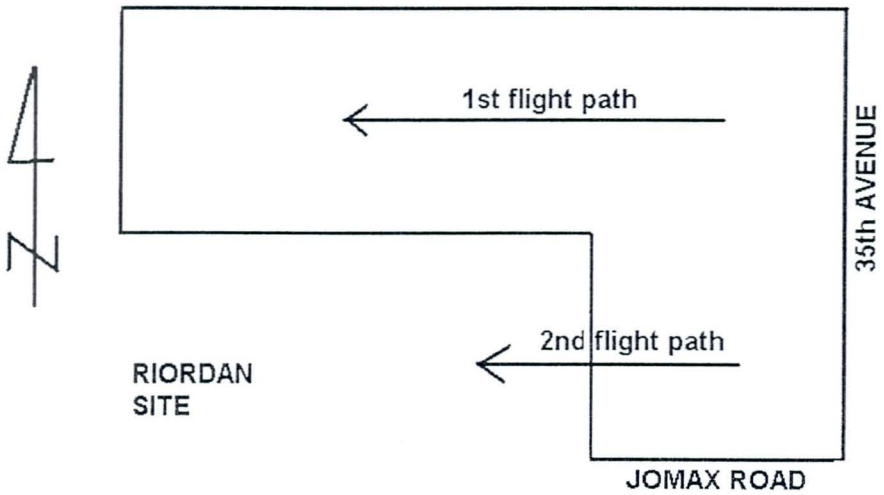
3.1 Field Survey Information

RBF Consulting's crews surveyed the existing concrete box culverts located on Pinnacle Vista Road. The professional responsible for the field surveying is Brent Smith. Field notes from the survey are provided in Section C.3, "Survey Field Notes for Hydraulic Modeling" of Appendix C.

3.2 Mapping

The aerial photograph used to create the mapping for Riordan Ranch was completed by a subconsultant, M&B Aerial Mapping, LLC. The professional responsible for the mapping is Brent J. Smith of RBF Consulting. Both the FIRM and the mapping for Riordan Ranch are referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29). RBF Consulting set the control for the aerial photograph. Section C.1 of Appendix C contains the field books which show the panel layout and control used in the aerial photograph. The date of the aerial photography was late January or early February of 2000. The prints were taken at a scale of 1:3600, and the contours were drawn at 1' interval. The aerial photographs were taken about 12:00pm. Below is a sketch of the flight path that was followed

Appendix C.1 also contains a table that shows a comparison of the Elevation Reference Marks found on the FIRM with the control for Riordan Ranch mapping.



Section 4- Hydrology

4.1 Existing Hydrology Model

RBF Consulting did not restudy the hydrology for the CLOMR Application. Instead they used the peak flow rates from the effective FIS HEC-2 model. The hydrology for the hydraulic model is explained in the report, *Hydrologic Analyses for Buchanan Wash Maricopa County, Arizona* November 1987, by AGK Engineers, Inc. The purpose of the AGK study was to evaluate peak discharges for the 10, 50, 100, and 500 year events to be used in the Flood Insurance Study for Buchanan Wash from Skunk Creek to C.A.P. Canal. The report used the U.S. Army Corps of Engineers Flood Hydrograph Package HEC-1 dated February 1, 1985.

A copy of the AGK drainage map is provided in Appendix D. The hydrologic model shows a concentration point at the confluence of Buchanan Wash and Skunk Creek, at the downstream end of sub-basin 8. The HEC-1 model shows a peak flow for the 100-year storm to be 2304 cfs at this point. The next concentration point approximately 1.4 miles upstream, at the outlet of sub-basin 7, within the proposed Riordan Ranch project site, where the peak flow is 1609 cfs. The FIS HEC-2 has the flow changing from 1609 cfs to 2304 cfs between stations 1.483 and 1.383. The additional 695 cfs at the confluence of Skunk Creek and Buchanan Wash that makes difference between the 1609 cfs and the 2304 cfs is generated in the 1.3 square miles of sub-basin 8. Only 110 acres of sub-basin 8's 1.3 square miles drains into Buchanan Wash within the Riordan Ranch development, indicating that the peak flow rate of 2304 cfs does not really occur until farther downstream than Riordan Ranch.

According to the *Final Drainage Report for Riordan Ranch* shows that a peak flow of approximately 140 cfs reaches the intersection of 37th Lane and Pinnacle Vista Road. This runoff is generated north of Riordan Ranch, and will be piped into Buchanan wash near river mile 1.40, where the HEC-2 flow rate changes. The peak flow of 140 cfs was computed using the rational method, and the FIS peak flows were computed using HEC-1. If the time to peak of the 140 cfs being piped into Buchanan Wash coincides with peak flow rate in Buchanan Wash, the peak flow rate in the wash would be approximately 1750 cfs, less than the 2304 cfs used in the HEC-2 model. Therefore, the peak flow rate of 2304 cfs used in the proposed model is conservative.

Section 5- Hydraulics

5.1 Method Description

A proposed conditions HEC-2 model for Buchanan Wash was created using HEC-2 version 4.6.2, dated May 1991 to determine the water surface elevations for existing and proposed improvements from the grading plan. The City of Phoenix requested that HEC-2 be used over HEC-RAS because the effective model was created using HEC-2. The same initial water surface elevations in the FIS were used in this study. The proposed conditions include encroachments to the original flood plain, extending the 4 barrel 8' x 3' culvert on Pinnacle Vista Drive, and a proposed 5 barrel 10' x 5' culvert at 35th Avenue. All HEC-2 models were run using the subcritical flow regime.

5.2 Work Study Maps

A full size work study map of the portion of Buchanan Wash within Riordan Ranch is provided at a scale of 1 inch = 100 feet, and is located at the end of this report. Additionally, a reduced scale map is provided on 11"x17" paper at the end of this section. A copy of the original work study map prepared by AGK Engineers is also provided at the end of this report.

5.3 Parameter Estimation

5.31 Roughness Coefficients

The same roughness coefficients used in the Flood Insurance Study by AGK Engineers, Inc. were used in the proposed conditions model for the portions of the wash and floodplain that will remain undisturbed. These values were verified through field observations. Due to the cobbly bottom and highly vegetated banks AGK chose a roughness coefficient value of 0.055 for both the channel and overbank areas, as directed by the FCDMC on March 17, 1987 in the AGK report.

A retention basin will be constructed in the floodplain near 35th Avenue. The basin will be a combination of desert landscaping and grass. An appropriate value according the Drainage Design Manual for Maricopa County is 0.025. For this reason, a Manning's 'n' value of 0.025 was used for the left overbank on sections 1.09 through 1.19 to model the retention basin landscaping. Additionally, the retention basin's overflow is at an elevation of 1463. Instead of modeling the basins full depth the cross sections were coded with 1463 being the bottom of the retention basin, since any area below an elevation of 1463 in the retention basin will be ineffective flow. For this reason, a Manning's 'n' value of 0.025 is conservative.

5.3.2 Expansion and Contraction Coefficients

Cross section 1.045, downstream of the 35th Avenue crossing, and cross sections 1.067 and 1.09 upstream of the 35th Avenue crossing, cross section 1.595 downstream of the Pinnacle Vista Drive crossing, and cross sections 1.61 and 1.638 upstream of the Pinnacle Vista Drive crossing were modeled using contraction and expansion coefficients of 0.3 and 0.5 respectively.

5.4 Cross Section Description

The cross sections used in the proposed model were based on the effective model from the FIS. The thalweg of the channel was modeled as a cross-section station of 10,000. Cross sections

were then located upstream and downstream of crossings at appropriate locations in order to effectively model the water surface profile at the culverts. Within Riordan Ranch, cross sections were added in locations to appropriately model the effects the roadway fill and retention basin construction have on the floodplain and water surface profiles. In most cases the cross section spacing is between 100 to 200 feet. At certain locations it was appropriate to add more cross sections to model natural contractions or expansions in the bank widths or changes in channel slope, reducing the reach lengths to less than 100 feet in some locations. Plots of each cross section are provided in Appendix E.

5.5 Modeling Considerations

5.5.1 Bridge and Culverts

Two sets of box culverts are modeled in the proposed conditions model. These culverts were modeled using HEC-2's special culvert routine. Table 5.1 lists the location, type and size of the culverts.

Table 5.1 - Description of Culverts Modeled

Station	Location Description	Size	No. of Barrels
1.067	Buchanan Wash at 35th Avenue	10' x 6'	5
1.610	Buchanan Wash at Pinnacle Vista Drive	8' x 3' 8.7' x 3' 8.4' x 3'	2 1 1

The existing culvert at station 1.610 is an existing culvert and was added to the in the existing conditions model. Pictures of the culvert are provided in Appendix E. As the pictures show, the outer two barrels experience deposition of sediment, and several bars have formed with vegetation growing on them. The culvert can be classified as "unfinished, smooth wood form", according to the Table3 3.3 in HEC-2 User's Manual (pg IV-17, see Appendix E for a copy). Also, because of the sand in the bottom of the culvert at various times, a Manning's n value of 0.016 was selected for this culvert. The box is also be classified according to Table 3.9 in the HEC-2 User's Manual as "Box Culvert with Flared Wing Walls and Inlet Top Edge Bevel" Both wing walls are flared between 18 to 33.7 degrees, and the inlet top edge is beveled, so a chart of 9.1 was input on the Special Culvert card. Because of the debris that collects on the inlet an entrance loss coefficient of 0.5 was used.

The top of the roadway above the inlet and outlet has a guard rail, which was modeled as the high cord elevation on the BT records. In addition to the guard rail there is dense vegetation growing on both the right and left overbanks along the roadway. For this reason a weir coefficient of 2.6 was used.

The proposed culvert has been modeled as a "Box Culvert with Flared Wingwalls", where the "Wingwalls [are] flared 30 to 75 degrees." Table 3.9 from the HEC-2 User's Manual uses Chart 8, Scale 1 to model this. An entrance loss coefficient of 0.4 was used because the wingwalls are at 15 to 45 degrees to the barrel, as prescribed by Table 3.4 of the HEC-2 User's Manual (pg IV-18). The weir coefficient is set at 2.6.

5.6 Problems Encountered During the Study

5.6.1 Special Problems and Solutions

The main problem encountered in the study is the existing culvert located on Pinnacle Vista Drive. In the existing and proposed conditions model the culvert is located at cross section 1.610, which is not in the Duplicate Effective Model (DEM). The existing culvert affects the water surface elevation at station 1.638. Station 1.638 in the DEM has a water surface elevation (WSE) of 1480.6. The WSE at station 1.638 in the Corrected Effective Model (CEM) is 1481.2, 0.6 feet higher. The difference appears to result from the additional cross sections and the higher quality of elevation data used in the CEM. Neither the DEM or the CEM model the existing box culvert and roadway at Pinnacle Vista Drive. This was added to the Existing Conditions Model, which shows a WSE of 1481.6, for a total rise in water surface elevation of 1.0 feet under existing conditions. The existing box culvert, which was not built as part of the Riordan Ranch development, affects the water surface elevations upstream of the project. When the proposed conditions are added to the HEC-2 model there is no change in the water surface elevations caused by Riordan Ranch, and the WSE in the proposed conditions is also at an elevation of 1481.6.

5.6.2 Modeling Warning and Error Messages

FEMA's computer program *Check-2* was used to help review all of the models, and the output is provided with the HEC-2 output in Appendix E. The FIS HEC-2 and the DEM contained warnings at sections 0.782, 0.890, 1.638, 1.695, 1.856, and 2.200. All of the warnings were "Conveyance change outside of acceptable range." These same warnings showed up at stations 0.782, 0.890, 1.090, 1.164, 1.227, 1.610, and 2.200 for the 100 year storm (Profile 3) in the proposed conditions model. Other warnings showed up for the other profiles (10-year, 50-year, and 500-year storms). HEC-2 also generated a "caution" note for section 1.207 for profile 3 (100-year storm), saying "Critical Depth assumed", and "Minimum Specified Energy". Cross sections were modeled closely together at this location, according to the guidance provided in *Check-2.* No other errors or warning were encountered.

5.9 Final Results

Table 5.2 shows the normal stream results of the proposed conditions HEC-2 Model. The normal stream results reported in Table 5.2 are peak flow, computed water surface elevation (WSE), critical water surface elevation, average velocity, top width of computed water surface, depth of flow in the channel, and the stations where the water surface intersects the ground on the left and right sides of the channel.

Table 5.2- Normal Stream Results for Proposed Conditions- Buchanan Wash

X-Sec No.	Peak Q (cfs)	WSE	Critical WSE	Avg. Vel. (fps)	Top Width (ft)	Depth of Flow (ft)	WS Station Left	WS Station Right
0.710	2304	1460.4	1456.1	0.64	1065	10.9	9436.7	10501.7
0.782	2304	1460.4	1457.3	0.85	902	5.9	9693.5	10617.8
0.890	2304	1460.5	1460.1	4.85	758	6.5	9403.5	10215.1

Table 5.2- Normal Stream Results for Proposed Conditions- Buchanan Wash

X-Sec No.	Peak Q (cfs)	WSE	Critical WSE	Avg. Vel. (fps)	Top Width (ft)	Depth of Flow (ft)	WS Station Left	WS Station Right
0.985	2304	1463.2	1462.2	4.78	584	5.1	9475.5	10089.4
1.045	2304	1464.6	1463.2	4.15	294	5.8	9662.2	10122.6
1.067	2304	1465.8	Culvert	4.52	79	6.5	9961.4	10039.9
1.090	2304	1466.3	1463.7	1.21	456	7.2	9673.9	10130.2
1.102	2304	1466.3	1463.8	1.53	426	6.8	9770.7	10196.3
1.120	2304	1466.3	1464.0	1.63	330	6.3	9755.3	10085.2
1.139	2304	1466.3	1464.6	2.05	273	5.9	9799.6	10072.2
1.164	2304	1466.3	1465.1	2.93	192	5.7	9851.7	10043.6
1.190	2304	1466.5	1466.0	3.33	165	4.3	9872.8	10037.6
1.207	2304	1467.8	1467.8	9.24	168	5.0	9877.6	10046.0
1.227	2304	1469.3	1468.5	6.21	193	6.4	9860.2	10052.9
1.256	2304	1470.3	1469.5	5.88	217	5.9	9855.0	10071.5
1.288	2304	1471.3	1470.7	6.08	236	6.3	9848.9	10084.7
1.321	2304	1472.3	1471.5	5.86	236	6.7	9880.3	10115.9
1.351	2304	1473.2	1472.0	5.58	202	6.5	9860.8	10062.7
1.383	2304	1474.1	1473.4	6.77	175	7.1	9867.4	10042.4
1.411	2304	1475.1	1473.3	5.70	158	7.0	9907.7	10065.6
1.426	2304	1475.5	1474.5	6.44	153	7.2	9885.9	10039.1
1.462	2304	1476.6	1475.2	6.16	152	6.9	9896.4	10048.9
1.483	1609	1477.3	1475.3	4.23	201	7.5	9893.0	10093.8
1.518	1609	1477.8	1476.5	4.52	210	6.2	9883.8	10094.3
1.549	1609	1478.4	1477.3	4.38	228	4.9	9873.3	10100.9
1.572	1609	1479.0	1478.2	4.65	253	4.6	9891.2	10144.5
1.595	1609	1479.9	1479.0	6.70	217	5.2	9960.8	10010.7
1.610	1609	1481.4	Culvert	2.28	432	6.3	9945.9	10041.0
1.638	1609	1481.6	1480.3	3.56	300	5.9	9970.0	10020.0
1.695	1609	1482.5	1481.9	4.93	282	5.2	9978.0	10016.0
1.761	1609	1484.6	1484.4	6.10	411	5.5	9940.5	10365.1

Table 5.2- Normal Stream Results for Proposed Conditions- Buchanan Wash

X-Sec No.	Peak Q (cfs)	WSE	Critical WSE	Avg. Vel. (fps)	Top Width (ft)	Depth of Flow (ft)	WS Station Left	WS Station Right
1.856	1609	1487.4	1486.0	5.55	147	6.7	9916.8	10064.1
1.951	1609	1489.5	1487.9	4.99	129	6.6	9903.1	10032.5
2.045	1609	1491.9	1491.3	5.13	281	5.3	9861.0	10142.4
2.121	1308	1494.4	1493.7	5.82	136	5.7	9936.1	10072.6
2.200	1308	1496.0	1494.3	2.38	336	5.5	9689.1	10030.1

Table 5.3 lists the culvert results for the proposed culvert at 35th Avenue and the existing culvert at Pinnacle Vista Drive. The results listed are water surface elevation, energy grade line elevation, peak discharge, discharge through structure, discharge over weir, velocity head, friction loss, and contraction and expansion coefficients.

Table 5.3- HEC-2 Results of Culverts on Pinnacle Vista Drive (X-Sec No. 1.067) and 35th Avenue (X-Sec No. 1.610)

X-Sec No.	WSE	EGL Elev.	Peak Q (cfs)	Culvert Q (cfs)	Weir Q (cfs)	Vel. Head (ft)	Friction Loss (Ft)	Cont. Coeff.	Exp. Coeff.
1.067	1465.8	1466.2	2304	2304	0	0.32	1.39	0.3	0.5
1.610	1481.4	1487.2	1609	847	756	0.08	1.01	0.3	0.5

Table 5.4 compares the water surface elevations from each of the different model (DEM, CEM, existing conditions, and proposed conditions).

Table 5.4- Comparison of Water Surface Elevation and Velocity Results from HEC-2

X-Sec No.	Duplicate Effective Model		Corrected Effective Model		Existing Conditions Model		Proposed Conditions Model	
	WSE	Velocity	WSE	Velocity	WSE	Velocity	WSE	Velocity
0.710	1460.4	0.64	1460.4	0.64	1460.4	0.64	1460.4	0.64
0.782	1460.4	0.85	1460.4	0.85	1460.4	0.85	1460.4	0.85
0.890	1460.5	4.85	1460.5	4.85	1460.5	4.85	1460.5	4.85
0.985	1463.2	4.78	1463.2	4.78	1463.2	4.78	1463.2	4.78
1.045	n/a	n/a	n/a	n/a	1464.6	4.16	1464.6	4.15
1.067	n/a	n/a	n/a	n/a	1464.9	5.19	1465.8	4.52
1.090	n/a	n/a	1465.5	4.71	1465.5	4.77	1466.3	1.21

Table 5.4- Comparison of Water Surface Elevation and Velocity Results from HEC-2

X-Sec No.	Duplicate Effective Model		Corrected Effective Model		Existing Conditions Model		Proposed Conditions Model	
	WSE	Velocity	WSE	Velocity	WSE	Velocity	WSE	Velocity
1.102	n/a	n/a	1465.8	4.97	1465.7	5.03	1466.3	1.53
1.120	1466.57	4.92	1466.2	5.63	1466.2	5.66	1466.3	1.63
1.139	n/a	n/a	1466.8	6.12	1466.8	6.13	1466.3	2.05
1.164	n/a	n/a	1467.6	5.38	1467.6	5.38	1466.3	2.93
1.190	n/a	n/a	1468.2	4.74	1468.2	4.74	1466.5	3.33
1.207	1469.1	6.49	1468.6	5.22	1468.6	5.22	1467.8	9.24
1.227	n/a	n/a	1469.0	5.73	1469.0	5.73	1469.3	6.21
1.256	n/a	n/a	1470.0	6.74	1470.0	6.74	1470.3	5.88
1.288	1471.6	5.10	1471.3	5.88	1471.3	5.88	1471.3	6.08
1.321	n/a	n/a	1472.3	5.80	1472.3	5.79	1472.3	5.86
1.351	n/a	n/a	1473.1	5.55	1473.1	5.55	1473.2	5.58
1.383	1474.3	6.71	1474.0	6.96	1474.0	6.96	1474.1	6.77
1.411	n/a	n/a	1475.1	5.67	1475.1	5.67	1475.1	5.70
1.426	n/a	n/a	1475.6	3.49	1475.6	3.49	1475.5	6.44
1.462	n/a	n/a	1475.9	7.99	1475.9	7.99	1476.6	6.16
1.483	1477.3	4.34	1477.1	4.51	1477.1	4.51	1477.3	4.23
1.518	n/a	n/a	1477.7	4.68	1477.7	4.68	1477.8	4.52
1.549	n/a	n/a	1478.4	4.37	1478.4	4.37	1478.4	4.38
1.572	1479.0	3.71	1479.0	4.65	1479.0	4.65	1479.0	4.65
1.595	n/a	n/a	1479.8	7.30	1479.9	6.75	1479.9	6.70
1.610	n/a	n/a	1480.6	4.03	1481.4	2.30	1481.4	2.28
1.638	1480.6	5.87	1481.2	4.25	1481.6	3.30	1481.6	3.56
1.695	1482.6	4.46	1482.5	4.90	1482.5	4.90	1482.5	4.93
1.761	1484.5	6.51	1484.6	6.12	1484.6	6.13	1484.6	6.11
1.856	1487.5	5.39	1487.4	5.54	1487.4	5.54	1487.4	5.56
1.951	1489.5	5.00	1489.5	4.99	1489.5	4.99	1489.5	4.99
2.045	1491.9	5.12	1491.9	5.13	1491.9	5.13	1491.9	5.13
2.121	1494.4	5.83	1494.4	5.82	1494.4	5.82	1494.4	5.82

Table 5.4- Comparison of Water Surface Elevation and Velocity Results from HEC-2

X-Sec No.	Duplicate Effective Model		Corrected Effective Model		Existing Conditions Model		Proposed Conditions Model	
	WSE	Velocity	WSE	Velocity	WSE	Velocity	WSE	Velocity
2.200	1496.0	2.38	1496.0	2.38	1496.0	2.38	1496.0	2.38

Comparing the DEM's water surface elevations to the proposed conditions model leads one to believe that the first effects of the proposed development is at 35th Avenue on the downstream end of the project and at river mile 1.951 upstream of the project, where the difference between the proposed water surface elevations and the DEM water surface elevations finally converge. When comparing the proposed conditions model with the existing conditions model, though, proposed development within the floodplain does not raise the water surface elevations outside of the site boundary. The main difference, a rise in water surface elevation of 1480.6 to 1481.6 at station 1.638, comes from adding the existing culvert on Pinnacle Vista Drive to the HEC-2 model. The improvements associated with Riordan Ranch will not cause the water surface elevations to rise when comparing the proposed conditions model to the existing conditions model. Within the development the largest rise in water surface elevation is 0.9 feet, at section 1.067. This rise is caused by the proposed culvert just downstream of the cross section.

Floodway modeling was also performed using HEC-2. A duplicate effective floodway model, and existing conditions floodway model, and a proposed conditions floodway model are provided in Appendix E. Table 5.5 compares the three models.

Table 5.5- Comparison of Floodway Modeling Results

X-Sec	Dist.	D.E.M.				EXISTING CONDITIONS				PROPOSED CONDITIONS			
		Width ft	FW Elev	FP Elev	Diff. ft	Width ft	FW Elev	FP Elev	Diff. ft	Width ft	FW Elev	FP Elev	Diff. ft
A	0.710	658	1461.4	1460.4	1.0	658	1461.4	1460.4	1.0	658	1461.4	1460.4	1.0
B	0.782	557	1461.4	1460.4	1.0	557	1461.4	1460.4	1.0	557	1461.4	1460.4	1.0
C	0.890	178	1461.4	1460.5	0.9	178	1461.4	1460.5	0.9	178	1461.4	1460.5	0.9
D	0.985	124	1464.2	1463.2	1.0	124	1464.2	1463.2	1.0	124	1464.2	1463.2	1.0
E	1.120	93	1467.4	1466.6	0.8	76	1467.0	1466.2	0.8	330	1466.9	1466.3	0.6
F	1.207	96	1470.0	1469.0	1.0	127	1469.6	1468.6	1.0	168	1467.8	1467.8	0.0
G	1.288	103	1472.5	1471.6	0.9	112	1472.0	1471.0	1.0	236	1471.3	1471.3	0.0
H	1.383	69	1475.1	1474.3	0.8	61	1474.7	1473.9	0.8	175	1471.1	1474.1	0.0
I	1.483	69	1478.2	1477.3	0.9	68	1477.7	1476.8	0.9	201	1477.3	1477.3	0.0
J	1.572	113	1479.9	1479.0	0.9	251	1479.9	1479.0	0.9	253	1479.1	1479.0	0.1
K	1.638	62	1481.4	1480.6	0.8	270	1481.6	1481.6	0.0	270	1481.6	1481.6	0.0
L	1.695	122	1483.6	1482.6	1.0	122	1482.5	1482.5	0.0	122	1482.5	1482.5	0.0
M	1.761	61	1485.2	1484.5	0.7	200	1485.2	1484.6	0.6	179	1485.3	1484.6	0.7
N	1.856	50	1488.5	1487.5	1.0	50	1487.5	1487.4	0.1	50	1487.6	1487.4	0.2
O	1.951	66	1490.5	1489.5	1.0	66	1490.3	1489.5	0.8	66	1490.3	1489.5	0.8
P	2.045	111	1492.7	1491.9	0.8	111	1492.7	1491.9	0.8	111	1492.7	1491.9	0.8
Q	2.121	43	1495.2	1494.4	0.8	43	1495.2	1494.4	0.8	43	1495.2	1494.4	0.8
R	2.200	187	1496.9	1496.0	0.9	187	1470.0	1496.0	1.0	187	1496.9	1496.0	0.9

Section 6- Erosion and Sediment Transport

6.1 Method Description

A combination of methodologies were used to assess the geomorphologic and sediment transport characteristics of Buchanan Wash in the vicinity of the proposed Riordan Ranch development. They include FEMA's criteria for erosion protection, Arizona Department of Water Resource's (ADWR) *State Standard for Watercourse Sediment Balance* (SSA 5-96), the Federal Highway Administration's *Stream Stability at Highway Structures* (HEC No. 20), Arizona Department of Water Resource's *Design Manual for Engineering Analysis of Fluvial Systems,* and the Albuquerque Metropolitan Arroyo Flood Control Authority's *Sediment and Erosion Design Guide* (AMAFCA). The Army Corps of Engineer's "Hydraulic Design Package for Channels" (SAM), was also used to help determine the sediment transport capabilities of the reach of Buchanan Wash that flows through Riordan Ranch. This report summarizes the findings of the geomorphologic and erosion study.

6.1 Summary of Results

FEMA requires that any fill exposed to velocities greater than 5 feet per second be protected from erosion. The only fill within the floodplain at this time is on the east side of the wash, or in the left overbank. Table 6.1 summarizes the velocities of the left overbank at cross sections within the project site.

Table 6.1- Velocities in the Left Overbank within the Riordan Ranch Development

X-Section	Velocities Computed by HEC-2 (fps)			
	10-Year Storm	50-Year Storm	100-Year Storm	500-Year Storm
1.067	0	0	0	1.29
1.090	2.27	2.03	1.95	1.84
1.102	2.88	2.58	2.45	2.27
1.120	3.09	2.84	2.73	2.55
1.139	4.08	3.77	3.58	3.27
1.164	5.73	5.87	5.54	4.96
1.190	6.70	7.24	6.98	6.28
1.207	3.03	4.05	4.47	5.33
1.227	2.52	3.07	3.32	3.89
1.256	3.09	3.46	3.65	4.07
1.288	2.93	3.36	3.55	3.99
1.321	2.84	3.33	3.54	3.99

Table 6.1- Velocities in the Left Overbank within the Riordan Ranch Development

X-Section	Velocities Computed by HEC-2 (fps)			
	10-Year Storm	50-Year Storm	100-Year Storm	500-Year Storm
1.351	2.12	2.59	2.83	3.40
1.383	2.59	3.23	3.48	4.08
1.411	2.09	2.12	2.34	2.96
1.426	3.10	3.65	3.90	4.50
1.462	2.35	2.84	3.10	3.69
1.483	1.79	1.83	1.83	1.92
1.518	2.79	2.76	2.71	2.59
1.549	2.58	2.79	2.85	2.94
1.572	2.53	2.76	2.84	2.95
1.595	0	1.92	2.12	2.54

As Table 6.1 shows, there are three cross sections where the velocity in the left overbank is greater than 5 feet per second during a 100-year storm event: 1.164, 1.190, and 1.207. The increased flows in the left overbank at these cross sections is most likely caused by the water "dropping" into the retention basin, which is located in the floodplain. Loose rip-rap will be provided in these areas, as shown on the improvement plans. The only other places that have velocities greater than 5 feet per second are in areas of the floodplain that are being kept natural (i.e. within the floodplain or 404 jurisdictional waters).

The drainage area for Buchanan Wash at the point where it crosses the 35th Avenue alignment is less than 30 square miles, which allows a Level I lateral migration analysis to be performed according to ADWR's SSA 5-96. ADWR's Level I determined created an erosion setback line 42 feet from the floodway for stream reaches that are relatively straight, and 105 feet from the floodway for stream reaches with obvious curvature. The setback line shows that portions of lots 30, 31, 32, and 33, along with the cul-de-sac is the only portion of the development with structures located on it to be within the erosion setback lines.

A level 2 analysis was also performed according to SSA-5-96 to determine the allowable velocity. Soil samples in the overbank were taken at various locations, and were used to determine the erosion potential Table 6.2 lists the allowable velocities at these locations, and compares it to the HEC-2 velocities.

Table 6.2- Allowable Velocities According to ADWR's SSA 5-96 Level II Analysis

X-Sec.	Side of Channel	Soil Type	Depth (ft)	Allowable Vel. (fps)	HEC-2 10 YR Velocities (fps)		
					Left	Channel	Right
1.090	Left	Sandy Lean Clay	0-2	1.3	2.3	1.7	0.8
		Clayey Gravel w/ Sand	2-7.5	3.3			
1.090	Right	Silty Clayey Sand w/ Gravel	0-7	1.3	2.3	1.7	0.8
		Silty Gravel w/ Sand	7-15.5	1.3			
1.190	Left	Sandy Silt with Gravel	0-1.5	1.9	6.7	3.1	0.0
		Silty Gravel with Sand	1.5-15.5	1.9			
1.288	Right	Sandy Silt with Gravel	0-1.5	1.8	2.93	5.5	2.5
		Silty Gravel with Sand	1.5-4	4.8			
1.351	Left	Clayey Sand	0-6	2.8	2.1	4.7	1.8
		Clayey Gravel w/ Sand	6-13	4.5			
1.411	Right	Sandy Lean Clay	0-2	2.8	2.1	4.6	2.1
		Clayey Gravel w/ Sand	2-15.5	4.6			
1.518	Left	Lean Clay with Sand	0-2.5	3.0	2.8	4.8	2.0
		Sandy Lean Clay	2.5-6	4.9			
1.572	Right	Sandy Lean Clay	0-2	2.8	2.5	4.5	3.1
		Clayey Gravel with Sand	2-7.5	5.6			

Table 6.2 shows that channel velocities during the 10-year storm are high enough to produce erosion, possibly causing lateral migration of the channel. The qualitative geomorphic analysis and Level 1 analysis indicate that the only lots within the lateral migration setback limits are those listed above. The velocities in the left overbank are only exceeded near the proposed retention basin, where loose rip-rap will be placed.

Scour depth calculations were also performed to determine the scour depth. SSA 5-96 Level II calculations indicate that the armoring of the channel will occur before depth reaches 1 foot below the flow line of the channel for the entire length of the wash within Riordan Ranch. The rip–rap will be extended to the depth shown on the improvement plans.

Loose rip rap is being placed at the locations mentioned above, as shown on the improvement plans.

Section 7- Draft FIS Reprt Data

7.1 Summary of Discharges

The hydrologic analysis remains the same as what has been reported in the effective FIS. Only hydraulics are discussed in this report.

7.2 Floodway Data

Table 7.1 contains the proposed floodway data table for Buchanan Wash.

Table 7.1- Floodway Data for Buchanan Wash

Flooding Source		Floodway			Base Flood Water Surface Elevation		
FIS Cross Section*	Distance mi.	Width ft.	Section Area sq. ft.	Mean Velocity fps	With Floodway	Without Floodway	Difference
A	0.710	658	4041	0.6	1461.4	1460.4	1.0
B	0.782	557	2637	0.9	1461.4	1460.4	1.0
C	0.890	178	518	4.4	1461.4	1460.5	0.9
D	0.985	124	507	4.5	1464.2	1463.2	1.0
	1.045	142	603	3.8	1465.5	1464.6	0.9
	1.067	79	569	4.1	1466.5	1465.8	0.7
	1.090	353	1425	1.6	1466.9	1466.2	0.7
	1.102	345	1358	1.7	1466.9	1466.2	0.7
E	1.120	287	1100	2.1	1466.9	1466.3	0.6
	1.139	223	780	3.0	1466.9	1466.3	0.6
	1.164	156	529	4.4	1466.9	1466.3	0.6
	1.190	150	489	4.7	1467.1	1466.5	0.6
F	1.207	158	334	6.9	1467.8	1467.8	0.0
	1.227	178	507	4.5	1469.4	1469.3	0.1
	1.256	204	523	4.4	1470.3	1470.3	0.0
G	1.288	211	519	4.4	1471.3	1471.3	0.0
	1.321	222	554	4.2	1472.3	1472.3	0.0
	1.351	180	501	4.6	1473.2	1473.2	0.0

Table 7.1- Floodway Data for Buchanan Wash

Flooding Source		Floodway			Base Flood Water Surface Elevation		
FIS Cross Section*	Distance mi.	Width ft.	Section Area sq. ft.	Mean Velocity fps	With Floodway	Without Floodway	Difference
H	1.383	168	436	5.3	1474.1	1474.1	0.0
	1.411	150	465	5.0	1475.1	1475.1	0.0
	1.426	145	466	4.9	1475.5	1475.5	0.0
	1.462	152	465	5.0	1476.6	1476.6	0.0
I	1.483	156	492	3.3	1477.3	1477.3	0.0
	1.518	141	406	4.0	1477.8	1477.8	0.0
	1.549	152	437	3.7	1478.5	1478.4	0.1
J	1.572	183	435	3.7	1479.1	1479.0	0.1
	1.595	206	328	4.9	1480.0	1479.9	0.1
	1.610	402	921	1.7	1481.4	1481.4	0.0
K	1.638	271	659	2.4	1481.6	1481.6	0.0
L	1.695	122	284	5.7	1482.5	1482.5	0.0
M	1.761	179	430	3.7	1485.3	1484.6	0.7
N	1.856	50	259	6.2	1487.6	1487.4	0.2
O	1.951	66	345	4.7	1490.3	1489.5	0.8
P	2.045	111	351	4.6	1492.7	1491.9	0.8
Q	2.121	43	205	6.4	1495.2	1494.4	0.8
R	2.200	187	587	2.2	1496.9	1496.0	0.9

* Only the cross sections listed in the FIS effective model are given a alphabetical designation.

7.3 Annotated Flood Insurance Rate Maps and Flood Profiles

See the following insert for the annotated Flood Insurance Rate Map and profiles.

A B C D E F G

ELEVATION REFERENCE MARKS

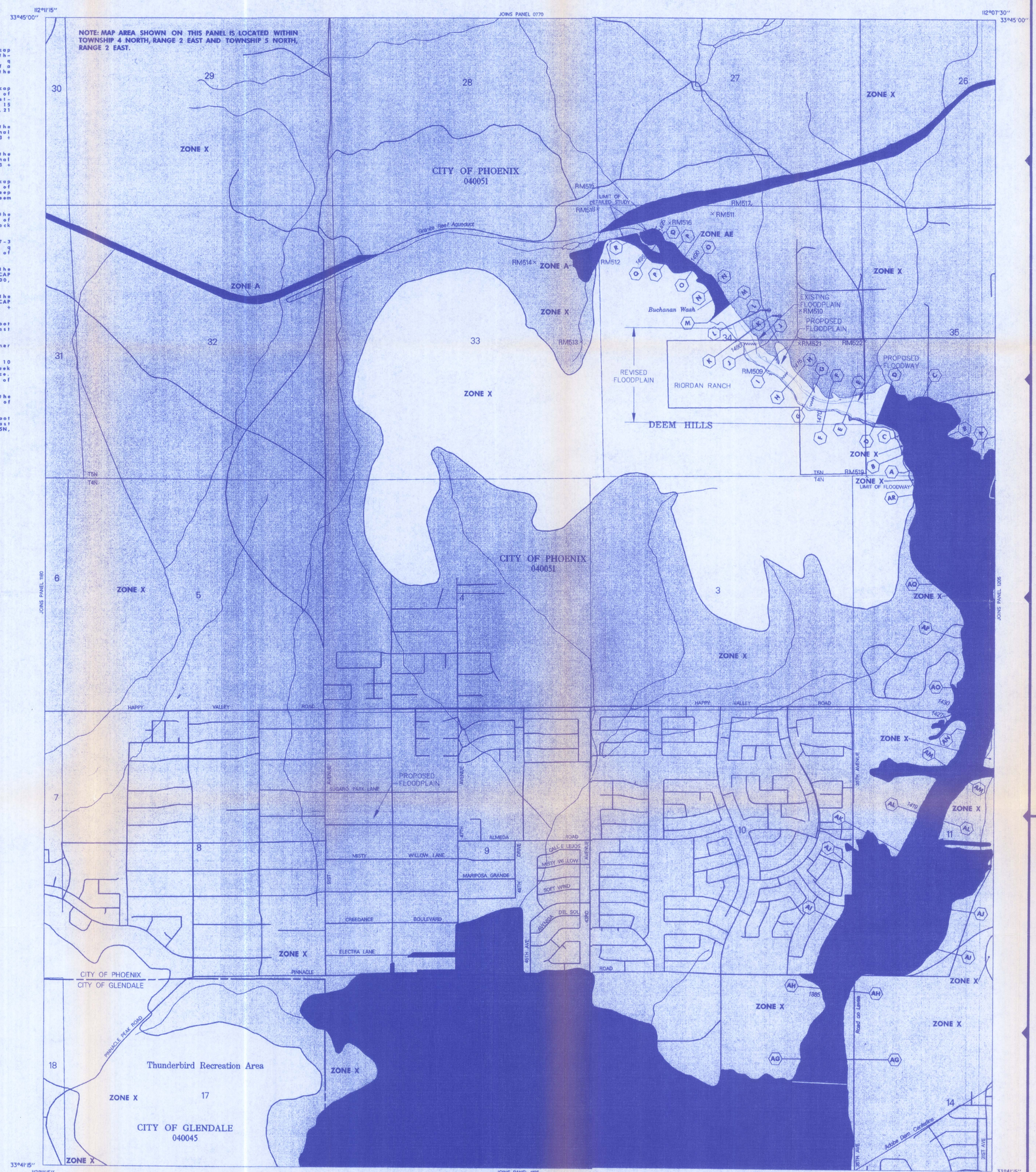
REFERENCE MARK	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
RM509	1482.46	Set +-inch rebar with aluminum cap stamped 515, 1000 feet q south-southwest point #714, 75 feet q south of wash at the foot of a rocky hill, 0.10 foot above the surface.
RM510	1482.77	Set +-inch rebar with aluminum cap stamped 516, 60 feet q south of fence corner 65 feet q east-southeast of power pole #27500, 15 feet q east of gravel road, 0.21 above the surface.
RM511	1500.39	Found U.S. Department of the Interior brass cap, along CAP Canal stamped Point #44, Station 373 + 41.83, 125 feet right.
RM512	1514.09	Found U.S. Department of the Interior brass cap, along CAP Canal stamped point #37, Station 373 + 41.84, 150 feet right.
RM513	1524.81	Set +-inch rebar with aluminum cap stamped 519, 2000 feet q south of Canal 75 feet q west end of a jeep trail in a draw north side of Deem Hills.
RM514	1523.02	Found U.S. Department of the Interior brass cap point of intersection 175 feet right back 150 feet ahead reset.
RM515	1503.88	Found ADOT benchmark stamped 517-3 in concrete cylinder 300 feet q north of northeast corner of section 33, T5N, R2E.
RM516	1502.16	Found U.S. Department of the Interior brass cap, along CAP Canal, Point #43, Station 386 + 00, 125 feet right.
RM517	1499.81	Found U.S. Department of the Interior brass cap, along CAP Canal, Point #45, Station 402 + 67.37, 125 feet right.
RM518	1502.11	Found +-inch iron pipe 0.25 foot above surface at the northeast corner of section 33, T5N, R2E.
RM519	1555.10	Found stone at the southeast corner of section 34, T5N, R2E.
RM520	1457.81	Found 1/2 -inch rebar South of 10 +- West of the toe Skunk Creek Levee 0.10 above the surface. Assumed to be North 1/4 corner of Section 2 T5N R2E.
RM521	1477.93	Found -inch iron pipe flush at the center east 1/16th corner of section 34, T5N, R2E.
RM522	1472.02	Found 1-inch iron pipe 0.08 foot below the surface at the east quarter corner of section 34, T5N, R2E.

LEGEND

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and /or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations and therefore may not exactly reflect the flood elevation data presented in the FIS. BFEs shown on the FIRM are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and /or floodplain management.

ERM elevations listed on this map were obtained and/or developed to establish vertical control for determination of flood elevations and floodplain boundaries portrayed on this map. Users should be aware that these ERM elevations may have changed since the publication of this map. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

Coastal BFE's shown on this map may apply only landward of 0.0' NGVD. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and /or floodplain management purposes when they are higher than the elevations shown on this FIRM.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction ; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

RM7 × — Elevation Reference Mark

• M2 — River Mile

97°07'30", 32°22'30" — Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for more detailed data on BFE's, and for any information on floodway delineations, prior to use of this map for property purchase or construction purposes.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, A1-A30, AH, AO, A99, V, VE and V1-V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 1/20 inch.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
APRIL 15, 1988

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:
SEPTEMBER 29, 1989, SEPTEMBER 4, 1991

Map revised July 19, 2001 to update corporate limits, to change base flood elevations, to add base flood elevations, to add Special Flood Hazard Areas, to change Special Flood Hazard Areas, to change zone designations, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

APPROXIMATE SCALE IN FEET
1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1185 OF 4350
(SEE MAP INDEX FOR PANELS NOT PRINTED)

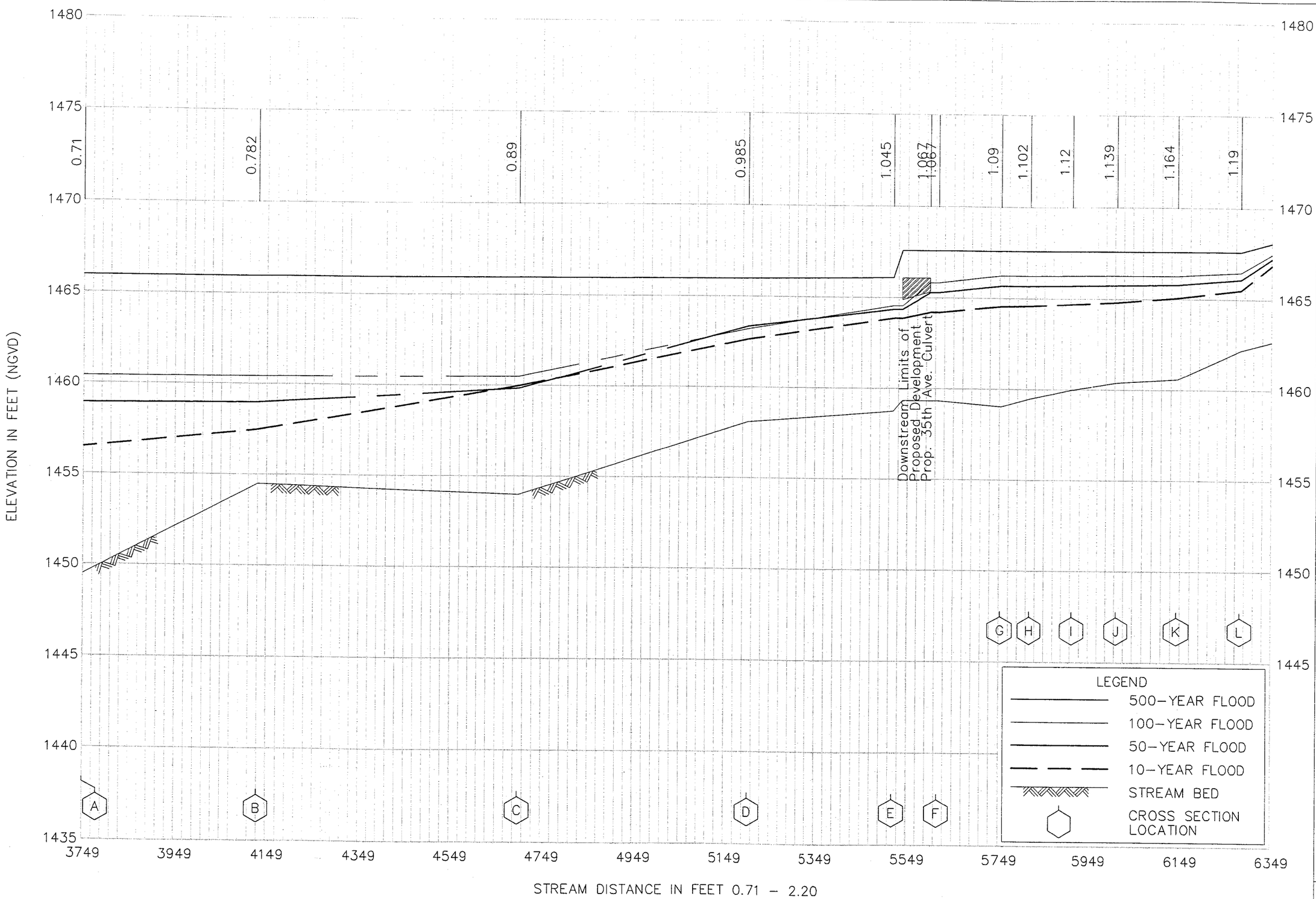
CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
GLENDALE, CITY OF	040045	1185	G
PHOENIX, CITY OF	040051	1185	G

PROPOSED MAP REVISION OCTOBER 2001

MAP NUMBER 04013C1185 G

MAP REVISED: JULY 19, 2001

Federal Emergency Management Agency

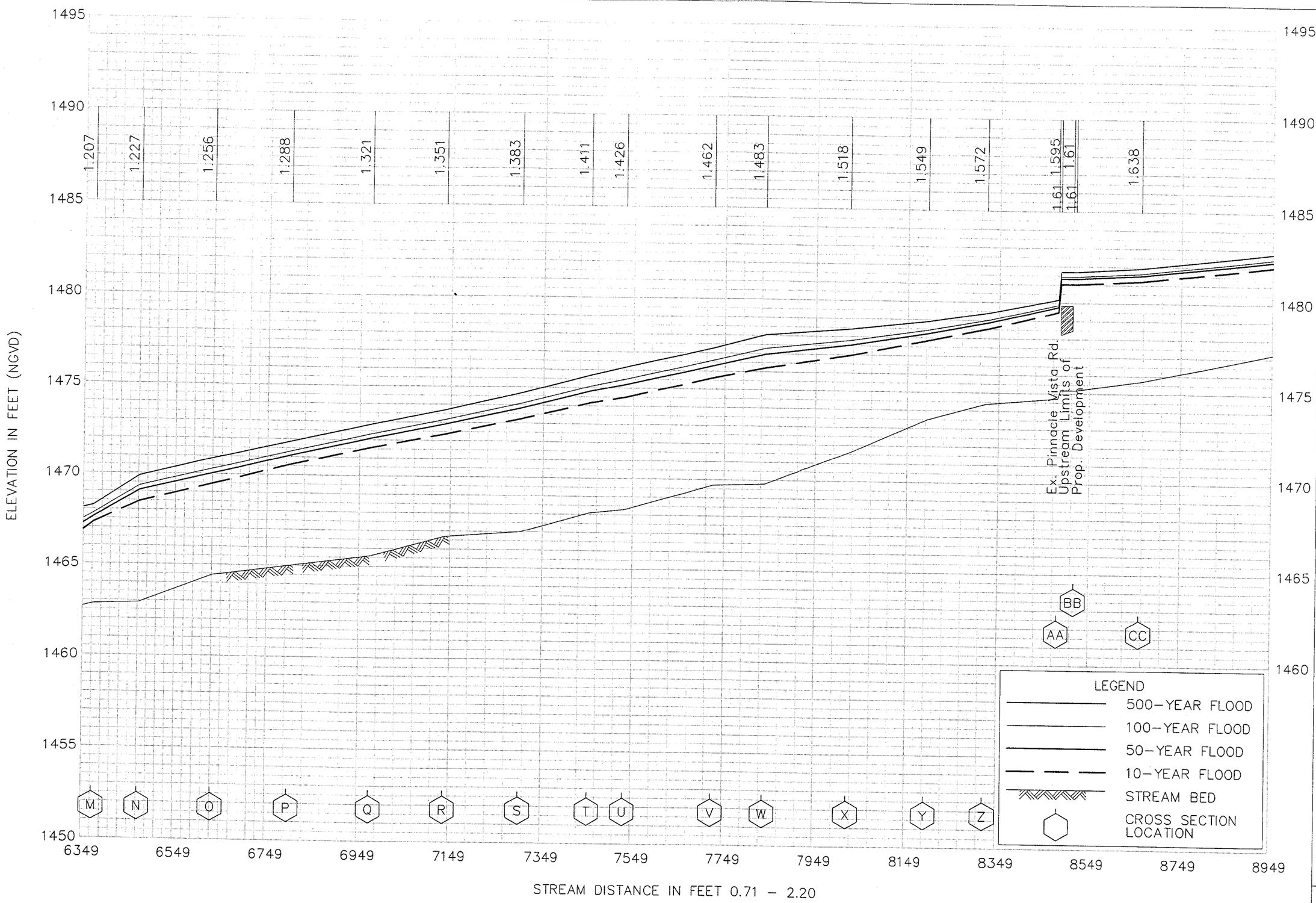


FLOOD PROFILES

BUCHANAN WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF PHOENIX, AZ
MARICOPA

01P

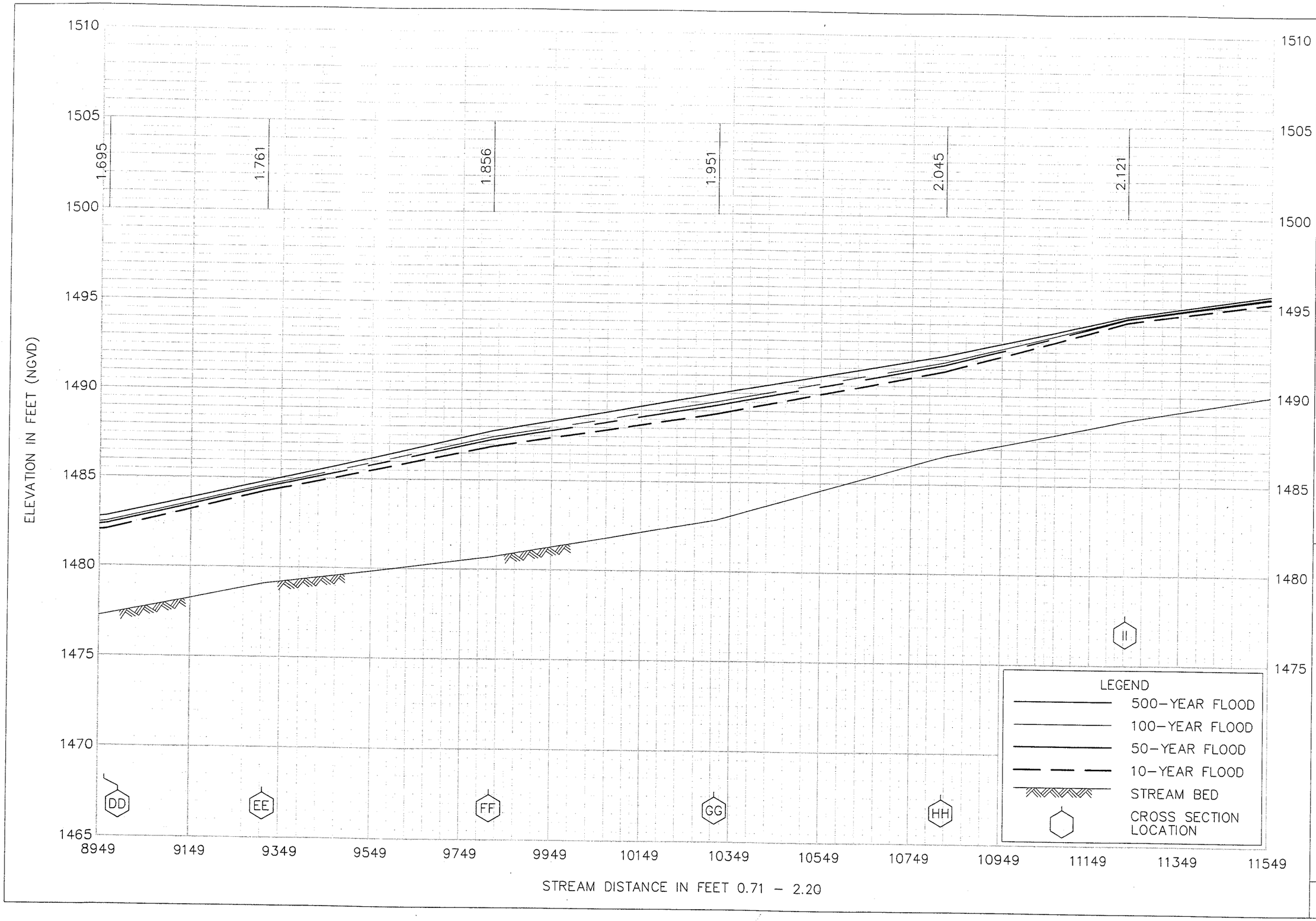


FLOOD PROFILES

BUCHANAN WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF PHOENIX, AZ
MARICOPA

02P

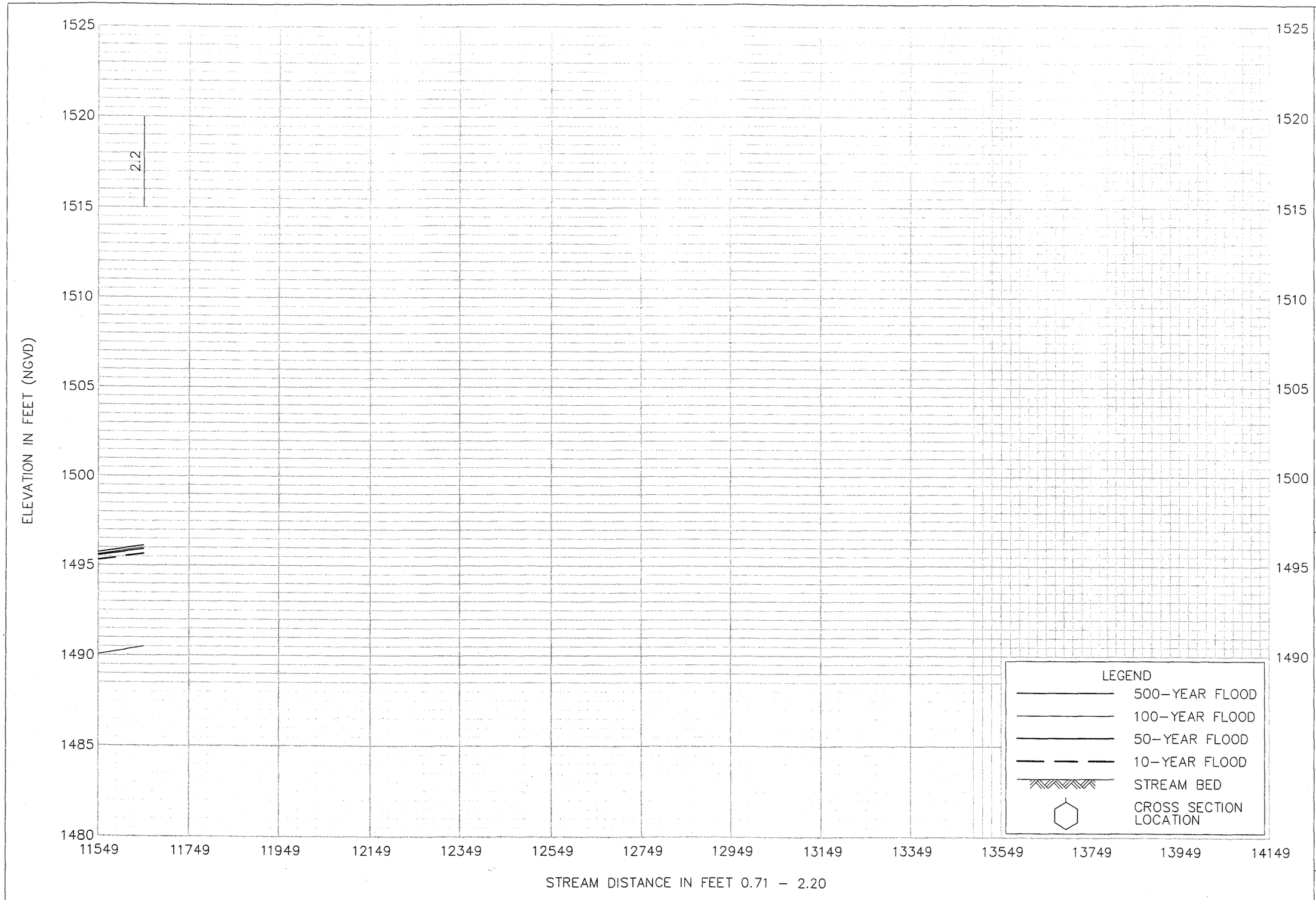


FLOOD PROFILES

BUCHANAN WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF PHOENIX, AZ
MARICOPA

03P



FLOOD PROFILES

BUCHANAN WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF PHOENIX, AZ
MARICOPA

04P

Appendix A
References

A.1- Data Collection Summary

The following is a list of other studies that pertain to this study:

"Arizona Hillcrest Buchanan Wash Study" August 31, 1999, RBF/American Engineering Company, Phoenix, Arizona

"Design Concept Report-Skunk Creek Channel Improvements Alternatives Analysis for Freeboard" September 1998, Simons, Li & Associates, Inc., Tempe, Arizona

"Flood Insurance Study for Buchanan Wash from Skunk Creek to C.A.P. Canal, Maricopa County Arizona", Contract FCD 86-26, November 1987, ACK Engineers, Phoenix, Arizona

"Final Drainage Report for Riordan Ranch Parcels A & C", April 11, 2001, RBF Consulting, Phoenix, Arizona

"Hydrologic Analyses for Buchanan Wash, Maricopa County, Arizona" November 1987, ACK Engineers, Inc., Phoenix, Arizona

"Preliminary Drainage Report for Riordan Ranch" November 27, 2000, RBF Consulting, Phoenix, Arizona

A.2- Referenced Documents

"Hydrologic Analyses for Buchanan Wash, Maricopa County, Arizona" November 1987, ACK Engineers, Inc., Phoenix, Arizona

"Final Drainage Report for Riordan Ranch Parcels A & C", April 11, 2001, RBF Consulting, Phoenix, Arizona

"HEC-2 Water Surface Profiles User's Manual" September 1990, U.S. Army Corps of Engineers Hydrologic Engineering Center, Davis, California

"State Standard for Watercourse Sediment Balance" SSA-5-96, September 1996, Arizona Department of Water Resources Flood Warning and Dam Safety Section, Phoenix, Arizona

"Sediment and Erosion Design Guide", November 1994, Albuquerque Metropolitan Arroyo Flood Control Authority, Albuquerque, New Mexico

"Stream Stability at Highway Structures, Second Edition", Hydraulic Engineering Circular No. 20, November 1995, Federal Highway Administration, Washington D.C.

"Design Manual for Engineering Analysis of Fluvial Systems", March 1985, Arizona Department of Water Resources, Phoenix, Arizona

Appendix B
General Documentation and Correspondence

RBF CONSULTING

November 26, 2001 JN 45-100428

Hasan Mustak
Floodplain Development
City of Phoenix- Fifth Floor
200 West Jefferson St.
Phoenix, Arizona

Subject: CLOMR Application for Riordan Ranch- Review Comments

Mr. Mustak:

I am returning three revised CLOMR applications and TDNs for Riordan Ranch. The following paragraphs explain the changes we made according to your review comments for the Riordan Ranch CLOMR Application.

You had several comments about us not including the floodway runs. We went back, ran the floodway runs for the existing and proposed conditions, and have included the report. Section 5, table 5.5 compares the results of the floodway run from the FIS, to the runs for existing proposed conditions. Section 7 contains the floodway table, and the proposed floodway is contained on the work map and revised FIRM. Printouts are included in Appendix E, and the electronic files are contained on the disks.

We have also created a record drawing of the existing box culverts on Pinnacle Vista Drive, as you requested. It has been stamped and signed by a registered professional engineer.

The missing hydrologic information from the original study has been added to Appendix D. Appendix A now contains the references, and Appendix B contains copies of correspondence. A better reference for the HEC-2 manual has been included, along with a copy of Table 3.3 in appendix E.

You had requested that we add tabs for each section, which we have done. We also printed the first page of each section of Appendix E on blue paper to make finding the section easier. The HEC-2 output has been checked to make sure it is in order. We have only provided the portion of the output that lists the input and summary tables. That is why it appears that the notebook is missing some pages. The first page of each HEC-2 run lists which pages we have included. We have included the complete input and output on the computer disk.

The original submittal was missing the 11" x 17" plot of the work study map. We have included it in this submittal.

As discussed in the meeting we had, we will supply fill certification once the project has been built, but since the project is not complete we can not supply a certification of fill.

The only reason we supplied the data for the 10, 50, 100, and 500 year events is because it was contained in the FIS.

You had also asked if the cross section I.D. of 1.638 listed in section 5.6.1, pg 5-3, was the correct i.d. We double checked it, and it is listed correctly, and is consistent with Table 5.4. The existing box culvert causes the water surface elevation at this cross section to be higher than the FIS shows.

Section 5.3.1, page 5-1, which explains how we selected the Manning's n values has been clarified.

The package accompanying this letter contains 3 CLOMR Applications and TDNs, each of which contains the report in a 3 ring binder, a computer disk, folded grading plans for Riordan Ranch, a full size exhibit of the floodplain work study maps, and a full size revised FIRM.

If there is anything I forgot or missed please give me a call at (602)467-2242. I would also appreciate it if we could get a copy of the singed FEMA form when it is complete and approved by the city.

Sincerely,

Roy B. McDaniel

Roy B. McDaniel, P.E.

Appendix C: Survey Field Notes

The field notes contained in Appendix C were taken during the months of May 1999 and January 2000, and are true and accurate to the best of my knowledge and belief.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
29891
BRENT J.
SMITH
Date Signed 06/28/01
ARIZONA, U.S.A.

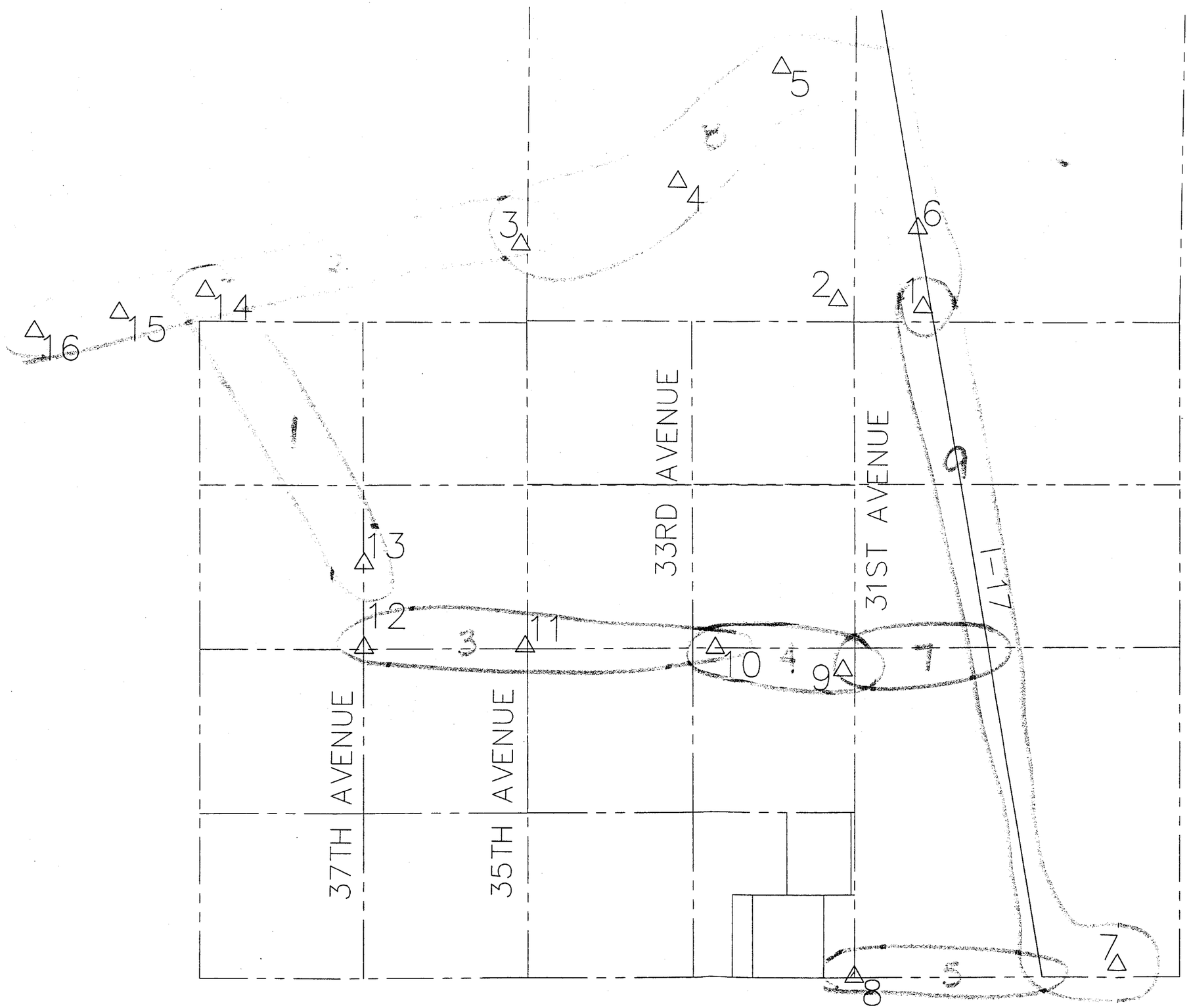
Brent J. Smith, R.L.S.

C.1 - Survey Field Notes for Aerial Mapping Control

Comparison of Riordan Ranch Mapping Control to Other Agencies' Control

FIRM ERM	**Monument Description**	**Entity Providing Control**	**Control**	**RBF Consulting**
	I-17 & Dynamite RR Spike	City of Phoenix	1506.42	1506.70
	USC & GS M343	NGS & City of Phoenix	1510.27	1510.27
	Skunk	NGS & City of Phoenix	1468.80	1468.80
	31st & Pinnacle Vista monument	City of Phoenix	1479.06	1479.40
522	35th & Pinnacle Vista monument	Flood Control District City of Phoenix	1472.02 1471.55	1471.87
521	37th & Pinnacle Vista monument	Flood Control District	1477.93	1477.27 bent rebar
510	37th & McArthur monument (bent)	Flood Control District	1482.77	1482.76
517	USDOI BC Sta 402+67.34	Flood Control District	1499.817	1499.82 1499.88 2nd check
511	USDOI BC Sta 394+56.33	Flood Control District	1500.40	1499.40
516	USDOI BC Sta 386+00	Flood Control District	1502.17	1501.15
	Box in cattleguard headwall 29th & Pinnacle Peak	City of Phoenix	1416.53	1416.67
519	Stone at SE Corner of Sec 34, T5N R2E	Flood Control District	1555.108	1555.11
	MCHD BC flush	City of Phoenix	1409.85	1409.91

The following sheets contain copies of the field books used to set control.



DYNAMITE

OBERLIN

MAC ARTHUR

PINNACLE VISTA

JOMAX

LEVEL LOOP

RM 516 CRNR OF 37TH & MCARTHUR

TO

US D.O.I. BM BRASS CAP (RM 517)
STA. 402+67.34

MAY 29 /99

K. CHIASSON
G. WEISS

BM	BS	HI	FS	ELEV
RM 516				1482.76
	6.03	1488.79		
TP			4.23	1484.56
	7.09	1491.65		
TP			3.99	1487.66
	8.52	1496.18		
TP			4.28	1491.90
	8.24	1500.14		
TP			3.40	1496.74
	5.81	1502.55		
* TP			4.10	1498.45
	7.15	1505.60		
TP			4.35	1501.25
	6.21	1507.46		
TP			11.56	1495.90
	7.33	1503.28 3		~~1499.88~~
FM			3.35	~~1499.88~~
	3.39	1503.27		
TP			7.37	1495.90
	11.51	1507.41		
TP			6.15	1501.26
	4.69	1505.95		
* TP			7.42	1498.53
	3.96	1502.49		

1" STEEL CAP ON S.W. CORNER OF 37TH AVE & McARTHUR - RM 516 (BENT OVER)

* U.S.D.O.T. BM BRASS CAP STA. 407+07.34 RT ROW 125 FT RT

BM	BS	HI	FS	ELEV.	
TP			5.66	1496.83	
	3.03	1499.86			
TP			7.85	1492.01	
	2.99	1495.00			
TP			7.28	1487.72	
	3.79	1491.44			
TP			6.87	14 ~~1~~84.57	
	4.43	1489.00			
RM 516			6.23	1482.77	1482.76
				ERROR = 0.01	
BRASS CAP 425+00		1500.42			
	5.23	1505.65			
PANEL PT.			5.33	1500.32	
BRASS CAP 438+11.39				1505.29	
	5.51	1510.80			
PANEL PT.			4.82	1505.98	

PT #	BS	HI	FS	ELEV	ADJ. ELEV

(30)

2

LEVEL LOOP
@
NORTHWEST END
NEAR S. SIDE OF
CANAL

(RM 117, 116, 111)

19-5-99

D STORWICK
G. BIRDS

Pt#	BS	HI	FS	Elev	Adj. Elev
425+00	5.77	1506.19		1500.42	
			(IFS) 5.44		
423+00				1500.75	
			4.04		
1	8.89	1511.04		1502.15	
			6.86		
2	4.96	1509.14		1504.18	
			6.04		
3	4.65	1507.75		1503.10	
			5.24		
4	4.67	1507.18		1502.51	
			7.93		
5	2.51	1501.76		1499.25	
			1.94		
402+67.34	4.39	1504.21		1499.82	1499.82
			5.22		
6	5.19	1504.18		1498.99	
			5.14		
7	5.78	1504.82		1499.04	
			5.43		
394+56.33	5.34	1504.73		1499.39	1499.40
			4.61		
8	4.33	1504.45		1500.12	
			4.67		
9	1			1499.78	

- U.S. D.O.I. B.M. BRASS CAP
  STA. 425+00
- TP rock
- TP rock
- TP rock
- TP rock
- TP rock
- U.S. D.O.I. B.M. BRASS CAP
  STA. 402+67.34 (RM 517)
- TP ROCK
- TP ROCK
- U.S. D.O.I. B.M. BRASS CAP
  STA. 394+56.33 (RM 511?)
- TP ROCK
- TP ROCK

PT #	BS	HT	FS	ELEV	ADJ. ELEV	
9	7.06	1506.84		1499.78		- TP Rock
			5.71			
386+00	5.56	1506.69		1501.13	1501.15	- U.S. D.O.I. B.M. BRASS CAP STA 386+00 (RM 516)
			7.09			
10	5.10	1504.70		1499.60		- TP rock
			4.45			
11	4.47	1504.72		1500.25		- TP rock
			5.34			
~~394+56.33~~	4.85	1504.23		1499.38	~~1499.40~~	- see previous
			4.61			
12	5.77	1505.39		1499.62		- TP rock
			5.31			
13	4.74	1504.82		1500.08		- TP rock
			5.03			
402+67.34	2.45	1502.24		1499.79	~~1499.82~~	- see previous
			6.00			
14	10.84	1507.08		1496.24		- TP rock
			4.12			
15	4.77	1507.73		1502.96		- TP rock
			5.32			
16	5.71	1508.12		1502.41		- TP rock
			4.62			
17	4.90	1508.40		1503.50		- TP rock
			3.16			

PT#	BS	HI	FS	ELEV	ADJ. ELEV	
18	3.29	1508.53		1505.24		- TP rock
			6.95			
19	4.41	1505.99		1501.58		- TP rock
			5.61			
425+00				1500.38		- see previous (start)
				1500.42		
			Δ =	-0.04		

3

LEVEL LOOP @ N. 33 AVE
AND PINNACLE VISTA DRIVE
+ HEADING WEST DOWN PINNACLE
VISTA DRIVE TO N. 37 AVE

21/5/99

D. STORWICK
G. BIRDS

POINT #	B.S.	HI	F.S.	ELEV.	ADJ. ELEV
176	2.95	1481.82		1478.87	
			4.19		
1	8.00	1485.63		1477.63	
			10.21		
2	1.52	1476.94		1475.42	
			5.69		
3	8.97	1480.22		1471.25	
			7.18		
PK NAIL	8.75	1481.79		1473.04	1473.03
			3.71		
4	4.42	1482.50		1478.08	
			5.11		
5	5.33	1482.72		1477.39	
			3.42		
6	5.22	1484.52		1479.30	
			4.37		
7	4.05	1484.20		1480.15	
			5.24		
CAP	5.61	1484.57		1478.96	1478.94
			4.39	~~1486~~	
8	3.99	1484.17		1480.18	
			5.66		
9	3.37	1481.88		1478.51	
			4.57		

1" PIPE @ INT OF N 33 AVE AND PINNACLE VISTA

TOP OF ROCK

" " "

" " "

PK NAIL @ INT. OF 35 AVE AND PINNACLE VISTA, LOCATED ON AERIAL PHOTO TARGET

TOP OF ROCK

" " "

" " "

" " "

1/2" REBAR, YELLOW CAP MARKED CRAFT, BLSIGING NW CORNER OF PINNACLE VISTA AND N 37 AVE.

TOP OF ROCK

TOP OF ROCK

POINT #	B.S.	HI	F.S.	ELEV	ADJ ELEV
10	5.03	1482.34		1477.3	
			4.23		
11	4.15	1482.26		1478.11	
			9.21		
PK NAIL	5.85 ~~4.60~~	1478.30		1473.05	1473.03
			7.01		
PIPE 151	7.57	1479.46		1471.89	1471.87
			3.87		
12	2.72	1478.31		1475.59	
			7.05		
13	5.85	1477.11		1471.26	
			0.91		
14	9.75	1485.95		1476.20	
			6.53		
15	2.47	1481.89		1479.42	
			2.98		
176				1478.91	1478.87
				1478.87	

ELEV. DIFFERENCE = 4/100

- TOP OF ROCK
- TOP OF ROCK
- INT. OF 35TH AVE AND PINNACLE VISTA ON PHOTO MAST
- 1" PIPE, APPROX 0.75' BELOW OF SURFACE SOUTH SIDE OF INT. @ 35TH AND PINNACLE VISTA
- TOP OF ROCK
- " " "
- " " "
- " " "
- INT. OF 33rd AVE AND PINNACLE VISTA
  - 1" PIPE

CONT'D

MAY 25/99

PT. #	BS	HI	FS	EL.	
CAP RLS 16116				1478.94	N.W CORN PINNACLE VISTA & 37 AVE
	5.33	1484.27			
TP			3.12	1481.15	ROCK
	5.11	1486.36			
RM # 51			3.50	~~1482~~ 7b	*
	3.50	1486.26			
TP			5.11	1481.15	ROCK
	3.09	1484.24			
CAP RLS 16116			5.29	1478.95	

* 1" STEEL CAP ON S.W. CORNER OF 37 AVE & MCARTHUR - RM 51 (BENT OVER)

TGW & KC

4

LEVEL LOOP

PINNACLE VISTA
DRIVE

18 5 - 97
CLEAR 95°

D. STORWICK
G. BIRDS

TP #	ELEV.	+ BS	- FS	HI	ADJ. ELEV.	
10	1482.75					- TP FROM PREVIOUS SURVEY. LOCATED @ EDGE OF PAVEMENT, S.W. CORNER OF PINNACLE VISTA DR. + BLACK CANYON FWY FRONTAGE RD.
		5.36	5.86			
				1488.11		
					1482.75	
50	1482.25					- PAINT MARK N. SIDE P.P. VISTA DR.
		3.11				
			5.94	1485.36		
51	1479.42					- TP PAINT MK as above
		4.84				
			4.90	1484.26		
52	1479.36					- TP PAINT MK as above
		5.33				
			5.29	1484.69		
(#150) PIPE 1	1479.40					- PIPE IN HAND HOLE (± 0.50 below surface) @ INTERSECTION OF P.P. VISTA DR. + 31st AVE.
		6.40				
			4.59	1485.80		
53	1481.21					- TP PAINT MK as above
		4.49 ~~4.59~~				
			4.80	1485.70		
54	1480.90					- TP PAINT MK as above

TP	ELEV	BS	FS	HI	ADJ. ELEV	
54	1480.90					- TP PAINT MARK on N SIDE P. VISTA DR.
		3.71				
			5.62	1484.61		
55	1478.99					- TP as above
		4.31				
			3.39	1483.30		
56	1479.91					- TP as above
		5.35				
			6.39	1485.26		
(#176) PIPE 2	~~1478~~.87					- 1" PIPE IN HAND HOLE (± 0.30 below road) @ INTERSECTION P. VISTA DR. + 33rd AVE
		6.27				
			5.34	1485.14		
57	1479.80					- TP PAINT MK on S SIDE P. VISTA DR.
		3.51				
			2.03	1483.31		
FH 1	1481.28					- LUG NUT ON N. SIDE OF HYDRANT FLANGE BETWEEN 31st + 33rd AVE ON S. SIDE OF P. VISTA DR.
		4.10				
			4.65	1485.38		
58	1480.73					- TP as above

TP	ELEV	BS	FS	HI	ADJ ELEV	
58	1480.13					- TP PAINT MK ON S SIDE OF P. VISTA DR.
		5.05				
			4.94	1485.78		
59	1480.84					- TP as above
		5.34				
			4.33	1486.18		
FH 2	1481.85					- LUG NUT ON N. SIDE OF FLANGE ON HYDRANT @ P. VISTA / 31st AVE.
		3.06				
			5.71	1484.91		
60	1479.20					- TP as above
		5.24				
			4.96	1484.44		
61	1479.48					- TP as above
		4.87				
			3.88	1484.35		
62	1480.47					- TP as above
		6.32				
			4.09	1486.79		
63	1482.70					TP as above

TP	ELEV	BS	FS	HI	ADJ. ELEV
63	1482.70				
		5.07			
			5.01	1487.77	
10	1482.76				
	1482.75 (FIXED)				
	Δ = +0.01 ∴ no adjustment				

- TP PAINT MK on S. SIDE OF P. VISTA DR.

- PT. FROM PREVIOUS SURVEY LOCATED @ SW CORNER OF INTERSECTION OF PINNACLE VISTA DR. + BLACK CANYON FWY FRONTAGE ROAD.

5

BENCH LOOP @
SKUNK CREEK
+
BLACK CANYON HWY
FRONTAGE RD.

19-5-99

D. STORWICK
6. BIRDS

PT #	BS	HI	FS	ELEV.	ADJ ELEV.
100	1.65	1470.41		1468.76	
			4.09		
1	4.63	70.15		65.52	
			5.72		
2	5.16	69.59		64.43	
			5.31		
3	3.60	67.88		64.28 ~~69.74~~	
			5.99		
4	4.15	66.04		61.89	
			5.60		
AL. CAP	5.40	65.84		1460.44	
			5.61		
1" PIPE	5.25	65.48		1460.23	
			5.84		
#4 BRASS CAP	5.82	65.46		1459.64	
			4.90		
5	4.87	65.43		60.56	
			6.87		
6	1.78	60.34		58.56	
			4.85		
7	4.08	59.57		55.49	
			7.51		
#3 BRASS CAP	3.54	55.60		1452.06	
			6.14		

- PANEL PT. WITH PK NAIL @ BLACK CANYON HWY FRONTAGE RD
- TP ROCK
- TP ROCK
- TP ROCK
- TP ROCK
- AL. CAPPED PIN MKD 'ASC' - LS9969' +/- 20' E OF FENCE CORNER
- 1" PIPE @ FENCE CORNER
- BRASS CAP - no marks @ BASE OF ROCK PILE PUB. ELEV = 1459.60
- TP ROCK
- TP ROCK @ BASE OF BCKM 5 SIDE SKUNK
- TP rock as above
- BRASS CAP - no marks on SIDESLOPE OF SKUNK CREEK PUB. ELEV = 1452.06

PT	BS	HI	FS	ELEV	ADJ ELEV
8	8.03	57.49		1449.46	
			6.26		
#2 BRASSCAP	11.45	62.68		1451.23	
			6.52		
9	9.47	65.63		56.16	
			2.71		
10	7.20	70.12		62.92	
			3.55		
11	7.24	73.~~86~~ 81		66.57 ~~66.62~~	
			4.79		
12	5.92	74.~~89~~ 94		69.02	
			5.35		
TARGET + 1" PIPE	1.85	71.~~49~~ 44		1469.~~64~~ 59	
			11.77		
13	3.33	63.~~05~~ 00		59.~~72~~ 67	
			4.23		
14	11.96	70.~~18~~ 73		58.~~82~~ 77	
			12.17		
15	7.60	66.~~71~~ 16		58.~~61~~ 56	
			0.78		
16	5.95	71.~~38~~ 33		65.~~43~~ 38	
			5.32		
17	4.67	70.~~13~~ 68		66.01	
			1.90 ~~4.67~~		
100				1468.~~43~~ 78	

- TP on ROCK
- BRASS CAP no marks @ N. SIDE SKUNK CK. PUB. ELEV. = 1451.24
- TP on Rock @ TOP of BERM
- TP as above
- TP as above
- TP as above
- 1" PIPE in PUBTD TARGET @ BERM TOP on N. SIDE SKUNK CREEK (#154) (C.P. 164)
- TP on rock 1/2 way down berm
- TP on rock 1/2 way up berm
- TP on rock
- TP on rock
- TP on rock

START:	1468.76
END:	1468.78
Δ =	+0.02
∴ no adjustment	

- PK NAIL @ PANEL PT. on BLACK CANYON HWY FRONTAGE RD.

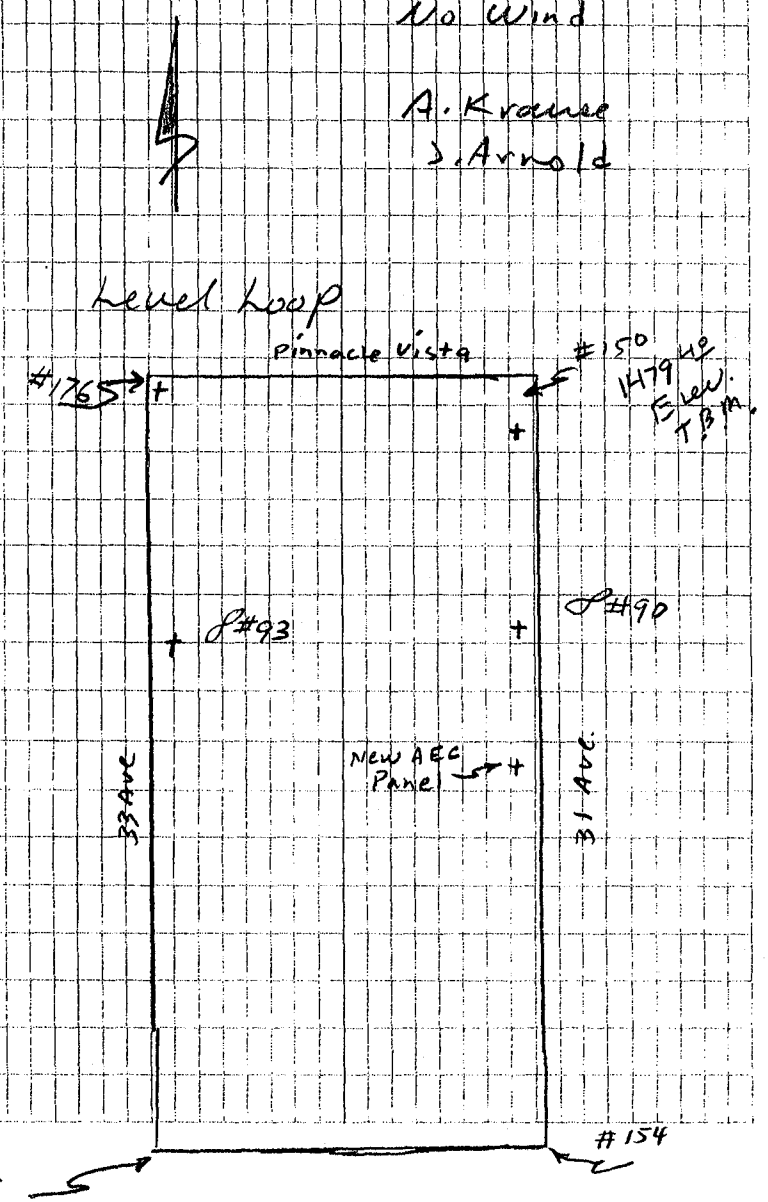
6

6-11-99

Clear - Hot
No Wind

A. Krause
J. Arnold

Level Loop



Sta.	+	H.I	-	Elev.
				1479 40
	5.47	84.87		
T.P. #1			4.58	80.29
	3.61	83.90		
T.P. #2			7.37	76.53
	1.54	78.07		
T.P. #3			8.21	69.86
	2.98	72.84		
T.P. #4			5.54	67.30
	4.56	71.86		
T.P. #5			7.32	64.54
	3.36	67.90		

Point #150 Pipe With Nail In Pothole
In S-E Cor. Intersection
Pinnacle Vista & 31 Ave.

Panel 565' & 500' From T.B.M. (Nail)

Panel @ #90 (Nail)

New A.E.C. Panel #4 Rebar

Set Hub

Set Hub

Sta.	+	H.I	-	Elev.	
		1467.90			
T.P.#6			8.20	59.70	Set Hub
	12.49	72.19			
T.P.#7			2.58	69.61	#154 1" Pipe
	2.12	71.73			
T.P.#8			12.02	59.71	Hub - Same As #7
	8.08	67.79			
T.P.#9			3.49	64.30	Set Hub
	2.16	66.46			
T.P.#10			8.83	57.63	Set Hub
	3.72	61.35			
T.P.#11			5.18	56.17	Set Hub

Bug!

Sta.	+	HI	-	Elev.	
				1456.17	
	3.24	59.41			
side shot			6.49	52.92	Ground @ Pin
T.P.#12			6.31	53.10	Form Pin @ s/w Cor. (Not Pipe)
	6.47	59.57			
T.P.#13			3.35	56.22	Set Hub
	5.83	62.05			
T.P.#14			2.44	59.61	Set Hub
	6.73	66.34			
T.P.#15			5.13	61.21	Panel ℘#93
	12.66	73.87			
T.P.#16			0.31	73.56	Set Hub
	9.65	83.21			

Sta.	+	H.I.	−	Elev
		1483.21		
T.P.#17			4.22	78.99
	4.63	83.62		
T.P.#18			4.69	78.93
	6.07	85.00		
T.P.#19			4.76	80.24
	5.14	85.38		
T.P#20			5.92	79.46

Panel 30° ± S & 30° ± E of #176

#176 Pipe In Hole In Asph.
S-E Cor Inter. Pinnacle
Vista & 33 Ave.

Set Hub

Orig T.B.M. +0 00

(+99.30)
(−99.77)

7

LEVEL LOOP

31st AVE & OBERLIN (CP 204)
EAST TO BLACK CANYON
SOUTH TO PINNACLE VISTA
(CP 150) WEST TO 31st AND PINNACLE VISTA

PT #	BS	HI	F.S.	ELEV.	ADJ ELEV.	
CP 204				1490.65		
	5.31	1495.96				
CP 214			5.20	1490.76		
	7.45	1498.21				
TP 1			4.23	1493.98		ROCK IN GROUND
	4.45	1498.43				
CP 215			4.25	1494.18		
	4.17	1498.35				
TP 2			5.94	1492.41		SHOULDER OF PAVEMENT
	2.55	1494.96				
TP 3			6.94	1488.02		" "
	2.73	1490.75				
CP 216			8 6.47	~~1484.28~~ 2.28		
	5.45	1487.73				
TP 4			5.55	1482.18		SHOULDER OF PAVEMENT
	2.03	1484.21				
CP 150			4.81	1479.40		

T.P.	B.S.	H.I.	F.S.	Elev.	Adj.	Description
				1506.55		Parcel Pt. P.K. nail, N. Blk. Canyon Frontage Rd.
	4.48					Ex Dynamite Rd. W. side of Fwy.
		11.03				
27			3.13			
				07.90		
	5.81					
		13.71				
28			3.43			
				10.28		B.M.
				10.27		NGS M343, B.C., U.S.C.G.S., TRI, STA.
				+.01		
				1510.27		B.M.
						NGS M343, B.C., U.S.C.G.S.,
	6.90					
		17.17				
29			4.88			
				12.29		T.P. rock
	4.54					
		16.83				
30			5.42			T.P
				11.41		T.P. rock
	3.18					
		14.59				
31			5.02			

T.P.	B.S.	H.I.	F.S.	Elev.	Adj.	Description
31			5.02	9.57		
	6.77					
		16.34				
32			2.22			
				14.12		BM C.A.P., R.O.W. Brass Cap STA. 449+01.34
	7.78					
		21.90				
33			2.53			
				19.37		T.P. Rock
	4.93					
		24.3				
34			4.37			
				19.93		B.M. C.A.P., R.O.W. Brass Cap STA. 458+01.84
	4.01					
		23.94				
35			6.14			
				17.80		T.P. Rock
	3.41					
		21.21				
36			7.09			
				14.12		SAME AS 32
	2.28					
		16.40				
37			7.13			

T.P	B.S.	H.I.	F.S.	Elev.	Adj.	Description	
37			7.13				
				1509.27			
	5.77						
		15.04					
38			6.28			T.P. Rock	
				1508.76			
	2.99						
		11.75					
39			6.46				
				1505.29		B.M., Brass Cap, R.O.W.	STA. 438 + 11.34
	1.41						
		06.70					
40			4.53				
				1502.17		T.P. Rock	
	4.25						
		6.42					
41			7.41				
				1499.01		T.P. Rock	
	4.94						
		150395					
			3.53				
42				1500.42		B.M., Brass Cap, R.O.W.	STA. 425 + 00
	3.17						
		03.59					

T.P.	B.S.	H.I.	F S	Elev.	Description
43			3.55		
				1500.04	T.P Rock
	2.03				
		02.07			
44			6.61		
				1495.46	T.P. PAV. Dynamite
	3.62				
		99.08			
45			0.86		
				1498.22	T.P. PAV. Dynamite
	7.72				
		05.94			
46			4.48		
				1501.46	T.P. PAV. Dynamite
	5.49				
		06.95			
47			3.32		
				1503.63	T.P. PAV. Dynamite
	6.81				
		10.44			
48			4.20		
				1506.24	T.P. PAV Dynamite
	5.51				
		11.75			

T.P.	B.S.	H.I.	F.S.	Elev.	Adj.	Description
49			4.75			
				1507.00		T.P. Rock
	5.88					
		12.88				
			2.60			
				1510.28		B.M. NGS, M 343, U.S.C.G.S., TRI. STA.
				10.27		1510.27
				+.01		

TP#	PT #	+BS	-FS	ELEV	ADJ ELEV
START	100: SKUNK			1468.80	
		3.79			
1			6.72	1465.87	
		7.47			
2			7.57	1465.77	
		8.21			
3	2		5.22	1468.76	
		6.61			
4			4.55	1470.82	
		6.79			
5			4.79	1472.82	
		6.13			
6	BM		3.29	1475.66	
		4.36			
7			4.56	1475.46	
		6.66			
8			4.45	1477.67	
		6.85			
9	BM		7.60	76.92	
10		CONT. ON NEXT PAGE			
11					
12					

DESCRIPTION

R.O.W. BC IN CONC

PK NAIL PAINT

SET NAIL

SET NAIL

CHISELED "□" @ SOUTHWEST CORNER BRIDGE OVER SKUNK CREEK ON FRONTAGE ROAD WEST

ALUM CAP

FOW ADJ BY IN CURB "975+00"

TP	BS	HI	FS	Elev.
9			7.60	1476.92
	7.81			
10			1.98	82.75
	7.03			
		89.78		
11			1.51	88.27
	7.68			
		95.95		
12			0.72	95.23
	7.53			
		1502.76		
13			1.69	01.07
	6.82			
		07.89		
14			2.65	
				05.24
	5.33			
		10.57		
15			4.02	06.55

JHM
DW

16)

5-17-99

R.O.W. A.D.O.T. Alum. Cap STA 975+00

Edge of Pav. S.W. Cor. of Pinnacle Vista Dr. & BIK Canyon Frontage Rd.

E.P.

Pal. Pt. 498 on BIK Canyon Fron. Rd. @ OBERLIN WS

E.P.

E.P.

Pal. Pt. @ N. BIK. Canyon Fron. Rd. & Dynamite

JHM
D.W
4-17-99

T.P.	B.S.	H.I	F.S.	Elev.	Adj	Description
	4.37					
		10.92				
16			5.69			
				05.23		SAME AS 14
	2.30	07.53				
17			7.51			
				00.02		E.P.
	2.01					
		02.03				
18			6.81			
				95.22		Pnl. Pt. SAME AS 12
	1.78					
		97.00				
19			7.86			
				89.14		E.P.
	1.84					
		90.98				
20			8.24			
				82.74		SAME AS 10
	2.71					
		85.45				
21			8.54			
				76.91		SAME AS Pnt# 9 B.M.

	B.S.	H.I.	F.S.	Elev.	Adj.
	5.20				
		82.11			
22			5.85		
				76.26	
	3.56				
		79.82			
23			4.17		
				75.65	
	1.43				
		77.08			
24			6.36		
				70.72	
	3.01				
		73.73			
			7.97	65.76	
25			4.99	68.74	
	3.36				
		72.10			
26			3.33		
				68.77	
				68.80	
				+.03	

Description

JHM
A.W
4-17-99

E.P.

Chisel "□" S.W. Cor. Bldg. Abut. SAME AS 6

E.P.

STA. 954+45.75

Side Shot, ADOT R.O.W Alum. CAP SAME AS

BM 100: SKUNK SAME AS START Pg. 15
" " " "
Brass Cap U.S.C.G.S., TRIANGULATION STA.

CONT'D

MAY 25/99

PT. #	BS	HI	FS	EL.	
CAP RLS 16116				1478.94	N.W. CORN PINNACLE VISTA & 37 AVE
	5.33	1484.27			
TP			3.12	1481.15	ROCK
	5.11	1486.26			
RM # 516			3.50	1482.76	*
	3.50	1486.26			
TP			5.11	1481.15	ROCK
	3.09	1484.24			
CAP RLS 16116			5.29	1478.95	

* 1" STEEL CAP ON S.W. CORNER OF 37 AVE & MCARTHUR - RM 516 (BENT OVER)

TGW & KC.

10

LEVEL LOOP

31st AVE N.
from
PINNACLE VISTA DR.
to
OBERLIN WAY

21/5/99

D. STANICK
G. BIRDS

$T = R \tan \frac{1}{2} I$

$T = \frac{50 \tan \frac{1}{2} I}{\text{Sin. } \frac{1}{2} D}$

$\text{Sin. } \frac{1}{2}D = \frac{50}{R}$

$\text{Sin. } \frac{1}{2}D = \frac{50 \tan \frac{1}{2}I}{T}$

$R = T \cot. \frac{1}{2}I$

$R = \frac{50}{\text{Sin. } \frac{1}{2}D}$

$E = R \text{ ex. sec } \frac{1}{2} I$

$E = T \tan \frac{1}{4} I$

$\text{Chord def.} = \frac{\text{chord}^2}{R}$

$\text{No. chords} = \frac{I}{D}$

$\text{Tan. def.} = \frac{1}{2} \text{ chord def.}$

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

Right Angle Triangles. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. $10.10^2 \div 200 = .5$. $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25.25^2 \div 200 = 3.125$. $100 - 3.125 = 96.875$ = Base.

Error in first example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

Leveling. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574\ d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{2}{3}d^2$. The combined correction is negative.

Probable Error. If d_1, d_2, d_3, etc. are the discrepancies of various results from the mean, and if Σd^2 = the sum of the squares of these differences and n = the number of observations, then the probable error of the mean =

$$\pm 0.6745 \sqrt{\frac{\Sigma d^2}{n(n-1)}}$$

MINUTES IN DECIMALS OF A DEGREE

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0333	12	.2000	22	.3667	32	.5333	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1/16	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8
.0052	.0078	.0104	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729

1	2	3	4	5	6	7	8	9	10	11
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167

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45-100 428

35th AVE + JOMAX

JAN. 25, 2000

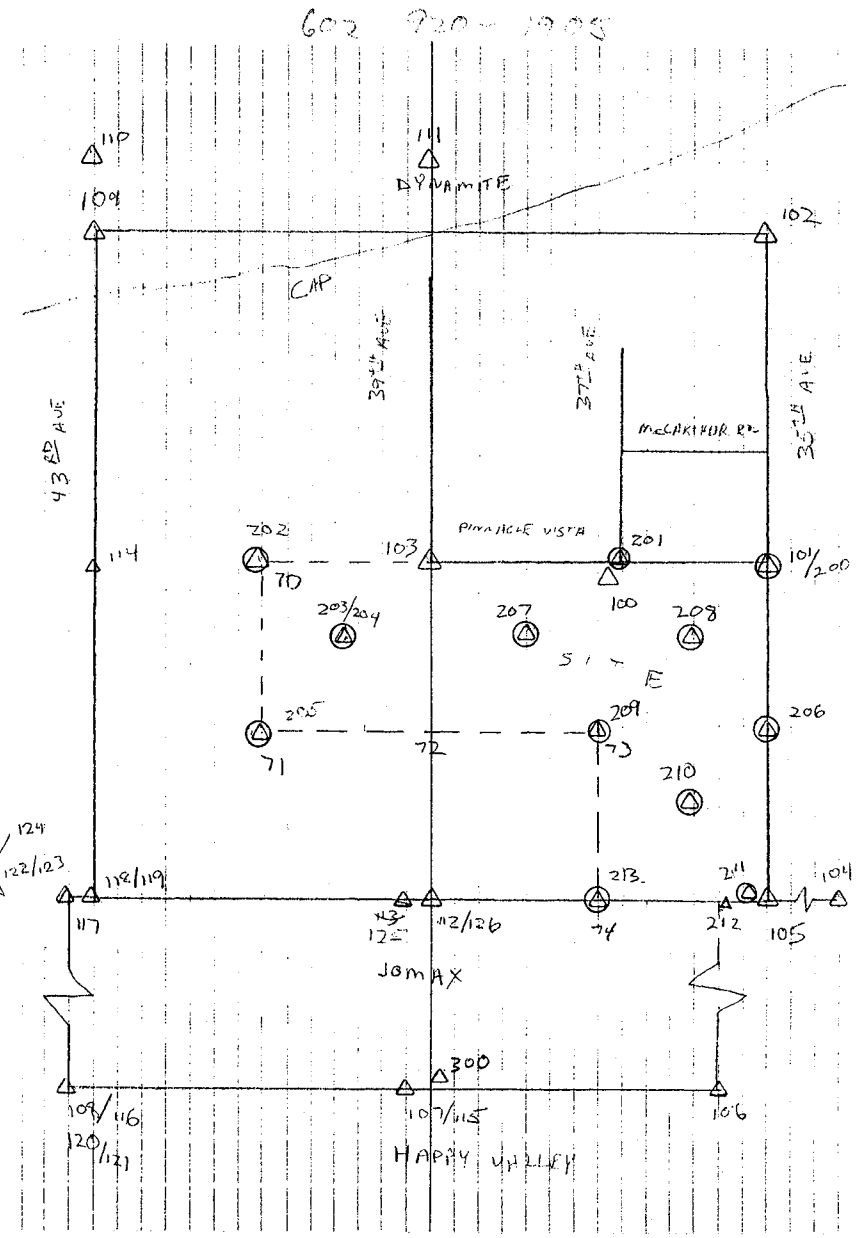
J. EDMONDSON

BENCHMARK CITY OF PHOENIX

1471.87 - 1" IRON PIPE, 80' DEEP IN POT HOLE @ 35TH AVE + PINNACLE VISTA SW COR OF INTERSECTION

1495.17 - 1/2" REBAR @ 39TH AVE + PINNACLE VISTA, SW COR OF INTERSECTION

PT #	DESCRIPTION
100	SET 1/2" REBAR SOUTHWEST +/- 100' FROM INTERSECTION OF 39TH AVE + PINNACLE VISTA GPS BASE
101	FD 1" IRON PIPE W/NAIL @ 35TH AVE + PINNACLE VISTA E 1/4 OF SEC 34
102	FD [illegible] @ 35TH AVE (ALIGNMENT) + DYNAMITE RD NE COR 34
103	FD 1/2" REBAR @ 39TH AVE + PINNACLE VISTA COR 34 COP BM
300	SET [illegible] NAIL PANEL IN PAVEMENT @ 35TH AVE + PINNACLE VISTA
201	SET 1" NAIL PANEL IN PAVEMENT @ 37TH AVE + PINNACLE VISTA
* 202	SET 1/2" REBAR [illegible] +/- 1320' DUE WEST OF INTERSECTION OF 39TH AVE + PINN. VISTA. +/- 10' BELOW [illegible]
203	SET 1/2" REBAR +/- 660' SOUTH OF AND +/- 660' WEST OF INTERSECTION OF 39TH AVE + PINN. VISTA
204	BOUND @ PT # 203
205	SET 1/2" REBAR +/- 2640 WEST OF AND +/- 1320 [illegible] OF INTERSECTION OF 39TH AVE + PINN. VISTA
206	SET PK NAIL PANEL IN PAVEMENT 1/4 MILE SOUTH OF PINNACLE VISTA @ END OF PAVEMENT ON 35TH AVE
207	SET 1/2" REBAR +/- 660 EY +/- 360 SW FROM PT # 201
208	SET 1/2" REBAR +/- 660 EY +/- 660 SW FROM PT 201



PT #	DESCRIPTION
209	SET 1/2" REBAR PARK'S 1/4 MILE SOUTH OF INTERSECTION OF 37th AVE + PINN. VISTA
104	FD 1/2" FORM PIN @ END OF PAVEMENT OF 33rd AVE SOUTH OF PINN. VISTA +/- 1/2 MILE
105	STONE WITH "+" CHISELED ATOP, 35th AVE (ALIGNMENT) + JOMAX (ALIGNMENT) SE COR OF 34
210	SET NAIL PANEL +/- 660' BY +/- 660' FROM PT # 206
211	SET 1/2" REBAR +/- 55' WEST OF SE COR OF 34
212	BC EPOXIED TO ROCK NE COR OF T4N R2E S3
213	SET 1/2" REBAR +/- 1320' WEST OF SE COR OF SEC 34
106	BC IN HH @ 35th AVE + HAPPY VALLEY RD
107	BC FLUSH @ 39th AVE + HAPPY VALLEY RD
108	BC IN HH EAST @ 43rd AVE + HAPPY VALLEY RD
109	1/2" IRON PIPE NW COR OF SEC 34
110	ADOT P+M BC IN CONC "BM 517-13" 1986
111	ADOT P+M BC IN CONC "BM 517-14" 1986

PT #	DESCRIPTION
112	FD STONE "1/4" S 1/4 OF 34, LAID ON SIDE SHOT TOP SOUTH EDGE NEED RESET
~~113~~	~~AL CAP~~
114	REBAR NEAR W 1/4 34
115	COP BC IN HH EAST @ 39th AVE + HAPPY VALLEY
116	COP BC IN HH EAST @ 43RD AVE + HAPPY VALLEY
300	SET 1/2" REBAR NE COR OF 39th AVE + HAPPY VALLEY SOUTHERN GPS BASE
117	FD 1/2" REBAR OLD PANEL NW COR 3
118	STONE POS. STAKED FROM CVL.
119	STONE CARVED "Ξ SC" LAYING ON CLF CARVINGS ON NORTH END SHOT @ TOP MIDDLE OF STONE
120	BC IN HH WEST @ 43RD AVE + HAPPY VALLEY
121	CHISELED "□" HEADWALL SW COR OF 43RD AVE + HAPPY VALLEY COP BM
122	AL CAP ON REBAR COLLAR WILLIAMS WHITE (CWW) LS 9137 BENT TO EAST

123	GROUND	VHFRF	REBAR	90FS IN @ PT 4	
	122				
124	AL CAP	CWW 18214	N1/4	SEC 4	
125	AL CAP	CWW 18214	N1/4	3	
126	NAIL W/ OLD RIBBON	POSSIBLELY	"1/2 REBAR"	SET MORE	
	LIKELY	PAVEL NAIL			

C.2 - Survey Field Notes for Hydrologic Modeling

There is no survey data for the hydrologic modeling portion of this project.

C.3 - Survey Field Notes for Hydraulic Modeling

Survey crews collected data on the existing box culvert across Buchanan Wash at Pinnacle Vista Road. The survey field books follow.

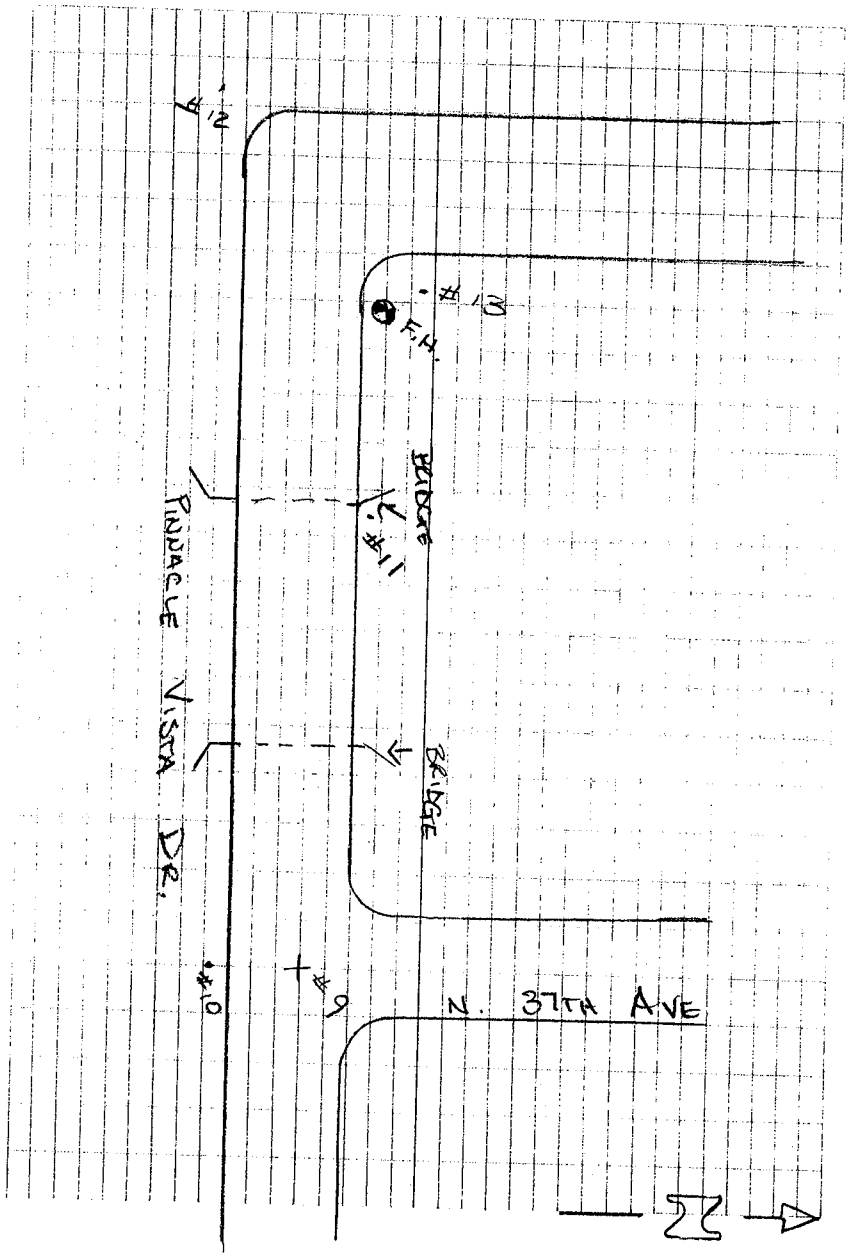
#9 FOUND PANEL PT @ INTER. OF 37TH AVE PINN. VISTA.
N.
E.
ELEV.

