C Library

ADDENDUM NO. 1
TO
FLOOD INSURANCE STUDY
FOR
SOUTHERN PACIFIC RAILROAD
QUEEN CREEK AREA
MARICOPA COUNTY, ARIZONA
CASE NUMBER: 90-09-68P

WOOD & ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS / LAND SURVEYORS

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FOR
SOUTHERN PACIFIC RAILROAD
QUEEN CREEK AREA
MARICOPA COUNTY, ARIZONA
CASE NUMBER: 90-09-68P

FLOOD CONTROL DISTRICT
RECEIVED
JUN 29 '90

	CH ENG		P & PM
	DEP		HYDRO
	ADMIN		EMGT
	FINANCE		FILE
	C & O		
	ENGR		

REMARKS

Submitted To: Federal Emergency Management Agency
500 C. Street, S.W.
Washington, D.C. 20472

Prepared For: Flood Control District of Maricopa County
FCD Contract No. 89-53
3335 West Durango Street
Phoenix, Arizona 85009
Contact: Ms. Jan Farmer (602) 262-1501

Prepared By: Wood & Associates, Inc.
Consulting Civil Engineers
4105 North 20th Street
Suite 130
Phoenix, Arizona 85016
Contact: Ms. Lynn Thomas, P.E. (602) 957-3149

Registered Professional Engineer (Civil)
CERTIFICATE NO.
23268
LYNN M.
THOMAS
Date Signed 6-27-90
ARIZONA, U.S.A.

June 1990
WA #89500

Addendum No. 1
Flood Insurance Study
Queen Creek Area

This addendum serves to respond to review comments received from the Federal Emergency Management Agency in a letter dated May 10, 1990 for the Flood Insurance Study along the upstream area of the Southern Pacific Railroad in the Queen Creek Area, Maricopa County, Arizona.

FEMA Comment

1. Please submit data which support the starting water surface elevation of 1321.30 feet (National Geodetic Vertical Datum) used in the HEC-2 hydraulic computer model for the 100-year recurrence interval flood along the Southern Pacific Railroad.

Wood & Associates' Response

Paragraph 4 on page 8 of the FIS report should be revised as follows:

> "The starting water surface elevation for the delineation shown on the work maps was based on computations started at critical depth. The approximate water surface elevation of 1321.30 was entered into the HEC-2 input data. The HEC-2 output data computed a starting water surface elevation of 1321.27. Copies of relevant drawings for the East Maricopa Floodway - Reach 4 construction and an approval letter are included (Attachment 1) with this addendum in an effort to provide an explanation for the decision to start computations at critical depth."

FEMA Comment

2. Our review of the submitted HEC-2 model determined that encroachment method 1 is used for most of the cross-sections modeled. Please submit an explanation of why this method was used to establish the 100-year floodplain boundary.

Wood & Associates' Response

During calibration of the HEC-2 model, encroachment method 1 was used to determine the floodplain boundary with average depths between 1 and 3 feet. Several cross-sections modeled were not extended vertically in the HEC-2 output and therefore, encroachment target stations have been deleted from the enclosed (Attachment 2) revised HEC-2 computer model. Several other cross-sections modeled are extended vertically and target stations have been selected in order to delineate a hydraulically acceptable floodplain boundary.

Addendum No. 1
Flood Insurance Study
Queen Creek Area

FEMA Comment

3. Our review of the calculated water-surface elevations and the topographic data at almost every cross-section indicates that the area inundated by the 100-year flood would be greater than that delineated on the topographic work maps entitled "Flood Insurance Study, Southern Pacific Railroad, Queen Creek Area, Maricopa County, Arizona," prepared by Wood & Associates, dated January 1990. Please submit an explanation for this discrepancy, a revised HEC-2 hydraulic model, and/or revised 100-year floodplain boundary delineations.

Wood & Associates' Response

Encroachment method 1 was used with the target station selected at the floodplain water depth of one foot or less. Results of this approach designated a hydraulically acceptable floodplain delineation, particularly since this portion of the area is characteristic of parallel contour lines with no well defined channel. In addition, this approach provides a floodplain with average depths between 1 and 3 feet.

FEMA Comment

4. The submitted HEC-2 hydraulic computer model for the 100-year recurrence interval flood along the Southern Pacific Railroad in the Queen Creek Area of Maricopa County, Arizona, and the work maps referenced in Item 3 contained the following discrepancies between the channel distances:

XSEC	HEC-2 XLCH	Work Maps XLCH
0.681	210	50
4.616	1500	1000

To resolve these discrepancies, please submit a revised HEC-2 hydraulic computer model and/or revised work maps.

Wood & Associates' Response

Channel distances shown on the "Work Maps" at the above referenced cross-sections were verified to be correct and the HEC-2 hydraulic computer model was revised, accordingly. The revised HEC-2 model is included (Attachment 2) in this addendum.

Addendum No. 1
Flood Insurance Study
Queen Creek Area

FEMA Comment

5. Please submit a hydraulic analysis that supports the Zone A flooding located between the East Maricopa Floodway limit of study and Germann Road.

Wood & Associates' Response

At the Southern Pacific Railroad crossing with Germann Road, a breakout of flow was calculated and split flow quantities were evaluated using the flow distribution in the HEC-2 output file. A HEC-2 hydraulic analysis was used to support the approximate Zone A delineation and is included (Attachment 3) in this addendum for additional supporting data.

In summary, we feel this addendum will satisfy the additional data required to complete the evaluation. We respectfully request FEMA continue processing this Request for a Flood Insurance Study/Flood Insurance Rate Map (FIRM) Revision. Please do not hesitate to call, should you need further clarification or additional data. We look forward to your response in the near future.

Very truly yours,

WOOD & ASSOCIATES, INC.

Lynn M. Thomas

Lynn M. Thomas, P.E.
Principal

LMT/tjb

Enclosures

ATTACHMENT 1

RWCD (EMF) FLOODWAY–REACH 4

Federal Emergency Management Agency

Washington, D.C. 20472

AUG 28 1989

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Steve Berman
Mayor, Town of Gilbert
119 North Gilbert Road
Gilbert, Arizona 85234

Dear Mayor Berman:

This is in response to a letter dated July 3, 1989, from Mr. D.E. Sagramoso, P.E., Chief Engineer and General Manager, Flood Control District of Maricopa County (FCDMC), regarding the effective Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas. Mr. Sagramoso requested that we revise the effective FIRM for Maricopa County, Arizona and Incorporated Areas to reflect the construction of reaches 1 through 6 of the East Maricopa Floodway (EMF) by the U.S. Soil Conservation Service (SCS) from the confluence of the Gila River north to Brown Road.

In support of this request, Mr. Sagramoso submitted the following construction drawings for the EMF, all prepared by the SCS:

- Sheets 2 through 15 of 24 entitled "R.W.C.P. Floodway - Reach 1," dated July 1979
- Sheets 2 through 14 of 50 entitled "R.W.C.P. Floodway - Reach 2," dated March 1982
- Sheets 2 through 16 of 50 entitled "R.W.C.P. Floodway - Reach 3," dated March 1984
- Sheets 2 through 16 of 36 entitled "R.W.C.P. Floodway - Reach 4," dated February 1986
- Sheets 1 through 14 of 30 entitled "East Maricopa Floodway Reach 5," dated May 1987
- Sheets 1 through 11 of 25 entitled "East Maricopa Floodway Reach 6," dated February 27, 1987

We also received a letter of certification, dated July 10, 1989, from Mr. Charles R. Adams, State Conservationist, SCS, stating that reaches 1 through 5 of the EMF from the confluence of the Gila River to Guadalupe Road are completed in conformance with the above-referenced construction drawings and that reach 6 from Guadalupe Road to Brown Road would be completed in July 1989. Mr. Adams also stated that the 100-year flood will be conveyed in the channel and no ponding will occur against the east bank of the EMF. During a telephone conversation on August 10, 1989, between Ms. Jan Farmer (FCDMC) and

a representative of our Technical Evaluation Contractor, we confirmed that reach 6 of the EMF had been completed.

We have completed our review of the data submitted and have determined that the floodplain boundaries as defined by the right-of-way limits for the EMF shown on the submitted construction drawings represent the best available flood data for reaches 1 through 6 of the EMF from the Maricopa/Pinal County boundary to Brown Road.