#10 FOUND 1/2" REBAR APPROX. 3' SOUTH E/P @ INTER OF 37TH & PINN. VISTA DR.
N.
E.
ELEV =

11 SET RTP NAIL BETWEEN 37TH AVE & ON PINN. VISTA Rd.
N.
E.
ELEV =

12 FOUND 1/2" REBAR APPROX 20' FROM E/P DOGLEG (APEX)
N.
E.
ELEV. =

13 FOUND 1/2" REBAR NE. COR. OF PINN. VISTA & 39TH AVE.
N.
E.
ELEV =



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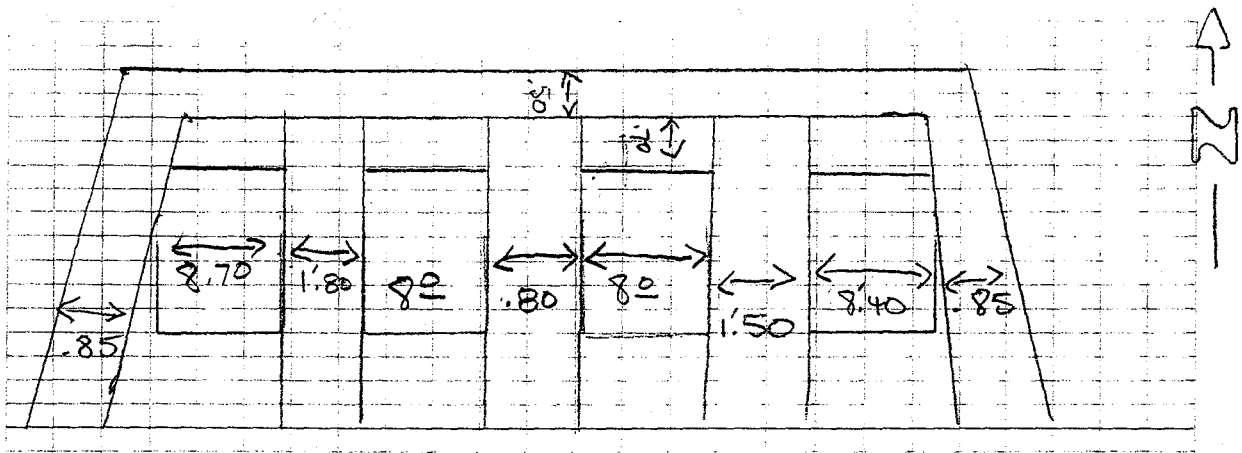
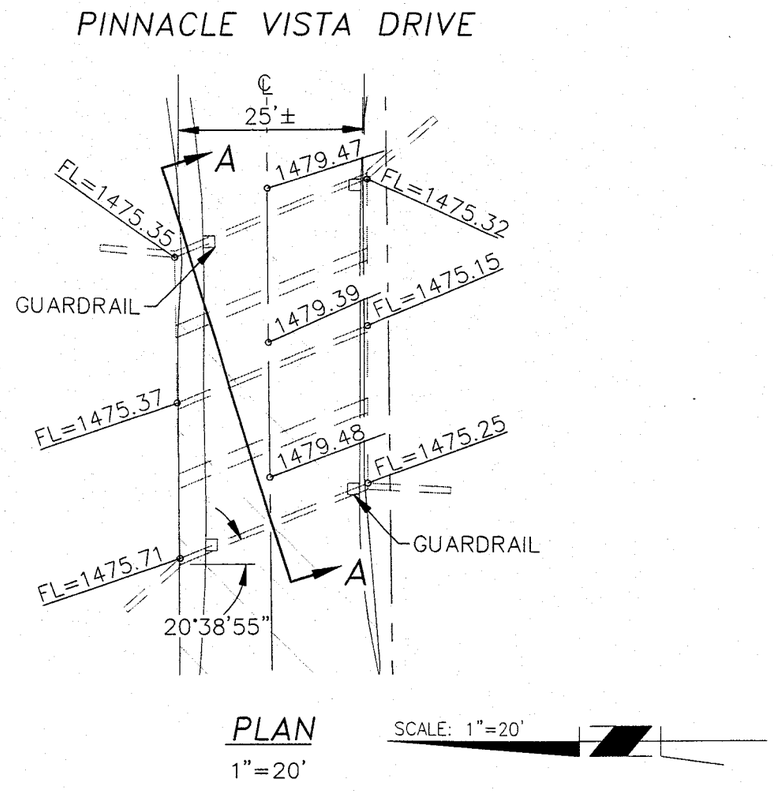


UNDERPASS OF BRIDGE
LOOKING NORTH



PLAN

1"=20'

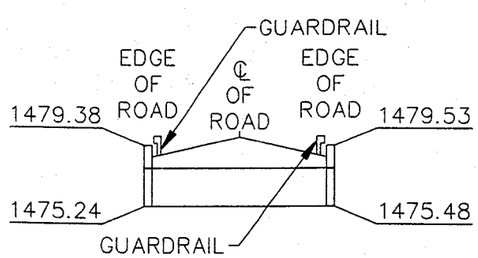
SCALE: 1"=20'

RECORD DRAWING

THE RECORD DRAWING INFORMATION SHOWN HERON IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS RECORD DRAWING IS FOR NOTED DIMENSIONS AND NOTED ELEVATIONS ONLY. THE ENGINEER MAKING THIS RECORD DRAWING STATEMENT DID NOT PARTICIPATE IN THE CULVERT DESIGN OR CONSTRUCTION OBSERVATION, AND HAS INVESTIGATED THIS CULVERT IN THE FIELD. INFORMATION SHOWN WAS OBTAINED FROM FIELD NOTES PREPARED AND SEALED BY BRENT SMITH R.L.S. #29891.

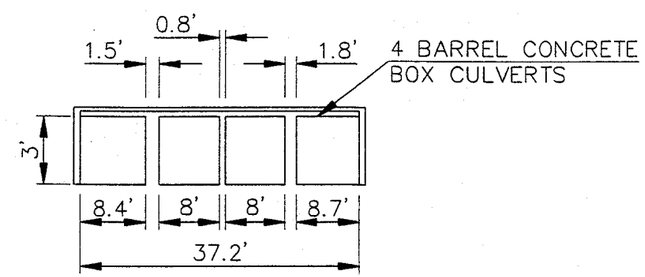
KENNETH M. TARR, P.E.
REGISTERED PROFESSIONAL ENGINEER #31317

Registered Professional Engineer (Civil)
CERTIFICATE NO.
31317
KENNETH M.
TARR
Date Signed 11/21/01
ARIZONA, U.S.A.



℄ PROFILE

1"=20'



ELEVATION A–A

1"=20'

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BUCHANAN WASH
AT PINNACLE VISTA
4 BARREL CONCRETE BOX CULVERTS

H:\PDATA\[illegible]0428\0428EXH.DWG 11/21/01 8:45 am

Appendix D
Hydrologic Analysis Supporting Documentation

This CLOMR is based on a revision to hydraulics only. The hydrology documentation provided in this report is from the original FIS and the final drainage report for Riordan Ranch.

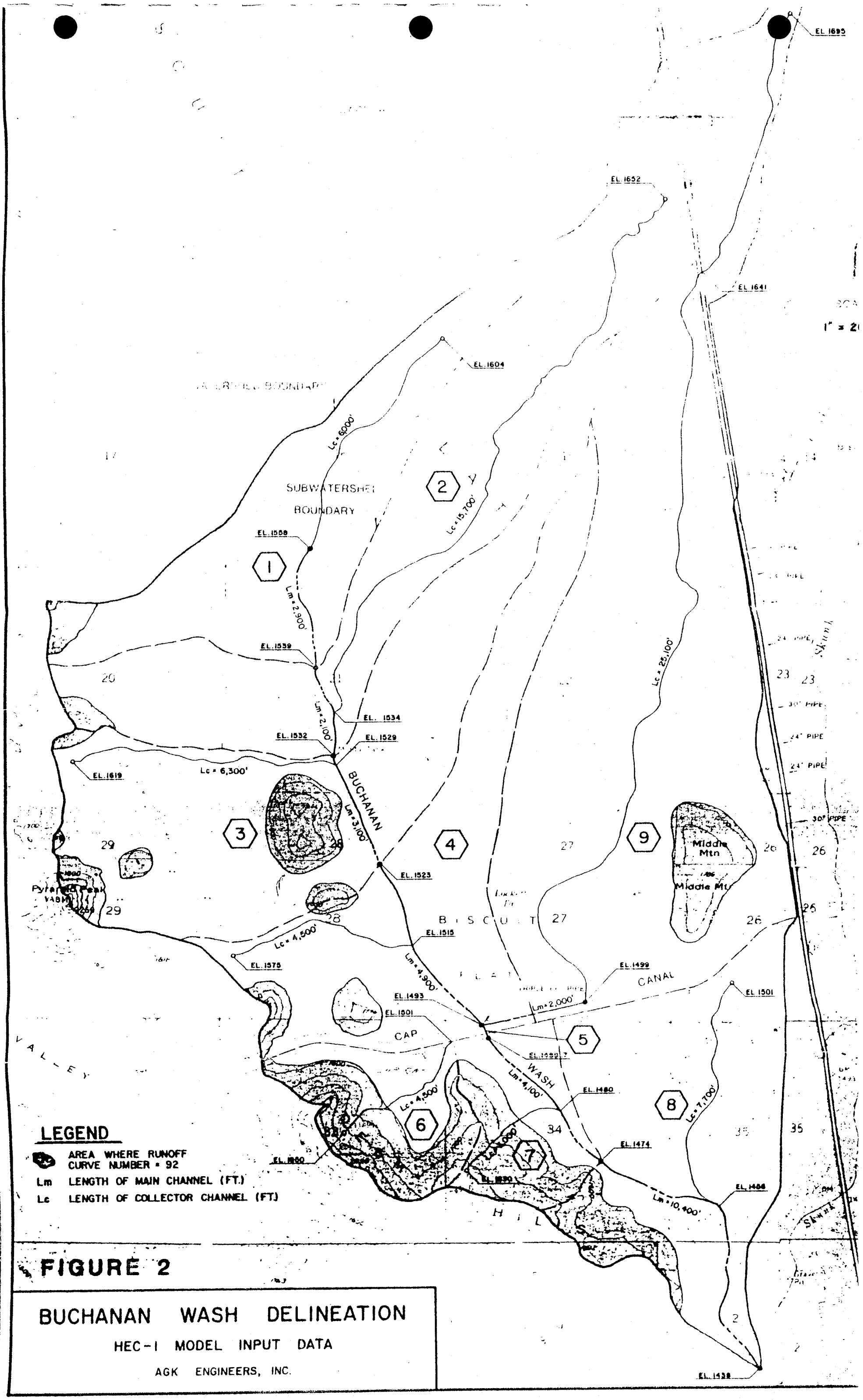


FIGURE 2

BUCHANAN WASH DELINEATION

HEC-1 MODEL INPUT DATA

AGK ENGINEERS, INC.

TABLE 3. SUMMARY OF DISCHARGES

Flood Source and Location	Drainage Area Sq. Miles	Peak Discharges (cfs) 10-Yr	50-Yr	100 Yr	500-Yr
Main Channel					
At 800 feet downstream of C.A.P. Canal	9.17	1065	1253	1308	1407
At 4300 feet downstream of C.A.P. Canal	9.99	1175	1467	1609	1958
At Confluence of Skunk Creek	11.29	1422	2005	2304	3067
Initial Water Surface Elevation		1456.50	1458.93	1460.42	1465.95
Tributary					
At Cross Section 2.045 of Main Channel	0.43	100	231	301	467
Initial Water Surface Elevation		1491.37	1491.72	1491.87	1492.24

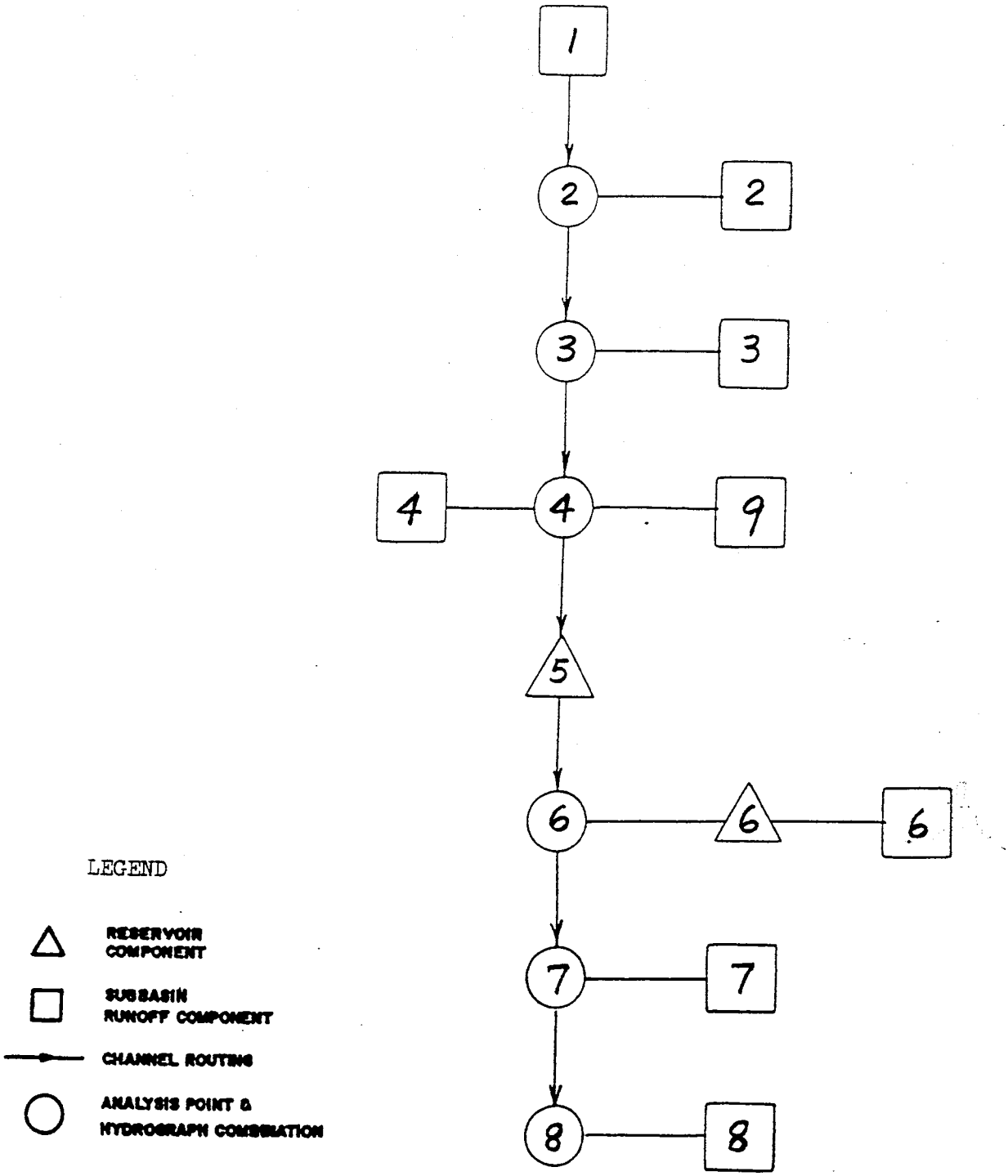


FIGURE 3. HEC-1 CODING SCHEMATIC FOR BUCHANAN WASH

Appendix E
Hydraulic Analysis Supporting Documentation

E.1 Roughness Coefficient Estimation

Including Site Photographs

US Army Corps
of Engineers
Hydrologic Engineering Center

GENERALIZED COMPUTER PROGRAM

HEC-2

Water Surface Profiles

User's Manual

September 1990

Approved for Public Release. Distribution Unlimited.

CPD-2A

Table 3.3
Manning's 'n' for Closed Conduits Flowing Partly Full

Type of Channel and Description	Minimum	Normal	Maximum
Brass, smooth:	**0.009**	**0.010**	**0.013**
Steel:			
Lockbar and welded	0.010	0.012	0.014
Riveted and spiral	0.013	0.016	0.017
Cast Iron:			
Coated	0.010	0.013	0.014
Uncoated	0.011	0.014	0.016
Wrought Iron:			
Black	0.012	0.014	0.015
Galvanized	0.013	0.016	0.017
Corrugated Metal:			
Subdrain	0.017	0.019	0.021
Storm Drain	0.021	0.024	0.030
Lucite:	**0.008**	**0.009**	**0.010**
Glass:	**0.009**	**0.010**	**0.013**
Cement:			
Neat, surface	0.010	0.011	0.013
Mortar	0.011	0.013	0.015
Concrete:			
Culvert, straight and free of debris	0.010	0.011	0.013
Culvert with bends, connections, and some debris	0.011	0.013	0.014
Finished	0.011	0.012	0.014
Sewer with manholes, inlet, etc., straight	0.013	0.015	0.017
Unfinished, steel form	0.012	0.013	0.014
Unfinished, smooth wood form	0.012	0.014	0.016
Unfinished, rough wood form	0.015	0.017	0.020
Wood:			
Stave	0.010	0.012	0.014
Laminated, treated	0.015	0.017	0.020
Clay:			
Common drainage tile	0.011	0.013	0.017
Vitrified sewer	0.011	0.014	0.017
Vitrified sewer with manholes, inlet, etc.	0.013	0.015	0.017
Vitrified subdrain with open joint	0.014	0.016	0.018
Brickwork:			
Glazed	0.011	0.013	0.015
Lined with cement mortar	0.012	0.015	0.017
Sanitary sewers coated with sewage slime with bends and connections	0.012	0.013	0.016
Paved invert, sewer, smooth bottom	0.016	0.019	0.020
Rubble masonry, cemented	0.018	0.025	0.030

[Chow, 1959]

Buchanan Wash Site Visit Photos

Photos on Pages 1-5 & Top Photo on Page 6 – Taken on March 7, 2000

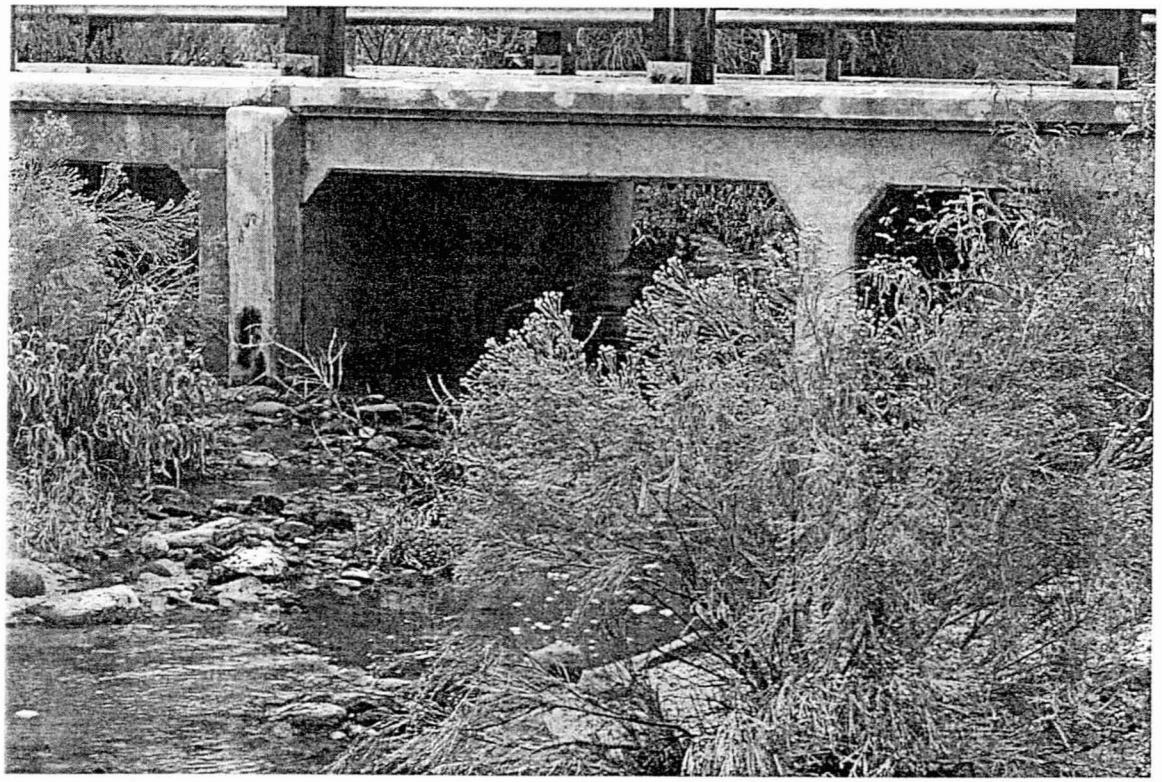
Photos on Bottom of Page 6 and Pages 7-16 – Taken on November 10, 2000

Photos on Pages 13-16 with XSEC # were taken walking upstream starting at 35th Ave to Pinnacle Vista Dr

Buchanan Wash - Upstream Entrance of Culvert (Pinnacle Vista Dr & 39th Ave)

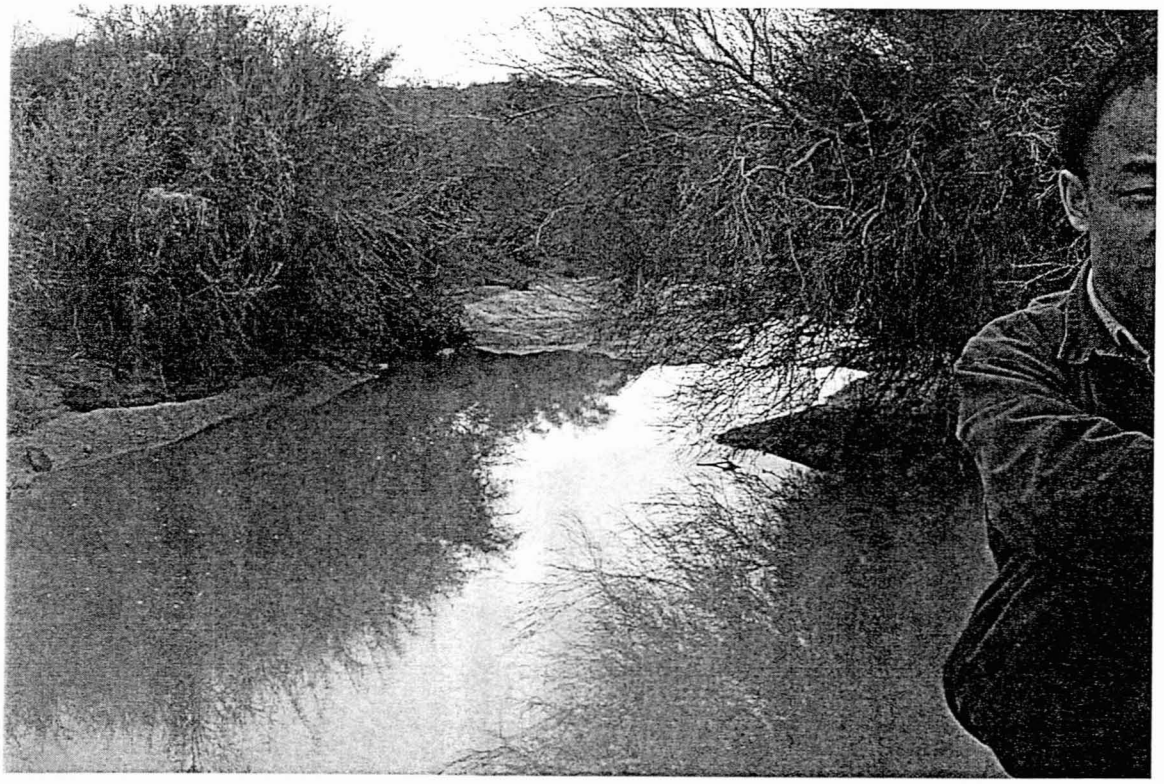
Buchanan Wash – Looking Upstream from Culvert (Pinnacle Vista Dr & 39th Ave)

Buchanan Wash - Upstream Entrance of Culvert (Pinnacle Vista Dr & 39th Ave)



Buchanan Wash – Culvert Exit (Pinnacle Vista Dr & 39th Ave)

Buchanan Wash – Looking South from Culvert at Pinnacle Vista Dr & 39th Ave



Buchanan Wash – Looking South from Culvert at Pinnacle Vista Dr & 39th Ave

Buchanan Wash – Looking Upstream Between 35th Ave & Pinnacle Vista Dr

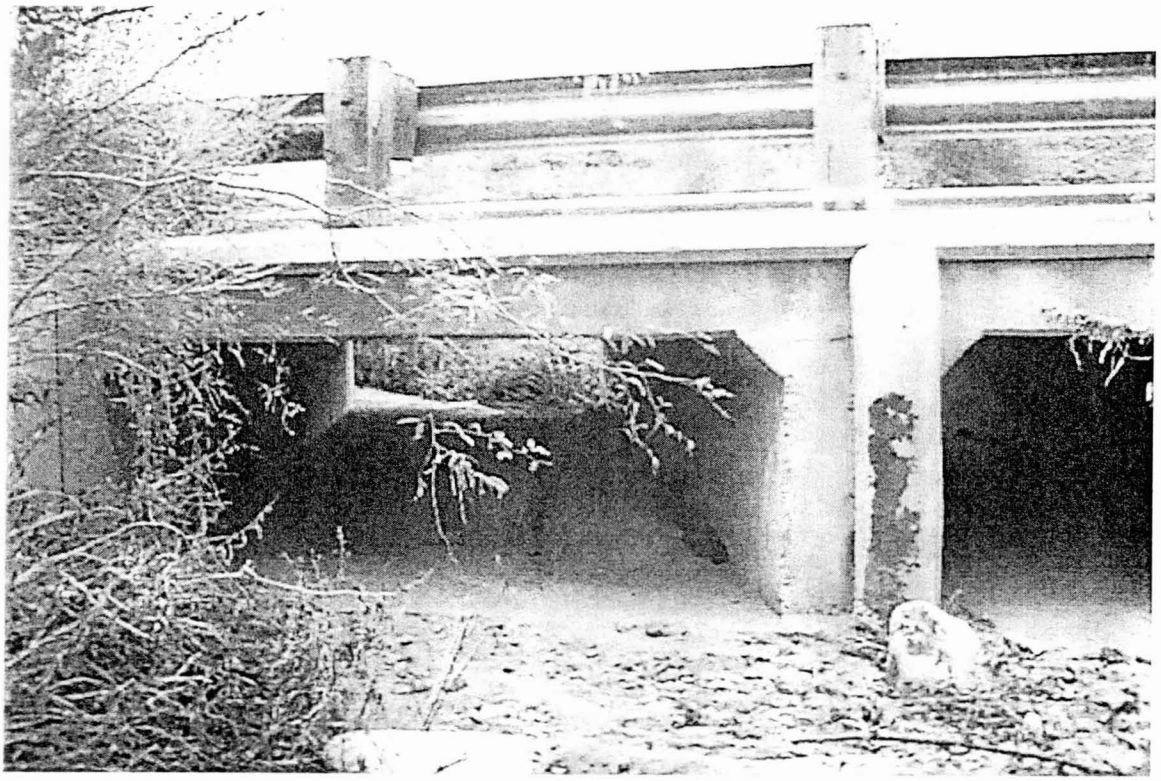
Buchanan Wash – Looking Downstream Between 35th Ave & Pinnacle Vista Dr

Buchanan Wash – Near HEC-2 Cross Section 1.483

Buchanan Wash – Near HEC-2 Cross Section 1.483

Buchanan Wash – Between 35th Ave & Pinnacle Vista Dr

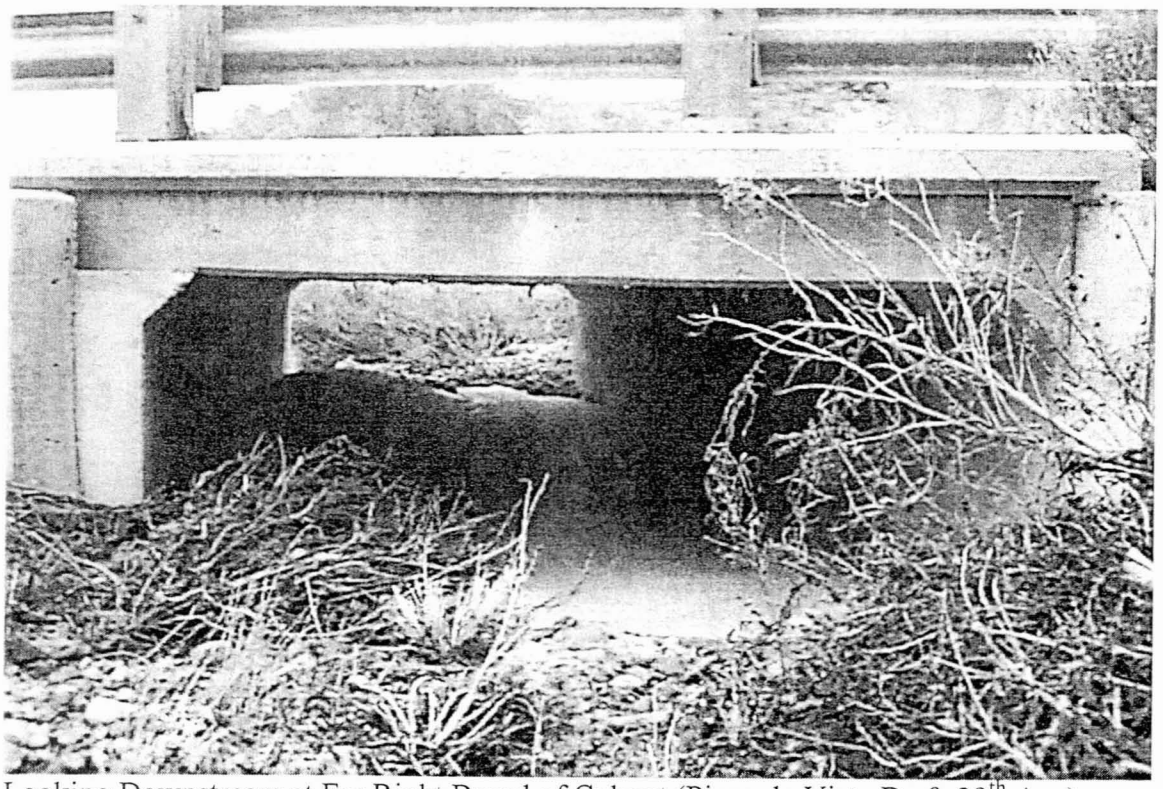
Buchanan Wash - Upstream Entrance of Culvert (Pinnacle Vista Dr & 39th Ave)



Looking Downstream at Far Left Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)

Looking Downstream at Middle Left Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)

Looking Downstream at Middle Right Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)



Looking Downstream at Far Right Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)

Buchanan Wash – Culvert Exit (Pinnacle Vista Dr & 39th Ave)

Looking Upstream at Far Right Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)

Looking Upstream at Middle Right Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)

Looking Upstream at Middle Left Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)

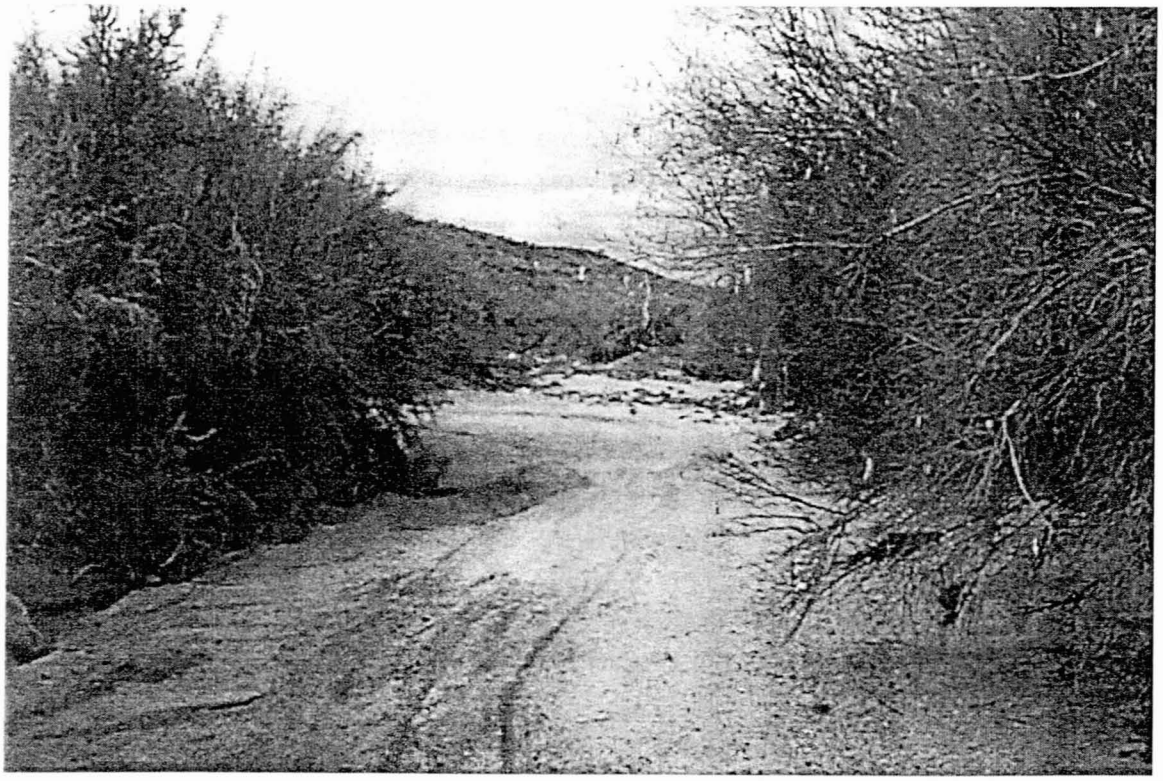
Looking Upstream at Far Left Barrel of Culvert (Pinnacle Vista Dr & 39th Ave)

Looking Downstream From Culvert at Pinnacle Vista Dr & 39th Ave

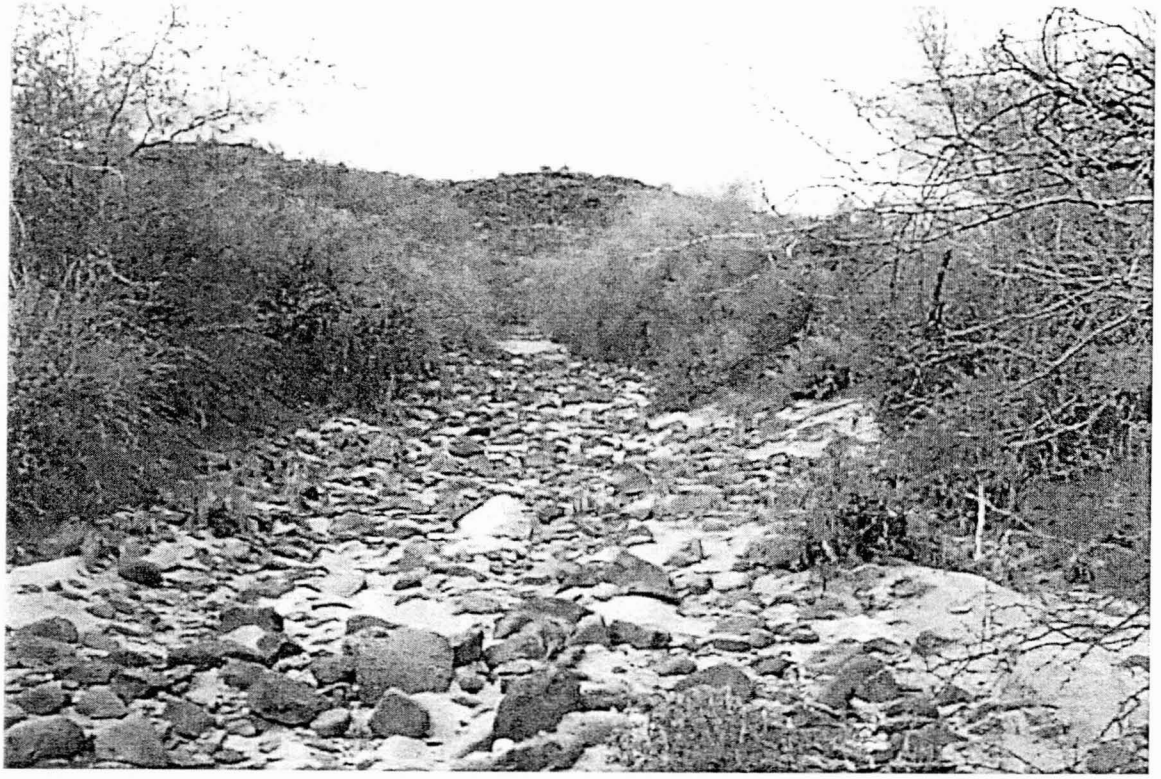
Buchanan Wash – Just Upstream of 35th Ave (Looking Downstream)

Buchanan Wash – Looking South (Perpendicular to Wash) At 35th Ave

Buchanan Wash – Looking Upstream from 35th Ave (XSEC 1)



Buchanan Wash – Looking Upstream Between 35th Ave & Pinnacle Vista Dr (XSEC 2)



Buchanan Wash – Looking Upstream Between 35th Ave & Pinnacle Vista Dr (XSEC 3)

Buchanan Wash – Looking Upstream Between 35th Ave & Pinnacle Vista Dr (XSEC 4)

Buchanan Wash – Looking Upstream Between 35th Ave & Pinnacle Vista Dr (XSEC 5)

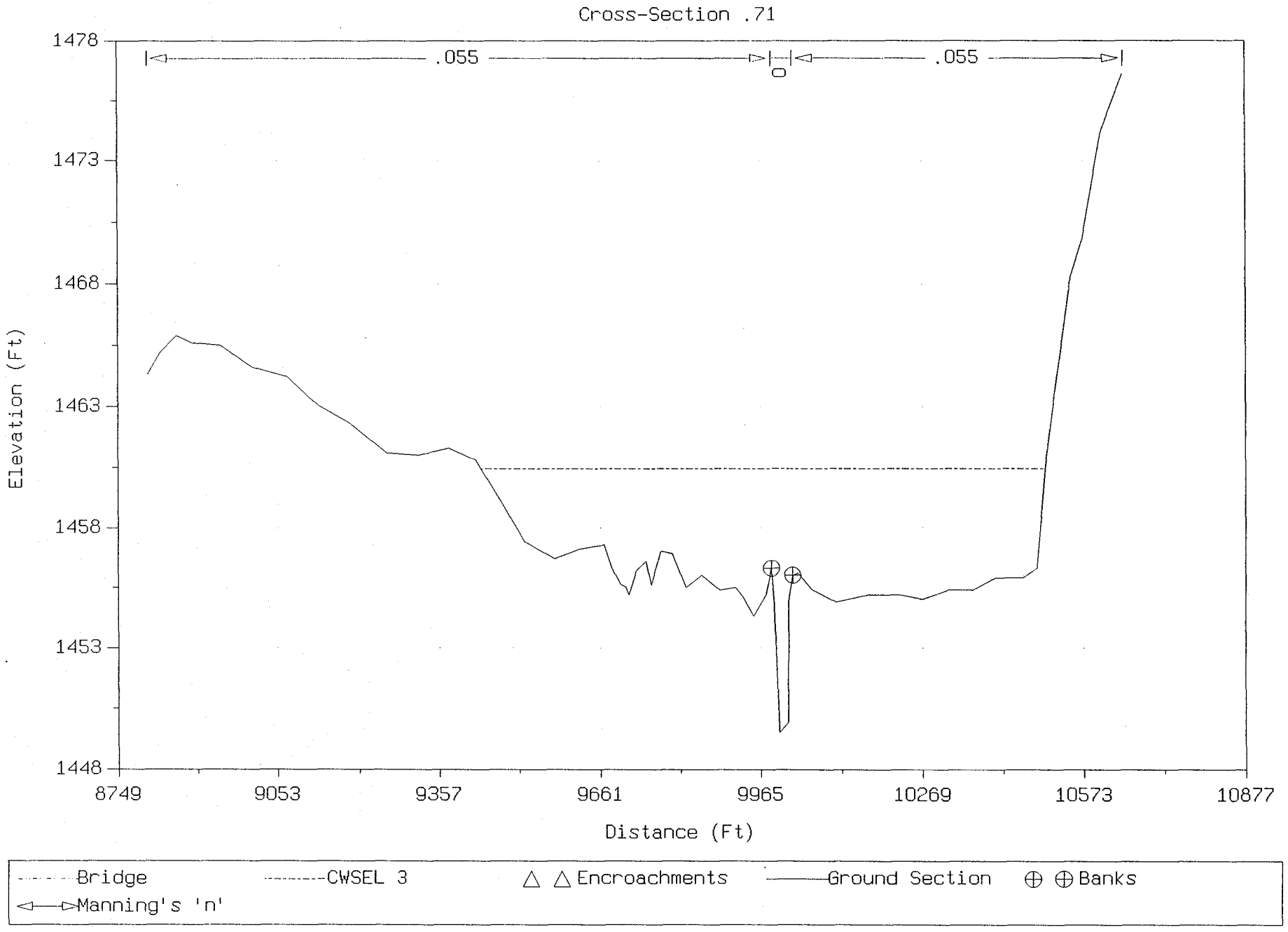
Buchanan Wash – Looking Upstream Between 35th Ave & Pinnacle Vista Dr (XSEC 6)

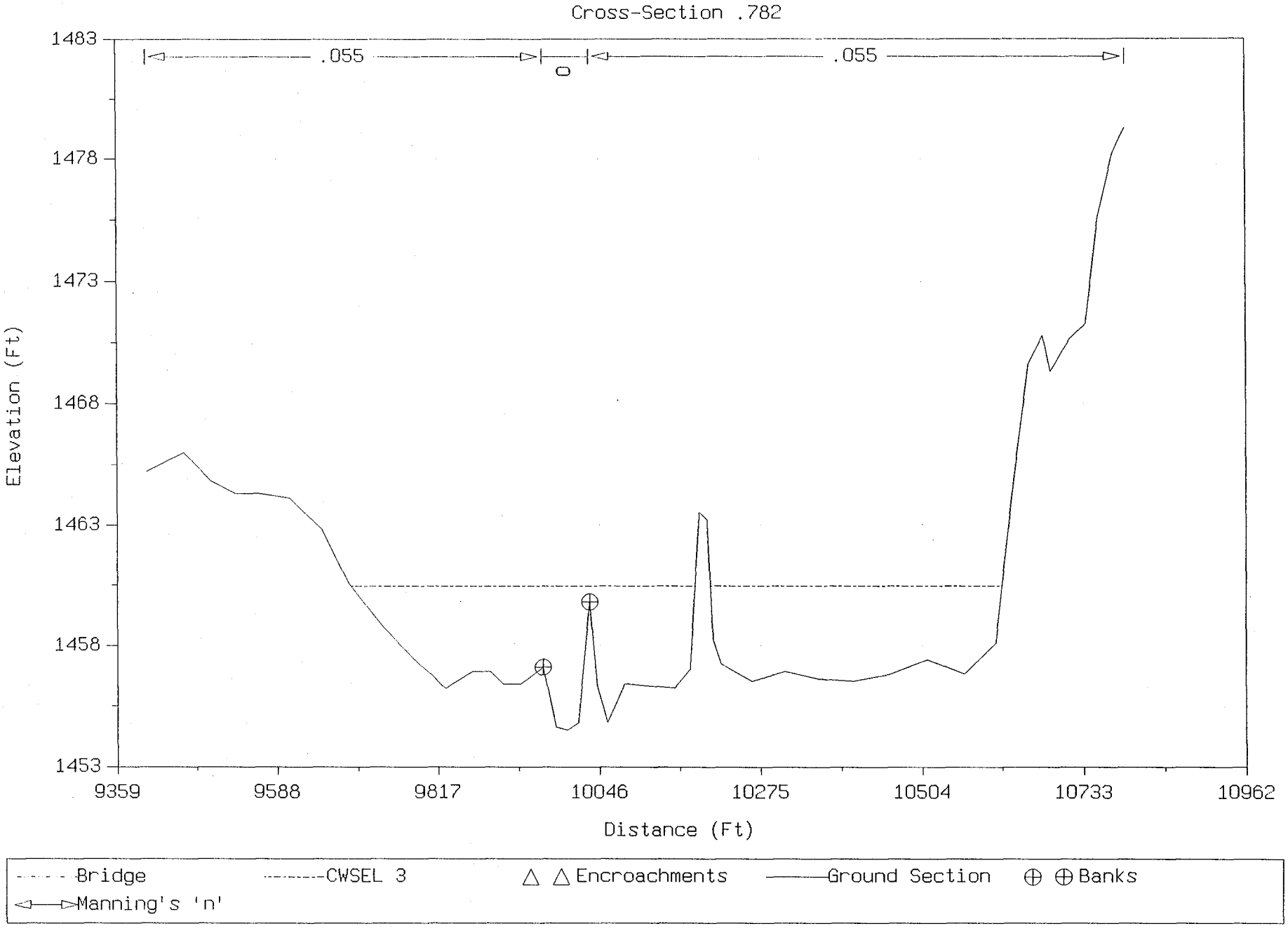
Buchanan Wash – Looking Upstream Between 35th Ave & Pinnacle Vista Dr (XSEC 7)

Buchanan Wash Tributary – Near HEC-2 Cross Section 1.483

E.2 Cross Section Plots

Proposed Cross Section Plots


Cross-Section .71
.055
0
.055
1478
1473
1468
1463
1458
1453
1448
Elevation (Ft)
8749
9053
9357
9661
9965
10269
10573
10877
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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.055
1483
1478
1473
1468
1463
1458
1453
Elevation (Ft)
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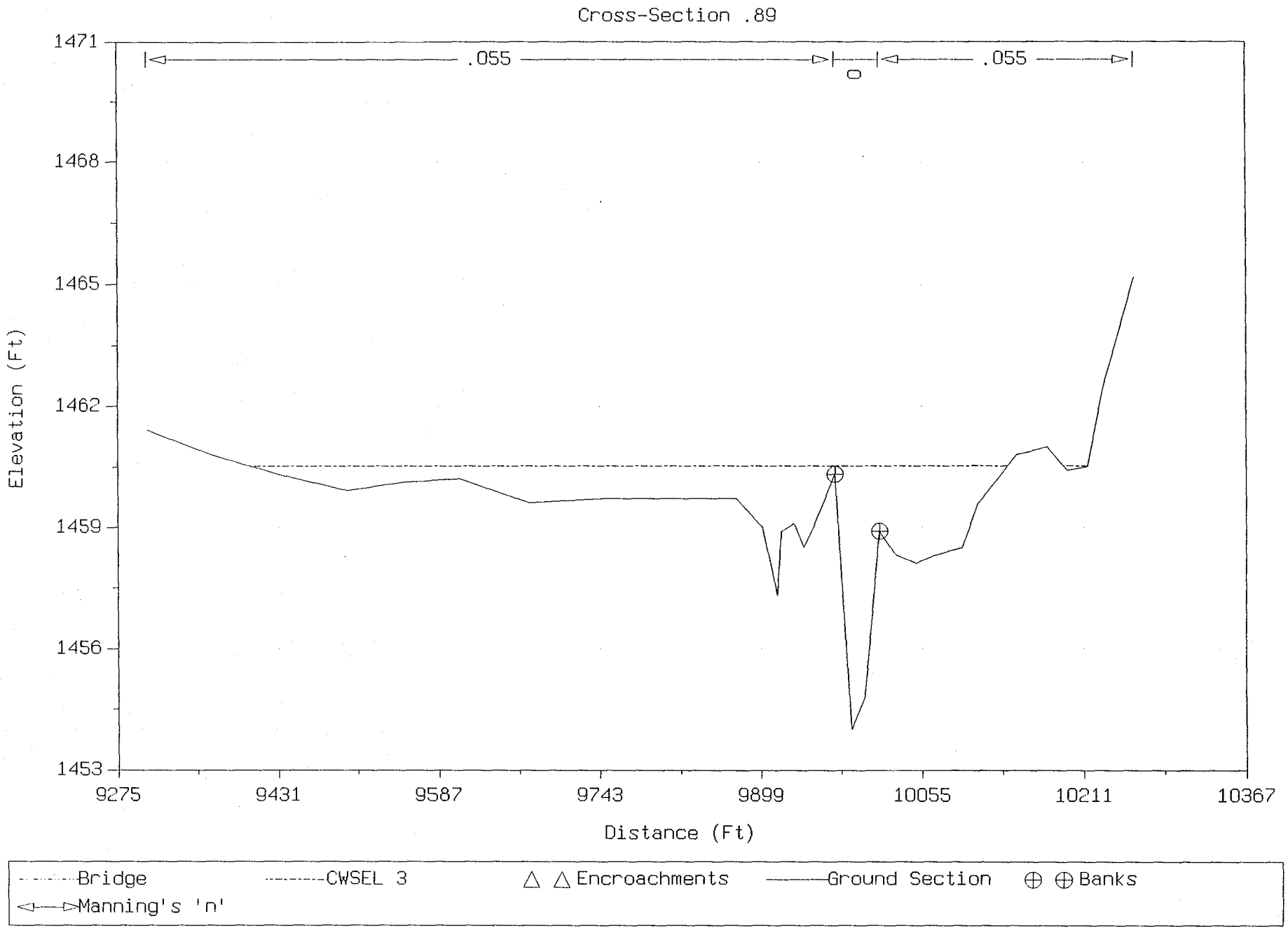
9588
9817
10046
10275
10504
10733
10962
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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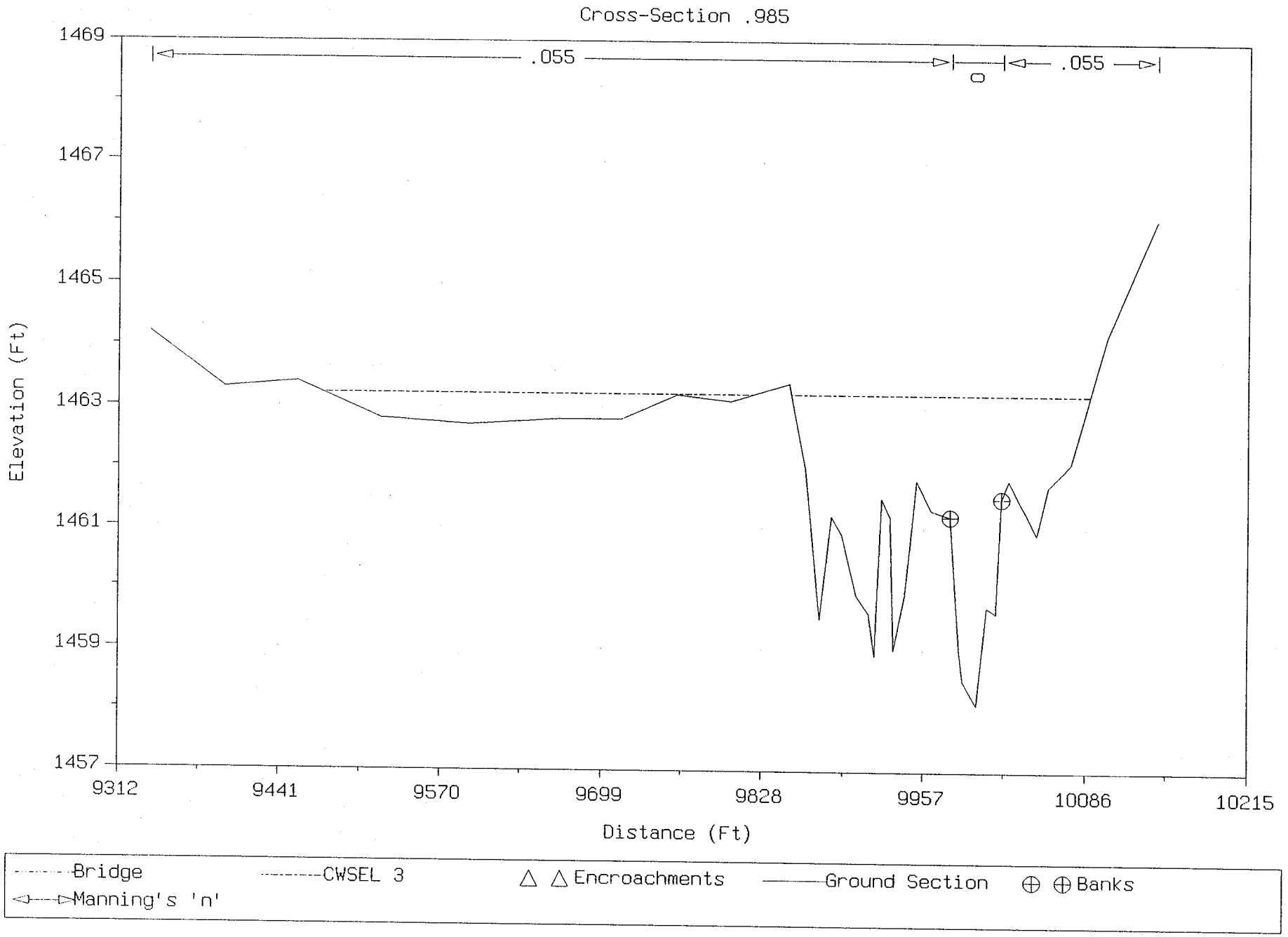
.055
0
.055
1471
1468
1465
1462
1459
1456
1453
Elevation (Ft)
9275
9431
9587
9743
9899
10055
10211
10367
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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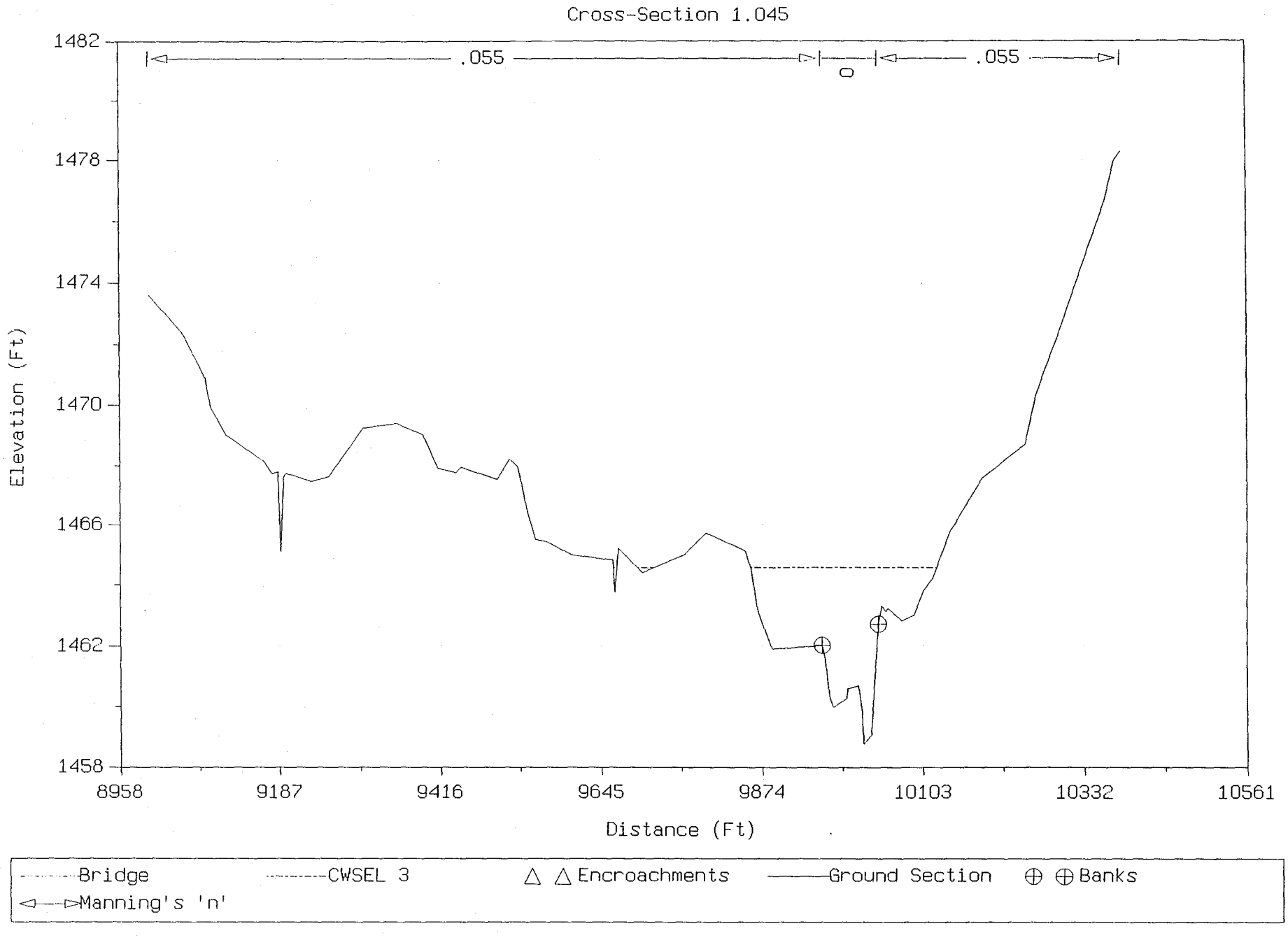
1469
1467
1465
1463
1461
1459
1457
Elevation (Ft)
9312
9441
9570
9699
9828
9957
10086
10215
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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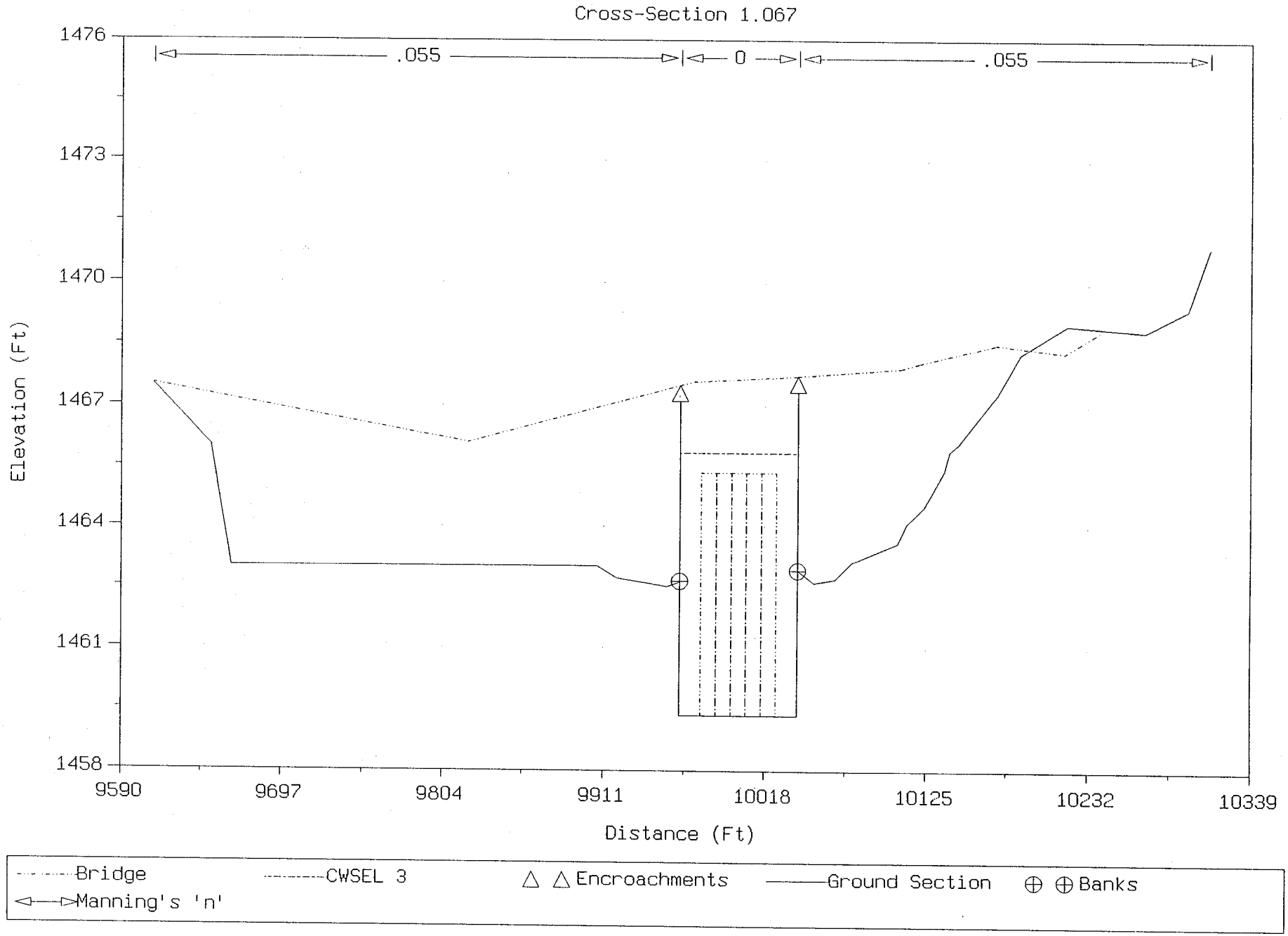
.055
1482
1478
1474
1470
1466
1462
1458
Elevation (Ft)
8958
9187
9416
9645
9874
10103
10332
10561
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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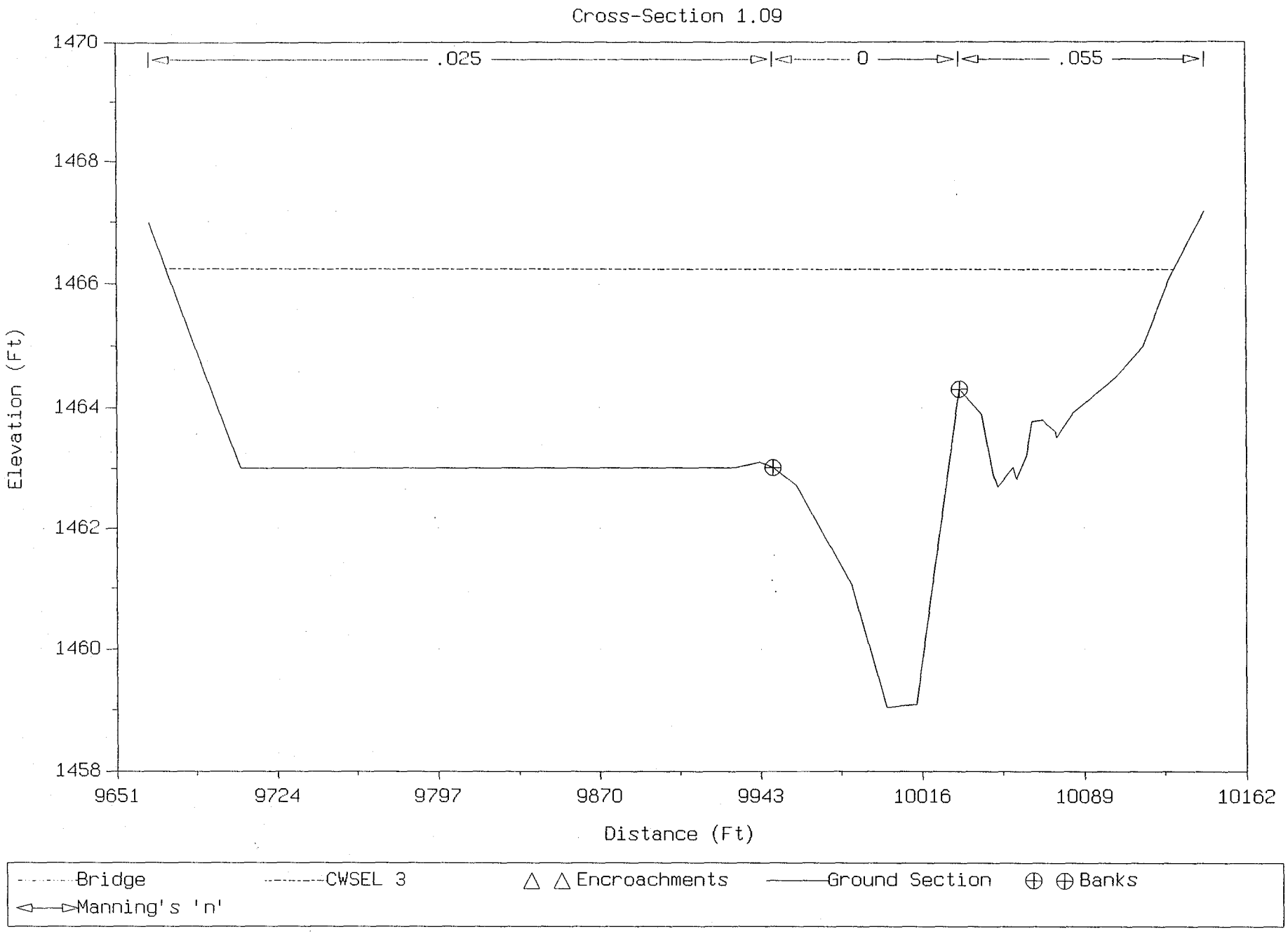
.055
1476
1473
1470
1467
1464
1461
1458
Elevation (Ft)
9590
9697
9804
9911
10018
10125
10232
10339
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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.055
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1468
1466
1464
1462
1460
1458
Elevation (Ft)
9651
9724
9797
9870
9943
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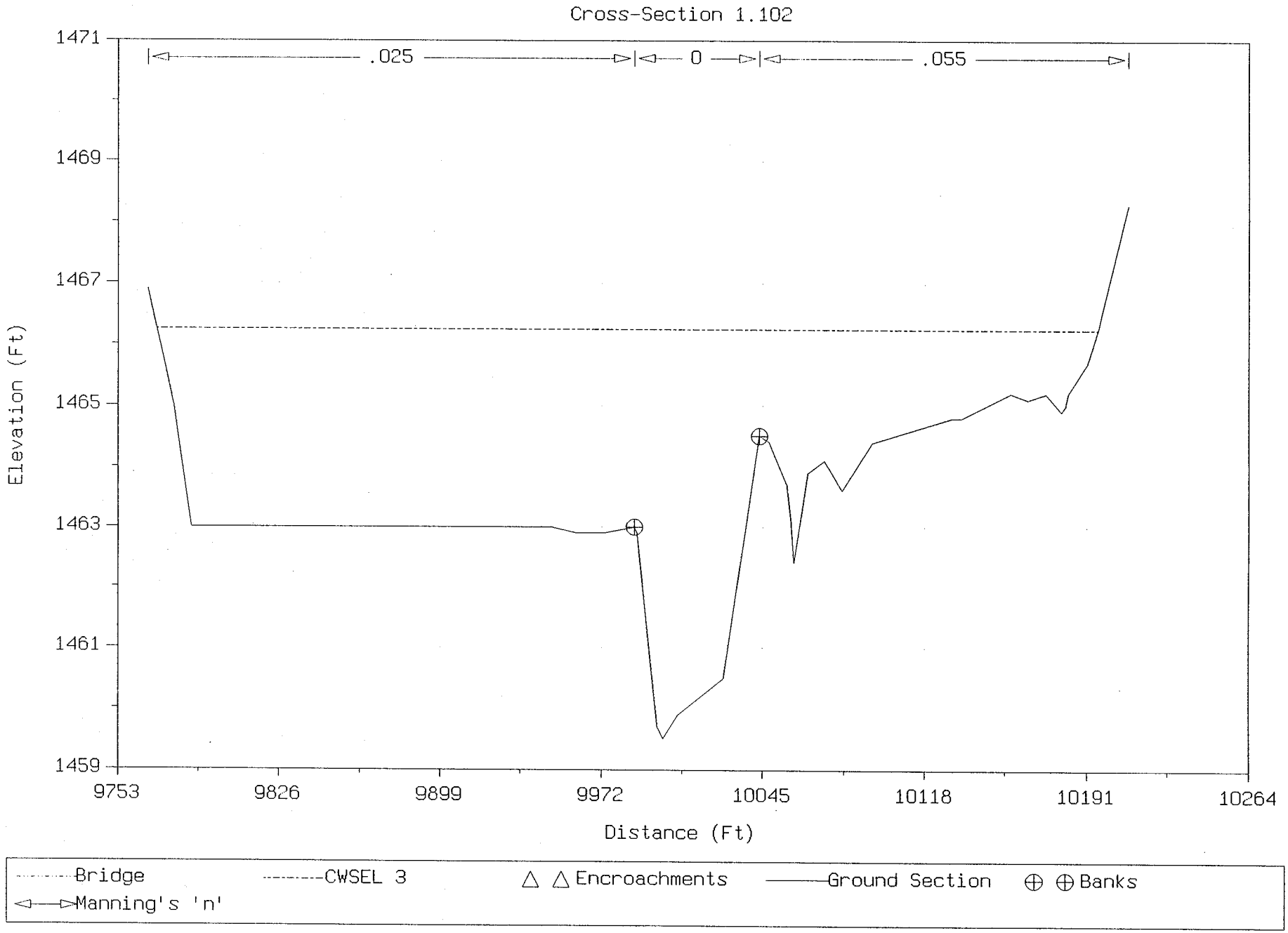
10089
10162
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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0
.055
1471
1469
1467
1465
1463
1461
1459
Elevation (Ft)
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9826
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9972
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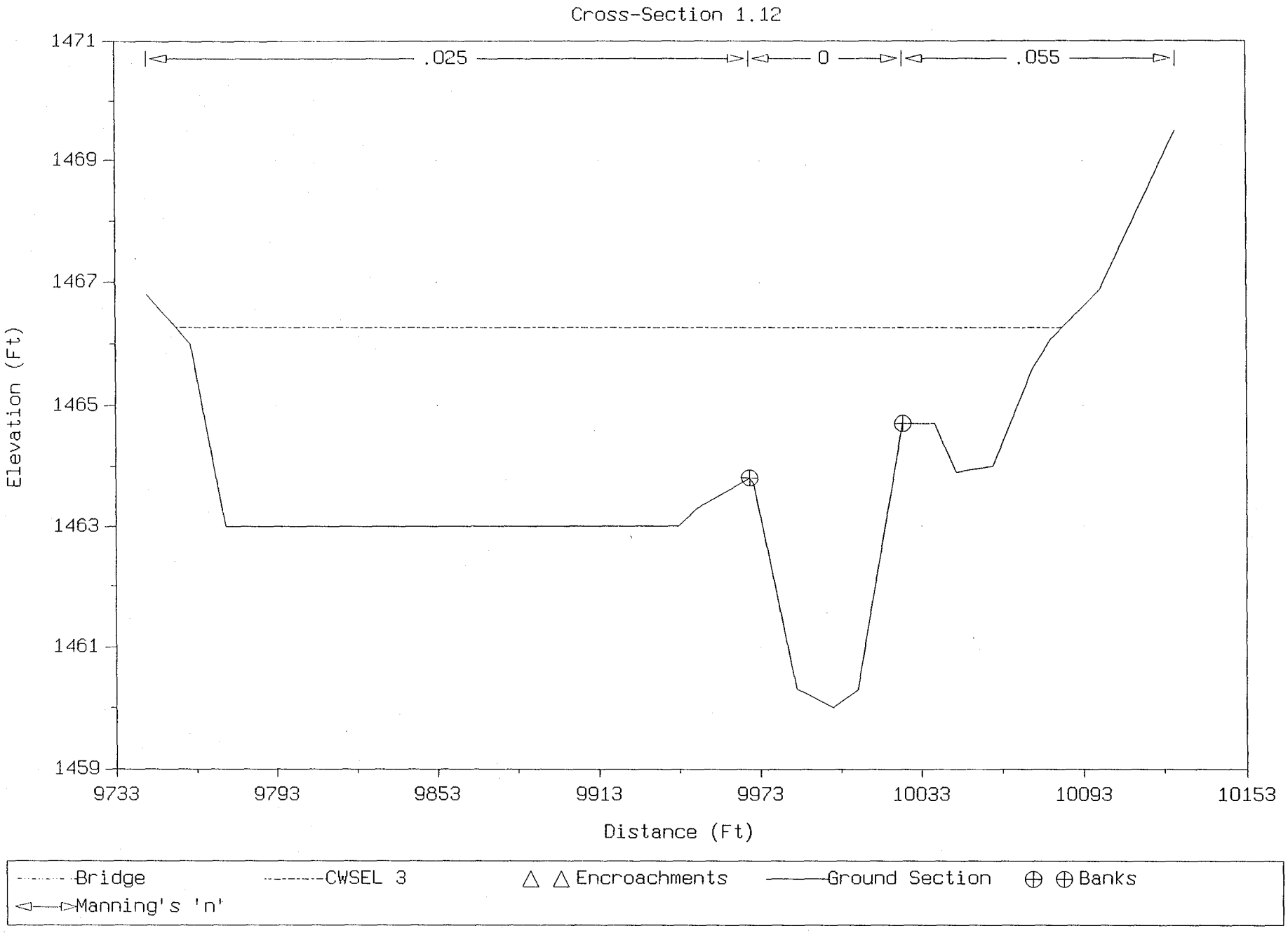
10118
10191
10264
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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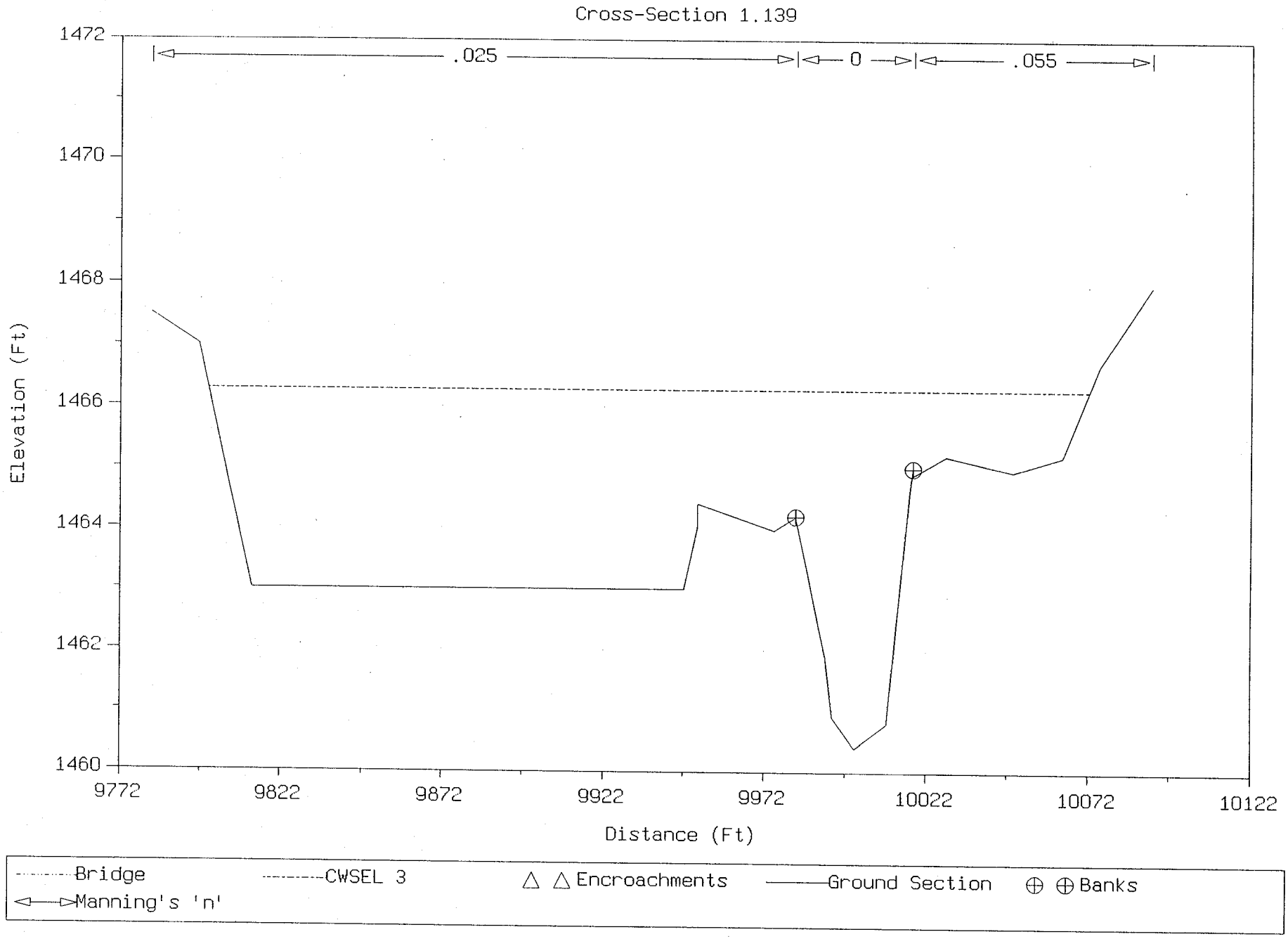
0
.055
1471
1469
1467
1465
1463
1461
1459
Elevation (Ft)
9733
9793
9853
9913
9973
10033
10093
10153
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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0
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1472
1470
1468
1466
1464
1462
1460
Elevation (Ft)
9772
9822
9872
9922
9972
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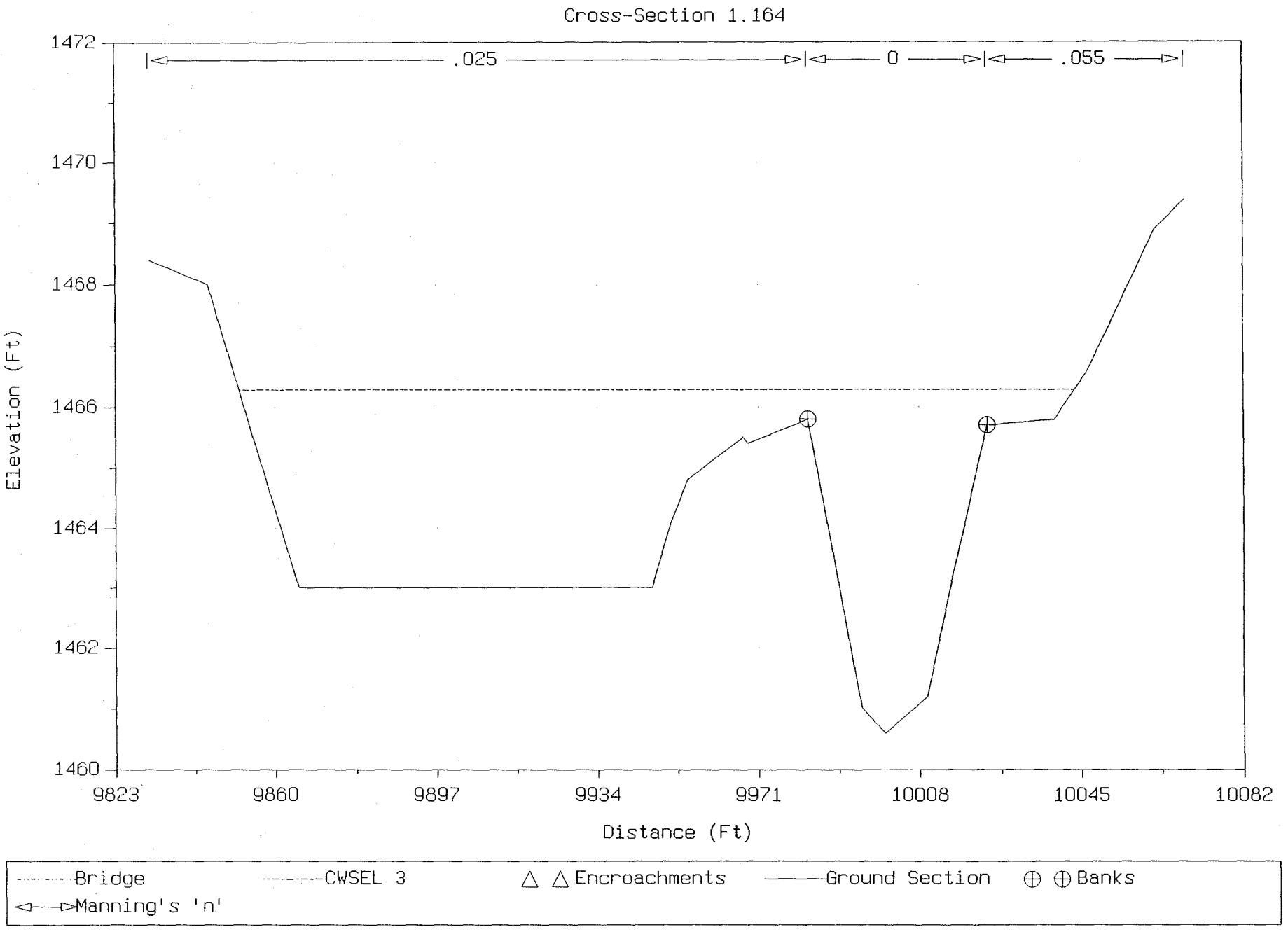
10072
10122
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1472
1470
1468
1466
1464
1462
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Elevation (Ft)
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9860
9897
9934
9971
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10045
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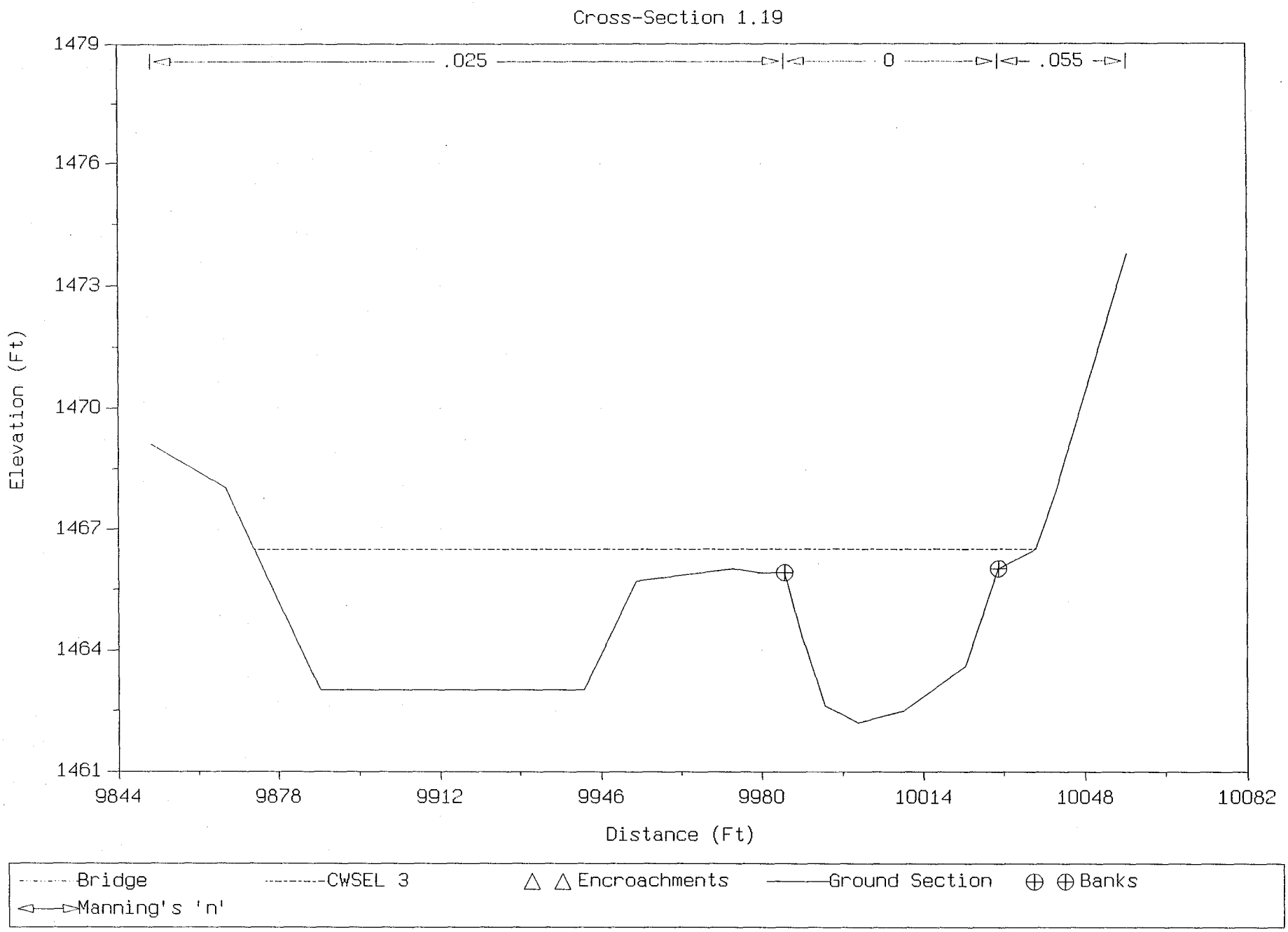
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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0
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1476
1473
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1467
1464
1461
Elevation (Ft)
9844
9878
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9946
9980
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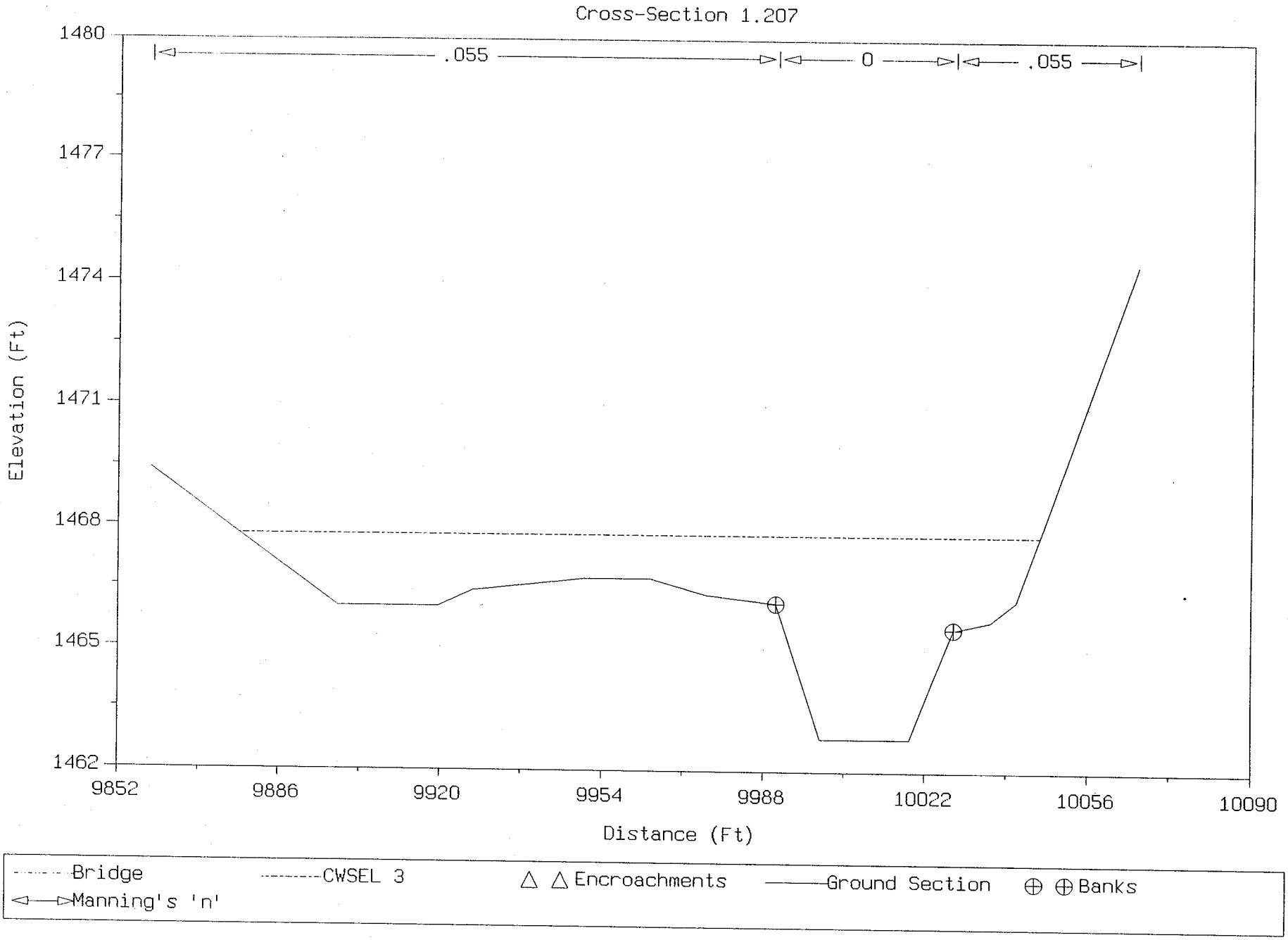
10048
10082
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.207
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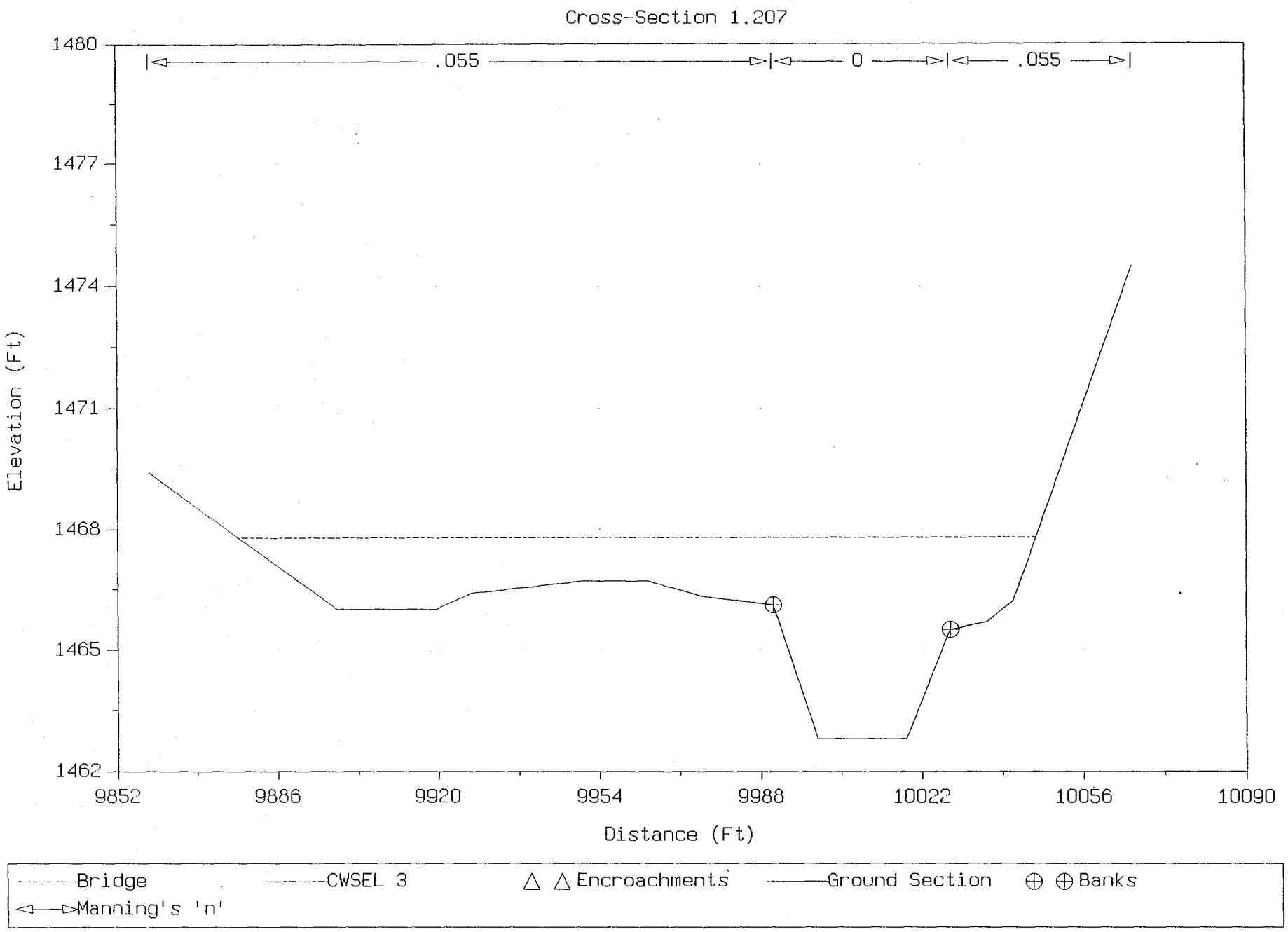
0
.055
1480
1477
1474
1471
1468
1465
1462
Elevation (Ft)
9852
9886
9920
9954
9988
10022
10056
10090
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.207
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1474
1471
1468
1465
1462
Elevation (Ft)
9852
9886
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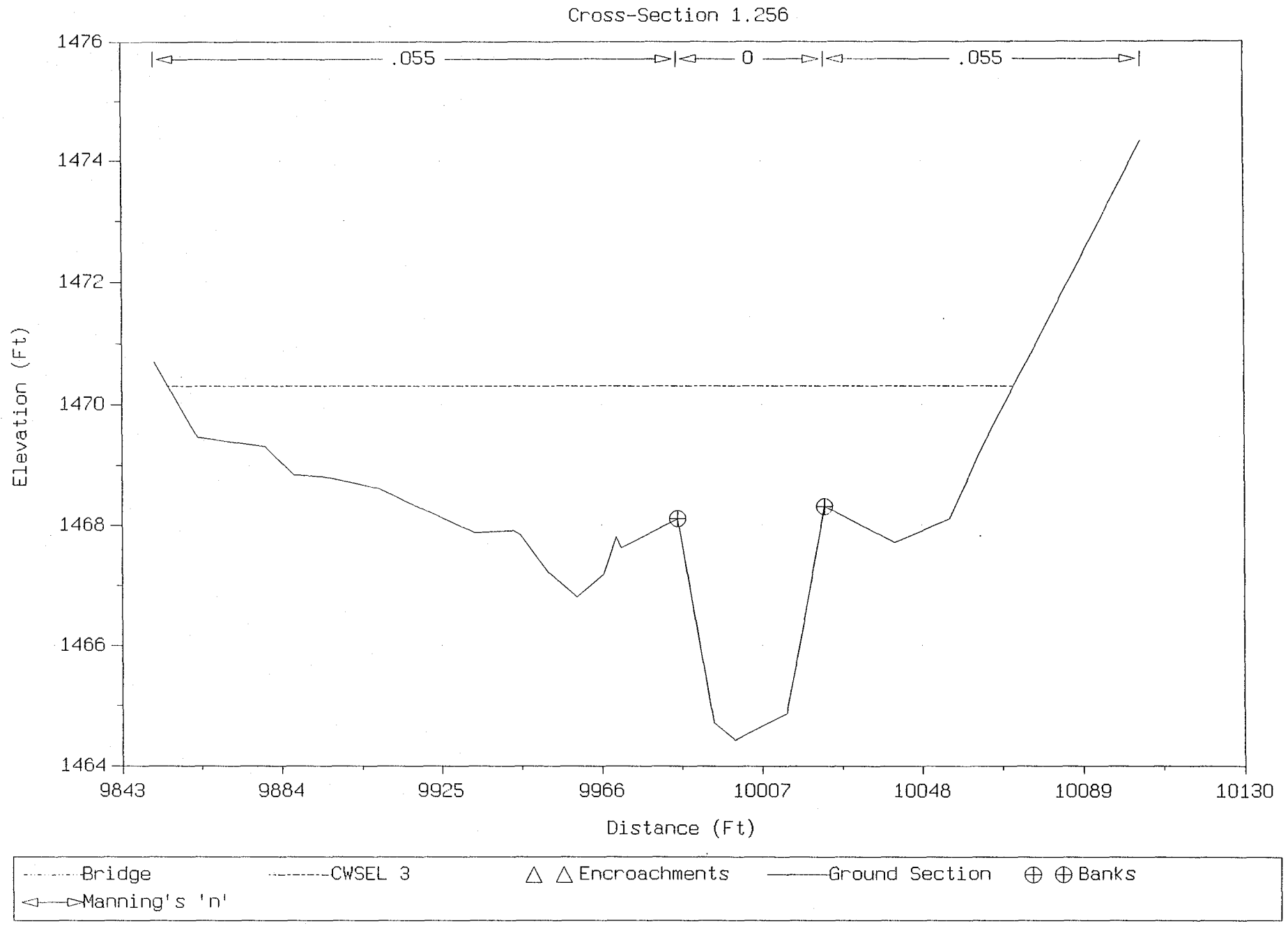
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1468
1466
1464
Elevation (Ft)
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9884
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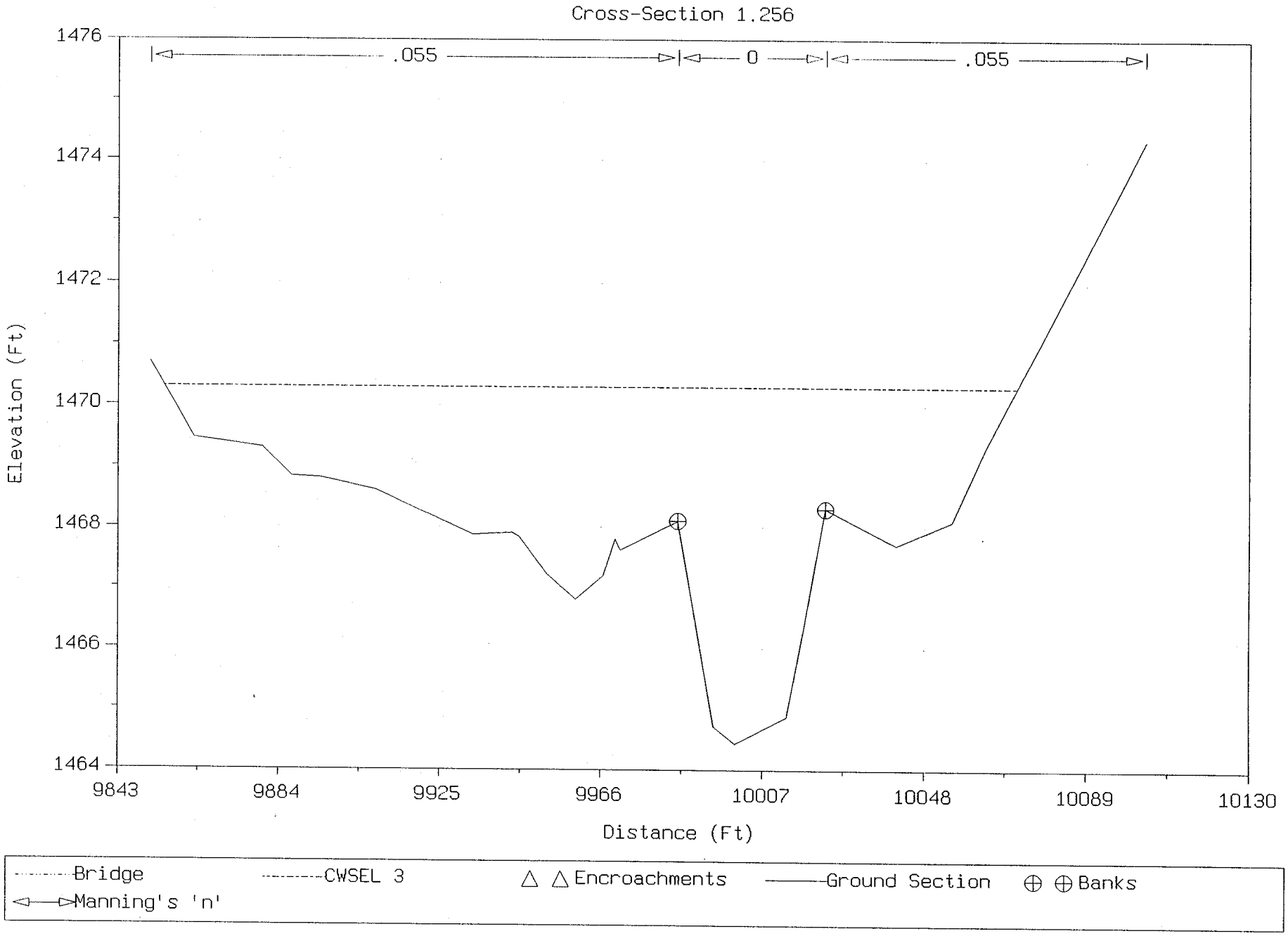
10130
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1476
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Elevation (Ft)
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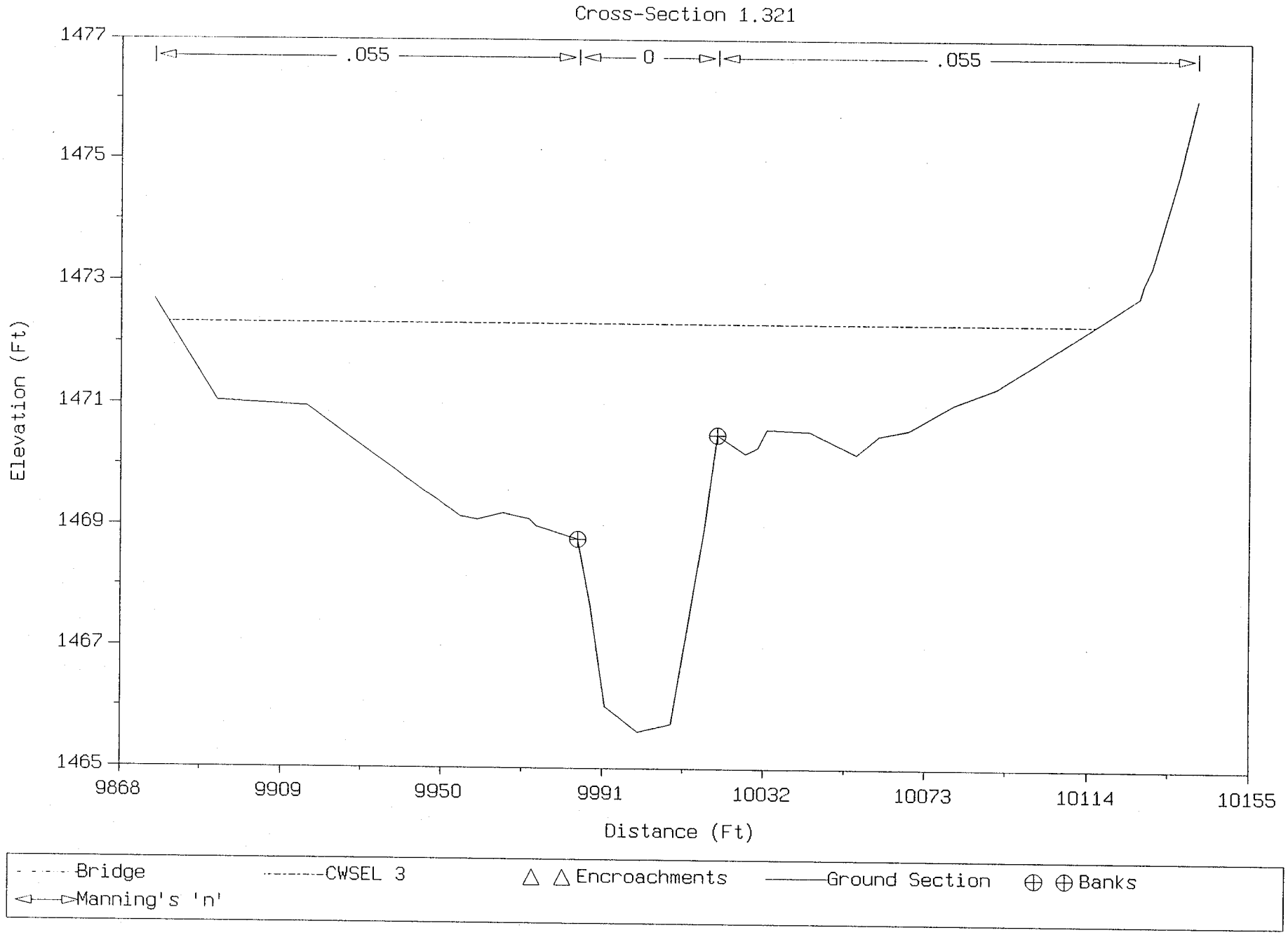
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1473
1471
1469
1467
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9991
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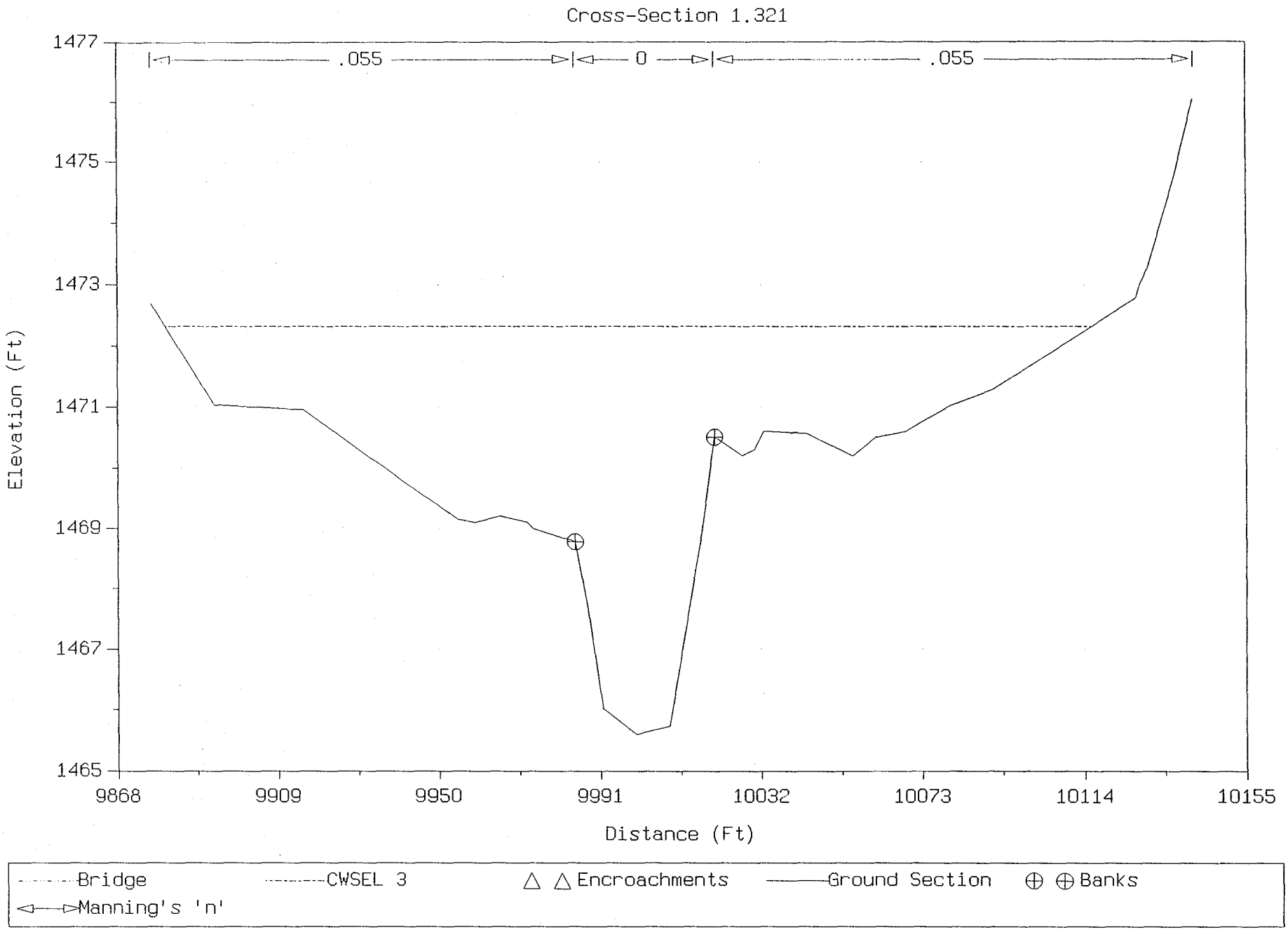
10114
10155
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1475
1473
1471
1469
1467
1465
Elevation (Ft)
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9909
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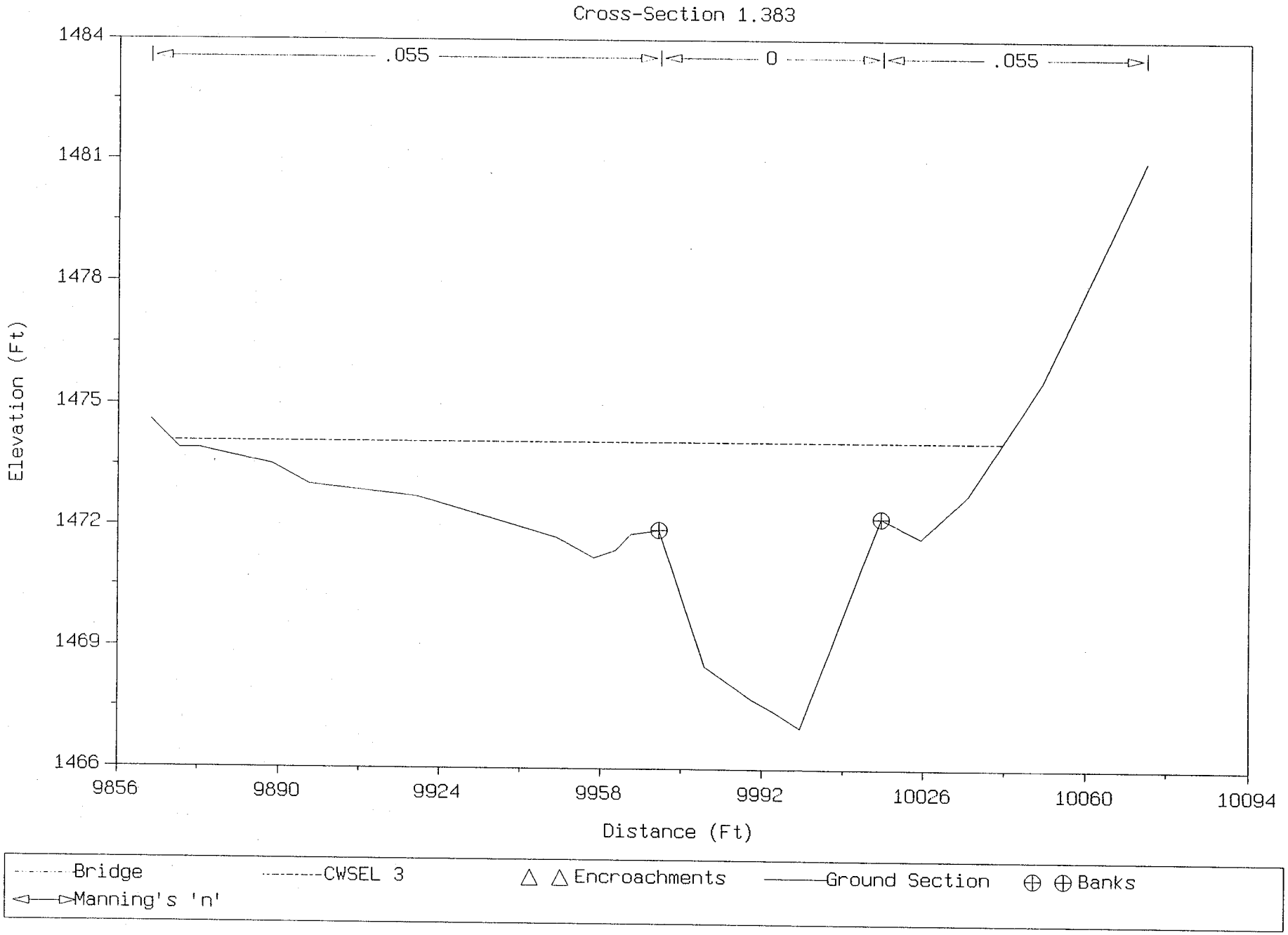
10155
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.383
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1481
1478
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1469
1466
Elevation (Ft)
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9890
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9958
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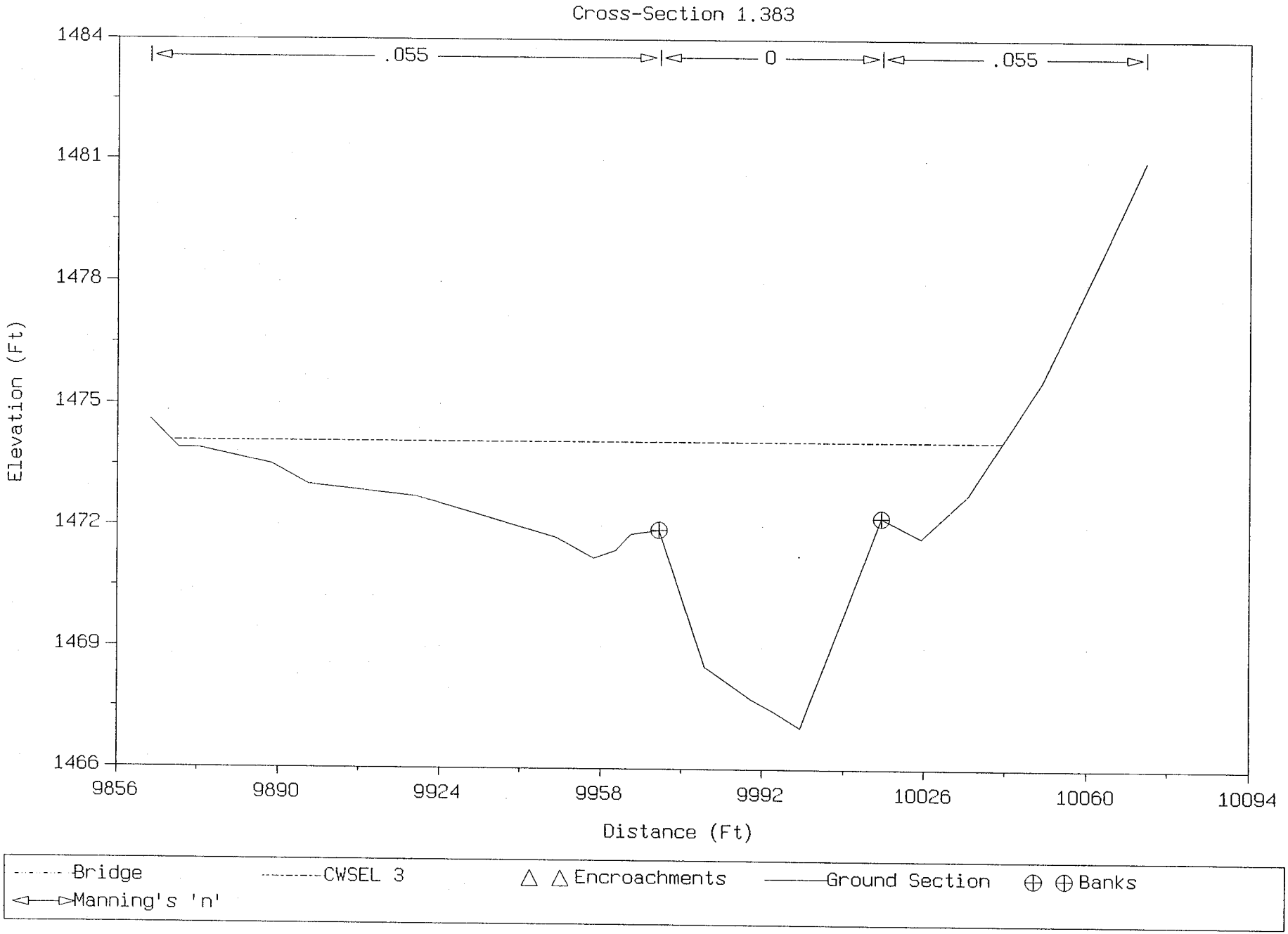
10060
10094
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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Elevation (Ft)
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9890
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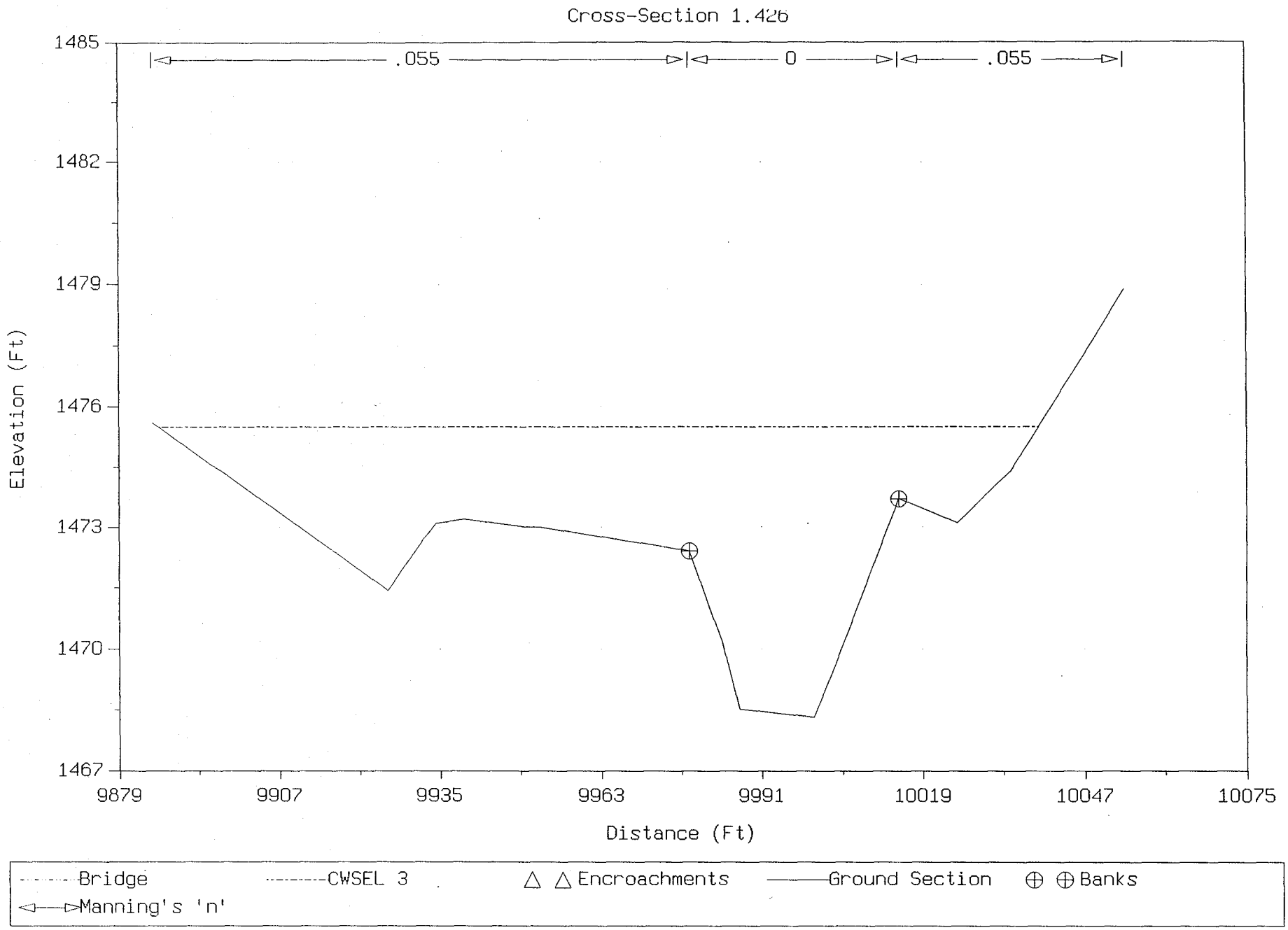
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1470
1467
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9991
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10047
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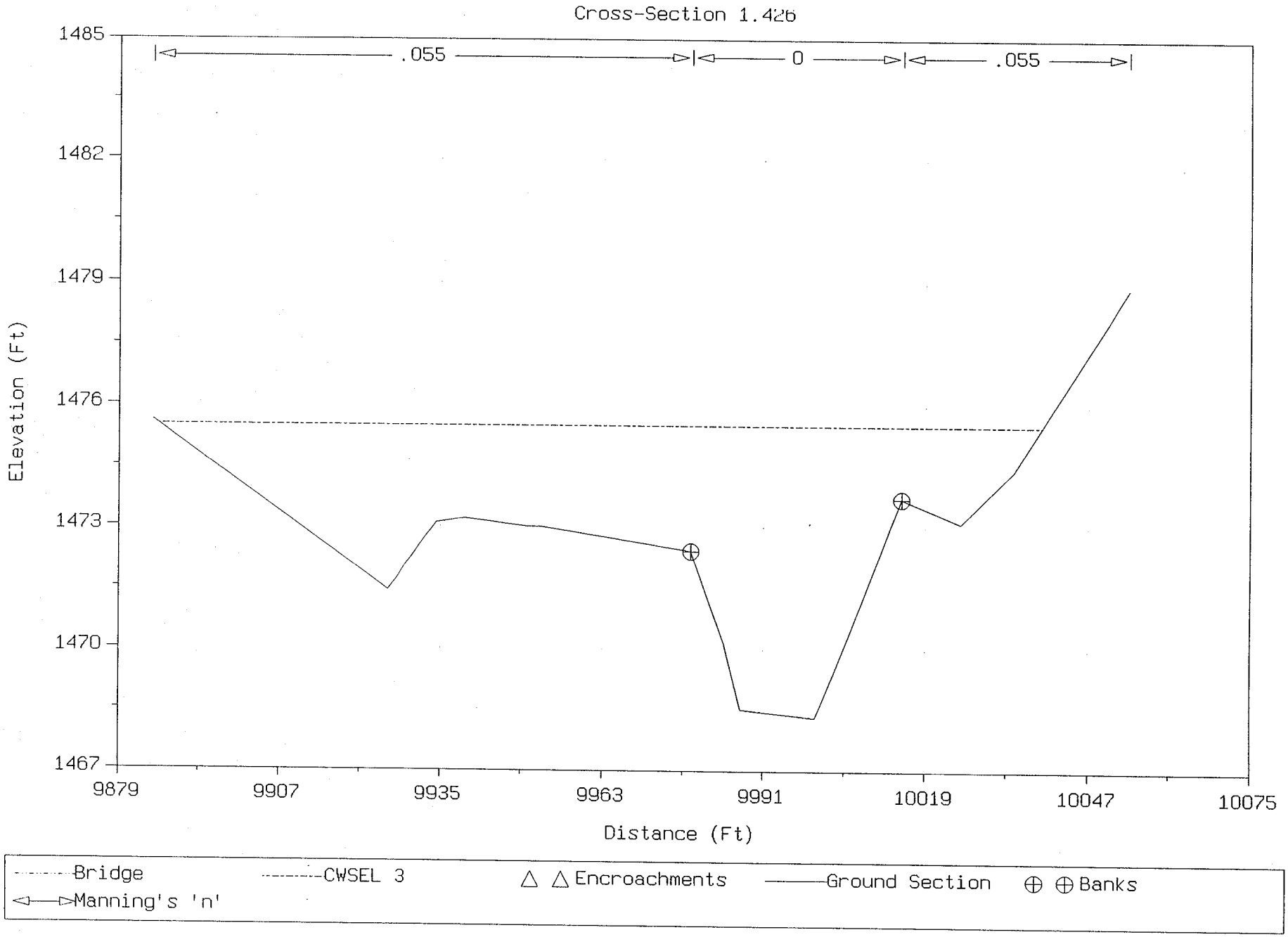
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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Elevation (Ft)
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9907
9935
9963
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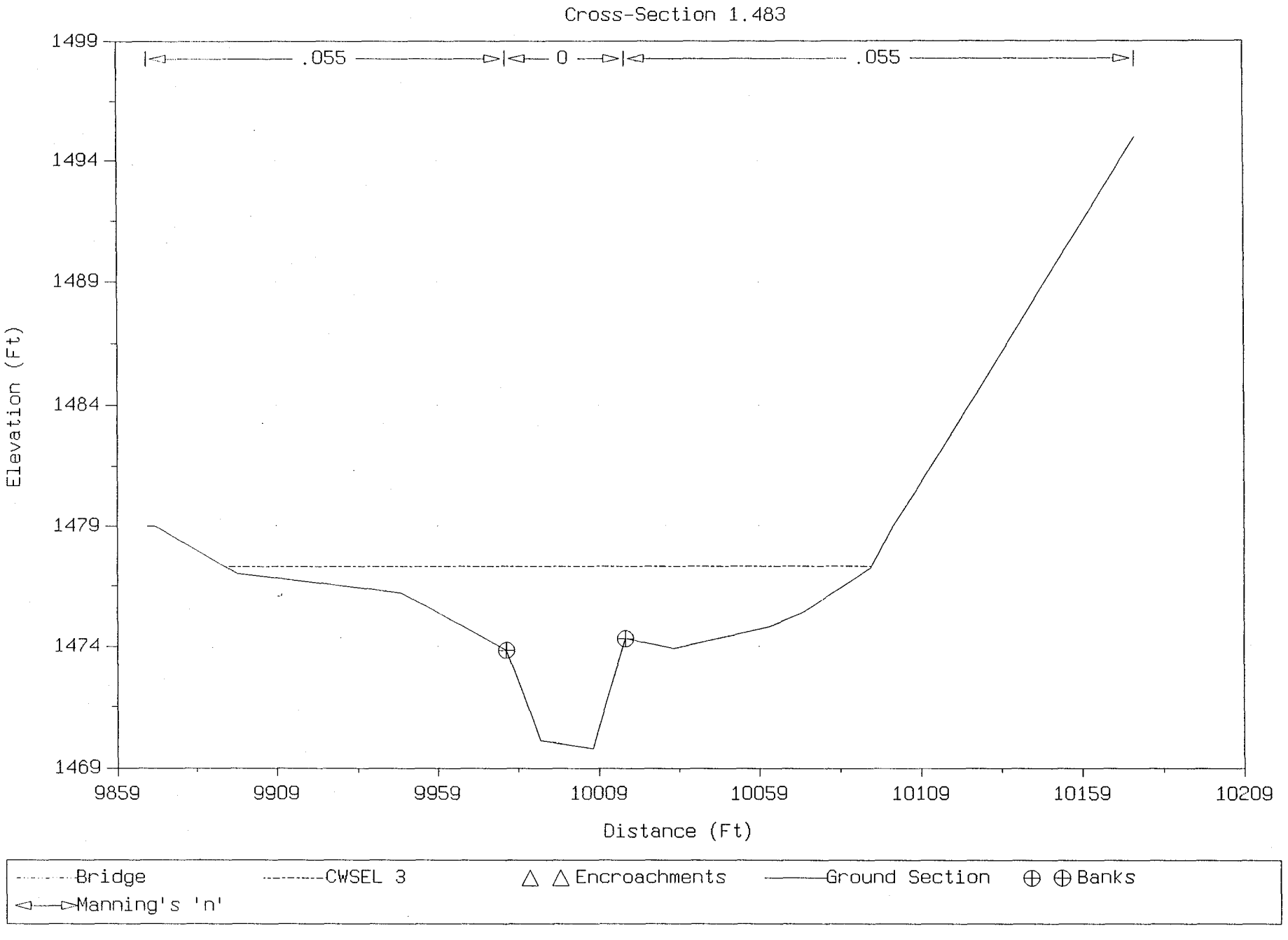
10075
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1479
1474
1469
Elevation (Ft)
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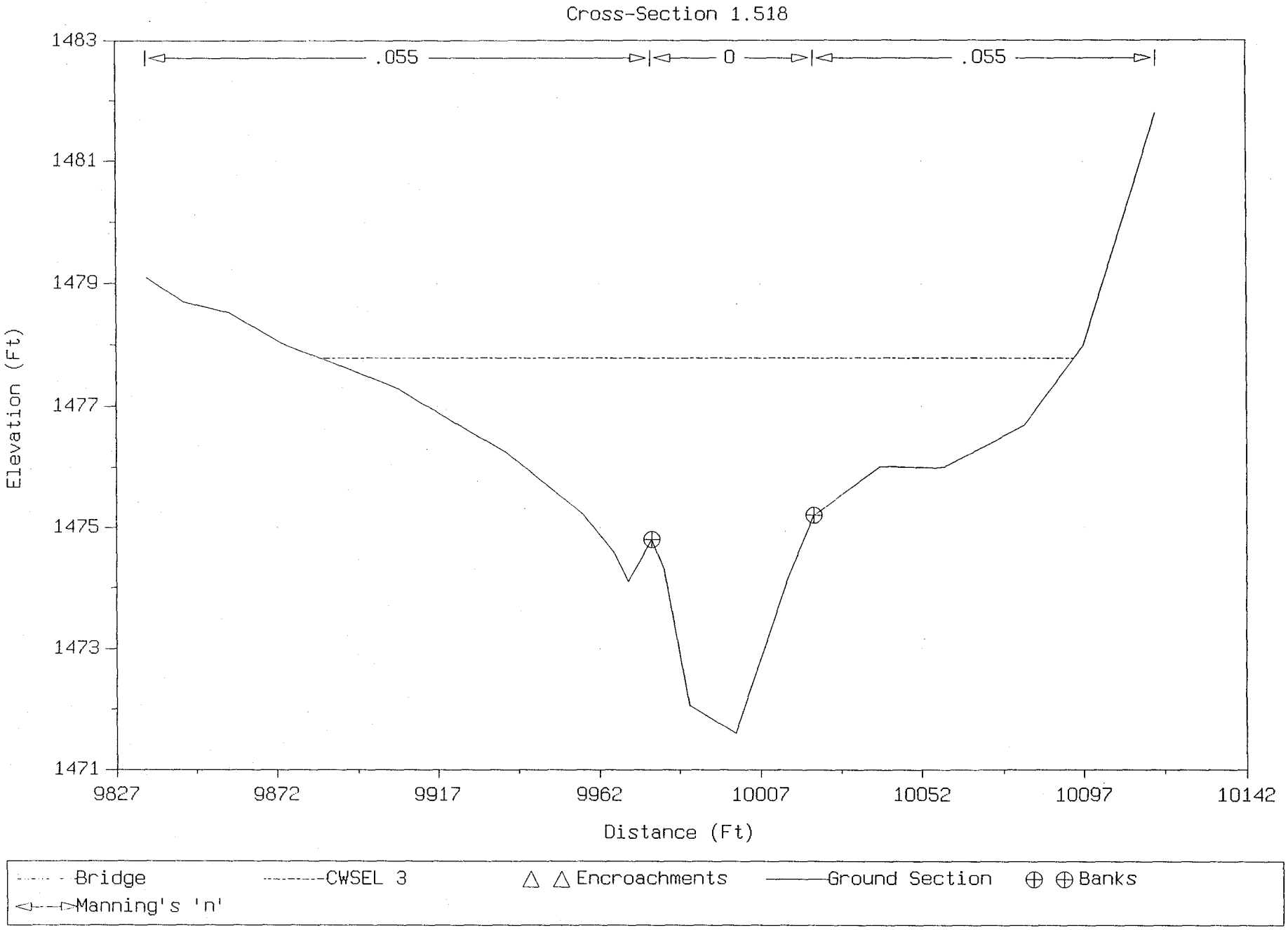
9909
9959
10009
10059
10109
10159
10209
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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1481
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1477
1475
1473
1471
Elevation (Ft)
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10097
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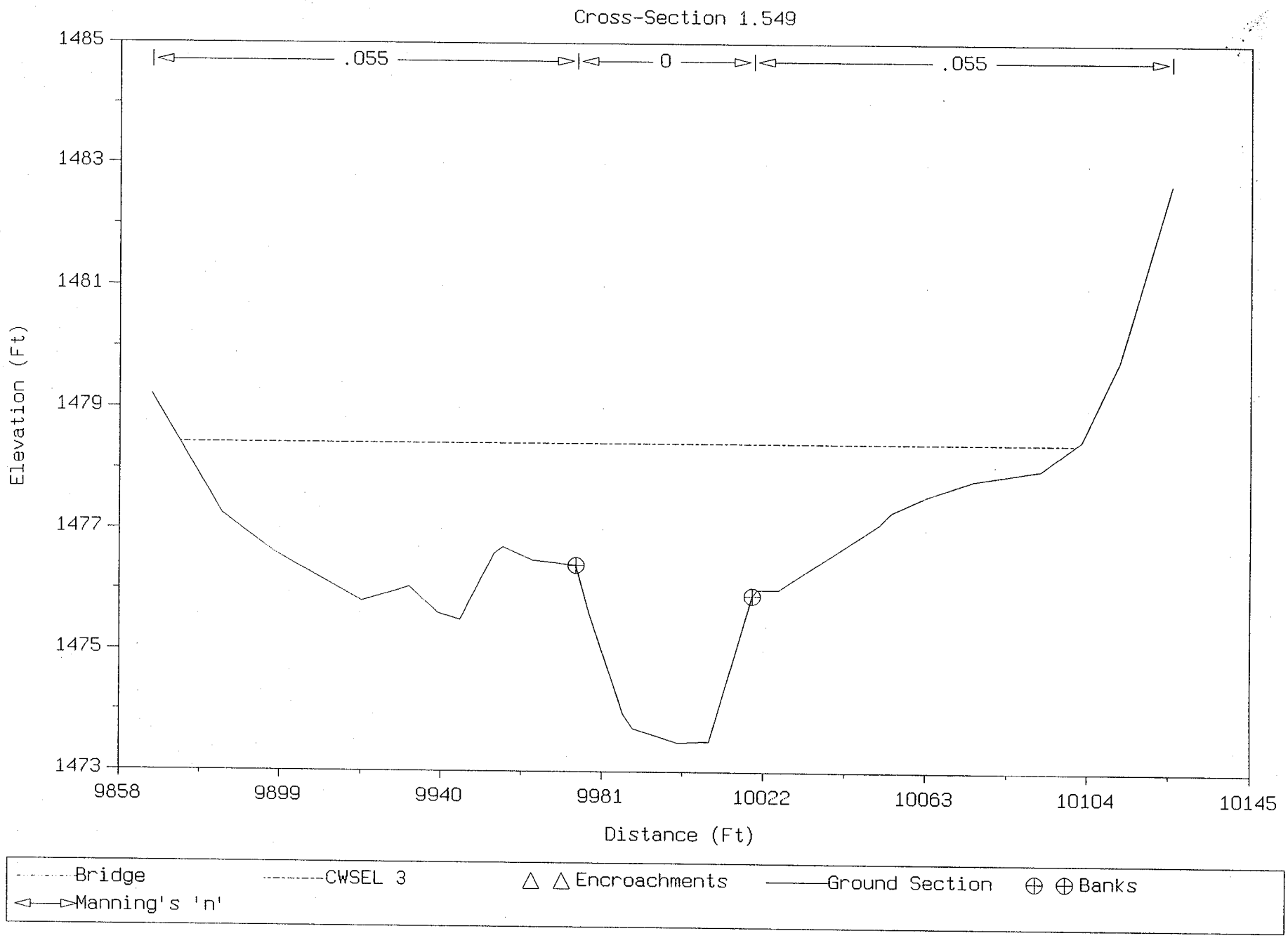
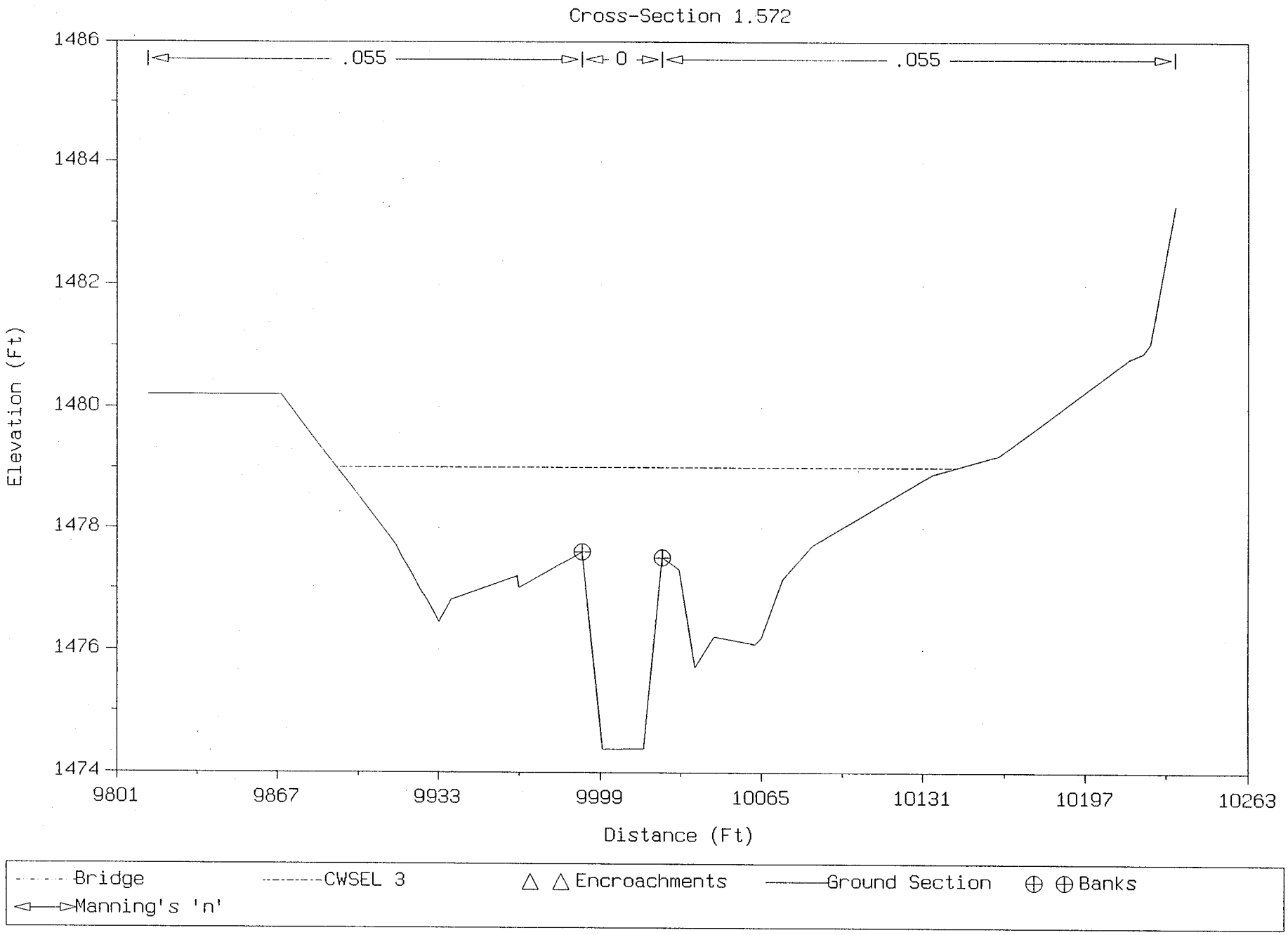
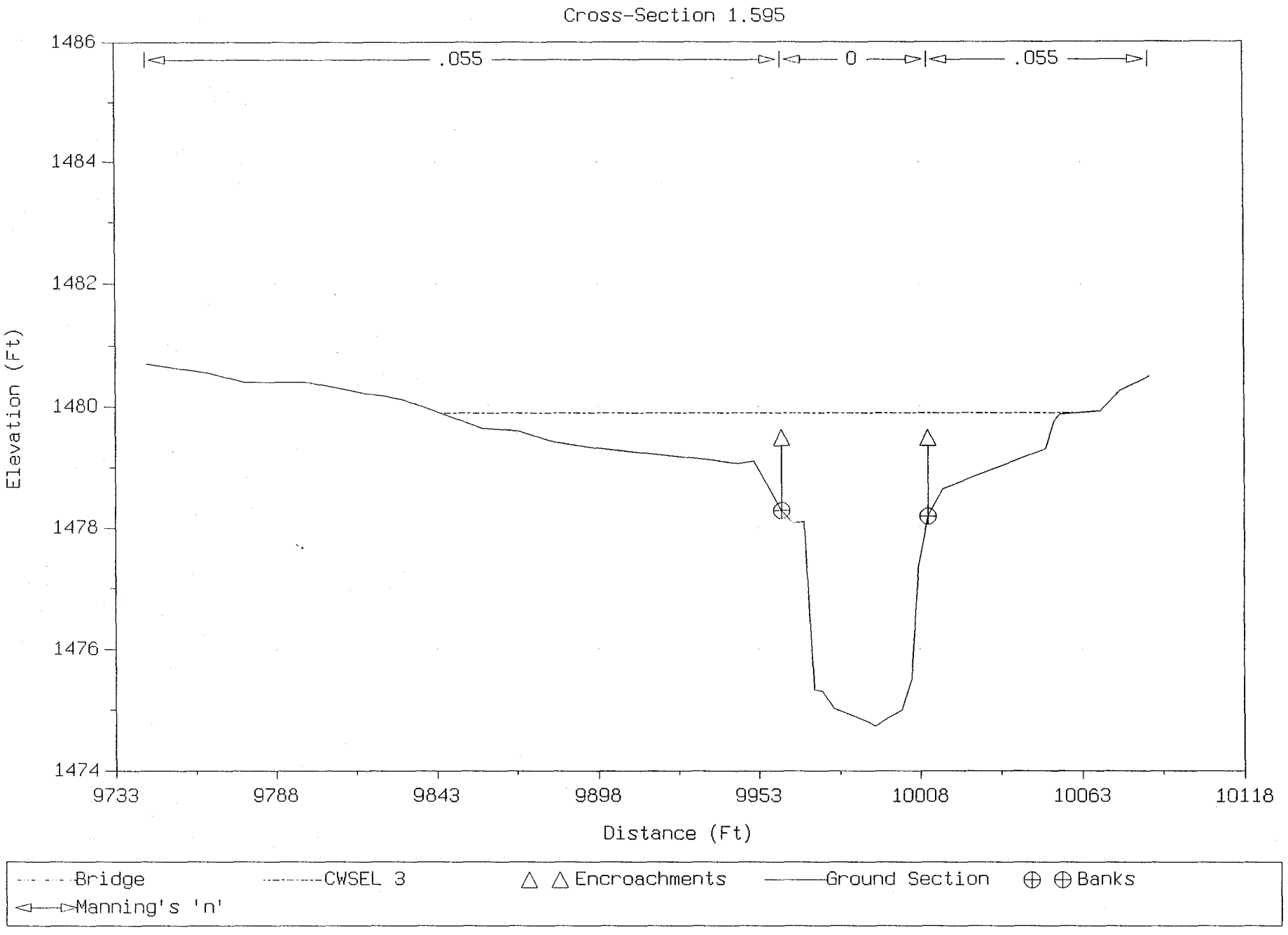
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.549
.055
0
.055
1485
1483
1481
1479
1477
1475
1473
Elevation (Ft)
9858
9899
9940
9981
10022
10063
10104
10145
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.572
.055
0
.055
1486
1484
1482
1480
1478
1476
1474
Elevation (Ft)
9801
9867
9933
9999
10065
10131
10197
10263
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.595
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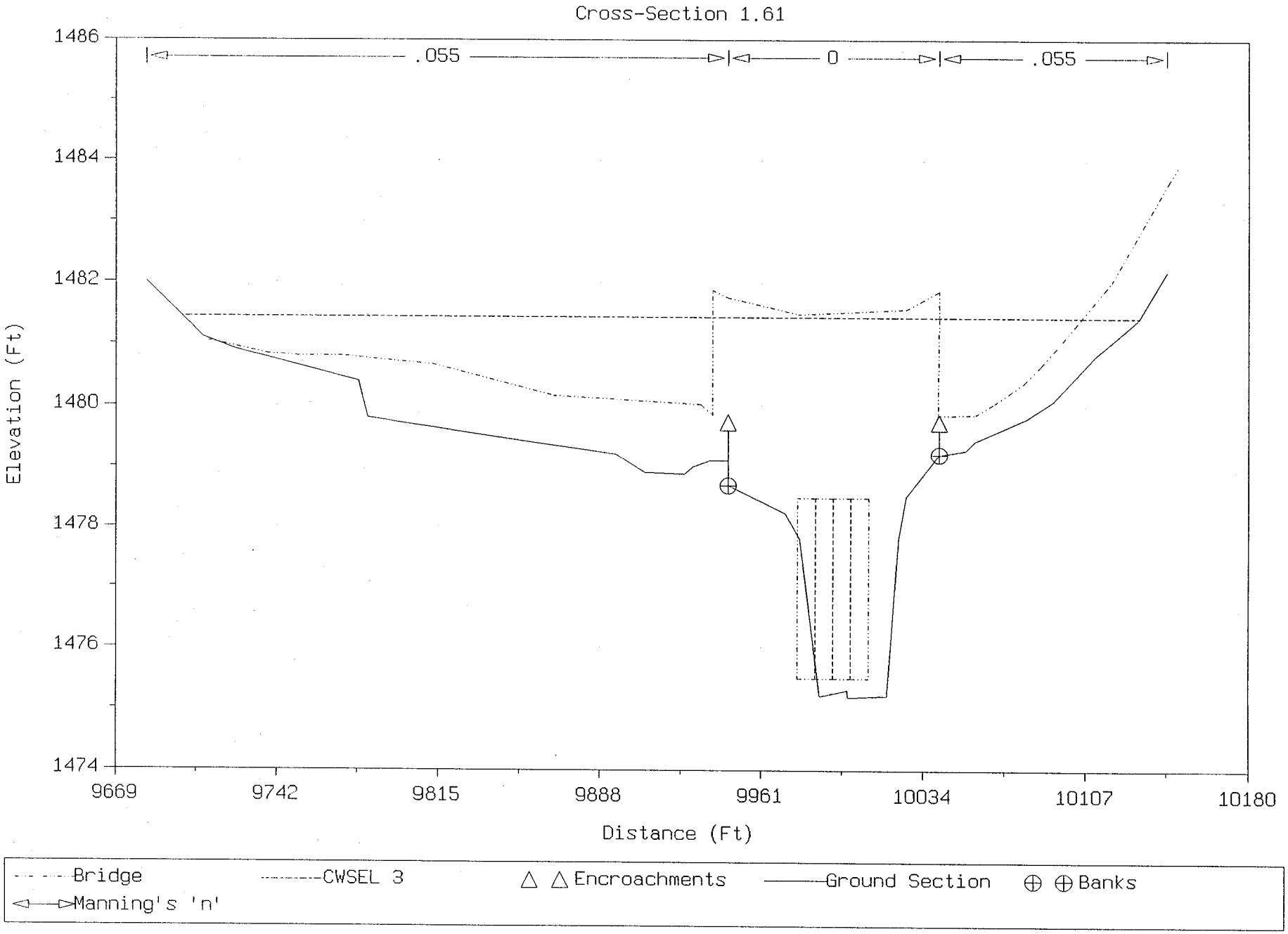
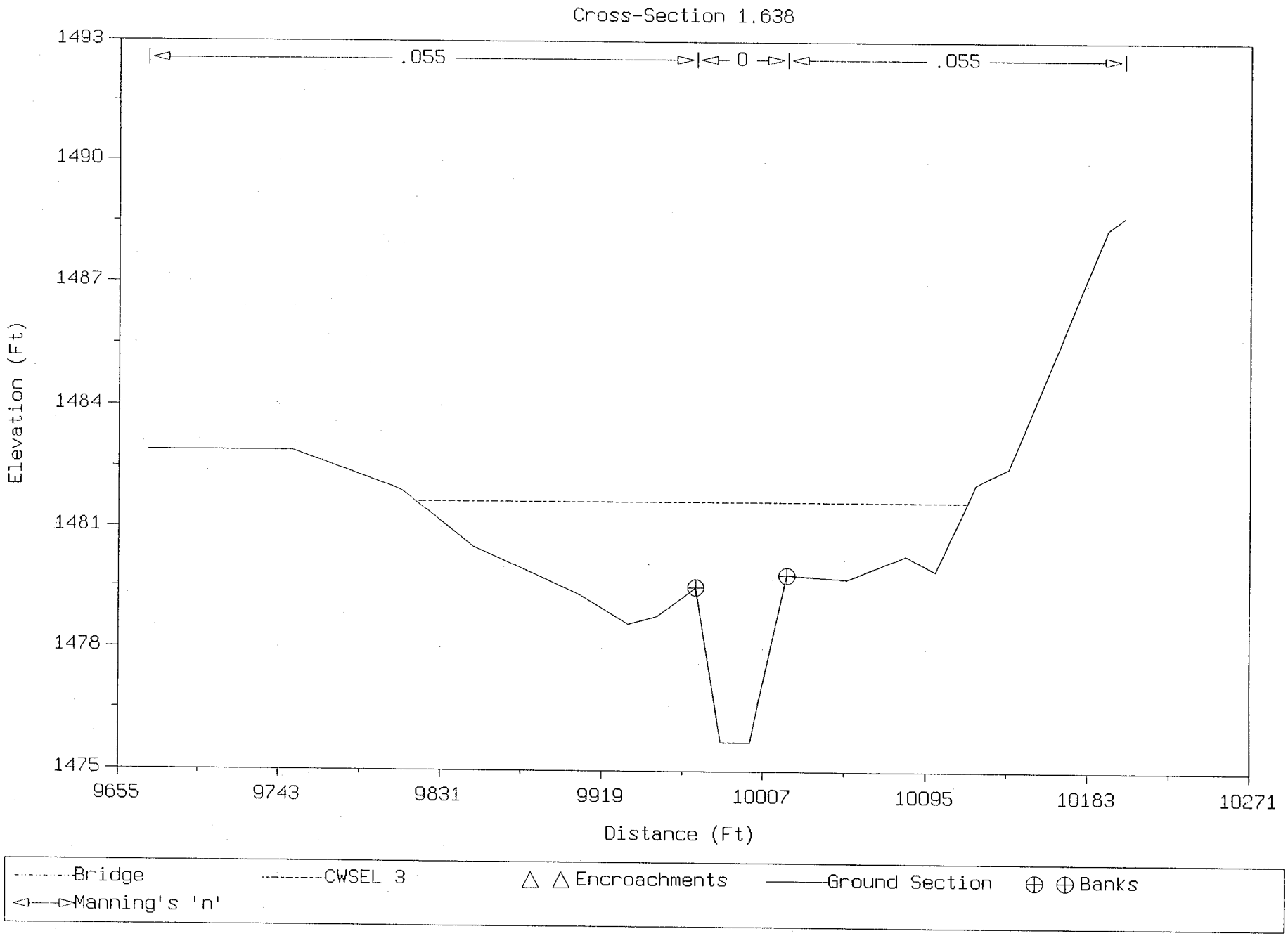
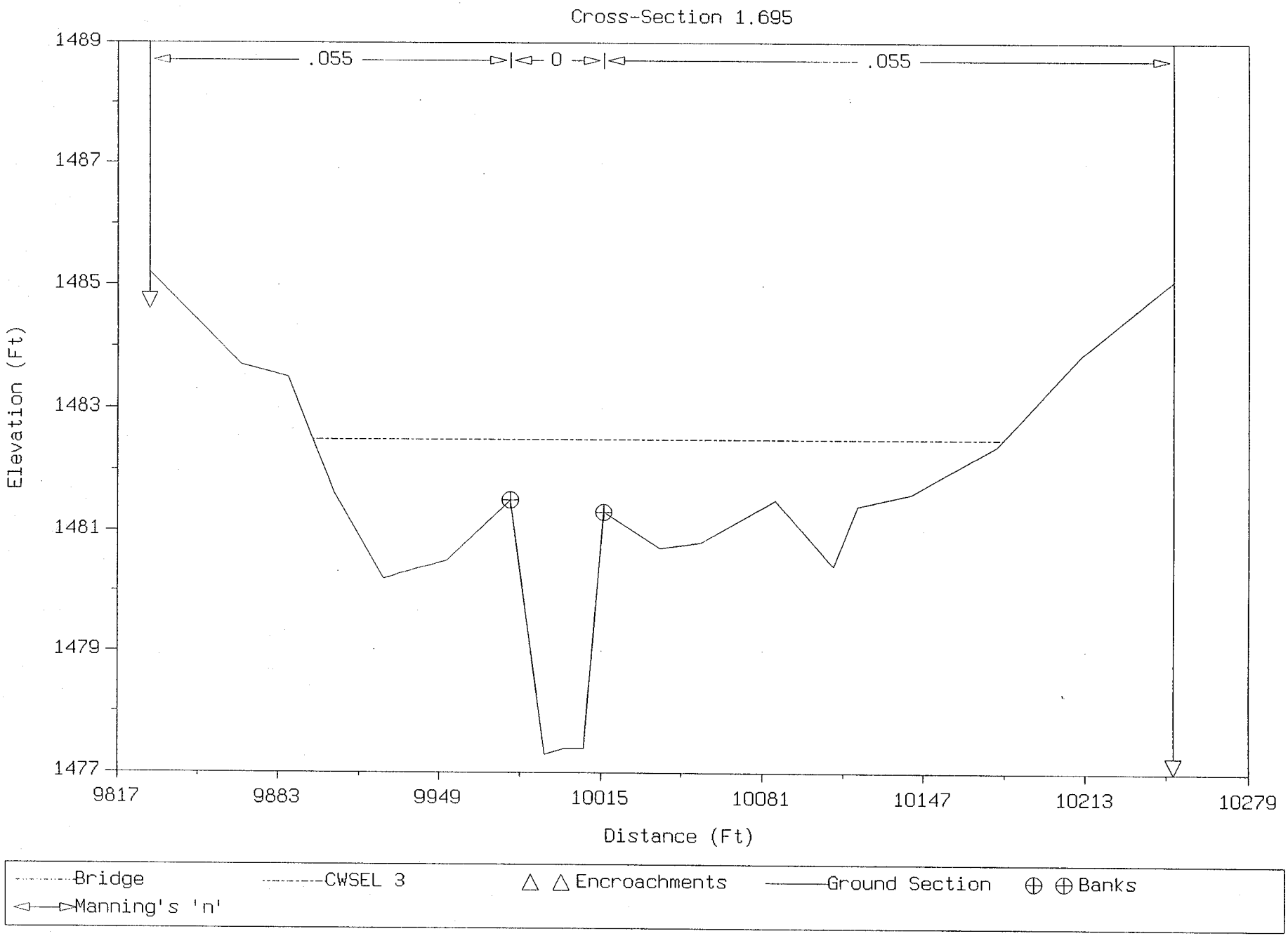
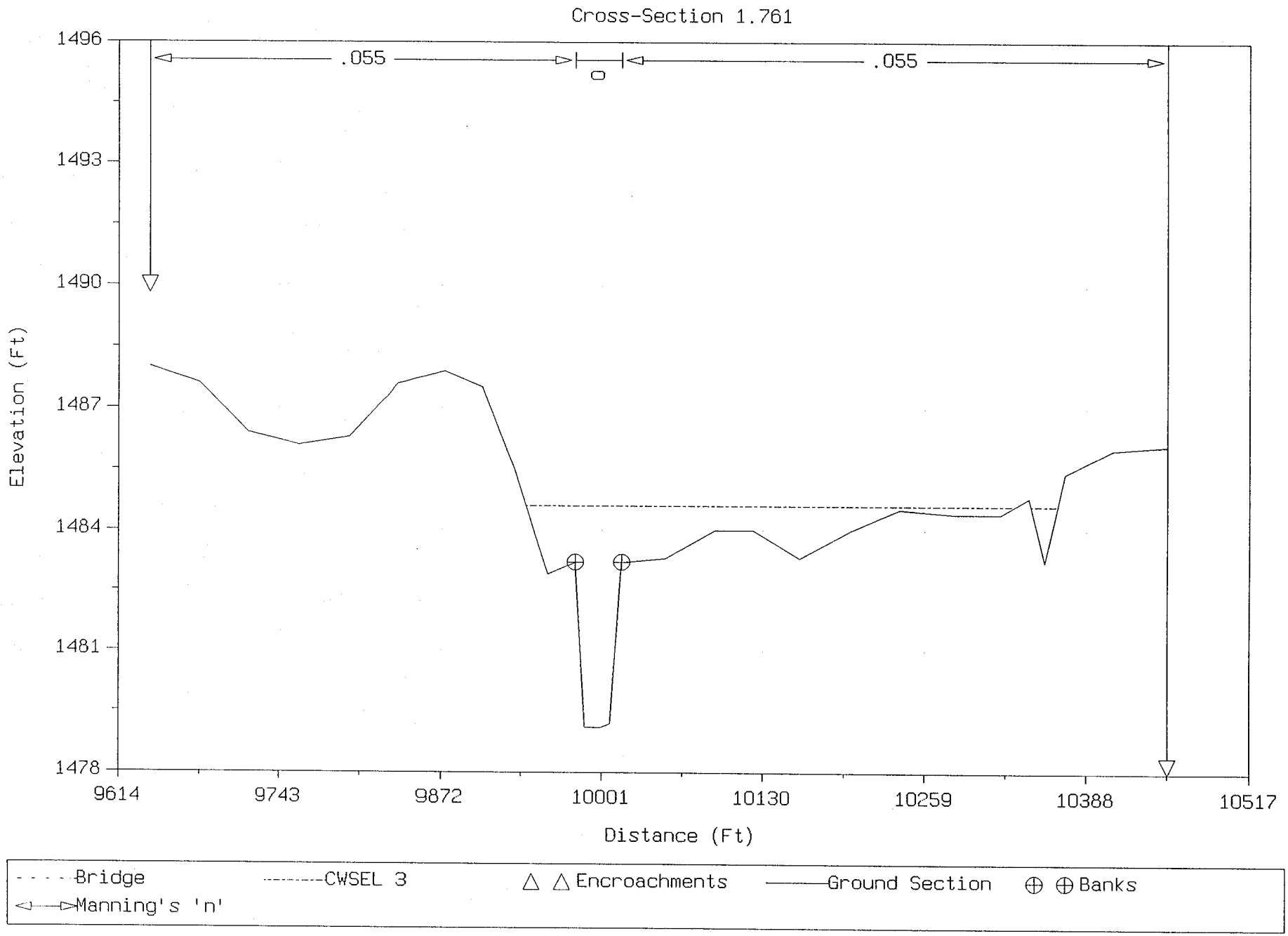
0
.055
1486
1484
1482
1480
1478
1476
1474
Elevation (Ft)
9733
9788
9843
9898
9953
10008
10063
10118
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.61
.055
0
.055
1486
1484
1482
1480
1478
1476
1474
Elevation (Ft)
9669
9742
9815
9888
9961
10034
10107
10180
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.638
.055
0
.055
1493
1490
1487
1484
1481
1478
1475
Elevation (Ft)
9655
9743
9831
9919
10007
10095
10183
10271
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.695
.055
0
.055
1489
1487
1485
1483
1481
1479
1477
Elevation (Ft)
9817
9883
9949
10015
10081
10147
10213
10279
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'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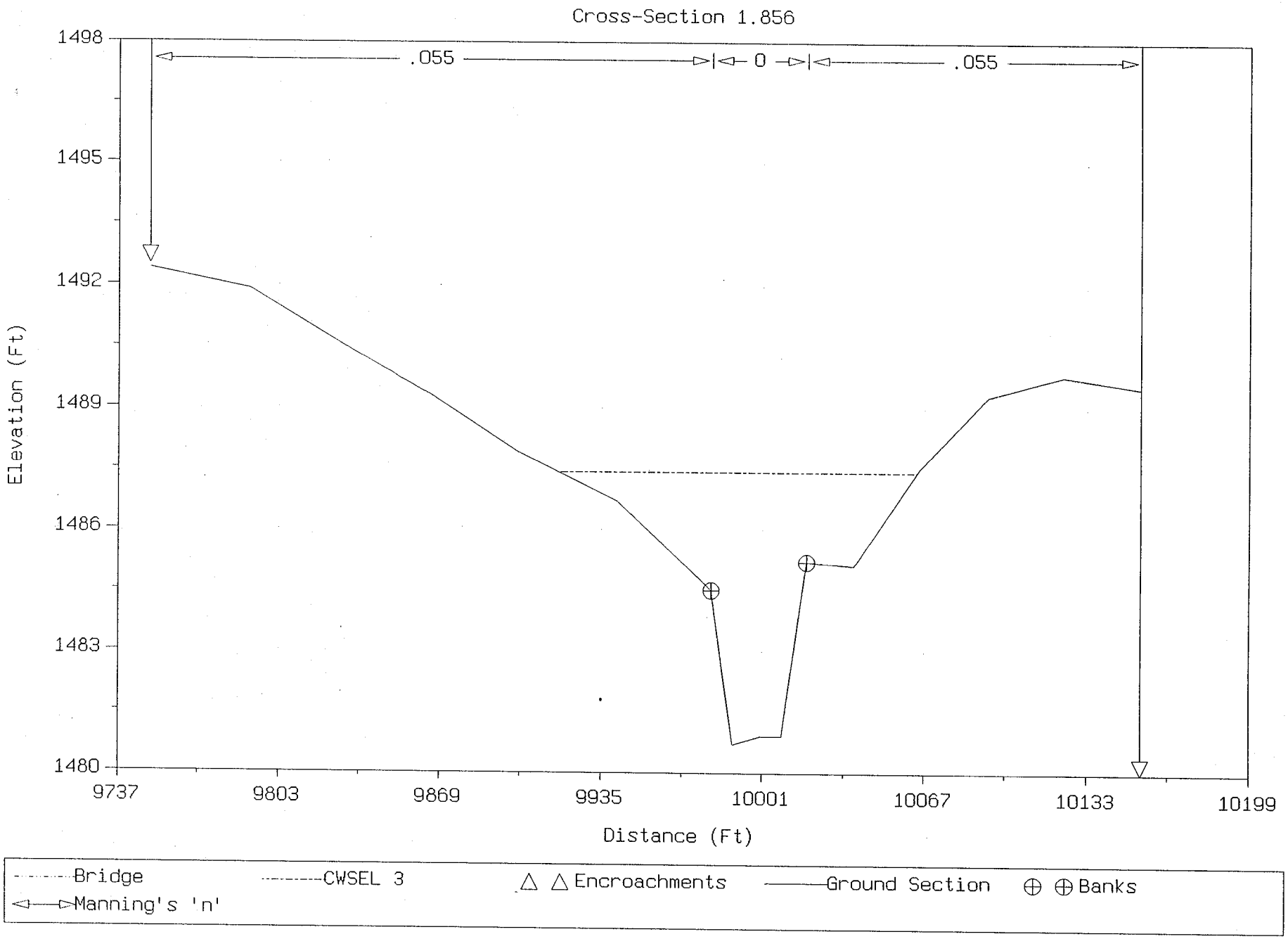
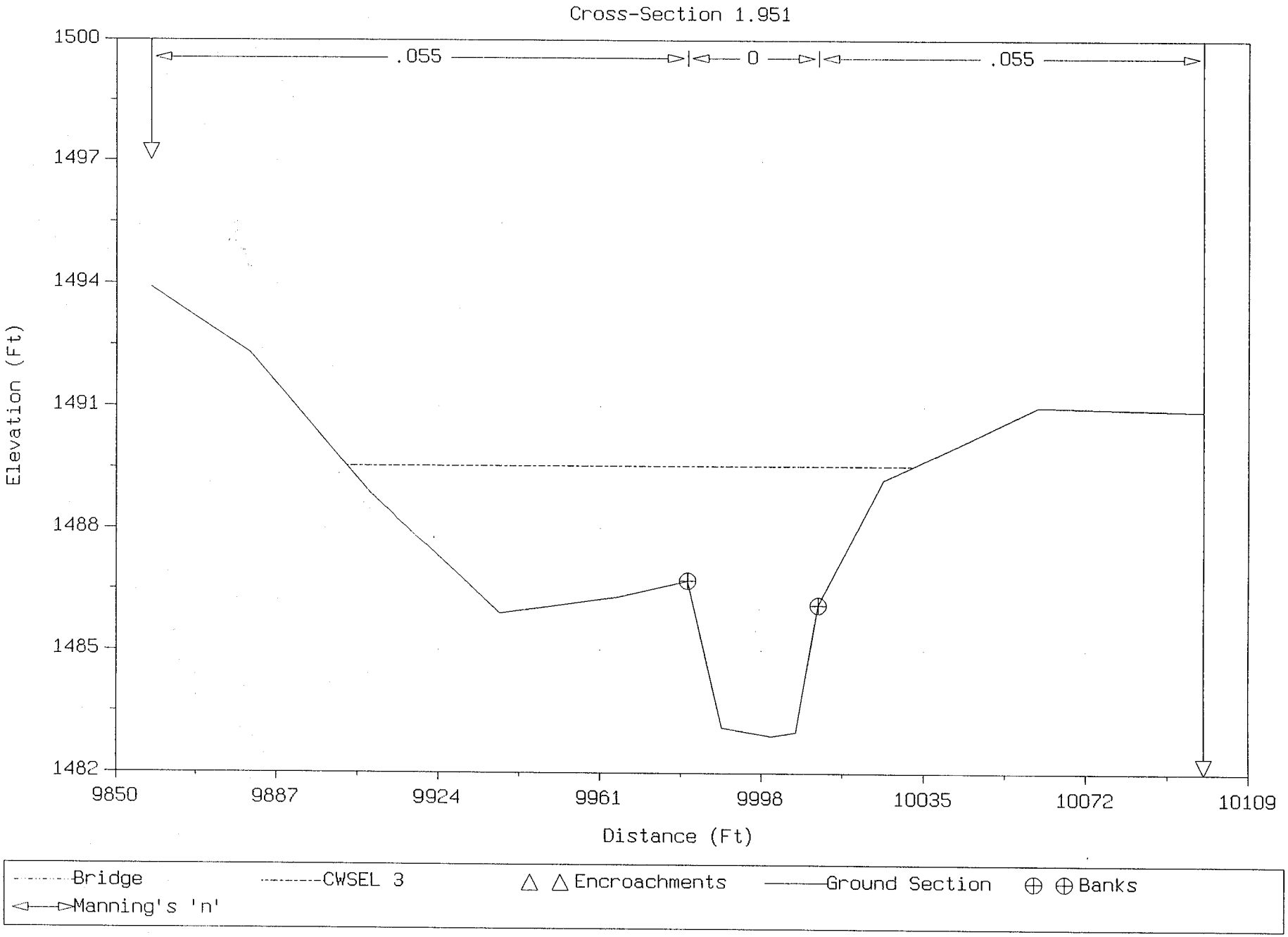
0
.055
1496
1493
1490
1487
1484
1481
1478
Elevation (Ft)
9614
9743
9872
10001
10130
10259
10388
10517
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.856
.055
0
.055
1498
1495
1492
1489
1486
1483
1480
Elevation (Ft)
9737
9803
9869
9935
10001
10067
10133
10199
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 1.951
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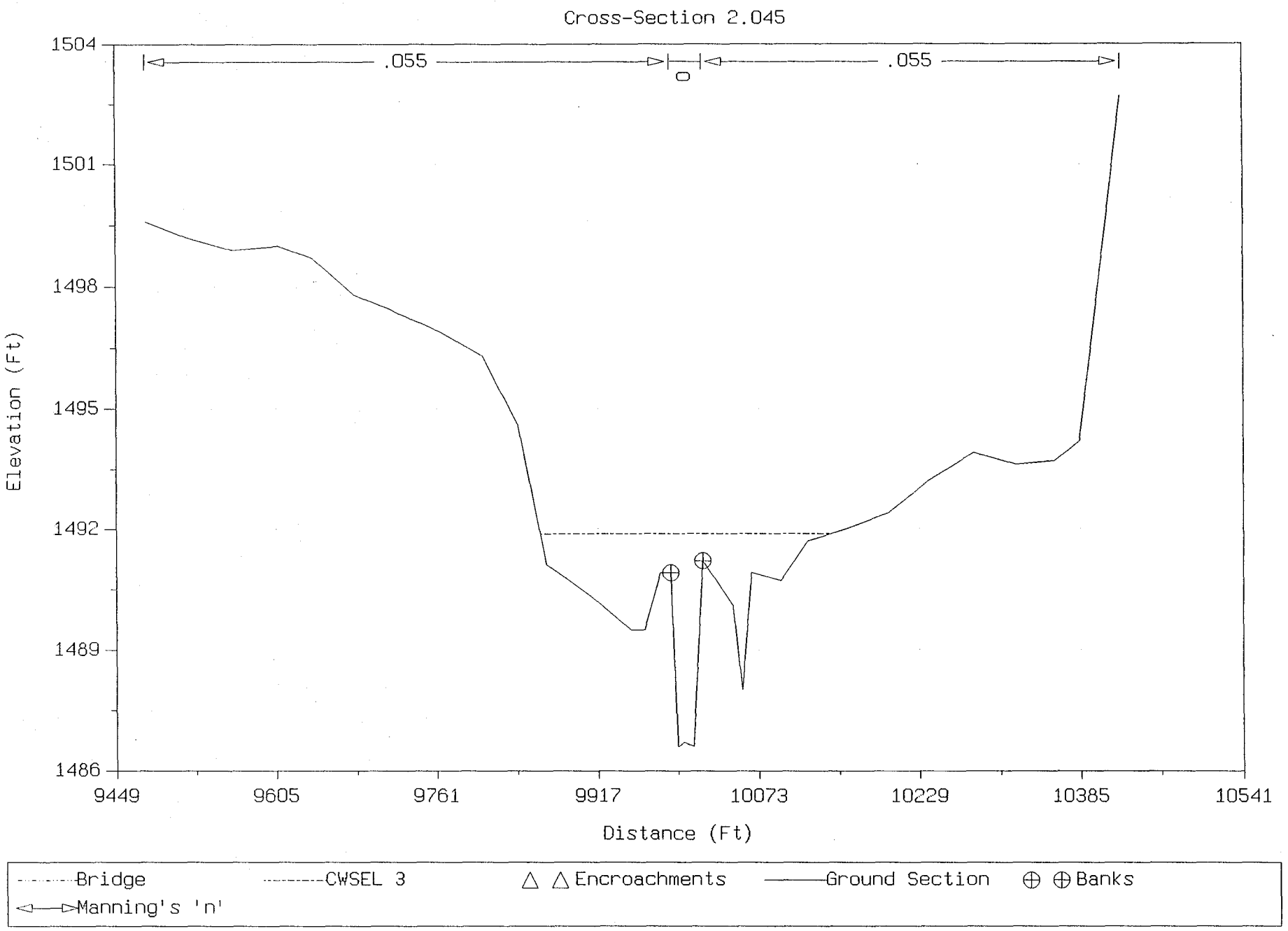
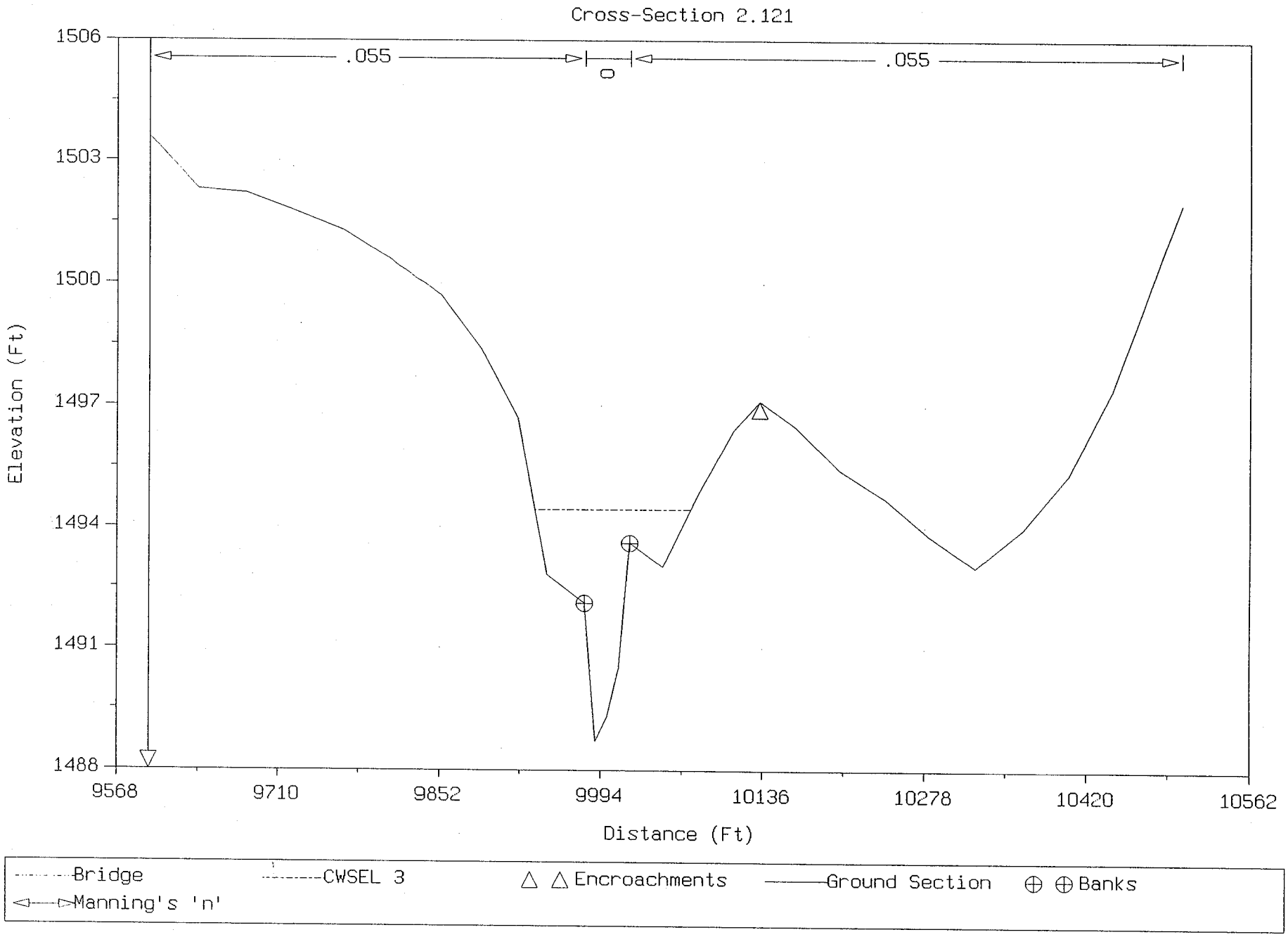
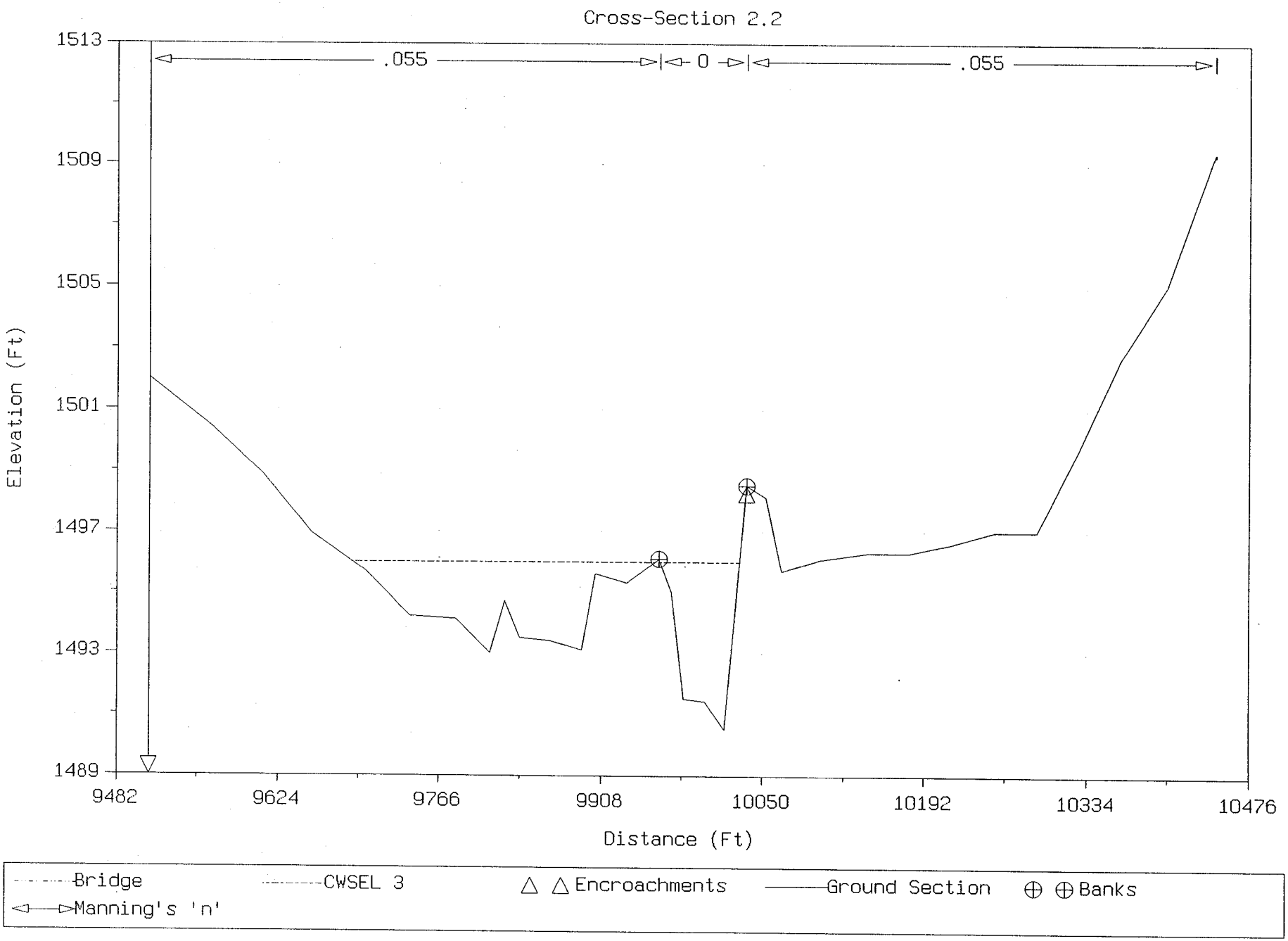
0
.055
1500
1497
1494
1491
1488
1485
1482
Elevation (Ft)
9850
9887
9924
9961
9998
10035
10072
10109
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 2.045
.055
0
.055
1504
1501
1498
1495
1492
1489
1486
Elevation (Ft)
9449
9605
9761
9917
10073
10229
10385
10541
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 2.121
.055
0
.055
1506
1503
1500
1497
1494
1491
1488
Elevation (Ft)
9568
9710
9852
9994
10136
10278
10420
10562
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'


Cross-Section 2.2
.055
0
.055
1513
1509
1505
1501
1497
1493
1489
Elevation (Ft)
9482
9624
9766
9908
10050
10192
10334
10476
Distance (Ft)
Bridge
CWSEL 3
Encroachments
Ground Section
Banks
Manning's 'n'

E.3 Hydraulic Calculations

DEM HEC-2 Output
Check-2 Output of DEM
CEM HEC-2 Output
Check-2 Output of CEM
Existing Conditions Model HEC-2 Output
Check-2 Output of Existing Conditions Model
Proposed Conditions Model HEC-2 Output
Check-2 Output of Proposed Conditions Model

HEC-2 Output for Duplicate Effective Model
Check-2 Output for Duplicate Effective Model

Pages 1-5 (input data), and 12-15 (summary tables). The complete input and output files are provided on the accompanying computer disk.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    02OCT01    TIME   21:53:55 *
*****************************************
```

```
***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 02OCT01 21:53:55

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************


T1      FLOODPLAIN ANALYSIS   -  MARICOPA COUNTY FLOOD CONTROL DISTRICT
T2      100  YEAR FLOOD EVENT  -  BASED ON 6-HR RAINFALL
T3      BUCHANAN WASH - SKUNK CREAK TO C.A.P. CANAL   SEPTEMBER, 1987

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0         0         0         0         0    1460.42        0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     -1         0        -1         0         0         0        -1         0         0         0


QT        1      2304.
NC    0.055      0.055      0.055      0.10       0.30
X1    0.710         57      9985.    10025.          0          0          0
GR   1464.3      8805.    1465.2      8829.    1465.9      8860.    1465.6      8890.    1465.5      8945.
GR   1464.6      9006.    1464.2      9072.    1463.0      9130.    1462.3      9188.    1461.1      9257.
GR   1461.0      9317.    1461.3      9374.    1460.8      9426.    1459.1      9474.    1457.4      9519.
GR   1456.7      9574.    1457.1      9621.    1457.3      9668.    1456.3      9683.    1455.6      9700.
GR   1455.5      9710.    1455.2      9716.    1456.2      9730.    1456.6      9748.    1455.6      9758.
GR   1457.0      9776.    1456.9      9798.    1455.5      9823.    1456.0      9852.    1455.4      9887.
GR   1455.5      9917.    1455.1      9932.    1454.3      9952.    1455.2      9975.    1456.3      9985.
GR   1454.9      9990.    1449.5     10000.    1449.9     10016.    1455.0     10018.    1456.0     10025.
GR   1456.1     10035.    1455.4     10061.    1454.9     10105.    1455.2     10165.    1455.2     10224.
GR   1455.0     10267.    1455.4     10316.    1455.4     10363.    1455.9     10405.    1455.9     10458.
GR   1456.3     10486.    1460.5     10502.    1464.4     10525.    1468.3     10549.    1469.9     10572.
GR   1474.2     10608.    1476.6     10648.

X1    0.782         48      9966.    10032.       380        360        380
GR   1465.2      9401.    1466.0      9455.    1464.8      9494.    1464.3      9529.    1464.3      9559.
GR   1464.1      9606.    1462.8      9651.    1460.6      9689.    1458.8      9738.    1457.4      9784.
GR   1456.2      9827.    1456.9      9865.    1456.9      9891.    1456.4      9909.    1456.4      9934.
GR   1457.1      9966.    1454.6      9985.    1454.5     10000.    1454.8     10016.    1459.8     10032.
GR   1456.2     10044.    1454.8     10058.    1456.4     10082.    1456.3     10116.    1456.2     10153.
GR   1457.0     10175.    1463.5     10188.    1463.2     10199.    1458.2     10208.    1457.2     10219.
GR   1456.5     10262.    1456.9     10308.    1456.6     10356.    1456.5     10404.    1456.8     10457.
GR   1457.4     10510.    1456.8     10564.    1458.1     10609.    1464.2     10632.    1469.6     10656.
GR   1470.8     10676.    1469.3     10687.    1469.9     10699.    1470.7     10715.    1471.3     10737.
GR   1475.6     10754.    1478.2     10775.    1479.3     10792.

X1    0.890         51      9971.    10014.       740        400        570
GR   1474.8      8814.    1474.0      8871.    1471.5      8924.    1469.4      8956.    1466.6      8987.
GR   1466.0      9000.    1465.0      9003.    1464.3      9029.    1464.2      9045.    1463.9      9067.
GR   1463.0      9106.    1462.3      9172.    1460.9      9240.    1461.4      9304.    1460.8      9366.
GR   1460.3      9431.    1459.9      9498.    1460.1      9549.    1460.2      9605.    1459.6      9673.
GR   1459.7      9743.    1459.7      9813.    1459.7      9875.    1459.0      9900.    1457.9      9910.
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	1457.3	9915.	1458.9	9919.	1459.1	9931.	1458.5	9941.	1459.0	9950.
GR	1460.3	9971.	1454.0	9987.	1454.8	10000.	1458.9	10014.	1458.3	10030.
GR	1458.1	10049.	1458.3	10066.	1458.5	10094.	1459.6	10109.	1459.6	10110.
GR	1459.7	10113.	1460.8	10147.	1461.0	10176.	1460.4	10195.	1460.5	10215.
GR	1462.5	10230.	1465.2	10260.	1468.1	10289.	1472.7	10329.	1477.6	10376.
GR	1479.4	10402.								
X1	0.985	54	9978.	10019.	600	490	502			
GR	1480.5	8830.	1480.3	8883.	1479.2	8936.	1478.3	8998.	1476.2	9044.
GR	1474.0	9095.	1471.8	9127.	1467.6	9159.	1464.6	9178.	1466.7	9185.
GR	1465.0	9189.	1464.6	9226.	1463.8	9279.	1464.2	9337.	1463.3	9397.
GR	1463.4	9455.	1462.8	9522.	1462.7	9591.	1462.8	9663.	1462.8	9714.
GR	1463.2	9759.	1463.1	9802.	1463.4	9849.	1462.0	9862.	1459.5	9874.
GR	1460.3	9878.	1461.2	9883.	1460.9	9891.	1459.9	9903.	1459.6	9913.
GR	1458.9	9918.	1461.5	9923.	1461.2	9930.	1459.0	9933.	1459.9	9942.
GR	1461.8	9951.	1461.3	9963.	1461.2	9978.	1459.0	9986.	1458.5	9989.
GR	1458.1	10000.	1459.7	10008.	1459.6	10015.	1461.5	10019.	1461.8	10025.
GR	1460.9	10047.	1461.7	10056.	1462.1	10074.	1464.2	10103.	1466.1	10143.
GR	1468.7	10185.	1470.9	10226.	1472.2	10248.	1475.9	10275.		
X1	1.120	52	9974.	10037.	640	730	713			
X3	0	0	0	9034.	1472.1					
GR	1477.9	8631.	1475.6	8673.	1473.1	8729.	1469.7	8778.	1467.3	8800.
GR	1466.8	8815.	1466.4	8852.	1466.3	8893.	1464.9	8894.	1467.0	8918.
GR	1470.3	8949.	1471.2	8993.	1472.1	9034.	1471.3	9076.	1468.6	9113.
GR	1467.7	9148.	1467.6	9191.	1468.1	9243.	1467.9	9281.	1468.3	9294.
GR	1469.2	9305.	1468.6	9333.	1469.3	9348.	1470.3	9360.	1470.5	9380.
GR	1470.1	9419.	1469.3	9460.	1469.0	9504.	1468.2	9557.	1467.9	9610.
GR	1467.3	9674.	1467.0	9734.	1466.9	9796.	1466.2	9854.	1465.5	9897.
GR	1463.5	9942.	1463.8	9974.	1463.5	9990.	1461.1	10000.	1461.1	10027.
GR	1465.1	10037.	1464.9	10050.	1464.2	10058.	1463.6	10064.	1465.2	10076.
GR	1466.3	10097.	1467.3	10116.	1467.5	10123.	1469.8	10141.	1470.6	10158.
GR	1471.6	10184.	1471.0	10194.						
	1.207	29	9997.	10030.	450	480	459			
GR	1471.3	9479.	1470.9	9520.	1469.6	9537.	1471.2	9556.	1470.4	9584.
GR	1470.3	9604.	1471.5	9633.	1470.9	9665.	1468.9	9685.	1469.8	9708.
GR	1469.8	9726.	1471.3	9750.	1471.5	9784.	1470.0	9812.	1468.1	9832.
GR	1466.7	9853.	1468.4	9862.	1467.4	9891.	1467.2	9920.	1466.8	9953.
GR	1467.3	9986.	1466.5	9997.	1463.0	10000.	1463.0	10019.	1466.0	10030.
GR	1466.0	10037.	1467.3	10047.	1474.7	10069.	1480.4	10099.		
X1	1.288	59	9994.	10032.	380	440	428			
X3				9785.	1471.6					
GR	1478.3	8665.	1478.3	8665.	1479.2	8696.	1478.8	8709.	1478.0	8710.
GR	1478.0	8735.	1479.1	8738.	1478.0	8768.	1477.9	8810.	1477.5	8864.
GR	1477.6	8926.	1477.4	8986.	1477.1	9051.	1477.4	9107.	1477.6	9173.
GR	1477.2	9244.	1478.3	9296.	1478.7	9324.	1478.4	9349.	1477.0	9388.
GR	1475.9	9440.	1475.4	9503.	1473.8	9552.	1472.9	9571.	1473.8	9587.
GR	1473.5	9605.	1471.3	9624.	1470.6	9653.	1470.6	9688.	1470.2	9716.
GR	1469.3	9729.	1471.0	9750.	1471.6	9785.	1470.8	9812.	1470.4	9822.
GR	1471.1	9832.	1470.1	9850.	1470.2	9867.	1470.2	9876.	1471.0	9892.
GR	1470.2	9915.	1467.7	9939.	1468.7	9956.	1468.5	9971.	1469.0	9983.
GR	1469.1	9994.	1465.5	10000.	1465.8	10020.	1469.2	10024.	1470.2	10032.

	1469.4	10047.	1468.0	10050.	1469.3	10057.	1470.0	10072.	1471.5	10092.
GR	1474.5	10129.	1475.6	10166.	1478.8	10199.	1479.6	10232.		
X1	1.383	41	9992.	10030.	470	510	502			
X3				9720.	1475.1					
GR	1480.6	8985.	1480.8	9002.	1478.9	9003.	1479.0	9027.	1480.1	9032.
GR	1480.2	9062.	1480.2	9110.	1479.9	9168.	1479.6	9224.	1479.9	9281.
GR	1479.9	9340.	1479.9	9398.	1479.4	9432.	1479.0	9434.	1475.6	9469.
GR	1473.6	9494.	1473.5	9517.	1474.0	9548.	1474.3	9590.	1475.1	9627.
GR	1474.8	9671.	1475.1	9720.	1475.0	9767.	1474.4	9805.	1474.3	9823.
GR	1473.9	9855.	1473.6	9898.	1472.6	9933.	1471.2	9964.	1471.8	9981.
GR	1471.9	9992.	1469.5	9998.	1467.2	10000.	1468.1	10022.	1472.6	10030.
GR	1472.6	10038.	1472.1	10049.	1475.9	10071.	1484.1	10110.	1495.6	10168.
GR	1508.8	10219.								
QT	1	1609.								
X1	1.483	54	9971.	10025.	530	528	528			
X3	0	0	0	9791.	1478.9					
GR	1480.2	8977.	1480.4	9018.	1480.7	9075.	1479.5	9100.	1478.6	9142.
GR	1478.6	9178.	1478.6	9201.	1477.6	9203.	1478.5	9218.	1478.2	9235.
GR	1478.2	9255.	1478.0	9280.	1479.3	9293.	1478.6	9318.	1478.1	9354.
GR	1478.3	9368.	1479.4	9373.	1478.8	9405.	1478.4	9434.	1477.3	9452.
GR	1477.6	9476.	1477.5	9486.	1478.0	9505.	1478.4	9526.	1478.4	9548.
GR	1477.8	9576.	1476.4	9604.	1476.7	9613.	1477.1	9649.	1476.6	9679.
GR	1475.7	9704.	1476.3	9718.	1477.0	9734.	1478.4	9764.	1478.9	9791.
GR	1478.7	9814.	1478.1	9836.	1476.5	9857.	1477.1	9887.	1477.0	9916.
GR	1476.7	9947.	1476.2	9971.	1474.1	9991.	1470.0	10000.	1470.2	10017.
GR	1473.1	10021.	1474.3	10025.	1474.4	10036.	1474.7	10058.	1475.1	10074.
GR	1476.3	10095.	1480.1	10118.	1488.4	10152.	1499.3	10217.		
X1	1.572	54	9985.0	10020.0	410	500	470			
X3	0	0	0	9698.	1480.9					
GR	1480.4	8828.	1480.9	8873.	1480.3	8921.	1480.3	8939.	1478.6	8941.
	1478.6	8972.	1479.6	8976.	1479.8	9002.	1479.6	9039.	1480.0	9077.
	1480.1	9119.	1480.0	9180.	1479.8	9241.	1479.5	9294.	1478.3	9324.
GR	1478.8	9350.	1478.8	9385.	1478.3	9430.	1477.9	9472.	1478.5	9507.
GR	1477.8	9517.	1479.4	9527.	1479.3	9543.	1479.2	9568.	1479.4	9597.
GR	1478.1	9604.	1478.5	9644.	1479.4	9658.	1480.9	9698.	1480.6	9742.
GR	1479.9	9785.	1480.1	9832.	1478.9	9867.	1477.4	9899.	1476.1	9923.
GR	1476.1	9945.	1476.3	9968.	1477.4	9985.	1476.5	9994.	1475.1	9998.
GR	1473.7	10000.	1474.0	10005.	1474.2	10015.	1476.5	10020.	1476.3	10026.
GR	1476.9	10046.	1477.4	10072.	1477.8	10103.	1478.0	10141.	1479.4	10176.
GR	1480.5	10209.	1482.0	10221.	1485.0	10243.	1489.5	10271.		
X1	1.638	31	9970.	10020.	360	330	350			
X3	0	0	0	9583.	1483.0					
GR	1484.1	9019.	1484.3	9104.	1484.0	9186.	1483.6	9263.	1482.6	9306.
GR	1481.3	9347.	1480.9	9424.	1480.5	9461.	1482.0	9483.	1481.3	9495.
GR	1483.0	9516.	1483.0	9583.	1482.9	9671.	1482.9	9750.	1481.9	9810.
GR	1480.5	9849.	1479.3	9907.	1478.6	9933.	1478.8	9949.	1479.5	9970.
GR	1475.7	9984.	1475.7	10000.	1479.8	10020.	1479.7	10052.	1480.3	10084.
GR	1479.9	10100.	1482.1	10122.	1482.5	10140.	1485.4	10167.	1488.4	10194.
GR	1488.7	10203.								

```
X1    1.695       47.     9978.0    10016       297       303       300
X3                                   9547    1484.6
GR   1484.7      9053     1486.0     9100    1486.0      9135    1486.7      9183    1485.5      9275
GR   1483.6      9300     1482.3     9338    1482.7      9371    1483.1      9414    1481.4      9426
GR   1481.5      9450     1482.4     9463    1484.1      9474    1484.3      9506    1484.6      9547
GR   1483.4      9609     1483.1     9660    1482.2      9713    1482.3      9735    1483.2      9749
GR   1484.0      9773     1483.9     9791    1484.2      9814    1485.2      9830    1483.7      9868
GR   1483.5      9887     1481.6     9906    1480.2      9926    1480.5      9952    1481.5      9978
GR   1477.3      9992     1477.4    10000    1477.4     10008    1481.3     10016    1480.7     10039
GR   1480.8     10056     1481.5    10086    1480.4     10110    1481.4     10120    1481.6     10142
GR   1482.4     10177     1483.9    10212    1485.1     10249    1485.9     10285    1486.3     10320
GR   1487.0     10350     1487.3    10362

X1    1.761        50      9980.    10017.       360       340       350
X3        0         0          0     9482.    1489.8
GR   1489.4     9067.     1488.2     9110.    1486.9     9152.    1487.3     9190.    1487.2     9232.
GR   1487.0     9274.     1486.6     9308.    1485.5     9317.    1487.3     9327.    1486.4     9361.
GR   1486.6     9397.     1484.2     9405.    1487.0     9428.    1488.9     9453.    1489.8     9482.
GR   1489.5     9517.     1489.5     9557.    1488.9     9599.    1488.0     9639.    1487.6     9678.
GR   1486.4     9718.     1486.1     9758.    1486.3     9800.    1487.6     9839.    1487.9     9874.
GR   1487.5     9905.     1485.5     9931.    1482.9     9958.    1483.2     9980.    1479.1     9988.
GR   1479.1    10000.     1479.2    10008.    1483.2    10017.    1483.3    10052.    1484.0    10091.
GR   1484.0    10122.     1483.3    10159.    1484.0    10200.    1484.5    10238.    1484.4    10280.
GR   1484.4    10319.     1484.8    10342.    1483.2    10355.    1485.4    10371.    1486.0    10410.
GR   1486.1    10453.     1487.0    10496.    1487.7    10542.    1488.4    10582.    1488.8    10614.

X1    1.856        56      9980.    10019.       502       502       502
X3        0         0          0     9707.    1492.5
GR   1493.6     8602.     1493.6     8647.    1493.8     8687.    1493.2     8733.    1490.9     8767.
GR   1490.0     8790.     1489.9     8829.    1488.9     8866.    1490.5     8878.    1489.8     8904.
GR   1490.0     8933.     1490.0     8970.    1490.7     9013.    1491.0     9047.    1492.0     9088.
GR   1491.6     9128.     1491.5     9170.    1491.1     9215.    1490.9     9253.    1491.3     9296.
GR   1490.3     9333.     1490.4     9375.    1491.2     9417.    1492.3     9455.    1492.3     9495.
GR   1492.1     9538.     1492.2     9581.    1492.3     9624.    1492.6     9666.    1492.5     9707.
GR   1492.4     9750.     1491.9     9791.    1490.5     9830.    1489.3     9865.    1487.9     9901.
GR   1486.7     9941.     1484.5     9980.    1480.7     9989.    1480.9    10000.    1480.9    10009.
GR   1485.2    10019.     1485.1    10038.    1487.5    10065.    1489.3    10093.    1489.8    10123.
GR   1489.5    10155.     1488.2    10182.    1487.6    10219.    1488.6    10257.    1488.4    10300.
GR   1488.9    10340.     1489.3    10381.    1490.4    10402.    1493.2    10419.    1498.7    10460.
GR   1500.9    10473.

X1    1.951        33      9981.    10011.       510       495       502
X3        0         0          0     9417.    1497.0
GR   1496.6     9241.     1496.4     9296.    1496.9     9357.    1497.0     9417.    1496.6     9498.
GR   1496.3     9579.     1495.5     9661.    1495.0     9741.    1494.8     9806.    1493.9     9858.
GR   1492.3     9881.     1488.8     9909.    1485.9     9938.    1486.3     9965.    1486.7     9981.
GR   1483.1     9989.     1482.9    10000.    1483.0    10006.    1486.1    10011.    1489.2    10026.
GR   1491.0    10061.     1490.9    10099.    1490.8    10145.    1491.0    10190.    1491.2    10242.
GR   1492.1    10289.     1493.1    10339.    1494.1    10388.    1494.8    10429.    1495.5    10457.
GR   1502.0    10488.     1505.7    10523.    1508.7    10544.
```

X1	2.045	34	9988.	10019.	505	510	505			
GR	1499.6	9478.	1499.2	9519.	1498.9	9562.	1499.0	9607.	1498.7	9640.
GR	1497.8	9681.	1497.4	9721.	1496.9	9765.	1496.3	9806.	1494.6	9840.
GR	1491.1	9867.	1490.3	9911.	1489.5	9949.	1489.5	9963.	1490.9	9978.
GR	1490.9	9988.	1486.6	9995.	1486.7	10000.	1486.6	10010.	1491.2	10019.
GR	1490.1	10048.	1488.0	10057.	1490.9	10066.	1490.7	10094.	1491.7	10120.
GR	1492.0	10158.	1492.4	10199.	1493.2	10238.	1493.9	10280.	1493.6	10321.
GR	1493.7	10360.	1494.2	10384.	1502.1	10422.	1502.7	10425.		
QT	1	1308.								
X1	2.121	29	9980.	10019.	405	415	410			
X3						10133.	1497.1			
GR	1503.6	9596.	1502.3	9639.	1502.2	9681.	1501.8	9722.	1501.3	9768.
GR	1500.5	9813.	1499.7	9853.	1498.4	9888.	1496.7	9921.	1492.8	9947.
GR	1492.1	9980.	1488.7	9990.	1489.3	10000.	1490.5	10010.	1493.6	10019.
GR	1493.0	10048.	1494.8	10079.	1496.4	10110.	1497.1	10133.	1496.5	10164.
GR	1495.4	10204.	1494.7	10243.	1493.8	10281.	1493.0	10322.	1494.0	10365.
GR	1495.3	10404.	1497.4	10443.	1500.7	10486.	1502.0	10504.		
X1	2.200	33	9959.	10036.	400	425	417			
X3						10036.	1498.5			
GR	1502.0	9511.	1500.4	9566.	1498.8	9612.	1496.9	9654.	1495.7	9701.
GR	1494.2	9741.	1494.1	9781.	1493.0	9811.	1494.7	9824.	1493.5	9837.
GR	1493.4	9863.	1493.1	9891.	1495.6	9903.	1495.3	9930.	1496.1	9959.
GR	1495.0	9970.	1491.5	9981.	1491.4	10000.	1490.5	10017.	1498.5	10036.
GR	1498.1	10053.	1495.7	10067.	1496.1	10101.	1496.3	10141.	1496.3	10178.
GR	1496.6	10215.	1497.0	10253.	1497.0	10291.	1499.8	10328.	1502.7	10364.
GR	1505.1	10405.	1509.4	10447.	1509.3	10447.				

THIS RUN EXECUTED 02OCT01 21:53:56

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BUCHANAN WASH - SKUNK CR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.710	.00	.00	.00	1449.50	2304.00	1460.42	1456.08	1460.42	.40	.64	4758.57	3640.20
*	.782	380.00	.00	.00	1454.50	2304.00	1460.44	1457.27	1460.45	1.25	.85	3174.93	2060.39
*	.890	570.00	.00	.00	1454.00	2304.00	1460.51	1460.07	1460.71	48.75	4.85	823.66	330.00
	.985	502.00	.00	.00	1458.10	2304.00	1463.22	1462.20	1463.43	51.32	4.78	683.02	321.63
	1.120	713.00	.00	.00	1461.10	2304.00	1466.57	1465.40	1466.85	48.23	4.92	593.13	331.76
	1.207	459.00	.00	.00	1463.00	2304.00	1469.05	1468.48	1469.46	66.18	6.49	521.91	283.22
	1.288	428.00	.00	.00	1465.50	2304.00	1471.57	1470.58	1471.82	50.26	5.10	622.21	325.01
	1.383	502.00	.00	.00	1467.20	2304.00	1474.27	1473.50	1474.77	69.17	6.71	473.62	277.02
	1.483	528.00	.00	.00	1470.00	1609.00	1477.26	1475.67	1477.50	35.59	4.34	469.44	269.72
	1.572	470.00	.00	.00	1473.70	1609.00	1478.98	1477.85	1479.11	33.39	3.71	581.73	278.45
*	1.638	350.00	.00	.00	1475.70	1609.00	1480.59	1480.22	1480.99	89.25	5.87	379.14	170.31
*	1.695	300.00	.00	.00	1477.30	1609.00	1482.64	1481.93	1482.82	43.69	4.46	534.90	243.42
	1.761	350.00	.00	.00	1479.10	1609.00	1484.51	1484.37	1484.97	85.04	6.51	396.94	174.48
*	1.856	502.00	.00	.00	1480.70	1609.00	1487.51	1485.96	1487.87	41.40	5.39	384.90	250.07
	1.951	502.00	.00	.00	1482.90	1609.00	1489.53	1487.86	1489.81	35.60	5.00	408.43	269.67
	2.045	505.00	.00	.00	1486.60	1609.00	1491.87	1491.32	1492.11	60.18	5.12	457.75	207.41
	2.121	410.00	.00	.00	1488.70	1308.00	1494.43	1493.71	1494.85	73.04	5.83	285.32	153.04

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	2.200	417.00	.00	.00	1490.50	1308.00	1496.00	1494.40	1496.06	15.22	2.38	675.04	335.30

HANAN WASH - SKUNK CR

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	.710	2304.00	1460.42	.00	.00	.00	1064.97	.00
*	.782	2304.00	1460.44	.00	.02	.00	902.21	380.00
*	.890	2304.00	1460.51	.00	.07	.00	758.28	570.00
	.985	2304.00	1463.22	.00	2.71	.00	583.56	502.00
	1.120	2304.00	1466.57	.00	3.35	.00	279.35	713.00
	1.207	2304.00	1469.05	.00	2.47	.00	235.41	459.00
	1.288	2304.00	1471.57	.00	2.52	.00	306.88	428.00
	1.383	2304.00	1474.27	.00	2.70	.00	235.90	502.00
	1.483	1609.00	1477.26	.00	3.00	.00	253.88	528.00
	1.572	1609.00	1478.98	.00	1.71	.00	300.62	470.00
*	1.638	1609.00	1480.59	.00	1.62	.00	260.84	350.00
*	1.695	1609.00	1482.64	.00	2.04	.00	340.44	300.00
	1.761	1609.00	1484.51	.00	1.87	.00	403.41	350.00
	1.856	1609.00	1487.51	.00	3.00	.00	151.11	502.00
	1.951	1609.00	1489.53	.00	2.02	.00	129.15	502.00
	2.045	1609.00	1491.87	.00	2.34	.00	281.71	505.00
	2.121	1308.00	1494.43	.00	2.56	.00	136.39	410.00
*	2.200	1308.00	1496.00	.00	1.57	.00	336.40	417.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      .782  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .890  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.638  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.695  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.856  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

CHECK-2 Program: NT Module
Manning's n Value and Transition Loss Coefficient Review

Report File = C:\PDATA\RIORDAN\BUCHNWFP.NT2
Date: 6/7/2001
Time: 4:02:31 PM

SECNO	XNL	XNR	XNCH	CCHV	CEHV	Structure
0.71	0.055	0.055	0.055	0.1	0.3	
0.782	0.055	0.055	0.055	0.1	0.3	
0.89	0.055	0.055	0.055	0.1	0.3	
0.985	0.055	0.055	0.055	0.1	0.3	
1.12	0.055	0.055	0.055	0.1	0.3	
1.207	0.055	0.055	0.055	0.1	0.3	
1.288	0.055	0.055	0.055	0.1	0.3	
1.383	0.055	0.055	0.055	0.1	0.3	
1.483	0.055	0.055	0.055	0.1	0.3	
1.572	0.055	0.055	0.055	0.1	0.3	
1.638	0.055	0.055	0.055	0.1	0.3	
1.695	0.055	0.055	0.055	0.1	0.3	
1.761	0.055	0.055	0.055	0.1	0.3	
1.856	0.055	0.055	0.055	0.1	0.3	
1.951	0.055	0.055	0.055	0.1	0.3	
2.045	0.055	0.055	0.055	0.1	0.3	
2.121	0.055	0.055	0.055	0.1	0.3	
2.2	0.055	0.055	0.055	0.1	0.3	

------Summary of Statistics------

	Minimum	Maximum
Left Overbank N Value:	0.055	0.055
Right Overbank N Value:	0.055	0.055
Channel N Value:	0.055	0.055
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

------Roughness Coefficient Check------

------NC and NH records Check------

------Transition Coefficient check------

------Roughness Coefficient Check at Structures------

------Special Notes and Messages check------

---End Program---

CHECK-2 Program: Profile Module
Starting WSEL, Spacing, Discharge, Roughness Coefficient, Crossing,
Topwidth Checks for Multiple Discharges

Report File = C:\PDATA\RIORDAN\BUCHNWFP.PR2
Date: 6/7/2001
Time: 4:03:35 PM

SECNO	CWSEL 1	CWSEL 2	CWSEL 3	CWSEL 4	TOPWID 1	TOPWID 2	TOPWID 3	TOPWID 4
0.71	1456.5	1458.93	1460.42	1465.95	765.69	1017.52	1064.97	1729.54
0.782	1457.49	1458.99	1460.44	1465.95	752.6	846.75	902.21	1233.94
0.89	1459.99	1459.85	1460.51	1465.96	523.89	465.35	758.28	1267.42
0.985	1462.65	1463.36	1463.22	1465.98	225.69	668.63	583.49	966.98
1.12	1465.81	1466.13	1466.57	1465.85	209.7	235.84	279.39	212.56
1.207	1468.29	1468.9	1469.05	1470.09	216.1	228.13	235.41	314.61
1.288	1470.88	1471.33	1471.57	1471.93	261.5	295.48	306.88	476.68
1.383	1473.47	1474.05	1474.27	1474.79	154.6	217.5	235.9	283.97
1.483	1476.5	1477.03	1477.26	1477.73	140.13	226.77	253.88	262.82
1.572	1478.51	1478.84	1478.98	1479.29	278.45	293.48	300.62	317.7
1.638	1480.24	1480.49	1480.6	1480.85	236.3	256.67	260.68	270.33
1.695	1482.25	1482.52	1482.64	1482.9	287.32	327.86	340.93	368.2
1.761	1484.13	1484.4	1484.5	1484.75	278.91	305.28	403.38	424.3
1.856	1486.99	1487.36	1487.51	1487.8	128.12	144.44	151.04	184.62
1.951	1488.84	1489.32	1489.53	1489.98	115.59	123.46	129.15	141.72
2.045	1491.37	1491.72	1491.87	1492.24	246.62	259.97	281.71	324.15
2.121	1494.19	1494.38	1494.43	1494.53	130.76	135.3	136.39	139.06
2.2	1495.66	1495.93	1496	1496.12	307.78	330.06	336.4	345.99

---Starting WSEL Check---

PF SW 01 Starting WSEL is computed from known water-surface elevation of 1456.5
for profile number 1 .

PF SW 01 Starting WSEL is computed from known water-surface elevation of 1458.93
for profile number 2 .

PF SW 01 Starting WSEL is computed from known water-surface elevation of 1460.42
for profile number 3 .

PF SW 01 Starting WSEL is computed from known water-surface elevation of 1465.95
for profile number 4 .

---Spacing Check---

---Discharge Check---

---Roughness Coefficicent Check---

---Crossing Check---

SECNO: 0.89
PF CR 01 CWSEL of 1459.99 for profile number 1 is higher than
the CWSEL of 1459.85 for profile number 2 .

SECNO: 0.985
PF CR 01 CWSEL of 1463.36 for profile number 2 is higher than
the CWSEL of 1463.22 for profile number 3 .

SECNO: 1.12
PF CR 01 CWSEL of 1466.57 for profile number 3 is higher than
the CWSEL of 1465.85 for profile number 4 .