We will include this information in the planned Spring 1990 preliminary physical map revision for Maricopa County, Arizona and Incorporated Areas. Please note that you may utilize these data in your floodplain management programs.

If you have any questions regarding this matter, please contact Mr. Alan Johnson of my staff in Washington, D.C., at (202) 646-3403.

Sincerely,

John L. Matticks
Chief, Risk Studies Division
Federal Insurance Administration

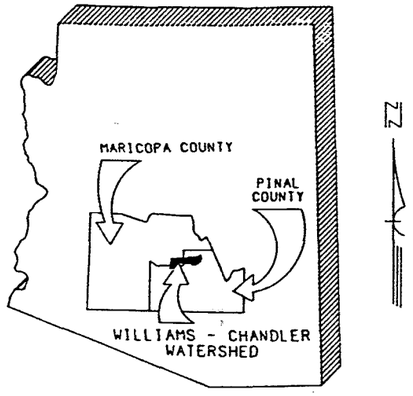
cc: Mr. D.E. Sagramoso, P.E.
Chief Engineer and General Manager, FCDMC

Ms. Jan Farmer
FCDMC

Mr. Charles R. Adams
SCS

FLOOD CONTROL DISTRICT
RECEIVED
AUG 30 '89
PMS

H96



ARIZONA

WILLIAMS - CHANDLER WATERSHED PROTECTION AND FLOOD PREVENTION PROJECT MARICOPA AND PINAL COUNTIES, ARIZONA PLANS FOR THE CONSTRUCTION OF

R.W.C.D. FLOODWAY-REACH 4

PREPARED FOR THE
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
BOARD OF SUPERVISORS OF PINAL COUNTY
EAST MARICOPA NATURAL RESOURCE CONSERVATION DISTRICT
BY
SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

INDEX OF DRAWINGS

SHEET NO	TITLE
1	INDEX OF DRAWINGS
2	LOCATION MAP AND SPOIL SITES
3	PLAN AND PROFILE STA. 485+13.08 TO 505+00
4	PLAN AND PROFILE STA. 505+00 TO 525+00
5	PLAN AND PROFILE STA. 525+00 TO 545+00
6	PLAN AND PROFILE STA. 545+00 TO 565+00
7	PLAN AND PROFILE STA. 565+00 TO 585+00
8	PLAN AND PROFILE STA. 585+00 TO 605+00
9	PLAN AND PROFILE STA. 605+00 TO 625+00
10	PLAN AND PROFILE STA. 625+00 TO 645+00
11	PLAN AND PROFILE STA. 645+00 TO 665+00
12	PLAN AND PROFILE STA. 665+00 TO 685+00
13	PLAN AND PROFILE STA. 685+00 TO 705+00
14	PLAN AND PROFILE STA. 705+00 TO 725+00
15	PLAN AND PROFILE STA. 725+00 TO 745+28.37
16	TYPICAL EARTH CROSS SECTIONS
17	TYPICAL EARTH CROSS SECTIONS
18	TYPICAL R/C LINED CROSS SECTIONS
19	RETAINING WALL LAYOUT
20	RETAINING WALL STEEL DETAILS
21	JUNCTION LAYOUT
22	JUNCTION LAYOUT DETAILS
23	R/C LINING DETAILS
24	POWER RD. CHANNEL EXPANSION LAYOUT
25	POWER RD. CH. EXP. & MISC DETAILS
26	RITTENHOUSE LAYOUT
27	MISCELLANEOUS DETAILS
28	LOW DROP STRUCTURE
29	WEIR CREST AND BAFFLE STR. LAYOUT
30	BAFFLE STR. PILE DETAILS
31	LOW DROP WEIR & BAFFLE STL. DETAILS
32	SIDE INLET AND SCHEDULES
33	RAMP LAYOUT AND MISCELLANEOUS DETAILS
34	MAINTENANCE ROAD DRAIN DETAILS, RIGHT SIDE
35	OLD BOX CULVERT UNDER SO. PAC. RR.
36	FENCING DETAILS

LEGEND

- □ TEST PIT
- — COORDINATE GRID POINT
- △ SURVEY MONUMENT
- ● BENCH MARK

SHEET OR DETAIL (A) — SHEET FROM WHICH IT IS TAKEN (24) — SHEET ON WHICH IT IS SHOWN (25)

SHEET OR DETAIL (B) — WHEN TAKEN & SHOWN ON SAME SHEET

STRUCTURAL NOTES

1. EXPOSED CONCRETE EDGES SHALL BE CHAMFERED ONE INCH OR ROUNDED.
2. REINFORCING BAR SPACING IS CENTER TO CENTER OF BARS. BAR COVER IS CLEAR DISTANCE FROM SURFACE OF BAR AND FACE OF CONCRETE AND SHALL BE TWO INCHES FOR FORMED AND TOP SURFACES AND THREE INCHES FOR SURFACES PLACED AGAINST EARTH UNLESS OTHERWISE SHOWN.
3. IN SECTIONS WITH A SINGLE MAT OF REINFORCING, THE STEEL SHALL BE POSITIONED IN THE CENTER OF THE SECTION UNLESS OTHERWISE SHOWN.
4. BAR SPLICES SHALL BE LAPPED AS FOLLOWS EXCEPT WERE SPECIFICALLY SHOWN OTHERWISE. SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN 1/2 OF THE BARS ARE SPLICED AT ONE LOCATION. BAR SPLICES SHALL BE LAPPED AS FOLLOWS:

SIZES	LAP (IN.)
4	18
5	23
6	27
7	34
8	44

5. ALL EXPOSED METAL INCLUDING ANCHOR BOLTS, NUTS, WASHERS, ETC. SHALL BE GALVANIZED UNLESS OTHERWISE NOTED.
6. ALL CONCRETE SHALL BE 4000X EXCEPT AS NOTED.

GENERAL NOTES

1. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL U.S.G.S. DATUM.
2. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION AND IS THE MEASURED HORIZONTAL DISTANCE.
3. ALL SOIL CLASSIFICATION SYMBOLS SHOWN ARE BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487). FIELD IDENTIFICATION WAS USED EXCEPT WHERE INDICATED BY AN ASTERISK (*). THIS DENOTES LABORATORY CLASSIFICATION. LOGS AND DESCRIPTIONS ARE ABRIDGED. COMPLETE DRILLING LOGS, LABORATORY REPORTS AND GEOLOGY REPORTS ARE AVAILABLE FOR INSPECTION AT THE PROJECT OFFICE.
4. ALL BEARINGS ARE REFERENCED TO TRUE NORTH.
5. ALL FLOODWAY CROSS SECTIONS ARE SHOWN LOOKING IN THE DIRECTION OF INCREASING STATIONS EXCEPT AS NOTED.
6. LOCATION OF UTILITIES SHOWN ON THE DRAWINGS IS APPROXIMATE AND IS NOT INTENDED TO BE ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AND COORDINATING HIS WORK WITH ALL UTILITY COMPANIES AND THE COMMANDER OF CIVIL ENGINEERING, WILLIAMS AIR FORCE BASE, ARIZONA.