---Topwidth Check---

---End Program---

HEC-2 Output for Corrected Effective Model
Check-2 Output for Corrected Effective Model

HEC-2 Output for Duplicate Effective Floodway Model
Check-2 Output for Duplicate Effective Floodway Model

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    19NOV01    TIME   14:22:26 *
*******************************************
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*********************************
*  U.S. ARMY CORPS OF ENGINEERS
*  HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616-4687
*          (916) 756-1104
*********************************
```

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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 19NOV01 14:22:26

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
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T1      FLOOD PLAIN ANALYSIS  -  MARICOPA COUNTY FLOOD CONTROL DIST.
T2      FLD'WAY ENCROACH CALC. (NATURAL CONDITON)  -  100 YR/6 HR STORM
T3      BUCHANAN WASH          SKUNK CREEK TO C.A.P. CANAL   OCT, 1987

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0        0        0        0        0     1460.42     0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     1        0       -1        0        0        0       -1        0        0        15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    110       200

J5  LPRNT    NUMSEC                 ********REQUESTED SECTION NUMBERS********

    -10      -10

QT        4    2304.0    2304.0    2304.0    2304.0
ET                 0      10.4       6.1      10.4    9693.00   10351.00
NC    0.055    0.055     0.055     0.10      0.30
X1    0.710       57     9985.    10025.        0         0         0
GR   1464.3    8805.    1465.2    8829.    1465.9    8860.    1465.6    8890.    1465.5    8945.
GR   1464.6    9006.    1464.2    9072.    1463.0    9130.    1462.3    9188.    1461.1    9257.
GR   1461.0    9317.    1461.3    9374.    1460.8    9426.    1459.1    9474.    1457.4    9519.
GR   1456.7    9574.    1457.1    9621.    1457.3    9668.    1456.3    9683.    1455.6    9700.
GR   1455.5    9710.    1455.2    9716.    1456.2    9730.    1456.6    9748.    1455.6    9758.
GR   1457.0    9776.    1456.9    9798.    1455.5    9823.    1456.0    9852.    1455.4    9887.
GR   1455.5    9917.    1455.1    9932.    1454.3    9952.    1455.2    9975.    1456.3    9985.
GR   1454.9    9990.    1449.5   10000.    1449.9   10016.    1455.0   10018.    1456.0   10025.
GR   1456.1   10035.    1455.4   10061.    1454.9   10105.    1455.2   10165.    1455.2   10224.
GR   1455.0   10267.    1455.4   10316.    1455.4   10363.    1455.9   10405.    1455.9   10458.
GR   1456.3   10486.    1460.5   10502.    1464.4   10525.    1468.3   10549.    1469.9   10572.
GR   1474.2   10608.    1476.6   10648.

X1    0.782       48     9966.    10032.       380       360       380

ET                 0.0       0.0       6.1       0.0    9d89.00   10446.00
GR   1465.2    9401.    1466.0    9455.    1464.8    9494.    1464.3    9529.    1464.3    9559.
GR   1464.1    9606.    1462.8    9651.    1460.6    9689.    1458.8    9738.    1457.4    9784.
GR   1456.2    9827.    1456.9    9865.    1456.9    9891.    1456.4    9909.    1456.4    9934.
GR   1457.1    9966.    1454.6    9985.    1454.5   10000.    1454.8   10016.    1459.8   10032.
GR   1456.2   10044.    1454.8   10058.    1456.4   10082.    1456.3   10116.    1456.2   10153.
GR   1457.0   10175.    1463.5   10188.    1463.2   10199.    1458.2   10208.    1457.2   10219.
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GR   1456.5    10262.   1456.9    10308.   1456.6    10356.   1456.5    10404.   1456.8    10457.
GR   1457.4    10510.   1456.8    10564.   1458.1    10609.   1464.2    10632.   1469.6    10656.
GR   1470.8    10676.   1469.3    10687.   1469.9    10699.   1470.7    10715.   1471.3    10737.
GR   1475.6    10754.   1478.2    10775.   1479.3    10792.
X1    0.890       51    9971.    10014.     740       400       570

ET               0.0      0.0       6.1      0.0   9836.00  10014.00
GR   1474.8     8814.   1474.0     8871.   1471.5     8924.   1469.4     8956.   1466.6     8987.
GR   1466.0     9000.   1465.0     9003.   1464.3     9029.   1464.2     9045.   1463.9     9067.
GR   1463.0     9106.   1462.3     9172.   1460.9     9240.   1461.4     9304.   1460.8     9366.
GR   1460.3     9431.   1459.9     9498.   1460.1     9549.   1460.2     9605.   1459.6     9673.
GR   1459.7     9743.   1459.7     9813.   1459.7     9875.   1459.0     9900.   1457.9     9910.
GR   1457.3     9915.   1458.9     9919.   1459.1     9931.   1458.5     9941.   1459.0     9950.
GR   1460.3     9971.   1454.0     9987.   1454.8    10000.   1458.9    10014.   1458.3    10030.
GR   1458.1    10049.   1458.3    10066.   1458.5    10094.   1459.6    10109.   1459.6    10110.
GR   1459.7    10113.   1460.8    10147.   1461.0    10176.   1460.4    10195.   1460.5    10215.
GR   1462.5    10230.   1465.2    10260.   1468.1    10289.   1472.7    10329.   1477.6    10376.
GR   1479.4    10402.
X1    0.985       54    9978.    10019.     600       490       502

ET               0.0      0.0       6.1      8.4   9895.00  10019.00
GR   1480.5     8830.   1480.3     8883.   1479.2     8936.   1478.3     8998.   1476.2     9044.
GR   1474.0     9095.   1471.8     9127.   1467.6     9159.   1464.6     9178.   1466.7     9185.
GR   1465.0     9189.   1464.6     9226.   1463.8     9279.   1464.2     9337.   1463.3     9397.
GR   1463.4     9455.   1462.8     9522.   1462.7     9591.   1462.8     9663.   1462.8     9714.
GR   1463.2     9759.   1463.1     9802.   1463.4     9849.   1462.0     9862.   1459.5     9874.
GR   1460.3     9878.   1461.2     9883.   1460.9     9891.   1459.9     9903.   1459.6     9913.
GR   1458.9     9918.   1461.5     9923.   1461.2     9930.   1459.0     9933.   1459.9     9942.
GR   1461.8     9951.   1461.3     9963.   1461.2     9978.   1459.0     9986.   1458.5     9989.
GR   1458.1    10000.   1459.7    10008.   1459.6    10015.   1461.5    10019.   1461.8    10025.
GR   1460.9    10047.   1461.7    10056.   1462.1    10074.   1464.2    10103.   1466.1    10143.
GR   1468.7    10185.   1470.9    10226.   1472.2    10248.   1475.9    10275.
X1    1.120       42    9974.    10037.     640       730       713

ET               0.0      0.0       6.1      9.4   9944.00  10037.00
GR   1472.1     9032.   1472.1     9033.   1472.1     9034.   1471.3     9076.   1468.6     9113.
GR   1467.7     9148.   1467.6     9191.   1468.1     9243.   1467.9     9281.   1468.3     9294.
GR   1469.2     9305.   1468.6     9333.   1469.3     9348.   1470.3     9360.   1470.5     9380.
GR   1470.1     9419.   1469.3     9460.   1469.0     9504.   1468.2     9557.   1467.9     9610.
GR   1467.3     9674.   1467.0     9734.   1466.9     9796.   1466.2     9854.   1465.5     9897.
GR   1463.5     9942.   1463.8     9974.   1463.5     9990.   1461.1    10000.   1461.1    10027.
GR   1465.1    10037.   1464.9    10050.   1464.2    10058.   1463.6    10064.   1465.2    10076.
GR   1466.3    10097.   1467.3    10116.   1467.5    10123.   1469.8    10141.   1470.6    10158.
GR   1471.6    10184.   1471.0    10194.
X1    1.207       29    9997.    10030.     450       480       459

ET               0.0      0.0       6.1      9.4   9934.00  10030.00
GR   1471.3     9479.   1470.9     9520.   1469.6     9537.   1471.2     9556.   1470.4     9584.
GR   1470.3     9604.   1471.5     9633.   1470.9     9665.   1468.9     9685.   1469.8     9708.
GR   1469.8     9726.   1471.3     9750.   1471.5     9784.   1470.0     9812.   1468.1     9832.
GR   1466.7     9853.   1468.4     9862.   1467.4     9891.   1467.2     9920.   1466.8     9953.
GR   1467.3     9986.   1466.5     9997.   1463.0    10000.   1463.0    10019.   1466.0    10030.
GR   1466.0    10037.   1467.3    10047.   1474.7    10069.   1480.4    10099.
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X1    1.288        29     9994.    10032.      380       440       428

ET                0.0       0.0       6.1       8.4   9929.00  10032.00
GR   1471.6      8665.   1471.6     9784.    1471.6     9785.    1470.8     9812.    1470.4     9822.
GR   1471.1      9832.   1470.1     9850.    1470.2     9867.    1470.2     9876.    1471.0     9892.
GR   1470.2      9915.   1467.7     9939.    1468.7     9956.    1468.5     9971.    1469.0     9983.
GR   1469.1      9994.   1465.5    10000.    1465.8    10020.    1469.2    10024.    1470.2    10032.
GR   1469.4     10047.   1468.0    10050.    1469.3    10057.    1470.0    10072.    1471.5    10092.
GR   1474.5     10129.   1475.6    10166.    1478.8    10199.    1479.6    10232.
X1    1.383        21     9992.    10030.      470       510       502

ET                0.0       0.0       6.1       8.4   9961.00  10030.00
GR   1475.1      9719.   1475.1     9720.    1475.0     9767.    1474.4     9805.    1474.3     9823.
GR   1473.9      9855.   1473.6     9898.    1472.6     9933.    1471.2     9964.    1471.8     9981.
GR   1471.9      9992.   1469.5     9998.    1467.2    10000.    1468.1    10022.    1472.6    10030.
GR   1472.6     10038.   1472.1    10049.    1475.9    10071.    1484.1    10110.    1495.6    10168.
GR   1508.8     10219.
QT         4    1609.0    1609.0    1609.0    1609.0
X1    1.483        24     9971.    10025.      530       528       528

ET                0.0       0.0       6.1       8.4   9971.00  10040.00
GR   1478.9      9787.   1478.9     9788.    1478.9     9789.    1478.9     9790.    1478.9     9791.
GR   1478.7      9814.   1478.1     9836.    1476.5     9857.    1477.1     9887.    1477.0     9916.
GR   1476.7      9947.   1476.2     9971.    1474.1     9991.    1470.0    10000.    1470.2    10017.
GR   1473.1     10021.   1474.3    10025.    1474.4    10036.    1474.7    10058.    1475.1    10074.
GR   1476.3     10095.   1480.1    10118.    1488.4    10125.    1499.3    10217.
X1    1.572        29     9985.0   10020.0      410       500       470

ET                0.0       0.0       6.1       9.4   9938.00  10051.00
GR   1480.9      9695.   1480.9     9696.    1480.9     9697.    1480.9     9698.    1480.6     9742.
GR   1479.9      9785.   1480.1     9832.    1478.9     9867.    1477.4     9899.    1476.1     9923.
GR   1476.1      9945.   1476.3     9968.    1477.4     9985.    1476.5     9994.    1475.1     9998.
GR   1473.7     10000.   1474.0    10005.    1474.2    10015.    1476.5    10020.    1476.3    10026.
GR   1476.9     10046.   1477.4    10072.    1477.8    10103.    1478.0    10141.    1479.4    10176.
GR   1480.5     10209.   1482.0    10221.    1485.0    10243.    1489.5    10271.
X1    1.638        21     9970.    10020.      360       330       350         0         0         0

ET                0.0       0.0       6.1       9.4   9958.00  10020.00
GR   1483.0      9582.   1483.0     9583.    1482.9     9671.    1482.9     9750.    1481.9     9810.
GR   1480.5      9849.   1479.3     9907.    1478.6     9933.    1478.8     9949.    1479.5     9970.
GR   1475.7      9984.   1475.7    10000.    1479.8    10020.    1479.7    10052.    1480.3    10084.
GR   1479.9     10100.   1482.1    10122.    1482.5    10140.    1485.4    10167.    1488.4    10194.
GR   1488.7     10203.
X1    1.695        37     9978.    10016.      297       303       300         0         0         0

ET                0.0       0.0       6.1       8.4   9950.00  10072.00
GR   1484.6      9443.   1484.6     9444.    1484.6     9445.    1484.6     9546.    1484.6     9547.
GR   1483.4      9609.   1483.1     9660.    1482.2     9713.    1482.3     9735.    1483.2     9749.
GR   1484.0      9773.   1483.9     9791.    1484.2     9814.    1485.2     9830.    1483.7     9868.
GR   1483.5      9887.   1481.6     9906.    1480.2     9926.    1480.5     9952.    1481.5     9978.
GR   1477.3      9992.   1477.4    10000.    1477.4    10008.    1481.3    10016.    1480.7    10039.
GR   1480.8     10056.   1481.5    10086.    1480.4    10110.    1481.4    10120.    1481.6    10142.
GR   1482.4     10177.   1483.9    10212.    1485.1    10249.    1485.9    10285.    1486.3    10320.
GR   1487.0     10350.   1487.3    10362.
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X1    1.761        40     9980.    10017.      360       340       350

ET                0.0       0.0       6.1       0.0   9980.0   10041.0
GR   1489.8     9478.    1489.8     9479.    1489.8     9480.    1489.8     9481.    1489.8     9482.
GR   1489.5     9517.    1489.5     9557.    1488.9     9599.    1488.0     9639.    1487.6     9678.
GR   1486.4     9718.    1486.1     9758.    1486.3     9800.    1487.6     9839.    1487.9     9874.
GR   1487.5     9905.    1485.5     9931.    1482.9     9958.    1483.2     9980.    1479.1     9988.
GR   1479.1    10000.    1479.2    10008.    1483.2    10017.    1483.3    10052.    1484.0    10091.
GR   1484.0    10122.    1483.3    10159.    1484.0    10200.    1484.5    10238.    1484.4    10280.
GR   1484.4    10319.    1484.8    10342.    1483.2    10355.    1485.4    10371.    1486.0    10410.
GR   1486.1    10453.    1487.0    10496.    1487.7    10542.    1488.4    10582.    1488.8    10614.
X1    1.856        31     9980.    10019.      502       502       502

ET                0.0       0.0       6.1       0.0  9974.00   10024.0
GR   1492.5     9703.    1492.5     9704.    1492.5     9705.    1492.5     9706.    1492.5     9707.
GR   1492.4     9750.    1491.9     9791.    1490.5     9830.    1489.3     9865.    1487.9     9901.
GR   1486.7     9941.    1484.5     9980.    1480.7     9989.    1480.9    10000.    1480.9    10009.
GR   1485.2    10019.    1485.1    10038.    1487.5    10065.    1489.3    10093.    1489.8    10123.
GR   1489.5    10155.    1488.2    10182.    1487.6    10219.    1488.6    10257.    1488.4    10300.
GR   1488.9    10340.    1489.3    10381.    1490.4    10402.    1493.2    10419.    1498.7    10460.
GR   1500.9    10473.
X1    1.951        33     9981.    10011.      510       495       502

ET                0.0       0.0       6.1       8.4    9945.0  10011.00
GR   1497.0     9414.    1497.0     9415.    1497.0     9416.    1497.0     9417.    1496.6     9498.
GR   1496.3     9579.    1495.5     9661.    1495.0     9741.    1494.8     9806.    1493.9     9858.
GR   1492.3     9881.    1488.8     9909.    1485.9     9938.    1486.3     9965.    1486.7     9981.
GR   1483.1     9989.    1482.9    10000.    1483.0    10006.    1486.1    10011.    1489.2    10026.
GR   1491.0    10061.    1490.9    10099.    1490.8    10145.    1491.0    10190.    1491.2    10242.
GR   1492.1    10289.    1493.1    10339.    1494.1    10388.    1494.8    10429.    1495.5    10457.
GR   1502.0    10488.    1505.7    10523.    1508.7    10544.
X1    2.045        34     9988.    10019.      505       510       505

ET                0.0       0.0       6.1       8.4   9939.00  10050.00
GR   1499.6     9478.    1499.2     9519.    1498.9     9562.    1499.0     9607.    1498.7     9640.
GR   1497.8     9681.    1497.4     9721.    1496.9     9765.    1496.3     9806.    1494.6     9840.
GR   1491.1     9867.    1490.3     9911.    1489.5     9949.    1489.5     9963.    1490.9     9978.
GR   1490.9     9988.    1486.6     9995.    1486.7    10000.    1486.6    10010.    1491.2    10019.
GR   1490.1    10048.    1488.0    10057.    1490.9    10066.    1490.7    10094.    1491.7    10120.
GR   1492.0    10158.    1492.4    10199.    1493.2    10238.    1493.9    10280.    1493.6    10321.
GR   1493.7    10360.    1494.2    10384.    1502.1    10422.    1502.7    10425.
QT        4    1308.0    1308.0    1308.0    1308.0
X1    2.121        19     9980.    10019.      405       415       410

ET                0.0       0.0       6.1       8.4   9976.00  10019.00
GR   1503.6     9596.    1502.3     9639.    1502.2     9681.    1501.8     9722.    1501.3     9768.
GR   1500.5     9813.    1499.7     9853.    1498.4     9888.    1496.7     9921.    1492.8     9947.
GR   1492.1     9980.    1488.7     9990.    1489.3    10000.    1490.5    10010.    1493.6    10019.
GR   1493.0    10048.    1494.8    10079.    1496.4    10110.    1497.1    10133.
X1    2.200        20     9959.    10036.      400       425       417
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ET		0.0	0.0	6.1	8.4	9845.00	10036.0			
GR	1502.0	9511.0	1500.0	9566.0	1498.8	9612.0	1496.9	9654.0	1495.7	9701.0
GR	1494.2	9741.	1494.1	9781.	1493.0	9811.	1494.7	9824.	1493.5	9837.
GR	1493.4	9863.	1493.1	9891.	1495.6	9903.	1495.3	9930.	1496.1	9959.
GR	1495.0	9970.	1491.5	9981.	1491.4	10000.	1490.5	10017.	1498.5	10036.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .71 CWSEL= 1460.42

STA=	9437.	9574.	9668.	9710.	9748.	9798.	9852.	9887.	9917.	9952.	9975.	9985.	10025.
PER Q=	4.4	5.3	3.5	3.4	3.6	4.9	3.5	3.2	4.4	3.1	1.0	9.1	
AREA=	307.6	316.8	179.0	168.9	193.7	240.9	165.2	149.1	191.2	130.4	46.7	328.2	
VEL=	.3	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.6	
DEPTH=	2.2	3.4	4.3	4.4	3.9	4.5	4.7	5.0	5.5	5.7	4.7	8.2	

STA=	10025.	10061.	10105.	10165.	10224.	10267.	10316.	10363.	10405.	10458.	10502.
PER Q=	3.4	5.2	7.3	6.9	5.2	5.7	5.1	4.2	4.9	2.8	
AREA=	165.1	231.9	322.2	308.0	228.8	255.8	235.9	200.3	239.6	153.3	
VEL=	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	
DEPTH=	4.6	5.3	5.4	5.2	5.3	5.2	5.0	4.8	4.5	3.5	

FLOW DISTRIBUTION FOR SECNO= .78 CWSEL= 1460.44

STA=	9693.	9827.	9865.	9909.	9934.	9966.	10032.	10058.	10082.	10116.	10153.	10219.	10262.
PER Q=	7.7	4.8	5.0	3.4	3.7	11.8	3.3	4.3	4.7	5.3	3.7	4.7	
AREA=	300.1	147.6	160.0	100.9	117.9	318.1	98.3	116.0	138.9	154.8	130.8	154.2	
VEL=	.6	.7	.7	.8	.7	.9	.8	.9	.8	.8	.7	.7	
DEPTH=	2.2	3.9	3.6	4.0	3.7	4.8	3.8	4.8	4.1	4.2	2.0	3.6	

STA=	10262.	10308.	10356.	10404.	10457.	10510.	10564.	10609.	10618.
PER Q=	5.4	5.5	6.0	6.4	5.2	5.3	3.7	.1	
AREA=	171.8	176.9	186.5	200.6	176.8	180.1	134.3	10.3	
VEL=	.7	.7	.7	.7	.7	.7	.6	.3	
DEPTH=	3.7	3.7	3.9	3.8	3.3	3.3	3.0	1.2	

FLOW DISTRIBUTION FOR SECNO= .89 CWSEL= 1460.51

STA=	9403.	9605.	9743.	9813.	9875.	9910.	9919.	9941.	9971.	10014.	10030.	10049.	10066.
PER Q=	3.5	6.9	4.1	3.6	5.4	3.8	4.0	3.2	38.8	3.9	6.3	5.6	
AREA=	76.9	102.0	56.8	50.3	49.7	24.2	35.3	34.0	184.5	30.6	43.9	39.3	
VEL=	1.1	1.6	1.6	1.6	2.5	3.6	2.6	2.2	4.8	2.9	3.3	3.3	
DEPTH=	.4	.7	.8	.8	1.4	2.7	1.6	1.1	4.3	1.9	2.3	2.3	

STA=	10066.	10094.	10138.	10215.
PER Q=	8.0	3.0	.0	
AREA=	59.1	35.6	1.4	
VEL=	3.1	2.0	.3	
DEPTH=	2.1	.8	.0	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .99 CWSEL= 1463.22

STA=	9475.	9663.	9874.	9883.	9903.	9913.	9918.	9930.	9942.	9951.	9978.	10019.	10047.
PER Q=	3.6	6.2	4.3	8.1	6.7	4.1	4.1	8.3	3.1	6.3	33.7	6.3	
AREA=	75.5	71.4	25.6	51.1	34.7	19.8	28.2	43.3	21.3	49.5	162.6	50.5	
VEL=	1.1	2.0	3.9	3.6	4.4	4.8	3.4	4.4	3.4	2.9	4.8	2.9	
DEPTH=	.4	.3	2.8	2.6	3.5	4.0	2.3	3.6	2.4	1.8	4.0	1.8	

STA=	10047.	10074.	10089.
PER Q=	4.6	.5	
AREA=	41.0	8.6	
VEL=	2.6	1.3	
DEPTH=	1.5	.6	

FLOW DISTRIBUTION FOR SECNO= 1.12 CWSEL= 1466.57

STA=	9823.	9854.	9897.	9942.	9974.	10037.	10050.	10058.	10064.	10076.	10097.	10102.
PER Q=	.2	2.1	12.4	15.6	58.1	2.3	2.1	2.5	3.5	1.2	.0	
AREA=	5.8	31.2	93.4	93.6	272.2	20.5	16.2	16.1	26.1	17.3	.7	
VEL=	.6	1.5	3.1	3.8	4.9	2.5	3.0	3.6	3.1	1.6	.5	
DEPTH=	.2	.7	2.1	2.9	4.3	1.6	2.0	2.7	2.2	.8	.1	

FLOW DISTRIBUTION FOR SECNO= 1.21 CWSEL= 1469.05

STA=	9684.	9853.	9891.	9920.	9953.	9986.	9997.	10030.	10037.	10047.	10052.
PER Q=	4.9	5.1	7.0	10.4	10.0	3.7	50.1	4.3	4.1	.4	
AREA=	39.7	46.8	50.7	67.6	65.9	23.6	177.8	21.3	24.0	4.5	
VEL=	2.8	2.5	3.2	3.5	3.5	3.7	6.5	4.6	3.9	1.9	
DEPTH=	.2	1.2	1.7	2.0	2.0	2.1	5.4	3.0	2.4	.9	

FLOW DISTRIBUTION FOR SECNO= 1.29 CWSEL= 1471.57

STA=	9786.	9850.	9876.	9915.	9939.	9956.	9971.	9983.	9994.	10032.	10047.	10057.	10072.
PER Q=	3.3	3.8	3.1	9.9	10.7	7.7	5.6	4.3	38.8	3.2	4.8	3.7	
AREA=	45.4	36.5	37.9	62.9	57.3	44.6	33.8	27.7	175.3	26.6	29.1	28.8	
VEL=	1.6	2.4	1.9	3.6	4.3	4.0	3.8	3.5	5.1	2.8	3.8	3.0	
DEPTH=	.7	1.4	1.0	2.6	3.4	3.0	2.8	2.5	4.6	1.8	2.9	1.9	

STA=	10072.	10093.
PER Q=	1.2	
AREA=	16.4	
VEL=	1.7	
DEPTH=	.8	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.38 CWSEL= 1474.27

STA=	9826.	9855.	9898.	9933.	9964.	9981.	9992.	10030.	10038.	10049.	10062.
PER Q=	.2	1.4	4.4	12.7	9.0	4.7	61.2	1.8	3.2	1.4	
AREA=	5.4	22.2	40.8	73.4	47.0	26.6	210.1	13.3	21.1	13.6	
VEL=	.7	1.4	2.5	4.0	4.4	4.0	6.7	3.2	3.5	2.3	
DEPTH=	.2	.5	1.2	2.4	2.8	2.4	5.5	1.7	1.9	1.1	

FLOW DISTRIBUTION FOR SECNO= 1.48 CWSEL= 1477.26

STA=	9847.	9857.	9887.	9916.	9947.	9971.	10025.	10036.	10058.	10074.	10095.	10101.
PER Q=	.2	.8	.2	.7	1.7	66.8	6.6	11.6	6.7	4.4	.2	
AREA=	3.8	13.9	6.2	12.9	19.6	247.7	32.1	59.7	37.8	32.9	2.8	
VEL=	.8	1.0	.6	.9	1.4	4.3	3.3	3.1	2.9	2.2	1.0	
DEPTH=	.4	.5	.2	.4	.8	4.6	2.9	2.7	2.4	1.6	.5	

FLOW DISTRIBUTION FOR SECNO= 1.57 CWSEL= 1478.98

STA=	9865.	9923.	9945.	9968.	9985.	10020.	10046.	10072.	10103.	10141.	10165.
PER Q=	11.1	12.4	12.2	5.8	30.6	11.0	6.9	5.1	4.2	.7	
AREA=	79.9	63.3	63.8	36.1	132.6	63.0	47.5	42.7	40.9	11.9	
VEL=	2.2	3.2	3.1	2.6	3.7	2.8	2.3	1.9	1.6	1.0	
DEPTH=	1.4	2.9	2.8	2.1	3.8	2.4	1.8	1.4	1.1	.5	

FLOW DISTRIBUTION FOR SECNO= 1.64 CWSEL= 1480.59

STA=	9846.	9907.	9933.	9949.	9970.	10020.	10052.	10084.	10100.	10107.
PER Q=	5.1	9.5	7.4	6.2	64.7	3.9	2.2	.8	.2	
AREA=	40.8	42.9	30.4	30.5	177.5	27.3	19.3	8.0	2.5	
VEL=	2.0	3.6	3.9	3.3	5.9	2.3	1.8	1.6	1.3	
DEPTH=	.7	1.7	1.9	1.5	3.5	.9	.6	.5	.4	

FLOW DISTRIBUTION FOR SECNO= 1.70 CWSEL= 1482.64

STA=	9687.	9926.	9952.	9978.	10016.	10039.	10056.	10086.	10110.	10142.	10183.
PER Q=	6.8	11.5	6.6	43.3	5.8	5.5	6.5	6.4	5.8	1.9	
AREA=	55.6	59.6	42.7	156.0	37.8	32.2	44.8	40.6	42.6	23.2	
VEL=	2.0	3.1	2.5	4.5	2.5	2.7	2.3	2.5	2.2	1.3	
DEPTH=	.2	2.3	1.6	4.1	1.6	1.9	1.5	1.7	1.3	.6	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.76 CWSEL= 1484.51

STA=	9941.	9980.	10017.	10052.	10091.	10159.	10200.	10364.
PER Q=	8.1	66.4	7.9	4.6	5.9	4.8	2.3	
AREA=	45.2	164.1	43.8	33.2	47.0	34.9	28.9	
VEL=	2.9	6.5	2.9	2.2	2.0	2.2	1.3	
DEPTH=	1.2	4.4	1.3	.9	.7	.9	.2	

FLOW DISTRIBUTION FOR SECNO= 1.86 CWSEL= 1487.51

STA=	9914.	9941.	9980.	10019.	10038.	10065.
PER Q=	.6	12.4	74.4	8.6	4.0	
AREA=	10.9	74.5	222.1	44.8	32.6	
VEL=	1.0	2.7	5.4	3.1	2.0	
DEPTH=	.4	1.9	5.7	2.4	1.2	

FLOW DISTRIBUTION FOR SECNO= 1.95 CWSEL= 1489.53

STA=	9903.	9909.	9938.	9965.	9981.	10011.	10026.	10032.
PER Q=	.1	10.6	21.1	10.1	53.8	4.2	.0	
AREA=	2.1	63.1	92.5	48.4	173.1	28.1	1.0	
VEL=	.8	2.7	3.7	3.4	5.0	2.4	.5	
DEPTH=	.4	2.2	3.4	3.0	5.8	1.9	.2	

FLOW DISTRIBUTION FOR SECNO= 2.05 CWSEL= 1491.87

STA=	9861.	9911.	9949.	9963.	9978.	9988.	10019.	10048.	10057.	10066.	10094.	10143.
PER Q=	7.7	15.4	7.7	4.6	1.3	40.4	5.3	6.5	5.0	4.1	1.8	
AREA=	54.2	75.2	33.3	25.2	9.8	127.2	35.6	25.5	21.9	30.2	19.7	
VEL=	2.3	3.3	3.7	3.0	2.1	5.1	2.4	4.1	3.7	2.2	1.5	
DEPTH=	1.1	2.0	2.4	1.7	1.0	4.1	1.2	2.8	2.4	1.1	.4	

FLOW DISTRIBUTION FOR SECNO= 2.12 CWSEL= 1494.43

STA=	9936.	9947.	9980.	10019.	10048.	10073.
PER Q=	1.3	18.1	71.8	6.2	2.5	
AREA=	8.8	65.2	161.2	32.6	17.5	
VEL=	2.0	3.6	5.8	2.5	1.8	
DEPTH=	.8	2.0	4.1	1.1	.7	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 2.20 CWSEL= 1496.00

STA=	9689.	9701.	9741.	9781.	9811.	9824.	9837.	9863.	9891.	9903.	9930.	9955.	10036.
PER Q=	.0	3.5	9.0	10.8	3.7	3.1	10.0	12.2	2.2	.8	.4	44.3	
AREA=	1.8	42.1	74.1	73.6	28.0	24.7	66.4	77.1	19.8	14.9	8.9	243.6	
VEL=	.3	1.1	1.6	1.9	1.7	1.6	2.0	2.1	1.5	.7	.5	2.4	
DEPTH=	.2	1.1	1.9	2.5	2.2	1.9	2.6	2.8	1.7	.6	.4	3.5	

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T1      FLOOD PLAIN ANALYSIS  -  MARICOPA COUNTY FLOOD CONTROL DIST.
T2      FLD'WAY ENCROACH CALC. (METHOD 4 W/1.0 W.S. RISE) 100 YR/6 HR STORM
T3      BUCHANAN WASH           SKUNK CREEK TO C.A.P. CANAL   OCT, 1987

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        3        0        0        0        0        0        0    1461.42      0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      2        0       -1        0        0        0       -1        0        0        0
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T1      FLOOD PLAIN ANALYSIS  -  MARICOPA COUNTY FLOOD CONTROL DIST.
T2      FLD'WAY ENCROACH CALC. (METHOD 1)                    100 YR/6 HR STORM
T3      BUCHANAN WASH          SKUNK CREEK TO C.A.P. CANAL   OCT, 1987

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        4        0        0        0        0        0        0     1461.42     0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      3        0       -1        0        0        0       -1        0        0        0
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T1      FLOOD PLAIN ANALYSIS  -  MARICOPA COUNTY FLOOD CONTROL DIST.
T2      FLD'WAY ENCROACH CALC. (METHOD 4 REVISED)          100 YR/6 HR STORM
T3      BUCHANAN WASH          SKUNK CREEK TO C.A.P. CANAL   OCT, 1987

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        5        0        0        0        0        0        0     1461.42     0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     15        0       -1        0        0        0       -1        0        0        0
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THIS RUN EXECUTED 19NOV01 14:22:26

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BUCHANAN WASH

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	S
	.710	1460.42	.00	1460.42	1064.97	925.88	210.74	1167.38	.00	.00	9985.00	10025.00	
	.710	1461.42	1.00	1461.43	657.83	901.10	255.20	1147.70	.28	9693.17	9985.00	10025.00	103
	.710	1461.42	1.00	1461.43	658.00	901.37	255.15	1147.48	658.00	9693.00	9985.00	10025.00	103
	.710	1461.42	1.00	1461.43	657.83	901.10	255.20	1147.70	.28	9693.17	9985.00	10025.00	103
*	.782	1460.44	.00	1460.45	902.21	565.22	271.71	1467.08	.00	.00	9966.00	10032.00	
*	.782	1461.44	1.00	1461.45	539.31	315.04	371.59	1617.38	.33	9889.19	9966.00	10032.00	104
*	.782	1461.44	1.00	1461.45	538.69	315.87	372.07	1616.06	557.00	9889.00	9966.00	10032.00	104
*	.782	1461.44	1.00	1461.45	539.31	315.04	371.59	1617.38	.33	9889.19	9966.00	10032.00	104
*	.890	1460.51	.00	1460.71	758.28	792.59	894.24	617.17	.00	.00	9971.00	10014.00	
*	.890	1461.41	.89	1461.77	177.64	1034.49	1269.51	.00	.59	9836.36	9971.00	10014.00	100
*	.890	1461.41	.89	1461.77	178.00	1034.60	1269.40	.00	178.00	9836.00	9971.00	10014.00	100
*	.890	1461.41	.89	1461.77	177.64	1034.49	1269.51	.00	.59	9836.36	9971.00	10014.00	100
	.985	1463.22	.00	1463.43	583.56	1264.54	776.71	262.75	.00	.00	9978.00	10019.00	
	.985	1464.31	1.09	1464.68	114.45	1204.19	1099.81	.00	.54	9904.55	9978.00	10019.00	100
	.985	1464.21	.99	1464.54	124.00	1289.24	1014.76	.00	124.00	9895.00	9978.00	10019.00	100
	.985	1464.22	1.00	1464.55	123.27	1284.37	1019.63	.00	.47	9895.73	9978.00	10019.00	100
	1.120	1466.57	.00	1466.85	279.35	695.15	1339.67	269.18	.00	.00	9974.00	10037.00	
	1.120	1467.63	1.06	1468.07	88.24	423.36	1880.64	.00	.43	9948.76	9974.00	10037.00	100
	1.120	1467.42	.85	1467.87	93.00	486.82	1817.18	.00	93.00	9944.00	9974.00	10037.00	100
	1.120	1467.43	.86	1467.88	92.35	478.23	1825.77	.00	.39	9944.65	9974.00	10037.00	100
	1.207	1469.05	.00	1469.46	235.41	947.92	1154.85	201.23	.00	.00	9997.00	10030.00	
	1.207	1470.13	1.09	1470.74	88.73	817.92	1486.08	.00	.42	9941.27	9997.00	10030.00	100
	1.207	1470.02	.97	1470.59	96.00	867.28	1436.72	.00	96.00	9934.00	9997.00	10030.00	100
	1.207	1470.03	.98	1470.61	95.12	860.85	1443.15	.00	.39	9934.88	9997.00	10030.00	100
	1.288	1471.57	.00	1471.82	306.88	1112.20	894.42	297.38	.00	.00	9994.00	10032.00	
	1.288	1472.68	1.11	1473.11	93.61	1089.95	1214.05	.00	.62	9938.39	9994.00	10032.00	100
	1.288	1472.52	.95	1472.90	103.00	1165.21	1138.79	.00	103.00	9929.00	9994.00	10032.00	100
	1.288	1472.53	.96	1472.91	103.08	1166.56	1137.44	.00	.54	9928.92	9994.00	10032.00	100

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	S
	1.383	1474.27	.00	1474.77	235.90	746.30	1410.59	147.11	.00	.00	9992.00	10030.00	
	1.383	1475.33	1.07	1476.08	63.77	464.67	1839.33	.00	.41	9966.23	9992.00	10030.00	100
	1.383	1475.11	.85	1475.83	69.00	550.27	1753.73	.00	69.00	9961.00	9992.00	10030.00	100
	1.383	1475.12	.85	1475.84	68.63	545.66	1758.33	.00	.35	9961.37	9992.00	10030.00	100
	1.483	1477.26	.00	1477.50	253.88	59.33	1074.63	475.04	.00	.00	9971.00	10025.00	
	1.483	1478.45	1.18	1478.78	63.45	.00	1486.69	122.31	.41	9971.00	9971.00	10025.00	100
	1.483	1478.23	.97	1478.55	69.00	.00	1405.90	203.09	69.00	9971.00	9971.00	10025.00	100
	1.483	1478.24	.98	1478.56	69.27	.00	1403.05	205.95	.35	9971.00	9971.00	10025.00	100
	1.572	1478.98	.00	1479.11	300.62	668.24	491.68	449.07	.00	.00	9985.00	10020.00	
	1.572	1480.07	1.10	1480.30	106.92	548.71	728.38	331.91	.47	9941.18	9985.00	10020.00	100
	1.572	1479.89	.92	1480.12	113.00	563.18	707.31	338.51	113.00	9938.00	9985.00	10020.00	100
	1.572	1479.90	.92	1480.13	113.70	562.93	704.41	341.67	.44	9937.84	9985.00	10020.00	100
*	1.638	1480.59	.00	1480.99	260.84	454.05	1041.41	113.54	.00	.00	9970.00	10020.00	
*	1.638	1481.51	.91	1482.27	54.90	35.42	1573.58	.00	.51	9965.10	9970.00	10020.00	100
*	1.638	1481.42	.83	1482.13	62.00	99.85	1509.15	.00	62.00	9958.00	9970.00	10020.00	100
*	1.638	1481.42	.82	1482.13	61.53	95.29	1513.71	.00	.48	9958.47	9970.00	10020.00	100
*	1.695	1482.64	.00	1482.82	340.44	399.86	695.95	513.18	.00	.00	9978.00	10016.00	
*	1.695	1483.79	1.15	1484.08	106.00	186.61	988.14	434.26	.51	9955.21	9978.00	10016.00	100
*	1.695	1483.62	.98	1483.88	122.00	224.29	914.73	469.98	122.00	9950.00	9978.00	10016.00	100
*	1.695	1483.62	.99	1483.89	121.64	221.05	915.91	472.04	.44	9950.48	9978.00	10016.00	100
	1.761	1484.51	.00	1484.97	403.41	130.33	1068.76	409.91	.00	.00	9980.00	10017.00	
*	1.761	1485.43	.92	1486.28	48.69	.00	1504.82	104.18	.57	9980.00	9980.00	10017.00	100
*	1.761	1485.23	.72	1486.01	61.00	.00	1418.08	190.91	61.00	9980.00	9980.00	10017.00	100
*	1.761	1485.23	.72	1486.00	61.82	.00	1411.98	197.02	.50	9980.00	9980.00	10017.00	100
*	1.856	1487.51	.00	1487.87	151.11	209.37	1197.28	202.34	.00	.00	9980.00	10019.00	
*	1.856	1488.68	1.18	1489.22	42.16	19.07	1585.01	4.91	.37	9977.84	9980.00	10019.00	100
*	1.856	1488.46	.95	1488.95	50.00	67.82	1497.87	43.31	50.00	9974.00	9980.00	10019.00	100
*	1.856	1488.46	.95	1488.95	49.54	61.13	1503.93	43.94	.31	9974.51	9980.00	10019.00	100
	1.951	1489.53	.00	1489.81	129.15	674.10	866.36	68.55	.00	.00	9981.00	10011.00	
	1.951	1490.75	1.22	1491.11	60.01	520.15	1088.85	.00	.33	9950.99	9981.00	10011.00	100
	1.951	1490.49	.97	1490.83	66.00	583.09	1025.91	.00	66.00	9945.00	9981.00	10011.00	100
	1.951	1490.51	.98	1490.85	65.40	576.36	1032.64	.00	.28	9945.60	9981.00	10011.00	100
	2.045	1491.87	.00	1492.11	281.71	591.43	650.80	366.77	.00	.00	9988.00	10019.00	
	2.045	1492.96	1.09	1493.36	99.26	482.18	930.44	196.38	.50	9946.28	9988.00	10019.00	100
	2.045	1492.73	.86	1493.10	111.00	519.26	875.17	214.56	111.00	9939.00	9988.00	10019.00	100
	2.045	1492.74	.87	1493.11	111.87	516.72	869.08	223.20	.43	9939.03	9988.00	10019.00	100
	2.121	1494.43	.00	1494.85	136.39	254.62	939.59	113.79	.00	.00	9980.00	10019.00	
*	2.121	1495.46	1.03	1496.11	39.00	.00	1308.00	.00	.40	9980.00	9980.00	10019.00	100
	2.121	1495.23	.80	1495.88	43.00	42.60	1265.40	.00	43.00	9976.00	9980.00	10019.00	100
*	2.121	1495.21	.79	1495.88	42.52	36.27	1271.73	.00	.36	9976.48	9980.00	10019.00	100

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	S
*	2.200	1496.00	.00	1496.06	336.40	728.22	579.77	.00	.00	.00	9959.00	10036.00	
*	2.200	1497.17	1.17	1497.26	170.90	455.57	852.43	.00	.44	9861.97	9959.00	10036.00	100
*	2.200	1496.95	.95	1497.03	187.32	519.87	788.13	.00	191.00	9845.00	9959.00	10036.00	100
*	2.200	1496.95	.95	1497.03	187.00	518.77	789.23	.00	.38	9845.33	9959.00	10036.00	100

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      .782  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .890  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .890  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .890  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .890  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.638  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.638  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.638  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.638  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.695  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.761  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.761  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.761  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.856  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.856  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.856  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.856  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.121  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.121  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.200  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.200  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

FLOODWAY DATA, BUCHANAN WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
.710	658.	4040.	.6	1461.4	1460.4	1.0
.782	558.	2642.	.9	1461.4	1460.4	1.0
.890	178.	519.	4.4	1461.4	1460.5	.9
.985	114.	479.	4.8	1464.3	1463.2	1.1
1.120	88.	438.	5.3	1467.7	1466.6	1.1
1.207	89.	389.	5.9	1470.1	1469.0	1.1
1.288	94.	445.	5.2	1472.7	1471.6	1.1
1.383	64.	345.	6.7	1475.4	1474.3	1.1
1.483	63.	350.	4.6	1478.5	1477.3	1.2
1.572	107.	427.	3.8	1480.1	1479.0	1.1
1.638	55.	233.	6.9	1481.5	1480.6	.9
1.695	106.	392.	4.1	1483.7	1482.6	1.1
1.761	49.	225.	7.2	1485.4	1484.5	.9
1.856	42.	280.	5.7	1488.7	1487.5	1.2
1.951	60.	341.	4.7	1490.7	1489.5	1.2
2.045	99.	340.	4.7	1493.0	1491.9	1.1
2.121	39.	201.	6.5	1495.4	1494.4	1.0
2.200	171.	567.	2.3	1497.2	1496.0	1.2

FLOODWAY DATA, BUCHANAN WASH
PROFILE NO. 3

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.710	658.	4041.	.6	1461.4	1460.4	1.0
.782	557.	2637.	.9	1461.4	1460.4	1.0
.890	178.	518.	4.4	1461.4	1460.5	.9
.985	124.	507.	4.5	1464.2	1463.2	1.0
1.120	93.	438.	5.3	1467.4	1466.6	.8
1.207	96.	401.	5.7	1470.0	1469.0	1.0
1.288	103.	469.	4.9	1472.5	1471.6	.9
1.383	69.	351.	6.6	1475.1	1474.3	.8
1.483	69.	358.	4.5	1478.2	1477.3	.9
1.572	113.	430.	3.7	1479.9	1479.0	.9
1.638	62.	244.	6.6	1481.4	1480.6	.8
1.695	122.	418.	3.8	1483.6	1482.6	1.0
1.761	61.	239.	6.7	1485.2	1484.5	.7
1.856	50.	298.	5.4	1488.5	1487.5	1.0
1.951	66.	353.	4.6	1490.5	1489.5	1.0
2.045	111.	352.	4.6	1492.7	1491.9	.8
2.121	43.	205.	6.4	1495.2	1494.4	.8
2.200	187.	587.	2.2	1496.9	1496.0	.9

FLOODWAY DATA, BUCHANAN WASH
PROFILE NO. 4

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	WATER SURFACE ELEVATION DIFFERENCE
.710	658.	4040.	.6	1461.4	1460.4	1.0
.782	558.	2642.	.9	1461.4	1460.4	1.0
.890	178.	519.	4.4	1461.4	1460.5	.9
.985	123.	504.	4.6	1464.2	1463.2	1.0
1.120	92.	438.	5.3	1467.4	1466.6	.8
1.207	95.	399.	5.8	1470.0	1469.0	1.0
1.288	103.	471.	4.9	1472.5	1471.6	.9
1.383	69.	350.	6.6	1475.1	1474.3	.8
1.483	69.	359.	4.5	1478.2	1477.3	.9
1.572	114.	432.	3.7	1479.9	1479.0	.9
1.638	62.	243.	6.6	1481.4	1480.6	.8
1.695	122.	418.	3.9	1483.6	1482.6	1.0
1.761	62.	241.	6.7	1485.2	1484.5	.7
1.856	50.	296.	5.4	1488.5	1487.5	1.0
1.951	65.	351.	4.6	1490.5	1489.5	1.0
2.045	112.	356.	4.5	1492.7	1491.9	.8
2.121	43.	203.	6.5	1495.2	1494.4	.8
2.200	187.	587.	2.2	1497.0	1496.0	1.0

CHECK-2 Program: Floodway Module
Encroachment Method, Starting WSEL, Floodway Width, and Surcharge Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\DEM\BUCHNWFW.FL2
Allowable Surcharge Value: 1
Date: 11/19/2001
Time: 2:20:46 PM

SECNO	Method	Surcharge	NTOPWID	FTOPWID	FWIDTH	CHWID	Structure
0.71	6.10	1.00	1064.97	658.00	658.00	40.00	
0.782	0.00	1.00	902.21	538.69	557.00	66.00	
0.89	6.10	0.89	758.28	178.00	178.00	43.00	
0.985	6.10	0.99	583.56	124.00	124.00	41.00	
1.12	6.10	0.85	279.35	93.00	93.00	63.00	
1.207	6.10	0.97	235.41	96.00	96.00	33.00	
1.288	6.10	0.95	306.88	103.00	103.00	38.00	
1.383	6.10	0.85	235.90	69.00	69.00	38.00	
1.483	6.10	0.97	253.88	69.00	69.00	54.00	
1.572	6.10	0.92	300.62	113.00	113.00	35.00	
1.638	6.10	0.83	260.84	62.00	62.00	50.00	
1.695	6.10	0.98	340.44	122.00	122.00	38.00	
1.761	6.10	0.72	403.41	61.00	61.00	37.00	
1.856	6.10	0.95	151.11	50.00	50.00	39.00	
1.951	6.10	0.97	129.15	66.00	66.00	30.00	
2.045	6.10	0.86	281.71	111.00	111.00	31.00	
2.121	6.10	0.80	136.39	43.00	43.00	39.00	
2.2	6.10	0.95	336.40	187.32	191.00	77.00	

----Encroachment Method----

SECNO: 0.782
FW EM 07 Floodway encroachment method is not selected at this section.

----Starting Water Surface Elevation----

----X5 Record(s)----

----Floodway Width----

--- Surcharge Value ---

----Floodway Discharge----

---End Program---

HEC-2 Output for Corrected Effective Model
Check-2 Output for Corrected Effective Model

Only pages 1-9 (Input Data) and 19-23 (summary tables) have been printed. The complete input and output files are provided on the accompanying computer disk.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    11JUL01    TIME   17:09:28 *
*****************************************
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***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 11JUL01 17:09:28

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
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```
T1      REVISED FLOODPLAIN ANALYSIS (CEM)   -  RBF CONSULTING
T2      100 YEAR FLOOD EVENT  -  BASED ON 6-HR RAINFALL
T3      BUCHANAN WASH - SKUNK CREAK TO C.A.P. CANAL   JULY, 2001

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         0         0         0         0         0   1460.42         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      -1         0        -1         0         0         0        -1         0         0         0


QT        1      2304.
NC    0.055      0.055      0.055      0.10       0.30
X1    0.710         57      9985.     10025.          0          0          0
GR   1464.3      8805.     1465.2      8829.     1465.9      8860.     1465.6      8890.     1465.5      8945.
GR   1464.6      9006.     1464.2      9072.     1463.0      9130.     1462.3      9188.     1461.1      9257.
GR   1461.0      9317.     1461.3      9374.     1460.8      9426.     1459.1      9474.     1457.4      9519.
GR   1456.7      9574.     1457.1      9621.     1457.3      9668.     1456.3      9683.     1455.6      9700.
GR   1455.5      9710.     1455.2      9716.     1456.2      9730.     1456.6      9748.     1455.6      9758.
GR   1457.0      9776.     1456.9      9798.     1455.5      9823.     1456.0      9852.     1455.4      9887.
GR   1455.5      9917.     1455.1      9932.     1454.3      9952.     1455.2      9975.     1456.3      9985.
GR   1454.9      9990.     1449.5     10000.     1449.9     10016.     1455.0     10018.     1456.0     10025.
GR   1456.1     10035.     1455.4     10061.     1454.9     10105.     1455.2     10165.     1455.2     10224.
GR   1455.0     10267.     1455.4     10316.     1455.4     10363.     1455.9     10405.     1455.9     10458.
GR   1456.3     10486.     1460.5     10502.     1464.4     10525.     1468.3     10549.     1469.9     10572.
GR   1474.2     10608.     1476.6     10648.

X1    0.782         48      9966.     10032.        380        360        380
GR   1465.2      9401.     1466.0      9455.     1464.8      9494.     1464.3      9529.     1464.3      9559.
GR   1464.1      9606.     1462.8      9651.     1460.6      9689.     1458.8      9738.     1457.4      9784.
GR   1456.2      9827.     1456.9      9865.     1456.9      9891.     1456.4      9909.     1456.4      9934.
GR   1457.1      9966.     1454.6      9985.     1454.5     10000.     1454.8     10016.     1459.8     10032.
GR   1456.2     10044.     1454.8     10058.     1456.4     10082.     1456.3     10116.     1456.2     10153.
GR   1457.0     10175.     1463.5     10188.     1463.2     10199.     1458.2     10208.     1457.2     10219.
GR   1456.5     10262.     1456.9     10308.     1456.6     10356.     1456.5     10404.     1456.8     10457.
GR   1457.4     10510.     1456.8     10564.     1458.1     10609.     1464.2     10632.     1469.6     10656.
GR   1470.8     10676.     1469.3     10687.     1469.9     10699.     1470.7     10715.     1471.3     10737.
GR   1475.6     10754.     1478.2     10775.     1479.3     10792.

X1    0.890         51      9971.     10014.        740        400        570
GR   1474.8      8814.     1474.0      8871.     1471.5      8924.     1469.4      8956.     1466.6      8987.
GR   1466.0      9000.     1465.0      9003.     1464.3      9029.     1464.2      9045.     1463.9      9067.
GR   1463.0      9106.     1462.3      9172.     1460.9      9240.     1461.4      9304.     1460.8      9366.
GR   1460.3      9431.     1459.9      9498.     1460.1      9549.     1460.2      9605.     1459.6      9673.
GR   1459.7      9743.     1459.7      9813.     1459.7      9875.     1459.0      9900.     1457.9      9910.
```

	1457.3	9915.	1458.9	9919.	1459.1	9931.	1458.5	9941.	1459.0	9950.
GR	1460.3	9971.	1454.0	9987.	1454.8	10000.	1458.9	10014.	1458.3	10030.
GR	1458.1	10049.	1458.3	10066.	1458.5	10094.	1459.6	10109.	1459.6	10110.
GR	1459.7	10113.	1460.8	10147.	1461.0	10176.	1460.4	10195.	1460.5	10215.
GR	1462.5	10230.	1465.2	10260.	1468.1	10289.	1472.7	10329.	1477.6	10376.
GR	1479.4	10402.								
X1	0.985	54	9978.	10019.	600	490	502			
GR	1480.5	8830.	1480.3	8883.	1479.2	8936.	1478.3	8998.	1476.2	9044.
GR	1474.0	9095.	1471.8	9127.	1467.6	9159.	1464.6	9178.	1466.7	9185.
GR	1465.0	9189.	1464.6	9226.	1463.8	9279.	1464.2	9337.	1463.3	9397.
GR	1463.4	9455.	1462.8	9522.	1462.7	9591.	1462.8	9663.	1462.8	9714.
GR	1463.2	9759.	1463.1	9802.	1463.4	9849.	1462.0	9862.	1459.5	9874.
GR	1460.3	9878.	1461.2	9883.	1460.9	9891.	1459.9	9903.	1459.6	9913.
GR	1458.9	9918.	1461.5	9923.	1461.2	9930.	1459.0	9933.	1459.9	9942.
GR	1461.8	9951.	1461.3	9963.	1461.2	9978.	1459.0	9986.	1458.5	9989.
GR	1458.1	10000.	1459.7	10008.	1459.6	10015.	1461.5	10019.	1461.8	10025.
GR	1460.9	10047.	1461.7	10056.	1462.1	10074.	1464.2	10103.	1466.1	10143.
GR	1468.7	10185.	1470.9	10226.	1472.2	10248.	1475.9	10275.		
X1	1.09	51	9959.2	10026.83	481	569	552			
GR	1469.4	9391.1	1469.3	9414.99	1468.36	9466.88	1467.95	9523.73	1467.38	9530.4
GR	1467.3	9532.58	1466.4	9542.33	1468.41	9564.09	1467.99	9573.36	1467.94	9583.42
GR	1468	9588.56	1467.8	9590.74	1467.54	9607.05	1466.59	9615.49	1465.94	9637.25
GR	1465.5	9732.89	1465.81	9809.9	1466.01	9828.51	1465.64	9861.17	1465.32	9872.24
GR	1465.6	9878.15	1464.16	9900.87	1463.42	9909.89	1463.2	9923.02	1463.26	9927.41
GR	1463.1	9942.2	1463.07	9948.33	1462.7	9959.2	1461.05	9984.28	1459.05	10000
GR	1459.1	10013.47	1462.7	10026.83	1464.3	10032.82	1463.95	10042.86	1462.9	10048.17
GR	1462.6	10050.13	1463	10057.08	1462.79	10058.68	1463.21	10063.07	1463.77	10065.62
GR	1463.8	10070.53	1463.7	10072.73	1463.65	10076.17	1463.53	10076.79	1463.93	10084.53
GR	1464.5	10103.94	1465	10115.96	1466.12	10127.98	1467.29	10144.17	1469.94	10185.75
GR	1470.4	10202.7								
	1.102	42	9986.7	10043.47	66	62	65			
	1466.7	9663.97	1466.68	9668.24	1466.53	9670.38	1466.38	9711.65	1466.1	9743.51
GR	1466.1	9774.07	1466.16	9796	1466	9851.31	1465.83	9858.79	1465.5	9881.86
GR	1465.2	9895.59	1465.05	9905.31	1463.38	9937.92	1463.62	9943.27	1462.96	9960.18
GR	1462.9	9972.98	1463.03	9986.7	1462.96	9988	1459.7	9997.36	1459.53	10000
GR	1459.9	10006.82	1460.53	10027.37	1464.5	10043.47	1464.44	10047.98	1463.7	10055.91
GR	1463.1	10057.72	1462.47	10059.16	1463.96	10065.36	1464.16	10072.7	1463.63	10080.67
GR	1464.4	10094.26	1464.87	10130.05	1464.82	10134.56	1465.2	10156.8	1465.14	10164.58
GR	1465.2	10172.74	1464.92	10179.84	1465	10181.7	1465.23	10182.88	1465.74	10191.47
GR	1466.3	10196.74	1466.51	10197.82						
X1	1.12	49	9968.95	10026.1	93	99	96			
GR	1470.1	9357.85	1469.91	9383.47	1469.7	9384.74	1469.3	9396.29	1468.6	9481.19
GR	1468.2	9501.05	1467.64	9604.77	1467.2	9614.34	1467.2	9646.43	1466.7	9668.18
GR	1466.9	9675.21	1466.6	9706.94	1466	9713.53	1466.6	9722.9	1466.3	9782.13
GR	1465.7	9820.97	1466.03	9828.9	1466.2	9844.77	1465.1	9882.91	1465.0	9899.25
GR	1464.5	9924.4	1464.03	9932.3	1464	9942.17	1463.3	9949.44	1463.8	9968.95
GR	1463.7	9970.48	1460.34	9986.44	1460	10000	1460.3	10009.33	1464.7	10026.1
GR	1464.7	10038	1463.9	10045.94	1464	10059.55	1465.6	10074.23	1466.1	10081.14
GR	1466.9	10099.54	1469.52	10127.5	1470.7	10147.47	1470.9	10171.84	1470.8	10195.15
GR	1470.4	10217.43	1469.61	10234.5	1469.5	10246.74	1469.2	10251.03	1469.3	10258.22

	1470.3	10278.9	1470.35	10292.37	1470.8	10311.6	1470.7	10319.08		
X1	1.139	36	9981.49	10017.72	106	89	100			
GR	1467.6	9744.74	1467.3	9757.47	1467.1	9760.31	1466.9	9787.4	1466.8	9803.79
GR	1466.8	9834.4	1466.1	9868.71	1465.5	9882.45	1465.4	9888.7	1464.2	9900.62
GR	1464.5	9909.32	1464.8	9915.26	1464.5	9923.49	1464.2	9928.39	1463.8	9932.11
GR	1464.3	9938.73	1464.4	9951.37	1463.9	9974.76	1464.2	9981.49	1461.9	9990.82
GR	1460.9	9993.08	1460.4	10000	1460.8	10009.97	1464.6	10016.85	1465.0	10017.72
GR	1464.9	10017.97	1465.2	10027.79	1464.9	10048.36	1465.2	10064.01	1466.7	10075.47
GR	1468	10091.61	1468.3	10097.11	1468.3	10100.54	1468.4	10111.79	1468.8	10118.7
GR	1469.3	10140.27								
X1	1.164	46	9982.34	10023.28	138	112	129			
GR	1469.8	9645.49	1469.43	9655.98	1469.9	9669.19	1469.85	9670.89	1469.31	9678.4
GR	1469.2	9685.82	1469.34	9699.35	1469.01	9725.2	1469.11	9747.87	1469.89	9758.31
GR	1469.7	9758.99	1469.52	9769.9	1468.85	9780.75	1467.85	9786.36	1467.95	9789.27
GR	1467.1	9820.09	1466.39	9852.35	1466.29	9854.03	1465.63	9878.13	1465.51	9878.64
GR	1464.9	9884.36	1464.83	9886.88	1464.88	9888.54	1464.71	9896.97	1464.84	9903.61
GR	1464.8	9910.68	1464.7	9912.2	1465.11	9919.63	1465.09	9936.41	1464.9	9942.79
GR	1464.5	9947.68	1464.8	9954.88	1465.49	9967.43	1465.46	9968.45	1465.82	9982.34
GR	1461	9994.82	1460.69	10000	1461.23	10009.82	1463.34	10015.83	1465.7	10023.28
GR	1465.8	10038.87	1466.6	10046.62	1468.91	10062.04	1469.4	10068.82	1471.35	10089.55
GR	1473.1	10105.35								
X1	1.19	52	9984.76	10029.88	138	138	138			
GR	1469	9685.25	1468.77	9706.06	1468.58	9709.47	1468.5	9715.94	1468.68	9721.02
GR	1468.5	9734.7	1468.84	9748.06	1468.82	9750.69	1469.2	9763.34	1469.32	9782.97
GR	1469.2	9787.15	1469.18	9790.5	1468.92	9798.84	1468.77	9805.89	1467.9	9810.41
GR	1467.8	9812.46	1467.88	9816.84	1467.1	9829.41	1466.68	9839.27	1466.13	9845.14
GR	1465.9	9848.26	1466	9857.11	1465.91	9859.42	1466	9866.39	1466.36	9873.66
GR	1466	9876.17	1465.7	9881.21	1465.71	9884.33	1465.48	9890.14	1465.4	9897.43
GR	1465.2	9903.48	1465	9904.1	1464.92	9904.92	1464.94	9907.48	1464.5	9911.87
GR	1464.5	9915.16	1464.33	9917.1	1465.77	9927.37	1465.9	9942.29	1465.77	9953.46
	1466	9973.63	1465.9	9979.06	1465.96	9984.76	1464.4	9988.33	1462.62	9993.34
	1462.2	10000	1462.49	10009.95	1463.69	10023.02	1466.08	10029.88	1466.5	10037.79
GR	1467.9	10041.85	1473.8	10057						
X1	1.207	43	9990.52	10027.97	78	96	91			
GR	1470.9	9477.28	1469.9	9522.9	1469.7	9526.25	1469.94	9530.62	1469.78	9540.66
GR	1470.3	9547.92	1470.56	9556.02	1469.87	9566.92	1469.86	9609.19	1470.45	9626.04
GR	1470.2	9663.43	1469.55	9673.75	1469.27	9685.21	1469.37	9707.71	1469.7	9718.41
GR	1469.9	9734.72	1470.52	9744.17	1470.53	9780.47	1470.4	9788.9	1468.99	9809.46
GR	1467.6	9815.45	1467.33	9820.51	1466.1	9831.95	1465.39	9851.18	1466.38	9859.04
GR	1466.6	9868.34	1466.3	9872.75	1466.6	9892.68	1466.47	9899.09	1466.17	9900.93
GR	1466.6	9905.16	1465.97	9908.34	1466.45	9926.83	1466.72	9950.09	1466.74	9964.01
GR	1466.3	9976.02	1466.1	9990.52	1462.83	10000	1462.86	10018.85	1465.5	10027.97
GR	1465.7	10035.59	1466.2	10041.15	1474.51	10066.45				
X1	1.227	40	9984.14	10023.91	107	98	100			
GR	1472.2	9621.62	1472.2	9625.81	1471.94	9632.11	1471.8	9640.07	1471.6	9672.26
GR	1471.3	9688.87	1471.33	9702.3	1470.91	9717.12	1470.9	9728.32	1470.98	9731.41
GR	1470.4	9749.17	1469.57	9757.69	1467.95	9777.82	1468.16	9782.44	1468.1	9787.93
GR	1466.3	9794.01	1467.59	9798.96	1467.5	9799.42	1467.36	9821.74	1467.3	9843.86
GR	1467.5	9859.13	1467.3	9867.87	1467.69	9898.13	1467.6	9937.73	1467.33	9953.13

	1466.8	9963.82	1465.39	9984.14	1463.59	9988.74	1462.91	10000	1463.56	10010.51
GR	1464.2	10018.47	1466.8	10023.91	1466.71	10031.94	1467.61	10038.59	1468	10040.83
GR	1468.6	10049.42	1473.13	10071.44	1473.96	10074.53	1474.7	10079.68	1475.36	10083.58
X1	1.256	56	9985.52	10022.96	144	162	159			
X3	.			9838.11	1469.71					
GR	1473.9	9527.42	1474.01	9531.58	1474.11	9558.21	1474.31	9573.76	1473.76	9579.37
GR	1472.7	9587.54	1472.84	9590.16	1472.8	9592.47	1471.46	9622.62	1471.64	9657.49
GR	1471.3	9674.56	1471.03	9677.94	1470.7	9684.8	1470.3	9687.95	1470.16	9692.58
GR	1468.9	9716.24	1468.75	9749.27	1468.88	9750.47	1469.1	9755.43	1468.4	9759.84
GR	1467.9	9767.77	1468.23	9771.54	1468.73	9775.85	1468.8	9777.8	1468.64	9779.06
GR	1468.6	9780.2	1468.9	9791.78	1468.8	9806.93	1468.85	9813.47	1469.12	9823.05
GR	1469.6	9832.25	1469.71	9838.11	1469.6	9842.44	1469.3	9880.05	1468.83	9887.26
GR	1468.8	9894.56	1468.61	9908.76	1467.87	9933.42	1467.91	9943.1	1467.83	9945.24
GR	1467.2	9952.43	1466.8	9959.52	1467.2	9966.78	1467.8	9969.73	1467.62	9970.93
GR	1468.1	9985.52	1464.7	9994.77	1464.43	10000	1464.87	10013.19	1466.3	10017.47
GR	1468.3	10022.96	1467.75	10040.81	1468.1	10055.02	1469.35	10063.73	1474.33	10104.04
GR	1478.9	10137.87								
X1	1.288	54	9985.44	10020.55	153	172	166			
X3				9781.75	1471.19					
GR	1478	9325.96	1477.1	9369.59	1476.53	9381.43	1476.46	9418.86	1475.56	9439.25
GR	1474.3	9505.3	1474.19	9525.34	1473.8	9539.03	1473.51	9541.21	1473.26	9557.74
GR	1473	9564.21	1473.19	9594.17	1472.01	9611.23	1471.25	9615.76	1470.24	9645.22
GR	1469.9	9669.72	1470	9687.87	1469.23	9693.28	1470.06	9703.29	1469.89	9720.34
GR	1470.1	9734.05	1471.16	9756.1	1471.19	9781.75	1470.46	9811	1470.07	9857.19
GR	1469.8	9858.26	1470.38	9878.96	1469.72	9914.83	1468.46	9940.95	1468.02	9959.41
GR	1469.2	9968.09	1469.25	9985.44	1465.32	9994.96	1465	10000	1465.46	10010.83
GR	1469.5	10020.55	1468.9	10044.93	1469	10050.41	1469.48	10056.19	1470.35	10074.79
GR	1471.6	10087.53	1472.04	10096.32	1474.2	10122.51	1475.9	10151.88	1477	10167.79
GR	1477.7	10172.91	1478.12	10178.51	1478.4	10184.44	1478.93	10187.98	1478.1	10195.33
GR	1478.4	10200.14	1478.48	10204.67	1480.5	10233.27	1481.41	10242.45		
	1.321	59	9984.58	10020.11	167	182	178			
				9710.61	1472.54					
GR	1475	9517.97	1474.42	9531.27	1474.4	9535.04	1474.3	9536.89	1473.95	9558.77
GR	1474	9568.24	1473.8	9573.97	1472.21	9583.68	1471.8	9588.8	1470.9	9613.61
GR	1470.8	9618.04	1471.01	9622.31	1470.45	9625.54	1470.4	9627.06	1470.08	9629.02
GR	1471.1	9638.7	1471.02	9660.2	1471.06	9675.53	1471	9684.66	1472.1	9700
GR	1472.4	9705.05	1472.54	9710.61	1472.44	9761.67	1472.13	9806.51	1471.5	9828.6
GR	1471.2	9843.7	1471.57	9852.65	1471.5	9855.03	1471.57	9864.11	1471.31	9876.99
GR	1471.1	9883.85	1470.95	9915.58	1469.14	9954.87	1469.09	9958.88	1469.23	9965.35
GR	1469.1	9972.08	1468.98	9974.02	1468.77	9984.58	1467.68	9987.8	1466.06	9991.72
GR	1465.6	10000	1465.73	10008.59	1468.94	10016.85	1470.5	10020.11	1470.28	10027.07
GR	1470.3	10030.3	1470.6	10032.63	1470.56	10043.51	1470.19	10055.25	1470.51	10061.05
GR	1470.6	10068.68	1471.02	10080	1471.29	10091.02	1472.8	10127.26	1473	10128.14
GR	1473.3	10130.29	1474.8	10137.3	1476.04	10142.03	1480.92	10165.27		
X1	1.351	39	9942.88	10011.03	153	164	163			
X3				9686.03	1474.3					
GR	1475	9513.75	1474.64	9518.55	1472.6	9535.08	1472.03	9563.52	1471.86	9587.7
GR	1471.5	9592.3	1471.9	9603.19	1472.39	9634.2	1473.3	9646.97	1473.88	9663.66
GR	1474.2	9671.37	1474.3	9686.03	1474.2	9703.16	1474.08	9706.37	1474.1	9708.99
GR	1473.9	9716.42	1473.7	9730.48	1473.49	9732.58	1473	9752.22	1473.13	9760.69

	1472.9	9800.12	1471.9	9838.01	1472.18	9845.43	1472.6	9880.65	1470.89	9924.11
GR	1470.8	9938.54	1470.65	9942.88	1469.7	9959.46	1467.51	9978.65	1466.77	9992.31
GR	1466.7	10000	1471.48	10011.03	1471.54	10013.4	1471.34	10024.88	1471.29	10042.77
GR	1472.5	10059.89	1473.44	10063.71	1474.4	10069.72	1478.89	10091.37		
X1	1.383	44	9970.16	10016.84	168	157	163			
X3				9737.5	1474.9					
GR	1478.9	9417.14	1477.92	9438.96	1476.9	9449.76	1475.05	9464.91	1474.71	9469.07
GR	1473.8	9486.52	1473.7	9494.68	1473.2	9498.8	1473.64	9502.58	1473.89	9523.22
GR	1474.1	9565.27	1474.6	9605.71	1474.55	9694.19	1474.82	9721.94	1474.76	9725.55
GR	1474.9	9737.5	1474.59	9772.26	1474.19	9780.62	1473.81	9793.71	1473.85	9800.23
GR	1473.7	9812.19	1473.66	9828.43	1474.01	9840.47	1473.94	9845.74	1474.06	9854.07
GR	1473.9	9873.19	1473.51	9888.54	1473.06	9896.25	1472.7	9919.19	1471.76	9948.56
GR	1471.2	9956.32	1471.49	9961.12	1471.81	9964.3	1471.94	9970.16	1468.52	9980.05
GR	1467.7	9989.76	1467.48	9994.43	1467.09	10000	1472.27	10016.84	1471.73	10025.23
GR	1472.8	10035.35	1475.64	10050.65	1481.02	10072.52	1486.03	10096.93		
X1	1.411	42	9971.18	10033.03	153	146	152			
GR	1476.2	9644.71	1475.86	9681.87	1475.9	9691.75	1475.8	9719.04	1475.8	9747.61
GR	1475.9	9756.52	1475.94	9773.87	1475.5	9784.76	1475.1	9788.56	1475.3	9792.27
GR	1475.2	9806.63	1475.59	9820.11	1475.6	9833.49	1475.7	9839.64	1475.6	9845.45
GR	1475.7	9871.08	1475.56	9878.14	1475.6	9879.28	1474.7	9908.54	1473.9	9957.93
GR	1472.7	9964.29	1472.61	9966.03	1472.4	9966.76	1471.8	9971.18	1471.3	9976.08
GR	1470.9	9979	1470.94	9979.9	1470.6	9982.72	1470.1	9984.48	1470.2	9987.79
GR	1469.7	9989.73	1469.64	9990.71	1469.4	9991.69	1468.7	9995.45	1468.2	9997.05
GR	1468.1	10000	1468.23	10015.43	1471.9	10033.03	1472.6	10037.33	1472.7	10048.66
GR	1473.3	10058.13	1480.9	10090.71						
X1	1.426	43	9978.18	10014.82	76	79	79			
X3				9783.95	1476.3					
GR	1476.4	9575.17	1476.35	9660.48	1476.1	9667.72	1475.7	9696.67	1475.7	9700.54
GR	1475.4	9709.04	1475.26	9718.65	1476.1	9740.87	1475.9	9746.31	1475.7	9747.11
GR	1475.7	9759.85	1476.31	9769.5	1476.3	9773.52	1476.2	9777.55	1476.3	9783.95
	1476.3	9789.63	1476.12	9803.17	1476.2	9818.13	1475.2	9844.23	1474.3	9857.62
	1473.7	9863.36	1473.3	9869.01	1472.3	9878.2	1470.9	9884.91	1469.7	9890.16
GR	1468.3	9902.02	1468.68	9910.26	1469.4	9914.2	1470.1	9919.53	1473.1	9934.3
GR	1473.2	9938.91	1473	9949.8	1473	9952.14	1472.3	9978.18	1472.4	9978.31
GR	1470.1	9984.19	1468.58	9987.16	1468.3	10000	1469.4	10003.23	1473.6	10014.82
GR	1473.1	10024.97	1474.43	10034.28	1478.9	10054.24				
X1	1.462	52	9971.59	10016.09	193	192	193			
X3				9848.83	1479.37					
GR	1478.5	9581.26	1478.48	9586.66	1478.05	9591.7	1477.67	9597.92	1476.7	9610.87
GR	1476.4	9623.48	1475.15	9651.07	1475.2	9661.09	1475.11	9674.59	1476.16	9679.77
GR	1475.5	9682.46	1475.07	9684.86	1474.66	9687.83	1474.88	9690.28	1474.89	9704.26
GR	1474.8	9708.87	1474.87	9714.86	1474.69	9720.22	1473.63	9734.14	1474.08	9743.46
GR	1474.7	9751.65	1475.02	9758	1475.87	9766.75	1476.5	9777.34	1476.65	9782.16
GR	1477.9	9798.01	1479.08	9815.69	1479.25	9843.21	1479.37	9848.83	1478.83	9853.88
GR	1478.1	9871.56	1477.72	9880.42	1477.5	9882.25	1477.4	9887.83	1476.6	9896.36
GR	1475.9	9900.75	1475.58	9912.02	1475.27	9931.01	1474.82	9948.64	1473.5	9963.86
GR	1473.4	9964.1	1473.28	9971.59	1470.05	9992.16	1469.7	10000	1469.85	10007.08
GR	1471.5	10012.15	1472.5	10016.09	1473.49	10030.44	1474.2	10038.38	1474.47	10040.07
GR	1481	10067.01	1482	10071.52						

```
QT        1      1609.
X1    1.483         49    9980.37   10017.29       112       112       113
X3                            9792.17     1478.9
GR   1479.4    9086.68     1478.3     9132.77   1478.54    9160.04   1478.46   9169.84    1479.1   9177.96
GR   1478.2    9185.72    1478.77     9295.52   1478.16    9301.76   1478.95   9315.59   1478.95   9319.55
GR   1478.5    9332.82     1479.1     9355.65   1478.73    9359.21   1477.98   9436.36   1477.26    9478.8
GR   1477.9    9526.58     1477.4      9554.8   1477.53    9557.31   1476.74    9583.8   1476.83   9601.12
GR     1477     9610.6       1477     9637.29   1476.76     9643.9    1477.1   9649.52   1476.64   9672.33
GR   1475.9    9687.21    1475.51     9689.99   1475.38    9696.15   1476.48   9720.66   1477.45   9736.49
GR   1478.5    9770.61     1478.4      9780.7    1478.9    9792.17   1477.64    9819.1   1477.22   9834.46
GR   1476.7    9843.61       1477     9896.72    1476.2    9947.69   1473.84   9980.37   1472.99   9985.59
GR   1470.1    9990.88     1469.8    10007.24   1474.31   10017.29    1473.9  10032.06   1474.88  10061.99
GR   1475.4   10072.56    1477.25    10093.65   1478.81   10099.71      1495  10175.72

X1    1.518         30    9976.69    10021.74       180       186       184
X3                            9800.87     1479.1
GR   1478.9     9665.6    1478.65      9680.6    1478.4    9684.52   1478.26   9701.13    1478.8   9718.94
GR   1478.6    9736.13    1478.76     9742.19    1479.1    9800.87    1478.7   9845.89   1478.52   9858.88
GR     1478    9874.38    1477.28     9906.15   1476.85    9919.61   1476.24   9936.13    1475.2   9957.62
GR   1474.6     9965.9     1474.1      9970.2   1474.83    9976.69    1474.3   9980.22   1472.05   9987.42
GR   1471.6      10000    1474.18     10014.71   1475.24   10021.74      1476  10040.18   1475.98  10054.93
GR     1476   10058.37     1476.7     10080.37   1478.01   10097.02    1481.8  10117.33   1482.35  10120.56

X1    1.549         40    9974.29     10019.1       135       175       171
X3                            9745.88      1480
GR     1479    9587.24     1478.5      9607.45   1478.76    9642.05   1479.41   9679.16    1479.4   9684.94
GR   1479.8    9719.08       1480      9745.88   1479.83    9775.73    1479.6   9786.73    1479.6   9796.48
GR   1479.3    9815.09    1478.76      9828.94   1478.19    9853.03   1477.23    9884.3    1476.6   9897.65
GR   1475.8    9919.62    1476.04      9931.96   1475.64    9939.15   1475.49   9944.81   1476.61   9953.63
GR   1476.7    9955.58    1476.48      9963.18   1476.43    9974.29    1475.6   9977.71   1473.94   9986.51
GR   1473.7     9989.1    1473.48        10000   1473.56   10008.39    1475.9   10019.1      1476  10020.37
GR     1476   10025.59    1477.11     10051.54    1477.3   10054.35   1477.56  10063.05   1477.82  10074.98
GR     1478   10091.94     1478.5     10102.65   1479.84   10112.11    1482.7  10125.24   1482.81  10126.6

X1    1.572         43    9991.46     10024.23       124       133       130
X3                            9734.14     1480.77
GR   1479.7     9422.5    1478.61      9466.49   1478.75    9499.91   1478.47   9517.24   1479.47    9534.2
GR   1479.2    9558.55     1479.3       9562.1   1478.83       9568   1478.59   9588.89   1479.48   9594.74
GR   1479.8    9649.46    1480.37      9666.26    1480.6    9680.03   1480.43   9690.77   1480.66   9695.99
GR   1480.6    9705.03    1480.77      9734.14   1480.57    9797.11   1480.66   9810.66    1480.4   9829.08
GR   1480.5    9830.53    1479.53      9852.46    1477.7    9915.82   1476.45   9933.23   1476.82   9938.26
GR   1477.2    9965.01    1477.01      9965.78    1477.6    9991.46   1474.38     10000    1474.4  10016.93
GR   1477.5   10024.23     1477.3     10031.33   1475.71   10037.89   1476.21  10045.55   1476.09   10062.1
GR   1476.2   10064.86    1477.15     10073.55   1477.72    10085.8   1478.89  10134.89    1479.2  10161.25
GR   1480.8    10215.2     1480.9     10220.99   1481.06   10223.88

X1    1.595         26    9964.48     10013.07       124       177       157
GR   1480.9    9735.29    1480.89      9735.44   1480.64    9750.03   1480.40   9778.48   1480.38   9810.08
GR   1480.1    9831.82    1479.64      9858.63   1479.60    9872.10   1479.41   9884.00   1479.05   9945.55
GR   1479.1    9951.44    1478.08      9964.48   1478.07    9968.41   1475.32   9971.94   1475.18   9978.48
GR   1474.7    9992.47    1475.00     10001.90   1478.42   10013.07   1478.80  10016.95   1479.19  10031.85
GR   1479.9   10055.63    1479.93     10069.79   1480.27   10076.40   1480.50  10086.23   1480.42  10094.33
GR   1481.1   10103.91
```

X1	1.610	19	9966.63	10026.42	38	36	37			
GR	1481.2	9688.85	1481.06	9700.7	1479.98	9782.54	1478.98	9928.22	1479.2	9938.12
GR	1479.0	9945.9	1478.44	9966.63	1477.9	9978.4	1475.6	9985.55	1475.23	9987.5
GR	1475.3	10017.89	1475.65	10020.73	1477.82	10023.04	1478.57	10026.42	1479.2	10041.01
GR	1479.4	10057.6	1479.67	10074.14	1480.12	10092.94	1482.17	10144.04		
X1	1.638	19	9970	10020	192	122	148			
GR	1482.9	9671	1482.9	9750	1481.9	9810	1480.5	9849	1479.3	9907
GR	1478.6	9933	1478.8	9949	1479.5	9970	1475.7	9984	1475.7	10000
GR	1479.8	10020	1479.7	10052	1480.3	10084	1479.9	10100	1482.1	10122
GR	1482.5	10140	1485.4	10167	1488.4	10194	1488.7	10203		
X1	1.695	47	9978	10016	297	303	300			
X3				9547	1484.6					
GR	1484.7	9053	1486	9100	1486	9135	1486.7	9183	1485.5	9275
GR	1483.6	9300	1482.3	9338	1482.7	9371	1483.1	9414	1481.4	9426
GR	1481.5	9450	1482.4	9463	1484.1	9474	1484.3	9506	1484.6	9547
GR	1483.4	9609	1483.1	9660	1482.2	9713	1482.3	9735	1483.2	9749
GR	1484	9773	1483.9	9791	1484.2	9814	1485.2	9830	1483.7	9868
GR	1483.5	9887	1481.6	9906	1480.2	9926	1480.5	9952	1481.5	9978
GR	1477.3	9992	1477.4	10000	1477.4	10008	1481.3	10016	1480.7	10039
GR	1480.8	10056	1481.5	10086	1480.4	10110	1481.4	10120	1481.6	10142
GR	1482.4	10177	1483.9	10212	1485.1	10249	1485.9	10285	1486.3	10320
GR	1487	10350	1487.3	10362						
X1	1.761	50	9980.	10017.	360	340	350			
X3				9482	1489.8					
GR	1489.4	9067.	1488.2	9110.	1486.9	9152.	1487.3	9190.	1487.2	9232.
GR	1487.0	9274.	1486.6	9308.	1485.5	9317.	1487.3	9327.	1486.4	9361.
GR	1486.6	9397.	1484.2	9405.	1487.0	9428.	1488.9	9453.	1489.8	9482.
GR	1489.5	9517.	1489.5	9557.	1488.9	9599.	1488.0	9639.	1487.6	9678.
GR	1486.4	9718.	1486.1	9758.	1486.3	9800.	1487.6	9839.	1487.9	9874.
	1487.5	9905.	1485.5	9931.	1482.9	9958.	1483.2	9980.	1479.1	9988.
	1479.1	10000.	1479.2	10008.	1483.2	10017.	1483.3	10052.	1484.0	10091.
GR	1484.0	10122.	1483.3	10159.	1484.0	10200.	1484.5	10238.	1484.4	10280.
GR	1484.4	10319.	1484.8	10342.	1483.2	10355.	1485.4	10371.	1486.0	10410.
GR	1486.1	10453.	1487.0	10496.	1487.7	10542.	1488.4	10582.	1488.8	10614.
X1	1.856	56	9980.	10019.	502	502	502			
X3				9707	1492.5					
GR	1493.6	8602.	1493.6	8647.	1493.8	8687.	1493.2	8733.	1490.9	8767.
GR	1490.0	8790.	1489.9	8829.	1488.9	8866.	1490.5	8878.	1489.8	8904.
GR	1490.0	8933.	1490.0	8970.	1490.7	9013.	1491.0	9047.	1492.0	9088.
GR	1491.6	9128.	1491.5	9170.	1491.1	9215.	1490.9	9253.	1491.3	9296.
GR	1490.3	9333.	1490.4	9375.	1491.2	9417.	1492.3	9455.	1492.3	9495.
GR	1492.1	9538.	1492.2	9581.	1492.3	9624.	1492.6	9666.	1492.5	9707.
GR	1492.4	9750.	1491.9	9791.	1490.5	9830.	1489.3	9865.	1487.9	9901.
GR	1486.7	9941.	1484.5	9980.	1480.7	9989.	1480.9	10000.	1480.9	10009.
GR	1485.2	10019.	1485.1	10038.	1487.5	10065.	1489.3	10093.	1489.8	10123.
GR	1489.5	10155.	1488.2	10182.	1487.6	10219.	1488.6	10257.	1488.4	10300.
GR	1488.9	10340.	1489.3	10381.	1490.4	10402.	1493.2	10419.	1498.7	10460.
GR	1500.9	10473.								

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X1    1.951       33     9981.    10011.      510      495      502
X3                                 9417     1497
GR   1496.6     9241.   1496.4     9296.   1496.9    9357.   1497.0    9417.   1496.6    9498.
GR   1496.3     9579.   1495.5     9661.   1495.0    9741.   1494.8    9806.   1493.9    9858.
GR   1492.3     9881.   1488.8     9909.   1485.9    9938.   1486.3    9965.   1486.7    9981.
GR   1483.1     9989.   1482.9    10000.   1483.0   10006.   1486.1   10011.   1489.2   10026.
GR   1491.0    10061.   1490.9    10099.   1490.8   10145.   1491.0   10190.   1491.2   10242.
GR   1492.1    10289.   1493.1    10339.   1494.1   10388.   1494.8   10429.   1495.5   10457.
GR   1502.0    10488.   1505.7    10523.   1508.7   10544.

X1    2.045       34     9988.    10019.      505      510      505
GR   1499.6     9478.   1499.2     9519.   1498.9    9562.   1499.0    9607.   1498.7    9640.
GR   1497.8     9681.   1497.4     9721.   1496.9    9765.   1496.3    9806.   1494.6    9840.
GR   1491.1     9867.   1490.3     9911.   1489.5    9949.   1489.5    9963.   1490.9    9978.
GR   1490.9     9988.   1486.6     9995.   1486.7   10000.   1486.6   10010.   1491.2   10019.
GR   1490.1    10048.   1488.0    10057.   1490.9   10066.   1490.7   10094.   1491.7   10120.
GR   1492.0    10158.   1492.4    10199.   1493.2   10238.   1493.9   10280.   1493.6   10321.
GR   1493.7    10360.   1494.2    10384.   1502.1   10422.   1502.7   10425.

QT        1     1308.
X1    2.121       29     9980.    10019.      405      415      410
X3                                                  10133.   1497.1
GR   1503.6     9596.   1502.3     9639.   1502.2    9681.   1501.8    9722.   1501.3    9768.
GR   1500.5     9813.   1499.7     9853.   1498.4    9888.   1496.7    9921.   1492.8    9947.
GR   1492.1     9980.   1488.7     9990.   1489.3   10000.   1490.5   10010.   1493.6   10019.
GR   1493.0    10048.   1494.8    10079.   1496.4   10110.   1497.1   10133.   1496.5   10164.
GR   1495.4    10204.   1494.7    10243.   1493.8   10281.   1493.0   10322.   1494.0   10365.
GR   1495.3    10404.   1497.4    10443.   1500.7   10486.   1502.0   10504.

X1    2.200       33     9959.    10036.      400      425      417
X3                                                  10036   1498.5
GR   1502.0     9511.   1500.4     9566.   1498.8    9612.   1496.9    9654.   1495.7    9701.
     1494.2     9741.   1494.1     9781.   1493.0    9811.   1494.7    9824.   1493.5    9837.
     1493.4     9863.   1493.1     9891.   1495.6    9903.   1495.3    9930.   1496.1    9959.
GR   1495.0     9970.   1491.5     9981.   1491.4   10000.   1490.5   10017.   1498.5   10036.
GR   1498.1    10053.   1495.7    10067.   1496.1   10101.   1496.3   10141.   1496.3   10178.
GR   1496.6    10215.   1497.0    10253.   1497.0   10291.   1499.8   10328.   1502.7   10364.
GR   1505.1    10405.   1509.4    10447.   1509.3   10447.
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THIS RUN EXECUTED 11JUL01 17:09:29

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BUCHANAN WASH - SKUNK CR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.710	.00	.00	.00	1449.50	2304.00	1460.42	1456.08	1460.42	.40	.64	4758.57	3640.20
*	.782	380.00	.00	.00	1454.50	2304.00	1460.44	1457.27	1460.45	1.25	.85	3174.93	2060.39
*	.890	570.00	.00	.00	1454.00	2304.00	1460.51	1460.07	1460.71	48.75	4.85	823.66	330.00
	.985	502.00	.00	.00	1458.10	2304.00	1463.22	1462.20	1463.43	51.32	4.78	683.02	321.63
	1.090	552.00	.00	.00	1459.05	2304.00	1465.50	1464.19	1465.77	38.03	4.71	622.44	373.63
	1.102	65.00	.00	.00	1459.53	2304.00	1465.76	1464.65	1466.03	43.68	4.97	636.87	348.61
	1.120	96.00	.00	.00	1460.00	2304.00	1466.17	1465.24	1466.54	56.41	5.63	541.84	306.78
	1.139	100.00	.00	.00	1460.40	2304.00	1466.76	1465.97	1467.14	63.89	6.12	525.71	288.25
	1.164	129.00	.00	.00	1460.69	2304.00	1467.58	1466.65	1467.88	48.22	5.38	586.08	331.81
	1.190	138.00	.00	.00	1462.20	2304.00	1468.23	1467.08	1468.47	38.01	4.74	636.42	373.73
	1.207	91.00	.00	.00	1462.83	2304.00	1468.56	1467.66	1468.83	45.29	5.22	614.74	342.37
	1.227	100.00	.00	.00	1462.91	2304.00	1469.02	1468.42	1469.35	51.61	5.73	602.64	320.72
	1.256	159.00	.00	.00	1464.43	2304.00	1469.96	1469.54	1470.41	90.08	6.74	495.37	242.75
	1.288	166.00	.00	.00	1465.00	2304.00	1471.29	1470.61	1471.60	60.69	5.88	595.48	295.74
	1.321	178.00	.00	.00	1465.60	2304.00	1472.25	1471.54	1472.57	51.01	5.80	597.45	322.59
	1.351	163.00	.00	.00	1466.70	2304.00	1473.08	1472.11	1473.46	57.71	5.55	543.97	303.30
	1.383	163.00	.00	.00	1467.09	2304.00	1474.03	1473.39	1474.62	79.53	6.96	433.75	258.36

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.411	152.00	.00	.00	1468.10	2304.00	1475.10	1473.29	1475.54	46.15	5.67	480.00	339.17
*	1.426	79.00	.00	.00	1468.30	2304.00	1475.62	1472.84	1475.78	17.73	3.49	742.53	547.14
*	1.462	193.00	.00	.00	1469.70	2304.00	1475.85	1475.25	1476.67	107.75	7.99	348.86	221.96
	1.483	113.00	.00	.00	1469.80	1609.00	1477.12	1475.44	1477.35	27.85	4.51	495.00	304.89
	1.518	184.00	.00	.00	1471.60	1609.00	1477.71	1476.49	1477.96	39.31	4.68	449.85	256.64
	1.549	171.00	.00	.00	1473.48	1609.00	1478.40	1477.34	1478.60	40.08	4.37	494.71	254.17
	1.572	130.00	.00	.00	1474.38	1609.00	1478.98	1478.19	1479.19	51.83	4.65	474.39	223.49
*	1.595	157.00	.00	.00	1474.70	1609.00	1479.77	1479.61	1480.52	118.87	7.30	275.86	147.58
*	1.610	37.00	.00	.00	1475.23	1609.00	1480.60	1479.57	1480.78	32.35	4.03	581.87	282.88
	1.638	148.00	.00	.00	1475.70	1609.00	1481.15	1480.23	1481.34	38.60	4.25	527.52	258.97
	1.695	300.00	.00	.00	1477.30	1609.00	1482.50	1481.86	1482.72	55.25	4.90	486.59	216.47
	1.761	350.00	.00	.00	1479.10	1609.00	1484.58	1484.40	1484.98	73.28	6.12	430.96	187.97
	1.856	502.00	.00	.00	1480.70	1609.00	1487.43	1485.97	1487.81	44.61	5.54	372.66	240.91
	1.951	502.00	.00	.00	1482.90	1609.00	1489.53	1487.86	1489.81	35.34	4.99	409.49	270.64
	2.045	505.00	.00	.00	1486.60	1609.00	1491.87	1491.32	1492.11	60.41	5.13	457.06	207.01
	2.121	410.00	.00	.00	1488.70	1308.00	1494.43	1493.71	1494.85	72.75	5.82	285.77	153.35
	2.200	417.00	.00	.00	1490.50	1308.00	1496.00	1494.40	1496.06	15.21	2.38	675.08	335.33

HANAN WASH - SKUNK CR

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	.710	2304.00	1460.42	.00	.00	.00	1064.97	.00
*	.782	2304.00	1460.44	.00	.02	.00	902.21	380.00
*	.890	2304.00	1460.51	.00	.07	.00	758.28	570.00
	.985	2304.00	1463.22	.00	2.71	.00	583.56	502.00
	1.090	2304.00	1465.50	.00	2.28	.00	254.10	552.00
	1.102	2304.00	1465.76	.00	.26	.00	328.10	65.00
	1.120	2304.00	1466.17	.00	.40	.00	290.74	96.00
	1.139	2304.00	1466.76	.00	.60	.00	240.14	100.00
	1.164	2304.00	1467.58	.00	.82	.00	250.50	129.00
	1.190	2304.00	1468.23	.00	.65	.00	234.04	138.00
	1.207	2304.00	1468.56	.00	.33	.00	237.06	91.00
	1.227	2304.00	1469.02	.00	.46	.00	287.00	100.00
	1.256	2304.00	1469.96	.00	.94	.00	365.96	159.00
	1.288	2304.00	1471.29	.00	1.32	.00	468.77	166.00
	1.321	2304.00	1472.25	.00	.96	.00	324.56	178.00
	1.351	2304.00	1473.08	.00	.83	.00	300.95	163.00
	1.383	2304.00	1474.03	.00	.96	.00	251.24	163.00
	1.411	2304.00	1475.10	.00	1.07	.00	170.35	152.00
*	1.426	2304.00	1475.62	.00	.52	.00	206.37	79.00
*	1.462	2304.00	1475.85	.00	.22	.00	143.11	193.00
	1.483	1609.00	1477.12	.00	1.28	.00	256.28	113.00
	1.518	1609.00	1477.71	.00	.59	.00	206.11	184.00
	1.549	1609.00	1478.40	.00	.69	.00	256.61	171.00
	1.572	1609.00	1478.98	.00	.58	.00	271.42	130.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.595	1609.00	1479.77	.00	.79	.00	200.48	157.00
*	1.610	1609.00	1480.60	.00	.83	.00	368.86	37.00
	1.638	1609.00	1481.15	.00	.55	.00	281.56	148.00
	1.695	1609.00	1482.50	.00	1.35	.00	324.78	300.00
	1.761	1609.00	1484.58	.00	2.09	.00	410.37	350.00
	1.856	1609.00	1487.43	.00	2.84	.00	147.42	502.00
	1.951	1609.00	1489.53	.00	2.11	.00	129.37	502.00
	2.045	1609.00	1491.87	.00	2.34	.00	281.38	505.00
	2.121	1308.00	1494.43	.00	2.56	.00	136.47	410.00
*	2.200	1308.00	1496.00	.00	1.57	.00	336.41	417.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      .782  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .890  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.426  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.462  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.595  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.610  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

CHECK-2 Program: NT Module
Manning's n Value and Transition Loss Coefficient Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\CEM.NT2
Date: 10/2/2001
Time: 9:48:30 PM

SECNO	XNL	XNR	XNCH	CCHV	CEHV	Structure
0.71	0.055	0.055	0.055	0.1	0.3	
0.782	0.055	0.055	0.055	0.1	0.3	
0.89	0.055	0.055	0.055	0.1	0.3	
0.985	0.055	0.055	0.055	0.1	0.3	
1.09	0.055	0.055	0.055	0.1	0.3	
1.102	0.055	0.055	0.055	0.1	0.3	
1.12	0.055	0.055	0.055	0.1	0.3	
1.139	0.055	0.055	0.055	0.1	0.3	
1.164	0.055	0.055	0.055	0.1	0.3	
1.19	0.055	0.055	0.055	0.1	0.3	
1.207	0.055	0.055	0.055	0.1	0.3	
1.227	0.055	0.055	0.055	0.1	0.3	
1.256	0.055	0.055	0.055	0.1	0.3	
1.288	0.055	0.055	0.055	0.1	0.3	
1.321	0.055	0.055	0.055	0.1	0.3	
1.351	0.055	0.055	0.055	0.1	0.3	
1.383	0.055	0.055	0.055	0.1	0.3	
1.411	0.055	0.055	0.055	0.1	0.3	
1.426	0.055	0.055	0.055	0.1	0.3	
1.462	0.055	0.055	0.055	0.1	0.3	
1.483	0.055	0.055	0.055	0.1	0.3	
1.518	0.055	0.055	0.055	0.1	0.3	
1.549	0.055	0.055	0.055	0.1	0.3	
1.572	0.055	0.055	0.055	0.1	0.3	
1.595	0.055	0.055	0.055	0.1	0.3	
1.61	0.055	0.055	0.055	0.1	0.3	
1.638	0.055	0.055	0.055	0.1	0.3	
1.695	0.055	0.055	0.055	0.1	0.3	
1.761	0.055	0.055	0.055	0.1	0.3	
1.856	0.055	0.055	0.055	0.1	0.3	
1.951	0.055	0.055	0.055	0.1	0.3	
2.045	0.055	0.055	0.055	0.1	0.3	
2.121	0.055	0.055	0.055	0.1	0.3	
2.2	0.055	0.055	0.055	0.1	0.3	

------Summary of Statistics------

	Minimum	Maximum
Left Overbank N Value:	0.055	0.055
Right Overbank N Value:	0.055	0.055
Channel N Value:	0.055	0.055
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

------Roughness Coefficient Check------

------NC and NH records Check------

------Transition Coefficient check------

------Roughness Coefficient Check at Structures------

------Special Notes and Messages check------

---End Program---

CHECK-2 Program, XSEC Module
Cross Section Location and Alignment Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\CEM.XS2
Date: 10/2/2001
Time: 9:48:37 PM

SECNO	Xlob	Xrob	Xlch	CHWID	Topwid	Structure	Flow Type
0.71	0.00	0.00	0.00	40.00	1064.97		
0.782	380.00	360.00	380.00	66.00	902.21		D
0.89	740.00	400.00	570.00	43.00	758.28		D
0.985	600.00	490.00	502.00	41.00	583.56		D
1.09	481.00	569.00	552.00	67.63	254.10		D
1.102	66.00	62.00	65.00	56.77	328.10		
1.12	93.00	99.00	96.00	57.15	290.74		D
1.139	106.00	89.00	100.00	36.23	240.14		
1.164	138.00	112.00	129.00	40.94	250.50		
1.19	138.00	138.00	138.00	45.12	234.04		
1.207	78.00	96.00	91.00	37.45	237.06		
1.227	107.00	98.00	100.00	39.77	287.00		
1.256	144.00	162.00	159.00	37.44	365.96		
1.288	153.00	172.00	166.00	35.11	468.77		
1.321	167.00	182.00	178.00	35.53	324.56		
1.351	153.00	164.00	163.00	68.15	300.95		D
1.383	168.00	157.00	163.00	46.68	251.24		D
1.411	153.00	146.00	152.00	61.85	170.35		D
1.426	76.00	79.00	79.00	36.64	206.37		
1.462	193.00	192.00	193.00	44.50	143.11		
1.483	112.00	112.00	113.00	36.92	256.28		
1.518	180.00	186.00	184.00	45.05	206.11		
1.549	135.00	175.00	171.00	44.81	256.61		
1.572	124.00	133.00	130.00	32.77	271.42		
1.595	124.00	177.00	157.00	48.59	200.48		
1.61	38.00	36.00	37.00	59.79	368.86		
1.638	192.00	122.00	148.00	50.00	281.56		
1.695	297.00	303.00	300.00	38.00	324.78		D
1.761	360.00	340.00	350.00	37.00	410.37		D
1.856	502.00	502.00	502.00	39.00	147.42		
1.951	510.00	495.00	502.00	30.00	129.37		
2.045	505.00	510.00	505.00	31.00	281.38		
2.121	405.00	415.00	410.00	39.00	136.47		
2.2	400.00	425.00	417.00	77.00	336.41		D

XS IF 04 D = divided flow
XS IF 05 E = extended cross section
XS IF 06 C = critical depth
XS IF 07 S = X5 record

-----Distance Check-----

----Channel Width Check----

----Spacing Check----

----Ineffective Flow Area----

----Location Check----

----Discharge Check----

```
----Starting WSEL Check----

XS SW 02  Known water-surface elevation of  1460.42  is specified on the first J

---End Program---
```

HEC-2 Output for Existing Conditions Model
Check-2 Output for Existing Conditions Model

Only pages 1-10 (Input data), and 51-59 (Summary tables) have been printed. The complete input and output files are provided on the accompanying computer disk.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    12OCT01    TIME   17:31:58 *
*****************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

```
X      X  XXXXXXX   XXXXX              XXXXX
X      X  X         X     X            X     X
X      X  X         X                        X
XXXXXXX   XXXX      X          XXXXX    XXXXX
X      X  X         X                  X
X      X  X         X     X            X
X      X  XXXXXXX   XXXXX              XXXXXXX
```

THIS RUN EXECUTED 12OCT01 17:31:58

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
```

```
T1      EXISTING CONDITIONS FLOODPLAIN ANALYSIS   -  RBF CONSULTING
T2      100 YEAR FLOOD EVENT  -  BASED ON 6-HR RAINFALL
T3      BUCHANAN WASH - SKUNK CREEK TO C.A.P. CANAL   JULY, 2001

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         0         0         0         0         0   1456.50         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

       1         0        -1         0         0         0        -1         0         0         0


QT        4    1422.     2005.     2304.     3067.
NC    0.055    0.055     0.055      0.10      0.30
X1    0.710       57     9985.    10025.         0         0         0
GR   1464.3    8805.    1465.2    8829.    1465.9    8860.    1465.6    8890.    1465.5    8945.
GR   1464.6    9006.    1464.2    9072.    1463.0    9130.    1462.3    9188.    1461.1    9257.
GR   1461.0    9317.    1461.3    9374.    1460.8    9426.    1459.1    9474.    1457.4    9519.
GR   1456.7    9574.    1457.1    9621.    1457.3    9668.    1456.3    9683.    1455.6    9700.
GR   1455.5    9710.    1455.2    9716.    1456.2    9730.    1456.6    9748.    1455.6    9758.
GR   1457.0    9776.    1456.9    9798.    1455.5    9823.    1456.0    9852.    1455.4    9887.
GR   1455.5    9917.    1455.1    9932.    1454.3    9952.    1455.2    9975.    1456.3    9985.
GR   1454.9    9990.    1449.5   10000.    1449.9   10016.    1455.0   10018.    1456.0   10025.
GR   1456.1   10035.    1455.4   10061.    1454.9   10105.    1455.2   10165.    1455.2   10224.
GR   1455.0   10267.    1455.4   10316.    1455.4   10363.    1455.9   10405.    1455.9   10458.
GR   1456.3   10486.    1460.5   10502.    1464.4   10525.    1468.3   10549.    1469.9   10572.
GR   1474.2   10608.    1476.6   10648.

X1    0.782       48     9966.    10032.       380       360       380
GR   1465.2    9401.    1466.0    9455.    1464.8    9494.    1464.3    9529.    1464.3    9559.
GR   1464.1    9606.    1462.8    9651.    1460.6    9689.    1458.8    9738.    1457.4    9784.
GR   1456.2    9827.    1456.9    9865.    1456.9    9891.    1456.4    9909.    1456.4    9934.
GR   1457.1    9966.    1454.6    9985.    1454.5   10000.    1454.8   10016.    1459.8   10032.
GR   1456.2   10044.    1454.8   10058.    1456.4   10082.    1456.3   10116.    1456.2   10153.
GR   1457.0   10175.    1463.5   10188.    1463.2   10199.    1458.2   10208.    1457.2   10219.
GR   1456.5   10262.    1456.9   10308.    1456.6   10356.    1456.5   10404.    1456.8   10457.
GR   1457.4   10510.    1456.8   10564.    1458.1   10609.    1464.2   10632.    1469.6   10656.
GR   1470.8   10676.    1469.3   10687.    1469.9   10699.    1470.7   10715.    1471.3   10737.
GR   1475.6   10754.    1478.2   10775.    1479.3   10792.

X1    0.890       51     9971.    10014.       740       400       570
GR   1474.8    8814.    1474.0    8871.    1471.5    8924.    1469.4    8956.    1466.6    8987.
GR   1466.0    9000.    1465.0    9003.    1464.3    9029.    1464.2    9045.    1463.9    9067.
GR   1463.0    9106.    1462.3    9172.    1460.9    9240.    1461.4    9304.    1460.8    9366.
GR   1460.3    9431.    1459.9    9498.    1460.1    9549.    1460.2    9605.    1459.6    9673.
GR   1459.7    9743.    1459.7    9813.    1459.7    9875.    1459.0    9900.    1457.9    9910.
```

[illegible]	1457.3	9915.	1458.9	9919.	1459.1	9931.	1458.5	9941.	1459.0	9950.
[illegible]	1460.3	9971.	1454.0	9987.	1454.8	10000.	1458.9	10014.	1458.3	10030.
GR	1458.1	10049.	1458.3	10066.	1458.5	10094.	1459.6	10109.	1459.6	10110.
GR	1459.7	10113.	1460.8	10147.	1461.0	10176.	1460.4	10195.	1460.5	10215.
GR	1462.5	10230.	1465.2	10260.	1468.1	10289.	1472.7	10329.	1477.6	10376.
GR	1479.4	10402.								
X1	0.985	54	9978.	10019.	600	490	502			
GR	1480.5	8830.	1480.3	8883.	1479.2	8936.	1478.3	8998.	1476.2	9044.
GR	1474.0	9095.	1471.8	9127.	1467.6	9159.	1464.6	9178.	1466.7	9185.
GR	1465.0	9189.	1464.6	9226.	1463.8	9279.	1464.2	9337.	1463.3	9397.
GR	1463.4	9455.	1462.8	9522.	1462.7	9591.	1462.8	9663.	1462.8	9714.
GR	1463.2	9759.	1463.1	9802.	1463.4	9849.	1462.0	9862.	1459.5	9874.
GR	1460.3	9878.	1461.2	9883.	1460.9	9891.	1459.9	9903.	1459.6	9913.
GR	1458.9	9918.	1461.5	9923.	1461.2	9930.	1459.0	9933.	1459.9	9942.
GR	1461.8	9951.	1461.3	9963.	1461.2	9978.	1459.0	9986.	1458.5	9989.
GR	1458.1	10000.	1459.7	10008.	1459.6	10015.	1461.5	10019.	1461.8	10025.
GR	1460.9	10047.	1461.7	10056.	1462.1	10074.	1464.2	10103.	1466.1	10143.
GR	1468.7	10185.	1470.9	10226.	1472.2	10248.	1475.9	10275.		
X1	1.045	64	9959.01	10039.88	316	319	317			
GR	1473.6	9000	1472.40	9047.61	1470.90	9080.50	1469.94	9088.10	1468.99	9111.47
GR	1468.1	9165.84	1467.70	9175.95	1467.76	9185.09	1465.10	9188.83	1467.58	9193.30
GR	1467.7	9195.73	1467.44	9233.04	1467.62	9257.62	1469.24	9305.68	1469.39	9353.17
GR	1469.0	9393.28	1467.87	9412.05	1467.73	9437.64	1467.90	9445.79	1467.50	9497.65
GR	1468.2	9515.00	1467.93	9526.31	1467.71	9529.35	1466.41	9540.86	1465.50	9552.16
GR	1465.4	9567.87	1464.97	9602.53	1464.80	9661.68	1464.20	9662.88	1463.76	9664.37
GR	1465.2	9669.24	1464.38	9703.09	1465.00	9764.57	1465.70	9793.67	1465.10	9850.28
GR	1464.5	9858.05	1463.11	9868.18	1461.90	9887.64	1462.01	9959.01	1461.55	9963.98
GR	1460.3	9969.82	1459.98	9975.21	1460.26	9994.11	1460.58	9996.03	1460.68	10011.16
GR	1459.9	10015.77	1458.76	10018.82	1459.06	10029.40	1462.71	10039.88	1463.29	10044.58
GR	1463.1	10050.26	1463.21	10052.77	1462.81	10073.03	1463.01	10090.67	1463.79	10104.15
GR	1464.2	10117.09	1465.80	10142.38	1466.02	10148.87	1467.54	10187.70	1468.70	10249.15
[illegible]	1470.3	10263.96	1476.68	10362.79	1478.01	10377.28	1478.29	10385.52		
X1	1.067	55	9979.32	10035.99	98	116	98			
GR	1475.8	9000.00	1475.40	9051.04	1473.79	9108.93	1471.72	9145.32	1470.70	9152.00
GR	1469.7	9167.57	1468.38	9222.63	1468.67	9231.17	1469.70	9291.98	1469.65	9318.58
GR	1468.9	9351.83	1468.50	9440.16	1468.56	9454.55	1467.98	9467.82	1468.19	9565.83
GR	1467.7	9576.91	1467.50	9587.43	1467.07	9591.88	1466.10	9619.02	1465.40	9707.62
GR	1465.5	9770.98	1465.94	9801.38	1465.86	9827.63	1462.75	9919.87	1462.50	9952.53
GR	1462.6	9959.99	1462.81	9969.19	1462.86	9979.32	1459.38	9994.89	1459.01	10005.33
GR	1459.4	10015.84	1463.17	10035.99	1462.64	10050.74	1462.70	10065.32	1463.12	10076.33
GR	1463.6	10106.11	1464.10	10112.38	1464.58	10123.63	1465.46	10136.86	1465.90	10140.46
GR	1466.1	10146.66	1467.37	10172.20	1468.38	10187.65	1469.01	10217.66	1468.84	10268.99
GR	1469.4	10297.71	1470.91	10312.39	1473.80	10367.67	1475.73	10397.67	1480.16	10457.68
GR	1481.4	10470.07	1483.41	10503.43	1484.60	10517.88	1486.71	10551.59	1489.08	10588.25
X1	1.09	51	9959.2	10026.83	71	122	136			
GR	1469.4	9391.1	1469.3	9414.99	1468.36	9466.88	1467.95	9523.73	1467.38	9530.4
GR	1467.3	9532.58	1466.4	9542.33	1468.41	9564.09	1467.99	9573.36	1467.94	9583.42
GR	1468	9588.56	1467.8	9590.74	1467.54	9607.05	1466.59	9615.49	1465.94	9637.25
GR	1465.5	9732.89	1465.81	9809.9	1466.01	9828.51	1465.64	9861.17	1465.32	9872.24
GR	1465.6	9878.15	1464.16	9900.87	1463.42	9909.89	1463.2	9923.02	1463.26	9927.41

	1463.1	9942.2	1463.07	9948.33	1462.7	9959.2	1461.05	9984.28	1459.05	10000
GR	1459.1	10013.47	1462.7	10026.83	1464.3	10032.82	1463.95	10042.86	1462.9	10048.17
GR	1462.6	10050.13	1463	10057.08	1462.79	10058.68	1463.21	10063.07	1463.77	10065.62
GR	1463.8	10070.53	1463.7	10072.73	1463.65	10076.17	1463.53	10076.79	1463.93	10084.53
GR	1464.5	10103.94	1465	10115.96	1466.12	10127.98	1467.29	10144.17	1469.94	10185.75
GR	1470.4	10202.7								
X1	1.102	42	9986.7	10043.47	66	62	65			
GR	1466.7	9663.97	1466.68	9668.24	1466.53	9670.38	1466.38	9711.65	1466.1	9743.51
GR	1466.1	9774.07	1466.16	9796	1466	9851.31	1465.83	9858.79	1465.5	9881.86
GR	1465.2	9895.59	1465.05	9905.31	1463.38	9937.92	1463.62	9943.27	1462.96	9960.18
GR	1462.9	9972.98	1463.03	9986.7	1462.96	9988	1459.7	9997.36	1459.53	10000
GR	1459.9	10006.82	1460.53	10027.37	1464.5	10043.47	1464.44	10047.98	1463.7	10055.91
GR	1463.1	10057.72	1462.47	10059.16	1463.96	10065.36	1464.16	10072.7	1463.63	10080.67
GR	1464.4	10094.26	1464.87	10130.05	1464.82	10134.56	1465.2	10156.8	1465.14	10164.58
GR	1465.2	10172.74	1464.92	10179.84	1465	10181.7	1465.23	10182.88	1465.74	10191.47
GR	1466.3	10196.74	1466.51	10197.82						
X1	1.12	49	9968.95	10026.1	93	99	96			
GR	1470.1	9357.85	1469.91	9383.47	1469.7	9384.74	1469.3	9396.29	1468.6	9481.19
GR	1468.2	9501.05	1467.64	9604.77	1467.2	9614.34	1467.2	9646.43	1466.7	9668.18
GR	1466.9	9675.21	1466.6	9706.94	1466	9713.53	1466.6	9722.9	1466.3	9782.13
GR	1465.7	9820.97	1466.03	9828.9	1466.2	9844.77	1465.1	9882.91	1465.0	9899.25
GR	1464.5	9924.4	1464.03	9932.3	1464	9942.17	1463.3	9949.44	1463.8	9968.95
GR	1463.7	9970.48	1460.34	9986.44	1460	10000	1460.3	10009.33	1464.7	10026.1
GR	1464.7	10038	1463.9	10045.94	1464	10059.55	1465.6	10074.23	1466.1	10081.14
GR	1466.9	10099.54	1469.52	10127.5	1470.7	10147.47	1470.9	10171.84	1470.8	10195.15
GR	1470.4	10217.43	1469.61	10234.5	1469.5	10246.74	1469.2	10251.03	1469.3	10258.22
GR	1470.3	10278.9	1470.35	10292.37	1470.8	10311.6	1470.7	10319.08		
X1	1.139	36	9981.49	10017.72	106	89	100			
GR	1467.6	9744.74	1467.3	9757.47	1467.1	9760.31	1466.9	9787.4	1466.8	9803.79
GR	1466.8	9834.4	1466.1	9868.71	1465.5	9882.45	1465.4	9888.7	1464.2	9900.62
	1464.5	9909.32	1464.8	9915.26	1464.5	9923.49	1464.2	9928.39	1463.8	9932.11
	1464.3	9938.73	1464.4	9951.37	1463.9	9974.76	1464.2	9981.49	1461.9	9990.82
GR	1460.9	9993.08	1460.4	10000	1460.8	10009.97	1464.6	10016.85	1465.0	10017.72
GR	1464.9	10017.97	1465.2	10027.79	1464.9	10048.36	1465.2	10064.01	1466.7	10075.47
GR	1468	10091.61	1468.3	10097.11	1468.3	10100.54	1468.4	10111.79	1468.8	10118.7
GR	1469.3	10140.27								
X1	1.164	46	9982.34	10023.28	138	112	129			
GR	1469.8	9645.49	1469.43	9655.98	1469.9	9669.19	1469.85	9670.89	1469.31	9678.4
GR	1469.2	9685.82	1469.34	9699.35	1469.01	9725.2	1469.11	9747.87	1469.89	9758.31
GR	1469.7	9758.99	1469.52	9769.9	1468.85	9780.75	1467.85	9786.36	1467.95	9789.27
GR	1467.1	9820.09	1466.39	9852.35	1466.29	9854.03	1465.63	9878.13	1465.51	9878.64
GR	1464.9	9884.36	1464.83	9886.88	1464.88	9888.54	1464.71	9896.97	1464.84	9903.61
GR	1464.8	9910.68	1464.7	9912.2	1465.11	9919.63	1465.09	9936.41	1464.9	9942.79
GR	1464.5	9947.68	1464.8	9954.88	1465.49	9967.43	1465.46	9968.45	1465.82	9982.34
GR	1461	9994.82	1460.69	10000	1461.23	10009.82	1463.34	10015.83	1465.7	10023.28
GR	1465.8	10038.87	1466.6	10046.62	1468.91	10062.04	1469.4	10068.82	1471.35	10089.55
GR	1473.1	10105.35								

X1	1.19	52	9984.76	10029.88	138	138	138			
GR	1469	9685.25	1468.77	9706.06	1468.58	9709.47	1468.5	9715.94	1468.68	9721.02
GR	1468.5	9734.7	1468.84	9748.06	1468.82	9750.69	1469.2	9763.34	1469.32	9782.97
GR	1469.2	9787.15	1469.18	9790.5	1468.92	9798.84	1468.77	9805.89	1467.9	9810.41
GR	1467.8	9812.46	1467.88	9816.84	1467.1	9829.41	1466.68	9839.27	1466.13	9845.14
GR	1465.9	9848.26	1466	9857.11	1465.91	9859.42	1466	9866.39	1466.36	9873.66
GR	1466	9876.17	1465.7	9881.21	1465.71	9884.33	1465.48	9890.14	1465.4	9897.43
GR	1465.2	9903.48	1465	9904.1	1464.92	9904.92	1464.94	9907.48	1464.5	9911.87
GR	1464.5	9915.16	1464.33	9917.1	1465.77	9927.37	1465.9	9942.29	1465.77	9953.46
GR	1466	9973.63	1465.9	9979.06	1465.96	9984.76	1464.4	9988.33	1462.62	9993.34
GR	1462.2	10000	1462.49	10009.95	1463.69	10023.02	1466.08	10029.88	1466.5	10037.79
GR	1467.9	10041.85	1473.8	10057						
X1	1.207	43	9990.52	10027.97	78	96	91			
GR	1470.9	9477.28	1469.9	9522.9	1469.7	9526.25	1469.94	9530.62	1469.78	9540.66
GR	1470.3	9547.92	1470.56	9556.02	1469.87	9566.92	1469.86	9609.19	1470.45	9626.04
GR	1470.2	9663.43	1469.55	9673.75	1469.27	9685.21	1469.37	9707.71	1469.7	9718.41
GR	1469.9	9734.72	1470.52	9744.17	1470.53	9780.47	1470.4	9788.9	1468.99	9809.46
GR	1467.6	9815.45	1467.33	9820.51	1466.1	9831.95	1465.39	9851.18	1466.38	9859.04
GR	1466.6	9868.34	1466.3	9872.75	1466.6	9892.68	1466.47	9899.09	1466.17	9900.93
GR	1466.6	9905.16	1465.97	9908.34	1466.45	9926.83	1466.72	9950.09	1466.74	9964.01
GR	1466.3	9976.02	1466.1	9990.52	1462.83	10000	1462.86	10018.85	1465.5	10027.97
GR	1465.7	10035.59	1466.2	10041.15	1474.51	10066.45				
X1	1.227	40	9984.14	10023.91	107	98	100			
GR	1472.2	9621.62	1472.2	9625.81	1471.94	9632.11	1471.8	9640.07	1471.6	9672.26
GR	1471.3	9688.87	1471.33	9702.3	1470.91	9717.12	1470.9	9728.32	1470.98	9731.41
GR	1470.4	9749.17	1469.57	9757.69	1467.95	9777.82	1468.16	9782.44	1468.1	9787.93
GR	1466.3	9794.01	1467.59	9798.96	1467.5	9799.42	1467.36	9821.74	1467.3	9843.86
GR	1467.5	9859.13	1467.3	9867.87	1467.69	9898.13	1467.6	9937.73	1467.33	9953.13
GR	1466.8	9963.82	1465.39	9984.14	1463.59	9988.74	1462.91	10000	1463.56	10010.51
GR	1464.2	10018.47	1466.8	10023.91	1466.71	10031.94	1467.61	10038.59	1468	10040.83
GR	1468.6	10049.42	1473.13	10071.44	1473.96	10074.53	1474.7	10079.68	1475.36	10083.58
X1	1.256	56	9985.52	10022.96	144	162	159			
X3				9838.11	1469.71					
GR	1473.9	9527.42	1474.01	9531.58	1474.11	9558.21	1474.31	9573.76	1473.76	9579.37
GR	1472.7	9587.54	1472.84	9590.16	1472.8	9592.47	1471.46	9622.62	1471.64	9657.49
GR	1471.3	9674.56	1471.03	9677.94	1470.7	9684.8	1470.3	9687.95	1470.16	9692.58
GR	1468.9	9716.24	1468.75	9749.27	1468.88	9750.47	1469.1	9755.43	1468.4	9759.84
GR	1467.9	9767.77	1468.23	9771.54	1468.73	9775.85	1468.8	9777.8	1468.64	9779.06
GR	1468.6	9780.2	1468.9	9791.78	1468.8	9806.93	1468.85	9813.47	1469.12	9823.05
GR	1469.6	9832.25	1469.71	9838.11	1469.6	9842.44	1469.3	9880.05	1468.83	9887.26
GR	1468.8	9894.56	1468.61	9908.76	1467.87	9933.42	1467.91	9943.1	1467.83	9945.24
GR	1467.2	9952.43	1466.8	9959.52	1467.2	9966.78	1467.8	9969.73	1467.62	9970.93
GR	1468.1	9985.52	1464.7	9994.77	1464.43	10000	1464.87	10013.19	1466.3	10017.47
GR	1468.3	10022.96	1467.75	10040.81	1468.1	10055.02	1469.35	10063.73	1474.33	10104.04
GR	1478.9	10137.87								

X1	1.288	54	9985.44	10020.55	153	172	166			
X3				9781.75	1471.19					
GR	1478	9325.96	1477.1	9369.59	1476.53	9381.43	1476.46	9418.86	1475.56	9439.25
GR	1474.3	9505.3	1474.19	9525.34	1473.8	9539.03	1473.51	9541.21	1473.26	9557.74
GR	1473	9564.21	1473.19	9594.17	1472.01	9611.23	1471.25	9615.76	1470.24	9645.22
GR	1469.9	9669.72	1470	9687.87	1469.23	9693.28	1470.06	9703.29	1469.89	9720.34
GR	1470.1	9734.05	1471.16	9756.1	1471.19	9781.75	1470.46	9811	1470.07	'9857.19
GR	1469.8	9858.26	1470.38	9878.96	1469.72	9914.83	1468.46	9940.95	1468.02	9959.41
GR	1469.2	9968.09	1469.25	9985.44	1465.32	9994.96	1465	10000	1465.46	10010.83
GR	1469.5	10020.55	1468.9	10044.93	1469	10050.41	1469.48	10056.19	1470.35	10074.79
GR	1471.6	10087.53	1472.04	10096.32	1474.2	10122.51	1475.9	10151.88	1477	10167.79
GR	1477.7	10172.91	1478.12	10178.51	1478.4	10184.44	1478.93	10187.98	1478.1	10195.33
GR	1478.4	10200.14	1478.48	10204.67	1480.5	10233.27	1481.41	10242.45		
X1	1.321	59	9984.58	10020.11	167	182	178			
X3				9710.61	1472.54					
GR	1475	9517.97	1474.42	9531.27	1474.4	9535.04	1474.3	9536.89	1473.95	9558.77
GR	1474	9568.24	1473.8	9573.97	1472.21	9583.68	1471.8	9588.8	1470.9	9613.61
GR	1470.8	9618.04	1471.01	9622.31	1470.45	9625.54	1470.4	9627.06	1470.08	9629.02
GR	1471.1	9638.7	1471.02	9660.2	1471.06	9675.53	1471	9684.66	1472.1	9700
GR	1472.4	9705.05	1472.54	9710.61	1472.44	9761.67	1472.13	9806.51	1471.5	9828.6
GR	1471.2	9843.7	1471.57	9852.65	1471.5	9855.03	1471.57	9864.11	1471.31	9876.99
GR	1471.1	9883.85	1470.95	9915.58	1469.14	9954.87	1469.09	9958.88	1469.23	9965.35
GR	1469.1	9972.08	1468.98	9974.02	1468.77	9984.58	1467.68	9987.8	1466.06	9991.72
GR	1465.6	10000	1465.73	10008.59	1468.94	10016.85	1470.5	10020.11	1470.28	10027.07
GR	1470.3	10030.3	1470.6	10032.63	1470.56	10043.51	1470.19	10055.25	1470.51	10061.05
GR	1470.6	10068.68	1471.02	10080	1471.29	10091.02	1472.8	10127.26	1473	10128.14
GR	1473.3	10130.29	1474.8	10137.3	1476.04	10142.03	1480.92	10165.27		
X1	1.351	39	9942.88	10011.03	153	164	163			
X3				9686.03	1474.3					
GR	1475	9513.75	1474.64	9518.55	1472.6	9535.08	1472.03	9563.52	1471.86	9587.7
GR	1471.5	9592.3	1471.9	9603.19	1472.39	9634.2	1473.3	9646.97	1473.88	9663.66
GR	1474.2	9671.37	1474.3	9686.03	1474.2	9703.16	1474.08	9706.37	1474.1	9708.99
GR	1473.9	9716.42	1473.7	9730.48	1473.49	9732.58	1473	9752.22	1473.13	9760.69
GR	1472.9	9800.12	1471.9	9838.01	1472.18	9845.43	1472.6	9880.65	1470.89	9924.11
GR	1470.8	9938.54	1470.65	9942.88	1469.7	9959.46	1467.51	9978.65	1466.77	9992.31
GR	1466.7	10000	1471.48	10011.03	1471.54	10013.4	1471.34	10024.88	1471.29	10042.77
GR	1472.5	10059.89	1473.44	10063.71	1474.4	10069.72	1478.89	10091.37		
X1	1.383	44	9970.16	10016.84	168	157	163			
X3				9737.5	1474.9					
GR	1478.9	9417.14	1477.92	9438.96	1476.9	9449.76	1475.05	9464.91	1474.71	9469.07
GR	1473.8	9486.52	1473.7	9494.68	1473.2	9498.8	1473.64	9502.58	1473.89	9523.22
GR	1474.1	9565.27	1474.6	9605.71	1474.55	9694.19	1474.82	9721.94	1474.76	9725.55
GR	1474.9	9737.5	1474.59	9772.26	1474.19	9780.62	1473.81	9793.71	1473.85	9800.23
GR	1473.7	9812.19	1473.66	9828.43	1474.01	9840.47	1473.94	9845.74	1474.06	9854.07
GR	1473.9	9873.19	1473.51	9888.54	1473.06	9896.25	1472.7	9919.19	1471.76	9948.56
GR	1471.2	9956.32	1471.49	9961.12	1471.81	9964.3	1471.94	9970.16	1468.52	9980.05
GR	1467.7	9989.76	1467.48	9994.43	1467.09	10000	1472.27	10016.84	1471.73	10025.23
GR	1472.8	10035.35	1475.64	10050.65	1481.02	10072.52	1486.03	10096.93		

X1	1.411	42	9971.18	10033.03	153	146	152			
GR	1476.2	9644.71	1475.86	9681.87	1475.9	9691.75	1475.8	9719.04	1475.8	9747.61
GR	1475.9	9756.52	1475.94	9773.87	1475.5	9784.76	1475.1	9788.56	1475.3	9792.27
GR	1475.2	9806.63	1475.59	9820.11	1475.6	9833.49	1475.7	9839.64	1475.6	9845.45
GR	1475.7	9871.08	1475.56	9878.14	1475.6	9879.28	1474.7	9908.54	1473.9	9957.93
GR	1472.7	9964.29	1472.61	9966.03	1472.4	9966.76	1471.8	9971.18	1471.3	9976.08
GR	1470.9	9979	1470.94	9979.9	1470.6	9982.72	1470.1	9984.48	1470.2	9987.79
GR	1469.7	9989.73	1469.64	9990.71	1469.4	9991.69	1468.7	9995.45	1468.2	9997.05
GR	1468.1	10000	1468.23	10015.43	1471.9	10033.03	1472.6	10037.33	1472.7	10048.66
GR	1473.3	10058.13	1480.9	10090.71						
X1	1.426	43	9978.18	10014.82	76	79	79			
X3				9783.95	1476.3					
GR	1476.4	9575.17	1476.35	9660.48	1476.1	9667.72	1475.7	9696.67	1475.7	9700.54
GR	1475.4	9709.04	1475.26	9718.65	1476.1	9740.87	1475.9	9746.31	1475.7	9747.11
GR	1475.7	9759.85	1476.31	9769.5	1476.3	9773.52	1476.2	9777.55	1476.3	9783.95
GR	1476.3	9789.63	1476.12	9803.17	1476.2	9818.13	1475.2	9844.23	1474.3	9857.62
GR	1473.7	9863.36	1473.3	9869.01	1472.3	9878.2	1470.9	9884.91	1469.7	9890.16
GR	1468.3	9902.02	1468.68	9910.26	1469.4	9914.2	1470.1	9919.53	1473.1	9934.3
GR	1473.2	9938.91	1473	9949.8	1473	9952.14	1472.3	9978.18	1472.4	9978.31
GR	1470.1	9984.19	1468.58	9987.16	1468.3	10000	1469.4	10003.23	1473.6	10014.82
GR	1473.1	10024.97	1474.43	10034.28	1478.9	10054.24				
X1	1.462	52	9971.59	10016.09	193	192	193			
X3				9848.83	1479.37					
GR	1478.5	9581.26	1478.48	9586.66	1478.05	9591.7	1477.67	9597.92	1476.7	9610.87
GR	1476.4	9623.48	1475.15	9651.07	1475.2	9661.09	1475.11	9674.59	1476.16	9679.77
GR	1475.5	9682.46	1475.07	9684.86	1474.66	9687.83	1474.88	9690.28	1474.89	9704.26
GR	1474.8	9708.87	1474.87	9714.86	1474.69	9720.22	1473.63	9734.14	1474.08	9743.46
GR	1474.7	9751.65	1475.02	9758	1475.87	9766.75	1476.5	9777.34	1476.65	9782.16
GR	1477.9	9798.01	1479.08	9815.69	1479.25	9843.21	1479.37	9848.83	1478.83	9853.88
GR	1478.1	9871.56	1477.72	9880.42	1477.5	9882.25	1477.4	9887.83	1476.6	9896.36
GR	1475.9	9900.75	1475.58	9912.02	1475.27	9931.01	1474.82	9948.64	1473.5	9963.86
GR	1473.4	9964.1	1473.28	9971.59	1470.05	9992.16	1469.7	10000	1469.85	10007.08
GR	1471.5	10012.15	1472.5	10016.09	1473.49	10030.44	1474.2	10038.38	1474.47	10040.07
GR	1481	10067.01	1482	10071.52						
QT	4	1175.	1467.	1609.	1958.					
X1	1.483	49	9980.37	10017.29	112	112	113			
X3				9792.17	1478.9					
GR	1479.4	9086.68	1478.3	9132.77	1478.54	9160.04	1478.46	9169.84	1479.1	9177.96
GR	1478.2	9185.72	1478.77	9295.52	1478.16	9301.76	1478.95	9315.59	1478.95	9319.55
GR	1478.5	9332.82	1479.1	9355.65	1478.73	9359.21	1477.98	9436.36	1477.26	9478.8
GR	1477.9	9526.58	1477.4	9554.8	1477.53	9557.31	1476.74	9583.8	1476.83	9601.12
GR	1477	9610.6	1477	9637.29	1476.76	9643.9	1477.1	9649.52	1476.64	9672.33
GR	1475.9	9687.21	1475.51	9689.99	1475.38	9696.15	1476.48	9720.66	1477.45	9736.49
GR	1478.5	9770.61	1478.4	9780.7	1478.9	9792.17	1477.64	9819.1	1477.22	9834.46
GR	1476.7	9843.61	1477	9896.72	1476.2	9947.69	1473.84	9980.37	1472.99	9985.59
GR	1470.1	9990.88	1469.8	10007.24	1474.31	10017.29	1473.9	10032.06	1474.88	10061.99
GR	1475.4	10072.56	1477.25	10093.65	1478.81	10099.71	1495	10175.72		

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X1    1.518        30    9976.69   10021.74       180       186       184
X3                                   9800.87    1479.1
GR   1478.9    9665.6   1478.65     9680.6    1478.4   9684.52   1478.26   9701.13    1478.8   9718.94
GR   1478.6   9736.13   1478.76    9742.19    1479.1   9800.87    1478.7   9845.89   1478.52   9858.88
GR     1478   9874.38   1477.28    9906.15   1476.85   9919.61   1476.24   9936.13    1475.2   9957.62
GR   1474.6    9965.9    1474.1     9970.2   1474.83   9976.69    1474.3   9980.22   1472.05   9987.42
GR   1471.6     10000   1474.18   10014.71   1475.24  10021.74      1476  10040.18   1475.98  10054.93
GR     1476  10058.37    1476.7   10080.37   1478.01  10097.02    1481.8  10117.33   1482.35  10120.56

X1    1.549        40    9974.29    10019.1       135       175       171
X3                                   9745.88      1480
GR     1479   9587.24    1478.5     9607.45   1478.76   9642.05   1479.41   9679.16    1479.4   9684.94
GR   1479.8   9719.08      1480     9745.88   1479.83   9775.73    1479.6   9786.73    1479.6   9796.48
GR   1479.3   9815.09   1478.76     9828.94   1478.19   9853.03   1477.23    9884.3    1476.6   9897.65
GR   1475.8   9919.62   1476.04     9931.96   1475.64   9939.15   1475.49   9944.81   1476.61   9953.63
GR   1476.7   9955.58   1476.48     9963.18   1476.43   9974.29    1475.6   9977.71   1473.94   9986.51
GR   1473.7    9989.1   1473.48       10000   1473.56  10008.39    1475.9   10019.1      1476  10020.37
GR     1476  10025.59   1477.11    10051.54    1477.3  10054.35   1477.56  10063.05   1477.82  10074.98
GR     1478  10091.94    1478.5    10102.65   1479.84  10112.11    1482.7  10125.24   1482.81   10126.6
  CROSS SECTION NO. 1 OF SPECIAL CULVERT ROUTINE.

X1    1.572        43    9991.46   10024.23       124       133       130
X3                                   9734.14   1480.77
GR   1479.7    9422.5   1478.61     9466.49   1478.75   9499.91   1478.47   9517.24   1479.47    9534.2
GR   1479.2   9558.55    1479.3      9562.1   1478.83      9568   1478.59   9588.89   1479.48   9594.74
GR   1479.8   9649.46   1480.37     9666.26    1480.6   9680.03   1480.43   9690.77   1480.66   9695.99
GR   1480.6   9705.03   1480.77     9734.14   1480.57   9797.11   1480.66   9810.66    1480.4   9829.08
GR   1480.5   9830.53   1479.53     9852.46    1477.7   9915.82   1476.45   9933.23   1476.82   9938.26
GR   1477.2   9965.01   1477.01     9965.78    1477.6   9991.46   1474.38     10000    1474.4  10016.93
GR   1477.5  10024.23    1477.3    10031.33   1475.71  10037.89   1476.21  10045.55   1476.09   10062.1
GR   1476.2  10064.86   1477.15    10073.55   1477.72   10085.8   1478.89  10134.89    1479.2  10161.25
GR   1480.8   10215.2    1480.9    10220.99   1481.06  10223.88

                                        0.3       0.5
  CROSS SECTION NO. 2 OF SPECIAL CULVERT ROUTINE.
X1    1.595        36    9960.78   10010.67       124       177       157
X3       10                                                        1479.62   1479.62
GR   1480.7   9743.55   1480.65     9749.73   1480.55   9764.86    1480.4   9776.96    1480.4   9798.59
GR   1480.3   9810.08    1480.2     9819.79   1480.17   9825.17   1480.11   9831.82   1479.64   9858.63
GR   1479.6   9871.14   1479.41     9883.27   1479.32   9896.56   1479.11   9936.46   1479.05   9945.55
GR   1479.1   9951.44   1478.28     9960.78   1478.08   9964.48    1478.1   9968.41   1475.32   9971.94
GR   1475.3   9974.65   1475.02     9978.48    1474.8   9990.18   1474.73   9992.47   1474.87   9996.73
GR    1475.   10001.9    1475.5    10004.98   1477.35  10007.55   1478.18  10010.67   1478.64  10015.81
GR   1479.3  10050.68   1479.75    10053.67   1479.87  10055.63   1479.93  10069.79   1480.27   10076.4
GR   1480.5  10086.23
  EXSTING CULVERT LOCATED ON PINNACLE VISTA ROAD.

SC    4.016       0.5       2.6                  3         8      25.4       9.2   1475.48   1475.24
  CROSS SECTION NO. 3 OF SPECIAL CULVERT ROUTINE.
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     1.610        29    9945.94   10041.01        38        36        37
X2                            2    1478.48   1479.85
X3       10                                                        1479.86   1479.86
BT      -24    9711.2   1481.04              9737.62   1480.84      9750.78    1480.8
BT           9773.28   1480.79              9812.34   1480.66      9867.01   1480.16
BT           9933.42   1480.02              9938.84   1479.85      9938.84   1481.88
BT           9945.94   1481.76              9977.68   1481.49     10026.42   1481.58
BT          10041.01   1481.88             10040.48   1479.85     10057.43   1479.86
BT           10065.8   1480.05             10079.04   1480.38     10087.02   1480.67
BT          10096.76   1481.07             10104.76   1481.42     10118.72   1482.03
BT          10125.68   1482.46             10144.75   1483.67     10148.75    1483.9
GR      1482 9683.12    1481.1   9708.61     1480.9   9723.22     1480.39    9779.28    1479.8   9783.52
GR    1479.5 9836.76    1479.2   9895.28     1478.9    9908.3     1478.87    9925.63    1479.0   9929.92
GR    1479.1 9937.19   1479.09    9945.9    1478.68   9945.94     1478.22    9971.95    1477.8    9978.4
GR    1475.2  9987.5    1475.3  10000.01    1475.18  10000.44     1475.21   10017.89    1477.8  10023.04
GR    1478.5 10026.42   1479.2  10041.01    1479.27  10052.63     1479.43    10057.2    1479.8  10080.04
GR    1480.1 10092.94  1480.86  10112.48    1481.44   10131.4      1482.2   10144.04
  CROSS SECTION NO. 4 OF SPECIAL BRIDGE ROUTINE.

X1    1.638        19      9970     10020       192       122       148
GR   1482.9      9671    1482.9      9750    1481.9      9810    1480.5      9849    1479.3      9907
GR   1478.6      9933    1478.8      9949    1479.5      9970    1475.7      9984    1475.7     10000
GR   1479.8     10020    1479.7     10052    1480.3     10084    1479.9     10100    1482.1     10122
GR   1482.5     10140    1485.4     10167    1488.4     10194    1488.7     10203

NC                                      .1        .3
X1    1.695        47      9978     10016       297       303       300
X3                                    9547    1484.6
GR   1484.7      9053      1486      9100      1486      9135    1486.7      9183    1485.5      9275
GR   1483.6      9300    1482.3      9338    1482.7      9371    1483.1      9414    1481.4      9426
GR   1481.5      9450    1482.4      9463    1484.1      9474    1484.3      9506    1484.6      9547
GR   1483.4      9609    1483.1      9660    1482.2      9713    1482.3      9735    1483.2      9749
GR      1484     9773    1483.9      9791    1484.2      9814    1485.2      9830    1483.7      9868
GR    1483.5     9887    1481.6      9906    1480.2      9926    1480.5      9952    1481.5      9978
GR    1477.3     9992    1477.4     10000    1477.4     10008    1481.3     10016    1480.7     10039
GR   1480.8     10056    1481.5     10086    1480.4     10110    1481.4     10120    1481.6     10142
GR   1482.4     10177    1483.9     10212    1485.1     10249    1485.9     10285    1486.3     10320
GR      1487    10350    1487.3     10362

X1    1.761        50     9980.    10017.       360       340       350
X3                                    9482    1489.8
GR   1489.4      9067.   1488.2      9110.   1486.9      9152.   1487.3      9190.   1487.2      9232.
GR   1487.0      9274.   1486.6      9308.   1485.5      9317.   1487.3      9327.   1486.4      9361.
GR   1486.6      9397.   1484.2      9405.   1487.0      9428.   1488.9      9453.   1489.8      9482.
GR   1489.5      9517.   1489.5      9557.   1488.9      9599.   1488.0      9639.   1487.6      9678.
GR   1486.4      9718.   1486.1      9758.   1486.3      9800.   1487.6      9839.   1487.9      9874.
GR   1487.5      9905.   1485.5      9931.   1482.9      9958.   1483.2      9980.   1479.1      9988.
GR   1479.1     10000.   1479.2     10008.   1483.2     10017.   1483.3     10052.   1484.0     10091.
GR   1484.0     10122.   1483.3     10159.   1484.0     10200.   1484.5     10238.   1484.4     10280.
GR   1484.4     10319.   1484.8     10342.   1483.2     10355.   1485.4     10371.   1486.0     10410.
GR   1486.1     10453.   1487.0     10496.   1487.7     10542.   1488.4     10582.   1488.8     10614.
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X1    1.856        56      9980.    10019.       502       502       502
X3                                     9707    1492.5
GR   1493.6      8602.    1493.6     8647.    1493.8     8687.    1493.2     8733.    1490.9     8767.
GR   1490.0      8790.    1489.9     8829.    1488.9     8866.    1490.5     8878.    1489.8     8904.
GR   1490.0      8933.    1490.0     8970.    1490.7     9013.    1491.0     9047.    1492.0     9088.
GR   1491.6      9128.    1491.5     9170.    1491.1     9215.    1490.9     9253.    1491.3     9296.
GR   1490.3      9333.    1490.4     9375.    1491.2     9417.    1492.3     9455.    1492.3     9495.
GR   1492.1      9538.    1492.2     9581.    1492.3     9624.    1492.6     9666.    1492.5     9707.
GR   1492.4      9750.    1491.9     9791.    1490.5     9830.    1489.3     9865.    1487.9     9901.
GR   1486.7      9941.    1484.5     9980.    1480.7     9989.    1480.9    10000.    1480.9    10009.
GR   1485.2     10019.    1485.1    10038.    1487.5    10065.    1489.3    10093.    1489.8    10123.
GR   1489.5     10155.    1488.2    10182.    1487.6    10219.    1488.6    10257.    1488.4    10300.
GR   1488.9     10340.    1489.3    10381.    1490.4    10402.    1493.2    10419.    1498.7    10460.
GR   1500.9     10473.

X1    1.951        33      9981.    10011.       510       495       502
X3                                     9417      1497
GR   1496.6      9241.    1496.4     9296.    1496.9     9357.    1497.0     9417.    1496.6     9498.
GR   1496.3      9579.    1495.5     9661.    1495.0     9741.    1494.8     9806.    1493.9     9858.
GR   1492.3      9881.    1488.8     9909.    1485.9     9938.    1486.3     9965.    1486.7     9981.
GR   1483.1      9989.    1482.9    10000.    1483.0    10006.    1486.1    10011.    1489.2    10026.
GR   1491.0     10061.    1490.9    10099.    1490.8    10145.    1491.0    10190.    1491.2    10242.
GR   1492.1     10289.    1493.1    10339.    1494.1    10388.    1494.8    10429.    1495.5    10457.
GR   1502.0     10488.    1505.7    10523.    1508.7    10544.

X1    2.045        34      9988.    10019.       505       510       505
GR   1499.6      9478.    1499.2     9519.    1498.9     9562.    1499.0     9607.    1498.7     9640.
GR   1497.8      9681.    1497.4     9721.    1496.9     9765.    1496.3     9806.    1494.6     9840.
GR   1491.1      9867.    1490.3     9911.    1489.5     9949.    1489.5     9963.    1490.9     9978.
GR   1490.9      9988.    1486.6     9995.    1486.7    10000.    1486.6    10010.    1491.2    10019.
GR   1490.1     10048.    1488.0    10057.    1490.9    10066.    1490.7    10094.    1491.7    10120.
GR   1492.0     10158.    1492.4    10199.    1493.2    10238.    1493.9    10280.    1493.6    10321.
GR   1493.7     10360.    1494.2    10384.    1502.1    10422.    1502.7    10425.

Q1       4      1065.     1253.     1308.     1407.
X1    2.121        29      9980.    10019.       405       415       410
X3                                            10133.    1497.1
GR   1503.6      9596.    1502.3     9639.    1502.2     9681.    1501.8     9722.    1501.3     9768.
GR   1500.5      9813.    1499.7     9853.    1498.4     9888.    1496.7     9921.    1492.8     9947.
GR   1492.1      9980.    1488.7     9990.    1489.3    10000.    1490.5    10010.    1493.6    10019.
GR   1493.0     10048.    1494.8    10079.    1496.4    10110.    1497.1    10133.    1496.5    10164.
GR   1495.4     10204.    1494.7    10243.    1493.8    10281.    1493.0    10322.    1494.0    10365.
GR   1495.3     10404.    1497.4    10443.    1500.7    10486.    1502.0    10504.

X1    2.200        33      9959.    10036.       400       425       417
X3                                            10036    1498.5
GR   1502.0      9511.    1500.4     9566.    1498.8     9612.    1496.9     9654.    1495.7     9701.
GR   1494.2      9741.    1494.1     9781.    1493.0     9811.    1494.7     9824.    1493.5     9837.
GR   1493.4      9863.    1493.1     9891.    1495.6     9903.    1495.3     9930.    1496.1     9959.
GR   1495.0      9970.    1491.5     9981.    1491.4    10000.    1490.5    10017.    1498.5    10036.
GR   1498.1     10053.    1495.7    10067.    1496.1    10101.    1496.3    10141.    1496.3    10178.
GR   1496.6     10215.    1497.0    10253.    1497.0    10291.    1499.8    10328.    1502.7    10364.
GR   1505.1     10405.    1509.4    10447.    1509.3    10447.
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THIS RUN EXECUTED 12OCT01 17:31:59

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BUCHANAN WASH - SKUNK CR

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.710	.00	.00	.00	1449.50	1422.00	1456.50	1455.80	1456.56	18.14	2.80	913.33	333.84
	.710	.00	.00	.00	1449.50	2005.00	1458.93	1456.00	1458.94	1.04	.90	3207.32	1970.19
	.710	.00	.00	.00	1449.50	2304.00	1460.42	1456.08	1460.42	.40	.64	4758.57	3640.20
	.710	.00	.00	.00	1449.50	3067.00	1465.95	1456.26	1465.95	.04	.30	12464.31	14605.90
*	.782	380.00	.00	.00	1454.50	1422.00	1457.49	1457.06	1457.57	45.12	3.11	704.96	211.70
*	.782	380.00	.00	.00	1454.50	2005.00	1458.99	1457.19	1459.01	4.65	1.34	1911.93	930.05
*	.782	380.00	.00	.00	1454.50	2304.00	1460.44	1457.27	1460.45	1.25	.85	3174.93	2060.39
*	.782	380.00	.00	.00	1454.50	3067.00	1465.95	1457.42	1465.95	.10	.39	8804.02	9924.60
	.890	570.00	.00	.00	1454.00	1422.00	1459.99	1459.33	1460.21	53.08	4.70	475.04	195.19
*	.890	570.00	.00	.00	1454.00	2005.00	1459.85	1459.85	1460.42	135.60	7.38	410.30	172.18
*	.890	570.00	.00	.00	1454.00	2304.00	1460.51	1460.07	1460.71	48.75	4.85	823.66	330.00
	.890	570.00	.00	.00	1454.00	3067.00	1465.96	1460.30	1465.96	.25	.60	6881.62	6077.50
	.985	502.00	.00	.00	1458.10	1422.00	1462.65	1461.63	1462.83	45.46	4.06	441.48	210.91
*	.985	502.00	.00	.00	1458.10	2005.00	1463.36	1462.03	1463.49	30.77	3.79	773.98	361.45
	.985	502.00	.00	.00	1458.10	2304.00	1463.22	1462.20	1463.43	51.32	4.78	683.02	321.63
*	.985	502.00	.00	.00	1458.10	3067.00	1465.98	1462.67	1466.00	2.48	1.49	3040.95	1948.25
	1.045	317.00	.00	.00	1458.76	1422.00	1463.86	1462.62	1464.01	30.88	3.46	500.93	255.91
	1.045	317.00	.00	.00	1458.76	2005.00	1464.34	1462.96	1464.53	33.62	3.94	624.57	345.81
	1.045	317.00	.00	.00	1458.76	2304.00	1464.55	1463.20	1464.76	35.03	4.16	682.10	389.30
*	1.045	317.00	.00	.00	1458.76	3067.00	1466.08	1463.57	1466.17	12.00	2.99	1429.52	885.37
	1.067	98.00	.00	.00	1459.01	1422.00	1464.18	1463.44	1464.43	51.34	4.60	412.82	198.46
	1.067	98.00	.00	.00	1459.01	2005.00	1464.69	1463.80	1464.97	51.90	5.03	537.31	278.31
	1.067	98.00	.00	.00	1459.01	2304.00	1464.91	1463.98	1465.21	51.28	5.19	600.00	321.73
	1.067	98.00	.00	.00	1459.01	3067.00	1466.20	1464.42	1466.35	22.20	4.04	1092.79	650.97
	1.090	136.00	.00	.00	1459.05	1422.00	1464.75	1463.31	1464.95	33.97	3.97	446.35	243.98
	1.090	136.00	.00	.00	1459.05	2005.00	1465.25	1463.94	1465.50	37.61	4.52	561.77	326.95
	1.090	136.00	.00	.00	1459.05	2304.00	1465.47	1464.21	1465.74	39.33	4.77	614.36	367.40
	1.090	136.00	.00	.00	1459.05	3067.00	1466.44	1464.71	1466.63	24.51	4.26	1032.41	619.51

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
1.102	65.00	.00	.00	1459.53	1422.00	1464.97	1463.87	1465.22	46.25	4.53	405.57	209.10
1.102	65.00	.00	.00	1459.53	2005.00	1465.51	1464.53	1465.78	45.54	4.89	555.65	297.11
1.102	65.00	.00	.00	1459.53	2304.00	1465.74	1464.66	1466.02	44.89	5.03	629.56	343.87
1.102	65.00	.00	.00	1459.53	3067.00	1466.60	1465.17	1466.80	28.96	4.51	993.52	569.88
1.120	96.00	.00	.00	1460.00	1422.00	1465.41	1464.35	1465.71	53.33	4.87	366.93	194.72
1.120	96.00	.00	.00	1460.00	2005.00	1465.93	1465.02	1466.28	55.82	5.42	480.70	268.35
1.120	96.00	.00	.00	1460.00	2304.00	1466.16	1465.24	1466.53	57.11	5.66	538.73	304.88
1.120	96.00	.00	.00	1460.00	3067.00	1466.86	1465.69	1467.17	44.53	5.49	794.30	459.62
1.139	100.00	.00	.00	1460.40	1422.00	1465.98	1465.50	1466.32	67.27	5.60	354.62	173.38
1.139	100.00	.00	.00	1460.40	2005.00	1466.52	1465.89	1466.89	64.69	5.96	469.88	249.29
1.139	100.00	.00	.00	1460.40	2304.00	1466.76	1465.98	1467.14	64.17	6.13	524.83	287.63
1.139	100.00	.00	.00	1460.40	3067.00	1467.33	1466.54	1467.70	58.44	6.29	698.44	401.21
1.164	129.00	.00	.00	1460.69	1422.00	1466.82	1466.03	1467.07	47.03	4.76	407.64	207.36
1.164	129.00	.00	.00	1460.69	2005.00	1467.35	1466.46	1467.63	47.93	5.19	528.55	289.62
1.164	129.00	.00	.00	1460.69	2304.00	1467.58	1466.65	1467.88	48.27	5.38	585.83	331.63
1.164	129.00	.00	.00	1460.69	3067.00	1468.08	1467.06	1468.42	50.10	5.84	716.43	433.30
1.190	138.00	.00	.00	1462.20	1422.00	1467.45	1466.53	1467.64	36.26	4.13	459.59	236.14
1.190	138.00	.00	.00	1462.20	2005.00	1468.00	1466.91	1468.22	37.39	4.55	580.73	327.88
1.190	138.00	.00	.00	1462.20	2304.00	1468.23	1467.08	1468.47	38.02	4.74	636.34	373.65
1.190	138.00	.00	.00	1462.20	3067.00	1468.76	1467.44	1469.04	39.98	5.20	765.86	485.07
1.207	91.00	.00	.00	1462.83	1422.00	1467.78	1467.20	1468.01	47.99	4.79	430.05	205.26
1.207	91.00	.00	.00	1462.83	2005.00	1468.32	1467.51	1468.57	45.70	5.07	557.57	296.59
1.207	91.00	.00	.00	1462.83	2304.00	1468.56	1467.66	1468.83	45.29	5.22	614.71	342.34
1.207	91.00	.00	.00	1462.83	3067.00	1469.10	1468.00	1469.41	45.56	5.60	742.39	454.37
1.227	100.00	.00	.00	1462.91	1422.00	1468.24	1467.75	1468.58	58.34	5.47	384.50	186.17
1.227	100.00	.00	.00	1462.91	2005.00	1468.78	1468.29	1469.11	53.58	5.66	533.57	273.90
1.227	100.00	.00	.00	1462.91	2304.00	1469.02	1468.42	1469.35	51.60	5.73	602.67	320.74
1.227	100.00	.00	.00	1462.91	3067.00	1469.57	1468.76	1469.90	48.31	5.93	761.59	441.28
1.256	159.00	.00	.00	1464.43	1422.00	1469.30	1468.93	1469.70	89.31	6.02	318.85	150.47
1.256	159.00	.00	.00	1464.43	2005.00	1469.75	1469.23	1470.21	93.22	6.64	419.14	207.67
1.256	159.00	.00	.00	1464.43	2304.00	1469.96	1469.54	1470.41	90.10	6.74	495.32	242.73
1.256	159.00	.00	.00	1464.43	3067.00	1470.44	1470.05	1470.86	80.71	6.83	674.30	341.39
1.288	166.00	.00	.00	1465.00	1422.00	1470.61	1469.99	1470.91	61.97	5.39	386.34	180.64
1.288	166.00	.00	.00	1465.00	2005.00	1471.11	1470.48	1471.41	59.13	5.66	526.73	260.73
1.288	166.00	.00	.00	1465.00	2304.00	1471.29	1470.61	1471.60	60.68	5.88	595.54	295.76
1.288	166.00	.00	.00	1465.00	3067.00	1471.67	1471.03	1472.00	61.61	6.24	777.71	390.73
1.321	178.00	.00	.00	1465.60	1422.00	1471.57	1470.60	1471.85	46.94	5.09	400.38	207.54
1.321	178.00	.00	.00	1465.60	2005.00	1472.05	1471.28	1472.36	49.72	5.58	535.78	284.35
1.321	178.00	.00	.00	1465.60	2304.00	1472.25	1471.54	1472.57	51.00	5.79	597.49	322.61
1.321	178.00	.00	.00	1465.60	3067.00	1472.66	1471.94	1473.01	54.52	6.29	764.28	415.36

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.351	163.00	.00	.00	1466.70	1422.00	1472.36	1471.00	1472.67	53.06	4.74	361.90	195.21
	1.351	163.00	.00	.00	1466.70	2005.00	1472.86	1471.80	1473.22	56.72	5.32	484.60	266.21
	1.351	163.00	.00	.00	1466.70	2304.00	1473.08	1472.11	1473.46	57.71	5.55	543.94	303.28
	1.351	163.00	.00	.00	1466.70	3067.00	1473.53	1472.72	1473.95	60.25	6.04	688.49	395.13
	1.383	163.00	.00	.00	1467.09	1422.00	1473.25	1472.31	1473.71	71.44	5.90	295.07	168.23
	1.383	163.00	.00	.00	1467.09	2005.00	1473.80	1473.17	1474.36	77.25	6.65	382.70	228.13
	1.383	163.00	.00	.00	1467.09	2304.00	1474.03	1473.39	1474.62	79.54	6.96	433.72	258.34
	1.383	163.00	.00	.00	1467.09	3067.00	1474.52	1474.07	1475.16	82.57	7.54	562.67	337.53
	1.411	152.00	.00	.00	1468.10	1422.00	1474.20	1472.14	1474.50	37.97	4.56	344.25	230.77
	1.411	152.00	.00	.00	1468.10	2005.00	1474.84	1472.95	1475.23	43.41	5.33	437.00	304.32
	1.411	152.00	.00	.00	1468.10	2304.00	1475.10	1473.29	1475.54	46.14	5.67	480.02	339.18
	1.411	152.00	.00	.00	1468.10	3067.00	1475.62	1473.99	1476.17	53.57	6.49	584.88	419.05
*	1.426	79.00	.00	.00	1468.30	1422.00	1474.59	1471.77	1474.70	15.72	2.87	543.86	358.70
*	1.426	79.00	.00	.00	1468.30	2005.00	1475.32	1472.50	1475.46	17.05	3.30	680.04	485.53
*	1.426	79.00	.00	.00	1468.30	2304.00	1475.62	1472.84	1475.78	17.73	3.49	742.50	547.11
*	1.426	79.00	.00	.00	1468.30	3067.00	1476.25	1473.45	1476.44	20.05	3.98	879.31	685.03
*	1.462	193.00	.00	.00	1469.70	1422.00	1474.83	1474.24	1475.52	114.93	7.07	229.28	132.64
*	1.462	193.00	.00	.00	1469.70	2005.00	1475.54	1474.93	1476.33	109.85	7.73	307.23	191.30
*	1.462	193.00	.00	.00	1469.70	2304.00	1475.85	1475.25	1476.67	107.74	7.99	348.88	221.97
*	1.462	193.00	.00	.00	1469.70	3067.00	1476.50	1475.95	1477.40	104.15	8.55	446.03	300.53
	1.483	113.00	.00	.00	1469.80	1175.00	1476.05	1474.80	1476.36	44.44	4.98	302.38	176.27
	1.483	113.00	.00	.00	1469.80	1467.00	1476.80	1475.24	1477.06	32.01	4.66	418.55	259.28
	1.483	113.00	.00	.00	1469.80	1609.00	1477.12	1475.44	1477.35	27.85	4.51	495.03	304.91
*	1.483	113.00	.00	.00	1469.80	1958.00	1477.82	1475.83	1478.00	20.27	4.14	683.48	434.91
	1.518	184.00	.00	.00	1471.60	1175.00	1476.96	1475.85	1477.24	52.07	4.79	310.58	162.84
	1.518	184.00	.00	.00	1471.60	1467.00	1477.47	1476.33	1477.73	42.77	4.71	403.36	224.31
	1.518	184.00	.00	.00	1471.60	1609.00	1477.71	1476.49	1477.96	39.31	4.68	449.85	256.64
	1.518	184.00	.00	.00	1471.60	1958.00	1478.25	1476.81	1478.48	32.41	4.57	568.72	343.95
	1.549	171.00	.00	.00	1473.48	1175.00	1477.85	1477.00	1478.05	46.81	4.28	361.83	171.73
	1.549	171.00	.00	.00	1473.48	1467.00	1478.22	1477.23	1478.43	42.54	4.37	449.47	224.92
	1.549	171.00	.00	.00	1473.48	1609.00	1478.40	1477.34	1478.60	40.08	4.37	494.71	254.17
	1.549	171.00	.00	.00	1473.48	1958.00	1478.83	1477.57	1479.02	34.80	4.34	607.80	331.92
	1.572	130.00	.00	.00	1474.38	1175.00	1478.52	1477.88	1478.72	57.24	4.48	357.32	155.31
	1.572	130.00	.00	.00	1474.38	1467.00	1478.83	1478.10	1479.04	53.76	4.61	435.44	200.07
	1.572	130.00	.00	.00	1474.38	1609.00	1478.98	1478.19	1479.19	51.83	4.65	474.39	223.49
	1.572	130.00	.00	.00	1474.38	1958.00	1479.33	1478.41	1479.54	46.80	4.68	576.18	286.21
	1.595	157.00	.00	.00	1474.73	1175.00	1479.48	1478.38	1480.13	106.40	6.46	182.00	113.91
	1.595	157.00	.00	.00	1474.73	1467.00	1479.75	1478.83	1480.35	99.84	6.56	282.07	146.82
	1.595	157.00	.00	.00	1474.73	1609.00	1479.87	1479.01	1480.49	101.56	6.75	307.48	159.66
*	1.595	157.00	.00	.00	1474.73	1958.00	1480.15	1479.95	1480.79	103.49	7.12	371.48	192.47

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	1.610	37.00	1479.85	1478.48	1475.18	1175.00	1481.02	.00	1481.07	9.44	2.03	753.94	382.34
*	1.610	37.00	1479.85	1478.48	1475.18	1467.00	1481.31	.00	1481.37	10.09	2.20	873.56	461.94
*	1.610	37.00	1479.85	1478.48	1475.18	1609.00	1481.44	.00	1481.50	10.34	2.28	928.48	500.45
*	1.610	37.00	1479.85	1478.48	1475.18	1958.00	1481.71	.00	1481.77	11.15	2.46	1045.14	586.49
	1.638	148.00	.00	.00	1475.70	1175.00	1481.21	1479.80	1481.30	19.03	3.01	543.43	269.37
	1.638	148.00	.00	.00	1475.70	1467.00	1481.51	1480.10	1481.61	19.89	3.22	630.47	328.96
	1.638	148.00	.00	.00	1475.70	1609.00	1481.64	1480.24	1481.75	20.28	3.32	669.85	357.30
	1.638	148.00	.00	.00	1475.70	1958.00	1481.92	1480.50	1482.04	21.57	3.56	755.33	421.57
*	1.695	300.00	.00	.00	1477.30	1175.00	1482.06	1481.59	1482.30	63.24	4.84	358.07	147.75
*	1.695	300.00	.00	.00	1477.30	1467.00	1482.36	1481.85	1482.59	57.44	4.88	444.07	193.57
*	1.695	300.00	.00	.00	1477.30	1609.00	1482.50	1481.93	1482.73	55.07	4.89	487.22	216.82
*	1.695	300.00	.00	.00	1477.30	1958.00	1482.80	1482.13	1483.02	50.26	4.91	591.81	276.19
	1.761	350.00	.00	.00	1479.10	1175.00	1484.26	1483.96	1484.64	68.80	5.64	316.98	141.66
	1.761	350.00	.00	.00	1479.10	1467.00	1484.49	1484.25	1484.89	72.35	6.00	391.62	172.46
	1.761	350.00	.00	.00	1479.10	1609.00	1484.58	1484.40	1484.98	73.40	6.13	430.56	187.80
	1.761	350.00	.00	.00	1479.10	1958.00	1484.79	1484.61	1485.19	75.36	6.39	517.18	225.55
	1.856	502.00	.00	.00	1480.70	1175.00	1486.89	1484.88	1487.21	39.18	4.86	300.66	187.71
	1.856	502.00	.00	.00	1480.70	1467.00	1487.27	1485.72	1487.63	42.72	5.32	350.49	224.45
	1.856	502.00	.00	.00	1480.70	1609.00	1487.43	1485.97	1487.81	44.56	5.54	372.82	241.03
	1.856	502.00	.00	.00	1480.70	1958.00	1487.76	1486.39	1488.20	48.48	6.01	426.72	281.20
	1.951	502.00	.00	.00	1482.90	1175.00	1488.85	1487.39	1489.09	35.71	4.61	326.43	196.62
	1.951	502.00	.00	.00	1482.90	1467.00	1489.33	1487.75	1489.60	35.38	4.87	383.20	246.63
	1.951	502.00	.00	.00	1482.90	1609.00	1489.53	1487.86	1489.81	35.36	4.99	409.44	270.60
	1.951	502.00	.00	.00	1482.90	1958.00	1489.99	1488.31	1490.30	35.73	5.28	470.98	327.59
*	2.045	505.00	.00	.00	1486.60	1175.00	1491.37	1490.98	1491.65	76.08	5.27	326.50	134.71
	2.045	505.00	.00	.00	1486.60	1467.00	1491.72	1491.13	1491.97	65.09	5.18	413.60	181.83
	2.045	505.00	.00	.00	1486.60	1609.00	1491.87	1491.32	1492.11	60.40	5.13	457.10	207.03
	2.045	505.00	.00	.00	1486.60	1958.00	1492.24	1491.49	1492.46	51.84	5.02	566.70	271.93
	2.121	410.00	.00	.00	1488.70	1065.00	1494.19	1493.35	1494.55	64.63	5.28	254.17	132.48
	2.121	410.00	.00	.00	1488.70	1253.00	1494.38	1493.67	1494.78	70.74	5.70	279.28	148.98
	2.121	410.00	.00	.00	1488.70	1308.00	1494.43	1493.71	1494.85	72.77	5.82	285.75	153.34
*	2.121	410.00	.00	.00	1488.70	1407.00	1494.53	1493.82	1494.97	73.99	5.97	300.70	163.57
*	2.200	417.00	.00	.00	1490.50	1065.00	1495.66	1494.10	1495.72	15.47	2.34	568.89	270.73
*	2.200	417.00	.00	.00	1490.50	1253.00	1495.92	1494.31	1495.99	15.31	2.37	650.92	320.28
*	2.200	417.00	.00	.00	1490.50	1308.00	1496.00	1494.40	1496.06	15.21	2.38	675.12	335.36
*	2.200	417.00	.00	.00	1490.50	1407.00	1496.12	1494.47	1496.19	15.10	2.40	716.70	362.08

ANAN WASH - SKUNK CR

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	.710	1422.00	1456.50	.00	.00	.00	765.69	.00
	.710	2005.00	1458.93	2.43	.00	.00	1017.52	.00
	.710	2304.00	1460.42	1.49	.00	.00	1064.97	.00
	.710	3067.00	1465.95	5.53	.00	.00	1729.54	.00
*	.782	1422.00	1457.49	.00	.99	.00	752.60	380.00
*	.782	2005.00	1458.99	1.50	.06	.00	846.75	380.00
*	.782	2304.00	1460.44	1.45	.02	.00	902.21	380.00
*	.782	3067.00	1465.95	5.51	.00	.00	1233.94	380.00
	.890	1422.00	1459.99	.00	2.50	.00	523.89	570.00
*	.890	2005.00	1459.85	-.13	.86	.00	465.35	570.00
*	.890	2304.00	1460.51	.66	.07	.00	758.28	570.00
*	.890	3067.00	1465.96	5.45	.01	.00	1267.42	570.00
	.985	1422.00	1462.65	.00	2.66	.00	225.69	502.00
*	.985	2005.00	1463.36	.71	3.51	.00	668.63	502.00
	.985	2304.00	1463.22	-.14	2.71	.00	583.56	502.00
*	.985	3067.00	1465.98	2.76	.02	.00	966.98	502.00
	1.045	1422.00	1463.86	.00	1.21	.00	244.16	317.00
	1.045	2005.00	1464.34	.48	.97	.00	263.87	317.00
	1.045	2304.00	1464.55	.21	1.33	.00	293.90	317.00
*	1.045	3067.00	1466.08	1.53	.10	.00	608.64	317.00
	1.067	1422.00	1464.18	.00	.32	.00	236.95	98.00
	1.067	2005.00	1464.69	.51	.35	.00	262.54	98.00
	1.067	2304.00	1464.91	.23	.36	.00	273.00	98.00
	1.067	3067.00	1466.20	1.28	.11	.00	532.24	98.00
	1.090	1422.00	1464.75	.00	.56	.00	218.26	136.00
	1.090	2005.00	1465.25	.51	.57	.00	235.08	136.00
	1.090	2304.00	1465.47	.22	.56	.00	249.35	136.00
	1.090	3067.00	1466.44	.97	.24	.00	512.59	136.00
	1.102	1422.00	1464.97	.00	.22	.00	238.57	65.00
	1.102	2005.00	1465.51	.54	.25	.00	306.04	65.00
	1.102	2304.00	1465.74	.23	.27	.00	326.33	65.00
	1.102	3067.00	1466.60	.86	.17	.00	528.38	65.00
	1.120	1422.00	1465.41	.00	.44	.00	200.12	96.00
	1.120	2005.00	1465.93	.53	.43	.00	245.15	96.00
	1.120	2304.00	1466.16	.23	.42	.00	288.13	96.00
	1.120	3067.00	1466.86	.70	.26	.00	431.84	96.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1.139	1422.00	1465.98	.00	.57	.00	198.49	100.00
1.139	2005.00	1466.52	.55	.59	.00	226.26	100.00
1.139	2304.00	1466.76	.24	.60	.00	239.91	100.00
1.139	3067.00	1467.33	.57	.47	.00	327.20	100.00
1.164	1422.00	1466.82	.00	.84	.00	215.11	129.00
1.164	2005.00	1467.35	.53	.82	.00	240.44	129.00
1.164	2304.00	1467.58	.23	.82	.00	250.46	129.00
1.164	3067.00	1468.08	.50	.75	.00	271.41	129.00
1.190	1422.00	1467.45	.00	.64	.00	216.86	138.00
1.190	2005.00	1468.00	.54	.65	.00	232.19	138.00
1.190	2304.00	1468.23	.24	.66	.00	234.04	138.00
1.190	3067.00	1468.76	.52	.68	.00	276.63	138.00
1.207	1422.00	1467.78	.00	.32	.00	231.26	91.00
1.207	2005.00	1468.32	.55	.33	.00	235.28	91.00
1.207	2304.00	1468.56	.24	.33	.00	237.06	91.00
1.207	3067.00	1469.10	.53	.34	.00	242.10	91.00
1.227	1422.00	1468.24	.00	.47	.00	270.13	100.00
1.227	2005.00	1468.78	.54	.46	.00	282.80	100.00
1.227	2304.00	1469.02	.24	.46	.00	287.00	100.00
1.227	3067.00	1469.57	.54	.47	.00	296.42	100.00
1.256	1422.00	1469.30	.00	1.06	.00	184.14	159.00
1.256	2005.00	1469.75	.45	.97	.00	353.09	159.00
1.256	2304.00	1469.96	.21	.94	.00	365.95	159.00
1.256	3067.00	1470.44	.48	.87	.00	385.70	159.00
1.288	1422.00	1470.61	.00	1.31	.00	272.65	166.00
1.288	2005.00	1471.11	.49	1.35	.00	297.40	166.00
1.288	2304.00	1471.29	.18	1.32	.00	468.78	166.00
1.288	3067.00	1471.67	.38	1.23	.00	475.71	166.00
1.321	1422.00	1471.57	.00	.96	.00	271.89	178.00
1.321	2005.00	1472.05	.47	.94	.00	299.87	178.00
1.321	2304.00	1472.25	.20	.96	.00	324.58	178.00
1.321	3067.00	1472.66	.41	.99	.00	541.04	178.00
1.351	1422.00	1472.36	.00	.78	.00	210.68	163.00
1.351	2005.00	1472.86	.51	.82	.00	259.84	163.00
1.351	2304.00	1473.08	.22	.83	.00	300.91	163.00
1.351	3067.00	1473.53	.45	.87	.00	332.04	163.00
1.383	1422.00	1473.25	.00	.89	.00	144.74	163.00
1.383	2005.00	1473.80	.56	.94	.00	193.23	163.00
1.383	2304.00	1474.03	.23	.96	.00	251.21	163.00
1.383	3067.00	1474.52	.49	1.00	.00	270.97	163.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.411	1422.00	1474.20	.00	.95	.00	122.08	152.00
	1.411	2005.00	1474.84	.64	1.04	.00	160.78	152.00
	1.411	2304.00	1475.10	.26	1.07	.00	170.36	152.00
	1.411	3067.00	1475.62	.52	1.10	.00	251.46	152.00
*	1.426	1422.00	1474.59	.00	.39	.00	181.69	79.00
*	1.426	2005.00	1475.32	.73	.48	.00	196.89	79.00
*	1.426	2304.00	1475.62	.30	.52	.00	206.36	79.00
*	1.426	3067.00	1476.25	.63	.63	.00	248.71	79.00
*	1.462	1422.00	1474.83	.00	.24	.00	93.48	193.00
*	1.462	2005.00	1475.54	.71	.22	.00	130.20	193.00
*	1.462	2304.00	1475.85	.30	.22	.00	143.12	193.00
*	1.462	3067.00	1476.50	.66	.26	.00	151.49	193.00
	1.483	1175.00	1476.05	.00	1.22	.00	130.32	113.00
	1.483	1467.00	1476.80	.76	1.26	.00	201.31	113.00
	1.483	1609.00	1477.12	.32	1.28	.00	256.28	113.00
*	1.483	1958.00	1477.82	.70	1.32	.00	280.90	113.00
	1.518	1175.00	1476.96	.00	.91	.00	167.57	184.00
	1.518	1467.00	1477.47	.52	.67	.00	192.87	184.00
	1.518	1609.00	1477.71	.24	.59	.00	206.11	184.00
	1.518	1958.00	1478.25	.54	.43	.00	231.42	184.00
	1.549	1175.00	1477.85	.00	.89	.00	213.27	171.00
	1.549	1467.00	1478.22	.38	.75	.00	245.13	171.00
	1.549	1609.00	1478.40	.18	.69	.00	256.61	171.00
	1.549	1958.00	1478.83	.42	.57	.00	277.70	171.00
	1.572	1175.00	1478.52	.00	.67	.00	231.53	130.00
	1.572	1467.00	1478.83	.32	.61	.00	256.06	130.00
	1.572	1609.00	1478.98	.15	.58	.00	271.42	130.00
	1.572	1958.00	1479.33	.35	.51	.00	306.45	130.00
	1.595	1175.00	1479.48	.00	.97	.00	49.89	157.00
	1.595	1467.00	1479.75	.27	.92	.00	201.55	157.00
	1.595	1609.00	1479.87	.12	.89	.00	212.01	157.00
*	1.595	1958.00	1480.15	.27	.81	.00	246.81	157.00
*	1.610	1175.00	1481.02	.00	1.54	.00	403.64	37.00
*	1.610	1467.00	1481.31	.29	1.56	.00	424.60	37.00
*	1.610	1609.00	1481.44	.13	1.57	.00	432.41	37.00
*	1.610	1958.00	1481.71	.27	1.56	.00	444.38	37.00
	1.638	1175.00	1481.21	.00	.18	.00	283.69	148.00
	1.638	1467.00	1481.51	.30	.19	.00	295.07	148.00
	1.638	1609.00	1481.64	.13	.20	.00	300.08	148.00
	1.638	1958.00	1481.92	.28	.21	.00	311.26	148.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.695	1175.00	1482.06	.00	.85	.00	260.47	300.00
*	1.695	1467.00	1482.36	.31	.86	.00	309.60	300.00
*	1.695	1609.00	1482.50	.14	.86	.00	324.99	300.00
*	1.695	1958.00	1482.80	.30	.88	.00	358.00	300.00
	1.761	1175.00	1484.26	.00	2.20	.00	292.04	350.00
	1.761	1467.00	1484.49	.23	2.13	.00	395.88	350.00
	1.761	1609.00	1484.58	.10	2.08	.00	410.29	350.00
	1.761	1958.00	1484.79	.21	1.99	.00	427.51	350.00
	1.856	1175.00	1486.89	.00	2.63	.00	123.74	502.00
	1.856	1467.00	1487.27	.38	2.78	.00	140.55	502.00
	1.856	1609.00	1487.43	.16	2.84	.00	147.47	502.00
	1.856	1958.00	1487.76	.34	2.97	.00	180.23	502.00
	1.951	1175.00	1488.85	.00	1.96	.00	115.70	502.00
	1.951	1467.00	1489.33	.48	2.05	.00	123.67	502.00
	1.951	1609.00	1489.53	.21	2.11	.00	129.36	502.00
	1.951	1958.00	1489.99	.45	2.22	.00	141.82	502.00
*	2.045	1175.00	1491.37	.00	2.52	.00	246.54	505.00
	2.045	1467.00	1491.72	.34	2.39	.00	259.79	505.00
	2.045	1609.00	1491.87	.15	2.34	.00	281.39	505.00
	2.045	1958.00	1492.24	.37	2.25	.00	324.14	505.00
	2.121	1065.00	1494.19	.00	2.82	.00	130.82	410.00
	2.121	1253.00	1494.38	.18	2.66	.00	135.33	410.00
	2.121	1308.00	1494.43	.05	2.56	.00	136.47	410.00
*	2.121	1407.00	1494.53	.11	2.30	.00	139.06	410.00
*	2.200	1065.00	1495.66	.00	1.47	.00	307.80	417.00
*	2.200	1253.00	1495.92	.26	1.55	.00	330.05	417.00
	2.200	1308.00	1496.00	.07	1.57	.00	336.42	417.00
*	2.200	1407.00	1496.12	.12	1.59	.00	345.98	417.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      .782  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .890  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .890  PROFILE=  2  MINIMUM SPECIFIC ENERGY
WARNING SECNO=      .890  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .890  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .985  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .985  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.045  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.426  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.426  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.426  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.426  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.462  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.462  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.462  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.462  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.483  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.595  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.610  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.610  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.610  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.610  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.695  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.045  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.121  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.200  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.200  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

CHECK-2 Program: NT Module
Manning's n Value and Transition Loss Coefficient Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\EXIST.NT2
Date: 10/15/2001
Time: 5:28:51 PM

S[illegible]O	XNL	XNR	XNCH	CCHV	CEHV	Structure
0.71	0.055	0.055	0.055	0.1	0.3	
0.782	0.055	0.055	0.055	0.1	0.3	
0.89	0.055	0.055	0.055	0.1	0.3	
0.985	0.055	0.055	0.055	0.1	0.3	
1.045	0.055	0.055	0.055	0.1	0.3	
1.067	0.055	0.055	0.055	0.1	0.3	
1.09	0.055	0.055	0.055	0.1	0.3	
1.102	0.055	0.055	0.055	0.1	0.3	
1.12	0.055	0.055	0.055	0.1	0.3	
1.139	0.055	0.055	0.055	0.1	0.3	
1.164	0.055	0.055	0.055	0.1	0.3	
1.19	0.055	0.055	0.055	0.1	0.3	
1.207	0.055	0.055	0.055	0.1	0.3	
1.227	0.055	0.055	0.055	0.1	0.3	
1.256	0.055	0.055	0.055	0.1	0.3	
1.288	0.055	0.055	0.055	0.1	0.3	
1.321	0.055	0.055	0.055	0.1	0.3	
1.351	0.055	0.055	0.055	0.1	0.3	
1.383	0.055	0.055	0.055	0.1	0.3	
1.411	0.055	0.055	0.055	0.1	0.3	
1.426	0.055	0.055	0.055	0.1	0.3	
1.462	0.055	0.055	0.055	0.1	0.3	
1.483	0.055	0.055	0.055	0.1	0.3	
1.518	0.055	0.055	0.055	0.1	0.3	
1.549	0.055	0.055	0.055	0.1	0.3	
1.572	0.055	0.055	0.055	0.1	0.3	
[illegible]5	0.055	0.055	0.055	0.3	0.5	
[illegible]1	0.055	0.055	0.055	0.3	0.5	SC+X2+BT
1.638	0.055	0.055	0.055	0.3	0.5	
1.695	0.055	0.055	0.055	0.1	0.3	
1.761	0.055	0.055	0.055	0.1	0.3	
1.856	0.055	0.055	0.055	0.1	0.3	
1.951	0.055	0.055	0.055	0.1	0.3	
2.045	0.055	0.055	0.055	0.1	0.3	
2.121	0.055	0.055	0.055	0.1	0.3	
2.2	0.055	0.055	0.055	0.1	0.3	

------Summary of Statistics------

	Minimum	Maximum
Left Overbank N Value:	0.055	0.055
Right Overbank N Value:	0.055	0.055
Channel N Value:	0.055	0.055
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

------Roughness Coefficient Check------

------NC and NH records Check------

-[illegible]-Transition Coefficient check------

------Roughness Coefficient Check at Structures------

------Special Notes and Messages check------

---End Program---

CHECK-2 Program, XSEC Module
Cross Section Location and Alignment Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\EXIST.XS2
Date: 10/15/2001
Time: 5:28:55 PM

SECNO	Xlob	Xrob	Xlch	CHWID	Topwid	Structure	Flow Type
0.71	0.00	0.00	0.00	40.00	1064.97		
0.782	380.00	360.00	380.00	66.00	902.21		D
0.89	740.00	400.00	570.00	43.00	758.28		D
0.985	600.00	490.00	502.00	41.00	583.56		D
1.045	316.00	319.00	317.00	80.87	293.90		D
1.067	98.00	116.00	98.00	56.67	273.00		
1.09	71.00	122.00	136.00	67.63	249.35		D
1.102	66.00	62.00	65.00	56.77	326.33		
1.12	93.00	99.00	96.00	57.15	288.13		D
1.139	106.00	89.00	100.00	36.23	239.91		
1.164	138.00	112.00	129.00	40.94	250.46		
1.19	138.00	138.00	138.00	45.12	234.04		
1.207	78.00	96.00	91.00	37.45	237.06		
1.227	107.00	98.00	100.00	39.77	287.00		
1.256	144.00	162.00	159.00	37.44	365.95		
1.288	153.00	172.00	166.00	35.11	468.78		
1.321	167.00	182.00	178.00	35.53	324.58		
1.351	153.00	164.00	163.00	68.15	300.91		D
1.383	168.00	157.00	163.00	46.68	251.21		D
1.411	153.00	146.00	152.00	61.85	170.36		D
1.426	76.00	79.00	79.00	36.64	206.36		
1.462	193.00	192.00	193.00	44.50	143.12		
1.483	112.00	112.00	113.00	36.92	256.28		
1.518	180.00	186.00	184.00	45.05	206.11		
1.549	135.00	175.00	171.00	44.81	256.61		
[illegible]2	124.00	133.00	130.00	32.77	271.42		
[illegible]95	124.00	177.00	157.00	49.89	212.01		
1.61	38.00	36.00	37.00	95.07	432.41	SC+X2+BT	
1.638	192.00	122.00	148.00	50.00	300.08		
1.695	297.00	303.00	300.00	38.00	324.99		D
1.761	360.00	340.00	350.00	37.00	410.29		D
1.856	502.00	502.00	502.00	39.00	147.47		
1.951	510.00	495.00	502.00	30.00	129.36		
2.045	505.00	510.00	505.00	31.00	281.39		
2.121	405.00	415.00	410.00	39.00	136.47		
2.2	400.00	425.00	417.00	77.00	336.42		D

XS IF 04 D = divided flow
XS IF 05 E = extended cross section
XS IF 06 C = critical depth
XS IF 07 S = X5 record

-----Distance Check-----

----Channel Width Check----

----Spacing Check----

----Ineffective Flow Area----

----Location Check----

----Discharge Check----

----Starting WSEL Check----

XS SW 02 Known water-surface elevation of 1460.42 is specified on the first J1 record.

---End Program---

CHECK-2 Program: Bridge Module

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\EXIST.BR2
Date: 10/15/2001
Time: 5:28:59 PM

SECNO	MXLCEL	MNREL	EG	CWSEL	ELMIN	Structure
0.71	-----	-----	1460.42	1460.42	1449.5	
0.782	-----	-----	1460.45	1460.44	1454.5	
0.89	-----	-----	1460.71	1460.51	1454	
0.985	-----	-----	1463.43	1463.22	1458.1	
1.045	-----	-----	1464.76	1464.55	1458.76	
1.067	-----	-----	1465.21	1464.91	1459.01	
1.09	-----	-----	1465.74	1465.47	1459.05	
1.102	-----	-----	1466.02	1465.74	1459.53	
1.12	-----	-----	1466.53	1466.16	1460	
1.139	-----	-----	1467.14	1466.76	1460.4	
1.164	-----	-----	1467.88	1467.58	1460.69	
1.19	-----	-----	1468.47	1468.23	1462.2	
1.207	-----	-----	1468.83	1468.56	1462.83	
1.227	-----	-----	1469.35	1469.02	1462.91	
1.256	-----	-----	1470.41	1469.96	1464.43	
1.288	-----	-----	1471.6	1471.29	1465	
1.321	-----	-----	1472.57	1472.25	1465.6	
1.351	-----	-----	1473.46	1473.08	1466.7	
1.383	-----	-----	1474.62	1474.03	1467.09	
1.411	-----	-----	1475.54	1475.1	1468.1	
1.426	-----	-----	1475.78	1475.62	1468.3	
1.462	-----	-----	1476.67	1475.85	1469.7	
1.483	-----	-----	1477.35	1477.12	1469.8	
1.518	-----	-----	1477.96	1477.71	1471.6	
1.549	-----	-----	1478.6	1478.4	1473.48	
1.572	-----	-----	1479.19	1478.98	1474.38	
1.595	-----	-----	1480.49	1479.87	1474.73	
[illegible]	1478.48	1479.85	1481.5	1481.44	1475.18	SC+X2+BT
1.638	-----	-----	1481.75	1481.64	1475.7	
1.695	-----	-----	1482.73	1482.5	1477.3	
1.761	-----	-----	1484.98	1484.58	1479.1	
1.856	-----	-----	1487.81	1487.43	1480.7	
1.951	-----	-----	1489.81	1489.53	1482.9	
2.045	-----	-----	1492.11	1491.87	1486.6	
2.121	-----	-----	1494.85	1494.43	1488.7	
2.2	-----	-----	1496.06	1496	1490.5	

SECNO: 1.61
Type Structure: Special Culvert
Type of Flow: Outlet Control and Weir Flow

Section	SECNO	XLCH	CWSEL	EG	TOPWID	CHWID	X3 Left	X3 Right
1	1.572	130	1478.98	1479.19	271.42	32.77		
2	1.595	157	1479.87	1480.49	212.01	49.89	1479.62	1479.62
3	1.61	37	1481.44	1481.5	432.41	95.07	1479.86	1479.86
4	1.638	148	1481.64	1481.75	300.08	50.		
5	1.695	300	1482.5	1482.73	324.99	38.		

EGOC:	1487.15	QWEIR:	846.77	WRLEN:	298		
EGIC:	1484.95	QCULV:	759.88				
MNLRDEL:	1479.85	MXLCEL:	1478.48	ELLC:	1478.48		
MNRRDEL:	1479.85	MNRDEL:	1479.85	ELTRD:	1479.85		
CUNV:	4.016	ENTLC:	0.5	COFQ:	2.6		
RDELEN:	0	RISE:	3	SPAN:	8		
CULVLN:	25.4	CHART:	9.2	ELCHU:	1475.48	ELCHD:	1475.24

---BT records Check---