DATE	REVISIONS
7-18-86	SHEETS 12, 15, 17, 28

EAST MARICOPA NATURAL RESOURCE CONSERVATION DISTRICT
APPROVED
DATE 11-20-86 CHAIRMAN, BOARD OF SUPERVISORS

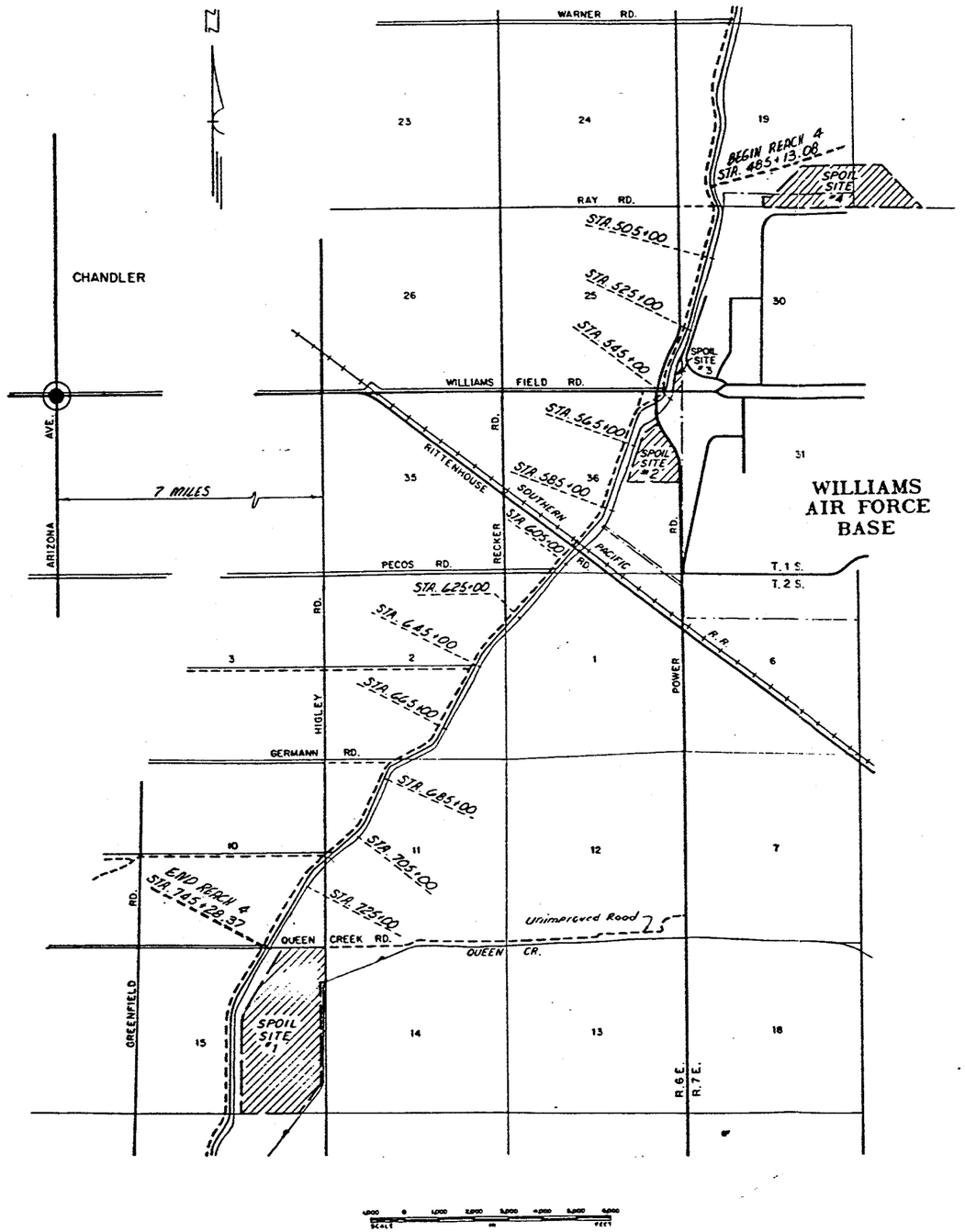
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
APPROVED
DATE 4-24-86 CHIEF ENGINEER

INDEX OF DRAWINGS
RWCD FLOODWAY - REACH 4
WILLIAMS-CHANDLER WPP
MARICOPA & PINAL COUNTIES, ARIZONA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed SOIL CONSERVATION SVC. 4/86
Drawn
Traced
Checked
Approved by Ralph M. Grunst, State Conservation Engineer
Daniel E. Wilkins 8-6-86, Area Hdqs. Engineering Staff
Sheet No. 1 of 36
Drawing No. AZ-85010-CH

SCS-ENG-333-5 Rev. 10-73



BENCHMARKS

NO. —	ELEVATION	DESCRIPTION	LOCATION
R4-21	1333.520	1/2" Rebar in Concrete	Sta 491+50.6 R/W line Rt. Side.
R4-20	1331.902	1/2" Rebar in Concrete	Sta. 498+21.68 R/W line Rt. Side.
MCHD	1322.159	Brass Cap Marked 1325.11	S.E. corner Rittenhouse Road Bridge
MCHD	1316.267	Brass Cap Marked 1319.62	N.W. corner Higley Road Bridge
MCHD	1315.223	Brass Cap Marked 1318.43	N.W. corner Queen Creek Road Bridge

NOTES: 1. Spoil in excess of that required to construct the floodway as shown on these plans shall be placed in the designated spoil sites 1,2,3 & 4 as shown on this sheet and staked in the field.

2. Maximum fill height (above existing ground) for spoil sites:

Site	Height (ft)	Approx. Volume
1	As staked in field	780,000 yrd^3
2	6'-0"	400,000 yrd^3
3	As staked in field	30,000 yrd^3
4	3'-0"	700,000 yrd^3

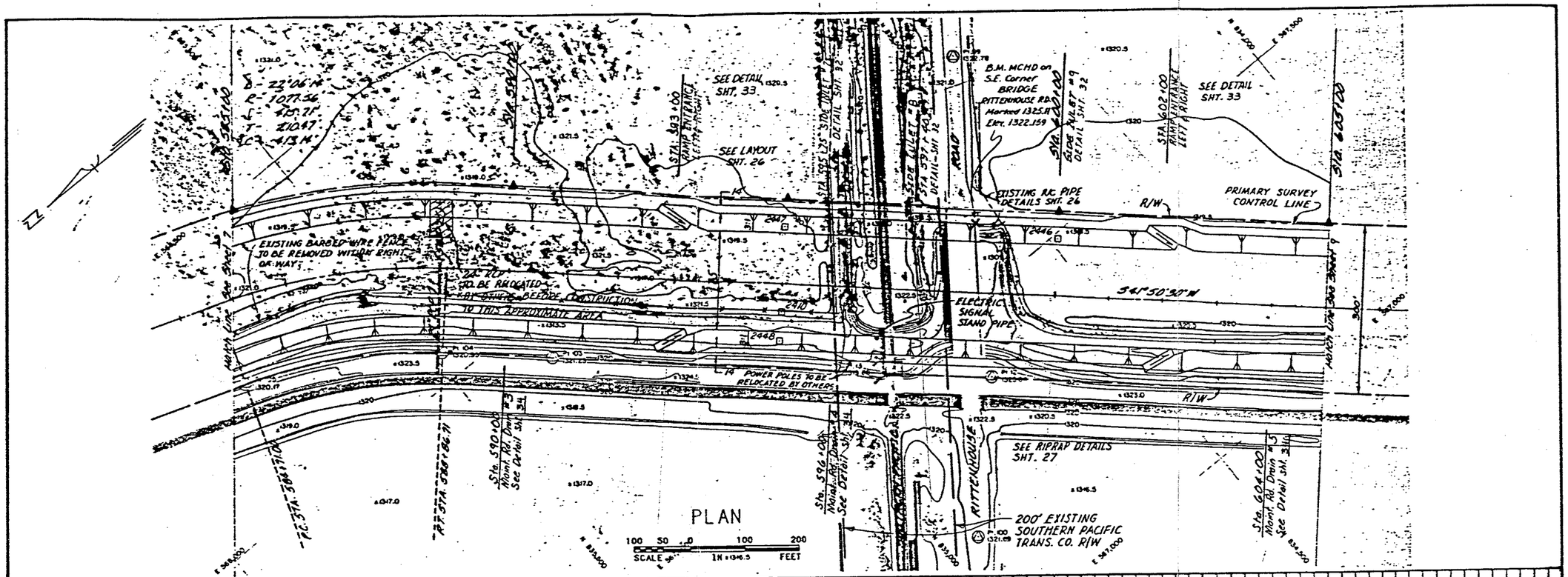
3. Notice shall be given to Williams Air Force Base prior to use of spoil site 4.
Contact: Air Field Manager, Lt. Col. Jerry Homewood, 988-5297
Base Engineers Office, Mike R. Toriello, 988-6887

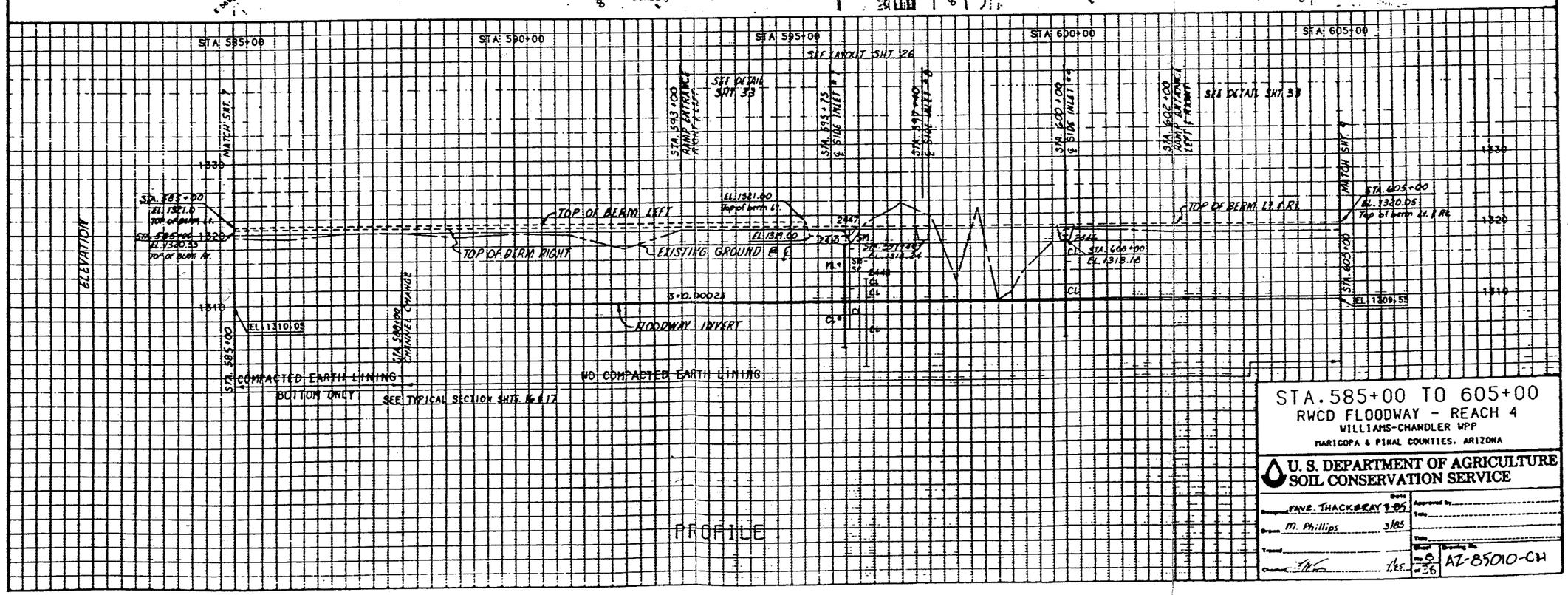
LOCATION MAP
RWCD FLOODWAY – REACH 4
WILLIAMS-CHANDLER WPP
MARICOPA & PINAL COUNTIES, ARIZONA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

	Date		
Designed DAVE THACKERAY	2/86	Approved by	
Drawn M.S. Phillips	2/86	Title	
Traced		Title	
Checked		Sheet 2 of 36	Drawing No. AZ-85010-CH

SCS-ENG-313-9 Rev. 10-75

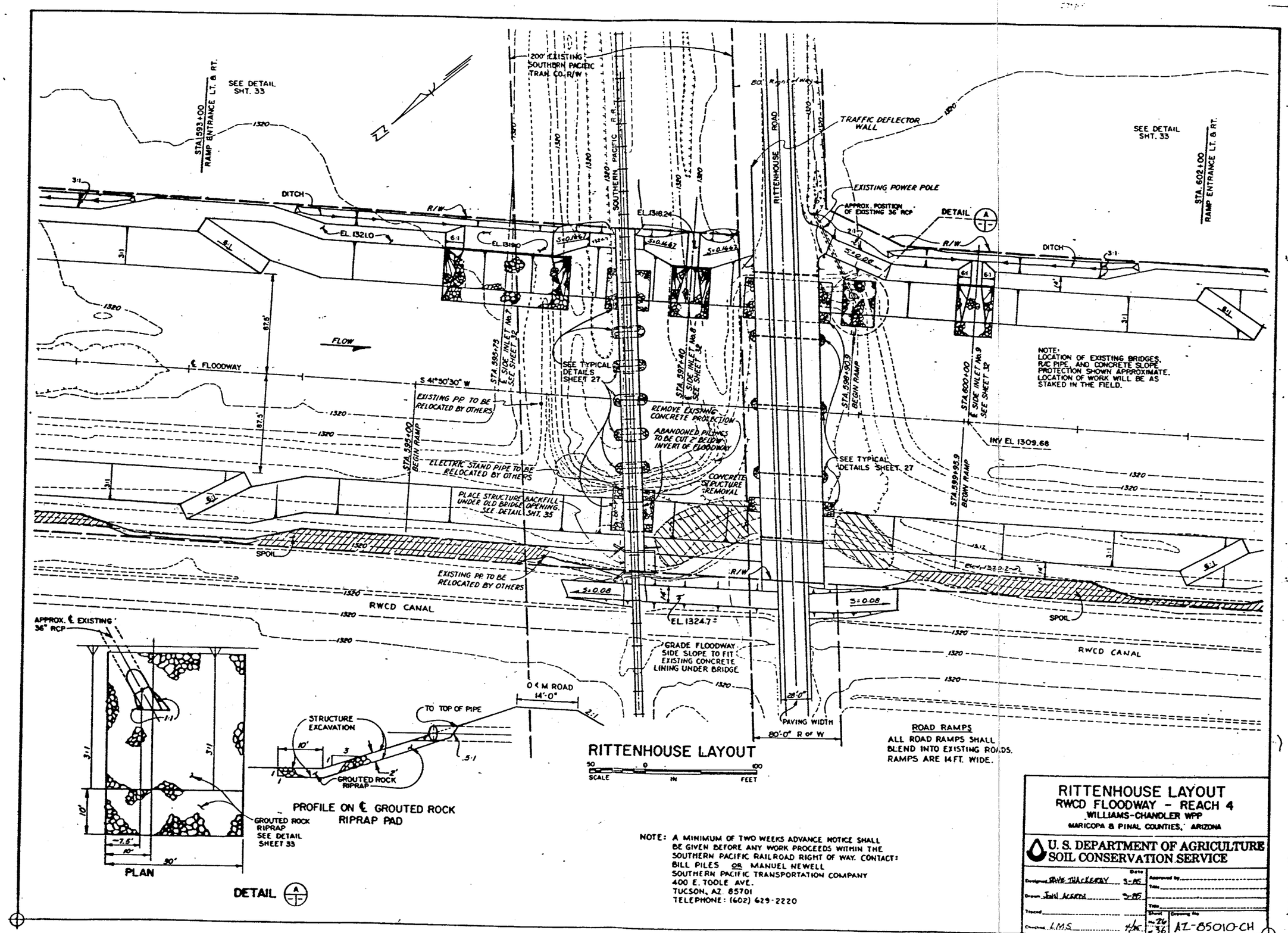




STA. 585+00 TO 605+00
RWCD FLOODWAY - REACH 4
WILLIAMS-CHANDLER WPP
MARICOPA & PINAL COUNTIES, ARIZONA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed FAYE THACKERAY	Date 3-85	Approved by	
Drawn M. Phillips	3/85	Title	
Traced		Sheet 6 of 36	Drawing No. AZ-85010-CH
Checked	1/85		



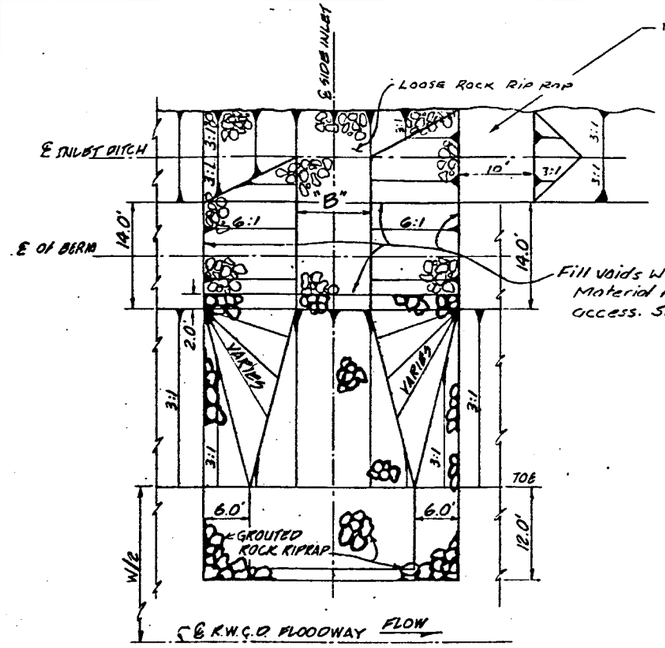
NOTE: A MINIMUM OF TWO WEEKS ADVANCE NOTICE SHALL BE GIVEN BEFORE ANY WORK PROCEEDS WITHIN THE SOUTHERN PACIFIC RAILROAD RIGHT OF WAY. CONTACT:
BILL PILES OR MANUEL NEWELL
SOUTHERN PACIFIC TRANSPORTATION COMPANY
400 E. TOOLE AVE.
TUCSON, AZ. 85701
TELEPHONE: (602) 629-2220