```
----Location check---

----X2 record check---

----X3 record check---

---Special Culvert Check---

---TOPWIDTH Check---

---Message Check---

---End Program---
```

HEC-2 Output for Existing Conditions Floodway Model
Check-2 Output for Existing Conditions Floodway Model

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
*  RUN DATE    19NOV01    TIME   15:45:31 *
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*********************************
*  U.S. ARMY CORPS OF ENGINEERS
*  HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616-4687
*          (916) 756-1104
*********************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 19NOV01 15:45:31

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************


T1      EXISTING CONDITIONS FLOODPLAIN ANALYSIS-EXISTING CULVERT ADDED-RBF CONSU
T2      FLD'WAY ENCROACH CALC. (NATURAL CONTITION) - 100 YR/6 HR STORM
T3      BUCHANAN WASH - SKUNK CREAK TO CANAL  NOVEMBER 2001

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         2         0         0         0         0         0         0   1460.42         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1         0        -1         0         0         0        -1         0         0        15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    110       115       200

J5  LPRNT    NUMSEC                    ********REQUESTED SECTION NUMBERS********

    -10       -10

QT        2      2304      2304
NC    0.055     0.055     0.055      0.10      0.30
ET                  0       4.1   9693.00  10351.00
X1    0.710        57     9985.    10025.         0         0         0
GR   1464.3     8805.    1465.2     8829.    1465.9     8860.    1465.6     8890.    1465.5     8945.
GR   1464.6     9006.    1464.2     9072.    1463.0     9130.    1462.3     9188.    1461.1     9257.
GR   1461.0     9317.    1461.3     9374.    1460.8     9426.    1459.1     9474.    1457.4     9519.
GR   1456.7     9574.    1457.1     9621.    1457.3     9668.    1456.3     9683.    1455.6     9700.
GR   1455.5     9710.    1455.2     9716.    1456.2     9730.    1456.6     9748.    1455.6     9758.
GR   1457.0     9776.    1456.9     9798.    1455.5     9823.    1456.0     9852.    1455.4     9887.
GR   1455.5     9917.    1455.1     9932.    1454.3     9952.    1455.2     9975.    1456.3     9985.
GR   1454.9     9990.    1449.5    10000.    1449.9    10016.    1455.0    10018.    1456.0    10025.
GR   1456.1    10035.    1455.4    10061.    1454.9    10105.    1455.2    10165.    1455.2    10224.
GR   1455.0    10267.    1455.4    10316.    1455.4    10363.    1455.9    10405.    1455.9    10458.
GR   1456.3    10486.    1460.5    10502.    1464.4    10525.    1468.3    10549.    1469.9    10572.
GR   1474.2    10608.    1476.6    10648.

ET                0.0       4.1   9889.00  10446.00
X1    0.782        48     9966.    10032.       380       360       380
GR   1465.2     9401.    1466.0     9455.    1464.8     9494.    1464.3     9529.    1464.3     9559.
GR   1464.1     9606.    1462.8     9651.    1460.6     9689.    1458.8     9738.    1457.4     9784.
GR   1456.2     9827.    1456.9     9865.    1456.9     9891.    1456.4     9909.    1456.4     9934.
GR   1457.1     9966.    1454.6     9985.    1454.5    10000.    1454.8    10016.    1459.8    10032.
GR   1456.2    10044.    1454.8    10058.    1456.4    10082.    1456.3    10116.    1456.2    10153.
GR   1457.0    10175.    1463.5    10188.    1463.2    10199.    1458.2    10208.    1457.2    10219.
GR   1456.5    10262.    1456.9    10308.    1456.6    10356.    1456.5    10404.    1456.8    10457.
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GR	1457.4	10510.	1456.8	10564.	1458.1	10609.	1464.2	10632.	1469.6	10656.
GR	1470.8	10676.	1469.3	10687.	1469.9	10699.	1470.7	10715.	1471.3	10737.
GR	1475.6	10754.	1478.2	10775.	1479.3	10792.				
ET		0.0	4.1	9836.00	10014.00					
X1	0.890	51	9971.	10014.	740	400	570			
GR	1474.8	8814.	1474.0	8871.	1471.5	8924.	1469.4	8956.	1466.6	8987.
GR	1466.0	9000.	1465.0	9003.	1464.3	9029.	1464.2	9045.	1463.9	9067.
GR	1463.0	9106.	1462.3	9172.	1460.9	9240.	1461.4	9304.	1460.8	9366.
GR	1460.3	9431.	1459.9	9498.	1460.1	9549.	1460.2	9605.	1459.6	9673.
GR	1459.7	9743.	1459.7	9813.	1459.7	9875.	1459.0	9900.	1457.9	9910.
GR	1457.3	9915.	1458.9	9919.	1459.1	9931.	1458.5	9941.	1459.0	9950.
GR	1460.3	9971.	1454.0	9987.	1454.8	10000.	1458.9	10014.	1458.3	10030.
GR	1458.1	10049.	1458.3	10066.	1458.5	10094.	1459.6	10109.	1459.6	10110.
GR	1459.7	10113.	1460.8	10147.	1461.0	10176.	1460.4	10195.	1460.5	10215.
GR	1462.5	10230.	1465.2	10260.	1468.1	10289.	1472.7	10329.	1477.6	10376.
GR	1479.4	10402.								
ET		0.0	4.1	9895.00	10019.00					
X1	0.985	54	9978.	10019.	600	490	502			
GR	1480.5	8830.	1480.3	8883.	1479.2	8936.	1478.3	8998.	1476.2	9044.
GR	1474.0	9095.	1471.8	9127.	1467.6	9159.	1464.6	9178.	1466.7	9185.
GR	1465.0	9189.	1464.6	9226.	1463.8	9279.	1464.2	9337.	1463.3	9397.
GR	1463.4	9455.	1462.8	9522.	1462.7	9591.	1462.8	9663.	1462.8	9714.
GR	1463.2	9759.	1463.1	9802.	1463.4	9849.	1462.0	9862.	1459.5	9874.
GR	1460.3	9878.	1461.2	9883.	1460.9	9891.	1459.9	9903.	1459.6	9913.
GR	1458.9	9918.	1461.5	9923.	1461.2	9930.	1459.0	9933.	1459.9	9942.
GR	1461.8	9951.	1461.3	9963.	1461.2	9978.	1459.0	9986.	1458.5	9989.
GR	1458.1	10000.	1459.7	10008.	1459.6	10015.	1461.5	10019.	1461.8	10025.
GR	1460.9	10047.	1461.7	10056.	1462.1	10074.	1464.2	10103.	1466.1	10143.
GR	1468.7	10185.	1470.9	10226.	1472.2	10248.	1475.9	10275.		
ET		0.0	4.1	9923.82	10039.88					
X1	1.045	64	9959.01	10039.88	316	319	317			
GR	1473.6	9000	1472.40	9047.61	1470.90	9080.50	1469.94	9088.10	1468.99	9111.47
GR	1468.1	9165.84	1467.70	9175.95	1467.76	9185.09	1465.10	9188.83	1467.58	9193.30
GR	1467.7	9195.73	1467.44	9233.04	1467.62	9257.62	1469.24	9305.68	1469.39	9353.17
GR	1469.0	9393.28	1467.87	9412.05	1467.73	9437.64	1467.90	9445.79	1467.50	9497.65
GR	1468.2	9515.00	1467.93	9526.31	1467.71	9529.35	1466.41	9540.86	1465.50	9552.16
GR	1465.4	9567.87	1464.97	9602.53	1464.80	9661.68	1464.20	9662.88	1463.76	9664.37
GR	1465.2	9669.24	1464.38	9703.09	1465.00	9764.57	1465.70	9793.67	1465.10	9850.28
GR	1464.5	9858.05	1463.11	9868.18	1461.90	9887.64	1462.01	9959.01	1461.55	9963.98
GR	1460.3	9969.82	1459.98	9975.21	1460.26	9994.11	1460.58	9996.03	1460.68	10011.16
GR	1459.9	10015.77	1458.76	10018.82	1459.06	10029.40	1462.71	10039.88	1463.29	10044.58
GR	1463.1	10050.26	1463.21	10052.77	1462.81	10073.03	1463.01	10090.67	1463.79	10104.15
GR	1464.2	10117.09	1465.80	10142.38	1466.02	10148.87	1467.54	10187.70	1468.70	10249.15
GR	1470.3	10263.96	1476.68	10362.79	1478.01	10377.28	1478.29	10385.52		
ET		0.0	4.1	9942.43	10050.80					
X1	1.067	55	9979.32	10035.99	98	116	98			
GR	1475.8	9000.00	1475.40	9051.04	1473.79	9108.93	1471.72	9145.32	1470.70	9152.00
GR	1469.7	9167.57	1468.38	9222.63	1468.67	9231.17	1469.70	9291.98	1469.65	9318.58
GR	1468.9	9351.83	1468.50	9440.16	1468.56	9454.55	1467.98	9467.82	1468.19	9565.83
GR	1467.7	9576.91	1467.50	9587.43	1467.07	9591.88	1466.10	9619.02	1465.40	9707.62

GR	1465.5	9770.98	1465.94	9801.38	1465.86	9827.63	1462.75	9919.87	1462.50	9952.53
GR	1462.6	9959.99	1462.81	9969.19	1462.86	9979.32	1459.38	9994.89	1459.01	10005.33
GR	1459.4	10015.84	1463.17	10035.99	1462.64	10050.74	1462.70	10065.32	1463.12	10076.33
GR	1463.6	10106.11	1464.10	10112.38	1464.58	10123.63	1465.46	10136.86	1465.90	10140.46
GR	1466.1	10146.66	1467.37	10172.20	1468.38	10187.65	1469.01	10217.66	1468.84	10268.99
GR	1469.4	10297.71	1470.91	10312.39	1473.80	10367.67	1475.73	10397.67	1480.16	10457.68
GR	1481.4	10470.07	1483.41	10503.43	1484.60	10517.88	1486.71	10551.59	1489.08	10588.25
ET		0.0	4.1	9939.58	10037.66					
X1	1.09	51	9959.2	10026.83	71	122	136			
GR	1469.4	9391.1	1469.3	9414.99	1468.36	9466.88	1467.95	9523.73	1467.38	9530.4
GR	1467.3	9532.58	1466.4	9542.33	1468.41	9564.09	1467.99	9573.36	1467.94	9583.42
GR	1468	9588.56	1467.8	9590.74	1467.54	9607.05	1466.59	9615.49	1465.94	9637.25
GR	1465.5	9732.89	1465.81	9809.9	1466.01	9828.51	1465.64	9861.17	1465.32	9872.24
GR	1465.6	9878.15	1464.16	9900.87	1463.42	9909.89	1463.2	9923.02	1463.26	9927.41
GR	1463.1	9942.2	1463.07	9948.33	1462.7	9959.2	1461.05	9984.28	1459.05	10000
GR	1459.1	10013.47	1462.7	10026.83	1464.3	10032.82	1463.95	10042.86	1462.9	10048.17
GR	1462.6	10050.13	1463	10057.08	1462.79	10058.68	1463.21	10063.07	1463.77	10065.62
GR	1463.8	10070.53	1463.7	10072.73	1463.65	10076.17	1463.53	10076.79	1463.93	10084.53
GR	1464.5	10103.94	1465	10115.96	1466.12	10127.98	1467.29	10144.17	1469.94	10185.75
GR	1470.4	10202.7								
ET		0.0	4.1	9959.10	10062.16					
X1	1.102	42	9986.7	10043.47	66	62	65			
GR	1466.7	9663.97	1466.68	9668.24	1466.53	9670.38	1466.38	9711.65	1466.1	9743.51
GR	1466.1	9774.07	1466.16	9796	1466	9851.31	1465.83	9858.79	1465.5	9881.86
GR	1465.2	9895.59	1465.05	9905.31	1463.38	9937.92	1463.62	9943.27	1462.96	9960.18
GR	1462.9	9972.98	1463.03	9986.7	1462.96	9988	1459.7	9997.36	1459.53	10000
GR	1459.9	10006.82	1460.53	10027.37	1464.5	10043.47	1464.44	10047.98	1463.7	10055.91
GR	1463.1	10057.72	1462.47	10059.16	1463.96	10065.36	1464.16	10072.7	1463.63	10080.67
GR	1464.4	10094.26	1464.87	10130.05	1464.82	10134.56	1465.2	10156.8	1465.14	10164.58
GR	1465.2	10172.74	1464.92	10179.84	1465	10181.7	1465.23	10182.88	1465.74	10191.47
GR	1466.3	10196.74	1466.51	10197.82						
ET		0.0	4.1	9950.38	10026.10					
X1	1.12	49	9968.95	10026.1	93	99	96			
GR	1470.1	9357.85	1469.91	9383.47	1469.7	9384.74	1469.3	9396.29	1468.6	9481.19
GR	1468.2	9501.05	1467.64	9604.77	1467.2	9614.34	1467.2	9646.43	1466.7	9668.18
GR	1466.9	9675.21	1466.6	9706.94	1466	9713.53	1466.6	9722.9	1466.3	9782.13
GR	1465.7	9820.97	1466.03	9828.9	1466.2	9844.77	1465.1	9882.91	1465.0	9899.25
GR	1464.5	9924.4	1464.03	9932.3	1464	9942.17	1463.3	9949.44	1463.8	9968.95
GR	1463.7	9970.48	1460.34	9986.44	1460	10000	1460.3	10009.33	1464.7	10026.1
GR	1464.7	10038	1463.9	10045.94	1464	10059.55	1465.6	10074.23	1466.1	10081.14
GR	1466.9	10099.54	1469.52	10127.5	1470.7	10147.47	1470.9	10171.84	1470.8	10195.15
GR	1470.4	10217.43	1469.61	10234.5	1469.5	10246.74	1469.2	10251.03	1469.3	10258.22
GR	1470.3	10278.9	1470.35	10292.37	1470.8	10311.6	1470.7	10319.08		
ET		0.0	4.1	9930.97	10017.72					
X1	1.139	36	9981.49	10017.72	106	89	100			
GR	1467.6	9744.74	1467.3	9757.47	1467.1	9760.31	1466.9	9787.4	1466.8	9803.79
GR	1466.8	9834.4	1466.1	9868.71	1465.5	9882.45	1465.4	9888.7	1464.2	9900.62
GR	1464.5	9909.32	1464.8	9915.26	1464.5	9923.49	1464.2	9928.39	1463.8	9932.11
GR	1464.3	9938.73	1464.4	9951.37	1463.9	9974.76	1464.2	9981.49	1461.9	9990.82
GR	1460.9	9993.08	1460.4	10000	1460.8	10009.97	1464.6	10016.85	1465.0	10017.72

GR	1464.9	10017.97	1465.2	10027.79	1464.9	10048.36	1465.2	10064.01	1466.7	10075.47
GR	1468	10091.61	1468.3	10097.11	1468.3	10100.54	1468.4	10111.79	1468.8	10118.7
GR	1469.3	10140.27								
ET		0.0	4.1	9914.95	10023.28					
X1	1.164	46	9982.34	10023.28	138	112	129			
GR	1469.8	9645.49	1469.43	9655.98	1469.9	9669.19	1469.85	9670.89	1469.31	9678.4
GR	1469.2	9685.82	1469.34	9699.35	1469.01	9725.2	1469.11	9747.87	1469.89	9758.31
GR	1469.7	9758.99	1469.52	9769.9	1468.85	9780.75	1467.85	9786.36	1467.95	9789.27
GR	1467.1	9820.09	1466.39	9852.35	1466.29	9854.03	1465.63	9878.13	1465.51	9878.64
GR	1464.9	9884.36	1464.83	9886.88	1464.88	9888.54	1464.71	9896.97	1464.84	9903.61
GR	1464.8	9910.68	1464.7	9912.2	1465.11	9919.63	1465.09	9936.41	1464.9	9942.79
GR	1464.5	9947.68	1464.8	9954.88	1465.49	9967.43	1465.46	9968.45	1465.82	9982.34
GR	1461	9994.82	1460.69	10000	1461.23	10009.82	1463.34	10015.83	1465.7	10023.28
GR	1465.8	10038.87	1466.6	10046.62	1468.91	10062.04	1469.4	10068.82	1471.35	10089.55
GR	1473.1	10105.35								
ET		0.0	4.1	9914.67	10029.88					
X1	1.19	52	9984.76	10029.88	138	138	138			
GR	1469	9685.25	1468.77	9706.06	1468.58	9709.47	1468.5	9715.94	1468.68	9721.02
GR	1468.5	9734.7	1468.84	9748.06	1468.82	9750.69	1469.2	9763.34	1469.32	9782.97
GR	1469.2	9787.15	1469.18	9790.5	1468.92	9798.84	1468.77	9805.89	1467.9	9810.41
GR	1467.8	9812.46	1467.88	9816.84	1467.1	9829.41	1466.68	9839.27	1466.13	9845.14
GR	1465.9	9848.26	1466	9857.11	1465.91	9859.42	1466	9866.39	1466.36	9873.66
GR	1466	9876.17	1465.7	9881.21	1465.71	9884.33	1465.48	9890.14	1465.4	9897.43
GR	1465.2	9903.48	1465	9904.1	1464.92	9904.92	1464.94	9907.48	1464.5	9911.87
GR	1464.5	9915.16	1464.33	9917.1	1465.77	9927.37	1465.9	9942.29	1465.77	9953.46
GR	1466	9973.63	1465.9	9979.06	1465.96	9984.76	1464.4	9988.33	1462.62	9993.34
GR	1462.2	10000	1462.49	10009.95	1463.69	10023.02	1466.08	10029.88	1466.5	10037.79
GR	1467.9	10041.85	1473.8	10057						
ET		0.0	4.1	9900.78	10027.97					
X1	1.207	43	9990.52	10027.97	78	96	91			
GR	1470.9	9477.28	1469.9	9522.9	1469.7	9526.25	1469.94	9530.62	1469.78	9540.66
GR	1470.3	9547.92	1470.56	9556.02	1469.87	9566.92	1469.86	9609.19	1470.45	9626.04
GR	1470.2	9663.43	1469.55	9673.75	1469.27	9685.21	1469.37	9707.71	1469.7	9718.41
GR	1469.9	9734.72	1470.52	9744.17	1470.53	9780.47	1470.4	9788.9	1468.99	9809.46
GR	1467.6	9815.45	1467.33	9820.51	1466.1	9831.95	1465.39	9851.18	1466.38	9859.04
GR	1466.6	9868.34	1466.3	9872.75	1466.6	9892.68	1466.47	9899.09	1466.17	9900.93
GR	1466.6	9905.16	1465.97	9908.34	1466.45	9926.83	1466.72	9950.09	1466.74	9964.01
GR	1466.3	9976.02	1466.1	9990.52	1462.83	10000	1462.86	10018.85	1465.5	10027.97
GR	1465.7	10035.59	1466.2	10041.15	1474.51	10066.45				
ET		0.0	4.1	9918.97	10023.91					
X1	1.227	40	9984.14	10023.91	107	98	100			
GR	1472.2	9621.62	1472.2	9625.81	1471.94	9632.11	1471.8	9640.07	1471.6	9672.26
GR	1471.3	9688.87	1471.33	9702.3	1470.91	9717.12	1470.9	9728.32	1470.98	9731.41
GR	1470.4	9749.17	1469.57	9757.69	1467.95	9777.82	1468.16	9782.44	1468.1	9787.93
GR	1466.3	9794.01	1467.59	9798.96	1467.5	9799.42	1467.36	9821.74	1467.3	9843.86
GR	1467.5	9859.13	1467.3	9867.87	1467.69	9898.13	1467.6	9937.73	1467.33	9953.13
GR	1466.8	9963.82	1465.39	9984.14	1463.59	9988.74	1462.91	10000	1463.56	10010.51
GR	1464.2	10018.47	1466.8	10023.91	1466.71	10031.94	1467.61	10038.59	1468	10040.83
GR	1468.6	10049.42	1473.13	10071.44	1473.96	10074.53	1474.7	10079.68	1475.36	10083.58

ET		0.0	4.1	9920.99	10022.96					
X1	1.256	56	9985.52	10022.96	144	162	159			
GR	1473.9	9527.42	1474.01	9531.58	1474.11	9558.21	1474.31	9573.76	1473.76	9579.37
GR	1472.7	9587.54	1472.84	9590.16	1472.8	9592.47	1471.46	9622.62	1471.64	9657.49
GR	1471.3	9674.56	1471.03	9677.94	1470.7	9684.8	1470.3	9687.95	1470.16	9692.58
GR	1468.9	9716.24	1468.75	9749.27	1468.88	9750.47	1469.1	9755.43	1468.4	9759.84
GR	1467.9	9767.77	1468.23	9771.54	1468.73	9775.85	1468.8	9777.8	1468.64	9779.06
GR	1468.6	9780.2	1468.9	9791.78	1468.8	9806.93	1468.85	9813.47	1469.12	9823.05
GR	1469.6	9832.25	1469.71	9838.11	1469.6	9842.44	1469.3	9880.05	1468.83	9887.26
GR	1468.8	9894.56	1468.61	9908.76	1467.87	9933.42	1467.91	9943.1	1467.83	9945.24
GR	1467.2	9952.43	1466.8	9959.52	1467.2	9966.78	1467.8	9969.73	1467.62	9970.93
GR	1468.1	9985.52	1464.7	9994.77	1464.43	10000	1464.87	10013.19	1466.3	10017.47
GR	1468.3	10022.96	1467.75	10040.81	1468.1	10055.02	1469.35	10063.73	1474.33	10104.04
GR	1478.9	10137.87								
ET		0.0	4.1	9908.85	10020.55					
X1	1.288	54	9985.44	10020.55	153	172	166			
GR	1478	9325.96	1477.1	9369.59	1476.53	9381.43	1476.46	9418.86	1475.56	9439.25
GR	1474.3	9505.3	1474.19	9525.34	1473.8	9539.03	1473.51	9541.21	1473.26	9557.74
GR	1473	9564.21	1473.19	9594.17	1472.01	9611.23	1471.25	9615.76	1470.24	9645.22
GR	1469.9	9669.72	1470	9687.87	1469.23	9693.28	1470.06	9703.29	1469.89	9720.34
GR	1470.1	9734.05	1471.16	9756.1	1471.19	9781.75	1470.46	9811	1470.07	9857.19
GR	1469.8	9858.26	1470.38	9878.96	1469.72	9914.83	1468.46	9940.95	1468.02	9959.41
GR	1469.2	9968.09	1469.25	9985.44	1465.32	9994.96	1465	10000	1465.46	10010.83
GR	1469.5	10020.55	1468.9	10044.93	1469	10050.41	1469.48	10056.19	1470.35	10074.79
GR	1471.6	10087.53	1472.04	10096.32	1474.2	10122.51	1475.9	10151.88	1477	10167.79
GR	1477.7	10172.91	1478.12	10178.51	1478.4	10184.44	1478.93	10187.98	1478.1	10195.33
GR	1478.4	10200.14	1478.48	10204.67	1480.5	10233.27	1481.41	10242.45		
ET		0.0	4.1	9915.96	10020.11					
X1	1.321	59	9984.58	10020.11	167	182	178			
GR	1475	9517.97	1474.42	9531.27	1474.4	9535.04	1474.3	9536.89	1473.95	9558.77
GR	1474	9568.24	1473.8	9573.97	1472.21	9583.68	1471.8	9588.8	1470.9	9613.61
GR	1470.8	9618.04	1471.01	9622.31	1470.45	9625.54	1470.4	9627.06	1470.08	9629.02
GR	1471.1	9638.7	1471.02	9660.2	1471.06	9675.53	1471	9684.66	1472.1	9700
GR	1472.4	9705.05	1472.54	9710.61	1472.44	9761.67	1472.13	9806.51	1471.5	9828.6
GR	1471.2	9843.7	1471.57	9852.65	1471.5	9855.03	1471.57	9864.11	1471.31	9876.99
GR	1471.1	9883.85	1470.95	9915.58	1469.14	9954.87	1469.09	9958.88	1469.23	9965.35
GR	1469.1	9972.08	1468.98	9974.02	1468.77	9984.58	1467.68	9987.8	1466.06	9991.72
GR	1465.6	10000	1465.73	10008.59	1468.94	10016.85	1470.5	10020.11	1470.28	10027.07
GR	1470.3	10030.3	1470.6	10032.63	1470.56	10043.51	1470.19	10055.25	1470.51	10061.05
GR	1470.6	10068.68	1471.02	10080	1471.29	10091.02	1472.8	10127.26	1473	10128.14
GR	1473.3	10130.29	1474.8	10137.3	1476.04	10142.03	1480.92	10165.27		
ET		0.0	4.1	9931.37	10011.03					
X1	1.351	39	9942.88	10011.03	153	164	163			
GR	1475	9513.75	1474.64	9518.55	1472.6	9535.08	1472.03	9563.52	1471.86	9587.7
GR	1471.5	9592.3	1471.9	9603.19	1472.39	9634.2	1473.3	9646.97	1473.88	9663.66
GR	1474.2	9671.37	1474.3	9686.03	1474.2	9703.16	1474.08	9706.37	1474.1	9708.99
GR	1473.9	9716.42	1473.7	9730.48	1473.49	9732.58	1473	9752.22	1473.13	9760.69
GR	1472.9	9800.12	1471.9	9838.01	1472.18	9845.43	1472.6	9880.65	1470.89	9924.11
GR	1470.8	9938.54	1470.65	9942.88	1469.7	9959.46	1467.51	9978.65	1466.77	9992.31
GR	1466.7	10000	1471.48	10011.03	1471.54	10013.4	1471.34	10024.88	1471.29	10042.77

GR	1472.5	10059.89	1473.44	10063.71	1474.4	10069.72	1478.89	10091.37		
ET		0.0	4.1	9955.45	10016.84					
X1	1.383	44	9970.16	10016.84	168	157	163			
GR	1478.9	9417.14	1477.92	9438.96	1476.9	9449.76	1475.05	9464.91	1474.71	9469.07
GR	1473.8	9486.52	1473.7	9494.68	1473.2	9498.8	1473.64	9502.58	1473.89	9523.22
GR	1474.1	9565.27	1474.6	9605.71	1474.55	9694.19	1474.82	9721.94	1474.76	9725.55
GR	1474.9	9737.5	1474.59	9772.26	1474.19	9780.62	1473.81	9793.71	1473.85	9800.23
GR	1473.7	9812.19	1473.66	9828.43	1474.01	9840.47	1473.94	9845.74	1474.06	9854.07
GR	1473.9	9873.19	1473.51	9888.54	1473.06	9896.25	1472.7	9919.19	1471.76	9948.56
GR	1471.2	9956.32	1471.49	9961.12	1471.81	9964.3	1471.94	9970.16	1468.52	9980.05
GR	1467.7	9989.76	1467.48	9994.43	1467.09	10000	1472.27	10016.84	1471.73	10025.23
GR	1472.8	10035.35	1475.64	10050.65	1481.02	10072.52	1486.03	10096.93		
ET		0.0	4.1	9969.85	10033.03					
X1	1.411	42	9971.18	10033.03	153	146	152			
GR	1476.2	9644.71	1475.86	9681.87	1475.9	9691.75	1475.8	9719.04	1475.8	9747.61
GR	1475.9	9756.52	1475.94	9773.87	1475.5	9784.76	1475.1	9788.56	1475.3	9792.27
GR	1475.2	9806.63	1475.59	9820.11	1475.6	9833.49	1475.7	9839.64	1475.6	9845.45
GR	1475.7	9871.08	1475.56	9878.14	1475.6	9879.28	1474.7	9908.54	1473.9	9957.93
GR	1472.7	9964.29	1472.61	9966.03	1472.4	9966.76	1471.8	9971.18	1471.3	9976.08
GR	1470.9	9979	1470.94	9979.9	1470.6	9982.72	1470.1	9984.48	1470.2	9987.79
GR	1469.7	9989.73	1469.64	9990.71	1469.4	9991.69	1468.7	9995.45	1468.2	9997.05
GR	1468.1	10000	1468.23	10015.43	1471.9	10033.03	1472.6	10037.33	1472.7	10048.66
GR	1473.3	10058.13	1480.9	10090.71						
ET		0.0	4.1	9890.57	10014.82					
X1	1.426	43	9978.18	10014.82	76	79	79			
GR	1476.4	9575.17	1476.35	9660.48	1476.1	9667.72	1475.7	9696.67	1475.7	9700.54
GR	1475.4	9709.04	1475.26	9718.65	1476.1	9740.87	1475.9	9746.31	1475.7	9747.11
GR	1475.7	9759.85	1476.31	9769.5	1476.3	9773.52	1476.2	9777.55	1476.3	9783.95
GR	1476.3	9789.63	1476.12	9803.17	1476.2	9818.13	1475.2	9844.23	1474.3	9857.62
GR	1473.7	9863.36	1473.3	9869.01	1472.3	9878.2	1470.9	9884.91	1469.7	9890.16
GR	1468.3	9902.02	1468.68	9910.26	1469.4	9914.2	1470.1	9919.53	1473.1	9934.3
GR	1473.2	9938.91	1473	9949.8	1473	9952.14	1472.3	9978.18	1472.4	9978.31
GR	1470.1	9984.19	1468.58	9987.16	1468.3	10000	1469.4	10003.23	1473.6	10014.82
GR	1473.1	10024.97	1474.43	10034.28	1478.9	10054.24				
ET		0.0	4.1	9902.33	10016.09					
X1	1.462	52	9971.59	10016.09	193	192	193			
GR	1478.5	9581.26	1478.48	9586.66	1478.05	9591.7	1477.67	9597.92	1476.7	9610.87
GR	1476.4	9623.48	1475.15	9651.07	1475.2	9661.09	1475.11	9674.59	1476.16	9679.77
GR	1475.5	9682.46	1475.07	9684.86	1474.66	9687.83	1474.88	9690.28	1474.89	9704.26
GR	1474.8	9708.87	1474.87	9714.86	1474.69	9720.22	1473.63	9734.14	1474.08	9743.46
GR	1474.7	9751.65	1475.02	9758	1475.87	9766.75	1476.5	9777.34	1476.65	9782.16
GR	1477.9	9798.01	1479.08	9815.69	1479.25	9843.21	1479.37	9848.83	1478.83	9853.88
GR	1478.1	9871.56	1477.72	9880.42	1477.5	9882.25	1477.4	9887.83	1476.6	9896.36
GR	1475.9	9900.75	1475.58	9912.02	1475.27	9931.01	1474.82	9948.64	1473.5	9963.86
GR	1473.4	9964.1	1473.28	9971.59	1470.05	9992.16	1469.7	10000	1469.85	10007.08
GR	1471.5	10012.15	1472.5	10016.09	1473.49	10030.44	1474.2	10038.38	1474.47	10040.07
GR	1481	10067.01	1482	10071.52						

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QT        2      1609      1609
ET                0.0       4.1   9963.45  10031.82
X1    1.483        49   9980.37  10017.29       112       112       113
GR   1479.4   9086.68    1478.3   9132.77   1478.54   9160.04   1478.46   9169.84    1479.1   9177.96
GR   1478.2   9185.72   1478.77   9295.52   1478.16   9301.76   1478.95   9315.59   1478.95   9319.55
GR   1478.5   9332.82    1479.1   9355.65   1478.73   9359.21   1477.98   9436.36   1477.26    9478.8
GR   1477.9   9526.58    1477.4    9554.8   1477.53   9557.31   1476.74    9583.8   1476.83   9601.12
GR     1477    9610.6      1477   9637.29   1476.76    9643.9    1477.1   9649.52   1476.64   9672.33
GR   1475.9   9687.21   1475.51   9689.99   1475.38   9696.15   1476.48   9720.66   1477.45   9736.49
GR   1478.5   9770.61    1478.4    9780.7    1478.9   9792.17   1477.64    9819.1   1477.22   9834.46
GR   1476.7   9843.61      1477   9896.72    1476.2   9947.69   1473.84   9980.37   1472.99   9985.59
GR   1470.1   9990.88    1469.8  10007.24   1474.31  10017.29    1473.9  10032.06   1474.88  10061.99
GR   1475.4  10072.56   1477.25   10093.65   1478.81  10099.71      1495  10175.72

ET                0.0       4.1   9963.13  10025.74
X1    1.518        30   9976.69  10021.74       180       186       184
GR   1478.9    9665.6   1478.65    9680.6    1478.4   9684.52   1478.26   9701.13    1478.8   9718.94
GR   1478.6   9736.13   1478.76   9742.19    1479.1   9800.87    1478.7   9845.89   1478.52   9858.88
GR     1478   9874.38   1477.28   9906.15   1476.85   9919.61   1476.24   9936.13    1475.2   9957.62
GR   1474.6    9965.9    1474.1    9970.2   1474.83   9976.69    1474.3   9980.22   1472.05   9987.42
GR   1471.6     10000   1474.18  10014.71   1475.24  10021.74      1476  10040.18   1475.98  10054.93
GR     1476  10058.37    1476.7  10080.37   1478.01  10097.02    1481.8  10117.33   1482.35  10120.56

ET                0.0       4.1   9926.89  10019.10
X1    1.549        40   9974.29   10019.1       135       175       171
GR     1479   9587.24    1478.5   9607.45   1478.76   9642.05   1479.41   9679.16    1479.4   9684.94
GR   1479.8   9719.08      1480   9745.88   1479.83   9775.73    1479.6   9786.73    1479.6   9796.48
GR   1479.3   9815.09   1478.76   9828.94   1478.19   9853.03   1477.23    9884.3    1476.6   9897.65
GR   1475.8   9919.62   1476.04   9931.96   1475.64   9939.15   1475.49   9944.81   1476.61   9953.63
GR   1476.7   9955.58   1476.48   9963.18   1476.43   9974.29    1475.6   9977.71   1473.94   9986.51
GR   1473.7    9989.1   1473.48     10000   1473.56  10008.39    1475.9   10019.1      1476  10020.37
GR     1476  10025.59   1477.11  10051.54    1477.3  10054.35   1477.56  10063.05   1477.82  10074.98
GR     1478  10091.94    1478.5  10102.65   1479.84  10112.11    1482.7  10125.24   1482.81   10126.6
  CROSS SECTION NO. 1 OF SPECIAL CULVERT ROUTINE.

ET                0.0       4.1   9891.20  10141.92
X1    1.572        43   9991.46  10024.23       124       133       130
GR   1479.7    9422.5   1478.61   9466.49   1478.75   9499.91   1478.47   9517.24   1479.47    9534.2
GR   1479.2   9558.55    1479.3    9562.1   1478.83      9568   1478.59   9588.89   1479.48   9594.74
GR   1479.8   9649.46   1480.37   9666.26    1480.6   9680.03   1480.43   9690.77   1480.66   9695.99
GR   1480.6   9705.03   1480.77   9734.14   1480.57   9797.11   1480.66   9810.66    1480.4   9829.08
GR   1480.5   9830.53   1479.53   9852.46    1477.7   9915.82   1476.45   9933.23   1476.82   9938.26
GR   1477.2   9965.01   1477.01   9965.78    1477.6   9991.46   1474.38     10000    1474.4  10016.93
GR   1477.5  10024.23    1477.3  10031.33   1475.71  10037.89   1476.21  10045.55   1476.09   10062.1
GR   1476.2  10064.86   1477.15  10073.55   1477.72   10085.8   1478.89  10134.89    1479.2  10161.25
GR   1480.8   10215.2    1480.9  10220.99   1481.06  10223.88

NC                                    0.3       0.5
  CROSS SECTION NO. 2 OF SPECIAL CULVERT ROUTINE.
ET                0.0       4.1   9960.78  10010.70
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X1    1.595        36    9960.78   10010.67       124       177       157
X3       10                                                        1479.62   1479.62
GR   1480.7   9743.55   1480.65    9749.73   1480.55   9764.86    1480.4   9776.96    1480.4   9798.59
GR   1480.3   9810.08    1480.2    9819.79   1480.17   9825.17   1480.11   9831.82   1479.64   9858.63
GR   1479.6   9871.14   1479.41    9883.27   1479.32   9896.56   1479.11   9936.46   1479.05   9945.55
GR   1479.1   9951.44   1478.28    9960.78   1478.08   9964.48    1478.1   9968.41   1475.32   9971.94
GR   1475.3   9974.65   1475.02    9978.48    1474.8   9990.18   1474.73   9992.47   1474.87   9996.73
GR    1475.   10001.9    1475.5   10004.98   1477.35  10007.55   1478.18  10010.67   1478.64  10015.81
GR   1479.3  10050.68   1479.75   10053.67   1479.87  10055.63   1479.93  10069.79   1480.27   10076.4
GR   1480.5  10086.23
  EXSTING CULVERT LOCATED ON PINNACLE VISTA ROAD.

SC    4.016       0.5       2.6                  3         8      25.4       9.2   1475.48   1475.24
  CROSS SECTION NO. 3 OF SPECIAL CULVERT ROUTINE.
ET                0.0      4.11    9714.18  10117.82
X1    1.610        29   9945.94   10041.01        38        36        37
X2                            2    1478.48   1479.85
X3       10                                                        1479.86   1479.86
BT      -24    9711.2   1481.04              9737.62   1480.84              9750.78    1480.8
BT           9773.28   1480.79              9812.34   1480.66              9867.01   1480.16
BT           9933.42   1480.02              9938.84   1479.85              9938.84   1481.88
BT           9945.94   1481.76              9977.68   1481.49             10026.42   1481.58
BT          10040.45   1479.85             10040.48   1479.85             10057.43   1479.86
BT           10065.8   1480.05             10079.04   1480.38             10087.02   1480.67
BT          10096.76   1481.07             10104.76   1481.42             10118.72   1482.03
BT          10125.68   1482.46             10144.75   1483.67             10148.75    1483.9
GR     1482   9683.12    1481.1    9708.61    1480.9   9723.22   1480.39    9779.28    1479.8   9783.52
GR   1479.5   9836.76    1479.2    9895.28    1478.9    9908.3   1478.87    9925.63    1479.0   9929.92
GR   1479.1   9937.19   1479.09     9945.9   1478.68   9945.94   1478.22    9971.95    1477.8    9978.4
GR   1475.2    9987.5    1475.3   10000.01   1475.18  10000.44   1475.21   10017.89    1477.8  10023.04
GR   1478.5  10026.42    1479.2   10041.01   1479.27  10052.63   1479.43    10057.2    1479.8  10080.04
GR   1480.1  10092.94   1480.86   10112.48   1481.44   10131.4    1482.2   10144.04
  CROSS SECTION NO. 4 OF SPECIAL BRIDGE ROUTINE.

ET                0.0       4.1    9839.09  10109.56
X1    1.638        21      9970      10020       192       122       148
GR   1483.0     9582.   1483.0      9583.    1482.9     9671.   1482.9      9750.   1481.9      9810.
GR   1480.5     9849.   1479.3      9907.    1478.6     9933.   1478.8      9949.   1479.5      9970.
GR   1475.7     9984.   1475.7     10000.    1479.8    10020.   1479.7     10052.   1480.3     10084.
GR   1479.9    10100.   1482.1     10122.    1482.5    10140.   1485.4     10167.   1488.4     10194.
GR   1488.7    10203.

NC                                     .1        .3
ET                0.0       4.1    9950.00  10072.00
X1    1.695        37      9978      10016       297       303       300
GR   1484.6     9443.   1484.6      9444.    1484.6     9445.   1484.6      9546.   1484.6      9547.
GR   1483.4     9609.   1483.1      9660.    1482.2     9713.   1482.3      9735.   1483.2      9749.
GR   1484.0     9773.   1483.9      9791.    1484.2     9814.   1485.2      9830.   1483.7      9868.
GR   1483.5     9887.   1481.6      9906.    1480.2     9926.   1480.5      9952.   1481.5      9978.
GR   1477.3     9992.   1477.4     10000.    1477.4    10008.   1481.3     10016.   1480.7     10039.
GR   1480.8    10056.   1481.5     10086.    1480.4    10110.   1481.4     10120.   1481.6     10142.
GR   1482.4    10177.   1483.9     10212.    1485.1    10249.   1485.9     10285.   1486.3     10320.
GR   1487.0    10350.   1487.3     10362.
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ET		0.0	4.1	9977.35	10177.84					
X1	1.761	40	9980.	10017.	360	340	350			
GR	1489.8	9478.	1489.8	9479.	1489.8	9480.	1489.8	9481.	1489.8	9482.
GR	1489.5	9517.	1489.5	9557.	1488.9	9599.	1488.0	9639.	1487.6	9678.
GR	1486.4	9718.	1486.1	9758.	1486.3	9800.	1487.6	9839.	1487.9	9874.
GR	1487.5	9905.	1485.5	9931.	1482.9	9958.	1483.2	9980.	1479.1	9988.
GR	1479.1	10000.	1479.2	10008.	1483.2	10017.	1483.3	10052.	1484.0	10091.
GR	1484.0	10122.	1483.3	10159.	1484.0	10200.	1484.5	10238.	1484.4	10280.
GR	1484.4	10319.	1484.8	10342.	1483.2	10355.	1485.4	10371.	1486.0	10410.
GR	1486.1	10453.	1487.0	10496.	1487.7	10542.	1488.4	10582.	1488.8	10614.
ET		0.0	4.1	9974.00	10024.0					
X1	1.856	31	9980.	10019.	502	502	502			
GR	1492.5	9703.	1492.5	9704.	1492.5	9705.	1492.5	9706.	1492.5	9707.
GR	1492.4	9750.	1491.9	9791.	1490.5	9830.	1489.3	9865.	1487.9	9901.
GR	1486.7	9941.	1484.5	9980.	1480.7	9989.	1480.9	10000.	1480.9	10009.
GR	1485.2	10019.	1485.1	10038.	1487.5	10065.	1489.3	10093.	1489.8	10123.
GR	1489.5	10155.	1488.2	10182.	1487.6	10219.	1488.6	10257.	1488.4	10300.
GR	1488.9	10340.	1489.3	10381.	1490.4	10402.	1493.2	10419.	1498.7	10460.
GR	1500.9	10473.								
ET		0.0	4.1	9945.0	10011.00					
X1	1.951	33	9981.	10011.	510	495	502			
GR	1497.0	9414.	1497.0	9415.	1497.0	9416.	1497.0	9417.	1496.6	9498.
GR	1496.3	9579.	1495.5	9661.	1495.0	9741.	1494.8	9806.	1493.9	9858.
GR	1492.3	9881.	1488.8	9909.	1485.9	9938.	1486.3	9965.	1486.7	9981.
GR	1483.1	9989.	1482.9	10000.	1483.0	10006.	1486.1	10011.	1489.2	10026.
GR	1491.0	10061.	1490.9	10099.	1490.8	10145.	1491.0	10190.	1491.2	10242.
GR	1492.1	10289.	1493.1	10339.	1494.1	10388.	1494.8	10429.	1495.5	10457.
GR	1502.0	10488.	1505.7	10523.	1508.7	10544.				
ET		0.0	4.1	9939.00	10050.00					
X1	2.045	34	9988.	10019.	505	510	505			
GR	1499.6	9478.	1499.2	9519.	1498.9	9562.	1499.0	9607.	1498.7	9640.
GR	1497.8	9681.	1497.4	9721.	1496.9	9765.	1496.3	9806.	1494.6	9840.
GR	1491.1	9867.	1490.3	9911.	1489.5	9949.	1489.5	9963.	1490.9	9978.
GR	1490.9	9988.	1486.6	9995.	1486.7	10000.	1486.6	10010.	1491.2	10019.
GR	1490.1	10048.	1488.0	10057.	1490.9	10066.	1490.7	10094.	1491.7	10120.
GR	1492.0	10158.	1492.4	10199.	1493.2	10238.	1493.9	10280.	1493.6	10321.
GR	1493.7	10360.	1494.2	10384.	1502.1	10422.	1502.7	10425.		
QT	2	1308.0	1308.0							
ET		0.0	4.1	9976.00	10019.00					
X1	2.121	19	9980.	10019.	405	415	410			
GR	1503.6	9596.	1502.3	9639.	1502.2	9681.	1501.8	9722.	1501.3	9768.
GR	1500.5	9813.	1499.7	9853.	1498.4	9888.	1496.7	9921.	1492.8	9947.
GR	1492.1	9980.	1488.7	9990.	1489.3	10000.	1490.5	10010.	1493.6	10019.
GR	1493.0	10048.	1494.8	10079.	1496.4	10110.	1497.1	10133.		

ET		0.0	4.1	9845.00	10036.0					
X1	2.200	20	9959.	10036.	400	425	417			
GR	1502.0	9511.0	1500.0	9566.0	1498.8	9612.0	1496.9	9654.0	1495.7	9701.0
GR	1494.2	9741.	1494.1	9781.	1493.0	9811.	1494.7	9824.	1493.5	9837.
GR	1493.4	9863.	1493.1	9891.	1495.6	9903.	1495.3	9930.	1496.1	9959.
GR	1495.0	9970.	1491.5	9981.	1491.4	10000.	1490.5	10017.	1498.5	10036.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .71 CWSEL= 1460.42

STA=	9437.	9574.	9668.	9710.	9748.	9798.	9852.	9887.	9917.	9952.	9975.	9985.	10025.
PER Q=	4.4	5.3	3.5	3.4	3.6	4.9	3.5	3.2	4.4	3.1	1.0	9.1	
AREA=	307.6	316.8	179.0	168.9	193.7	240.9	165.2	149.1	191.2	130.4	46.7	328.2	
VEL=	.3	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.6	
DEPTH=	2.2	3.4	4.3	4.4	3.9	4.5	4.7	5.0	5.5	5.7	4.7	8.2	

STA=	10025.	10061.	10105.	10165.	10224.	10267.	10316.	10363.	10405.	10458.	10502.
PER Q=	3.4	5.2	7.3	6.9	5.2	5.7	5.1	4.2	4.9	2.8	
AREA=	165.1	231.9	322.2	308.0	228.8	255.8	235.9	200.3	239.6	153.3	
VEL=	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	
DEPTH=	4.6	5.3	5.4	5.2	5.3	5.2	5.0	4.8	4.5	3.5	

FLOW DISTRIBUTION FOR SECNO= .78 CWSEL= 1460.44

STA=	9693.	9827.	9865.	9909.	9934.	9966.	10032.	10058.	10082.	10116.	10153.	10219.	10262.
PER Q=	7.7	4.8	5.0	3.4	3.7	11.8	3.3	4.3	4.7	5.3	3.7	4.7	
AREA=	300.1	147.6	160.0	100.9	117.9	318.1	98.3	116.0	138.9	154.8	130.8	154.2	
VEL=	.6	.7	.7	.8	.7	.9	.8	.9	.8	.8	.7	.7	
DEPTH=	2.2	3.9	3.6	4.0	3.7	4.8	3.8	4.8	4.1	4.2	2.0	3.6	

STA=	10262.	10308.	10356.	10404.	10457.	10510.	10564.	10609.	10618.
PER Q=	5.4	5.5	6.0	6.4	5.2	5.3	3.7	.1	
AREA=	171.8	176.9	186.5	200.6	176.8	180.1	134.3	10.3	
VEL=	.7	.7	.7	.7	.7	.7	.6	.3	
DEPTH=	3.7	3.7	3.9	3.8	3.3	3.3	3.0	1.2	

FLOW DISTRIBUTION FOR SECNO= .89 CWSEL= 1460.51

STA=	9403.	9605.	9743.	9813.	9875.	9910.	9919.	9941.	9971.	10014.	10030.	10049.	10066.
PER Q=	3.5	6.9	4.1	3.6	5.4	3.8	4.0	3.2	38.8	3.9	6.3	5.6	
AREA=	76.9	102.0	56.8	50.3	49.7	24.2	35.3	34.0	184.5	30.6	43.9	39.3	
VEL=	1.1	1.6	1.6	1.6	2.5	3.6	2.6	2.2	4.8	2.9	3.3	3.3	
DEPTH=	.4	.7	.8	.8	1.4	2.7	1.6	1.1	4.3	1.9	2.3	2.3	

STA=	10066.	10094.	10138.	10215.
PER Q=	8.0	3.0	.0	
AREA=	59.1	35.6	1.4	
VEL=	3.1	2.0	.3	
DEPTH=	2.1	.8	.0	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .99 CWSEL= 1463.22

STA=	9475.	9663.	9874.	9883.	9903.	9913.	9918.	9930.	9942.	9951.	9978.	10019.	10047.
PER Q=	3.6	6.2	4.3	8.1	6.7	4.1	4.1	8.3	3.1	6.3	33.7	6.3	
AREA=	75.5	71.4	25.6	51.1	34.7	19.8	28.2	43.3	21.3	49.5	162.6	50.5	
VEL=	1.1	2.0	3.9	3.6	4.4	4.8	3.4	4.4	3.4	2.9	4.8	2.9	
DEPTH=	.4	.3	2.8	2.6	3.5	4.0	2.3	3.6	2.4	1.8	4.0	1.8	

STA=	10047.	10074.	10089.
PER Q=	4.6	.5	
AREA=	41.0	8.6	
VEL=	2.6	1.3	
DEPTH=	1.5	.6	

FLOW DISTRIBUTION FOR SECNO= 1.04 CWSEL= 1464.55

STA=	9662.	9888.	9959.	10040.	10073.	10104.	10123.
PER Q=	5.0	24.3	61.9	4.5	4.0	.4	
AREA=	51.4	185.2	343.3	49.7	44.4	8.1	
VEL=	2.2	3.0	4.2	2.1	2.1	1.0	
DEPTH=	.2	2.6	4.2	1.5	1.4	.4	

FLOW DISTRIBUTION FOR SECNO= 1.07 CWSEL= 1464.91

STA=	9856.	9920.	9953.	9969.	9979.	10036.	10051.	10065.	10106.	10129.
PER Q=	6.2	10.9	5.5	2.9	56.7	4.0	4.7	8.2	1.0	
AREA=	69.5	74.8	38.0	21.1	251.9	29.6	32.7	68.4	14.0	
VEL=	2.0	3.4	3.4	3.2	5.2	3.1	3.3	2.8	1.6	
DEPTH=	1.1	2.3	2.3	2.1	4.4	2.0	2.2	1.7	.6	

FLOW DISTRIBUTION FOR SECNO= 1.09 CWSEL= 1465.47

STA=	9867.	9923.	9942.	9959.	10027.	10048.	10057.	10071.	10104.	10121.
PER Q=	5.8	5.6	5.8	66.8	3.8	3.4	3.5	4.7	.5	
AREA=	57.8	43.7	42.8	322.7	36.2	23.9	28.3	49.0	9.9	
VEL=	2.3	2.9	3.1	4.8	2.4	3.3	2.8	2.2	1.3	
DEPTH=	1.0	2.3	2.5	4.8	1.7	2.7	2.1	1.5	.6	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.10 CWSEL= 1465.74

STA=	9865.	9938.	9960.	9973.	9987.	10043.	10059.	10073.	10094.	10130.	10191.
PER Q=	5.8	7.5	5.6	5.9	58.4	3.2	3.6	4.4	3.3	2.3	
AREA=	63.0	53.4	36.0	38.1	267.5	27.5	28.0	38.1	39.5	38.5	
VEL=	2.1	3.2	3.6	3.6	5.0	2.7	3.0	2.6	1.9	1.4	
DEPTH=	.9	2.4	2.8	2.8	4.7	1.7	2.1	1.8	1.1	.6	

FLOW DISTRIBUTION FOR SECNO= 1.12 CWSEL= 1466.16

STA=	9712.	9899.	9924.	9942.	9969.	10026.	10046.	10060.	10082.
PER Q=	3.1	3.9	5.1	11.5	65.8	3.9	4.5	2.2	
AREA=	46.9	35.2	36.0	68.9	267.9	32.0	29.9	21.9	
VEL=	1.5	2.6	3.3	3.8	5.7	2.8	3.5	2.3	
DEPTH=	.3	1.4	2.0	2.6	4.7	1.6	2.2	1.0	

FLOW DISTRIBUTION FOR SECNO= 1.14 CWSEL= 1466.76

STA=	9836.	9901.	9909.	9923.	9932.	9939.	9951.	9975.	9981.	10018.	10048.	10064.	10076.
PER Q=	6.0	3.5	4.6	3.9	3.3	5.1	10.9	3.3	47.9	7.0	3.6	.8	
AREA=	55.5	21.0	29.9	22.1	17.9	30.5	61.1	18.2	180.1	52.5	26.8	9.3	
VEL=	2.5	3.9	3.6	4.1	4.2	3.9	4.1	4.2	6.1	3.1	3.1	1.9	
DEPTH=	.9	2.4	2.1	2.6	2.7	2.4	2.6	2.7	5.0	1.7	1.7	.8	

FLOW DISTRIBUTION FOR SECNO= 1.16 CWSEL= 1467.58

STA=	9803.	9878.	9887.	9897.	9904.	9911.	9920.	9936.	9948.	9955.	9967.	9982.	10023.
PER Q=	6.7	3.2	4.5	3.0	3.1	3.8	6.2	4.8	3.5	4.5	3.7	48.2	
AREA=	72.2	21.4	28.0	18.6	19.5	24.2	41.6	30.6	21.1	30.6	29.1	206.5	
VEL=	2.1	3.4	3.7	3.7	3.7	3.6	3.4	3.7	3.8	3.4	2.9	5.4	
DEPTH=	1.0	2.5	2.8	2.8	2.8	2.7	2.5	2.7	2.9	2.4	2.0	5.0	

STA=	10023.	10039.	10053.
PER Q=	3.5	1.2	
AREA=	28.5	13.9	
VEL=	2.8	2.1	
DEPTH=	1.8	1.0	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.19 CWSEL= 1468.23

STA=	9809.	9848.	9859.	9874.	9884.	9897.	9905.	9912.	9917.	9927.	9942.	9953.	9974.
PER Q=	3.8	3.2	3.7	3.2	5.0	3.3	3.9	3.4	5.1	4.6	3.5	6.1	
AREA=	43.1	25.5	30.8	25.1	35.7	22.4	23.9	19.7	32.7	35.8	26.8	47.4	
VEL=	2.1	2.9	2.8	2.9	3.3	3.4	3.8	4.0	3.6	3.0	3.0	2.9	
DEPTH=	1.1	2.3	2.2	2.3	2.7	3.0	3.4	3.8	3.2	2.4	2.4	2.3	

STA=	9974.	9985.	10030.	10043.
PER Q=	3.2	45.8	2.0	
AREA=	25.5	222.2	19.7	
VEL=	2.9	4.7	2.4	
DEPTH=	2.3	4.9	1.5	

FLOW DISTRIBUTION FOR SECNO= 1.21 CWSEL= 1468.56

STA=	9811.	9832.	9851.	9859.	9873.	9893.	9905.	9927.	9950.	9964.	9976.	9991.	10028.
PER Q=	3.1	8.5	3.2	3.7	5.5	3.4	7.1	5.7	3.0	3.1	4.8	42.3	
AREA=	28.7	54.2	21.1	28.6	42.1	26.4	50.8	46.1	25.5	24.6	34.3	186.7	
VEL=	2.5	3.6	3.5	3.0	3.0	3.0	3.2	2.9	2.7	2.9	3.2	5.2	
DEPTH=	1.4	2.8	2.7	2.1	2.1	2.1	2.3	2.0	1.8	2.0	2.4	5.0	

STA=	10028.	10036.	10048.
PER Q=	3.7	2.9	
AREA=	22.6	23.1	
VEL=	3.8	2.9	
DEPTH=	3.0	1.8	

FLOW DISTRIBUTION FOR SECNO= 1.23 CWSEL= 1469.02

STA=	9764.	9799.	9822.	9844.	9868.	9898.	9938.	9964.	9984.	10024.	10039.	10051.
PER Q=	3.9	4.2	4.5	4.5	5.2	5.7	5.5	10.2	51.4	4.2	.7	
AREA=	37.9	36.2	37.5	39.0	46.3	54.6	44.9	59.5	206.8	30.6	9.4	
VEL=	2.4	2.6	2.8	2.7	2.6	2.4	2.8	4.0	5.7	3.2	1.7	
DEPTH=	1.1	1.6	1.7	1.6	1.5	1.4	1.7	2.9	5.2	2.1	.7	

FLOW DISTRIBUTION FOR SECNO= 1.26 CWSEL= 1469.94

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

STA=	9697.	9749.	9768.	9792.	9823.	9895.	9933.	9943.	9952.	9960.	9967.	9986.	10023.
PER Q=	4.5	3.2	3.9	3.3	3.0	7.8	3.1	3.8	4.2	4.3	6.5	41.7	
AREA=	46.9	25.5	32.4	32.9	41.1	59.4	19.8	21.8	20.8	21.3	40.2	163.7	
VEL=	2.2	2.9	2.8	2.3	1.7	3.0	3.6	4.0	4.6	4.6	3.7	5.9	
DEPTH=	.9	1.4	1.4	1.1	.6	1.5	2.0	2.3	2.9	2.9	2.1	4.4	

STA=	10023.	10041.	10055.	10068.
PER Q=	5.1	4.4	1.2	
AREA=	34.1	28.6	12.0	
VEL=	3.5	3.6	2.4	
DEPTH=	1.9	2.0	.9	

FLOW DISTRIBUTION FOR SECNO= 1.29 CWSEL= 1471.04

STA=	9622.	9688.	9720.	9857.	9915.	9941.	9959.	9968.	9985.	10021.	10045.	10056.	10082.
PER Q=	4.8	4.4	5.2	5.4	7.7	9.9	3.7	4.5	42.5	6.5	3.3	2.3	
AREA=	52.8	39.8	65.9	56.3	50.9	51.7	21.1	31.5	162.9	44.8	21.8	23.3	
VEL=	2.1	2.6	1.8	2.2	3.5	4.4	4.0	3.3	6.0	3.3	3.5	2.3	
DEPTH=	.8	1.2	.5	1.0	1.9	2.8	2.4	1.8	4.6	1.8	1.9	.9	

FLOW DISTRIBUTION FOR SECNO= 1.32 CWSEL= 1472.08

STA=	9585.	9629.	9660.	9844.	9916.	9955.	9965.	9972.	9985.	10020.	10044.	10061.	10091.
PER Q=	3.4	3.5	3.7	4.7	10.8	5.3	3.4	7.2	46.2	4.4	3.6	3.5	
AREA=	39.7	36.5	50.8	60.4	80.1	30.8	19.6	39.8	186.7	37.7	30.1	36.3	
VEL=	2.0	2.2	1.7	1.8	3.1	4.0	4.0	4.2	5.7	2.7	2.8	2.2	
DEPTH=	.9	1.2	.3	.8	2.0	2.9	2.9	3.2	5.3	1.6	1.7	1.2	

STA=	10091.	10110.
PER Q=	.3	
AREA=	7.6	
VEL=	1.0	
DEPTH=	.4	

FLOW DISTRIBUTION FOR SECNO= 1.35 CWSEL= 1472.92

STA=	9532.	9588.	9634.	9924.	9939.	9943.	10011.	10043.	10062.
PER Q=	3.2	3.8	8.1	4.4	1.5	71.3	6.0	1.6	
AREA=	41.2	43.1	98.1	30.0	9.5	297.1	49.1	17.9	
VEL=	1.8	2.0	1.9	3.4	3.5	5.5	2.8	2.1	
DEPTH=	.7	.9	.3	2.1	2.2	4.4	1.5	1.0	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.38 CWSEL= 1473.91

STA=	9484.	9919.	9949.	9956.	9964.	9970.	10017.	10035.	10041.
PER Q=	3.9	7.8	3.8	3.9	2.1	72.9	5.3	.2	
AREA=	47.3	49.4	18.9	19.5	11.9	230.5	32.7	3.3	
VEL=	1.9	3.6	4.6	4.7	4.1	7.3	3.8	1.7	
DEPTH=	.1	1.7	2.4	2.4	2.0	4.9	1.8	.6	

FLOW DISTRIBUTION FOR SECNO= 1.41 CWSEL= 1475.10

STA=	9896.	9909.	9958.	9964.	9966.	9967.	9971.	10033.	10037.	10049.	10058.	10066.
PER Q=	.1	2.7	1.3	.6	.3	2.2	83.8	1.9	4.0	2.6	.5	
AREA=	2.6	39.4	11.4	4.3	1.9	13.2	339.9	12.2	27.7	19.9	6.9	
VEL=	.6	1.6	2.7	3.3	3.4	3.8	5.7	3.7	3.3	3.0	1.7	
DEPTH=	.2	.8	1.8	2.4	2.6	3.0	5.5	2.8	2.4	2.1	.9	

FLOW DISTRIBUTION FOR SECNO= 1.43 CWSEL= 1475.62

STA=	9703.	9878.	9885.	9890.	9902.	9910.	9914.	9920.	9934.	9950.	9978.	10015.	10034.
PER Q=	4.8	3.3	4.1	13.6	10.7	4.4	5.0	7.3	3.5	8.5	31.3	3.3	
AREA=	67.0	27.0	28.0	78.6	58.8	26.0	31.3	59.5	39.0	83.7	206.9	40.5	
VEL=	1.7	2.8	3.4	4.0	4.2	3.9	3.7	2.8	2.1	2.3	3.5	1.9	
DEPTH=	.4	4.0	5.3	6.6	7.1	6.6	5.9	4.0	2.5	2.9	5.6	2.1	

STA=	10034.	10040.
PER Q=	.1	
AREA=	3.2	
VEL=	.8	
DEPTH=	.6	

FLOW DISTRIBUTION FOR SECNO= 1.46 CWSEL= 1476.00

STA=	9632.	9690.	9720.	9734.	9743.	9931.	9964.	9972.	10016.	10030.	10040.	10046.
PER Q=	3.1	3.6	3.6	3.2	3.6	5.6	3.7	61.6	8.5	3.1	.4	
AREA=	38.7	34.7	25.7	20.1	39.8	45.1	20.6	224.4	43.3	20.0	4.9	
VEL=	1.8	2.4	3.3	3.6	2.1	2.8	4.2	6.3	4.5	3.5	1.8	
DEPTH=	.7	1.2	1.8	2.2	.2	1.4	2.7	5.0	3.0	2.1	.8	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.48 CWSEL= 1476.75

STA=	9583.	9721.	9980.	10017.	10032.	10062.	10088.
PER Q=	3.6	8.9	63.5	7.7	13.0	3.3	
AREA=	39.0	67.7	203.7	39.2	70.9	27.6	
VEL=	1.5	2.1	5.0	3.2	2.9	1.9	
DEPTH=	.3	.3	5.5	2.7	2.4	1.1	

FLOW DISTRIBUTION FOR SECNO= 1.52 CWSEL= 1477.53

STA=	9896.	9958.	9966.	9970.	9977.	10022.	10040.	10055.	10080.	10091.
PER Q=	9.1	4.8	3.4	4.9	63.5	6.3	3.5	4.2	.3	
AREA=	62.3	21.7	13.6	19.8	201.3	35.1	22.6	31.0	4.3	
VEL=	2.3	3.6	4.1	4.0	5.1	2.9	2.5	2.2	1.0	
DEPTH=	1.0	2.6	3.2	3.1	4.5	1.9	1.5	1.2	.4	

FLOW DISTRIBUTION FOR SECNO= 1.55 CWSEL= 1478.36

STA=	9846.	9898.	9920.	9932.	9939.	9945.	9954.	9974.	10019.	10052.	10100.
PER Q=	4.4	8.7	6.0	3.7	3.4	3.9	6.2	50.8	10.6	2.4	
AREA=	40.1	47.4	30.1	18.1	15.8	20.4	37.9	182.7	62.1	28.2	
VEL=	1.8	2.9	3.2	3.3	3.5	3.1	2.6	4.5	2.7	1.4	
DEPTH=	.8	2.2	2.4	2.5	2.8	2.3	1.8	4.1	1.9	.6	

FLOW DISTRIBUTION FOR SECNO= 1.57 CWSEL= 1478.97

STA=	9452.	9916.	9933.	9965.	9991.	10024.	10038.	10046.	10062.	10074.	10086.	10135.	10142.
PER Q=	3.9	6.1	12.4	7.5	35.8	5.3	5.8	11.2	6.0	3.0	3.0	.0	
AREA=	55.0	33.0	64.3	44.3	125.1	27.4	23.1	46.7	27.8	18.8	32.8	.3	
VEL=	1.1	3.0	3.1	2.7	4.6	3.1	4.0	3.9	3.5	2.6	1.5	.2	
DEPTH=	.1	1.9	2.0	1.7	3.8	2.0	3.0	2.8	2.4	1.5	.7	.0	

FLOW DISTRIBUTION FOR SECNO= 1.60 CWSEL= 1479.85

STA=	9846.	9936.	9961.	10011.	10051.	10055.
PER Q=	4.6	3.8	85.1	6.5	.1	
AREA=	40.7	22.5	200.6	38.3	1.1	
VEL=	1.8	2.7	6.8	2.7	1.2	
DEPTH=	.5	.9	4.0	1.0	.2	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.61 CWSEL= 1481.41

STA=	9700.	9837.	9895.	9926.	9946.	9946.	10041.	10057.	10080.	10131.
PER Q=	10.1	10.7	7.5	4.7	.0	58.1	3.2	3.3	2.4	
AREA=	150.2	120.8	74.6	48.0	.1	405.9	34.8	41.1	42.2	
VEL=	1.1	1.4	1.6	1.6	.3	2.3	1.5	1.3	.9	
DEPTH=	1.1	2.1	2.5	2.4	2.5	4.3	2.1	1.8	.8	

FLOW DISTRIBUTION FOR SECNO= 1.64 CWSEL= 1481.62

STA=	9818.	9849.	9907.	9933.	9949.	9970.	10020.	10052.	10084.	10100.	10117.
PER Q=	.9	10.9	10.2	7.3	7.2	47.5	6.9	5.5	2.5	1.0	
AREA=	17.4	99.7	69.4	46.7	51.9	228.4	59.8	51.8	24.3	14.8	
VEL=	.8	1.8	2.4	2.5	2.2	3.3	1.9	1.7	1.6	1.1	
DEPTH=	.6	1.7	2.7	2.9	2.5	4.6	1.9	1.6	1.5	.9	

FLOW DISTRIBUTION FOR SECNO= 1.70 CWSEL= 1482.50

STA=	9696.	9926.	9952.	9978.	10016.	10039.	10056.	10086.	10110.	10142.	10179.
PER Q=	6.1	11.6	6.4	45.8	5.6	5.4	6.1	6.2	5.4	1.4	
AREA=	44.2	55.8	38.9	150.5	34.4	29.7	40.4	37.1	37.9	17.5	
VEL=	2.2	3.3	2.6	4.9	2.6	2.9	2.4	2.7	2.3	1.3	
DEPTH=	.2	2.1	1.5	4.0	1.5	1.7	1.3	1.5	1.2	.5	

FLOW DISTRIBUTION FOR SECNO= 1.76 CWSEL= 1484.59

STA=	9941.	9980.	10017.	10052.	10091.	10159.	10200.	10365.
PER Q=	8.3	63.6	8.1	5.0	6.6	5.3	3.1	
AREA=	48.5	167.2	46.7	36.4	52.7	38.3	41.3	
VEL=	2.8	6.1	2.8	2.2	2.0	2.2	1.2	
DEPTH=	1.2	4.5	1.3	.9	.8	.9	.3	

FLOW DISTRIBUTION FOR SECNO= 1.86 CWSEL= 1487.43

STA=	9917.	9941.	9980.	10019.	10038.	10064.
PER Q=	.5	11.9	75.4	8.4	3.8	
AREA=	8.8	71.2	218.8	43.3	30.5	
VEL=	.9	2.7	5.5	3.1	2.0	
DEPTH=	.4	1.8	5.6	2.3	1.2	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.95 CWSEL= 1489.53

STA=	9903.	9909.	9938.	9965.	9981.	10011.	10026.	10032.
PER Q=	.1	10.6	21.1	10.2	53.8	4.2	.0	
AREA=	2.2	63.3	92.7	48.5	173.4	28.3	1.1	
VEL=	.8	2.7	3.7	3.4	5.0	2.4	.5	
DEPTH=	.4	2.2	3.4	3.0	5.8	1.9	.2	

FLOW DISTRIBUTION FOR SECNO= 2.05 CWSEL= 1491.87

STA=	9861.	9911.	9949.	9963.	9978.	9988.	10019.	10048.	10057.	10066.	10094.	10142.
PER Q=	7.7	15.4	7.7	4.6	1.3	40.5	5.3	6.5	5.0	4.1	1.8	
AREA=	54.1	75.1	33.3	25.2	9.8	127.1	35.6	25.4	21.8	30.1	19.6	
VEL=	2.3	3.3	3.7	3.0	2.1	5.1	2.4	4.1	3.7	2.2	1.5	
DEPTH=	1.1	2.0	2.4	1.7	1.0	4.1	1.2	2.8	2.4	1.1	.4	

FLOW DISTRIBUTION FOR SECNO= 2.12 CWSEL= 1494.43

STA=	9936.	9947.	9980.	10019.	10048.	10073.
PER Q=	1.3	18.1	71.8	6.3	2.5	
AREA=	8.8	65.3	161.3	32.7	17.6	
VEL=	2.0	3.6	5.8	2.5	1.8	
DEPTH=	.8	2.0	4.1	1.1	.7	

FLOW DISTRIBUTION FOR SECNO= 2.20 CWSEL= 1496.00

STA=	9689.	9701.	9741.	9781.	9811.	9824.	9837.	9863.	9891.	9903.	9930.	9955.	10036.
PER Q=	.0	3.5	9.0	10.8	3.7	3.1	10.0	12.2	2.2	.8	.4	44.3	
AREA=	1.8	42.1	74.1	73.6	28.0	24.7	66.4	77.1	19.8	14.9	8.9	243.7	
VEL=	.3	1.1	1.6	1.9	1.7	1.6	2.0	2.1	1.5	.7	.5	2.4	
DEPTH=	.2	1.1	1.9	2.5	2.2	1.9	2.6	2.8	1.7	.6	.4	3.5	

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T1      EXISTING CONDITIONS FLOODPLAIN ANALYSIS   -  RBF CONSULTING
T2      FLD'WAY ENCROACH CALC. (METHOD 1)
T3      BUCHANAN WASH - SKUNK CREAK TO CANAL  NOVEMBER 2001

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0         3         0         0         0         0         0         0   1461.42         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      15         0        -1         0         0         0        -1         0         0         0
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THIS RUN EXECUTED 19NOV01 15:45:32

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

BUCHANAN WASH - SKUNK CR

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	S
	.710	1460.42	.00	1460.42	1064.97	925.88	210.74	1167.38	.00	.00	9985.00	10025.00	
	.710	1461.42	1.00	1461.43	658.00	901.37	255.15	1147.48	658.00	9693.00	9985.00	10025.00	103
*	.782	1460.44	.00	1460.45	902.21	565.22	271.71	1467.08	.00	.00	9966.00	10032.00	
*	.782	1461.44	1.00	1461.45	538.69	315.87	372.07	1616.06	557.00	9889.00	9966.00	10032.00	104
*	.890	1460.51	.00	1460.71	758.28	792.59	894.24	617.17	.00	.00	9971.00	10014.00	
*	.890	1461.41	.89	1461.77	178.00	1034.60	1269.40	.00	178.00	9836.00	9971.00	10014.00	100
	.985	1463.22	.00	1463.43	583.56	1264.54	776.71	262.75	.00	.00	9978.00	10019.00	
	.985	1464.21	.99	1464.54	124.00	1289.24	1014.76	.00	124.00	9895.00	9978.00	10019.00	100
	1.045	1464.55	.00	1464.76	293.90	673.82	1426.42	203.76	.00	.00	9959.01	10039.88	
	1.045	1465.47	.92	1465.77	116.06	413.77	1890.23	.00	116.06	9923.82	9959.01	10039.88	100
	1.067	1464.91	.00	1465.21	273.00	586.80	1306.64	410.55	.00	.00	9979.32	10035.99	
	1.067	1465.77	.86	1466.20	108.37	437.65	1705.69	160.66	108.37	9942.43	9979.32	10035.99	100
	1.090	1465.47	.00	1465.74	249.35	396.78	1539.89	367.33	.00	.00	9959.20	10026.83	
	1.090	1466.35	.88	1466.74	98.08	233.59	1992.87	77.54	98.08	9939.58	9959.20	10026.83	100
	1.102	1465.74	.00	1466.02	326.33	571.84	1344.63	387.53	.00	.00	9986.70	10043.47	
	1.102	1466.60	.86	1467.00	103.06	410.05	1728.29	165.66	103.06	9959.10	9986.70	10043.47	100
	1.120	1466.16	.00	1466.53	288.13	543.55	1515.63	244.82	.00	.00	9968.95	10026.10	
	1.120	1466.95	.79	1467.56	75.72	271.99	2032.01	.00	75.72	9950.38	9968.95	10026.10	100
	1.139	1466.76	.00	1467.14	239.91	937.96	1103.40	262.64	.00	.00	9981.49	10017.72	
	1.139	1467.65	.89	1468.23	86.75	881.13	1422.87	.00	86.75	9930.97	9981.49	10017.72	100
	1.164	1467.58	.00	1467.88	250.46	1084.52	1110.90	108.58	.00	.00	9982.34	10023.28	
	1.164	1468.58	1.00	1468.96	108.33	931.82	1372.18	.00	108.33	9914.95	9982.34	10023.28	100

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	S
	1.190	1468.23	.00	1468.47	234.04	1202.83	1054.31	46.86	.00	.00	9984.76	10029.88	
	1.190	1469.20	.96	1469.53	115.21	939.83	1364.16	.00	115.21	9914.67	9984.76	10029.88	100
	1.207	1468.56	.00	1468.83	237.06	1177.85	974.61	151.54	.00	.00	9990.52	10027.97	
	1.207	1469.54	.97	1469.90	127.19	1075.74	1228.26	.00	127.19	9900.78	9990.52	10027.97	100
	1.227	1469.02	.00	1469.35	287.00	1005.66	1185.12	113.22	.00	.00	9984.14	10023.91	
	1.227	1469.96	.93	1470.44	104.94	788.59	1515.41	.00	104.94	9918.97	9984.14	10023.91	100
	1.256	1469.94	.00	1470.25	371.74	1093.67	961.76	248.57	.00	.00	9985.52	10022.96	
	1.256	1470.86	.92	1471.40	101.97	1015.18	1288.82	.00	101.97	9920.99	9985.52	10022.96	100
	1.288	1471.04	.00	1471.35	425.68	1047.11	978.52	278.38	.00	.00	9985.44	10020.55	
	1.288	1471.99	.96	1472.47	111.70	1072.39	1231.61	.00	111.70	9908.85	9985.44	10020.55	100
	1.321	1472.08	.00	1472.37	416.41	966.92	1063.43	273.65	.00	.00	9984.58	10020.11	
	1.321	1473.00	.92	1473.44	104.15	996.18	1307.82	.00	104.15	9915.96	9984.58	10020.11	100
	1.351	1472.92	.00	1473.28	374.18	484.81	1643.87	175.32	.00	.00	9942.88	10011.03	
	1.351	1473.79	.87	1474.35	79.66	131.71	2172.29	.00	79.66	9931.37	9942.88	10011.03	100
	1.383	1473.91	.00	1474.56	260.03	495.61	1679.95	128.44	.00	.00	9970.16	10016.84	
	1.383	1474.74	.83	1475.61	61.39	236.62	2067.38	.00	61.39	9955.45	9970.16	10016.84	100
	1.411	1475.10	.00	1475.54	170.22	165.41	1929.84	208.75	.00	.00	9971.18	10033.03	
*	1.411	1476.02	.92	1476.54	63.18	9.80	2294.20	.00	63.18	9969.85	9971.18	10033.03	100
*	1.426	1475.62	.00	1475.77	232.44	1505.68	720.83	77.49	.00	.00	9978.18	10014.82	
*	1.426	1476.59	.97	1476.76	124.25	1463.87	840.12	.00	124.25	9890.57	9978.18	10014.82	100
*	1.462	1476.00	.00	1476.45	281.97	608.16	1420.40	275.44	.00	.00	9971.59	10016.09	
*	1.462	1476.84	.83	1477.45	113.76	522.39	1781.61	.00	113.76	9902.33	9971.59	10016.09	100
	1.483	1476.75	.00	1477.04	250.43	201.65	1021.65	385.71	.00	.00	9980.37	10017.29	
	1.483	1477.66	.90	1478.04	68.37	171.88	1271.96	165.17	68.37	9963.45	9980.37	10017.29	100
	1.518	1477.53	.00	1477.83	195.31	357.51	1021.36	230.12	.00	.00	9976.69	10021.74	
	1.518	1478.36	.83	1478.82	62.61	224.35	1351.59	33.06	62.61	9963.13	9976.69	10021.74	100
	1.549	1478.36	.00	1478.57	253.65	582.91	816.66	209.43	.00	.00	9974.29	10019.10	
	1.549	1479.25	.90	1479.56	92.21	531.10	1077.90	.00	92.21	9926.89	9974.29	10019.10	100
	1.572	1478.97	.00	1479.17	369.27	479.86	576.63	552.51	.00	.00	9991.46	10024.23	
*	1.572	1479.83	.85	1479.92	250.72	527.14	473.49	608.37	250.72	9891.20	9991.46	10024.23	101
	1.595	1479.85	.00	1480.48	209.11	134.00	1368.83	106.17	.00	.00	9960.78	10010.67	
*	1.595	1480.00	.14	1480.93	49.92	.00	1609.00	.00	49.92	9960.78	9960.78	10010.67	100
*	1.610	1481.41	.00	1481.47	430.89	530.52	934.99	143.49	.00	.00	9945.94	10041.01	
*	1.610	1481.45	.03	1481.51	403.64	534.75	929.26	144.98	403.64	9714.18	9945.94	10041.01	101

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	S
	1.638	1481.62	.00	1481.73	299.37	589.01	764.41	255.58	.00	.00	9970.00	10020.00	
	1.638	1481.64	.03	1481.76	270.47	588.37	762.59	258.04	270.47	9839.09	9970.00	10020.00	101
*	1.695	1482.50	.00	1482.72	324.69	386.81	737.22	484.97	.00	.00	9978.00	10016.00	
*	1.695	1482.51	.01	1483.13	122.00	165.07	1088.70	355.23	122.00	9950.00	9978.00	10016.00	100
	1.761	1484.59	.00	1484.98	410.42	134.10	1023.21	451.69	.00	.00	9980.00	10017.00	
*	1.761	1485.20	.62	1485.48	200.49	10.40	970.71	627.89	200.49	9977.35	9980.00	10017.00	101
	1.856	1487.43	.00	1487.81	147.40	200.04	1213.20	195.76	.00	.00	9980.00	10019.00	
	1.856	1487.54	.11	1488.22	50.00	59.14	1514.82	35.03	50.00	9974.00	9980.00	10019.00	100
	1.951	1489.53	.00	1489.81	129.37	674.88	865.29	68.83	.00	.00	9981.00	10011.00	
	1.951	1490.36	.83	1490.72	66.00	575.45	1033.55	.00	66.00	9945.00	9981.00	10011.00	100
	2.045	1491.87	.00	1492.11	281.38	591.14	651.41	366.46	.00	.00	9988.00	10019.00	
	2.045	1492.72	.85	1493.09	111.00	518.53	876.72	213.75	111.00	9939.00	9988.00	10019.00	100
	2.121	1494.43	.00	1494.85	136.47	254.86	938.97	114.16	.00	.00	9980.00	10019.00	
	2.121	1495.23	.80	1495.89	43.00	42.63	1265.36	.00	43.00	9976.00	9980.00	10019.00	100
*	2.200	1496.00	.00	1496.06	336.41	728.24	579.76	.00	.00	.00	9959.00	10036.00	
*	2.200	1496.95	.95	1497.03	187.32	520.02	787.98	.00	191.00	9845.00	9959.00	10036.00	100

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=       .782  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .782  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=       .890  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=       .890  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.411  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.426  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      1.426  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.462  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      1.462  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.572  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.595  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.610  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      1.610  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.695  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      1.695  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.761  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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Floodway width summary: BUCHANAN WASH - SKUNK CR
Profile No. 2

Section Number	Elevation Increase	Top Width	Left Encroach Station	Left Sta Distance From Center	Center Station	Right Sta Distance From Center	Right Encroach Station
.710	1.00	658.00	9693.00	312.00	10005.00	346.00	10351.00
.782	1.00	557.00	9889.00	110.00	9999.00	447.00	10446.00
.890	.89	178.00	9836.00	156.50	9992.50	21.50	10014.00
.985	.99	124.00	9895.00	103.50	9998.50	20.50	10019.00
1.045	.92	116.06	9923.82	75.62	9999.45	40.43	10039.88
1.067	.86	108.37	9942.43	65.23	10007.66	43.14	10050.80
1.090	.88	98.08	9939.58	53.44	9993.02	44.64	10037.66
1.102	.86	103.06	9959.10	55.99	10015.08	47.08	10062.16
1.120	.79	75.72	9950.38	47.15	9997.53	28.57	10026.10
1.139	.89	86.75	9930.97	68.64	9999.61	18.11	10017.72
1.164	1.00	108.33	9914.95	87.86	10002.81	20.47	10023.28
1.190	.96	115.21	9914.67	92.65	10007.32	22.56	10029.88
1.207	.97	127.19	9900.78	108.46	10009.24	18.73	10027.97
1.227	.93	104.94	9918.97	85.06	10004.03	19.88	10023.91
1.256	.92	101.97	9920.99	83.25	10004.24	18.72	10022.96
1.288	.96	111.70	9908.85	94.15	10003.00	17.55	10020.55
1.321	.92	104.15	9915.96	86.39	10002.35	17.76	10020.11
1.351	.87	79.66	9931.37	45.58	9976.96	34.08	10011.03
1.383	.83	61.39	9955.45	38.05	9993.50	23.34	10016.84
1.411	.92	63.18	9969.85	32.26	10002.11	30.92	10033.03
1.426	.97	124.25	9890.57	105.93	9996.50	18.32	10014.82
1.462	.83	113.76	9902.33	91.51	9993.84	22.25	10016.09
1.483	.90	68.37	9963.45	35.38	9998.83	32.99	10031.82
1.518	.83	62.61	9963.13	36.09	9999.21	26.53	10025.74
1.549	.90	92.21	9926.89	69.81	9996.70	22.40	10019.10
1.572	.85	250.72	9891.20	116.65	10007.85	134.07	10141.92
1.595	.14	49.92	9960.78	24.94	9985.72	24.98	10010.70
1.610	.03	403.64	9714.18	279.30	9993.47	124.35	10117.82
1.638	.03	270.47	9839.09	155.91	9995.00	114.56	10109.56
1.695	.01	122.00	9950.00	47.00	9997.00	75.00	10072.00
1.761	.62	200.49	9977.35	21.15	9998.50	179.34	10177.84
1.856	.11	50.00	9974.00	25.50	9999.50	24.50	10024.00
1.951	.83	66.00	9945.00	51.00	9996.00	15.00	10011.00
2.045	.85	111.00	9939.00	64.50	10003.50	46.50	10050.00
2.121	.80	43.00	9976.00	23.50	9999.50	19.50	10019.00
2.200	.95	191.00	9845.00	152.50	9997.50	38.50	10036.00

FLOODWAY DATA, BUCHANAN WASH - SKUNK CR
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.710	658.	4041.	.6	1461.4	1460.4	1.0
.782	557.	2637.	.9	1461.4	1460.4	1.0
.890	178.	518.	4.4	1461.4	1460.5	.9
.985	124.	507.	4.5	1464.2	1463.2	1.0
1.045	116.	541.	4.3	1465.5	1464.6	.9
1.067	108.	458.	5.0	1465.8	1464.9	.9
1.090	98.	476.	4.8	1466.4	1465.5	.9
1.102	103.	469.	4.9	1466.6	1465.7	.9
1.120	76.	376.	6.1	1467.0	1466.2	.8
1.139	87.	387.	5.9	1467.7	1466.8	.9
1.164	108.	480.	4.8	1468.6	1467.6	1.0
1.190	115.	511.	4.5	1469.2	1468.2	1.0
1.207	127.	501.	4.6	1469.6	1468.6	1.0
1.227	105.	436.	5.3	1469.9	1469.0	.9
1.256	102.	406.	5.7	1470.8	1469.9	.9
1.288	112.	432.	5.3	1472.0	1471.0	1.0
1.321	104.	452.	5.1	1473.0	1472.1	.9
1.351	80.	391.	5.9	1473.8	1472.9	.9
1.383	61.	315.	7.3	1474.7	1473.9	.8
1.411	63.	402.	5.7	1476.0	1475.1	.9
1.426	124.	701.	3.3	1476.6	1475.6	1.0
1.462	114.	399.	5.8	1476.8	1476.0	.8
1.483	68.	343.	4.7	1477.7	1476.8	.9
1.518	63.	304.	5.3	1478.3	1477.5	.8
1.549	92.	370.	4.4	1479.3	1478.4	.9
1.572	251.	681.	2.4	1479.9	1479.0	.9
1.595	50.	208.	7.7	1480.0	1479.9	.1
1.610	404.	925.	1.7	1481.4	1481.4	.0
1.638	270.	659.	2.4	1481.6	1481.6	.0
1.695	122.	284.	5.7	1482.5	1482.5	.0
1.761	200.	454.	3.5	1485.2	1484.6	.6
1.856	50.	252.	6.4	1487.5	1487.4	.1
1.951	66.	344.	4.7	1490.3	1489.5	.8
2.045	111.	351.	4.6	1492.7	1491.9	.8
2.121	43.	205.	6.4	1495.2	1494.4	.8
2.200	187.	587.	2.2	1497.0	1496.0	1.0

CHECK-2 Program: Floodway Module
Encroachment Method, Starting WSEL, Floodway Width, and Surcharge Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\EXISTING\EXISTFW.FL2
Allowable Surcharge Value: 1
Date: 11/19/2001
Time: 3:45:58 PM

SECNO	Method	Surcharge	NTOPWID	FTOPWID	FWIDTH	CHWID	Structure
0.71	4.10	1.00	1064.97	658.00	658.00	40.00	
0.782	4.10	1.00	902.21	538.69	557.00	66.00	
0.89	4.10	0.89	758.28	178.00	178.00	43.00	
0.985	4.10	0.99	583.56	124.00	124.00	41.00	
1.045	4.10	0.92	293.90	116.06	116.06	80.87	
1.067	4.10	0.86	273.00	108.37	108.37	56.67	
1.09	4.10	0.88	249.35	98.08	98.08	67.63	
1.102	4.10	0.86	326.33	103.06	103.06	56.77	
1.12	4.10	0.79	288.13	75.72	75.72	57.15	
1.139	4.10	0.89	239.91	86.75	86.75	36.23	
1.164	4.10	1.00	250.46	108.33	108.33	40.94	
1.19	4.10	0.96	234.04	115.21	115.21	45.12	
1.207	4.10	0.97	237.06	127.19	127.19	37.45	
1.227	4.10	0.93	287.00	104.94	104.94	39.77	
1.256	4.10	0.92	371.74	101.97	101.97	37.44	
1.288	4.10	0.96	425.68	111.70	111.70	35.11	
1.321	4.10	0.92	416.41	104.15	104.15	35.53	
1.351	4.10	0.87	374.18	79.66	79.66	68.15	
1.383	4.10	0.83	260.03	61.39	61.39	46.68	
1.411	4.10	0.92	170.22	63.18	63.18	61.85	
1.426	4.10	0.97	232.44	124.25	124.25	36.64	
1.462	4.10	0.83	281.97	113.76	113.76	44.50	
1.483	4.10	0.90	250.43	68.37	68.37	36.92	
1.518	4.10	0.83	195.31	62.61	62.61	45.05	
1.549	4.10	0.90	253.65	92.21	92.21	44.81	
1.572	4.10	0.85	369.27	250.72	250.72	32.77	
1.595	4.10	0.14	209.11	49.92	49.92	49.89	
1.61	4.11	0.03	430.89	403.64	403.64	95.07	SC+X2+BT
1.638	4.10	0.03	299.37	270.47	270.47	50.00	
1.695	4.10	0.01	324.69	122.00	122.00	38.00	
1.761	4.10	0.62	410.42	200.49	200.49	37.00	
1.856	4.10	0.11	147.40	50.00	50.00	39.00	
1.951	4.10	0.83	129.37	66.00	66.00	30.00	
2.045	4.10	0.85	281.38	111.00	111.00	31.00	
2.121	4.10	0.80	136.47	43.00	43.00	39.00	
2.2	4.10	0.95	336.41	187.32	191.00	77.00	

----Encroachment Method----

----Starting Water Surface Elevation----

----X5 Record(s)----

----Floodway Width----

--- Surcharge Value ---

----Floodway Discharge----

---End Program---

HEC-2 Output for Proposed Conditions Model
Check-2 Output for Proposed Conditions Model

Only pages 1-8 (Input data), and 49-59 (summary tables) have been printed. The complete input and output files are provided on the accompanying computer disk.

THIS RUN EXECUTED 09OCT01 10:51:13

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

NON WASH - SKUNK CREEK T

SUMMARY PRINTOUT TABLE 101

	SECNO	EGOC	ELLC	EGIC	ELTRD	QCULV	QWEIR	CLASS	H4	DEPTH	CWSEL	VCH	EG
	1.067	1464.42	1464.34	1464.01	1466.09	1422.00	.00	7.00	.40	4.86	1464.20	3.72	1464.42
	1.067	1465.58	1464.34	1465.27	1466.09	2005.00	.00	7.00	1.05	5.96	1465.30	4.28	1465.58
	1.067	1466.15	1464.34	1465.87	1466.09	2304.00	.00	7.00	1.39	6.49	1465.83	4.52	1466.15
*	1.067	1468.59	1464.34	1468.20	1466.09	2385.01	673.66	17.00	1.41	8.24	1467.58	1.83	1467.61
*	1.610	1482.99	1478.48	1483.66	1479.85	847.65	332.82	16.00	.77	5.63	1480.83	2.57	1480.90
*	1.610	1485.23	1478.48	1486.89	1479.85	885.13	585.01	16.00	.78	5.89	1481.09	2.79	1481.17
*	1.610	1486.47	1478.48	1488.71	1479.85	898.57	695.72	16.00	.74	5.98	1481.18	2.91	1481.27
*	1.610	1489.93	1478.48	1493.91	1479.85	931.88	1012.85	16.00	.68	6.23	1481.43	3.13	1481.52

WASH - SKUNK CREEK T

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.710	.00	.00	.00	1449.50	1422.00	1456.50	1455.80	1456.56	18.14	2.80	913.33	333.84
	.710	.00	.00	.00	1449.50	2005.00	1458.93	1456.00	1458.94	1.04	.90	3207.32	1970.19
	.710	.00	.00	.00	1449.50	2304.00	1460.42	1456.08	1460.42	.40	.64	4758.57	3640.20
	.710	.00	.00	.00	1449.50	3067.00	1465.95	1456.26	1465.95	.04	.30	12464.31	14605.90
*	.782	380.00	.00	.00	1454.50	1422.00	1457.49	1457.06	1457.57	45.12	3.11	704.96	211.70
*	.782	380.00	.00	.00	1454.50	2005.00	1458.99	1457.19	1459.01	4.65	1.34	1911.93	930.05
*	.782	380.00	.00	.00	1454.50	2304.00	1460.44	1457.27	1460.45	1.25	.85	3174.93	2060.39
*	.782	380.00	.00	.00	1454.50	3067.00	1465.95	1457.42	1465.95	.10	.39	8804.02	9924.60
	.890	570.00	.00	.00	1454.00	1422.00	1459.99	1459.33	1460.21	53.08	4.70	475.04	195.19
*	.890	570.00	.00	.00	1454.00	2005.00	1459.85	1459.85	1460.42	135.60	7.38	410.30	172.18
*	.890	570.00	.00	.00	1454.00	2304.00	1460.51	1460.07	1460.71	48.75	4.85	823.66	330.00
*	.890	570.00	.00	.00	1454.00	3067.00	1465.96	1460.30	1465.96	.32	.68	5854.62	5397.23
	.985	502.00	.00	.00	1458.10	1422.00	1462.65	1461.63	1462.83	45.46	4.06	441.48	210.91
*	.985	502.00	.00	.00	1458.10	2005.00	1463.36	1462.03	1463.49	30.77	3.79	773.98	361.45
	.985	502.00	.00	.00	1458.10	2304.00	1463.22	1462.20	1463.43	51.32	4.78	683.02	321.63
*	.985	502.00	.00	.00	1458.10	3067.00	1465.99	1462.67	1466.01	2.75	1.57	2781.52	1848.92
	1.045	317.00	.00	.00	1458.76	1422.00	1463.87	1462.62	1464.02	30.71	3.46	501.91	256.59
	1.045	317.00	.00	.00	1458.76	2005.00	1464.35	1462.96	1464.53	33.23	3.92	627.18	347.80
	1.045	317.00	.00	.00	1458.76	2304.00	1464.55	1463.20	1464.76	35.02	4.15	682.14	389.33
*	1.045	317.00	.00	.00	1458.76	3067.00	1466.11	1463.57	1466.20	11.61	2.95	1449.31	900.17
	1.067	98.00	1466.09	1464.34	1459.34	1422.00	1464.20	.00	1464.42	25.80	3.72	381.82	279.97
	1.067	98.00	1466.09	1464.34	1459.34	2005.00	1465.30	.00	1465.58	26.02	4.28	468.03	393.07
	1.067	98.00	1466.09	1464.34	1459.34	2304.00	1465.83	.00	1466.15	25.76	4.52	510.26	453.94
*	1.067	98.00	1466.09	1464.34	1459.34	3067.00	1467.58	.00	1467.61	3.09	1.83	2101.53	1743.85
*	1.090	136.00	.00	.00	1459.05	1422.00	1464.55	1463.40	1464.62	8.34	1.74	730.89	492.30
*	1.090	136.00	.00	.00	1459.05	2005.00	1465.68	1463.59	1465.73	3.26	1.32	1217.36	1109.92
*	1.090	136.00	.00	.00	1459.05	2304.00	1466.25	1463.69	1466.29	2.35	1.21	1471.90	1502.78
*	1.090	136.00	.00	.00	1459.05	3067.00	1467.59	1463.82	1467.63	1.33	1.07	2105.26	2654.50
	1.102	65.00	.00	.00	1459.50	1422.00	1464.59	1463.56	1464.70	12.68	2.22	567.13	399.28
	1.102	65.00	.00	.00	1459.50	2005.00	1465.69	1463.80	1465.77	5.09	1.68	988.48	888.31
	1.102	65.00	.00	.00	1459.50	2304.00	1466.25	1463.82	1466.32	3.60	1.53	1225.20	1214.92
	1.102	65.00	.00	.00	1459.50	3067.00	1467.59	1464.13	1467.65	1.96	1.31	1809.93	2190.01
	1.120	96.00	.00	.00	1460.00	1422.00	1464.70	1463.65	1464.83	14.05	2.20	525.91	379.33
	1.120	96.00	.00	.00	1460.00	2005.00	1465.72	1463.91	1465.83	6.30	1.77	841.59	798.95
	1.120	96.00	.00	.00	1460.00	2304.00	1466.27	1464.01	1466.37	4.55	1.63	1017.82	1080.12
	1.120	96.00	.00	.00	1460.00	3067.00	1467.59	1464.30	1467.68	2.55	1.43	1482.68	1920.65

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.139	100.00	.00	.00	1460.40	1422.00	1464.82	1464.01	1465.04	23.36	2.68	386.40	294.24
	1.139	100.00	.00	.00	1460.40	2005.00	1465.75	1464.45	1465.94	11.61	2.24	616.31	588.51
	1.139	100.00	.00	.00	1460.40	2304.00	1466.28	1464.58	1466.45	8.24	2.05	759.00	802.54
	1.139	100.00	.00	.00	1460.40	3067.00	1467.59	1464.85	1467.73	4.39	1.78	1132.11	1463.60
	1.164	129.00	.00	.00	1460.60	1422.00	1465.08	1464.32	1465.50	37.72	3.27	293.99	231.52
*	1.164	129.00	.00	.00	1460.60	2005.00	1465.80	1464.83	1466.26	28.23	3.10	406.10	377.37
*	1.164	129.00	.00	.00	1460.60	2304.00	1466.28	1465.05	1466.69	20.98	2.93	497.21	503.06
*	1.164	129.00	.00	.00	1460.60	3067.00	1467.55	1465.69	1467.88	11.09	2.58	749.34	921.18
	1.190	138.00	.00	.00	1462.20	1422.00	1465.52	1464.99	1466.10	41.93	3.06	267.19	219.60
	1.190	138.00	.00	.00	1462.20	2005.00	1466.10	1465.48	1466.78	39.56	3.34	345.59	318.78
	1.190	138.00	.00	.00	1462.20	2304.00	1466.48	1466.00	1467.12	33.13	3.33	407.33	400.27
	1.190	138.00	.00	.00	1462.20	3067.00	1467.61	1466.40	1468.13	19.15	3.09	597.54	700.84
*	1.207	91.00	.00	.00	1462.80	1422.00	1467.30	1467.30	1467.96	133.54	7.41	258.86	123.05
*	1.207	91.00	.00	.00	1462.80	2005.00	1467.60	1467.60	1468.51	170.38	8.82	309.24	153.61
*	1.207	91.00	.00	.00	1462.80	2304.00	1467.79	1467.79	1468.75	176.11	9.24	339.67	173.62
*	1.207	91.00	.00	.00	1462.80	3067.00	1468.23	1468.23	1469.32	181.27	10.01	415.25	227.80
*	1.227	100.00	.00	.00	1462.90	1422.00	1468.46	1467.31	1468.83	55.38	5.51	344.76	191.08
*	1.227	100.00	.00	.00	1462.90	2005.00	1469.07	1468.24	1469.47	55.01	5.96	457.34	270.33
*	1.227	100.00	.00	.00	1462.90	2304.00	1469.32	1468.46	1469.74	56.03	6.21	504.94	307.80
*	1.227	100.00	.00	.00	1462.90	3067.00	1469.87	1468.91	1470.36	58.77	6.77	612.71	400.06
	1.256	159.00	.00	.00	1464.43	1422.00	1469.47	1468.93	1469.79	69.66	5.48	351.68	170.37
	1.256	159.00	.00	.00	1464.43	2005.00	1470.04	1469.31	1470.39	63.89	5.75	471.18	250.85
	1.256	159.00	.00	.00	1464.43	2304.00	1470.30	1469.54	1470.66	62.10	5.88	526.12	292.37
	1.256	159.00	.00	.00	1464.43	3067.00	1470.88	1469.93	1471.27	59.32	6.20	653.56	398.21
	1.288	166.00	.00	.00	1465.00	1422.00	1470.57	1469.95	1470.89	66.18	5.54	362.66	174.80
	1.288	166.00	.00	.00	1465.00	2005.00	1471.08	1470.52	1471.43	64.90	5.93	478.65	248.87
	1.288	166.00	.00	.00	1465.00	2304.00	1471.31	1470.66	1471.68	64.07	6.08	533.19	287.84
	1.288	166.00	.00	.00	1465.00	3067.00	1471.85	1471.03	1472.25	62.35	6.42	660.58	388.41
	1.321	178.00	.00	.00	1465.60	1422.00	1471.58	1470.59	1471.87	46.97	5.10	389.73	207.49
	1.321	178.00	.00	.00	1465.60	2005.00	1472.10	1471.33	1472.43	50.03	5.64	502.71	283.47
	1.321	178.00	.00	.00	1465.60	2304.00	1472.33	1471.52	1472.68	51.05	5.86	556.11	322.46
	1.321	178.00	.00	.00	1465.60	3067.00	1472.86	1471.94	1473.25	52.25	6.30	685.56	424.28
	1.351	163.00	.00	.00	1466.70	1422.00	1472.36	1470.97	1472.67	52.39	4.73	356.07	196.47
	1.351	163.00	.00	.00	1466.70	2005.00	1472.91	1471.81	1473.28	55.51	5.33	461.25	269.12
	1.351	163.00	.00	.00	1466.70	2304.00	1473.16	1472.04	1473.55	56.59	5.58	509.68	306.29
	1.351	163.00	.00	.00	1466.70	3067.00	1473.70	1472.68	1474.16	58.88	6.12	620.47	399.68
	1.383	163.00	.00	.00	1467.00	1422.00	1473.24	1472.27	1473.69	68.76	5.82	299.20	171.49
	1.383	163.00	.00	.00	1467.00	2005.00	1473.83	1473.08	1474.36	71.92	6.49	390.39	236.42
	1.383	163.00	.00	.00	1467.00	2304.00	1474.09	1473.39	1474.65	73.15	6.77	434.58	269.38
	1.383	163.00	.00	.00	1467.00	3067.00	1474.66	1473.88	1475.30	75.42	7.37	536.75	353.15

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*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    09OCT01    TIME   10:51:13 *
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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THIS RUN EXECUTED 09OCT01 10:51:13

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************
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T1REVISED FLOODPLAIN ANALYSIS-BASED ON MARICOPA COUNTY FLOOD CONTROL DISTRICT
T2100 YEAR FLOOD EVENT - BASED ON 6-HR RAINFALL
T3BUCHANNON WASH - SKUNK CREEK TO C.A.P.- REVISED BY RBF CONSULTING APRIL 2001

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0						1456.50	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1	0	0	0	-1	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

150 101

QT	4	1422.	2005.	2304.	3067.					
NC	0.055	0.055	0.055	0.10	0.30					
X1	0.710	57	9985.	10025.	0	0	0			
GR	1464.3	8805.	1465.2	8829.	1465.9	8860.	1465.6	8890.	1465.5	8945.
GR	1464.6	9006.	1464.2	9072.	1463.0	9130.	1462.3	9188.	1461.1	9257.
GR	1461.0	9317.	1461.3	9374.	1460.8	9426.	1459.1	9474.	1457.4	9519.
GR	1456.7	9574.	1457.1	9621.	1457.3	9668.	1456.3	9683.	1455.6	9700.
GR	1455.5	9710.	1455.2	9716.	1456.2	9730.	1456.6	9748.	1455.6	9758.
GR	1457.0	9776.	1456.9	9798.	1455.5	9823.	1456.0	9852.	1455.4	9887.
GR	1455.5	9917.	1455.1	9932.	1454.3	9952.	1455.2	9975.	1456.3	9985.
GR	1454.9	9990.	1449.5	10000.	1449.9	10016.	1455.0	10018.	1456.0	10025.
GR	1456.1	10035.	1455.4	10061.	1454.9	10105.	1455.2	10165.	1455.2	10224.
GR	1455.0	10267.	1455.4	10316.	1455.4	10363.	1455.9	10405.	1455.9	10458.
GR	1456.3	10486.	1460.5	10502.	1464.4	10525.	1468.3	10549.	1469.9	10572.
GR	1474.2	10608.	1476.6	10648.						
X1	0.782	48	9966.	10032.	380	360	380			
GR	1465.2	9401.	1466.0	9455.	1464.8	9494.	1464.3	9529.	1464.3	9559.
GR	1464.1	9606.	1462.8	9651.	1460.6	9689.	1458.8	9738.	1457.4	9784.
GR	1456.2	9827.	1456.9	9865.	1456.9	9891.	1456.4	9909.	1456.4	9934.
GR	1457.1	9966.	1454.6	9985.	1454.5	10000.	1454.8	10016.	1459.8	10032.
GR	1456.2	10044.	1454.8	10058.	1456.4	10082.	1456.3	10116.	1456.2	10153.
GR	1457.0	10175.	1463.5	10188.	1463.2	10199.	1458.2	10208.	1457.2	10219.
GR	1456.5	10262.	1456.9	10308.	1456.6	10356.	1456.5	10404.	1456.8	10457.
GR	1457.4	10510.	1456.8	10564.	1458.1	10609.	1464.2	10632.	1469.6	10656.
GR	1470.8	10676.	1469.3	10687.	1469.9	10699.	1470.7	10715.	1471.3	10737.
GR	1475.6	10754.	1478.2	10775.	1479.3	10792.				

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X1     0.89        34      9971     10014       740       400       570
GR   1461.4      9304    1460.8      9366    1460.3      9431    1459.9      9498    1460.1      9549
GR   1460.2      9605    1459.6      9673    1459.7      9743    1459.7      9813    1459.7      9875
GR     1459      9900    1457.9      9910    1457.3      9915    1458.9      9919    1459.1      9931
GR   1458.5      9941      1459      9950    1460.3      9971      1454      9987    1454.8     10000
GR   1458.9     10014    1458.3     10030    1458.1     10049    1458.3     10066    1458.5     10094
GR   1459.6     10109    1459.6     10110    1459.7     10113    1460.8     10147      1461     10176
GR   1460.4     10195    1460.5     10215    1462.5     10230    1465.2     10260

X1    0.985        37      9978     10019       600       490       502
GR   1464.2      9337    1463.3      9397    1463.4      9455    1462.8      9522    1462.7      9591
GR   1462.8      9663    1462.8      9714    1463.2      9759    1463.1      9802    1463.4      9849
GR     1462      9862    1459.5      9874    1460.3      9878    1461.2      9883    1460.9      9891
GR   1459.9      9903    1459.6      9913    1458.9      9918    1461.5      9923    1461.2      9930
GR     1459      9933    1459.9      9942    1461.8      9951    1461.3      9963    1461.2      9978
GR     1459      9986    1458.5      9989    1458.1     10000    1459.7     10008    1459.6     10015
GR   1461.5     10019    1461.8     10025    1460.9     10047    1461.7     10056    1462.1     10074
GR   1464.2     10103    1466.1     10143

NC        0         0         0       0.3       0.5
X1    1.045        64   9959.01  10039.88       316       319       317
X3                                                                        1462.01   1462.71
GR   1473.6      9000   1472.40   9047.61   1470.90   9080.50   1469.94   9088.10   1468.99   9111.47
GR   1468.1   9165.84   1467.70   9175.95   1467.76   9185.09   1465.10   9188.83   1467.58   9193.30
GR   1467.7   9195.73   1467.44   9233.04   1467.62   9257.62   1469.24   9305.68   1469.39   9353.17
GR   1469.0   9393.28   1467.87   9412.05   1467.73   9437.64   1467.90   9445.79   1467.50   9497.65
GR   1468.2   9515.00   1467.93   9526.31   1467.71   9529.35   1466.41   9540.86   1465.50   9552.16
GR   1465.4   9567.87   1464.97   9602.53   1464.80   9661.68   1464.20   9662.88   1463.76   9664.37
GR   1465.2   9669.24   1464.38   9703.09   1465.00   9764.57   1465.70   9793.67   1465.10   9850.28
GR   1464.5   9858.05   1463.11   9868.18   1461.90   9887.64   1462.01   9959.01   1461.55   9963.98
GR   1460.3   9969.82   1459.98   9975.21   1460.26   9994.11   1460.58   9996.03   1460.68  10011.16
GR   1459.9  10015.77   1458.76  10018.82   1459.06  10029.40   1462.71  10039.88   1463.29  10044.58
GR   1463.1  10050.26   1463.21  10052.77   1462.81  10073.03   1463.01  10090.67   1463.79  10104.15
GR   1464.2  10117.09   1465.80  10142.38   1466.02  10148.87   1467.54  10187.70   1468.70  10249.15
GR   1470.3  10263.96   1476.68  10362.79   1478.01  10377.28   1478.29  10385.52

SC    5.013        .4       2.6                  6        10        60       8.1   1459.34    1458.9
X1    1.067        26   9961.39  10039.94       98       116        98
X2                          2    1464.34   1466.09
X3       10                                                               1467.50   1467.74
BT      -10   9611.57    1467.5            9820.84   1466.09            9961.39   1467.50
BT            9970.84   1467.59           10039.94   1467.74           10108.25   1467.93
BT           10120.46   1468.07           10170.84   1468.52           10216.00   1468.31
BT           10238.99   1468.84
GR   1467.5   9611.57      1466   9650.21      1463   9664.02      1463   9906.66    1462.7   9919.87
GR   1462.5   9952.53    1462.6   9959.99   1462.64   9961.39   1459.34   9961.39   1459.34  10039.94
GR   1462.9  10039.94    1462.6  10050.74    1462.7  10065.32   1463.12  10076.33    1463.6  10106.11
GR   1464.1  10112.38    1464.5  10123.63    1465.4  10136.86   1465.90  10140.46    1466.1  10146.66
GR   1467.3  10172.20    1468.3  10187.65    1469.0  10217.66   1468.84  10268.99    1469.4  10297.71
GR   1470 9  10312.39
  FILL RETENTION BASIN TO OVERFLOW ELEVATION
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NC      0.025
X1      1.09        26    9948.33   10032.82        71       122       136
GR      1467   9666.07       1463    9707.45      1463   9931.05    1463.1    9942.2      1463   9948.33
GR    1462.7    9959.2    1461.05    9984.28   1459.05     10000    1459.1  10013.47    1464.3  10032.82
GR    1463.9  10042.86     1462.9   10048.17   1462.67  10050.13      1463  10057.08    1462.8  10058.68
GR    1463.2  10063.07    1463.77   10065.62    1463.8  10070.53    1463.7  10072.73    1463.6  10076.17
GR    1463.5  10076.79    1463.93   10084.53   1464.51  10103.94      1465  10115.96    1466.1  10127.98
GR    1467.2  10144.17
  FILL RETENTION BASIN TO OVERFLOW ELEVATION

NC                                       .1        .3
X1     1.102        33     9986.7   10043.47        66        62        65
GR    1466.9   9766.67       1465    9778.38      1463   9786.38      1463   9949.08    1462.9   9960.18
GR    1462.9   9972.98     1463.0     9986.7    1462.9      9988    1459.7   9997.36    1459.5     10000
GR    1459.9  10006.82     1460.5   10027.37    1464.5  10043.47    1464.4  10047.98    1463.7  10055.91
GR    1463.1  10057.72     1462.4   10059.16    1463.9  10065.36    1464.1   10072.7    1463.6  10080.67
GR    1464.4  10094.26     1464.8   10130.05    1464.8  10134.56    1465.2   10156.8    1465.1  10164.58
GR    1465.2  10172.74     1464.9   10179.84      1465   10181.7    1465.2  10182.88    1465.7  10191.47
GR    1466.3  10196.74     1466.5   10197.82    1468.3     10210
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

X1      1.12        18    9968.95    10026.1        93        99        96
GR    1466.8   9744.78       1466    9760.79      1463   9773.85      1463   9942.25    1463.3   9949.44
GR    1463.8   9968.95     1463.7    9970.48    1460.3   9986.44      1460     10000    1460.3  10009.33
GR    1464.7   10026.1     1464.7      10038    1463.9  10045.94      1464  10059.55    1465.6  10074.23
GR    1466.1  10081.14     1466.9   10099.54    1469.5   10127.5
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

X1     1.139        20    9981.49   10017.72       106        89       100
GR    1467.5   9781.66       1467    9796.59      1463   9813.42      1463   9947.17       1464   9951.17
GR    1464.4   9951.37     1463.97    9974.76    1464.2   9981.49    1461.9   9990.82    1460.9   9993.08
GR    1460.4     10000     1460.8   10009.97    1464.6  10016.85    1465.0  10017.72    1464.9  10017.97
GR    1465.2  10027.79    1464.95   10048.36    1465.2  10064.01    1466.7  10075.47      1468  10091.61
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

X1     1.164        18    9982.34   10023.28       138       112       129
GR    1468.4   9830.82       1468    9844.61      1463   9865.40      1463   9946.58       1464   9950.58
GR    1464.8   9954.88     1465.5    9967.43    1465.4   9968.45    1465.8   9982.34       1461   9994.82
GR    1460.6     10000     1461.2   10009.82    1463.3  10015.83    1465.7  10023.28    1465.8  10038.87
GR    1466.6  10046.62     1468.9   10062.04    1469.4  10068.82
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

X1      1.19        17    9984.76   10029.88       138       138       138
GR    1469.1   9850.94       1468    9866.78      1463   9886.78      1463   9942.43    1465.7   9953.46
GR      1466   9973.63     1465.9    9979.06    1465.9   9984.76    1464.4   9988.33    1462.6   9993.34
GR    1462.2     10000     1462.5   10009.95    1463.6  10023.02    1466.0  10029.88    1466.5  10037.79
GR    1467.9  10041.85     1473.8      10057
```

N	0.055									
X1	1.207	14	9990.52	10027.97	78	96	91			
GR	1469.4	9858.73	1466	9898.43	1466	9919.45	1466.4	9926.83	1466.7	9950.09
GR	1466.7	9964.01	1466.3	9976.02	1466.1	9990.52	1462.8	10000	1462.8	10018.85
GR	1465.5	10027.97	1465.7	10035.59	1466.2	10041.15	1474.5	10066.45		
X1	1.227	17	9984.14	10023.91	107	98	100			
GR	1470.0	9854	1467.43	9877.45	1467.7	9898.13	1467.6	9937.73	1467.3	9953.13
GR	1466.8	9963.82	1465.39	9984.14	1463.6	9988.74	1462.9	10000	1463.5	10010.51
GR	1464.2	10018.47	1466.8	10023.91	1466.7	10031.94	1467.6	10038.59	1468	10040.83
GR	1468.6	10049.42	1473.13	10071.44						
X1	1.256	24	9985.52	10022.96	144	162	159			
GR	1470.7	9851.37	1469.46	9862.56	1469.3	9880.05	1468.83	9887.26	1468.8	9894.56
GR	1468.6	9908.76	1467.87	9933.42	1467.91	9943.1	1467.83	9945.24	1467.2	9952.43
GR	1466.8	9959.52	1467.2	9966.78	1467.8	9969.73	1467.62	9970.93	1468.1	9985.52
GR	1464.7	9994.77	1464.43	10000	1464.87	10013.19	1466.3	10017.47	1468.3	10022.96
GR	1467.7	10040.81	1468.1	10055.02	1469.35	10063.73	1474.33	10104.04		
X1	1.288	19	9985.44	10020.55	153	172	166			
GR	1471.5	9847.14	1469.92	9862.07	1470.38	9878.96	1469.7	9914.83	1468.4	9940.95
GR	1468.0	9959.41	1469.2	9968.09	1469.25	9985.44	1465.3	9994.96	1465	10000
GR	1465.4	10010.83	1469.5	10020.55	1468.9	10044.93	1469	10050.41	1469.4	10056.19
GR	1470.3	10074.79	1471.6	10087.53	1472.04	10096.32	1474.2	10122.51		
X1	1.321	29	9984.58	10020.11	167	182	178			
GR	1472.7	9876.67	1471.03	9892.87	1470.95	9915.58	1469.14	9954.87	1469.09	9958.88
GR	1469.2	9965.35	1469.1	9972.08	1468.98	9974.02	1468.77	9984.58	1467.68	9987.8
GR	1466	9991.72	1465.6	10000	1465.73	10008.59	1468.94	10016.85	1470.5	10020.11
GR	1470.2	10027.07	1470.3	10030.3	1470.6	10032.63	1470.56	10043.51	1470.19	10055.25
GR	1470.5	10061.05	1470.6	10068.68	1471.02	10080	1471.29	10091.02	1472.8	10127.26
GR	1473	10128.14	1473.3	10130.29	1474.8	10137.3	1476.04	10142.03		
X1	1.351	18	9942.88	10011.03	153	164	163			
GR	1473.5	9857.67	1472.42	9867.48	1472.6	9880.65	1470.9	9924.11	1470.8	9938.54
GR	1470.6	9942.88	1469.7	9959.46	1467.51	9978.65	1466.7	9992.31	1466.7	10000
GR	1471.4	10011.03	1471.54	10013.4	1471.34	10024.88	1471.3	10042.77	1472.5	10059.89
GR	1473.4	10063.71	1474.4	10069.72	1478.89	10091.37				
X1	1.383	20	9970.16	10016.84	168	157	163			
GR	1474.6	9862.88	1473.9	9869.02	1473.9	9873.19	1473.5	9888.54	1473.0	9896.25
GR	1472.7	9919.19	1471.7	9948.56	1471.2	9956.32	1471.4	9961.12	1471.8	9964.3
GR	1471.9	9970.16	1468.5	9980.05	1467.7	9989.76	1467.4	9994.43	1467.0	10000
GR	1472.2	10016.84	1471.7	10025.23	1472.8	10035.35	1475.6	10050.65	1481.0	10072.52
NC				0.1	0.3					
X1	1.411	25	9971.18	10033.03	153	146	152			
GR	1475.3	9905.98	1474.74	9910.5	1473.9	9957.93	1472.7	9964.29	1472.6	9966.03
GR	1472.4	9966.76	1471.81	9971.18	1471.37	9976.08	1470.9	9979	1470.9	9979.9
GR	1470.6	9982.72	1470.15	9984.48	1470.2	9987.79	1469.7	9989.73	1469.6	9990.71
GR	1469.4	9991.69	1468.77	9995.45	1468.2	9997.05	1468.1	10000	1468.2	10015.43
GR	1471.9	10033.03	1472.6	10037.33	1472.71	10048.66	1473.3	10058.13	1480.9	10090

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NC                                        0.1       0.3
X1    1.426        15   9978.31  10014.82        76        79        79
GR   1475.6   9884.94  1471.42   9925.94    1473.1    9934.3    1473.2   9938.91      1473    9949.8
GR     1473   9952.14   1472.4   9978.31   1470.15   9984.19    1468.5   9987.16    1468.3     10000
GR   1469.4  10003.23  1473.69  10014.82    1473.1  10024.97    1474.4  10034.28    1478.9     10054

X1    1.462        18   9971.59  10016.09       193       192       193
GR   1477.2   9890.18   1476.6   9896.36    1475.9   9900.75    1475.5   9912.02    1475.2   9931.01
GR   1474.8   9948.64   1473.5   9963.86    1473.4    9964.1    1473.2   9971.59    1470.0   9992.16
GR   1469.7     10000  1469.85  10007.08    1471.5  10012.15    1472.5  10016.09    1473.4  10030.44
GR   1474.2  10038.38  1474.47  10040.07      1481  10067.01

NC    0.055    0.055    0.055       0.1       0.3
QT        4    1175.     1467.     1609.     1958.
X1    1.483        15   9980.37  10017.29       112       112       113
GR     1479   9868.51      1479   9870.77      1477   9896.72    1476.2   9947.69   1473.84   9980.37
GR     1472   9985.59    1470.1   9990.88    1469.8  10007.24   1474.31  10017.29    1473.9  10032.06
GR   1474.8  10061.99    1475.4  10072.56   1477.25  10093.65   1478.81  10099.71      1495  10175.72

NC    0.055    0.055    0.055       0.1       0.3
X1    1.518        22   9976.69  10021.74       180       186       184
GR   1479.1   9835.54   1478.7   9845.89   1478.52   9858.88      1478   9874.38   1477.28   9906.15
GR   1476.8   9919.61   1476.24   9936.13    1475.2   9957.62    1474.6    9965.9    1474.1    9970.2
GR   1474.8   9976.69   1474.3   9980.22   1472.05   9987.42    1471.6     10000   1474.18  10014.71
GR   1475.2  10021.74     1476  10040.18   1475.98  10054.93      1476  10058.37    1476.7  10080.37
GR     1478  10097.02   1481.8  10117.33

NC                                        0.1       0.3
X1    1.549        27   9974.29   10019.1       135       175       171
GR   1479.2   9866.08   1477.23    9884.3    1476.6   9897.65    1475.8   9919.62   1476.04   9931.96
GR   1475.6   9939.15   1475.49   9944.81   1476.61   9953.63    1476.7   9955.58   1476.48   9963.18
GR   1476.4   9974.29    1475.6   9977.71   1473.94   9986.51    1473.7    9989.1   1473.48     10000
GR   1473.5  10008.39    1475.9   10019.1      1476  10020.37      1476  10025.59   1477.11  10051.54
GR   1477.3  10054.35   1477.56  10063.05   1477.82  10074.98      1478  10091.94    1478.5  10102.65
GR   1479.8  10112.11    1482.7  10125.24
  CROSS SECTIONNO. 1 OF SPECIAL CULVERT ROUTINE.

X1    1.572        24   9991.46  10024.23       124       133       130
GR   1480.2   9813.67    1480.2   9868.51    1477.7   9915.82   1476.45   9933.23   1476.82   9938.26
GR   1477.2   9965.01   1477.01   9965.78    1477.6   9991.46   1474.38     10000    1474.4  10016.93
GR   1477.5  10024.23    1477.3  10031.33   1475.71  10037.89   1476.21  10045.55   1476.09   10062.1
GR   1476.2  10064.86   1477.15  10073.55   1477.72   10085.8   1478.89  10134.89    1479.2  10161.25
GR   1480.8   10215.2    1480.9  10220.99   1481.06  10223.88   1483.31  10234.14

NC    0.055    0.055    0.055       0.3       0.5
  CROSS SECTION NO. 2 OF SPECIAL CULVERT ROUTINE.
X1    1.595        26   9964.48  10013.07       124       177       157
X3       10                                                      1479.62   1479.62
GR   1480.9   9735.29   1480.89   9735.44   1480.64   9750.03   1480.40   9778.48   1480.38   9810.08
GR   1480.1   9831.82   1479.64   9858.63   1479.60   9872.10   1479.41   9884.00   1479.05   9945.55
GR   1479.1   9951.44   1478.08   9964.48   1478.07   9968.41   1475.32   9971.94   1475.18   9978.48
GR   1474.7   9992.47   1475.00  10001.90   1478.42  10013.07   1478.80  10016.95   1479.19  10031.85
GR   1479.9  10055.63   1479.93  10069.79   1480.27  10076.40   1480.50  10086.23   1480.42  10094.33
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 1481.1   10103.91
EXSTING CULVERT LOCATED ON PINNACLE VISTA ROAD.

SC    4.013        0.4        2.6                    3          8        25.4        8.1     1475.48     1475.24
  CROSS SECTION NO. 3 OF SPECIAL CULVERT ROUTINE.
SC    4.013        0.4          3                    3          8        25.4        8.1     1475.48     1475.24
  CROSS SECTION NO. 3 OF SPECIAL CULVERT ROUTINE.
X1    1.610         22     9966.63   10026.42        38         36         37
X2                              2    1478.48     1479.85
X3       10                                                                   1479.86     1479.86
BT      -24     9711.2    1481.04                9737.62    1480.84                9750.78      1480.8
BT            9773.28    1480.79                9812.34    1480.66                9867.01     1480.16
BT            9933.42    1480.02                9938.84    1479.85                9938.84     1481.88
BT            9966.63    1481.76                9977.68    1481.49               10026.42     1481.58
BT           10040.48    1481.88               10040.48    1479.85               10057.43     1479.86
BT            10065.8    1480.05               10079.04    1480.38               10087.02     1480.67
BT           10096.76    1481.07               10104.76    1481.42               10118.72     1482.03
BT           10125.68    1482.46               10144.75    1483.67               10148.75      1483.9
GR   1481.2    9688.85    1481.06     9700.7    1480.72     9726.3    1479.98    9782.54     1478.98     9928.22
GR   1479.2    9938.12     1479.0     9945.9    1478.44    9966.63     1477.9     9978.4      1475.6     9985.55
GR   1475.2     9987.5    1475.22     9992.9     1475.3   10017.89    1475.65   10020.73     1477.82    10023.04
GR   1478.5   10026.42     1479.2   10041.01     1479.4    10057.6    1479.67   10074.14     1480.12    10092.94
GR   1482.1   10144.04     1486.3   10189.6
  CROSS SECTION NO. 4 OF SPECIAL BRIDGE ROUTINE.

X1    1.638         19       9970      10020        192        122        148
GR   1482.9       9671     1482.9       9750     1481.9       9810     1480.5       9849     1479.3       9907
GR   1478.6       9933     1478.8       9949     1479.5       9970     1475.7       9984     1475.7      10000
GR   1479.8      10020     1479.7      10052     1480.3      10084     1479.9      10100     1482.1      10122
GR   1482.5      10140     1485.4      10167     1488.4      10194     1488.7      10203

NC    0.055      0.055      0.055        0.1        0.3
X1    1.695         20       9978      10016        297        303        300
                                        9547     1484.6
 1485.2       9830     1483.7       9868     1483.5       9887     1481.6       9906     1480.2       9926
GR   1480.5       9952     1481.5       9978     1477.3       9992     1477.4      10000     1477.4      10008
GR   1481.3      10016     1480.7      10039     1480.8      10056     1481.5      10086     1480.4      10110
GR   1481.4      10120     1481.6      10142     1482.4      10177     1483.9      10212     1485.1      10249

X1    1.761         28       9980      10017        360        340        350
X3                                      9482     1489.8
GR     1488       9639     1487.6       9678     1486.4       9718     1486.1       9758     1486.3       9800
GR   1487.6       9839     1487.9       9874     1487.5       9905     1485.5       9931     1482.9       9958
GR   1483.2       9980     1479.1       9988     1479.1      10000     1479.2      10008     1483.2      10017
GR   1483.3      10052       1484      10091       1484      10122     1483.3      10159       1484      10200
GR   1484.5      10238     1484.4      10280     1484.4      10319     1484.8      10342     1483.2      10355
GR   1485.4      10371       1486      10410     1486.1      10453

X1    1.856         16       9980      10019        502        502        502
X3                                      9707     1492.5
GR   1492.4       9750     1491.9       9791     1490.5       9830     1489.3       9865     1487.9       9901
GR   1486.7       9941     1484.5       9980     1480.7       9989     1480.9      10000     1480.9      10009
GR   1485.2      10019     1485.1      10038     1487.5      10065     1489.3      10093     1489.8      10123
GR   1489.5      10155
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[illegible]	1.951	13	9981	10011	510	495	502			
X3				9417	1497					
GR	1493.9	9858	1492.3	9881	1488.8	9909	1485.9	9938	1486.3	9965
GR	1486.7	9981	1483.1	9989	1482.9	10000	1483	10006	1486.1	10011
GR	1489.2	10026	1491	10061	1490.9	10099				
X1	2.045	34	9988.	10019.	505	510	505			
GR	1499.6	9478.	1499.2	9519.	1498.9	9562.	1499.0	9607.	1498.7	9640.
GR	1497.8	9681.	1497.4	9721.	1496.9	9765.	1496.3	9806.	1494.6	9840.
GR	1491.1	9867.	1490.3	9911.	1489.5	9949.	1489.5	9963.	1490.9	9978.
GR	1490.9	9988.	1486.6	9995.	1486.7	10000.	1486.6	10010.	1491.2	10019.
GR	1490.1	10048.	1488.0	10057.	1490.9	10066.	1490.7	10094.	1491.7	10120.
GR	1492.0	10158.	1492.4	10199.	1493.2	10238.	1493.9	10280.	1493.6	10321.
GR	1493.7	10360.	1494.2	10384.	1502.1	10422.	1502.7	10425.		
QT	4	1065.	1253.	1308.	1407.					
X1	2.121	29	9980.	10019.	405	415	410			
X3						10133.	1497.1			
GR	1503.6	9596.	1502.3	9639.	1502.2	9681.	1501.8	9722.	1501.3	9768.
GR	1500.5	9813.	1499.7	9853.	1498.4	9888.	1496.7	9921.	1492.8	9947.
GR	1492.1	9980.	1488.7	9990.	1489.3	10000.	1490.5	10010.	1493.6	10019.
GR	1493.0	10048.	1494.8	10079.	1496.4	10110.	1497.1	10133.	1496.5	10164.
GR	1495.4	10204.	1494.7	10243.	1493.8	10281.	1493.0	10322.	1494.0	10365.
GR	1495.3	10404.	1497.4	10443.	1500.7	10486.	1502.0	10504.		
X1	2.200	33	9959.	10036.	400	425	417			
X3						10036	1498.5			
GR	1502.0	9511.	1500.4	9566.	1498.8	9612.	1496.9	9654.	1495.7	9701.
GR	1494.2	9741.	1494.1	9781.	1493.0	9811.	1494.7	9824.	1493.5	9837.
GR	1493.4	9863.	1493.1	9891.	1495.6	9903.	1495.3	9930.	1496.1	9959.
GR	1495.0	9970.	1491.5	9981.	1491.4	10000.	1490.5	10017.	1498.5	10036.
GR	1498.1	10053.	1495.7	10067.	1496.1	10101.	1496.3	10141.	1496.3	10178.
[illegible]	1496.6	10215.	1497.0	10253.	1497.0	10291.	1499.8	10328.	1502.7	10364.
[illegible]	1505.1	10405.	1509.4	10447.	1509.3	10447.				

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.411	152.00	.00	.00	1468.10	1422.00	1474.17	1472.13	1474.48	39.08	4.61	340.03	227.47
	1.411	152.00	.00	.00	1468.10	2005.00	1474.82	1472.95	1475.22	44.51	5.38	430.59	300.54
	1.411	152.00	.00	.00	1468.10	2304.00	1475.09	1473.29	1475.54	46.76	5.70	473.78	336.95
	1.411	152.00	.00	.00	1468.10	3067.00	1475.70	1473.99	1476.24	51.62	6.43	571.09	426.90
	1.426	79.00	.00	.00	1468.30	1422.00	1474.50	1473.69	1474.90	65.87	5.81	320.27	175.21
	1.426	79.00	.00	.00	1468.30	2005.00	1475.20	1474.25	1475.64	62.27	6.22	421.73	254.08
	1.426	79.00	.00	.00	1468.30	2304.00	1475.50	1474.53	1475.96	62.14	6.44	466.61	292.27
	1.426	79.00	.00	.00	1468.30	3067.00	1476.16	1475.05	1476.68	61.85	6.93	568.90	389.99
	1.462	193.00	.00	.00	1469.70	1422.00	1475.63	1474.20	1475.99	49.00	5.25	323.99	203.14
	1.462	193.00	.00	.00	1469.70	2005.00	1476.30	1474.89	1476.73	51.76	5.90	420.62	278.70
	1.462	193.00	.00	.00	1469.70	2304.00	1476.60	1475.23	1477.06	52.43	6.16	466.10	318.19
	1.462	193.00	.00	.00	1469.70	3067.00	1477.27	1475.92	1477.80	54.32	6.75	570.02	416.15
	1.483	113.00	.00	.00	1469.80	1175.00	1476.21	1474.64	1476.47	34.88	4.60	329.43	198.96
	1.483	113.00	.00	.00	1469.80	1467.00	1476.96	1475.18	1477.18	26.25	4.37	449.66	286.33
	1.483	113.00	.00	.00	1469.80	1609.00	1477.29	1475.33	1477.49	22.86	4.23	516.96	336.49
	1.483	113.00	.00	.00	1469.80	1958.00	1478.04	1475.82	1478.20	17.51	4.00	671.51	467.87
	1.518	184.00	.00	.00	1471.60	1175.00	1476.96	1475.84	1477.24	51.12	4.75	313.21	164.34
	1.518	184.00	.00	.00	1471.60	1467.00	1477.53	1476.32	1477.77	40.07	4.60	414.31	231.75
	1.518	184.00	.00	.00	1471.60	1609.00	1477.79	1476.48	1478.02	35.88	4.52	466.85	268.61
	1.518	184.00	.00	.00	1471.60	1958.00	1478.41	1476.80	1478.61	27.37	4.29	607.26	374.23
	1.549	171.00	.00	.00	1473.48	1175.00	1477.84	1476.99	1478.05	47.11	4.30	356.96	171.18
	1.549	171.00	.00	.00	1473.48	1467.00	1478.23	1477.23	1478.44	42.39	4.37	441.08	225.32
	1.549	171.00	.00	.00	1473.48	1609.00	1478.42	1477.33	1478.63	40.05	4.38	482.98	254.25
	1.549	171.00	.00	.00	1473.48	1958.00	1478.90	1477.55	1479.09	33.60	4.32	594.01	337.77
	1.572	130.00	.00	.00	1474.38	1175.00	1478.51	1477.87	1478.72	57.98	4.50	351.74	154.32
	1.572	130.00	.00	.00	1474.38	1467.00	1478.85	1478.09	1479.06	53.90	4.62	427.95	199.81
	1.572	130.00	.00	.00	1474.38	1609.00	1479.00	1478.18	1479.21	51.59	4.65	466.39	224.02
	1.572	130.00	.00	.00	1474.38	1958.00	1479.39	1478.40	1479.60	44.99	4.63	571.20	291.92
	1.595	157.00	.00	.00	1474.70	1175.00	1479.48	1478.36	1480.13	103.97	6.49	181.03	115.23
	1.595	157.00	.00	.00	1474.70	1467.00	1479.75	1478.78	1480.39	101.38	6.72	271.93	145.70
	1.595	157.00	.00	.00	1474.70	1609.00	1479.88	1478.99	1480.53	103.37	6.93	297.74	158.26
*	1.595	157.00	.00	.00	1474.70	1958.00	1480.16	1480.01	1480.84	104.63	7.29	364.12	191.41
*	1.610	37.00	1479.85	1478.48	1475.20	1175.00	1480.83	.00	1480.90	12.27	2.57	671.55	335.44
*	1.610	37.00	1479.85	1478.48	1475.20	1467.00	1481.09	.00	1481.17	13.35	2.79	778.28	401.51
*	1.610	37.00	1479.85	1478.48	1475.20	1609.00	1481.18	.00	1481.27	14.18	2.91	818.33	427.24
*	1.610	37.00	1479.85	1478.48	1475.20	1958.00	1481.43	.00	1481.52	15.41	3.13	924.34	498.71
	1.638	148.00	.00	.00	1475.70	1175.00	1481.07	1479.79	1481.18	23.12	3.24	504.79	244.39
	1.638	148.00	.00	.00	1475.70	1467.00	1481.35	1480.12	1481.48	24.67	3.50	582.14	295.34
	1.638	148.00	.00	.00	1475.70	1609.00	1481.46	1480.25	1481.59	25.73	3.63	613.78	317.20
	1.638	148.00	.00	.00	1475.70	1958.00	1481.72	1480.54	1481.88	27.33	3.89	693.29	374.56

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	1.695	300.00	.00	.00	1477.30	1175.00	1482.05	1481.66	1482.30	63.37	4.85	357.78	147.60
*	1.695	300.00	.00	.00	1477.30	1467.00	1482.36	1481.85	1482.59	58.08	4.90	439.25	192.49
*	1.695	300.00	.00	.00	1477.30	1609.00	1482.48	1481.93	1482.72	55.96	4.93	477.29	215.09
	1.695	300.00	.00	.00	1477.30	1958.00	1482.78	1482.12	1483.02	53.55	5.05	559.52	267.56
	1.761	350.00	.00	.00	1479.10	1175.00	1484.26	1483.96	1484.64	68.77	5.64	317.05	141.69
	1.761	350.00	.00	.00	1479.10	1467.00	1484.49	1484.25	1484.89	71.82	5.98	393.31	173.11
	1.761	350.00	.00	.00	1479.10	1609.00	1484.59	1484.40	1484.98	72.89	6.11	432.16	188.46
	1.761	350.00	.00	.00	1479.10	1958.00	1484.82	1484.62	1485.20	71.48	6.25	530.10	231.59
	1.856	502.00	.00	.00	1480.70	1175.00	1486.89	1484.88	1487.20	39.18	4.86	300.68	187.72
	1.856	502.00	.00	.00	1480.70	1467.00	1487.27	1485.72	1487.63	42.88	5.33	349.95	224.04
	1.856	502.00	.00	.00	1480.70	1609.00	1487.42	1485.97	1487.81	44.73	5.55	372.23	240.59
	1.856	502.00	.00	.00	1480.70	1958.00	1487.74	1486.37	1488.19	49.61	6.06	421.26	277.98
	1.951	502.00	.00	.00	1482.90	1175.00	1488.85	1487.39	1489.09	35.72	4.61	326.40	196.60
	1.951	502.00	.00	.00	1482.90	1467.00	1489.33	1487.75	1489.60	35.36	4.87	383.28	246.70
	1.951	502.00	.00	.00	1482.90	1609.00	1489.53	1487.86	1489.82	35.33	4.99	409.54	270.69
	1.951	502.00	.00	.00	1482.90	1958.00	1489.99	1488.31	1490.30	35.59	5.27	471.66	328.22
*	2.045	505.00	.00	.00	1486.60	1175.00	1491.37	1490.98	1491.65	76.08	5.27	326.50	134.71
	2.045	505.00	.00	.00	1486.60	1467.00	1491.72	1491.13	1491.97	65.12	5.18	413.53	181.79
	2.045	505.00	.00	.00	1486.60	1609.00	1491.87	1491.32	1492.11	60.42	5.13	457.03	206.99
	2.045	505.00	.00	.00	1486.60	1958.00	1492.24	1491.49	1492.46	51.88	5.02	566.54	271.84
	2.121	410.00	.00	.00	1488.70	1065.00	1494.19	1493.35	1494.55	64.63	5.28	254.17	132.48
	2.121	410.00	.00	.00	1488.70	1253.00	1494.38	1493.67	1494.78	70.72	5.70	279.31	149.00
	2.121	410.00	.00	.00	1488.70	1308.00	1494.43	1493.71	1494.85	72.73	5.82	285.80	153.37
*	2.121	410.00	.00	.00	1488.70	1407.00	1494.53	1493.82	1494.97	73.95	5.97	300.77	163.62
*	2.200	417.00	.00	.00	1490.50	1065.00	1495.66	1494.10	1495.72	15.47	2.34	568.89	270.73
	2.200	417.00	.00	.00	1490.50	1253.00	1495.92	1494.31	1495.99	15.30	2.37	651.00	320.33
	2.200	417.00	.00	.00	1490.50	1308.00	1496.00	1494.33	1496.06	15.21	2.38	675.08	335.33
*	2.200	417.00	.00	.00	1490.50	1407.00	1496.12	1494.47	1496.19	15.10	2.40	716.74	362.11

WASH - SKUNK CREEK T

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	.710	1422.00	1456.50	.00	.00	.00	765.69	.00
	.710	2005.00	1458.93	2.43	.00	.00	1017.52	.00
	.710	2304.00	1460.42	1.49	.00	.00	1064.97	.00
	.710	3067.00	1465.95	5.53	.00	.00	1729.54	.00
*	.782	1422.00	1457.49	.00	.99	.00	752.60	380.00
*	.782	2005.00	1458.99	1.50	.06	.00	846.75	380.00
*	.782	2304.00	1460.44	1.45	.02	.00	902.21	380.00
*	.782	3067.00	1465.95	5.51	.00	.00	1233.94	380.00
	.890	1422.00	1459.99	.00	2.50	.00	523.89	570.00
*	.890	2005.00	1459.85	-.13	.86	.00	465.35	570.00
*	.890	2304.00	1460.51	.66	.07	.00	758.28	570.00
*	.890	3067.00	1465.96	5.45	.01	.00	956.00	570.00
	.985	1422.00	1462.65	.00	2.66	.00	225.69	502.00
*	.985	2005.00	1463.36	.71	3.51	.00	668.63	502.00
	.985	2304.00	1463.22	-.14	2.71	.00	583.56	502.00
*	.985	3067.00	1465.99	2.77	.03	.00	803.46	502.00
	1.045	1422.00	1463.87	.00	1.21	.00	244.35	317.00
	1.045	2005.00	1464.35	.48	.98	.00	264.15	317.00
	1.045	2304.00	1464.55	.21	1.33	.00	293.92	317.00
*	1.045	3067.00	1466.11	1.56	.12	.00	609.97	317.00
	1.067	1422.00	1464.20	.00	.34	.00	78.55	98.00
	1.067	2005.00	1465.30	1.10	.95	.00	78.55	98.00
	1.067	2304.00	1465.83	.54	1.28	.00	78.55	98.00
*	1.067	3067.00	1467.58	1.74	1.46	.00	428.37	98.00
*	1.090	1422.00	1464.55	.00	.35	.00	413.55	136.00
*	1.090	2005.00	1465.68	1.13	.38	.00	443.69	136.00
*	1.090	2304.00	1466.25	.57	.41	.00	456.29	136.00
*	1.090	3067.00	1467.59	1.34	.01	.00	478.10	136.00
	1.102	1422.00	1464.59	.00	.04	.00	331.02	65.00
	1.102	2005.00	1465.69	1.10	.00	.00	417.06	65.00
	1.102	2304.00	1466.25	.56	.00	.00	425.58	65.00
	1.102	3067.00	1467.59	1.34	.00	.00	438.57	65.00
	1.120	1422.00	1464.70	.00	.11	.00	287.49	96.00
	1.120	2005.00	1465.72	1.02	.04	.00	313.97	96.00
	1.120	2304.00	1466.27	.55	.02	.00	329.89	96.00
	1.120	3067.00	1467.59	1.32	.01	.00	362.27	96.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.139	1422.00	1464.82	.00	.11	.00	211.60	100.00
	1.139	2005.00	1465.75	.93	.02	.00	266.33	100.00
	1.139	2304.00	1466.28	.53	.01	.00	272.61	100.00
	1.139	3067.00	1467.59	1.31	-.01	.00	304.81	100.00
	1.164	1422.00	1465.08	.00	.26	.00	140.17	129.00
*	1.164	2005.00	1465.80	.72	.05	.00	185.13	129.00
*	1.164	2304.00	1466.28	.48	.01	.00	191.82	129.00
*	1.164	3067.00	1467.55	1.26	-.04	.00	206.49	129.00
	1.190	1422.00	1465.52	.00	.44	.00	118.85	138.00
	1.190	2005.00	1466.10	.58	.30	.00	157.12	138.00
	1.190	2304.00	1466.48	.38	.20	.00	164.73	138.00
	1.190	3067.00	1467.61	1.13	.06	.00	172.69	138.00
*	1.207	1422.00	1467.30	.00	1.78	.00	161.19	91.00
*	1.207	2005.00	1467.60	.31	1.50	.00	165.73	91.00
*	1.207	2304.00	1467.79	.18	1.30	.00	168.41	91.00
*	1.207	3067.00	1468.23	.44	.61	.00	174.89	91.00
*	1.227	1422.00	1468.46	.00	1.16	.00	179.39	100.00
*	1.227	2005.00	1469.07	.61	1.47	.00	189.22	100.00
*	1.227	2304.00	1469.32	.25	1.53	.00	192.71	100.00
*	1.227	3067.00	1469.87	.55	1.64	.00	200.38	100.00
	1.256	1422.00	1469.47	.00	1.01	.00	202.24	159.00
	1.256	2005.00	1470.04	.58	.97	.00	212.12	159.00
	1.256	2304.00	1470.30	.26	.98	.00	216.50	159.00
	1.256	3067.00	1470.88	.58	1.01	.00	224.74	159.00
	1.288	1422.00	1470.57	.00	1.10	.00	221.47	166.00
	1.288	2005.00	1471.08	.51	1.04	.00	231.33	166.00
	1.288	2304.00	1471.31	.23	1.01	.00	235.83	166.00
	1.288	3067.00	1471.85	.54	.98	.00	245.26	166.00
	1.321	1422.00	1471.58	.00	1.01	.00	210.43	178.00
	1.321	2005.00	1472.10	.52	1.01	.00	227.81	178.00
	1.321	2304.00	1472.33	.23	1.01	.00	235.58	178.00
	1.321	3067.00	1472.86	.53	1.00	.00	250.83	178.00
	1.351	1422.00	1472.36	.00	.78	.00	171.11	163.00
	1.351	2005.00	1472.91	.55	.82	.00	198.65	163.00
	1.351	2304.00	1473.16	.24	.83	.00	201.88	163.00
	1.351	3067.00	1473.70	.54	.84	.00	207.82	163.00
	1.383	1422.00	1473.24	.00	.88	.00	145.18	163.00
	1.383	2005.00	1473.83	.59	.92	.00	165.23	163.00
	1.383	2304.00	1474.09	.26	.93	.00	175.04	163.00
	1.383	3067.00	1474.66	.57	.97	.00	182.64	163.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.411	1422.00	1474.17	.00	.93	.00	118.50	152.00
	1.411	2005.00	1474.82	.65	.98	.00	154.60	152.00
	1.411	2304.00	1475.09	.28	1.00	.00	157.99	152.00
	1.411	3067.00	1475.70	.61	1.04	.00	162.20	152.00
	1.426	1422.00	1474.50	.00	.33	.00	138.94	79.00
	1.426	2005.00	1475.20	.71	.39	.00	148.95	79.00
	1.426	2304.00	1475.50	.30	.41	.00	153.16	79.00
	1.426	3067.00	1476.16	.66	.46	.00	157.04	79.00
	1.462	1422.00	1475.63	.00	1.13	.00	136.45	193.00
	1.462	2005.00	1476.30	.67	1.10	.00	149.34	193.00
	1.462	2304.00	1476.60	.30	1.10	.00	152.47	193.00
	1.462	3067.00	1477.27	.67	1.11	.00	161.40	193.00
	1.483	1175.00	1476.21	.00	.58	.00	134.56	113.00
	1.483	1467.00	1476.96	.75	.66	.00	190.17	113.00
	1.483	1609.00	1477.29	.33	.69	.00	200.85	113.00
	1.483	1958.00	1478.04	.75	.77	.00	213.43	113.00
	1.518	1175.00	1476.96	.00	.76	.00	168.96	184.00
	1.518	1467.00	1477.53	.56	.57	.00	195.73	184.00
	1.518	1609.00	1477.79	.26	.50	.00	210.46	184.00
	1.518	1958.00	1478.41	.63	.38	.00	237.03	184.00
	1.549	1175.00	1477.84	.00	.87	.00	198.12	171.00
	1.549	1467.00	1478.23	.40	.70	.00	221.91	171.00
	1.549	1609.00	1478.42	.19	.64	.00	227.63	171.00
	1.549	1958.00	1478.90	.47	.48	.00	236.65	171.00
	1.572	1175.00	1478.51	.00	.68	.00	218.63	130.00
	1.572	1467.00	1478.85	.33	.61	.00	238.92	130.00
	1.572	1609.00	1479.00	.16	.58	.00	253.31	130.00
	1.572	1958.00	1479.39	.39	.49	.00	283.79	130.00
	1.595	1175.00	1479.48	.00	.96	.00	48.59	157.00
	1.595	1467.00	1479.75	.28	.91	.00	198.68	157.00
	1.595	1609.00	1479.88	.12	.87	.00	210.26	157.00
*	1.595	1958.00	1480.16	.29	.77	.00	247.45	157.00
*	1.610	1175.00	1480.83	.00	1.35	.00	392.97	37.00
*	1.610	1467.00	1481.09	.26	1.34	.00	419.81	37.00
*	1.610	1609.00	1481.18	.09	1.31	.00	430.22	37.00
*	1.610	1958.00	1481.43	.24	1.27	.00	437.85	37.00
	1.638	1175.00	1481.07	.00	.24	.00	278.48	148.00
	1.638	1467.00	1481.35	.28	.26	.00	288.81	148.00
	1.638	1609.00	1481.46	.11	.27	.00	292.93	148.00
	1.638	1958.00	1481.72	.26	.29	.00	303.03	148.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.695	1175.00	1482.05	.00	.99	.00	260.41	300.00
*	1.695	1467.00	1482.36	.30	1.01	.00	276.72	300.00
*	1.695	1609.00	1482.48	.13	1.03	.00	282.12	300.00
	1.695	1958.00	1482.78	.29	1.05	.00	291.67	300.00
	1.761	1175.00	1484.26	.00	2.21	.00	292.07	350.00
	1.761	1467.00	1484.49	.23	2.14	.00	398.36	350.00
	1.761	1609.00	1484.59	.09	2.10	.00	410.62	350.00
	1.761	1958.00	1484.82	.23	2.04	.00	428.72	350.00
	1.856	1175.00	1486.89	.00	2.63	.00	123.75	502.00
	1.856	1467.00	1487.27	.38	2.78	.00	140.38	502.00
	1.856	1609.00	1487.42	.16	2.84	.00	147.29	502.00
	1.856	1958.00	1487.74	.32	2.92	.00	162.45	502.00
	1.951	1175.00	1488.85	.00	1.96	.00	115.70	502.00
	1.951	1467.00	1489.33	.48	2.06	.00	123.69	502.00
	1.951	1609.00	1489.53	.21	2.11	.00	129.38	502.00
	1.951	1958.00	1489.99	.46	2.25	.00	141.95	502.00
*	2.045	1175.00	1491.37	.00	2.52	.00	246.54	505.00
	2.045	1467.00	1491.72	.34	2.39	.00	259.76	505.00
	2.045	1609.00	1491.87	.15	2.34	.00	281.36	505.00
	2.045	1958.00	1492.24	.37	2.25	.00	324.08	505.00
	2.121	1065.00	1494.19	.00	2.82	.00	130.82	410.00
	2.121	1253.00	1494.38	.18	2.66	.00	135.34	410.00
	2.121	1308.00	1494.43	.05	2.56	.00	136.48	410.00
*	2.121	1407.00	1494.53	.11	2.30	.00	139.07	410.00
*	2.200	1065.00	1495.66	.00	1.47	.00	307.80	417.00
	2.200	1253.00	1495.92	.26	1.55	.00	330.07	417.00
	2.200	1308.00	1496.00	.07	1.57	.00	336.41	417.00
*	2.200	1407.00	1496.12	.12	1.59	.00	345.99	417.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=      .782  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .890  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .890  PROFILE=  2  MINIMUM SPECIFIC ENERGY
WARNING SECNO=      .890  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .890  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .985  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .985  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.045  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.067  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.090  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.090  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.090  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.090  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.164  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.164  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.164  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     1.207  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.207  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     1.207  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.207  PROFILE=  2  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     1.207  PROFILE=  3  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.207  PROFILE=  3  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     1.207  PROFILE=  4  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.207  PROFILE=  4  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     1.227  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.227  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.227  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.227  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.595  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.610  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.610  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.610  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.610  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.695  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

```
WARNING SECNO=      2.045  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.121  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      2.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.200  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      2.200  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
```

CHECK-2 Program: Bridge Module

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\PROPOSED.BR2
Date: 10/9/2001
Time: 10:52:11 AM

S[illegible]O	MXLCEL	MNREL	EG	CWSEL	ELMIN	Structure
0.71	-----	-----	1460.42	1460.42	1449.5	
0.782	-----	-----	1460.45	1460.44	1454.5	
0.89	-----	-----	1460.71	1460.51	1454	
0.985	-----	-----	1463.43	1463.22	1458.1	
1.045	-----	-----	1464.76	1464.55	1458.76	
1.067	1464.34	1466.09	1466.15	1465.83	1459.34	SC+X2+BT
1.09	-----	-----	1466.29	1466.25	1459.05	
1.102	-----	-----	1466.32	1466.25	1459.5	
1.12	-----	-----	1466.37	1466.27	1460	
1.139	-----	-----	1466.45	1466.28	1460.4	
1.164	-----	-----	1466.69	1466.28	1460.6	
1.19	-----	-----	1467.12	1466.48	1462.2	
1.207	-----	-----	1468.75	1467.79	1462.8	
1.227	-----	-----	1469.74	1469.32	1462.9	
1.256	-----	-----	1470.66	1470.3	1464.43	
1.288	-----	-----	1471.68	1471.31	1465	
1.321	-----	-----	1472.68	1472.33	1465.6	
1.351	-----	-----	1473.55	1473.16	1466.7	
1.383	-----	-----	1474.65	1474.09	1467	
1.411	-----	-----	1475.54	1475.09	1468.1	
1.426	-----	-----	1475.96	1475.5	1468.3	
1.462	-----	-----	1477.06	1476.6	1469.7	
1.483	-----	-----	1477.49	1477.29	1469.8	
1.518	-----	-----	1478.02	1477.79	1471.6	
1.549	-----	-----	1478.63	1478.42	1473.48	
1.572	-----	-----	1479.21	1479	1474.38	
1.595	-----	-----	1480.53	1479.88	1474.7	
[illegible]	1478.48	1479.85	1481.27	1481.18	1475.2	SC+X2+BT
1.638	-----	-----	1481.59	1481.46	1475.7	
1.695	-----	-----	1482.72	1482.48	1477.3	
1.761	-----	-----	1484.98	1484.59	1479.1	
1.856	-----	-----	1487.81	1487.42	1480.7	
1.951	-----	-----	1489.82	1489.53	1482.9	
2.045	-----	-----	1492.11	1491.87	1486.6	
2.121	-----	-----	1494.85	1494.43	1488.7	
2.2	-----	-----	1496.06	1496	1490.5	

SECNO: 1.067
Type Structure: Special Culvert
Type of Flow: Outlet Control

Section	SECNO	XLCH	CWSEL	EG	TOPWID	CHWID	X3 Left	X3 Right
1	0.985	502	1463.22	1463.43	583.56	41.		
2	1.045	317	1464.55	1464.76	293.92	80.87	1462.01	1462.71
3	1.067	98	1465.83	1466.15	78.55	78.55	1467.5	1467.74
4	1.09	136	1466.25	1466.29	456.29	84.49		
5	1.102	65	1466.25	1466.32	425.58	56.77		

EGOC:	1466.15	QWEIR:	0	WRLEN:	0
EGIC:	1465.87	QCULV:	2304		
MNLRDEL:	1466.09	MXLCEL:	1464.34	ELLC:	1464.34
MNRRDEL:	1467.5	MNRDEL:	1466.09	ELTRD:	1466.09
CUNV:	5.013	ENTLC:	0.4	COFQ:	2.6
RDELEN:	0	RISE:	6	SPAN:	10
CULVLN:	60	CHART:	8.1	ELCHU:	1459.34

ELCHD: 1458.9

---BT records Check---

----Location check---

----X2 record check---

----X3 record check---

---Special Culvert Check---

---Message Check---

SECNO: 1.61
Type Structure: Special Culvert
Type of Flow: Inlet Control and Weir Flow

Section	SECNO	XLCH	CWSEL	EG	TOPWID	CHWID	X3 Left	X3 Right
1	1.572	130	1479	1479.21	253.31	32.77		
2	1.595	157	1479.88	1480.53	210.26	48.59	1479.62	1479.62
3	1.61	37	1481.18	1481.27	430.22	59.79	1479.86	1479.86
4	1.638	148	1481.46	1481.59	292.93	50.		
5	1.695	300	1482.48	1482.72	282.12	38.		