RITTENHOUSE LAYOUT
RWCD FLOODWAY - REACH 4
WILLIAMS-CHANDLER WFP
MARICOPA & PINAL COUNTIES, ARIZONA

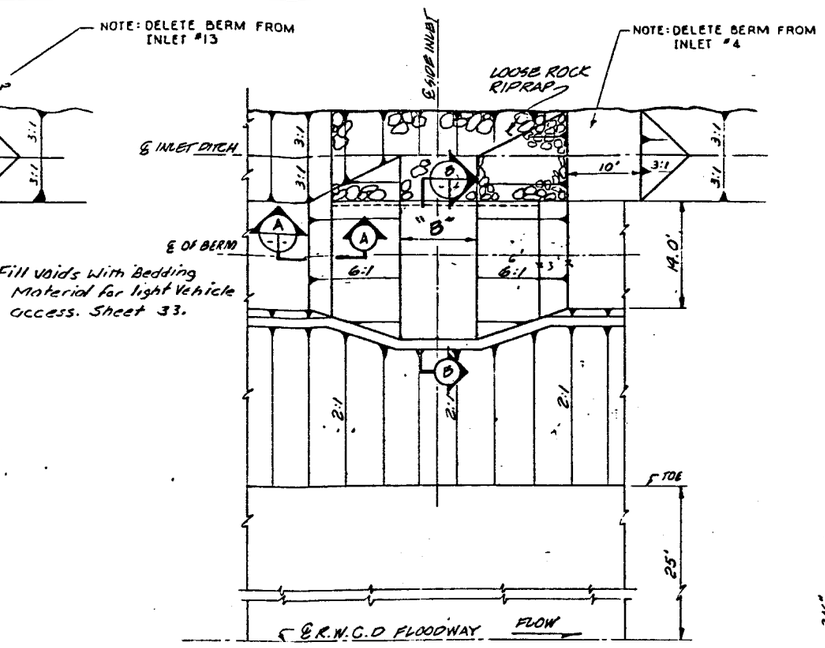
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed STEVE THACKERAY	Date 5-85	Approved by	
Drawn JOHN ACKERS	5-85	Title	
Traced		Title	
Checked L.M.S.	4/86	Sheet No. 26 of 36	Drawing No. AZ-85010-CH

SCS-ENG-313-B Rev. 10-72



PLAN



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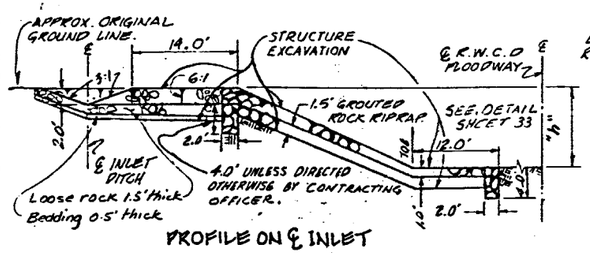
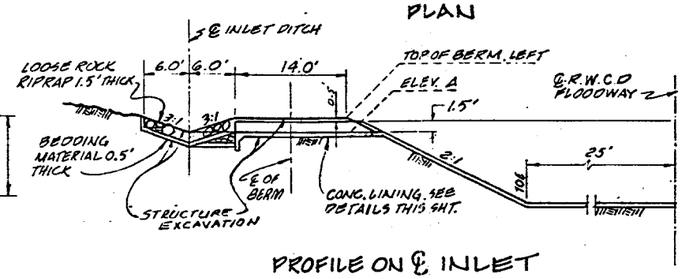


PROFILE ON ℄ INLET

GROUTED ROCK RIPRAP SIDE INLET DETAILS

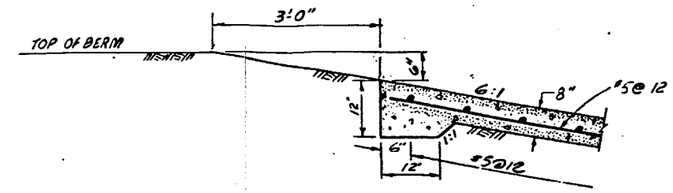
(NOT TO SCALE)



PROFILE ON ℄ INLET

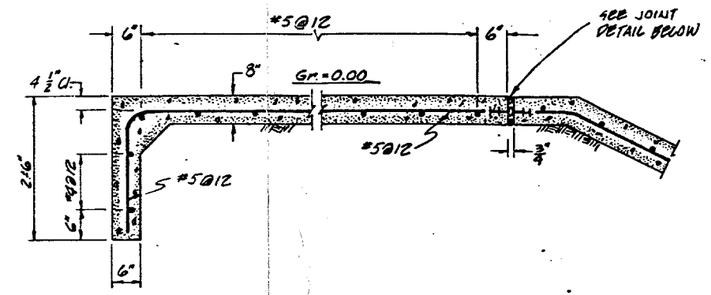
CONCRETE LINED SIDE INLET DETAILS

(NOT TO SCALE)



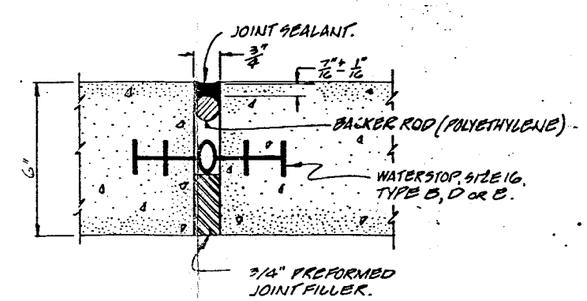
SECTION A

(NOT TO SCALE)



SECTION B

(NOT TO SCALE)



JOINT DETAIL

(NOT TO SCALE)

GROUTED ROCK RIPRAP SIDE INLET SCHEDULE

NUMBER	STATION	"B"	"H"	W/2
5	567+30 Lt	10.0'	10.5'	87.5'
6	580+00 Lt	10.0'	10.83'	87.5'
7	595+75 Lt	80.0'	11.22'	87.5'
8	597+40 Lt	10.0'	10.5'	87.5'
9	600+00 Lt	10.0'	10.5'	87.5'
10	625+25 Lt	10.0'	10.5'	87.5'
11	685+50 Lt	10.0'	10.5'	75.0'
12	714+00 Lt	10.0'	10.5'	75.0'
13	726+50 Lt	10.0'	10.5'	75.0'

CONCRETE LINED SIDE INLET SCHEDULE

NUMBER	STATION	"B"	ELEV. A
1	498+40 Lt	10.0'	1324.61
2	513+79.5 Lt	40.0'	1323.23
3	541+50 Lt	10.0'	1321.24
4	546+60 Lt	40.0'	1320.94

SIDE INLET DETAILS

R.W.C.D FLOODWAY-REACH 4

WILLIAMS-CHANDLER WPP

MARICOPA & PINAL COUNTIES, ARIZONA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed DAVID THACKERAY	Date 3-85	Approved by	
Drawn JACK LAGO	3-85	Title	
Traced		Title	
Checked J.I., LMS	4-4-85	Sheet No. 32 of 36	Drawing No. AZ 85010 CH

SCS-ENG-313-9 Rev. 10-75

ATTACHMENT 2

REVISED HEC-2

ZONE AH 100-YEAR FLOODPLAIN

EMF TO QUEEN CREEK

```
T1       FLOOD INSURANCE STUDY FOR SOUTHERN PACIFIC RAILROAD
T2       QUEEN CREEK AREA-MARICOPA COUNTY, ARIZONA**895000R.DAT**
T3       100-YEAR FLOODPLAIN DELINEATION   REVISED: JUNE 1990
J1   -10       2       0              -1                        1321.30
J2    -1              -1
J3    38      43       1       2      26      39      21      22      27      28
J3    53      54               38      13      14      15      55      26      56
J3    63       1      51       4      42      57              38      39      33
J3     3      10      11      12       5       7       8      16      17      18
J5    +1
NC 0.040   0.050   0.050     0.1     0.3
QT     1    1085
ET           9.1                                                   9900.0 11100.0
X1 0.038      11  9950.0 10062.0
GR1325.4  9900.0  1321.1  9908.0  1320.8  9925.0  1321.1  9950.0  1321.0  9955.0
GR1319.7  9975.0  1319.2 10000.0  1319.2 10025.0  1319.5 10048.0  1321.0 10062.0
GR1321.0 11100.0
ET           9.1                                                   9960.0 11020.0
X1 0.199      16  9990.0 10045.0     880     880     880
X3     0  1322.0
GR1325.0  9835.0  1322.0  9840.0  1322.0  9880.0  1322.0  9945.0  1324.0  9950.0
GR1326.8  9960.0  1322.0  9990.0  1320.0 10000.0  1322.0 10045.0  1322.8 10350.0
GR1322.5 10710.0  1322.0 10910.0  1322.2 11020.0  1322.0 11150.0  1322.3 11360.0
GR1322.7 11760.0
ET           9.1                                                   9960.0 11000.0
X1 0.407      20  9980.0 10575.0    1100    1220    1100
GR1328.0  9840.0  1326.7  9860.0  1326.0  9905.0  1325.6  9925.0  1326.0  9940.0
GR1328.0  9950.0  1329.6  9960.0  1327.0  9980.0  1326.0 10000.0  1327.0 10575.0
GR1326.0 10680.0  1326.0 10730.0  1326.2 10880.0  1326.1 11000.0  1326.0 11100.0
GR1325.9 11200.0  1326.0 11270.0  1325.7 11600.0  1326.0 11900.0  1328.0 12000.0
X1 0.646      24  9970.0 10125.0    1250    1250    1250
X3    10  1330.0
GR1331.6  9750.0  1329.3  9765.0  1330.0  9780.0  1330.8  9800.0  1330.0  9830.0
GR1329.6  9840.0  1330.0  9850.0  1332.0  9860.0  1333.5  9875.0  1332.0  9885.0
GR1330.0  9905.0  1329.7  9925.0  1330.0  9950.0  1330.2  9960.0  1330.0  9970.0
GR1328.5 10000.0  1330.0 10005.0  1331.0 10125.0  1330.7 10270.0  1331.0 10400.0
GR1330.0 10555.0  1330.0 10780.0  1330.0 11000.0  1332.4 11160.0
NC 0.014   0.014   0.014     0.3     0.5
ET           9.1                                                   9725.0 11160.0
SB  1.25     2.4    2.83       0    33.7     3.7   120.0       0  1328.9  1328.8
X1 0.672      19  9984.2 10015.8     170     175     160
X2     0       0       1  1332.0  1334.0
X3    10
BT    -7  9725.0  1335.0  1333.0  9910.0  1335.5  1333.5  9984.2  1333.2  1332.9
BT       10015.8  1333.0  1332.9 10265.0  1334.0  1332.0 10750.0  1333.0  1331.0
BT       11160.0  1332.4  1331.0
GR1333.0  9725.0  1333.5  9910.0  1332.9  9983.2  1332.9  9984.2  1328.9  9984.3
GR1328.9  9994.1  1332.9  9994.2  1332.9  9995.0  1328.9  9995.1  1328.9 10004.9
GR1332.9 10005.0  1332.9 10005.8  1328.9 10015.0  1328.9 10015.7  1332.9 10015.8
GR1332.9 10016.8  1332.0 10265.0  1331.0 10750.0  1330.4 11160.0
NC 0.040   0.050   0.050     0.1     0.3
ET           9.1                                                   9700.0 11140.0
X1 0.681      13  9975.0 10025.0      50      50      50
X3    10  1332.0
GR1332.0  9365.0  1333.2  9525.0  1334.0  9670.0  1335.2  9700.0  1334.0  9710.0
GR1332.0  9975.0  1330.0  9995.0  1329.0 10000.0  1330.0 10015.0  1332.0 10025.0
GR1332.0 10160.0  1332.0 10875.0  1332.0 11140.0
ET           9.1                                                   9950.0 10600.0
X1 0.785      13  9985.0 10430.0     480     550     500
GR1333.5  9580.0  1333.0  9735.0  1333.0  9810.0  1334.0  9930.0  1336.3  9950.0
GR1336.0  9955.0  1334.0  9985.0  1333.0 10000.0  1333.5 10080.0  1334.0 10430.0
GR1334.0 10500.0  1334.0 10560.0  1336.0 10600.0
ET           9.1                                                   9975.0 10600.0
```