EGOC:	1486.47	QWEIR:	695.72	WRLEN:	288		
EGIC:	1488.71	QCULV:	898.57				
MNLRDEL:	1479.85	MXLCEL:	1478.48	ELLC:	1478.48		
MNRRDEL:	1479.85	MNRDEL:	1479.85	ELTRD:	1479.85		
CUNV:	4.013	ENTLC:	0.4	COFQ:	2.6		
RDELEN:	0	RISE:	3	SPAN:	8		
CULVLN:	25.4	CHART:	8.1	ELCHU:	1475.48	ELCHD:	1475.24

---BT records Check---

----Location check---

----X2 record check---

----X3 record check---

---Special Culvert Check---

---TOPWIDTH Check---

---Message Check---

---End Program---

CHECK-2 Program: NT Module
Manning's n Value and Transition Loss Coefficient Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\PROPOSED.NT2
Date: 10/15/2001
Time: 12:50:32 PM

SECNO	XNL	XNR	XNCH	CCHV	CEHV	Structure
0.71	0.055	0.055	0.055	0.1	0.3	
0.782	0.055	0.055	0.055	0.1	0.3	
0.89	0.055	0.055	0.055	0.1	0.3	
0.985	0.055	0.055	0.055	0.1	0.3	
1.045	0.055	0.055	0.055	0.3	0.5	
1.067	0.055	0.055	0.055	0.3	0.5	SC+X2+BT
1.09	0.025	0.055	0.055	0.3	0.5	
1.102	0.025	0.055	0.055	0.1	0.3	
1.12	0.025	0.055	0.055	0.1	0.3	
1.139	0.025	0.055	0.055	0.1	0.3	
1.164	0.025	0.055	0.055	0.1	0.3	
1.19	0.025	0.055	0.055	0.1	0.3	
1.207	0.055	0.055	0.055	0.1	0.3	
1.227	0.055	0.055	0.055	0.1	0.3	
1.256	0.055	0.055	0.055	0.1	0.3	
1.288	0.055	0.055	0.055	0.1	0.3	
1.321	0.055	0.055	0.055	0.1	0.3	
1.351	0.055	0.055	0.055	0.1	0.3	
1.383	0.055	0.055	0.055	0.1	0.3	
1.411	0.055	0.055	0.055	0.1	0.3	
1.426	0.055	0.055	0.055	0.1	0.3	
1.462	0.055	0.055	0.055	0.1	0.3	
1.483	0.055	0.055	0.055	0.1	0.3	
1.518	0.055	0.055	0.055	0.1	0.3	
1.549	0.055	0.055	0.055	0.1	0.3	
1.572	0.055	0.055	0.055	0.1	0.3	
[illegible]5	0.055	0.055	0.055	0.3	0.5	
[illegible]1	0.055	0.055	0.055	0.3	0.5	SC+X2+BT
1.638	0.055	0.055	0.055	0.3	0.5	
1.695	0.055	0.055	0.055	0.1	0.3	
1.761	0.055	0.055	0.055	0.1	0.3	
1.856	0.055	0.055	0.055	0.1	0.3	
1.951	0.055	0.055	0.055	0.1	0.3	
2.045	0.055	0.055	0.055	0.1	0.3	
2.121	0.055	0.055	0.055	0.1	0.3	
2.2	0.055	0.055	0.055	0.1	0.3	

------Summary of Statistics------

	Minimum	Maximum
Left Overbank N Value:	0.025	0.055
Right Overbank N Value:	0.055	0.055
Channel N Value:	0.055	0.055
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

------Roughness Coefficient Check------

SECNO: 1.09
NT RC 01 Left overbank n value is less than 0.04

SECNO: 1.102
NT [illegible] 01 Left overbank n value is less than 0.04

SECNO: 1.12
NT RC 01 Left overbank n value is less than 0.04

SECNO: 1.139
NT RC 01 Left overbank n value is less than 0.04

```
SECNO:  1.164
NT RC 01  Left overbank n value is less than 0.04

SECNO:  1.19
NT RC 01  Left overbank n value is less than 0.04

------NC and NH records Check------

------Transition Coefficient check------

------Roughness Coefficient Check at Structures------

------Special Notes and Messages check------

---End Program---
```

CHECK-2 Program, XSEC Module
Cross Section Location and Alignment Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\PROPOSED.XS2
Date: 10/15/2001
Time: 12:50:36 PM

SECNO	Xlob	Xrob	Xlch	CHWID	Topwid	Structure	Flow Type
0.71	0.00	0.00	0.00	40.00	1064.97		
0.782	380.00	360.00	380.00	66.00	902.21		D
0.89	740.00	400.00	570.00	43.00	758.28		D
0.985	600.00	490.00	502.00	41.00	583.56		D
1.045	316.00	319.00	317.00	80.87	293.92		D
1.067	98.00	116.00	98.00	78.55	78.55	SC+X2+BT	
1.09	71.00	122.00	136.00	84.49	456.29		
1.102	66.00	62.00	65.00	56.77	425.58		
1.12	93.00	99.00	96.00	57.15	329.89		
1.139	106.00	89.00	100.00	36.23	272.61		
1.164	138.00	112.00	129.00	40.94	191.82		
1.19	138.00	138.00	138.00	45.12	164.73		
1.207	78.00	96.00	91.00	37.45	168.41		C
1.227	107.00	98.00	100.00	39.77	192.71		
1.256	144.00	162.00	159.00	37.44	216.50		
1.288	153.00	172.00	166.00	35.11	235.83		
1.321	167.00	182.00	178.00	35.53	235.58		
1.351	153.00	164.00	163.00	68.15	201.88		
1.383	168.00	157.00	163.00	46.68	175.04		
1.411	153.00	146.00	152.00	61.85	157.99		
1.426	76.00	79.00	79.00	36.51	153.16		
1.462	193.00	192.00	193.00	44.50	152.47		
1.483	112.00	112.00	113.00	36.92	200.85		
1.518	180.00	186.00	184.00	45.05	210.46		
1.549	135.00	175.00	171.00	44.81	227.63		
1.572	124.00	133.00	130.00	32.77	253.31		
1.595	124.00	177.00	157.00	49.89	216.63		
1.61	38.00	36.00	37.00	95.07	432.43	SC+X2+BT	
1.638	192.00	122.00	148.00	50.00	300.10		
1.695	297.00	303.00	300.00	38.00	282.28		
1.761	360.00	340.00	350.00	37.00	410.74		D
1.856	502.00	502.00	502.00	39.00	147.23		
1.951	510.00	495.00	502.00	30.00	129.38		
2.045	505.00	510.00	505.00	31.00	281.34		
2.121	405.00	415.00	410.00	39.00	136.48		
2.2	400.00	425.00	417.00	77.00	336.42		D

XS IF 04 D = divided flow
XS IF 05 E = extended cross section
XS IF 06 C = critical depth
XS IF 07 S = X5 record

-----Distance Check-----

----Channel Width Check----

----Spacing Check----

----Ineffective Flow Area----

----Location Check----

----Discharge Check----

----Starting WSEL Check----

XS SW 02 Known water-surface elevation of 1460.42 is specified on the first J1 record.

---End Program---

CHECK-2 Program: Bridge Module

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\PROPOSED.BR2
Date: 10/15/2001
Time: 12:50:41 PM

SECNO	MXLCEL	MNREL	EG	CWSEL	ELMIN	Structure
0.71	-----	-----	1460.42	1460.42	1449.5	
0.782	-----	-----	1460.45	1460.44	1454.5	
0.89	-----	-----	1460.71	1460.51	1454	
0.985	-----	-----	1463.43	1463.22	1458.1	
1.045	-----	-----	1464.76	1464.55	1458.76	
1.067	1464.34	1466.09	1466.15	1465.83	1459.34	SC+X2+BT
1.09	-----	-----	1466.29	1466.25	1459.05	
1.102	-----	-----	1466.32	1466.25	1459.5	
1.12	-----	-----	1466.37	1466.27	1460	
1.139	-----	-----	1466.45	1466.28	1460.4	
1.164	-----	-----	1466.69	1466.28	1460.6	
1.19	-----	-----	1467.12	1466.48	1462.2	
1.207	-----	-----	1468.75	1467.79	1462.8	
1.227	-----	-----	1469.74	1469.32	1462.9	
1.256	-----	-----	1470.66	1470.3	1464.43	
1.288	-----	-----	1471.68	1471.31	1465	
1.321	-----	-----	1472.68	1472.33	1465.6	
1.351	-----	-----	1473.55	1473.16	1466.7	
1.383	-----	-----	1474.65	1474.09	1467	
1.411	-----	-----	1475.54	1475.09	1468.1	
1.426	-----	-----	1475.96	1475.5	1468.3	
1.462	-----	-----	1477.06	1476.6	1469.7	
1.483	-----	-----	1477.49	1477.29	1469.8	
1.518	-----	-----	1478.02	1477.79	1471.6	
1.549	-----	-----	1478.63	1478.42	1473.48	
1.572	-----	-----	1479.21	1479	1474.38	
1.595	-----	-----	1480.49	1479.89	1474.73	
[illegible]	1478.48	1479.85	1481.5	1481.44	1475.18	SC+X2+BT
[illegible]38	-----	-----	1481.75	1481.64	1475.7	
1.695	-----	-----	1482.73	1482.5	1477.3	
1.761	-----	-----	1484.99	1484.59	1479.1	
1.856	-----	-----	1487.81	1487.42	1480.7	
1.951	-----	-----	1489.82	1489.53	1482.9	
2.045	-----	-----	1492.11	1491.87	1486.6	
2.121	-----	-----	1494.85	1494.43	1488.7	
2.2	-----	-----	1496.06	1496	1490.5	

SECNO: 1.067
Type Structure: Special Culvert
Type of Flow: Outlet Control

Section	SECNO	XLCH	CWSEL	EG	TOPWID	CHWID	X3 Left	X3 Right
1	0.985	502	1463.22	1463.43	583.56	41.		
2	1.045	317	1464.55	1464.76	293.92	80.87	1462.01	1462.71
3	1.067	98	1465.83	1466.15	78.55	78.55	1467.5	1467.74
4	1.09	136	1466.25	1466.29	456.29	84.49		
5	1.102	65	1466.25	1466.32	425.58	56.77		

EGOC:	1466.15	QWEIR:	0	WRLEN:	0		
EGIC:	1465.87	QCULV:	2304				
MNLRDEL:	1466.09	MXLCEL:	1464.34	ELLC:	1464.34		
MNRRDEL:	1467.5	MNRDEL:	1466.09	ELTRD:	1466.09		
CUNV:	5.013	ENTLC:	0.4	COFQ:	2.6		
RDELEN:	0	RISE:	6	SPAN:	10		
CULVLN:	60	CHART:	8.1	ELCHU:	1459.34	ELCHD:	1458.9

---BT records Check---

----Location check---

----X2 record check---

----X3 record check---

---Special Culvert Check---

---Message Check---

SECNO: 1.61
Type Structure: Special Culvert
Type of Flow: Outlet Control and Weir Flow

Section	SECNO	XLCH	CWSEL	EG	TOPWID	CHWID	X3 Left	X3 Right
1	1.572	130	1479	1479.21	253.31	32.77		
2	1.595	157	1479.89	1480.49	216.63	49.89	1479.62	1479.62
3	1.61	37	1481.44	1481.5	432.43	95.07	1479.86	1479.86
4	1.638	148	1481.64	1481.75	300.1	50.		
5	1.695	300	1482.5	1482.73	282.28	38.		

EGOC:	1487.17	QWEIR:	847.19	WRLEN:	298		
EGIC:	1484.95	QCULV:	756.24				
MNLRDEL:	1479.85	MXLCEL:	1478.48	ELLC:	1478.48		
MNRRDEL:	1479.85	MNRDEL:	1479.85	ELTRD:	1479.85		
CUNV:	4.016	ENTLC:	0.5	COFQ:	2.6		
RDELEN:	0	RISE:	3	SPAN:	8		
CULVLN:	25.4	CHART:	9.2	ELCHU:	1475.48	ELCHD:	1475.24

---BT records Check---

----Location check---

----X2 record check---

----X3 record check---

---Special Culvert Check---

---TOPWIDTH Check---

---Message Check---

---End Program---

HEC-2 Output for Proposed Conditions Floodway Model
Check-2 Output for Proposed Conditions Floodway Model

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version  4.6.2;  May 1991            *
*                                       *
*  RUN DATE    26NOV01    TIME   13:16:56 *
*****************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 26NOV01 13:16:56

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************


T1REVISED FLOODPLAIN ANALYSIS-BASED ON MARICOPA COUNTY FLOOD CONTROL DISTRICT
T2100 YEAR FLOOD EVENT - BASED ON 6-HR RAINFALL
T3BUCHANAN WASH - SKUNK CREEK TO C.A.P.- REVISED BY RBF CONSULTING APRIL 2001

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

      0        2        0        0        0        0        0        0     1460.42     0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      1        0       -1        0        0        0       -1        0        0        15

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    110      115      200

J5  LPRNT    NUMSEC                    ********REQUESTED SECTION NUMBERS********

    -10      -10

QT        2     2304     2304
NC    0.055    0.055    0.055     0.10     0.30
                   0      5.1              9693.00  10351.00
X1    0.710       57    9985.    10025.        0        0        0
GR   1464.3    8805.   1465.2    8829.   1465.9    8860.   1465.6    8890.   1465.5    8945.
GR   1464.6    9006.   1464.2    9072.   1463.0    9130.   1462.3    9188.   1461.1    9257.
GR   1461.0    9317.   1461.3    9374.   1460.8    9426.   1459.1    9474.   1457.4    9519.
GR   1456.7    9574.   1457.1    9621.   1457.3    9668.   1456.3    9683.   1455.6    9700.
GR   1455.5    9710.   1455.2    9716.   1456.2    9730.   1456.6    9748.   1455.6    9758.
GR   1457.0    9776.   1456.9    9798.   1455.5    9823.   1456.0    9852.   1455.4    9887.
GR   1455.5    9917.   1455.1    9932.   1454.3    9952.   1455.2    9975.   1456.3    9985.
GR   1454.9    9990.   1449.5   10000.   1449.9   10016.   1455.0   10018.   1456.0   10025.
GR   1456.1   10035.   1455.4   10061.   1454.9   10105.   1455.2   10165.   1455.2   10224.
GR   1455.0   10267.   1455.4   10316.   1455.4   10363.   1455.9   10405.   1455.9   10458.
GR   1456.3   10486.   1460.5   10502.   1464.4   10525.   1468.3   10549.   1469.9   10572.
GR   1474.2   10608.   1476.6   10648.

ET                 0      5.1              9889.00  10446.00
X1    0.782       48    9966.    10032.      380      360      380
GR   1465.2    9401.   1466.0    9455.   1464.8    9494.   1464.3    9529.   1464.3    9559.
GR   1464.1    9606.   1462.8    9651.   1460.6    9689.   1458.8    9738.   1457.4    9784.
GR   1456.2    9827.   1456.9    9865.   1456.9    9891.   1456.4    9909.   1456.4    9934.
GR   1457.1    9966.   1454.6    9985.   1454.5   10000.   1454.8   10016.   1459.8   10032.
GR   1456.2   10044.   1454.8   10058.   1456.4   10082.   1456.3   10116.   1456.2   10153.
GR   1457.0   10175.   1463.5   10188.   1463.2   10199.   1458.2   10208.   1457.2   10219.
GR   1456.5   10262.   1456.9   10308.   1456.6   10356.   1456.5   10404.   1456.8   10457.
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	1457.4	10510.	1456.8	10564.	1458.1	10609.	1464.2	10632.	1469.6	10656.
GR	1470.8	10676.	1469.3	10687.	1469.9	10699.	1470.7	10715.	1471.3	10737.
GR	1475.6	10754.	1478.2	10775.	1479.3	10792.				
ET		0	5.1		9836.00	10014.00				
X1	0.89	34	9971	10014	740	400	570			
GR	1461.4	9304	1460.8	9366	1460.3	9431	1459.9	9498	1460.1	9549
GR	1460.2	9605	1459.6	9673	1459.7	9743	1459.7	9813	1459.7	9875
GR	1459	9900	1457.9	9910	1457.3	9915	1458.9	9919	1459.1	9931
GR	1458.5	9941	1459	9950	1460.3	9971	1454	9987	1454.8	10000
GR	1458.9	10014	1458.3	10030	1458.1	10049	1458.3	10066	1458.5	10094
GR	1459.6	10109	1459.6	10110	1459.7	10113	1460.8	10147	1461	10176
GR	1460.4	10195	1460.5	10215	1462.5	10230	1465.2	10260		
ET		0	5.1		9895	10019.00				
X1	0.985	37	9978	10019	600	490	502			
GR	1464.2	9337	1463.3	9397	1463.4	9455	1462.8	9522	1462.7	9591
GR	1462.8	9663	1462.8	9714	1463.2	9759	1463.1	9802	1463.4	9849
GR	1462	9862	1459.5	9874	1460.3	9878	1461.2	9883	1460.9	9891
GR	1459.9	9903	1459.6	9913	1458.9	9918	1461.5	9923	1461.2	9930
GR	1459	9933	1459.9	9942	1461.8	9951	1461.3	9963	1461.2	9978
GR	1459	9986	1458.5	9989	1458.1	10000	1459.7	10008	1459.6	10015
GR	1461.5	10019	1461.8	10025	1460.9	10047	1461.7	10056	1462.1	10074
GR	1464.2	10103	1466.1	10143						
NC	0	0	0	0.3	0.5					
ET		0	5.1		9918	10060				
X1	1.045	64	9959.01	10039.88	316	319	317			
X3	10									
GR	1473.6	9000	1472.40	9047.61	1470.90	9080.50	1469.94	1462.01	1462.71	
GR	1468.1	9165.84	1467.70	9175.95	1467.76	9185.09	1465.10	9088.10	1468.99	9111.47
GR	1467.7	9195.73	1467.44	9233.04	1467.62	9257.62	1469.24	9188.83	1467.58	9193.30
GR	1469.0	9393.28	1467.87	9412.05	1467.73	9437.64	1467.90	9305.68	1469.39	9353.17
GR	1468.2	9515.00	1467.93	9526.31	1467.71	9529.35	1466.41	9445.79	1467.50	9497.65
GR	1465.4	9567.87	1464.97	9602.53	1464.80	9661.68	1464.20	9540.86	1465.50	9552.16
GR	1465.2	9669.24	1464.38	9703.09	1465.00	9764.57	1465.70	9662.88	1463.76	9664.37
GR	1464.5	9858.05	1463.11	9868.18	1461.90	9887.64	1462.01	9793.67	1465.10	9850.28
GR	1460.3	9969.82	1459.98	9975.21	1460.26	9994.11	1460.58	9959.01	1461.55	9963.98
GR	1459.9	10015.77	1458.76	10018.82	1459.06	10029.40	1462.71	9996.03	1460.68	10011.16
GR	1463.1	10050.26	1463.21	10052.77	1462.81	10073.03	1463.01	10039.88	1463.29	10044.58
GR	1464.2	10117.09	1465.80	10142.38	1466.02	10148.87	1467.54	10090.67	1463.79	10104.15
GR	1470.3	10263.96	1476.68	10362.79	1478.01	10377.28	1478.29	10187.70	1468.70	10249.15
								10385.52		
SC	5.013	.4	2.6		6	10	60	8.1	1459.34	1458.9
ET		0	5.11		9961.39	10039.94				
X1	1.067	26	9961.39	10039.94	98	116	98			
X2			2	1464.34	1466.09					
X3	10									
BT	-10	9611.57	1467.5		9820.84	1466.09		1467.50	1467.74	
BT		9970.84	1467.59		10039.94	1467.74		9961.39	1467.50	
BT		10120.46	1468.07		10170.84	1468.52		10108.25	1467.93	
BT		10238.99	1468.84					10216.00	1468.31	
GR	1467.5	9611.57	1466	9650.21	1463	9664.02	1463	9906.66	1462.7	9919.87
GR	1462.5	9952.53	1462.6	9959.99	1462.64	9961.39	1459.34	9961.39	1459.34	10039.94

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GR   1462.9   10039.94    1462.6   10050.74    1462.7   10065.32   1463.12   10076.33    1463.6   10106.11
GR   1464.1   10112.38    1464.5   10123.63    1465.4   10136.86   1465.90   10140.46    1466.1   10146.66
GR   1467.3   10172.20    1468.3   10187.65    1469.0   10217.66   1468.84   10268.99    1469.4   10297.71
GR   1470.9   10312.39
  FILL RETENTION BASIN TO OVERFLOW ELEVATION

NC    0.025
ET                 0       5.1                 9766      10119
X1     1.09       26    9948.33   10032.82      71        122       136
GR     1467   9666.07      1463    9707.45    1463    9931.05    1463.1     9942.2      1463    9948.33
GR   1462.7    9959.2   1461.05    9984.28 1459.05      10000    1459.1   10013.47    1464.3   10032.82
GR   1463.9  10042.86    1462.9   10048.17 1462.67   10050.13      1463   10057.08    1462.8   10058.68
GR   1463.2  10063.07   1463.77   10065.62   1463.8   10070.53    1463.7   10072.73    1463.6   10076.17
GR   1463.5  10076.79   1463.93   10084.53 1464.51   10103.94      1465   10115.96    1466.1   10127.98
GR   1467.2  10144.17
  FILL RETENTION BASIN TO OVERFLOW ELEVATION

NC                                    .1        .3
ET                 0       5.1                 9770      10115
X1    1.102       33     9986.7   10043.47      66         62        65
GR   1466.9   9766.67      1465    9778.38    1463    9786.38      1463    9949.08    1462.9    9960.18
GR   1462.9   9972.98    1463.0     9986.7 1462.9       9988    1459.7    9997.36    1459.5      10000
GR   1459.9  10006.82    1460.5   10027.37 1464.5   10043.47    1464.4   10047.98    1463.7   10055.91
GR   1463.1  10057.72    1462.4   10059.16 1463.9   10065.36    1464.1    10072.7    1463.6   10080.67
GR   1464.4  10094.26    1464.8   10130.05 1464.8   10134.56    1465.2    10156.8    1465.1   10164.58
GR   1465.2  10172.74    1464.9   10179.84   1465    10181.7    1465.2   10182.88    1465.7   10191.47
GR   1466.3  10196.74    1466.5   10197.82 1468.3      10210
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

ET                 0       5.1                 9798    10085.2
X1     1.12       18    9968.95    10026.1      93        . 99        96
GR   1466.8   9744.78      1466    9760.79    1463    9773.85      1463    9942.25    1463.3    9949.44
GR   1463.8   9968.95    1463.7    9970.48 1460.3    9986.44      1460      10000    1460.3   10009.33
GR   1464.7   10026.1    1464.7      10038 1463.9   10045.94      1464   10059.55    1465.6   10074.23
GR   1466.1  10081.14    1466.9   10099.54 1469.5    10127.5
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

ET                 0       5.1                 9841      10064
X1    1.139       20    9981.49   10017.72     106         89       100
GR   1467.5   9781.66      1467    9796.59    1463    9813.42      1463    9947.17      1464    9951.17
GR   1464.4   9951.37    1463.97    9974.76 1464.2    9981.49    1461.9    9990.82    1460.9    9993.08
GR   1460.4     10000     1460.8   10009.97 1464.6   10016.85    1465.0   10017.72    1464.9   10017.97
GR   1465.2  10027.79    1464.95   10048.36 1465.2   10064.01    1466.7   10075.47      1468   10091.61
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