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X1 0.843      13  9770.0 10375.0     370     905     370
GR1334.0  9785.0  1333.9  9800.0  1335.3  9830.0  1334.0  9870.0  1334.0  9955.0
GR1336.0  9960.0  1337.3  9975.0  1335.0  9990.0  1334.0 10000.0  1335.0 10395.0
GR1335.5 10680.0  1336.0 10860.0  1338.0 10920.0
ET           9.1                                                  9970.0 10600.0
X1 1.078      14  9990.0 10580.0    1240    1215    1240
GR1338.0  9625.0  1338.0  9800.0  1340.0  9830.0  1338.0  9875.0  1337.4  9910.0
GR1338.0  9945.0  1340.0  9955.0  1341.0  9970.0  1339.0  9990.0  1338.0 10000.0
GR1338.0 10080.0  1339.0 10580.0  1340.0 11610.0  1340.0 11690.0
ET           9.1                                                  9950.0 10600.0
X1 1.227      16  9980.0 10840.0     790     850     790
GR1343.0  9815.0  1342.0  9840.0  1340.0  9900.0  1339.5  9920.0  1340.0  9925.0
GR1342.0  9935.0  1344.0  9945.0  1344.8  9950.0  1342.0  9970.0  1341.5  9980.0
GR1340.5 10000.0  1341.0 10105.0  1341.5 10600.0  1341.5 10840.0  1342.0 11290.0
GR1344.0 12150.0
ET           9.1                                                  9950.0 10600.0
X1 1.419      17  9980.0 10120.0    1010    1230    1010
GR1348.2  9810.0  1345.0  9835.0  1345.3  9875.0  1344.0  9910.0  1344.0  9920.0
GR1346.0  9930.0  1348.0  9940.0  1348.6  9950.0  1345.0  9980.0  1344.0 10000.0
GR1345.0 10120.0  1346.0 10220.0  1346.1 10310.0  1346.0 10400.0  1345.5 10600.0
GR1345.0 10950.0  1346.0 11230.0
ET           9.1                                                  9960.0 10600.0
X1 1.561      14  9990.0 10040.0     750     750     750
GR1350.5  9820.0  1347.9  9840.0  1347.2  9870.0  1346.0  9920.0  1346.0  9935.0
GR1348.0  9940.0  1350.0  9950.0  1350.7  9960.0  1347.0  9990.0  1346.0 10000.0
GR1347.0 10040.0  1348.0 10480.0  1348.0 11050.0  1350.0 12620.0
ET           9.1                                                  9980.0 10600.0
X1 1.712      15  9995.0 10420.0     790     930     790
GR1351.5  9840.0  1350.0  9860.0  1349.0  9870.0  1350.0  9925.0  1349.0  9945.0
GR1350.0  9955.0  1352.0  9970.0  1352.9  9980.0  1351.0  9995.0  1350.0 10000.0
GR1350.3 10200.0  1350.0 10420.0  1349.9 10550.0  1350.0 10680.0  1352.0 11625.0
ET           9.1                                                  9940.0 10600.0
X1 1.860      12  9975.0 10380.0     780     800     780
GR1353.0  9810.0  1351.0  9840.0  1352.0  9855.0  1354.0  9880.0  1354.0  9920.0
GR1355.0  9940.0  1353.0  9975.0  1352.0 10000.0  1353.0 10380.0  1354.0 10530.0
GR1355.0 10640.0  1356.0 11220.0
NC 0.015   0.015   0.015     0.3     0.5
QT     1    1358
X1 1.939      11  9690.0 10270.0     210     550     370
X2                                                                      15
GR1360.1  8780.0  1359.2  8985.0  1358.3  9190.0  1356.7  9580.0  1356.8  9690.0
GR1356.7  9800.0  1356.4 10000.0  1357.4 10270.0  1358.6 10595.0  1359.6 10925.0
GR1360.7 11260.0
NC 0.040   0.040   0.040     0.1     0.3
ET           9.1                                                  9970.0 10545.0
X1 2.053      17  9990.0 10050.0     600     320     450
X2                                                                      15
GR1356.0  9600.0  1355.0  9680.0  1354.0  9790.0  1354.0  9805.0  1356.0  9830.0
GR1354.0  9850.0  1352.0  9870.0  1352.0  9935.0  1354.0  9950.0  1356.0  9955.0
GR1358.0  9970.0  1356.0  9990.0  1354.7 10000.0  1356.0 10050.0  1356.0 10220.0
GR1358.0 10470.0  1358.0 10545.0
QT     1    1172
X1 2.218       7  9990.0 10370.0     850     880     845
X2                                                                      15
GR1361.9  9965.0  1359.0  9990.0  1358.0 10000.0  1360.0 10370.0  1360.0 11000.0
GR1361.6 11010.0  1360.0 12100.0
X1 2.343       8  9990.0 10030.0     660     730     660
X3     0  1362.0
GR1364.8  9970.0  1362.0  9990.0  1360.0 10000.0  1362.0 10030.0  1362.0 10340.0
GR1363.0 10650.0  1364.0 11380.0  1364.9 11500.0
X1 2.559       7  9980.0 10030.0    1125    1125    1125
GR1368.7  9960.0  1366.0  9980.0  1364.0 10000.0  1366.0 10030.0  1366.0 10130.0
GR1368.0 10850.0  1368.0 12260.0
NC 0.040   0.050   0.050     0.1     0.3
X1 2.795       8  9970.0 10010.0    1250    1250    1250
X3     0  1365.2
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GR1371.4  9940.0  1368.0  9970.0  1368.3 10000.0  1368.0 10010.0  1368.0 10020.0
GR1368.0 10140.0  1370.0 10960.0  1372.0 11740.0
X1 2.947       9  9985.0 10020.0     800     800     800
GR1373.2  9950.0  1368.0  9985.0  1366.0 10000.0  1368.0 10020.0  1370.0 10030.0
GR1370.0 10180.0  1372.0 11240.0  1374.0 11770.0  1376.0 12200.0
X1 3.136      10  9985.0 10030.0    1000    1000    1000
X3     0  1371.0
GR1376.3  9960.0  1370.0  9985.0  1366.5 10000.0  1372.0 10030.0  1374.0 10300.0
GR1374.0 10420.0  1376.0 11170.0  1376.0 11250.0  1376.0 11530.0  1378.0 12000.0
X1 3.305       9  9980.0 10030.0     890     890     890
X3     0  1375.0
GR1380.2  9960.0  1380.0  9970.0  1376.0  9980.0  1373.0 10000.0  1376.0 10030.0
GR1377.0 10190.0  1378.0 10910.0  1380.0 11840.0  1380.0 12230.0
X1 3.551       6  9990.0 10025.0    1300    1300    1300
GR1384.0  9955.0  1378.0  9990.0  1377.0 10000.0  1380.0 10025.0  1382.0 10860.0
GR1384.0 12100.0
X1 3.676       9  9980.0 10015.0     670     670     670
GR1385.9  9965.0  1380.0  9980.0  1378.8 10000.0  1380.0 10015.0  1382.0 10025.0
GR1382.0 10050.0  1382.0 10260.0  1384.0 11090.0  1386.0 12210.0
QT     1     828
X1 3.892       9  9985.0 10030.0    1140    1140    1140
GR1389.6  9960.0  1384.0  9985.0  1382.0 10000.0  1386.0 10030.0  1386.0 10100.0
GR1386.8 10650.0  1387.0 11150.0  1388.0 11540.0  1389.0 12125.0
NC 0.100   0.035   0.050     0.1     0.3
ET           9.1                                                  9560.0 10960.0
X1 4.123      12  9440.0 10090.0    1270    1200    1235
GR1393.1  9440.0  1388.0  9475.0  1390.0  9530.0  1390.0  9560.0  1388.8 10000.0
GR1390.0 10090.0  1390.0 10120.0  1389.4 10300.0  1389.3 10800.0  1390.0 10960.0
GR1390.0 11330.0  1391.0 12450.0
ET           9.1                                                  9300.0 10900.0
X1 4.230       8  9740.0 10180.0     800     700     650
GR1392.0  9045.0  1391.0  9250.0  1391.0  9740.0  1391.0 10000.0  1391.4 10180.0
GR1391.0 10225.0  1391.0 10700.0  1392.0 10900.0
NC 0.015   0.015   0.015     0.3     0.5
X1 4.341       8  9585.0 10480.0     580     520     490
GR1399.5  8420.0  1398.0  8610.0  1396.0  8830.0  1395.0  9175.0  1394.5  9585.0
GR1394.0 10000.0  1394.5 10480.0  1394.9 10880.0
NC 0.040   0.100   0.050     0.1     0.3
ET           9.1                                                  9850.0 11250.0
X1 4.616       9  9930.0 10640.0    1000    1000    1000
GR1399.5  9850.0  1396.0  9930.0  1395.0 10000.0  1394.4 10100.0  1395.0 10640.0
GR1395.1 11130.0  1396.0 12030.0  1396.0 12440.0  1398.0 12560.0
X1 4.637       7  9925.0 10010.0      75     550     110
GR1399.5  9880.0  1398.0  9925.0  1395.3 10000.0  1395.5 10010.0  1396.0 10480.0
GR1398.0 10870.0  1400.0 11320.0
NC 0.040   0.040   0.035     0.1     0.3
X1 4.748       8  9960.0 10070.0     630     330     600
GR1400.6  9950.0  1398.0  9960.0  1396.0 10000.0  1396.0 10070.0  1396.0 10280.0
GR1398.0 10510.0  1400.0 11400.0  1402.0 12720.0
X1 4.924       8  9975.0 10490.0     930    1040     930
GR1403.2  9960.0  1401.0  9975.0  1400.0 10000.0  1401.0 10490.0  1402.0 10760.0
GR1402.0 11000.0  1404.0 12280.0  1404.5 12820.0
X1 5.038       8  9985.0 10640.0     600     630     600
GR1406.2  9965.0  1403.0  9985.0  1402.0 10000.0  1403.0 10640.0  1404.0 11100.0
GR1404.0 11475.0  1406.0 11485.0  1406.0 11800.0
ET           9.1                                                  9970.0 10500.0
X1 5.170      10  9990.0 10100.0     700     700     700
GR1409.6  9970.0  1408.0  9985.0  1407.0  9990.0  1406.0 10000.0  1406.0 10080.0
GR1406.7 10100.0  1406.2 10500.0  1406.0 10740.0  1406.0 11460.0  1408.0 11920.0
ET           9.1                                                  9955.0 10000.0
X1 5.375       9  9990.0 10040.0    1080    1150    1080
GR1411.9  9955.0  1409.0  9990.0  1408.0 10000.0  1409.5 10040.0  1410.0 10350.0
GR1410.6 10800.0  1410.0 11310.0  1411.0 12250.0  1412.0 12755.0
X1 5.523       8  9940.0 10120.0     780     790     780
GR1414.2  9920.0  1414.0  9930.0  1412.0  9940.0  1411.0 10000.0  1412.0 10120.0
GR1413.0 10400.0  1413.0 10860.0  1413.0 11365.0
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NC 0.015   0.015   0.015     0.3     0.3
X1 5.631       8  9730.0 10300.0     340     800     600
GR1414.5  9425.0  1412.0  9730.0  1410.3 10000.0  1412.0 10300.0  1414.0 10500.0
GR1415.0 10870.0  1416.0 11010.0  1416.0 11525.0
OT     1     393
NC 0.040   0.040   0.035     0.1     0.3
X1 5.864       8  9975.0 10390.0    1410    1050    1230
GR1418.0  9940.0  1414.0  9975.0  1413.0 10000.0  1414.0 10020.0  1415.0 10390.0
GR1416.0 10745.0  1417.0 11120.0  1416.8 11350.0
ET           9.1                                                   9960.0 10770.0
X1 6.047       9  9990.0 10020.0     970     980     970
GR1421.0  9960.0  1417.0  9990.0  1416.0 10000.0  1417.0 10020.0  1418.0 10045.0
GR1420.0 10770.0  1420.0 11670.0  1418.0 11685.0  1418.0 11850.0
ET           9.1                                                   9965.0 10510.0
X1 6.259       9  9995.0 10025.0    1120    1120    1120
GR1424.8  9965.0  1421.0  9995.0  1420.0 10000.0  1421.0 10025.0  1422.0 10150.0
GR1424.0 10510.0  1424.0 12010.0  1422.0 12025.0  1422.0 12560.0
X1 6.472      10  9990.0 10015.0    1120    1120    1120
GR1428.9  9950.0  1424.0  9980.0  1423.0  9990.0  1422.0 10000.0  1423.0 10015.0
GR1424.0 10025.0  1426.0 10050.0  1426.0 10545.0  1430.0 11095.0  1430.0 12100.0
X1 6.672       7  9990.0 10015.0    1060    1060    1060
GR1432.4  9945.0  1427.0  9990.0  1426.0 10000.0  1427.0 10015.0  1430.0 10040.0
GR1432.0 11160.0  1434.0 12135.0
X1 6.811      10  9980.0 10020.0     730     730     730
GR1434.5  9950.0  1430.0  9980.0  1429.0 10000.0  1430.0 10020.0  1432.0 10050.0
GR1432.0 10630.0  1434.0 10725.0  1434.0 11315.0  1434.0 11395.0  1436.0 12150.0
X1 7.019      10  9990.0 10020.0    1100    1100    1100
GR1440.1  9945.0  1433.0  9990.0  1432.0 10000.0  1433.0 10020.0  1440.0 10040.0
GR1436.0 10070.0  1436.0 10310.0  1438.0 10890.0  1440.0 10905.0  1440.0 12710.0
X1 7.201       8  9980.0 10090.0     960     960     960
X3     0  1438.0
GR1441.6  9960.0  1441.0  9980.0  1440.0 10000.0  1440.0 10040.0  1434.0 10060.0
GR1438.0 10090.0  1440.0 10220.0  1442.0 10810.0
X1 7.455      10  9980.0 10115.0    1340    1340    1340
GR1448.6  9950.0  1443.0  9980.0  1442.0 10000.0  1442.0 10050.0  1443.0 10115.0
GR1444.0 10190.0  1446.0 11235.0  1446.5 11400.0  1448.0 11990.0  1448.5 12300.0
ET           9.1                                                   9970.0 10050.0
X1 7.519       7  9970.0 10050.0     340     340     340
GR1449.2  9920.0  1448.0  9960.0  1446.0  9970.0  1445.0 10000.0  1446.0 10050.0
GR1446.0 11300.0  1446.0 11640.0
EJ