ET                 0       5.1                 9877      10033
X1    1.164       18    9982.34   10023.28     138        112       129
GR   1468.4   9830.82      1468    9844.61    1463    9865.40      1463    9946.58      1464    9950.58
GR   1464.8   9954.88    1465.5    9967.43 1465.4    9968.45    1465.8    9982.34      1461    9994.82
GR   1460.6     10000     1461.2   10009.82 1463.3   10015.83    1465.7   10023.28    1465.8   10038.87
GR   1466.6  10046.62    1468.9   10062.04 1469.4   10068.82
  FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)
```

ET		0	5.1		9880	10030				
X1	1.19	17	9984.76	10029.88	138	138	138			
GR	1469.1	9850.94	1468	9866.78	1463	9886.78	1463	9942.43	1465.7	9953.46
GR	1466	9973.63	1465.9	9979.06	1465.9	9984.76	1464.4	9988.33	1462.6	9993.34
GR	1462.2	10000	1462.5	10009.95	1463.6	10023.02	1466.0	10029.88	1466.5	10037.79
GR	1467.9	10041.85	1473.8	10057						
NC	0.055									
ET		0	5.1		9877.6	10036				
X1	1.207	14	9990.52	10027.97	78	96	91			
GR	1469.4	9858.73	1466	9898.43	1466	9919.45	1466.4	9926.83	1466.7	9950.09
GR	1466.7	9964.01	1466.3	9976.02	1466.1	9990.52	1462.8	10000	1462.8	10018.85
GR	1465.5	10027.97	1465.7	10035.59	1466.2	10041.15	1474.5	10066.45		
ET		0	5.1		9872	10050				
X1	1.227	17	9984.14	10023.91	107	98	100			
GR	1470.0	9854	1467.43	9877.45	1467.7	9898.13	1467.6	9937.73	1467.3	9953.13
GR	1466.8	9963.82	1465.39	9984.14	1463.6	9988.74	1462.9	10000	1463.5	10010.51
GR	1464.2	10018.47	1466.8	10023.91	1466.7	10031.94	1467.6	10038.59	1468	10040.83
GR	1468.6	10049.42	1473.13	10071.44						
ET		0	5.1		9867	10071.5				
X1	1.256	24	9985.52	10022.96	144	162	159			
GR	1470.7	9851.37	1469.46	9862.56	1469.3	9880.05	1468.83	9887.26	1468.8	9894.56
GR	1468.6	9908.76	1467.87	9933.42	1467.91	9943.1	1467.83	9945.24	1467.2	9952.43
GR	1466.8	9959.52	1467.2	9966.78	1467.8	9969.73	1467.62	9970.93	1468.1	9985.52
GR	1464.7	9994.77	1464.43	10000	1464.87	10013.19	1466.3	10017.47	1468.3	10022.96
GR	1467.7	10040.81	1468.1	10055.02	1469.35	10063.73	1474.33	10104.04		
ET		0	5.1		9865	10076				
X1	1.288	19	9985.44	10020.55	153	172	166			
GR	1471.5	9847.14	1469.92	9862.07	1470.38	9878.96	1469.7	9914.83	1468.4	9940.95
GR	1468.0	9959.41	1469.2	9968.09	1469.25	9985.44	1465.3	9994.96	1465	10000
GR	1465.4	10010.83	1469.5	10020.55	1468.9	10044.93	1469	10050.41	1469.4	10056.19
GR	1470.3	10074.79	1471.6	10087.53	1472.04	10096.32	1474.2	10122.51		
ET		0	5.1		9893	10115				
X1	1.321	29	9984.58	10020.11	167	182	178			
GR	1472.7	9876.67	1471.03	9892.87	1470.95	9915.58	1469.14	9954.87	1469.09	9958.88
GR	1469.2	9965.35	1469.1	9972.08	1468.98	9974.02	1468.77	9984.58	1467.68	9987.8
GR	1466	9991.72	1465.6	10000	1465.73	10008.59	1468.94	10016.85	1470.5	10020.11
GR	1470.2	10027.07	1470.3	10030.3	1470.6	10032.63	1470.56	10043.51	1470.19	10055.25
GR	1470.5	10061.05	1470.6	10068.68	1471.02	10080	1471.29	10091.02	1472.8	10127.26
GR	1473	10128.14	1473.3	10130.29	1474.8	10137.3	1476.04	10142.03		
ET		0	5.1		9882	10062				
X1	1.351	18	9942.88	10011.03	153	164	163			
GR	1473.5	9857.67	1472.42	9867.48	1472.6	9880.65	1470.9	9924.11	1470.8	9938.54
GR	1470.6	9942.88	1469.7	9959.46	1467.51	9978.65	1466.7	9992.31	1466.7	10000
GR	1471.4	10011.03	1471.54	10013.4	1471.34	10024.88	1471.3	10042.77	1472.5	10059.89
GR	1473.4	10063.71	1474.4	10069.72	1478.89	10091.37				

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ET                  0       5.1                 9874      10042
X1    1.383        20   9970.16   10016.84       168        157        163
GR   1474.6   9862.88    1473.9    9869.02    1473.9    9873.19     1473.5    9888.54     1473.0    9896.25
GR   1472.7   9919.19    1471.7    9948.56    1471.2    9956.32     1471.4    9961.12     1471.8     9964.3
GR   1471.9   9970.16    1468.5    9980.05    1467.7    9989.76     1467.4    9994.43     1467.0      10000
GR   1472.2  10016.84    1471.7   10025.23    1472.8   10035.35     1475.6   10050.65     1481.0   10072.52

NC                                     0.1       0.3
ET                  0       5.1                 9908      10058
X1    1.411        25   9971.18   10033.03       153        146        152
GR   1475.3   9905.98   1474.74     9910.5    1473.9    9957.93     1472.7    9964.29     1472.6    9966.03
GR   1472.4   9966.76   1471.81    9971.18   1471.37    9976.08     1470.9       9979     1470.9     9979.9
GR   1470.6   9982.72   1470.15    9984.48    1470.2    9987.79     1469.7    9989.73     1469.6    9990.71
GR   1469.4   9991.69   1468.77    9995.45    1468.2    9997.05     1468.1      10000     1468.2   10015.43
GR   1471.9  10033.03    1472.6   10037.33   1472.71   10048.66     1473.3   10058.13     1480.9      10090

NC                                     0.1       0.3
ET                  0       5.1                 9894      10039
X1    1.426        15   9978.31   10014.82        76         79         79
GR   1475.6   9884.94   1471.42    9925.94    1473.1     9934.3     1473.2    9938.91        1473     9949.8
GR    1473   9952.14    1472.4    9978.31   1470.15    9984.19     1468.5    9987.16     1468.3      10000
GR   1469.4  10003.23   1473.69   10014.82    1473.1   10024.97     1474.4   10034.28     1478.9      10054

ET                  0       5.1                 9897     10048.9
X1    1.462        18   9971.59   10016.09       193        192        193
GR   1477.2   9890.18    1476.6    9896.36    1475.9    9900.75     1475.5    9912.02     1475.2    9931.01
GR   1474.8   9948.64    1473.5    9963.86    1473.4     9964.1     1473.2    9971.59     1470.0    9992.16
GR   1469.7     10000   1469.85   10007.08    1471.5   10012.15     1472.5   10016.09     1473.4   10030.44
GR   1474.2  10038.38   1474.47   10040.07      1481   10067.01

NC    0.055    0.055     0.055       0.1       0.3
OT        2     1609      1609
ET                  0       5.1                 9923      10079
X1    1.483        15   9980.37   10017.29       112        112        113
GR    1479   9868.51      1479    9870.77      1477    9896.72     1476.2    9947.69    1473.84    9980.37
GR    1472   9985.59    1470.1    9990.88    1469.8   10007.24    1474.31   10017.29     1473.9   10032.06
GR   1474.8  10061.99    1475.4   10072.56   1477.25   10093.65    1478.81   10099.71       1495   10175.72

NC    0.055    0.055     0.055       0.1       0.3
ET                  0       5.1                 9949      10090
X1    1.518        22   9976.69   10021.74       180        186        184
GR   1479.1   9835.54    1478.7    9845.89   1478.52    9858.88       1478    9874.38    1477.28    9906.15
GR   1476.8   9919.61   1476.24    9936.13    1475.2    9957.62     1474.6     9965.9     1474.1     9970.2
GR   1474.8   9976.69    1474.3    9980.22   1472.05    9987.42     1471.6      10000    1474.18   10014.71
GR   1475.2  10021.74      1476   10040.18   1475.98   10054.93       1476   10058.37     1476.7   10080.37
GR    1478  10097.02    1481.8   10117.33

NC                                     0.1       0.3
ET                  0       5.1                 9900      10052
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      1.549        27   9974.29   10019.1       135       175       171
GR    1479.2   9866.08   1477.23    9884.3    1476.6   9897.65    1475.8   9919.62   1476.04   9931.96
GR    1475.6   9939.15   1475.49   9944.81   1476.61   9953.63    1476.7   9955.58   1476.48   9963.18
GR    1476.4   9974.29    1475.6   9977.71   1473.94   9986.51    1473.7    9989.1   1473.48     10000
GR    1473.5  10008.39    1475.9   10019.1      1476  10020.37      1476  10025.59   1477.11  10051.54
GR    1477.3  10054.35   1477.56  10063.05   1477.82  10074.98      1478  10091.94    1478.5  10102.65
GR    1479.8  10112.11    1482.7  10125.24
  CROSS SECTIONNO. 1 OF SPECIAL CULVERT ROUTINE.

ET                  0       5.1                 9892     10075
X1    1.572        24   9991.46  10024.23       124       133       130
GR    1480.2   9813.67    1480.2   9868.51    1477.7   9915.82   1476.45   9933.23   1476.82   9938.26
GR    1477.2   9965.01   1477.01   9965.78    1477.6   9991.46   1474.38     10000    1474.4  10016.93
GR    1477.5  10024.23    1477.3  10031.33   1475.71  10037.89   1476.21  10045.55   1476.09   10062.1
GR    1476.2  10064.86   1477.15  10073.55   1477.72   10085.8   1478.89  10134.89    1479.2  10161.25
GR    1480.8   10215.2    1480.9  10220.99   1481.06  10223.88   1483.31  10234.14

NC                                     0.3       0.5
  CROSS SECTION NO. 2 OF SPECIAL CULVERT ROUTINE.
ET                  0       5.1                 9853     10059
X1    1.595        36   9960.78  10010.67       124       177       157
X3       10
GR    1480.7   9743.55   1480.65   9749.73   1480.55   9764.86    1480.4   1479.62   1479.62
GR    1480.3   9810.08    1480.2   9819.79   1480.17   9825.17   1480.11   9776.96    1480.4   9798.59
GR    1479.6   9871.14   1479.41   9883.27   1479.32   9896.56   1479.11   9831.82   1479.64   9858.63
GR    1479.1   9951.44   1478.28   9960.78   1478.08   9964.48    1478.1   9936.46   1479.05   9945.55
GR    1475.3   9974.65   1475.02   9978.48    1474.8   9990.18   1474.73   9968.41   1475.32   9971.94
GR     1475.   10001.9    1475.5  10004.98   1477.35  10007.55   1478.18   9992.47   1474.87   9996.73
GR    1479.3  10050.68   1479.75  10053.67   1479.87  10055.63   1479.93  10010.67   1478.64  10015.81
GR    1480.5  10086.23                                                     10069.79   1480.27   10076.4
  EXSTING CULVERT LOCATED ON PINNACLE VISTA ROAD.

SC    4.016       0.5       2.6                    3         8      25.4       9.2   1475.48   1475.24
  CROSS SECTION NO. 3 OF SPECIAL CULVERT ROUTINE.
                    0      5.11                 9715     10117
X1    1.610        29   9945.94  10041.01        38        36        37
X2                          2   1478.48   1479.85
X3       10
BT      -24    9711.2   1481.04              9737.62   1480.84                1479.86   1479.86
BT            9773.28   1480.79              9812.34   1480.66                9750.78    1480.8
BT            9933.42   1480.02              9938.84   1479.85                9867.01   1480.16
BT            9945.94   1481.76              9977.68   1481.49                9938.84   1481.88
BT           10040.47   1479.85             10040.48   1479.85               10026.42   1481.58
BT            10065.8   1480.05             10079.04   1480.38               10057.43   1479.86
BT           10096.76   1481.07             10104.76   1481.42               10087.02   1480.67
BT           10125.68   1482.46             10144.75   1483.67               10118.72   1482.03
GR     1482   9683.12    1481.1   9708.61    1480.9   9723.22   1480.39   10148.75    1483.9
GR   1479.5   9836.76    1479.2   9895.28    1478.9    9908.3   1478.87   9779.28    1479.8   9783.52
GR   1479.1   9937.19   1479.09    9945.9   1478.68   9945.94   1478.22   9925.63    1479.0   9929.92
GR   1475.2    9987.5    1475.3  10000.01   1475.18  10000.44   1475.21   9971.95    1477.8    9978.4
GR   1478.5  10026.42    1479.2  10041.01   1479.27  10052.63   1479.43  10017.89    1477.8  10023.04
GR   1480.1  10092.94   1480.86  10112.48   1481.44   10131.4    1482.2   10057.2    1479.8  10080.04
  CROSS SECTION NO. 4 OF SPECIAL BRIDGE ROUTINE.
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ET                 0.0       5.1                9839      10110
X1     1.638        21      9970      10020      192        122       148
GR    1483.0     9582.    1483.0     9583.   1482.9       9671.   1482.9     9750.    1481.9     9810.
GR    1480.5     9849.    1479.3     9907.   1478.6       9933.   1478.8     9949.    1479.5     9970.
GR    1475.7     9984.    1475.7    10000.   1479.8      10020.   1479.7    10052.    1480.3    10084.
GR    1479.9    10100.    1482.1    10122.   1482.5      10140.   1485.4    10167.    1488.4    10194.
GR    1488.7    10203.

NC                                     .1        .3
ET                 0.0       5.1            9950.00    10072.00
X1     1.695        37      9978      10016      297        303       300
GR    1484.6     9443.    1484.6     9444.   1484.6       9445.   1484.6     9546.    1484.6     9547.
GR    1483.4     9609.    1483.1     9660.   1482.2       9713.   1482.3     9735.    1483.2     9749.
GR    1484.0     9773.    1483.9     9791.   1484.2       9814.   1485.2     9830.    1483.7     9868.
GR    1483.5     9887.    1481.6     9906.   1480.2       9926.   1480.5     9952.    1481.5     9978.
GR    1477.3     9992.    1477.4    10000.   1477.4      10008.   1481.3    10016.    1480.7    10039.
GR    1480.8    10056.    1481.5    10086.   1480.4      10110.   1481.4    10120.    1481.6    10142.
GR    1482.4    10177.    1483.9    10212.   1485.1      10249.   1485.9    10285.    1486.3    10320.
GR    1487.0    10350.    1487.3    10362.

ET                 0.0       5.1            9980.0      10159
X1     1.761        40     9980.    10017.      360        340       350
GR    1489.8     9478.    1489.8     9479.   1489.8       9480.   1489.8     9481.    1489.8     9482.
GR    1489.5     9517.    1489.5     9557.   1488.9       9599.   1488.0     9639.    1487.6     9678.
GR    1486.4     9718.    1486.1     9758.   1486.3       9800.   1487.6     9839.    1487.9     9874.
GR    1487.5     9905.    1485.5     9931.   1482.9       9958.   1483.2     9980.    1479.1     9988.
GR    1479.1    10000.    1479.2    10008.   1483.2      10017.   1483.3    10052.    1484.0    10091.
GR    1484.0    10122.    1483.3    10159.   1484.0      10200.   1484.5    10238.    1484.4    10280.
GR    1484.4    10319.    1484.8    10342.   1483.2      10355.   1485.4    10371.    1486.0    10410.
GR    1486.1    10453.    1487.0    10496.   1487.7      10542.   1488.4    10582.    1488.8    10614.

ET                 0.0       5.1            9974.00     10024.0
X1     1.856        31     9980.    10019.      502        502       502
GR    1492.5     9703.    1492.5     9704.   1492.5       9705.   1492.5     9706.    1492.5     9707.
GR    1492.4     9750.    1491.9     9791.   1490.5       9830.   1489.3     9865.    1487.9     9901.
GR    1486.7     9941.    1484.5     9980.   1480.7       9989.   1480.9    10000.    1480.9    10009.
GR    1485.2    10019.    1485.1    10038.   1487.5      10065.   1489.3    10093.    1489.8    10123.
GR    1489.5    10155.    1488.2    10182.   1487.6      10219.   1488.6    10257.    1488.4    10300.
GR    1488.9    10340.    1489.3    10381.   1490.4      10402.   1493.2    10419.    1498.7    10460.
GR    1500.9    10473.

ET                 0.0       5.1            9945.0      10011.00
X1     1.951        33     9981.    10011.      510        495       502
GR    1497.0     9414.    1497.0     9415.   1497.0       9416.   1497.0     9417.    1496.6     9498.
GR    1496.3     9579.    1495.5     9661.   1495.0       9741.   1494.8     9806.    1493.9     9858.
GR    1492.3     9881.    1488.8     9909.   1485.9       9938.   1486.3     9965.    1486.7     9981.
GR    1483.1     9989.    1482.9    10000.   1483.0      10006.   1486.1    10011.    1489.2    10026.
GR    1491.0    10061.    1490.9    10099.   1490.8      10145.   1491.0    10190.    1491.2    10242.
GR    1492.1    10289.    1493.1    10339.   1494.1      10388.   1494.8    10429.    1495.5    10457.
GR    1502.0    10488.    1505.7    10523.   1508.7      10544.
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ET                0.0       5.1              9939.00   10050.00
X1    2.045        34      9988.    10019.      505       510       505
GR   1499.6     9478.    1499.2     9519.   1498.9     9562.    1499.0     9607.    1498.7     9640.
GR   1497.8     9681.    1497.4     9721.   1496.9     9765.    1496.3     9806.    1494.6     9840.
GR   1491.1     9867.    1490.3     9911.   1489.5     9949.    1489.5     9963.    1490.9     9978.
GR   1490.9     9988.    1486.6     9995.   1486.7    10000.    1486.6    10010.    1491.2    10019.
GR   1490.1    10048.    1488.0    10057.   1490.9    10066.    1490.7    10094.    1491.7    10120.
GR   1492.0    10158.    1492.4    10199.   1493.2    10238.    1493.9    10280.    1493.6    10321.
GR   1493.7    10360.    1494.2    10384.   1502.1    10422.    1502.7    10425.

QT        2    1308.0    1308.0
ET                0.0       5.1              9976.00   10019.00
X1    2.121        19      9980.    10019.      405       415       410
GR   1503.6     9596.    1502.3     9639.   1502.2     9681.    1501.8     9722.    1501.3     9768.
GR   1500.5     9813.    1499.7     9853.   1498.4     9888.    1496.7     9921.    1492.8     9947.
GR   1492.1     9980.    1488.7     9990.   1489.3    10000.    1490.5    10010.    1493.6    10019.
GR   1493.0    10048.    1494.8    10079.   1496.4    10110.    1497.1    10133.

ET                0.0       5.1              9845.00   10036.0
X1    2.200        20      9959.    10036.      400       425       417
GR   1502.0    9511.0    1500.0    9566.0   1498.8    9612.0    1496.9    9654.0    1495.7    9701.0
GR   1494.2     9741.    1494.1     9781.   1493.0     9811.    1494.7     9824.    1493.5     9837.
GR   1493.4     9863.    1493.1     9891.   1495.6     9903.    1495.3     9930.    1496.1     9959.
GR   1495.0     9970.    1491.5     9981.   1491.4    10000.    1490.5    10017.    1498.5    10036.
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .71 CWSEL= 1460.42

STA=	9437.	9574.	9668.	9710.	9748.	9798.	9852.	9887.	9917.	9952.	9975.	9985.	10025.
PER Q=	4.4	5.3	3.5	3.4	3.6	4.9	3.5	3.2	4.4	3.1	1.0	9.1	
AREA=	307.6	316.8	179.0	168.9	193.7	240.9	165.2	149.1	191.2	130.4	46.7	328.2	
VEL=	.3	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.6	
DEPTH=	2.2	3.4	4.3	4.4	3.9	4.5	4.7	5.0	5.5	5.7	4.7	8.2	

STA=	10025.	10061.	10105.	10165.	10224.	10267.	10316.	10363.	10405.	10458.	10502.
PER Q=	3.4	5.2	7.3	6.9	5.2	5.7	5.1	4.2	4.9	2.8	
AREA=	165.1	231.9	322.2	308.0	228.8	255.8	235.9	200.3	239.6	153.3	
VEL=	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	
DEPTH=	4.6	5.3	5.4	5.2	5.3	5.2	5.0	4.8	4.5	3.5	

FLOW DISTRIBUTION FOR SECNO= .78 CWSEL= 1460.44

STA=	9693.	9827.	9865.	9909.	9934.	9966.	10032.	10058.	10082.	10116.	10153.	10219.	10262.
PER Q=	7.7	4.8	5.0	3.4	3.7	11.8	3.3	4.3	4.7	5.3	3.7	4.7	
AREA=	300.1	147.6	160.0	100.9	117.9	318.1	98.3	116.0	138.9	154.8	130.8	154.2	
VEL=	.6	.7	.7	.8	.7	.9	.8	.9	.8	.8	.7	.7	
DEPTH=	2.2	3.9	3.6	4.0	3.7	4.8	3.8	4.8	4.1	4.2	2.0	3.6	

STA=	10262.	10308.	10356.	10404.	10457.	10510.	10564.	10609.	10618.
PER Q=	5.4	5.5	6.0	6.4	5.2	5.3	3.7	.1	
AREA=	171.8	176.9	186.5	200.6	176.8	180.1	134.3	10.3	
VEL=	.7	.7	.7	.7	.7	.7	.6	.3	
DEPTH=	3.7	3.7	3.9	3.8	3.3	3.3	3.0	1.2	

FLOW DISTRIBUTION FOR SECNO= .89 CWSEL= 1460.51

STA=	9403.	9605.	9743.	9813.	9875.	9910.	9919.	9941.	9971.	10014.	10030.	10049.	10066.
PER Q=	3.5	6.9	4.1	3.6	5.4	3.8	4.0	3.2	38.8	3.9	6.3	5.6	
AREA=	76.9	102.0	56.8	50.3	49.7	24.2	35.3	34.0	184.5	30.6	43.9	39.3	
VEL=	1.1	1.6	1.6	1.6	2.5	3.6	2.6	2.2	4.8	2.9	3.3	3.3	
DEPTH=	.4	.7	.8	.8	1.4	2.7	1.6	1.1	4.3	1.9	2.3	2.3	

STA=	10066.	10094.	10138.	10215.
PER Q=	8.0	3.0	.0	
AREA=	59.1	35.6	1.4	
VEL=	3.1	2.0	.3	
DEPTH=	2.1	.8	.0	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .99 CWSEL= 1463.22

STA=	9475.	9663.	9874.	9883.	9903.	9913.	9918.	9930.	9942.	9951.	9978.	10019.	10047.
PER Q=	3.6	6.2	4.3	8.1	6.7	4.1	4.1	8.3	3.1	6.3	33.7	6.3	
AREA=	75.5	71.4	25.6	51.1	34.7	19.8	28.2	43.3	21.3	49.5	162.6	50.5	
VEL=	1.1	2.0	3.9	3.6	4.4	4.8	3.4	4.4	3.4	2.9	4.8	2.9	
DEPTH=	.4	.3	2.8	2.6	3.5	4.0	2.3	3.6	2.4	1.8	4.0	1.8	

STA=	10047.	10074.	10089.
PER Q=	4.6	.5	
AREA=	41.0	8.6	
VEL=	2.6	1.3	
DEPTH=	1.5	.6	

FLOW DISTRIBUTION FOR SECNO= 1.04 CWSEL= 1464.55

STA=	9662.	9888.	9959.	10040.	10073.	10104.	10123.
PER Q=	5.0	24.3	61.9	4.5	4.0	.4	
AREA=	51.4	185.2	343.3	49.7	44.4	8.1	
VEL=	2.2	3.0	4.2	2.1	2.1	1.0	
DEPTH=	.2	2.6	4.2	1.5	1.4	.4	

FLOW DISTRIBUTION FOR SECNO= 1.07 CWSEL= 1465.83

STA=	9961.	10040.
PER Q=	100.0	
AREA=	510.3	
VEL=	4.5	
DEPTH=	6.5	

FLOW DISTRIBUTION FOR SECNO= 1.09 CWSEL= 1466.25

STA=	9674.	9931.	9942.	9948.	10033.	10063.	10116.	10130.
PER Q=	65.9	3.1	1.7	22.6	3.2	3.4	.1	
AREA=	780.6	35.7	19.6	428.6	86.8	112.1	8.5	
VEL=	1.9	2.0	2.0	1.2	.9	.7	.3	
DEPTH=	3.0	3.2	3.2	5.1	2.9	2.1	.6	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.10 CWSEL= 1466.25

STA=	9771.	9949.	9960.	9973.	9987.	10043.	10081.	10135.	10196.
PER Q=	58.3	4.0	4.7	4.9	19.7	3.7	3.2	1.6	
AREA=	551.0	36.6	42.8	45.2	297.4	90.5	96.0	65.6	
VEL=	2.4	2.5	2.5	2.5	1.5	.9	.8	.6	
DEPTH=	3.1	3.3	3.3	3.3	5.2	2.4	1.8	1.1	

FLOW DISTRIBUTION FOR SECNO= 1.12 CWSEL= 1466.27

STA=	9755.	9761.	9774.	9942.	9949.	9969.	10026.	10038.	10046.	10060.	10074.	10081.	10085.
PER Q=	.0	1.8	66.9	2.6	5.7	19.5	.6	.6	1.4	.7	.0	.0	
AREA=	.8	23.2	551.6	22.5	53.2	275.6	18.7	15.7	31.6	21.7	2.9	.4	
VEL=	.3	1.8	2.8	2.7	2.5	1.6	.8	.9	1.0	.7	.3	.1	
DEPTH=	.1	1.8	3.3	3.1	2.7	4.8	1.6	2.0	2.3	1.5	.4	.1	

FLOW DISTRIBUTION FOR SECNO= 1.14 CWSEL= 1466.28

STA=	9800.	9813.	9947.	9951.	9951.	9975.	9981.	10018.	10018.	10028.	10048.	10064.	10072.
PER Q=	2.3	71.6	1.6	.0	5.9	1.8	14.5	.0	.5	.9	.7	.1	
AREA=	22.6	438.3	11.1	.4	48.9	14.8	162.6	.3	12.0	24.7	18.8	4.4	
VEL=	2.3	3.8	3.3	1.6	2.8	2.9	2.1	.9	.9	.9	.9	.5	
DEPTH=	1.6	3.3	2.8	2.1	2.1	2.2	4.5	1.3	1.2	1.2	1.2	.5	

FLOW DISTRIBUTION FOR SECNO= 1.16 CWSEL= 1466.28

STA=	9852.	9865.	9947.	9951.	9955.	9967.	9968.	9982.	10023.	10039.	10044.
PER Q=	3.6	69.6	2.6	1.4	1.8	.1	.9	19.7	.3	.0	
AREA=	22.4	266.6	11.1	8.1	14.2	.9	9.5	154.8	8.3	1.1	
VEL=	3.7	6.0	5.3	4.1	3.0	2.4	2.1	2.9	.8	.5	
DEPTH=	1.6	3.3	2.8	1.9	1.1	.8	.7	3.8	.5	.2	

FLOW DISTRIBUTION FOR SECNO= 1.19 CWSEL= 1466.48

STA=	9873.	9887.	9942.	9953.	9974.	9979.	9985.	10030.	10038.
PER Q=	5.1	66.2	5.7	1.4	.3	.3	20.9	.0	
AREA=	24.3	194.0	23.6	12.8	2.9	3.3	144.6	1.9	
VEL=	4.9	7.9	5.6	2.5	2.3	2.4	3.3	.6	
DEPTH=	1.7	3.5	2.1	.6	.5	.6	3.2	.2	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.21 CWSEL= 1467.79

STA=	9878.	9898.	9919.	9927.	9950.	9964.	9976.	9991.	10028.	10036.	10041.	10046.
PER Q=	2.7	8.6	2.5	5.2	2.5	2.8	4.9	63.7	4.4	2.4	.5	
AREA=	18.6	37.5	11.7	28.8	15.1	15.4	23.0	158.8	16.7	10.2	3.8	
VEL=	3.3	5.3	4.9	4.1	3.8	4.2	4.9	9.2	6.0	5.4	3.0	
DEPTH=	.9	1.8	1.6	1.2	1.1	1.3	1.6	4.2	2.2	1.8	.8	

FLOW DISTRIBUTION FOR SECNO= 1.23 CWSEL= 1469.32

STA=	9860.	9877.	9898.	9938.	9953.	9964.	9984.	10024.	10032.	10039.	10041.	10049.	10053.
PER Q=	1.4	4.6	8.2	3.8	3.7	12.5	59.0	3.4	2.1	.4	.8	.1	
AREA=	16.3	36.3	66.1	28.8	24.3	65.5	219.2	20.6	14.4	3.4	8.8	1.3	
VEL=	1.9	2.9	2.8	3.1	3.5	4.4	6.2	3.8	3.4	2.6	2.0	1.0	
DEPTH=	.9	1.8	1.7	1.9	2.3	3.2	5.5	2.6	2.2	1.5	1.0	.4	

FLOW DISTRIBUTION FOR SECNO= 1.26 CWSEL= 1470.30

STA=	9855.	9895.	9933.	9943.	9952.	9960.	9967.	9986.	10023.	10041.	10055.	10071.
PER Q=	3.8	10.5	3.9	4.5	4.8	4.9	8.0	45.3	6.6	5.7	1.9	
AREA=	39.2	73.8	23.4	25.3	23.4	24.0	47.0	177.4	41.1	34.2	17.4	
VEL=	2.3	3.3	3.8	4.1	4.7	4.7	3.9	5.9	3.7	3.8	2.5	
DEPTH=	1.0	1.9	2.4	2.7	3.3	3.3	2.5	4.7	2.3	2.4	1.1	

FLOW DISTRIBUTION FOR SECNO= 1.29 CWSEL= 1471.31

STA=	9849.	9915.	9941.	9959.	9968.	9985.	10021.	10045.	10056.	10075.	10085.
PER Q=	7.8	9.6	11.5	4.3	5.6	45.7	8.0	4.0	3.3	.3	
AREA=	74.5	59.1	57.5	23.6	36.2	173.3	51.5	25.2	27.2	5.0	
VEL=	2.4	3.7	4.6	4.2	3.5	6.1	3.6	3.7	2.8	1.4	
DEPTH=	1.1	2.3	3.1	2.7	2.1	4.9	2.1	2.2	1.5	.5	

FLOW DISTRIBUTION FOR SECNO= 1.32 CWSEL= 1472.33

STA=	9880.	9916.	9955.	9965.	9972.	9985.	10020.	10033.	10055.	10069.	10091.	10116.
PER Q=	3.6	13.0	6.1	3.9	8.2	49.8	3.3	5.3	3.2	3.1	.7	
AREA=	38.5	89.6	33.5	21.4	42.8	195.7	24.8	41.9	25.0	30.1	12.9	
VEL=	2.2	3.3	4.2	4.2	4.4	5.9	3.0	2.9	2.9	2.4	1.2	
DEPTH=	1.1	2.3	3.2	3.2	3.4	5.5	2.0	1.9	1.9	1.3	.5	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.35 CWSEL= 1473.16

STA=	9861.	9867.	9881.	9924.	9939.	9943.	10011.	10013.	10025.	10043.	10060.	10063.
PER Q=	.1	.6	6.8	5.1	1.7	76.2	.5	2.5	4.3	2.2	.0	
AREA=	2.5	8.5	61.1	33.3	10.7	314.8	4.0	19.7	32.8	21.5	.9	
VEL=	1.0	1.5	2.5	3.5	3.7	5.6	2.9	2.9	3.0	2.4	.9	
DEPTH=	.4	.6	1.4	2.3	2.5	4.6	1.7	1.7	1.8	1.3	.3	

FLOW DISTRIBUTION FOR SECNO= 1.38 CWSEL= 1474.09

STA=	9867.	9919.	9949.	9956.	9964.	9970.	10017.	10035.	10042.
PER Q=	4.2	8.5	3.9	4.1	2.3	70.9	5.8	.3	
AREA=	41.9	55.5	20.5	21.3	13.1	241.2	36.6	4.5	
VEL=	2.3	3.5	4.4	4.4	4.0	6.8	3.6	1.7	
DEPTH=	.8	1.9	2.6	2.7	2.2	5.2	2.0	.6	

FLOW DISTRIBUTION FOR SECNO= 1.41 CWSEL= 1475.09

STA=	9908.	9911.	9958.	9964.	9966.	9967.	9971.	10033.	10037.	10049.	10058.	10066.
PER Q=	.0	2.5	1.3	.6	.3	2.2	84.1	1.9	4.0	2.6	.5	
AREA=	.5	36.6	11.4	4.2	1.9	13.2	339.6	12.2	27.6	19.8	6.7	
VEL=	.6	1.6	2.7	3.3	3.4	3.8	5.7	3.7	3.3	3.0	1.7	
DEPTH=	.2	.8	1.8	2.4	2.6	3.0	5.5	2.8	2.4	2.1	.9	

FLOW DISTRIBUTION FOR SECNO= 1.43 CWSEL= 1475.50

STA=	9886.	9926.	9934.	9939.	9950.	9952.	9978.	10015.	10025.	10034.	10039.
Q=	12.1	5.4	1.8	4.3	1.0	13.4	56.4	3.2	2.2	.2	
EA=	81.6	27.1	10.8	26.1	5.8	73.2	201.6	21.4	16.3	2.6	
VEL=	3.4	4.6	3.8	3.8	3.9	4.2	6.4	3.5	3.1	1.4	
DEPTH=	2.0	3.2	2.3	2.4	2.5	2.8	5.5	2.1	1.7	.5	

FLOW DISTRIBUTION FOR SECNO= 1.46 CWSEL= 1476.60

STA=	9896.	9901.	9912.	9931.	9949.	9964.	9964.	9972.	10016.	10030.	10038.	10040.	10049.
PER Q=	.1	.8	2.3	3.3	5.7	.1	4.6	67.4	10.5	3.7	.6	.8	
AREA=	1.5	10.1	23.7	28.2	37.3	.8	24.7	252.2	52.3	22.2	3.8	9.3	
VEL=	1.0	1.8	2.3	2.7	3.5	4.0	4.3	6.2	4.6	3.9	3.3	2.0	
DEPTH=	.3	.9	1.2	1.6	2.4	3.1	3.3	5.7	3.6	2.8	2.3	1.1	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.48 CWSEL= 1477.29

STA=	9893.	9897.	9948.	9980.	10017.	10032.	10062.	10073.	10094.
PER Q=	.0	2.2	10.3	60.1	8.2	14.5	3.1	1.6	
AREA=	.5	35.2	74.2	228.5	47.0	88.0	23.1	20.4	
VEL=	.4	1.0	2.2	4.2	2.8	2.7	2.2	1.3	
DEPTH=	.1	.7	2.3	6.2	3.2	2.9	2.2	1.0	

FLOW DISTRIBUTION FOR SECNO= 1.52 CWSEL= 1477.79

STA=	9884.	9936.	9958.	9966.	9970.	9977.	10022.	10040.	10055.	10080.	10094.
PER Q=	3.5	7.2	4.9	3.4	4.8	59.9	6.8	3.9	5.0	.5	
AREA=	36.6	44.4	23.9	14.8	21.7	213.4	40.3	26.5	37.8	7.6	
VEL=	1.5	2.6	3.3	3.7	3.6	4.5	2.7	2.4	2.1	1.1	
DEPTH=	.7	2.1	2.9	3.4	3.3	4.7	2.2	1.8	1.5	.5	

FLOW DISTRIBUTION FOR SECNO= 1.55 CWSEL= 1478.42

STA=	9873.	9898.	9920.	9932.	9939.	9945.	9954.	9974.	10019.	10026.	10052.	10101.
PER Q=	3.3	8.8	6.0	3.8	3.5	3.9	6.4	50.7	3.0	7.8	2.7	
AREA=	26.6	48.8	30.8	18.7	16.3	20.9	39.3	186.1	15.8	48.4	31.3	
VEL=	2.0	2.9	3.1	3.2	3.5	3.0	2.6	4.4	3.1	2.6	1.4	
DEPTH=	1.1	2.2	2.5	2.6	2.9	2.4	1.9	4.2	2.4	1.9	.6	

FLOW DISTRIBUTION FOR SECNO= 1.57 CWSEL= 1479.00

STA=	9891.	9933.	9965.	9991.	10024.	10038.	10046.	10062.	10074.	10086.	10135.	10144.
PER Q=	7.7	12.7	7.7	36.5	5.4	5.9	11.5	6.2	3.1	3.2	.0	
AREA=	49.6	65.2	45.1	126.1	27.8	23.3	47.2	28.1	19.2	34.2	.5	
VEL=	2.5	3.1	2.8	4.7	3.2	4.1	3.9	3.5	2.6	1.5	.3	
DEPTH=	1.2	2.1	1.7	3.8	2.0	3.0	2.9	2.5	1.6	.7	.1	

FLOW DISTRIBUTION FOR SECNO= 1.60 CWSEL= 1479.89

STA=	9844.	9936.	9961.	10011.	10051.	10061.
PER Q=	5.0	3.9	84.3	6.8	.1	
AREA=	43.9	23.4	202.4	39.8	1.3	
VEL=	1.8	2.7	6.7	2.7	1.2	
DEPTH=	.5	1.0	4.1	1.0	.1	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.61 CWSEL= 1481.41

STA=	9700.	9837.	9895.	9926.	9946.	9946.	10041.	10057.	10080.	10131.
PER Q=	10.1	10.7	7.5	4.7	.0	58.1	3.2	3.3	2.4	
AREA=	150.1	120.8	74.6	48.0	.1	405.8	34.8	41.1	42.2	
VEL=	1.1	1.4	1.6	1.6	.3	2.3	1.5	1.3	.9	
DEPTH=	1.1	2.1	2.5	2.4	2.5	4.3	2.1	1.8	.8	

FLOW DISTRIBUTION FOR SECNO= 1.64 CWSEL= 1481.62

STA=	9818.	9849.	9907.	9933.	9949.	9970.	10020.	10052.	10084.	10100.	10117.
PER Q=	.9	10.9	10.2	7.3	7.2	47.5	6.9	5.5	2.5	1.0	
AREA=	17.4	99.7	69.4	46.7	51.8	228.3	59.8	51.8	24.3	14.8	
VEL=	.8	1.8	2.4	2.5	2.2	3.3	1.9	1.7	1.6	1.1	
DEPTH=	.6	1.7	2.7	2.9	2.5	4.6	1.9	1.6	1.5	.9	

FLOW DISTRIBUTION FOR SECNO= 1.70 CWSEL= 1482.50

STA=	9696.	9926.	9952.	9978.	10016.	10039.	10056.	10086.	10110.	10142.	10179.
PER Q=	6.1	11.6	6.4	45.8	5.6	5.4	6.1	6.2	5.4	1.4	
AREA=	44.2	55.8	38.9	150.5	34.4	29.7	40.4	37.1	37.9	17.5	
VEL=	2.2	3.3	2.6	4.9	2.6	2.9	2.4	2.7	2.3	1.3	
DEPTH=	.2	2.1	1.5	4.0	1.5	1.7	1.3	1.5	1.2	.5	

FLOW DISTRIBUTION FOR SECNO= 1.76 CWSEL= 1484.59

STA=	9941.	9980.	10017.	10052.	10091.	10159.	10200.	10365.
PER Q=	8.3	63.6	8.1	5.0	6.6	5.3	3.1	
AREA=	48.5	167.2	46.7	36.4	52.7	38.3	41.3	
VEL=	2.8	6.1	2.8	2.2	2.0	2.2	1.2	
DEPTH=	1.2	4.5	1.3	.9	.8	.9	.3	

FLOW DISTRIBUTION FOR SECNO= 1.86 CWSEL= 1487.43

STA=	9917.	9941.	9980.	10019.	10038.	10064.
PER Q=	.5	11.9	75.4	8.4	3.8	
AREA=	8.8	71.2	218.8	43.3	30.4	
VEL=	.9	2.7	5.5	3.1	2.0	
DEPTH=	.4	1.8	5.6	2.3	1.2	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.95 CWSEL= 1489.53

STA=	9903.	9909.	9938.	9965.	9981.	10011.	10026.	10032.
PER Q=	.1	10.6	21.1	10.2	53.8	4.2	.0	
AREA=	2.2	63.3	92.7	48.5	173.4	28.3	1.1	
VEL=	.8	2.7	3.7	3.4	5.0	2.4	.5	
DEPTH=	.4	2.2	3.4	3.0	5.8	1.9	.2	

FLOW DISTRIBUTION FOR SECNO= 2.05 CWSEL= 1491.87

STA=	9861.	9911.	9949.	9963.	9978.	9988.	10019.	10048.	10057.	10066.	10094.	10142.
PER Q=	7.7	15.4	7.7	4.6	1.3	40.5	5.3	6.5	5.0	4.1	1.8	
AREA=	54.1	75.1	33.3	25.2	9.8	127.1	35.6	25.4	21.8	30.1	19.6	
VEL=	2.3	3.3	3.7	3.0	2.1	5.1	2.4	4.1	3.7	2.2	1.5	
DEPTH=	1.1	2.0	2.4	1.7	1.0	4.1	1.2	2.8	2.4	1.1	.4	

FLOW DISTRIBUTION FOR SECNO= 2.12 CWSEL= 1494.43

STA=	9936.	9947.	9980.	10019.	10048.	10073.
PER Q=	1.3	18.1	71.8	6.3	2.5	
AREA=	8.8	65.3	161.3	32.7	17.6	
VEL=	2.0	3.6	5.8	2.5	1.8	
DEPTH=	.8	2.0	4.1	1.1	.7	

FLOW DISTRIBUTION FOR SECNO= 2.20 CWSEL= 1496.00

STA=	9689.	9701.	9741.	9781.	9811.	9824.	9837.	9863.	9891.	9903.	9930.	9955.	10036.
PER Q=	.0	3.5	9.0	10.8	3.7	3.1	10.0	12.2	2.2	.8	.4	44.3	
AREA=	1.8	42.1	74.1	73.6	28.0	24.7	66.4	77.1	19.8	14.9	8.9	243.7	
VEL=	.3	1.1	1.6	1.9	1.7	1.6	2.0	2.1	1.5	.7	.5	2.4	
DEPTH=	.2	1.1	1.9	2.5	2.2	1.9	2.6	2.8	1.7	.6	.4	3.5	

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T1      FLOODPLAIN ANALYSIS - MARICOPA COUNTY FLOOD CONTROL DISTRICT
T2      FLD'WAY ENCROACH CALC. (METHOD 1)              100 YR/ 6 HR STORM
T3      BUCHANAN WASH   SKUNK CREEK TO C.A.P. CANAL REVISED NOV. 2001

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

       0       3        0        0        0        0        0        0   1461.42       0

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      15       0       -1        0        0        0       -1        0        0        0
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THIS RUN EXECUTED 26NOV01 13:16:56

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

AN WASH - SKUNK CREEK TO

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	.710	1460.42	.00	1460.42	1064.97	925.88	210.74	1167.38	.00	.00	9985.00	10025.00	.00
	.710	1461.42	1.00	1461.43	658.00	901.37	255.15	1147.48	658.00	9693.00	9985.00	10025.00	10351.00
*	.782	1460.44	.00	1460.45	902.21	565.22	271.71	1467.08	.00	.00	9966.00	10032.00	.00
*	.782	1461.44	1.00	1461.45	538.69	315.87	372.07	1616.06	557.00	9889.00	9966.00	10032.00	10446.00
*	.890	1460.51	.00	1460.71	758.28	792.59	894.24	617.17	.00	.00	9971.00	10014.00	.00
*	.890	1461.41	.89	1461.77	178.00	1034.60	1269.40	.00	178.00	9836.00	9971.00	10014.00	10014.00
	.985	1463.22	.00	1463.43	583.56	1264.54	776.71	262.75	.00	.00	9978.00	10019.00	.00
	.985	1464.21	.99	1464.54	124.00	1289.24	1014.76	.00	124.00	9895.00	9978.00	10019.00	10019.00
	1.045	1464.55	.00	1464.76	293.92	673.83	1426.39	203.78	.00	.00	9959.01	10039.88	.00
	1.045	1465.44	.88	1465.68	142.00	440.13	1754.62	109.25	142.00	9918.00	9959.01	10039.88	10060.00
	1.067	1465.83	.00	1466.15	78.55	.00	2304.00	.00	.00	.00	9961.39	10039.94	.00
	1.067	1466.58	.75	1466.84	78.55	.00	2304.00	.00	78.55	9961.39	9961.39	10039.94	10039.94
*	1.090	1466.25	.00	1466.29	456.29	1628.71	520.60	154.68	.00	.00	9948.33	10032.82	.00
*	1.090	1466.90	.65	1466.95	353.00	1489.57	600.65	213.78	353.00	9766.00	9948.33	10032.82	10119.00
	1.102	1466.25	.00	1466.32	425.58	1656.06	453.99	193.95	.00	.00	9986.70	10043.47	.00
	1.102	1466.91	.66	1466.97	345.00	1724.14	420.99	158.87	345.00	9770.00	9986.70	10043.47	10115.00
	1.120	1466.27	.00	1466.37	329.89	1777.50	448.56	77.94	.00	.00	9968.95	10026.10	.00
	1.120	1466.91	.64	1467.00	287.20	1720.99	470.66	112.35	287.20	9798.00	9968.95	10026.10	10085.20
	1.139	1466.28	.00	1466.45	272.61	1919.18	333.38	51.44	.00	.00	9981.49	10017.72	.00
*	1.139	1466.90	.62	1467.07	223.00	1842.50	374.56	86.95	223.00	9841.00	9981.49	10017.72	10064.00
*	1.164	1466.28	.00	1466.69	191.82	1843.74	452.92	7.34	.00	.00	9982.34	10023.28	.00
*	1.164	1466.90	.62	1467.26	156.00	1784.65	506.74	12.61	156.00	9877.00	9982.34	10023.28	10033.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	1.190	1466.48	.00	1467.12	164.73	1821.95	480.92	1.13	.00	.00	9984.76	10029.88	.00
	1.190	1467.09	.60	1467.52	150.00	1829.07	474.89	.03	150.00	9880.00	9984.76	10029.88	10030.00
*	1.207	1467.79	.00	1468.75	168.41	670.63	1466.65	166.72	.00	.00	9990.52	10027.97	.00
*	1.207	1467.83	.05	1468.82	158.40	707.05	1491.44	105.51	158.40	9877.60	9990.52	10027.97	10036.00
*	1.227	1469.32	.00	1469.74	192.71	788.42	1360.48	155.10	.00	.00	9984.14	10023.91	.00
*	1.227	1469.38	.06	1469.79	178.00	793.73	1352.33	157.95	178.00	9872.00	9984.14	10023.91	10050.00
	1.256	1470.30	.00	1470.66	216.50	933.52	1043.16	327.32	.00	.00	9985.52	10022.96	.00
	1.256	1470.32	.02	1470.67	204.50	928.94	1044.68	330.38	204.50	9867.00	9985.52	10022.96	10071.50
	1.288	1471.31	.00	1471.68	235.83	890.60	1053.94	359.45	.00	.00	9985.44	10020.55	.00
	1.288	1471.33	.01	1471.70	211.00	877.27	1066.11	360.61	211.00	9865.00	9985.44	10020.55	10076.00
	1.321	1472.33	.00	1472.68	235.58	799.27	1146.29	358.44	.00	.00	9984.58	10020.11	.00
	1.321	1472.35	.03	1472.70	222.00	791.84	1146.31	365.85	222.00	9893.00	9984.58	10020.11	10115.00
	1.351	1473.16	.00	1473.55	201.88	328.63	1754.81	220.57	.00	.00	9942.88	10011.03	.00
	1.351	1473.17	.02	1473.57	180.00	315.96	1763.96	224.07	180.00	9882.00	9942.88	10011.03	10062.00
	1.383	1474.09	.00	1474.65	175.04	530.21	1632.85	140.94	.00	.00	9970.16	10016.84	.00
	1.383	1474.11	.02	1474.66	168.00	532.95	1628.94	142.11	168.00	9874.00	9970.16	10016.84	10042.00
	1.411	1475.09	.00	1475.54	157.99	158.87	1936.94	208.19	.00	.00	9971.18	10033.03	.00
	1.411	1475.09	.00	1475.55	150.00	158.92	1954.36	190.72	150.00	9908.00	9971.18	10033.03	10058.00
	1.426	1475.50	.00	1475.96	153.16	876.22	1299.46	128.32	.00	.00	9978.31	10014.82	.00
	1.426	1475.51	.02	1475.97	145.00	889.84	1285.91	128.25	145.00	9894.00	9978.31	10014.82	10039.00
	1.462	1476.60	.00	1477.06	152.47	391.02	1553.14	359.84	.00	.00	9971.59	10016.09	.00
	1.462	1476.59	-.01	1477.06	151.83	390.24	1554.13	359.62	151.90	9897.00	9971.59	10016.09	10048.90
	1.483	1477.29	.00	1477.49	200.85	200.94	967.30	440.76	.00	.00	9980.37	10017.29	.00
	1.483	1477.28	-.01	1477.49	156.00	192.95	980.12	435.93	156.00	9923.00	9980.37	10017.29	10079.00
	1.518	1477.79	.00	1478.02	210.46	383.49	964.39	261.12	.00	.00	9976.69	10021.74	.00
	1.518	1477.79	.00	1478.08	141.00	282.72	1042.51	283.77	141.00	9949.00	9976.69	10021.74	10090.00
	1.549	1478.42	.00	1478.63	227.63	575.07	816.11	217.83	.00	.00	9974.29	10019.10	.00
	1.549	1478.52	.10	1478.76	152.00	550.55	865.16	193.29	152.00	9900.00	9974.29	10019.10	10052.00
	1.572	1479.00	.00	1479.21	253.31	453.52	586.53	568.95	.00	.00	9991.46	10024.23	.00
	1.572	1479.11	.11	1479.35	183.00	498.85	609.92	500.23	183.00	9892.00	9991.46	10024.23	10075.00
	1.595	1479.89	.00	1480.49	216.63	143.02	1355.72	110.26	.00	.00	9960.78	10010.67	.00
	1.595	1479.97	.09	1480.52	206.00	163.63	1325.66	119.70	206.00	9853.00	9960.78	10010.67	10059.00
*	1.610	1481.41	.00	1481.47	430.86	530.42	935.12	143.46	.00	.00	9945.94	10041.01	.00
*	1.610	1481.44	.03	1481.50	402.00	533.52	931.10	144.37	402.00	9715.00	9945.94	10041.01	10117.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	1.638	1481.62	.00	1481.73	299.36	588.98	764.48	255.54	.00	.00	9970.00	10020.00	.00
	1.638	1481.64	.02	1481.75	271.00	588.05	762.93	258.02	271.00	9839.00	9970.00	10020.00	10110.00
*	1.695	1482.50	.00	1482.72	324.69	386.81	737.22	484.97	.00	.00	9978.00	10016.00	.00
*	1.695	1482.51	.01	1483.13	122.00	164.83	1089.39	354.77	122.00	9950.00	9978.00	10016.00	10072.00
	1.761	1484.59	.00	1484.98	410.42	134.10	1023.21	451.69	.00	.00	9980.00	10017.00	.00
*	1.761	1485.29	.71	1485.59	179.00	.00	997.58	611.42	179.00	9980.00	9980.00	10017.00	10159.00
	1.856	1487.43	.00	1487.81	147.40	200.03	1213.22	195.75	.00	.00	9980.00	10019.00	.00
	1.856	1487.67	.25	1488.32	50.00	60.65	1511.91	36.44	50.00	9974.00	9980.00	10019.00	10024.00
	1.951	1489.53	.00	1489.82	129.37	674.88	865.29	68.83	.00	.00	9981.00	10011.00	.00
	1.951	1490.37	.84	1490.73	66.00	575.83	1033.17	.00	66.00	9945.00	9981.00	10011.00	10011.00
	2.045	1491.87	.00	1492.11	281.38	591.14	651.41	366.46	.00	.00	9988.00	10019.00	.00
	2.045	1492.72	.85	1493.09	111.00	518.64	876.50	213.87	111.00	9939.00	9988.00	10019.00	10050.00
	2.121	1494.43	.00	1494.85	136.47	254.86	938.97	114.16	.00	.00	9980.00	10019.00	.00
	2.121	1495.23	.80	1495.89	43.00	42.62	1265.38	.00	43.00	9976.00	9980.00	10019.00	10019.00
*	2.200	1496.00	.00	1496.06	336.43	728.26	579.74	.00	.00	.00	9959.00	10036.00	.00
*	2.200	1496.95	.95	1497.03	187.32	519.97	788.03	.00	191.00	9845.00	9959.00	10036.00	10036.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
WARNING SECNO=      .782  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .782  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .890  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .890  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.090  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.090  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.139  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.164  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.164  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     1.207  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.207  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=     1.207  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     1.207  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     1.227  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.227  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.610  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.610  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.695  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     1.695  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     1.761  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=     2.200  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=     2.200  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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Floodway width summary: AN WASH - SKUNK CREEK TO
Profile No. 2

Section Number	Elevation Increase	Top Width	Left Encroach Station	Left Sta Distance From Center	Center Station	Right Sta Distance From Center	Right Encroach Station
.710	1.00	658.00	9693.00	312.00	10005.00	346.00	10351.00
.782	1.00	557.00	9889.00	110.00	9999.00	447.00	10446.00
.890	.89	178.00	9836.00	156.50	9992.50	21.50	10014.00
.985	.99	124.00	9895.00	103.50	9998.50	20.50	10019.00
1.045	.88	142.00	9918.00	81.44	9999.45	60.55	10060.00
1.067	.75	78.55	9961.39	39.28	10000.67	39.28	10039.94
1.090	.65	353.00	9766.00	224.58	9990.58	128.42	10119.00
1.102	.66	345.00	9770.00	245.08	10015.08	99.92	10115.00
1.120	.64	287.20	9798.00	199.52	9997.53	87.67	10085.20
1.139	.62	223.00	9841.00	158.60	9999.61	64.39	10064.00
1.164	.62	156.00	9877.00	125.81	10002.81	30.19	10033.00
1.190	.60	150.00	9880.00	127.32	10007.32	22.68	10030.00
1.207	.05	158.40	9877.60	131.65	10009.24	26.76	10036.00
1.227	.06	178.00	9872.00	132.02	10004.03	45.97	10050.00
1.256	.02	204.50	9867.00	137.24	10004.24	67.26	10071.50
1.288	.01	211.00	9865.00	138.00	10003.00	73.00	10076.00
1.321	.03	222.00	9893.00	109.35	10002.35	112.65	10115.00
1.351	.02	180.00	9882.00	94.96	9976.96	85.04	10062.00
1.383	.02	168.00	9874.00	119.50	9993.50	48.50	10042.00
1.411	.00	150.00	9908.00	94.10	10002.11	55.89	10058.00
1.426	.02	145.00	9894.00	102.56	9996.56	42.44	10039.00
1.462	-.01	151.90	9897.00	96.84	9993.84	55.06	10048.90
1.483	-.01	156.00	9923.00	75.83	9998.83	80.17	10079.00
1.518	.00	141.00	9949.00	50.22	9999.21	90.79	10090.00
1.549	.10	152.00	9900.00	96.69	9996.70	55.30	10052.00
1.572	.11	183.00	9892.00	115.85	10007.85	67.15	10075.00
1.595	.09	206.00	9853.00	132.73	9985.72	73.28	10059.00
1.610	.03	402.00	9715.00	278.48	9993.47	123.53	10117.00
1.638	.02	271.00	9839.00	156.00	9995.00	115.00	10110.00
1.695	.01	122.00	9950.00	47.00	9997.00	75.00	10072.00
1.761	.71	179.00	9980.00	18.50	9998.50	160.50	10159.00
1.856	.25	50.00	9974.00	25.50	9999.50	24.50	10024.00
1.951	.84	66.00	9945.00	51.00	9996.00	15.00	10011.00
2.045	.85	111.00	9939.00	64.50	10003.50	46.50	10050.00
2.121	.80	43.00	9976.00	23.50	9999.50	19.50	10019.00
2.200	.95	191.00	9845.00	152.50	9997.50	38.50	10036.00

FLOODWAY DATA, AN WASH - SKUNK CREEK TO
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
.710	658.	4041.	.6	1461.4	1460.4	1.0
.782	557.	2637.	.9	1461.4	1460.4	1.0
.890	178.	518.	4.4	1461.4	1460.5	.9
.985	124.	507.	4.5	1464.2	1463.2	1.0
1.045	142.	603.	3.8	1465.5	1464.6	.9
1.067	79.	569.	4.1	1466.5	1465.8	.7
1.090	353.	1452.	1.6	1466.9	1466.2	.7
1.102	345.	1358.	1.7	1466.9	1466.2	.7
1.120	287.	1100.	2.1	1466.9	1466.3	.6
1.139	223.	780.	3.0	1466.9	1466.3	.6
1.164	156.	529.	4.4	1466.9	1466.3	.6
1.190	150.	489.	4.7	1467.1	1466.5	.6
1.207	158.	334.	6.9	1467.8	1467.8	.0
1.227	178.	507.	4.5	1469.4	1469.3	.1
1.256	204.	523.	4.4	1470.3	1470.3	.0
1.288	211.	519.	4.4	1471.3	1471.3	.0
1.321	222.	554.	4.2	1472.3	1472.3	.0
1.351	180.	501.	4.6	1473.2	1473.2	.0
1.383	168.	436.	5.3	1474.1	1474.1	.0
1.411	150.	465.	5.0	1475.1	1475.1	.0
1.426	145.	466.	4.9	1475.5	1475.5	.0
1.462	152.	465.	5.0	1476.6	1476.6	.0
1.483	156.	492.	3.3	1477.3	1477.3	.0
1.518	141.	406.	4.0	1477.8	1477.8	.0
1.549	152.	437.	3.7	1478.5	1478.4	.1
1.572	183.	435.	3.7	1479.1	1479.0	.1
1.595	206.	328.	4.9	1480.0	1479.9	.1
1.610	402.	921.	1.7	1481.4	1481.4	.0
1.638	271.	659.	2.4	1481.6	1481.6	.0
1.695	122.	284.	5.7	1482.5	1482.5	.0
1.761	179.	430.	3.7	1485.3	1484.6	.7
1.856	50.	259.	6.2	1487.6	1487.4	.2
1.951	66.	345.	4.7	1490.3	1489.5	.8
2.045	111.	351.	4.6	1492.7	1491.9	.8
2.121	43.	205.	6.4	1495.2	1494.4	.8
2.200	187.	587.	2.2	1496.9	1496.0	.9

CHECK-2 Program: Floodway Module
Encroachment Method, Starting WSEL, Floodway Width, and Surcharge Review

Report File = H:\PDATA\45100428\HD\HEC2\FCD_FIS\PROPOSED\PROPFW.FL2
Allowable Surcharge Value: 1
Date: 11/26/2001
Time: 1:17:18 PM

SECNO	Method	Surcharge	NTOPWID	FTOPWID	FWIDTH	CHWID	Structure
0.71	5.10	1.00	1064.97	658.00	658.00	40.00	
0.782	5.10	1.00	902.21	538.69	557.00	66.00	
0.89	5.10	0.89	758.28	178.00	178.00	43.00	
0.985	5.10	0.99	583.56	124.00	124.00	41.00	
1.045	5.10	0.88	293.92	142.00	142.00	80.87	
1.067	5.11	0.75	78.55	78.55	78.55	78.55	SC+X2+BT
1.09	5.10	0.65	456.29	353.00	353.00	84.49	
1.102	5.10	0.66	425.58	345.00	345.00	56.77	
1.12	5.10	0.64	329.89	287.20	287.20	57.15	
1.139	5.10	0.62	272.61	223.00	223.00	36.23	
1.164	5.10	0.62	191.82	156.00	156.00	40.94	
1.19	5.10	0.60	164.73	150.00	150.00	45.12	
1.207	5.10	0.05	168.41	158.40	158.40	37.45	
1.227	5.10	0.06	192.71	178.00	178.00	39.77	
1.256	5.10	0.02	216.50	204.50	204.50	37.44	
1.288	5.10	0.01	235.83	211.00	211.00	35.11	
1.321	5.10	0.03	235.58	222.00	222.00	35.53	
1.351	5.10	0.02	201.88	180.00	180.00	68.15	
1.383	5.10	0.02	175.04	168.00	168.00	46.68	
1.411	5.10	0.00	157.99	150.00	150.00	61.85	
1.426	5.10	0.02	153.16	145.00	145.00	36.51	
1.462	5.10	-0.01	152.47	151.83	151.90	44.50	
1.483	5.10	-0.01	200.85	156.00	156.00	36.92	
1.518	5.10	0.00	210.46	141.00	141.00	45.05	
1.[illegible]9	5.10	0.10	227.63	152.00	152.00	44.81	
1.[illegible]2	5.10	0.11	253.31	183.00	183.00	32.77	
1.595	5.10	0.09	216.63	206.00	206.00	49.89	
1.61	5.11	0.03	430.86	402.00	402.00	95.07	SC+X2+BT
1.638	5.10	0.02	299.36	271.00	271.00	50.00	
1.695	5.10	0.01	324.69	122.00	122.00	38.00	
1.761	5.10	0.71	410.42	179.00	179.00	37.00	
1.856	5.10	0.25	147.40	50.00	50.00	39.00	
1.951	5.10	0.84	129.37	66.00	66.00	30.00	
2.045	5.10	0.85	281.38	111.00	111.00	31.00	
2.121	5.10	0.80	136.47	43.00	43.00	39.00	
2.2	5.10	0.95	336.43	187.32	191.00	77.00	

----Encroachment Method----

----Starting Water Surface Elevation----

----X5 Record(s)----

----Floodway Width----

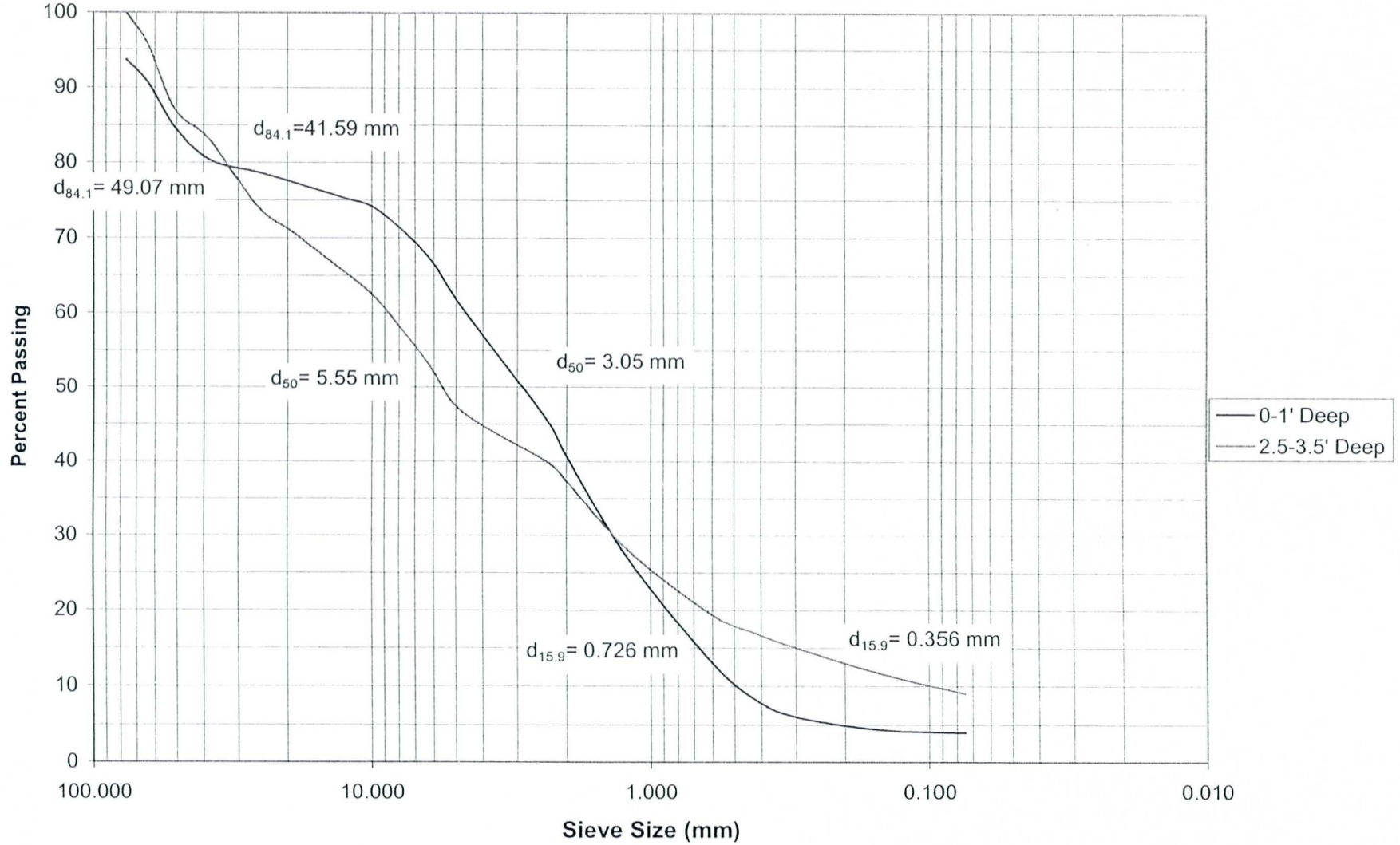
--- Surcharge Value ---

----Floodway Discharge----

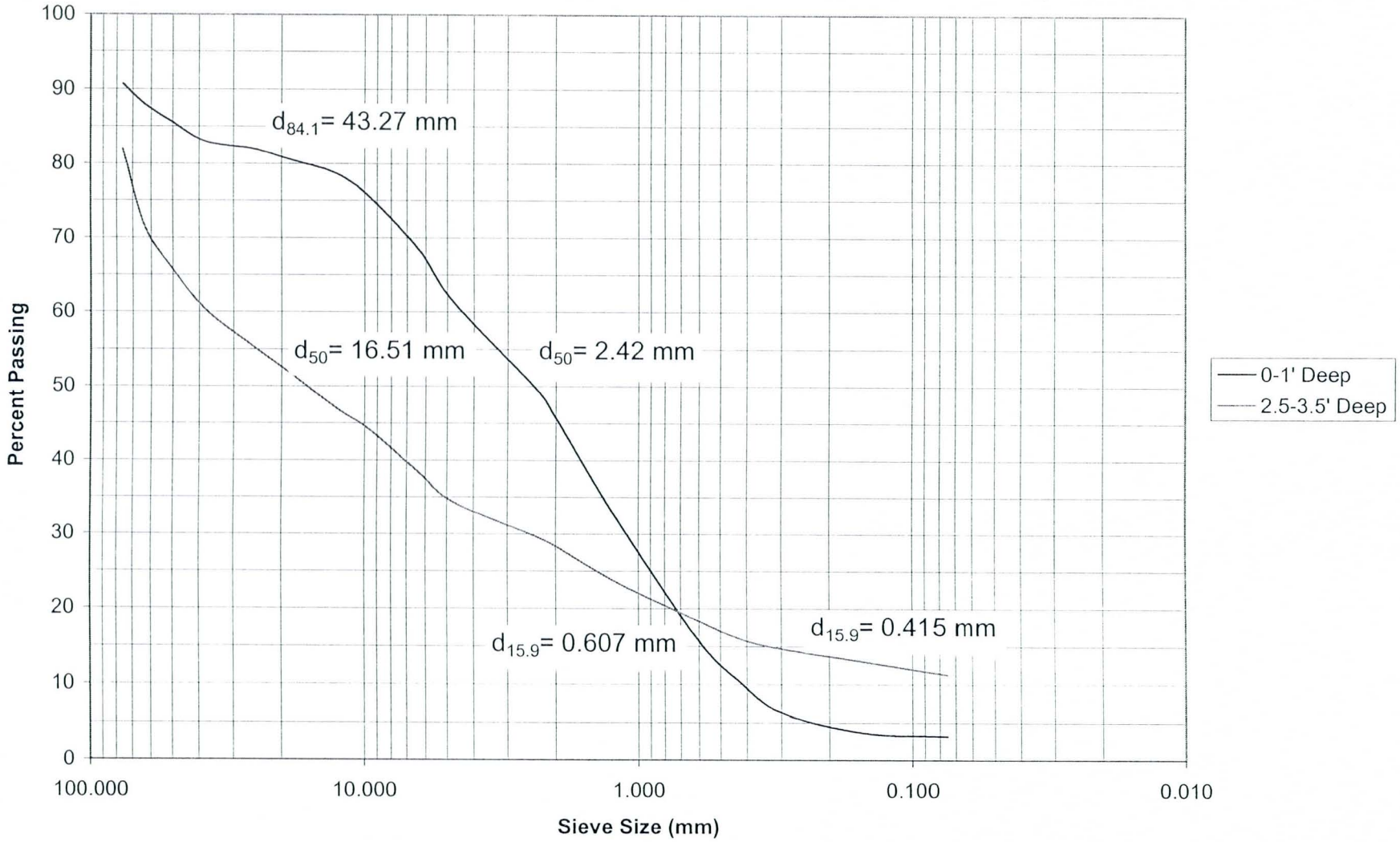
---End Program---

Appendix F
Erosion/Sediment Transport Analysis Supporting Documentation

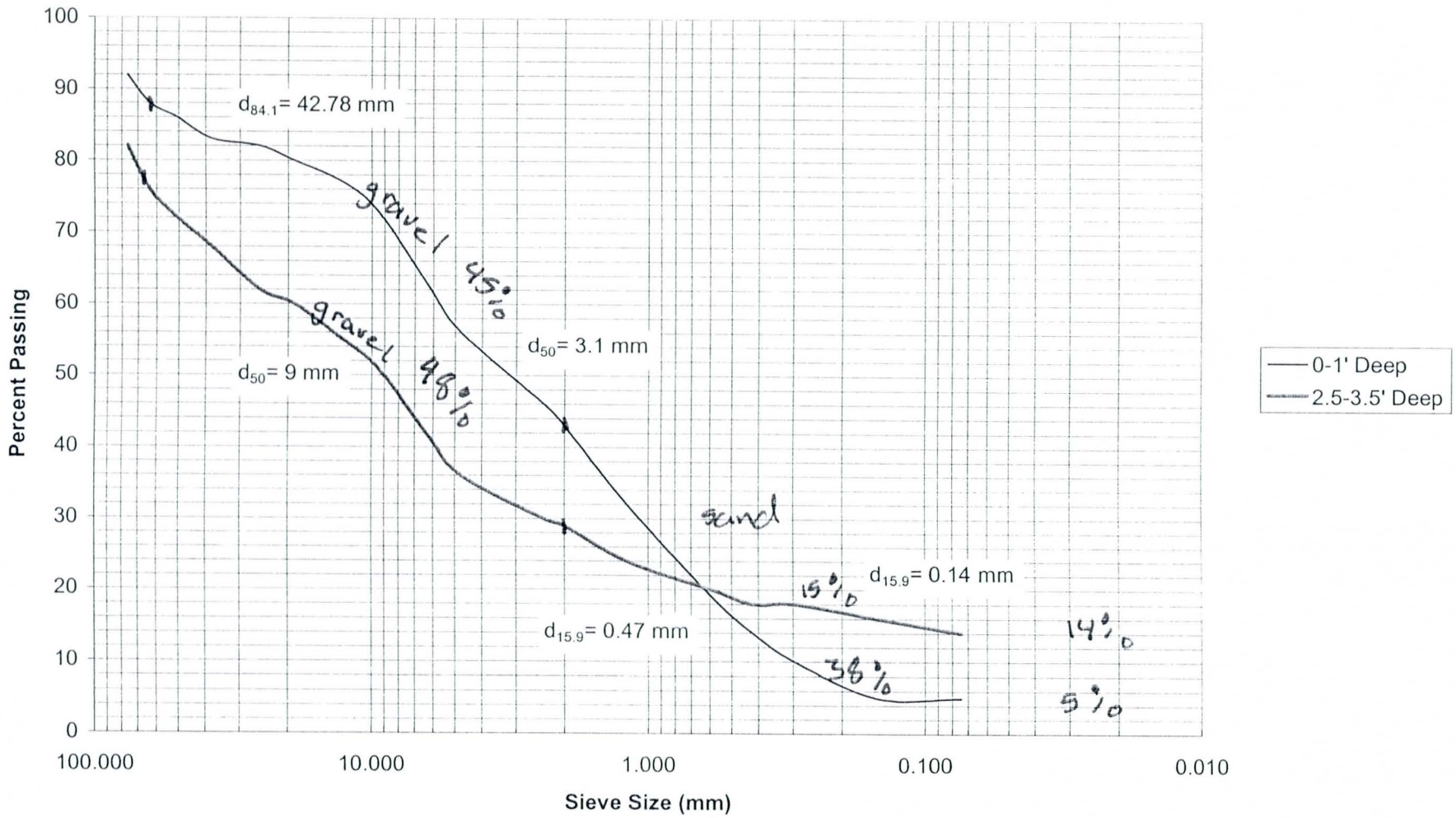
Particle Size Distribution North of Pinnacle Vista



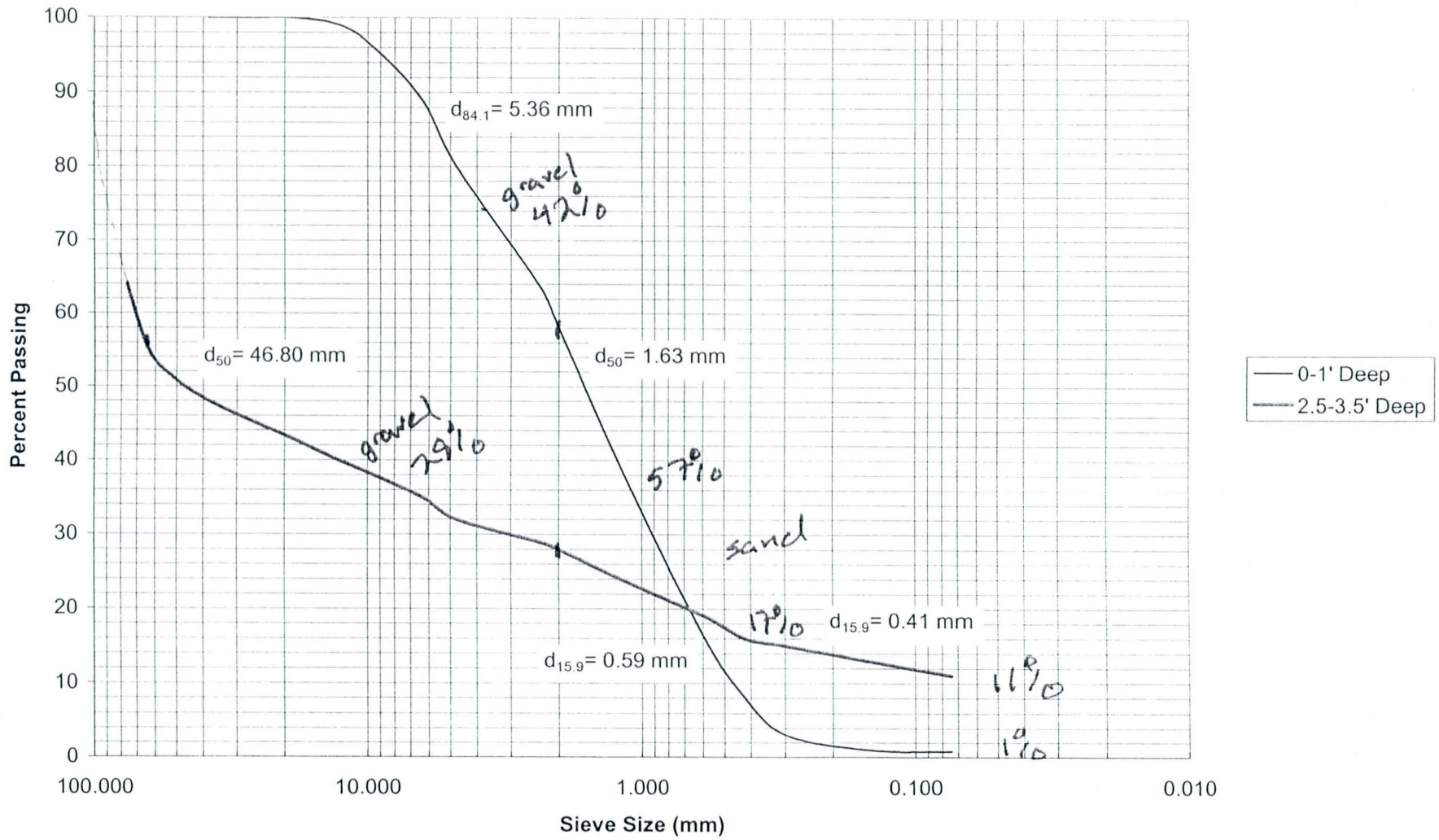
Particle Size Distribution Curve South of Pinnacle Vista



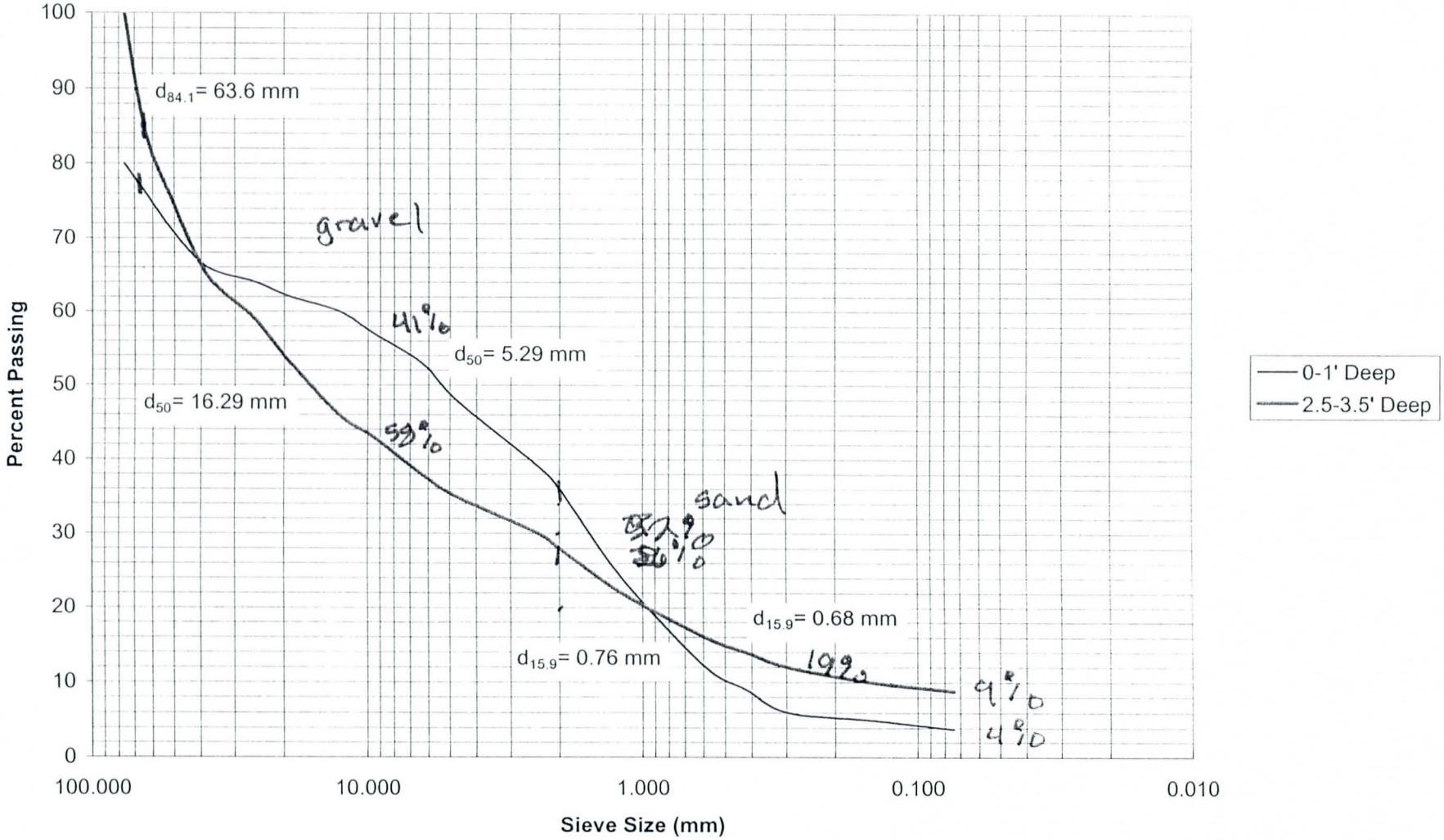
Particle Size Distribution Curve
TH 1



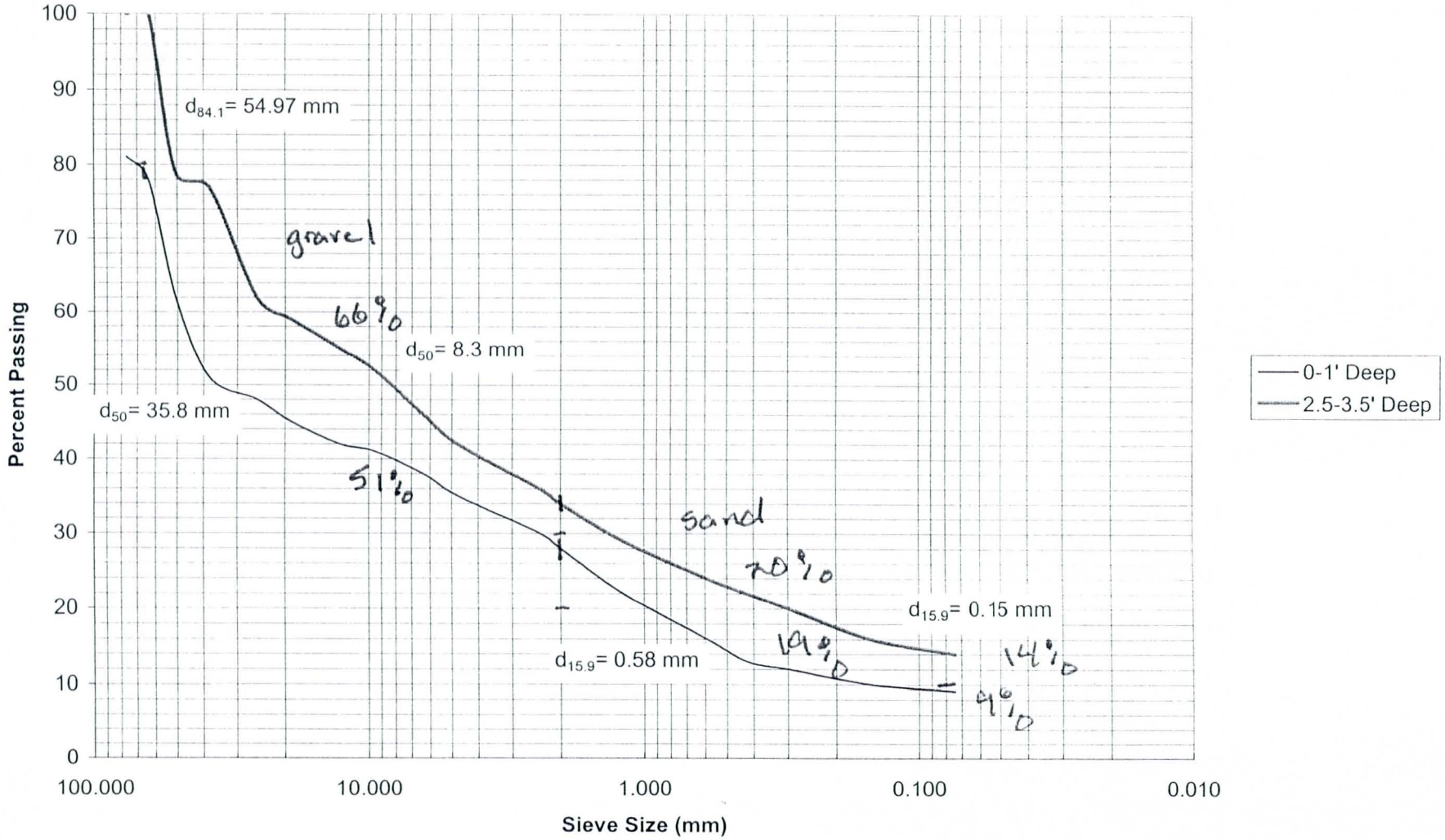
Particle Size Distribution Curve
TH 3



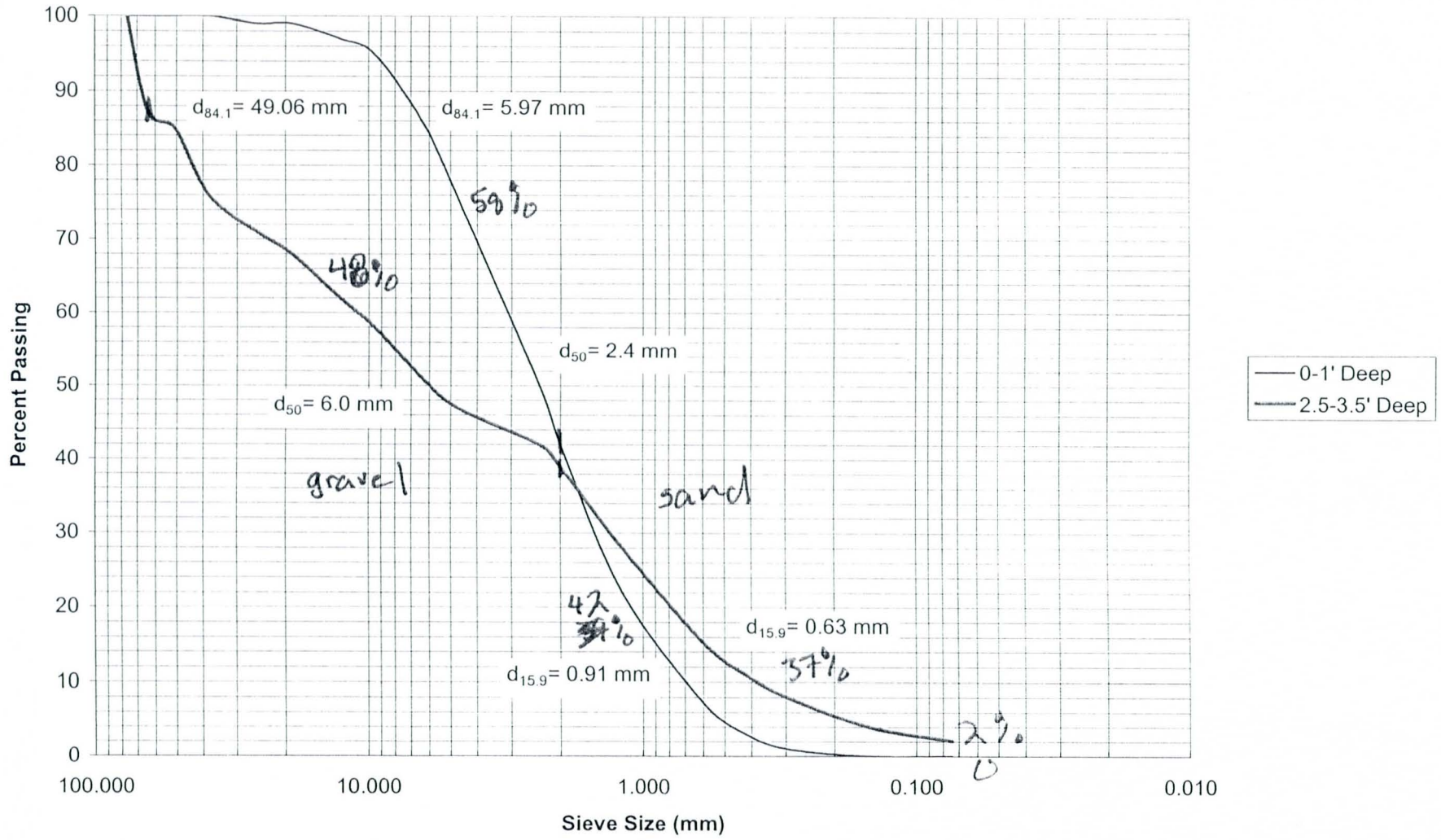
Particle Size Distribution Curve
TH 4



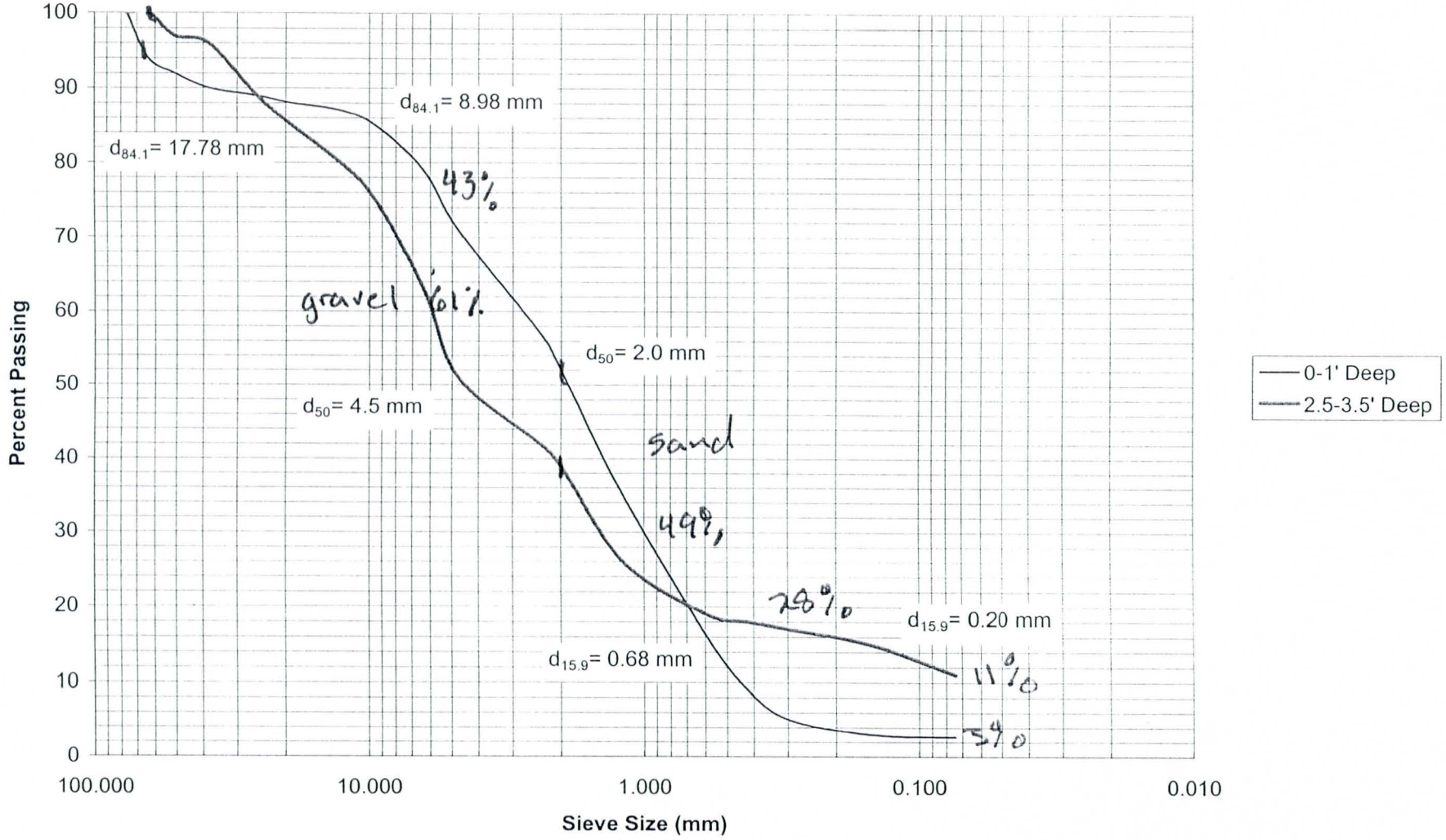
Particle Size Distribution Curve
TH 5



Particle Size Distribution Curve
TH 6



Particle Size Distribution Curve
TH 7



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SCALE

Level I Scour Analysis

$d_{gs} = 0.157 (Q_{100})^{0.4} = 0.157(1609)^{0.4} = 3.00$ ft
for straight reaches

$d_{gs} = 0.219 (Q_{100})^{0.4} = 0.219(1609)^{0.4} = 4.20$ ft

$d_{ts} = 0.02 (Q_{100})^{0.6} = 0.02(1609)^{0.6} = 1.67$

Straight $d_s = 4.7$
Curved Reaches $d_s = 5.4$

Level II

slope = 0.00559 ft/ft

Manning's n = 0.055 (0.030)

Location 4 next to Pinnacle Vista

Erodibility Evaluation

From Figure 1, $D_{75} = 50$ mm

V = 8.8 fps
Depth = 5 ft

$C_a = 1$ $C_b = N/A$ $C_D = 1.2$

$V_{all} = 8.8 \times 1.2 = 10.6$ fps No erosion expected

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Armoring Potential

$n = D_{90}^{1/6}/26 = \left(\frac{70}{1000}\right)^{1/6}/26 = \underline{0.025}$

Flow Area = 466 ft^2

Top width = 253

$R = \frac{466}{253} = 1.84$ ft

$f = 116.5(0.025)^2/(1.84)^{1/3}$

$= 0.0594$

$\tau_p = \frac{1}{8}(0.0594)(1.94)(6.7)^2$

$= 0.6466$

$D_c = \tau_p/[0.047(\gamma_s - \gamma)]$

$0.6466/[0.047(165-62.4)]$

$= 0.13$ feet

$= 1.6$ inches

$= 40.87$ mm $= D_{66}$

Armoring is possible

Armor thickness = 82 mm

$\Delta z = 82\text{mm}\left(\frac{1}{34\%} - 1\right)$ 159 mm

= 6 inches

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Location 3 Sta 1.351

$D_{75} = 3$ mm
Figure 1 $V = 3.5$

$C_a = 1$ $C_b = 1$

$C = 1.1$ $V_a = 3.9$ fps

V exceeds erosion expected

Armoring Potential

$n = D_{90}^{1/6}/26 = \left(\frac{6.5}{1000}\right)^{1/6}/26 = 0.0166$

$A = 509$ $T = 202$ $R = 2.52$ ft

$f = 116.5(0.0166)^2/(2.52)^{1/3} = 0.0438$

$\tau_p = 1/8(0.0438)(1.94)(5.6)^2 = 0.333$

$D_c = 0.333/[0.047(165-62.4)]$

$= 0.069$ feet $= 0.82$ inches

$= 21$ mm

= Armoring not likeley to occur in upper level

$D_{90} = 100$ $n = (0.1)^{1/6}/26 = 0.026$
$f = 0.0587$ $\tau_p = 0.447$ $D_c = 28$ mm $= D_{46}$
56 mm = 2.2 inches $\Delta Z = 56\left(\frac{1}{.54} - 1\right) = 47$ mm
1.8 inches

Depth = 1.7 feet

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Location 1 sta 1.067

$D_{75} = 9.5$ mm $V = 1.0 \times 1.0 \times 1.2 \times 5.2 = 6.24$ fps

which is greater than velocities

$n = D_{90}^{1/6} / 26 = \left(\frac{70\text{ mm}}{1000}\right)^{1/6} / 26 = 0.0246$

$T_1 = 78.5$
$A_1 = 510$
$R_1 = 6.49$
$f = 0.0477$
$V = 4.52$
$\tau_p = 0.236$
$D_c = 0.0490$ ft
0.588 in
14.9 mm
D_{79}

$T_2 = 456$
$A_2 = 1472$
$R_2 = 3.23$
$f_2 = 0.0378$
$V = 1.21$
$\tau_p = 0.0134$
$D_c = 0.00278$ ft
0.0333 in
0.847 mm
D_{24}

Armor thickness = 29.9 mm = 1.694 mm

$\Delta Z = 29.9\left(\frac{1}{.21} - 1\right) =$ $= 1.69\left(\frac{1}{.76} - 1\right)$

112.4 mm 0.53 mm
4.4 in
0.36 ft

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Retention basin Area

$V = 5.73$

$F = 116.5(0.025)^2/(3)^{1/3}$

$= 0.0488$

$\tau_p = \frac{1}{8}(0.0488)(1.94)(5.7)^2$

$= 0.385$

$D_c = 0.0748 = 24$ mm

D_{50}

Armor layer $= 48$ mm

$\Delta Z = 48\left(\frac{1}{.19} - 1\right) = 218$ mm

8.6 inch.

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Lateral Migration Setback Allowance

- For straight channel reaches

$$\text{Setback} = 1.0\,(Q_{100})^{0.5}$$

where $r > 5w$

$w = 46$ $\quad 5w = 230$ ft

$r > 230$ for the whole channel, except 1 spot.

$$\text{setback} = 1.0\,(1609 + 110)^{0.5} \cong 42 \text{ ft}$$

Minimum sb = 20 ft

$$\text{setback} = 2.5\,(Q_{100})^{0.5}$$ for obvious curvature

$$sb = 2.5(42) = 105 \text{ ft}$$

Lots 31, 30, 32, 33, Fetlock cul-de-sac & parts of Riordan Ranch Road are in the setback limits, along w/ the south part of the retention basin.

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Level II

Allowable Velocity

级 - D_{75} < sieve size 200

side slope

52

Allowable Velocity Approach

	Bank Mate Depth	D75	Vb	Curve Radi	WS Width	Ca		Bank Slop	Cb	Depth	Cd		Va	V	Erosion?	Case
s02	Sandy Lear 0-2 feet	0.075	2	205	46	4.5	0.7	2.5	0.81	5.1	1.11		**1.3**	**6.7**	yes	2
	Clayey Gra 2-7.5 Feet	9	5.2	205	46	4.5	0.7		0.81	5.1	1.11		**3.3**	**6.7**	yes	1
s03	Lean Clay v 0-2.5 feet	0.075	2	205	46	4.5	0.7	3.4	0.84	5.1	1.11		**1.3**	**6.7**	yes	2
	Sandy Lear 2.5-6 feet	0.075	2	205	46	4.5	0.7		0.84	5.1	1.11		**1.3**	**6.7**	yes	2
s08	Sandy Lear 0-2 feet	0.075	2	480	46	10.4	0.94	3.3	0.84	7	1.18		**1.9**	**6.3**	yes	2
	Clayey Gra 2-15.5 feet	0.075	2	480	46	10.4	0.94		0.84	7	1.18		**1.9**	**6.3**	yes	2
s09	Clayey San 0-1.5 feet	0.075	2	480	46	10.4	0.94	2.8	0.83	7	1.18		**1.8**	**6.3**	yes	2
	Clayey Gra 6-13 feet	9.5	5.2	480	46	10.4	0.94		0.83	7	1.18		**4.8**	**6.3**	yes	1
s12	Sandy Silt v 0-1.5	2	3.2	650	46	14.1	0.99	2.3	0.78	5.5	1.12		**2.8**	**5.9**	yes	2
	Silty Gravel 1.5-4	9.5	5.2	650	46	14.1	0.99		0.78	5.5	1.12		**4.5**	**5.9**	yes	1
s13	Sandy Silt v 0-1.5 feet	2	3.2	650	46	14.1	0.99	2.9	0.79	5.5	1.12		**2.8**	**3**	yes	2
	Silty Gravel 1.5-15.5 fee	9.5	5.2	650	46	14.1	0.99		0.79	5.5	1.12		**4.6**	**3**	no	1
s14	Sandy Silt v 0.-2.5 feet	2	3.2	1860	46	40.4	1	4.0	0.84	5.9	1.12		**3.0**	**4.5**	yes	2
	Silty Gravel 2.5-7.0 feet	9.5	5.2	1860	46	40.4	1		0.84	5.9	1.12		**4.9**	**4.5**	no	1
s17	Silty Clayey 0-1.5	1.8	3	1860	46	40.4	1	4.1	0.84	5.9	1.12		**2.8**	**4.5**	yes	2
	Silty Gravel 7-15.5 feet	10.5	6	1860	46	40.4	1		0.84	5.9	1.12		**5.6**	**4.5**	no	1

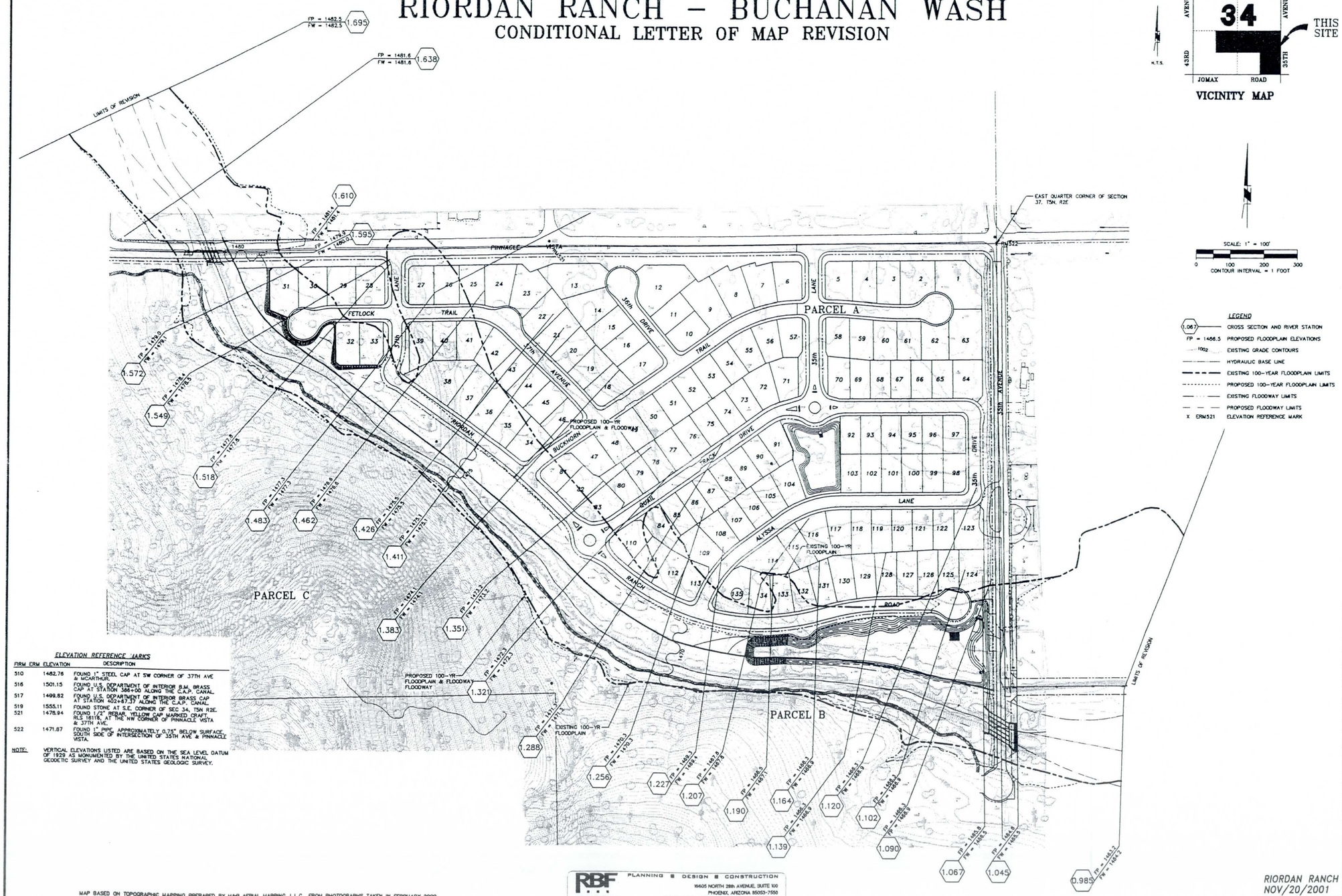
1.527
1.527
1.411
1.406
2.351
1.527
1.190
1.067

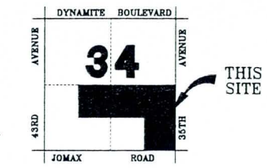
$$\text{valley} = \frac{2546.737}{2362.241} = 1.08$$

FLOODPLAIN WORK MAP

RIORDAN RANCH – BUCHANAN WASH

CONDITIONAL LETTER OF MAP REVISION





VICINITY MAP

SCALE: 1" = 100'

0 100 200 300

CONTOUR INTERVAL = 1 FOOT

LEGEND

1.067	CROSS SECTION AND RIVER STATION
FP = 1456.5	PROPOSED FLOODPLAIN ELEVATIONS
1002	EXISTING GRADE CONTOURS
	HYDRAULIC BASE LINE
	EXISTING 100-YEAR FLOODPLAIN LIMITS
	PROPOSED 100-YEAR FLOODPLAIN LIMITS
	EXISTING FLOODWAY LIMITS
	PROPOSED FLOODWAY LIMITS
X ERM521	ELEVATION REFERENCE MARK

ELEVATION REFERENCE MARKS

FIRM ERM	ELEVATION	DESCRIPTION
510	1462.76	FOUND 1" STEEL CAP AT SW CORNER OF 37TH AVE & MCARTHUR.
516	1501.15	FOUND U.S. DEPARTMENT OF INTERIOR B.M. BRASS CAP AT STATION 386+00 ALONG THE C.A.P. CANAL.
517	1499.82	FOUND U.S. DEPARTMENT OF INTERIOR BRASS CAP AT STATION 402+87.37 ALONG THE C.A.P. CANAL.
519	1555.11	FOUND STONE AT S.E. CORNER OF SEC 34, T5N R2E.
521	1478.94	FOUND 1 1/2" REBAR, YELLOW CAP MARKED CRAFT, RLS 18118, AT THE NW CORNER OF PINNACLE VISTA & 37TH AVE.
522	1471.87	FOUND 1" IRPC APPROXIMATELY 0.75" BELOW SURFACE, SOUTH SIDE OF INTERSECTION OF 35TH AVE & PINNACLE VISTA.

NOTE: VERTICAL ELEVATIONS LISTED ARE BASED ON THE SEA LEVEL DATUM OF 1929 AS MONUMENTED BY THE UNITED STATES NATIONAL GEODETIC SURVEY AND THE UNITED STATES GEOLOGIC SURVEY.

MAP BASED ON TOPOGRAPHIC MAPPING PREPARED BY M&B AERIAL MAPPING, L.L.C., FROM PHOTOGRAPHS TAKEN IN FEBRUARY 2000.

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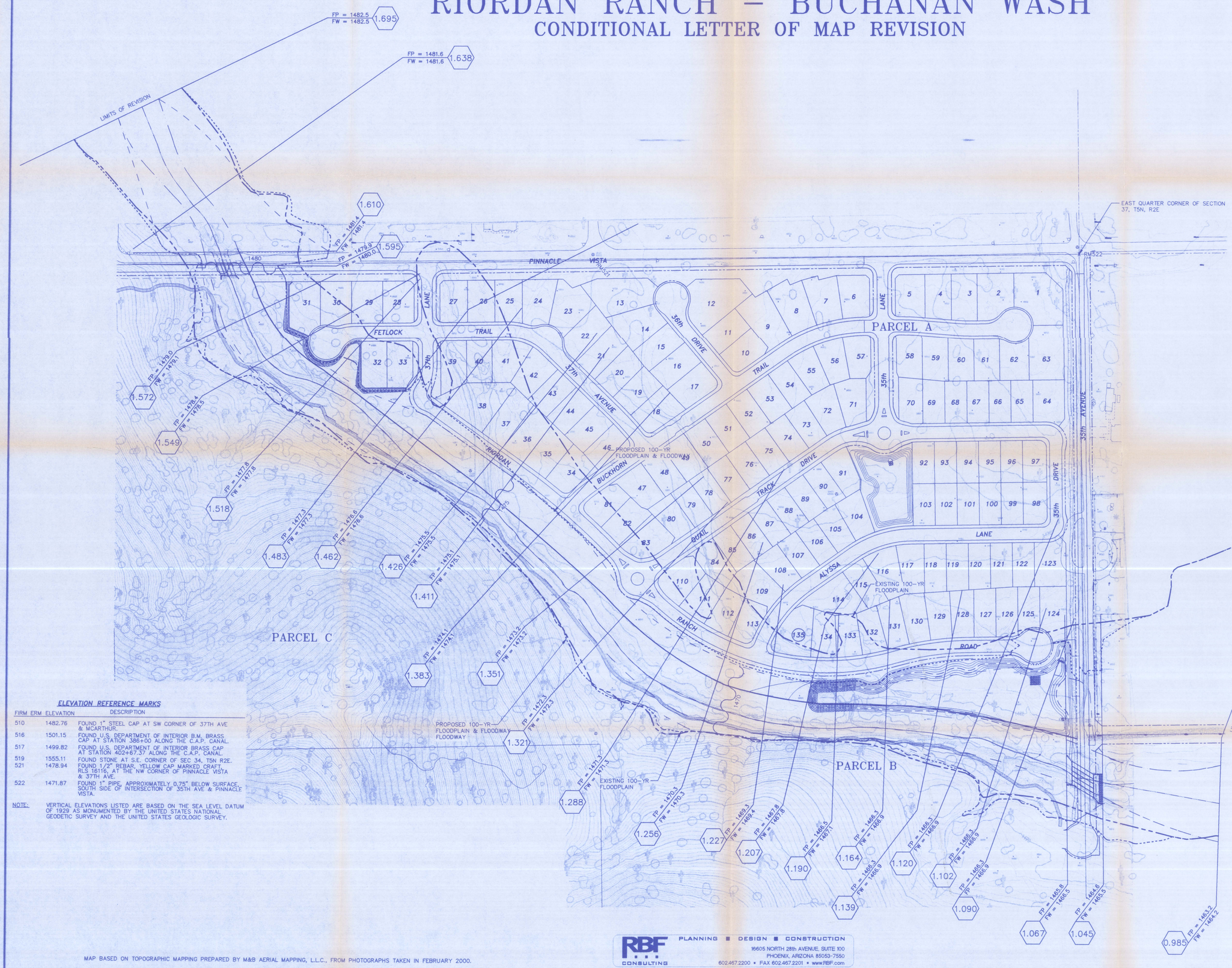
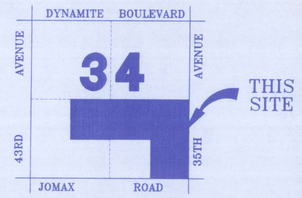
RIORDAN RANCH
NOV/20/2001
RBF#45-100428

FLOODPLAIN WORK MAP

RIORDAN RANCH – BUCHANAN WASH

CONDITIONAL LETTER OF MAP REVISION





VICINITY MAP

N.T.S.

SCALE: 1" = 100'

0 100 200 300

CONTOUR INTERVAL = 1 FOOT

LEGEND

1.067	CROSS SECTION AND RIVER STATION
FP = 1486.5	PROPOSED FLOODPLAIN ELEVATIONS
1002	EXISTING GRADE CONTOURS
	HYDRAULIC BASE LINE
	EXISTING 100-YEAR FLOODPLAIN LIMITS
	PROPOSED 100-YEAR FLOODPLAIN LIMITS
	EXISTING FLOODWAY LIMITS
	PROPOSED FLOODWAY LIMITS
X ERM521	ELEVATION REFERENCE MARK

ELEVATION REFERENCE MARKS

FIRM ERM	ELEVATION	DESCRIPTION
510	1482.76	FOUND 1" STEEL CAP AT SW CORNER OF 37TH AVE & MCARTHUR.
516	1501.15	FOUND U.S. DEPARTMENT OF INTERIOR B.M. BRASS CAP AT STATION 386+00 ALONG THE C.A.P. CANAL.
517	1499.82	FOUND U.S. DEPARTMENT OF INTERIOR BRASS CAP AT STATION 402+67.37 ALONG THE C.A.P. CANAL.
519	1555.11	FOUND STONE AT S.E. CORNER OF SEC 34, T5N R2E.
521	1478.94	FOUND 1/2" REBAR, YELLOW CAP MARKED CRAFT, RLS 16116, AT THE NW CORNER OF PINNACLE VISTA & 37TH AVE.
522	1471.87	FOUND 1" PIPE, APPROXIMATELY 0.75" BELOW SURFACE, SOUTH SIDE OF INTERSECTION OF 35TH AVE & PINNACLE VISTA.

NOTE: VERTICAL ELEVATIONS LISTED ARE BASED ON THE SEA LEVEL DATUM OF 1929 AS MONUMENTED BY THE UNITED STATES NATIONAL GEODETIC SURVEY AND THE UNITED STATES GEOLOGIC SURVEY.

MAP BASED ON TOPOGRAPHIC MAPPING PREPARED BY M&B AERIAL MAPPING, L.L.C., FROM PHOTOGRAPHS TAKEN IN FEBRUARY 2000.

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Registered Professional Engineer (Civil) CERTIFICATE NO. 31317 KENNETH M. TARR Date Signed 11/20/01 ARIZONA, U.S.A.

RIORDAN RANCH
NOV/20/2001
RBF#45-100428

GRADING PLANS FOR
RIORDAN RANCH PARCELS A & C
A PORTION OF THE SOUTH HALF OF SECTION 34
TOWNSHIP 5 NORTH, RANGE 2 EAST OF THE
GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

ENGINEER NOTES

THE CONTRACTOR SHALL MAKE NO CLAIM AGAINST THE OWNER OR THE ENGINEER REGARDING ALLEGED INACCURACY OF CONSTRUCTION STAKES SET BY THE ENGINEER UNLESS ALL SURVEY STAKES SET BY THE ENGINEER ARE MAINTAINED INTACT AND CAN BE VERFIED AS TO THEIR ORIGIN. IF, IN THE OPINION OF THE ENGINEER, THE STAKES ARE NOT MAINTAINED INTACT AND CANNOT BE VERIFIED AS TO THEIR ORIGIN, ANY REMEDIAL WORK REQUIRED TO CORRECT ANY ITEM OR IMPROPER CONSTRUCTION WORK IN THIS DEVELOPMENT SHALL BE PERFORMED AT THE SOLE EXPENSE OF THE RESPONSIBLE CONTRACTOR OR SUBCONTRACTOR.

NOTHING CONTAINED IN THE CONTRACT DOCUMENTS SHALL CREATE, NOR SHALL BE CONSTRUED TO CREATE, ANY CONTRACTUAL RELATIONSHIP BETWEEN THE ENGINEER AND THE CONTRACTOR OR ANY SUBCONTRACTOR. THE ENGINEER WILL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OR FOR SAFETY PRECAUTIONS OR PROGRAMS UTILIZED IN CONNECTION WITH THE WORK, AND HE WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

THE ENGINEER MAKES NO REPRESENTATION OR GUARANTEE REGARDING EARTHWORK QUANTITIES OR THAT THE EARTHWORK FOR THIS PROJECT WILL BALANCE DUE TO THE VARYING FIELD CONDITIONS, CHANGING SOIL TYPES, ALLOWABLE CONSTRUCTION TOLERANCES AND CONSTRUCTION METHODS THAT ARE BEYOND THE CONTROL OF THE ENGINEER.

PRIOR TO BIDDING THE WORK THE CONTRACTOR SHALL THOROUGHLY SATISFY HIMSELF AS TO THE ACTUAL CONDITIONS AND EARTHWORK QUANTITIES, IF ANY. NO CLAIM SHALL BE MADE AGAINST THE OWNER/DEVELOPER OR ENGINEER FOR ANY EXCESS OR DEFICIENCY THEREIN, ACTUAL OR RELATIVE.

THE ENGINEER WILL PERFORM FIELD SURVEYS FOR PAD ELEVATION CERTIFICATIONS UPON NOTIFICATION BY THE GRADING CONTRACTOR THAT THE PADS ARE COMPLETE AND READY FOR CERTIFICATION. IT IS UNDERSTOOD THAT THE CERTIFICATION PROVIDES ONLY A REPRESENTATIVE ELEVATION OF THE AVERAGE GRADE OF EACH LOT, BUILDINGS OR UNIT PAD, AND SHALL NOT BE CONSTRUED TO INCLUDE YARD AND STREET SUBGRADE CERTIFICATION OR CERTIFICATION THAT THE ENTIRE PAD IS LEVEL, THAT IT WAS CONSTRUCTED IN THE DESIGNED LOCATION OR WAS GRADED TO THE CROSS-SECTION SET FORTH ON THE PLANS OR AS DESIGNATED IN THE SOILS REPORT.

EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN LOCATED ACCORDING TO INFORMATION PROVIDED BY THE AGENCY OPERATING EACH UTILITY. LOCATIONS SHOWN ARE APPROXIMATELY ONLY, AND ARE NOT RELIABLE FOR CONSTRUCTION PURPOSES. CALL BLUE STAKE FOR FIELD LOCATION @ (602) 263-1100.

THE ENGINEER AND APPLICABLE AGENCY MUST APPROVE, PRIOR TO CONSTRUCTION, ANY ALTERATION OR VARIANCE FROM THESE PLANS. ANY VARIATIONS FROM THESE PLANS SHALL BE PROPOSED ON CONSTRUCTION FIELD PRINTS AND TRANSMITTED TO THE ENGINEER.

THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITIES ON THE SITE. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN OR NOT ON THE DRAWING, SHALL BE REPAIRED/REPLACED AT THE CONTRACTOR'S EXPENSE. EXISTING SURFACE FEATURES AND FENCING SHALL BE REPLACED IN KIND.

ANY INSPECTION BY THE CITY, COUNTY, OR THE ENGINEER, SHALL NOT, IN ANY WAY, RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM THE WORK IN STRICT COMPLIANCE WITH APPLICABLE CODES AND AGENCY REQUIREMENTS.

CONTRACTOR TO LOCATE ALL EXISTING PROPERTY MONUMENTS PRIOR TO CONSTRUCTION. ANY MONUMENTS DISTURBED DURING THE CONSTRUCTION OF THIS PROJECT SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.

TRAFFIC CONTROL SHALL BE MAINTAINED IN ACCORDANCE WITH THE MAG SPECIFICATION 401 AND THE CITY OF PHOENIX BARRICADE MANUAL.

PRIOR TO FINAL APPROVAL AND ACCEPTANCE OF THE WORK THE DEVELOPER/CONTRACTOR WILL BE REQUIRED TO CLEAN AND REPAIR ADJACENT (OFF-PROJECT) ROADWAYS USED OR DAMAGED DURING THE COURSE OF CONSTRUCTION.

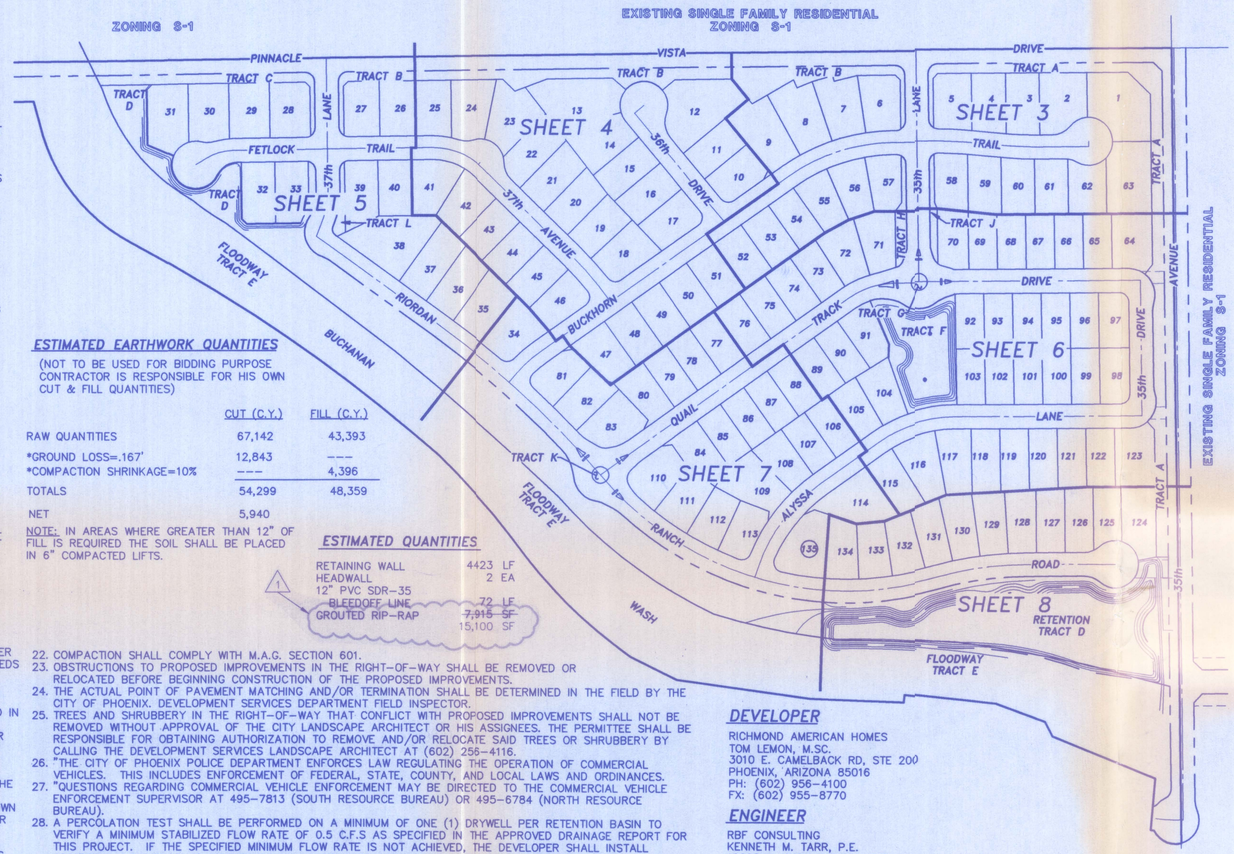
CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL STORM DRAIN PIPES AND DRAINAGE FACILITIES FROM DAMAGE DURING ALL STAGES OF CONSTRUCTION. THE DEPTH OF COVER ON THE STORM DRAINAGE PIPE IS DESIGNED FOR FINAL GRADE, THEREFORE, EXTRA CARE SUCH AS BERMING OVER PIPES, FLAGGING OR SIGNAGE SHOULD BE USED DURING CONSTRUCTION TO MAINTAIN COVER OR PROTECT THE PIPES.

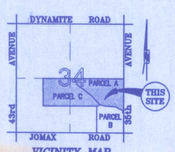
CITY OF PHOENIX GRADING & DRAINAGE NOTES

1. A GRADING PERMIT IS REQUIRED UNDER CHAPTER 32A OF THE PHOENIX CITY CODE.
2. HAUL PERMITS, WHEN REQUIRED, MUST BE OBTAINED PRIOR TO OR CONCURRENTLY WITH THE GRADING AND DRAINAGE PERMIT.
3. EXCAVATING CONTRACTOR MUST GIVE LOCATION FOR WASTING EXCESS EXCAVATION AND A LETTER FROM OWNER GIVING PERMISSION FOR DUMPING PRIOR TO STARTING ON-SITE CONSTRUCTION. IF EXCESS EXCAVATION EXCEEDS 100 CUBIC YARDS, THE DISPOSAL SITE WILL ALSO REQUIRE A GRADING AND DRAINAGE PERMIT.
4. DEVELOPMENT SERVICES DEPARTMENT'S FIELD INSPECTION GROUP SHALL BE NOTIFIED 48 HOURS BEFORE ANY ON-SITE CONSTRUCTION BEGINS, TELEPHONE (602) 262-7811.
5. MINIMUM FINISH FLOOR ELEVATIONS SHOWN ARE SAFE FROM THE 100 YEAR FLOOD OR PER MINIMUM SPECIFIED IN THE CITY OF PHOENIX STORM DRAIN DESIGN MANUAL, WHICHEVER IS GREATER.
6. STAKING PAD ELEVATIONS IS THE RESPONSIBILITY OF THE OWNER AND HIS ENGINEER. THE OWNER'S ENGINEER SHALL SUBMIT ONE SEALED COPY OF THIS GRADING AND DRAINAGE PLAN DESIGNATED AS "RECORD DRAWING" (BEARING AN ORIGINAL SIGNATURE) PRIOR TO THE REQUEST FOR FINAL INSPECTION.
7. A SEPARATE PERMIT IS NECESSARY FOR ANY OFF-SITE CONSTRUCTION.
8. AN APPROVED GRADING AND DRAINAGE PLAN SHALL BE ON THE JOB SITE AT ALL TIMES. DEVIATIONS FROM THE PLAN MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
9. GRADING AND DRAINAGE PLAN APPROVAL INCLUDES THE CONSTRUCTION OF ALL SURFACE IMPROVEMENTS SHOWN ON THE APPROVED PLAN INCLUDING, BUT NOT LIMITED TO, RETENTION AREAS, SEDIMENTATION BASINS, AND/OR OTHER DRAINAGE FACILITIES, DRAINAGE PATTERNS, WALLS, CURBS, ASPHALT PAVEMENT, AND BUILDING FLOOR ELEVATIONS.
10. CONTRACTOR SHALL PROVIDE LEVEL BOTTOM IN ALL RETENTION BASINS AT ELEVATIONS SHOWN ON THE PLANS. SLOPE PROTECTION SHALL BE APPLIED TO PREVENT EROSION.
11. GRADES SHOWN IN RETENTION BASINS ARE DESIGN FINISHED GRADES. SHOULD THE CONTRACTOR OR ANY SUBCONTRACTOR PLAN TO PLACE SPOIL DIRT FROM FOOTINGS, UTILITY TRENCHES, LANDSCAPING, SWIMMING POOLS, ETC. IN THE BASINS, THEN THE BASINS SHOULD BE SUFFICIENTLY OVER-EXCAVATED DURING THE ROUGH GRADING OPERATION TO ALLOW FOR THE PLACEMENT OF THE FILL OR LANDSCAPING MATERIALS.
12. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONFIRMING DEPTHS OF ALL THE EXISTING UTILITY LINES WITHIN PROPOSED RETENTION BASIN AREAS. IF THE BASIN CANNOT BE CONSTRUCTED PER PLAN BECAUSE OF CONFLICTS, THE CONTRACTOR SHOULD DISCUSS MODIFICATION OF BASIN CONFIGURATION WITH THE CITY INSPECTOR TO DETERMINE IF A PLAN REVISION OR A FIELD CHANGE IS REQUIRED.
13. ALL DRAINAGE PROTECTIVE DEVICES SUCH AS SWALES, INTERCEPTOR DITCHES, PIPES, PROTECTIVE BERMS, BARRIER WALLS, CONCRETE CHANNELS OR OTHER MEASURES DESIGNED TO PROTECT ADJACENT BUILDINGS OR PROPERTY FROM STORM RUNOFF MUST BE COMPLETED PRIOR TO BUILDING CONSTRUCTION.
14. RETENTION BASIN SIDE SLOPES SHALL BE A MAXIMUM OF 4:1 UNLESS APPROVAL IS RECEIVED FROM THE PLAN REVIEWER FOR A STEEPER SLOPE.
15. ALL KNOWN EXISTING UNDERGROUND UTILITIES WITHIN PROPOSED RETENTION AREAS HAVE BEEN DESIGNED TO MAINTAIN A MINIMUM 15" OF COVER OVER CITY OWNED UTILITY LINES AND THE MINIMUM SPECIFIED BY OTHER UTILITY OWNERS.
16. REQUIRED RETAINING WALLS SHOWN ON THE GRADING AND DRAINAGE PLANS ARE TO BE REVIEWED, PERMITTED, AND INSPECTED BY THE BUILDING SAFETY BRANCH OF THE DEVELOPMENT SERVICES DEPARTMENT.
17. CERTIFICATE OF OCCUPANCY (C. OF O.) AND/OR FINAL ELECTRICAL CLEARANCE FOR ANY BUILDING IS DENIED UNTIL ALL GRADING AND DRAINAGE IMPROVEMENTS ARE COMPLETED.
18. DAMAGED AND/OR DISPLACED CONCRETE CURB, GUTTER, SIDEWALK, OR DRIVEWAY SLAB THAT IS WITHIN THE RIGHT-OF-WAY SHALL BE REPAIRED OR REPLACED, AS NOTED BY CITY INSPECTORS, BEFORE FINAL ACCEPTANCE OF THE WORK.
19. THE ENGINEERING DESIGN ON THESE PLANS ARE ONLY APPROVED BY THE CITY IN SCOPE AND NOT IN DETAIL. CONSTRUCTION QUANTITIES ON THESE PLANS ARE NOT VERIFIED BY THE CITY. APPROVAL OF THESE PLANS ARE FOR PERMIT PURPOSES ONLY AND SHALL NOT PREVENT THE CITY FROM REQUIRING CORRECTION OF ERRORS IN THE PLANS WHERE SUCH ERRORS ARE SUBSEQUENTLY FOUND TO BE IN VIOLATION OF ANY LAW, ORDINANCE, HEALTH, SAFETY, OR OTHER DESIGN ISSUES.
20. CONSTRUCTION WITHIN THE RIGHT-OF-WAY SHALL CONFORM TO THE LATEST APPLICABLE MARICOPA ASSOCIATION OF GOVERNMENTS (MAG) UNIFORM STANDARD SPECIFICATIONS AND DETAILS AND THE LATEST CITY OF PHOENIX SUPPLEMENTALS TO THE MAG UNIFORM STANDARD SPECIFICATIONS AND DETAILS.
21. PLAN APPROVAL IS VALID FOR TWELVE (12) MONTHS. IF APPROVAL EXPIRES, THE PLANS MUST BE RESUBMITTED FOR CITY UPDATE REVIEW AND APPROVAL.
22. COMPACTION SHALL COMPLY WITH M.A.G. SECTION 601.
23. OBSTRUCTIONS TO PROPOSED IMPROVEMENTS IN THE RIGHT-OF-WAY SHALL BE REMOVED OR RELOCATED BEFORE BEGINNING CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
24. THE ACTUAL POINT OF PAVEMENT MATCHING AND/OR TERMINATION SHALL BE DETERMINED IN THE FIELD BY THE CITY OF PHOENIX. DEVELOPMENT SERVICES DEPARTMENT FIELD INSPECTOR.
25. TREES AND SHRUBBERY IN THE RIGHT-OF-WAY THAT CONFLICT WITH PROPOSED IMPROVEMENTS SHALL NOT BE REMOVED WITHOUT APPROVAL OF THE CITY LANDSCAPE ARCHITECT OR HIS ASSIGNEES. THE PERMITTEE SHALL BE RESPONSIBLE FOR OBTAINING AUTHORIZATION TO REMOVE AND/OR RELOCATE SAID TREES OR SHRUBBERY BY CALLING THE DEVELOPMENT SERVICES LANDSCAPE ARCHITECT AT (602) 256-4116.
26. "THE CITY OF PHOENIX POLICE DEPARTMENT ENFORCES LAW REGULATING THE OPERATION OF COMMERCIAL VEHICLES. THIS INCLUDES ENFORCEMENT OF FEDERAL, STATE, COUNTY, AND LOCAL LAWS AND ORDINANCES.
27. "QUESTIONS REGARDING COMMERCIAL VEHICLE ENFORCEMENT MAY BE DIRECTED TO THE COMMERCIAL VEHICLE ENFORCEMENT SUPERVISOR AT 495-7813 (SOUTH RESOURCE BUREAU) OR 495-6784 (NORTH RESOURCE BUREAU).
28. A PERCOLATION TEST SHALL BE PERFORMED ON A MINIMUM OF ONE (1) DRYWELL PER RETENTION BASIN TO VERIFY A MINIMUM STABILIZED FLOW RATE OF 0.5 C.F.S AS SPECIFIED IN THE APPROVED DRAINAGE REPORT FOR THIS PROJECT. IF THE SPECIFIED MINIMUM FLOW RATE IS NOT ACHIEVED, THE DEVELOPER SHALL INSTALL ADDITIONAL DRY WELLS AS NECESSARY TO INSURE BASIN WILL DRAIN IN WITHIN 36 HOURS.
29. PAD CERTIFICATIONS WILL BE REQUIRED ON ALL LOTS WITHIN THE SUBDIVISION AND SUBMITTED TO THE CIVIL/SITE INSPECTOR PRIOR TO ANY CONCRETE CONSTRUCTED IN THE RIGHT OF WAY. PAD CERTIFICATIONS CAN BE SUBMITTED TO THE CIVIL/SITE INSPECTOR BY EITHER SUBMITTING ONE APPROVED BLACK-LINE AS-BUILT GRADING AND DRAINAGE PLAN OR IN LETTER FORMAT SHOWING THE DESIGN AND AS-BUILT PAD ELEVATIONS AS SHOWN ON THE APPROVED GRADING AND DRAINAGE. IT IS REQUIRED THAT THE AS-BUILT PLAN AND LETTER BE SEALED BY A CIVIL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA.
BEFORE GRADING IN AREAS CONTAINING NATIVE DESERT VEGETATION, THE CONTRACTOR MUST OBTAIN A PERMIT FROM ARIZONA DEPARTMENT OF AGRICULTURE. FOR INFORMATION, PHONE (602) 255-4933/542-0994.
30. A. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR REGISTERING THE DRY WELLS SHOWN ON THE G&D PLAN WITH THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (A.D.E.Q.). FOR INFORMATION ABOUT SPECIFIC REQUIREMENTS, CONTACT THE WATER PERMITS AT (602) 207-4686.
B. DRY WELLS MUST BE DRILLED A MINIMUM OF 10 FEET INTO PERMEABLE POROUS STRATA OR PERCOLATION TESTS WILL BE REQUIRED. THE G&D INSPECTOR MUST BE PRESENT BEFORE BACKFILL OR WELL PIPES ARE PLACED WITHIN ANY DRY WELLS.

GENERAL GRADING NOTES

1. CONTRACTOR TO FOLLOW RECOMMENDATIONS LISTED IN THE SOILS INVESTIGATION REPORT FOR 83RD AVENUE & LOWER BUCKEYE PREPARED BY CONSTRUCTION INSPECTION & TESTING COMPANY. SHOULD ANY CONFLICTS ARISE BETWEEN THE SOILS INVESTIGATION REPORT AND THESE GRADING PLANS, THE CIVIL ENGINEER SHALL BE CONTACTED AND THE SOILS INVESTIGATION REPORT RECOMMENDATIONS SHALL BE FOLLOWED.
2. THE ENGINEER MAKES NO REPRESENTATION OR GUARANTEE REGARDING EARTHWORK QUANTITIES OR THAT THE EARTHWORK FOR THIS PROJECT WILL BALANCE DUE TO VARYING FIELD CONDITIONS, CHANGING SOIL TYPES, ALLOWABLE CONSTRUCTION TOLERANCES AND CONSTRUCTION METHODS THAT ARE BEYOND THE CONTROL OF THE ENGINEER.
3. PRIOR TO BIDDING THE WORK THE CONTRACTOR SHALL THOROUGHLY SATISFY HIMSELF AS TO THE ACTUAL CONDITIONS AND EARTHWORK QUANTITIES, IF ANY. NO CLAIM SHALL BE MADE AGAINST THE OWNER/DEVELOPER OR ENGINEER FOR ANY EXCESS OR DEFICIENCY THEREIN, ACTUAL OR RELATIVE.
4. THE ENGINEER WILL PERFORM FIELD SURVEYS FOR PAD ELEVATION CERTIFICATIONS UPON NOTIFICATION BY THE GRADING CONTRACTOR THAT THE PADS ARE COMPLETE AND READY FOR CERTIFICATION. IT IS UNDERSTOOD THAT THE CERTIFICATION PROVIDES ONLY A REPRESENTATIVE ELEVATION OF THE AVERAGE GRADE OF EACH LOT, BUILDINGS OR UNIT PAD, AND SHALL NOT BE CONSTRUED TO INCLUDE YARD AND STREET SUBGRADE CERTIFICATION OR CERTIFICATION THAT THE ENTIRE PAD IS LEVEL, THAT IT WAS CONSTRUCTED IN THE DESIGNED LOCATION OR WAS GRADED TO THE CROSS-SECTION SET FORTH ON THE PLANS OR AS DESIGNATED IN THE SOILS REPORT.





VICINITY MAP (NTS)

SCALE 1"=150'

SCALE: 1" = 150'

0 150 300 450

LEGEND

PAD=	MIN. BUILDING PAD ELEVATION
HW=	HIGH WATER ELEVATION
BTM=	BASIN BOTTOM ELEVATION
◆	INDICATES GRADE BREAK
FGT= FGB=	TOP OF RETAINING WALL FINISHED SURFACE AT BOTTOM OF RET. WALL
FL= 03.71	FLOW LINE ELEVATION
	TOP AND BOTTOM OF SLOPE
	STORM DRAIN
	DRAINAGE ARROW
NG 10.10	NATURAL GRADE ELEVATION
	RETAINING WALL
	GROUTED RIP-RAP
	GUNNITE SPILLWAY
	SURVEY MONUMENT
1002	EXISTING CONTOURS
2.00%	PROPOSED STREET SLOPE
82.6	(RECTANGLE) FINISHED GRADE AT REAR PROPERTY CORNER
79.5	EXISTING GROUND ELEVATION
81.93	PROPOSED TOP OF CURB ELEV.
8.31	EXISTING TOP OF CURB ELEV.
FF=	MIN. FINISHED FLOOR ELEVATION

ESTIMATED EARTHWORK QUANTITIES

(NOT TO BE USED FOR BIDDING PURPOSE CONTRACTOR IS RESPONSIBLE FOR HIS OWN CUT & FILL QUANTITIES)

	CUT (C.Y.)	FILL (C.Y.)
RAW QUANTITIES	67,142	43,393
*GROUND LOSS=.167'	12,843	---
*COMPACTION SHRINKAGE=10%	---	4,396
TOTALS	54,299	48,359
NET	5,940	

NOTE: IN AREAS WHERE GREATER THAN 12" OF FILL IS REQUIRED THE SOIL SHALL BE PLACED IN 6" COMPACTED LIFTS.

ESTIMATED QUANTITIES

RETAINING WALL	4423 LF
HEADWALL	2 EA
12" PVC SDR-35 BLEEDOFF LINE	72 LF
GROUTED RIP-RAP	~~7,915 SF~~ 15,100 SF

1

DEVELOPER

RICHMOND AMERICAN HOMES
TOM LEMON, M.SC.
3010 E. CAMELBACK RD, STE 200
PHOENIX, ARIZONA 85016
PH: (602) 956-4100
FX: (602) 955-8770

ENGINEER

RBF CONSULTING
KENNETH M. TARR, P.E.
16605 N. 28TH AVENUE, STE 100
PHOENIX, ARIZONA 85053-7550
PH: (602) 467-2200
FX: (602) 467-2201

SHEET INDEX

1	COVER SHEET
2	DETAILS
3-8	GRADING PLANS

BENCH MARK

1" IRON PIPE .80' DEEP IN POTHOLE @ 35th AVE & PINNACLE VISTA SW CORN OF INTERSECTION ELEV.=1471.87

1/2" REBAR @ 39th AVE & PINNACLE VISTA, SW COR OF INTERSECTION ELEV.=1495.17

GROSS AREA: 121.64 AC
NET AREA: 109.76 AC

These plans have been approved by the Development Services Department for The issuance of the following permit(s)

Grading	BP	Ph.___	Date 8/20/01
SWMP	___	Ph.___	Date___
Paving	___	Ph.___	Date___
Concrete	___	Ph.___	Date___
Drain. Fac.	___	Ph.___	Date___
Water	___	Ph.___	Date___
Wastewater	___	Ph.___	Date___
Misc.	___	Ph.___	Date___

"I HEREBY CERTIFY THAT THIS DESIGN IS BASED ON ACCURATE FIELD DATA WHICH HAS BEEN CHECKED IN THE FIELD PRIOR TO SUBMISSION FOR CITY APPROVAL."

BY: Kenneth M. Tarr DATE 8-15-2001

APPROVED FOR PARKS AND RECREATION
FOR MULTI-USE TRAIL ONLY

BY: [signature] DATE 8-17-01
PARKS RECREATION LIBRARY DIR.

"AS-BUILT CERTIFICATION"

I HEREBY CERTIFY THAT THE "RECORDED DRAWING" MEASUREMENTS AS SHOWN HEREON WAS OBTAINED UNDER MY DIRECT SUPERVISION AND IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

REGISTERED LAND SURVEYOR/ENGINEER

REGISTRATION NUMBER DATE

Two working days before you dig CALL FOR THE BLUE STAKES 602-263-1100 Blue Stake Center CALL COLLECT

1 MODIFICATION OF BFE'S AND BANK PROTECTION 10/26/01 Kenneth M. Tarr

MANAGING ENGINEER/PLANS FOR: KENNETH M. TARR, P.E.
PROJECT COORDINATOR: DANIEL J. POTTINGER, P.E.
FIELD SURVEY | DRAFTED | CHECKED
DESIGN/LAYOUT: EJF | DRAFTED: DOH | CHECKED: KMT
DRAWING SCALE(S): 1"=150'

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
16605 NORTH 28th AVENUE, SUITE 100
PHOENIX, ARIZONA 85032-2602
602.467.2200 ▪ FAX 602.467.2201 ▪ www.RBF.com

OWNER/DEVELOPER: RICHMOND AMERICAN HOMES
PROJECT NAME: RIORDAN RANCH PARCELS A & C
PLAN TYPE: GRADING PLANS

SEALED: Registered Professional Engineer (Civil) CERTIFICATE NO. 31317 KENNETH M. TARR Date Signed 8/15/01 ARIZONA, U.S.A.

ORIGINAL PLAN DATE: APR/2001
LATEST REVISION DATE: JULY/2001
SHEET NUMBER: 1 OF 8
PROJECT NUMBER: 45100428

KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037

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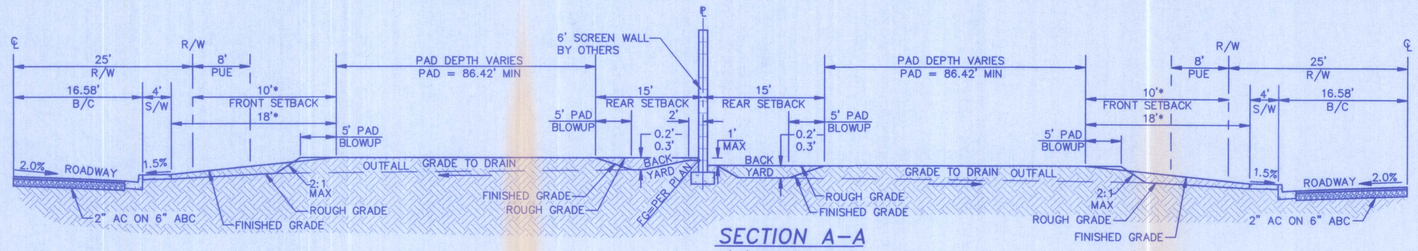
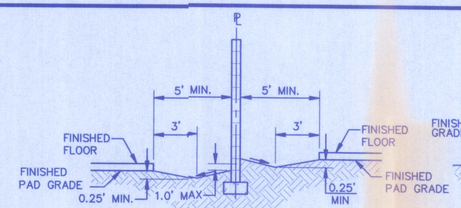
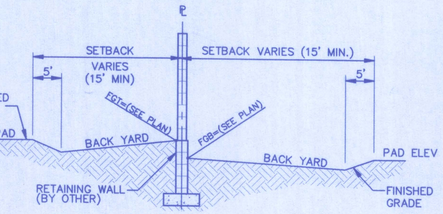


SECTION A-A
(W/O RETAINING WALL)
NTS

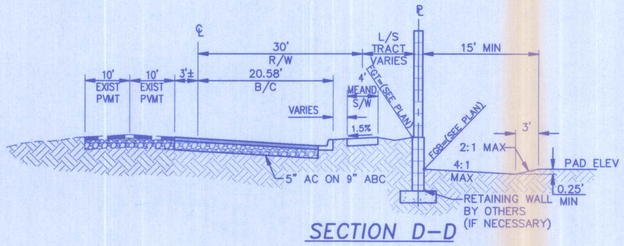
* 10' FRONT SETBACK TO LIVABLE AREA.
18' FRONT SETBACK FROM BACK OF WALK
TO FACE OF VERTICALLY OPENING GARAGE.



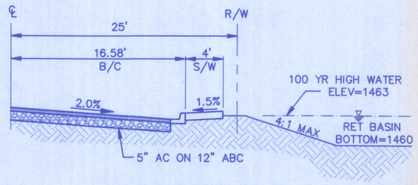
TYPICAL SIDE YARD
SECTION B-B
NTS



SECTION C-C
NTS



SECTION D-D
NTS



SECTION E-E
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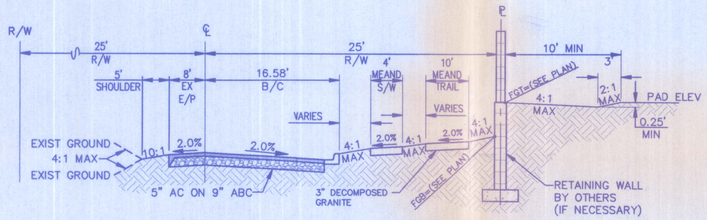

SECTION F-F
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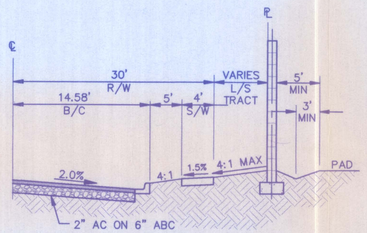

SECTION G-G
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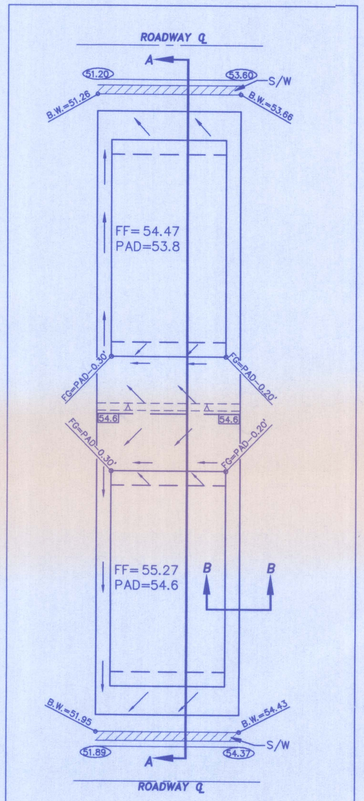
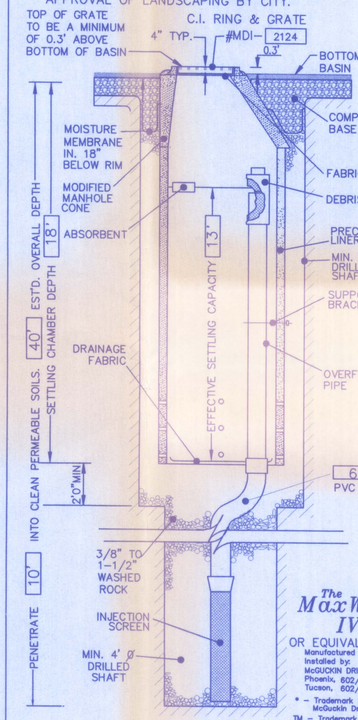


TYPICAL LOT GRADING PLAN

TEMPORARY STORM WATER POLLUTION PREVENTION NOTE:

MARIFI 100X FABRIC UNDERNEATH GRATE. TO BE CHECKED AFTER EACH STORM FOR SILT BY DEVELOPER MARIFI FABRIC TO BE REMOVED BY DEVELOPER AT TIME OF ACCEPTANCE AND APPROVAL OF LANDSCAPING BY CITY.



PRECAST LINER – REINFORCED 4000 PSI CONCRETE. 48" ID. 54" OD.

MANHOLE CONE – STANDARD UTILITY CONSTRUCTION. EXCEPT FLAT BOTTOM.

OVERFLOW PIPE – SCHEDULE 40 PVC MATED TO DRAINAGE PIPE BELOW ROCK.

BRACKETS – FORMED 12 GA. STEEL FUSION BONDED EPOXY COATED.

DEBRIS SHIELD – ROLLED 16 GA. STEEL X 36" LENGTH WITH ROLLED 16 GA. X .265" MAX. SWO FLATTENED EXPANDED STEEL SCREEN X 12" LENGTH. FUSION BONDED EPOXY COATED.

DRAINAGE PIPE–ADS HIGHWAY GRADE OR EQUAL.

RINGS AND GRATES – CLEAN CAST IRON WITH WORDING "STORM WATER ONLY" IN RAISED LETTERS MACHINED MATING SURFACES BOLTED IN TWO LOCATIONS.

ROCK – CLEAN WASHED ROCK – BETWEEN 3/8" AND 1-1/2", SIZED TO COMPLIMENT SOIL CONDITIONS.

MOISTURE MEMBRANE – 6 MIL PLASTIC. PLACE SECURELY AGAINST CONE AND HOLE SIDEWALL.

DRAINAGE FABRIC – NON-WOVEN GEOTEXTILE FABRIC. PLACE FABRIC TIGHTLY AGAINST LINER AND PIPE.

ABSORBENT – HYDROPHOBIC PETROCHEMICAL SPONGE MIN. 4 QT. CAPACITY STANDARD IN ALL PAVED DRAINAGE AREAS.

DRAINAGE SCREENS – ROLLED 10 GA. X .625" MAX. SWO FLATTENED EXPANDED STEEL, FUSION BONDED EPOXY COATED 96" OVERALL LENGTH WITH MDI-B COUPLER OR EQUAL.

HOLES ARE TO BE DRILLED IN A MANNER TO PREVENT CONTAMINATION OF PERMEABLE SOILS. HOLE SHAFT TO BE MINIMUM OF 4'Ø TO MAXIMIZE SURFACE WALL AREA.

DRAINAGE PIPE SHALL BE SUSPENDED DURING BACKFILL OPERATIONS TO PREVENT BUCKLING OR BREAKAGE.

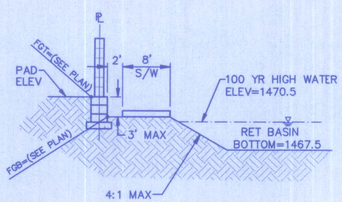
CENTER PRECAST LINER IN HOLE AND ALIGN SECTIONS TO MAXIMIZE BEARING SURFACE.

SECURE RING AND GRATE TO CONE WITH MORTAR. RIM ELEVATION ±0.02' OF PLANS.

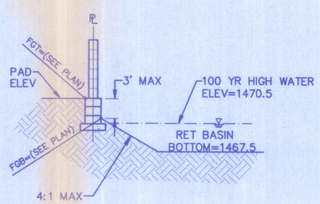
DRYWELL MANUFACTURER IS TO INSTALL U.V. RESISTANT FABRIC SEAL BENEATH GRATE. GENERAL CONTRACTOR TO REMOVE AT END OF PROJECT, AFTER PAVING AND LANDSCAPING ARE COMPLETE.

IN LANDSCAPED AREAS, RIM ELEVATION SHALL BE 6" ABOVE ADJACENT FINISHED GRADE.

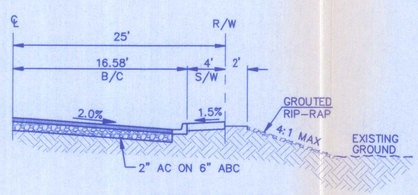
DRYWELL DETAIL AND SPECIFICATIONS
NTS



SECTION H-H
NTS



SECTION J-J
NTS



SECTION K-K
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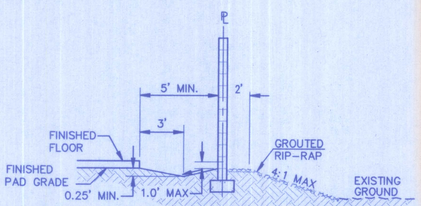

SECTION L-L
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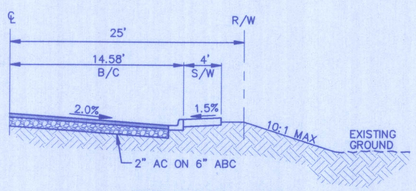

SECTION M-M
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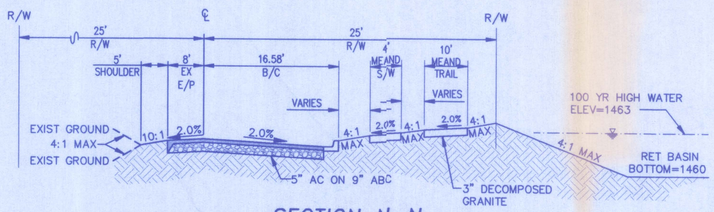


SECTION N-N
NTS

RIORDAN RANCH GRADING PLANS

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
16605 NORTH 28th AVENUE, SUITE 100
PHOENIX, ARIZONA 85053-7550
602.467.2200 • FAX 602.467.2201 • www.RBF.com

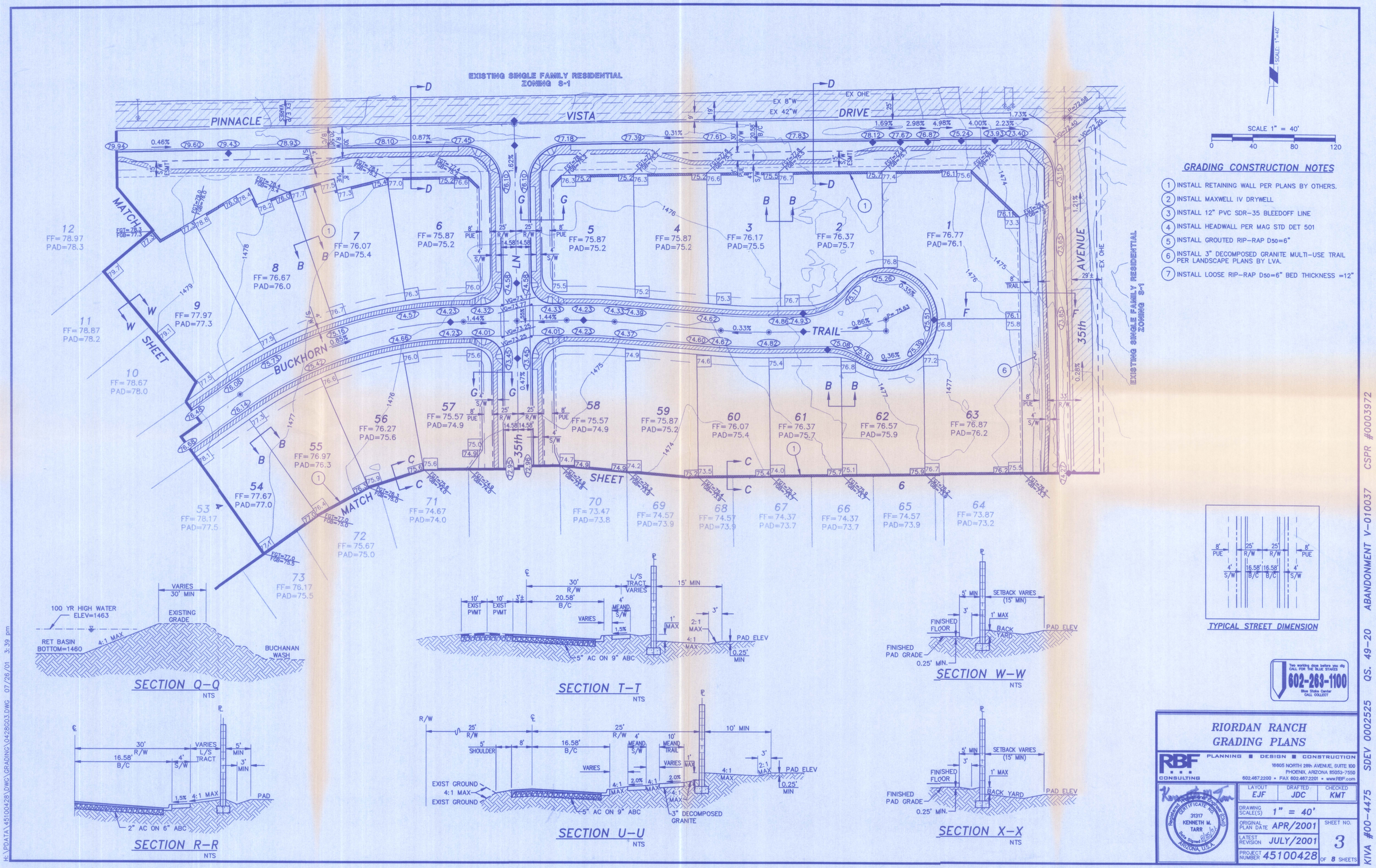
Registered Professional Engineer (Civil) CERTIFICATE NO. 31317 KENNETH M. TARR Date Signed 8/16/01 ARIZONA, U.S.A.

LAYOUT	DRAFTED	CHECKED
EJF	JDC	KMT

DRAWING SCALE(S): NTS
ORIGINAL PLAN DATE: APR/2001
LATEST REVISION: JULY/2001
PROJECT NUMBER: 45100428
SHEET NO. 2 OF 8 SHEETS

H:\PDATA\45100428\DWG\GRADING\0428G02.DWG 07/26/01 3:35 pm

KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037 CSPR #0003972


EXISTING SINGLE FAMILY RESIDENTIAL
ZONING S-1
PINNACLE
VISTA
DRIVE
BUCKHORN
TRAIL
35th
AVENUE
MATCH SHEET
SCALE 1" = 40'
0 40 80 120
GRADING CONSTRUCTION NOTES
1 INSTALL RETAINING WALL PER PLANS BY OTHERS.
2 INSTALL MAXWELL IV DRYWELL
3 INSTALL 12" PVC SDR-35 BLEEDOFF LINE
4 INSTALL HEADWALL PER MAG STD DET 501
5 INSTALL GROUTED RIP-RAP D50=6"
6 INSTALL 3" DECOMPOSED GRANITE MULTI-USE TRAIL PER LANDSCAPE PLANS BY LVA.
7 INSTALL LOOSE RIP-RAP D50=6" BED THICKNESS =12"
TYPICAL STREET DIMENSION
SECTION Q-Q
SECTION T-T
SECTION W-W
SECTION R-R
SECTION U-U
SECTION X-X
NTS
Two working days before you dig CALL FOR THE BLUE STAKES 602-263-1100 Blue Stake Center CALL COLLECT
RIORDAN RANCH
GRADING PLANS
RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
16605 NORTH 28th AVENUE, SUITE 100
PHOENIX, ARIZONA 85053-7550
602.467.2200 • FAX 602.467.2201 • www.RBF.com
LAYOUT EJF
DRAFTED JDC
CHECKED KMT
DRAWING SCALE(S) 1" = 40'
ORIGINAL PLAN DATE APR/2001
LATEST REVISION JULY/2001
PROJECT NUMBER 45100428
SHEET NO. 3 OF 8 SHEETS
Registered Professional Engineer (Civil) CERTIFICATE NO. 31317 KENNETH M. TARR Date Signed 8/6/01 ARIZONA, U.S.A.
KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037 CSPR #0003972
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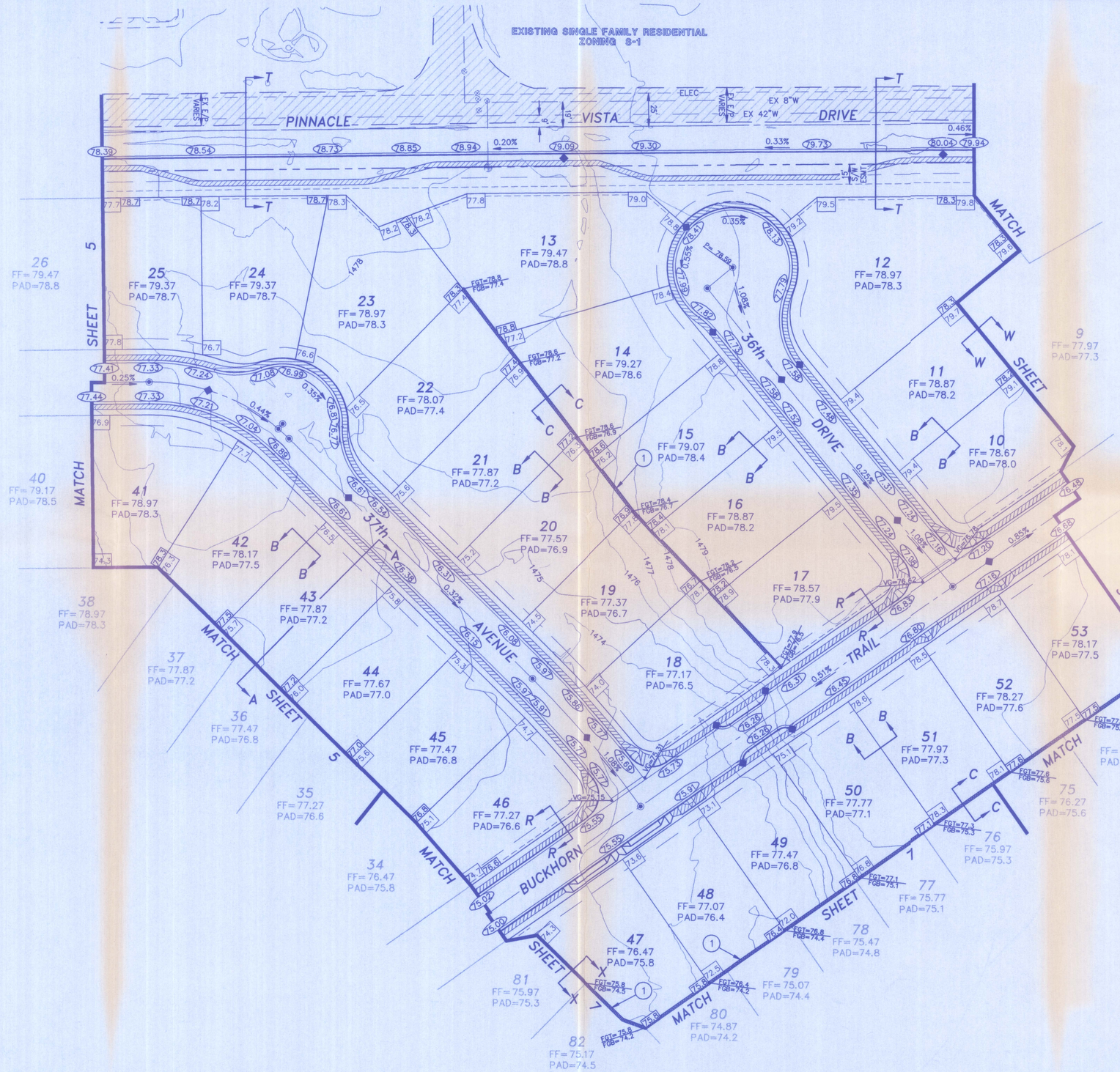
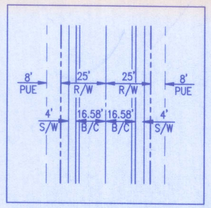


GRADING CONSTRUCTION NOTES

1. INSTALL RETAINING WALL PER PLANS BY OTHERS.
2. INSTALL MAXWELL IV DRYWELL
3. INSTALL 12" PVC SDR-35 BLEEDOFF LINE
4. INSTALL HEADWALL PER MAG STD DET 501
5. INSTALL GROUTED RIP-RAP D50=6"
6. INSTALL 3" DECOMPOSED GRANITE MULTI-USE TRAIL PER LANDSCAPE PLANS BY LVA.
7. INSTALL LOOSE RIP-RAP D50=6" BED THICKNESS =12"



TYPICAL STREET DIMENSION

Two working days before you dig CALL FOR THE BLUE STAKES 602-263-1100 Blue Stake Center CALL COLLECT

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16605 NORTH 28th AVENUE, SUITE 100
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Registered Professional Engineer (Civil) CERTIFICATE NO. 31317 KENNETH M. TARR Date Signed 8/16/01 ARIZONA, U.S.A.

LAYOUT	DRAFTED	CHECKED
EJF	JDC	KMT

DRAWING SCALE(S) 1" = 40'
ORIGINAL PLAN DATE APR/2001
LATEST REVISION JULY/2001
PROJECT NUMBER 45100428
SHEET NO. 4 OF 8 SHEETS

KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037 CSPR #0003972

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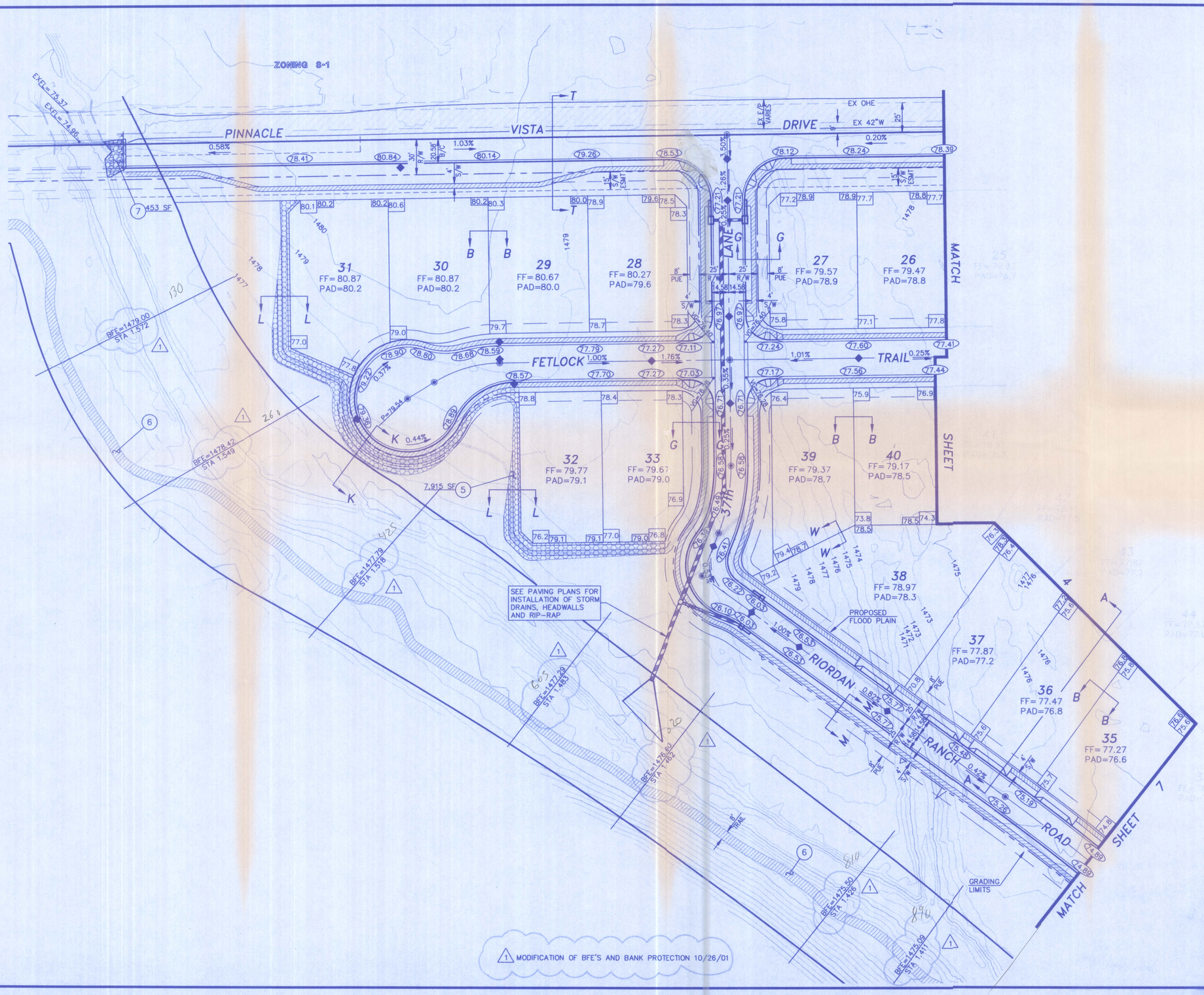

SCALE 1" = 40'

0 40 80 120

GRADING CONSTRUCTION NOTES

1. INSTALL RETAINING WALL PER PLANS BY OTHERS.
2. INSTALL MAXWELL IV DRYWELL
3. INSTALL 12" PVC SDR-35 BLEEDOFF LINE
4. INSTALL HEADWALL PER MAG STD DET 501
5. INSTALL GROUTED RIP-RAP D50=6"
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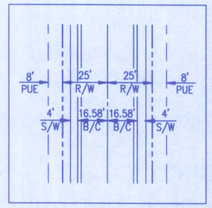

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Registered Professional Engineer (Civil) CERTIFICATE NO. 31317 KENNETH M. TARR Date Signed 10/26/01 ARIZONA, U.S.A.

LAYOUT	DRAFTED	CHECKED
EJF	JDC	KMT

DRAWING SCALE(S): 1" = 40'

ORIGINAL PLAN DATE: APR/2001

LATEST REVISION: JULY/2001

PROJECT NUMBER: 45100428

SHEET NO. 5 OF 8 SHEETS

KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037 CSPR #0003972

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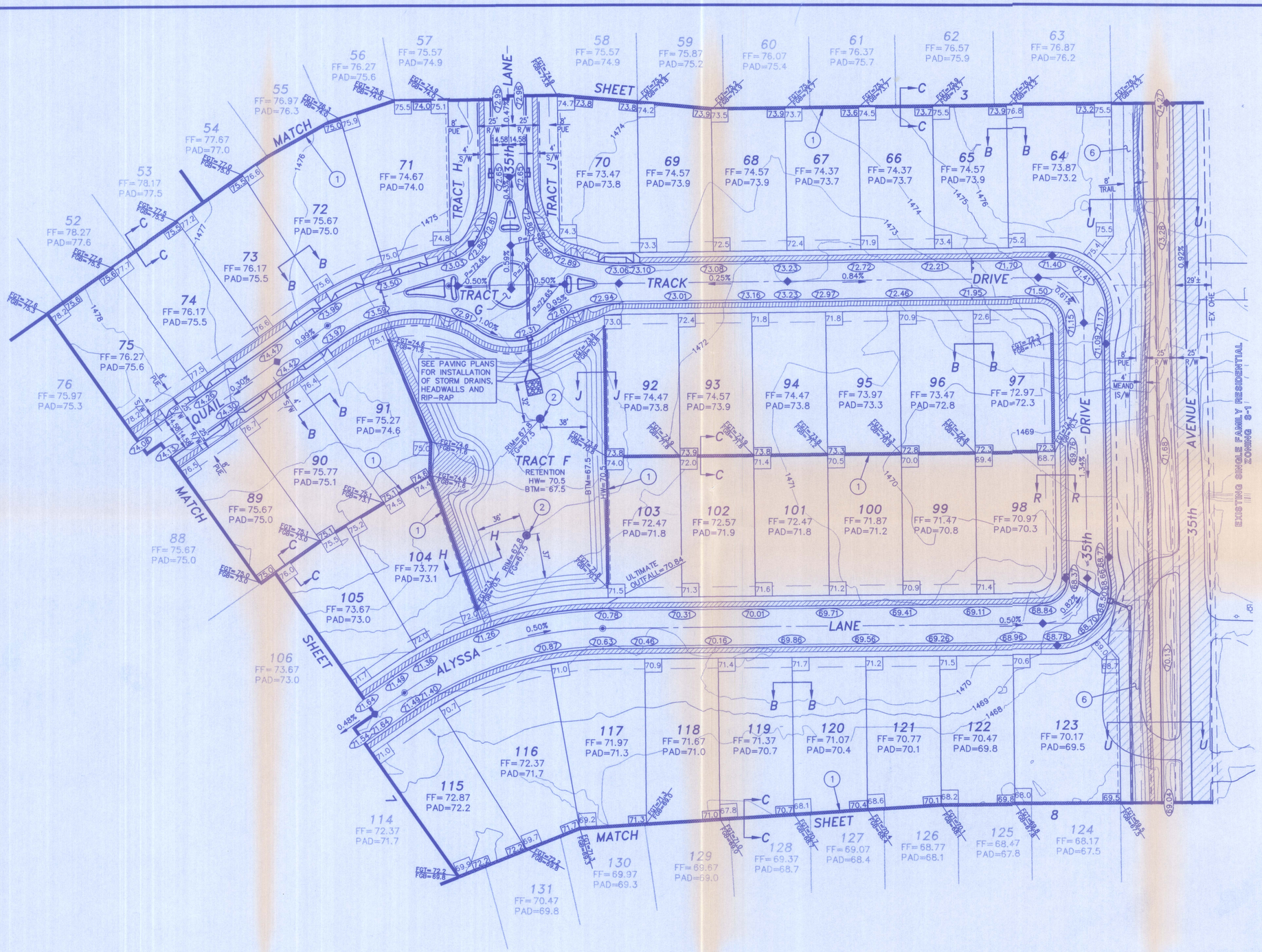

GRADING CONSTRUCTION NOTES

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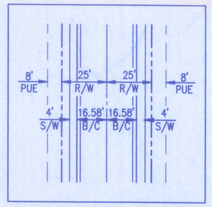

TYPICAL STREET DIMENSION

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DRAWING SCALE(S) 1" = 40'
ORIGINAL PLAN DATE APR/2001
LATEST REVISION JULY/2001
PROJECT NUMBER 45100428
SHEET NO. 6 OF 8 SHEETS

KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037 CSPR #0003972

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GRADING CONSTRUCTION NOTES

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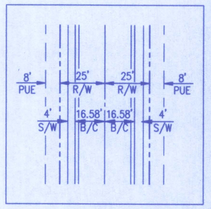

TYPICAL STREET DIMENSION

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Registered Professional Engineer (Civil) CERTIFICATE NO. 31317 KENNETH M. TARR Date Signed 10/26/01 ARIZONA, U.S.A.

LAYOUT	DRAFTED	CHECKED
EJF	JDC	KMT

DRAWING SCALE(S): 1" = 40'
ORIGINAL PLAN DATE: APR/2001
LATEST REVISION: JULY/2001
PROJECT NUMBER: 45100428
SHEET NO. 7 OF 8 SHEETS

KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037 CSPR #0003972

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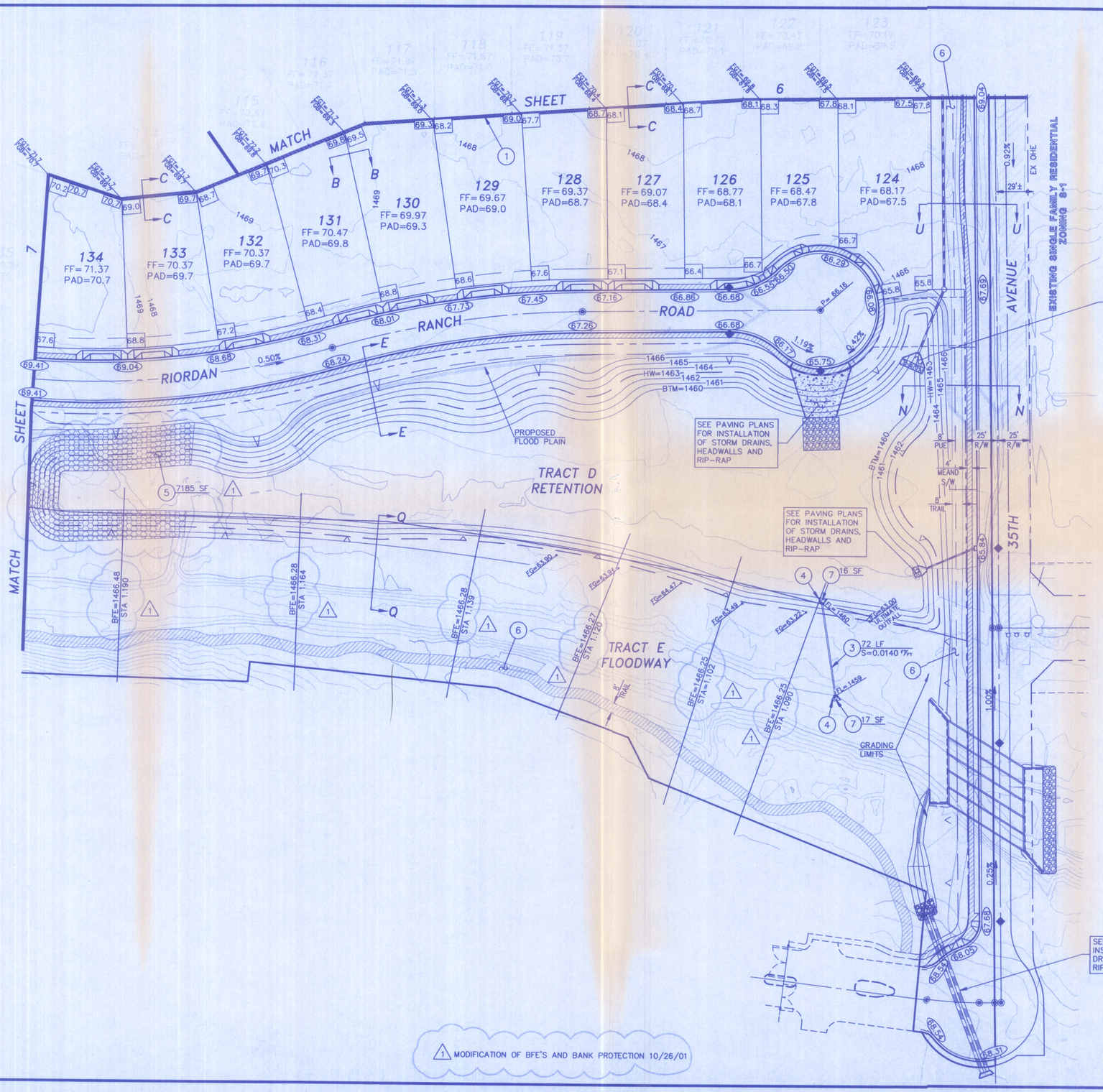

SCALE 1" = 40'

0 40 80 120

GRADING CONSTRUCTION NOTES

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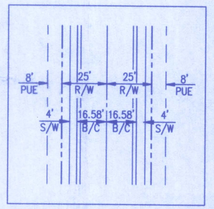

TYPICAL STREET DIMENSION

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1 MODIFICATION OF BFE'S AND BANK PROTECTION 10/26/01

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DRAWING SCALE(S) 1" = 40'
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LATEST REVISION JULY/2001
PROJECT NUMBER 45100428
SHEET NO. 8 OF 8 SHEETS

KIVA #00-4475 SDEV 0002525 QS. 49-20 ABANDONMENT V-010037 CSPR #0003972

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