ER
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****************************************************
*  WATER SURFACE PROFILES                          *
*  VERSION OF NOVEMBER 1976                        *
*  UPDATED MAY 1984                                *
*                                                  *
*  RUN DATE: 06/08/1990       TIME: 10:52:45.33    *
****************************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 551-1748 (FTS) 448-2105    *
*************************************
```

```
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
```

```
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION   :::
:::          by: HAESTAD METHODS          :::
:::                                       :::
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
```


==========
H A E S T A D M E T H O D S
==========

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS RUN EXECUTED: 06/08/1990 10:52:45.66

```
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*************************************************
```

```
T1       FLOOD INSURANCE STUDY FOR SOUTHERN PACIFIC RAILROAD
T2       QUEEN CREEK AREA-MARICOPA COUNTY, ARIZONA**89500A.DAT**
T3       100-YEAR FLOODPLAIN DELINEATION   REVISED: JUNE 1990

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

    -10.       2.       0.       0. -1.000000     0.00     0.0       0.  1321.300    0.000

J2  NPROF    IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    -1.000    0.000   -1.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38.000   43.000    1.000    2.000   26.000   39.000   21.000   22.000   27.000   28.000

    53.000   54.000    0.000   38.000   13.000   14.000   15.000   55.000   26.000   56.000

    63.000    1.000   51.000    4.000   42.000   57.000    0.000   38.000   39.000   33.000

     3.000   10.000   11.000   12.000    5.000    7.000    8.000   16.000   17.000   18.000

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

     1.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000
```

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


*PROF 1


CCHV=   0.100 CEHV=   0.300
*SECNO 0.038
3280 CROSS SECTION      0.04 EXTENDED      0.27 FEET

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    9900.0   11100.0  TYPE=     1  TARGET=    1200.000
     0.04     2.07  1321.27  1321.27     0.00  1321.45     0.17     0.00     0.00  1321.10
    1085.      24.     704.     357.      14.     176.     284.       0.       0.   1321.00
     0.00     1.75     4.01     1.25    0.040    0.050    0.050    0.000  1319.20  9907.68
 0.010008       0.       0.       0.        0        5        0     0.00  1192.32 11100.00


*SECNO 0.199
3280 CROSS SECTION      0.20 EXTENDED      0.76 FEET


3470 ENCROACHMENT STATIONS=    9960.0   11020.0  TYPE=     1  TARGET=    1060.000
     0.20     1.47  1323.47     0.00     0.00  1323.49     0.02     2.02     0.02  1322.00
    1085.       6.      97.     982.       7.      80.    1007.      16.      23.   1322.00
     0.25     0.94     1.21     0.98    0.040    0.050    0.050    0.000  1322.00  9980.87
 0.000995     880.     880.     880.        6        0        0     0.00  1039.13 11020.00


*SECNO 0.407

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=    9960.0   11000.0  TYPE=     1  TARGET=    1040.000
     0.41     0.71  1326.71     0.00     0.00  1326.85     0.14     3.33     0.04  1327.00
    1085.       0.     357.     728.       0.     149.     220.      36.      48.   1327.00
     0.36     0.00     2.40     3.31    0.000    0.050    0.050    0.000  1326.00  9985.85
 0.026034    1100.    1100.    1220.        5        0        0     0.00   815.26 11000.00


*SECNO 0.646

3265 DIVIDED FLOW
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


    0.65     1.15  1331.15     0.00     0.00  1331.17     0.02     4.31     0.01  1330.00
   1085.     221.     106.     758.     167.     119.     743.      56.      78.   1331.00
    0.68     1.32     0.89     1.02    0.040    0.050    0.050    0.000  1330.00  9754.18
 0.001287    1250.    1250.    1250.        9        0        0     0.00  1285.10 11076.96


CCHV=   0.300 CEHV=   0.500

SPECIAL BRIDGE

5227 DOWNSTREAM ELEV IS   1330.80 ,NOT   1331.15 HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS)

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
    1.25      2.40      2.83      0.00     33.70      3.70    120.00      0.00   1328.90   1328.80

*SECNO 0.672
 PRESS FLOW BECAUSE EGLWC OF   1342.79  EXCEEDS 1.5 DEPTH

3265 DIVIDED FLOW

3280 CROSS SECTION      0.67 EXTENDED      2.64 FEET

PRESSURE AND WEIR FLOW


 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD
                                                             AREA
   1334.20   1342.79     0.00      234.      855.      120.      93.     1332.00   1334.00



3470 ENCROACHMENT STATIONS=    9725.0   11160.0  TYPE=     1  TARGET=    1435.000
    0.67     4.14  1333.04     0.00     0.00  1333.04     0.00     1.87     0.00  1332.90
   1085.       0.      62.    1023.       2.     105.    1857.      62.      83.   1332.90
    0.77     0.06     0.59     0.55    0.014    0.014    0.014    0.000  1328.90  9725.00
 0.000012     170.     160.     175.        0        0        6     0.00  1210.26 11160.00


CCHV=   0.100 CEHV=   0.300
*SECNO 0.681
3280 CROSS SECTION      0.68 EXTENDED      1.04 FEET


3470 ENCROACHMENT STATIONS=    9700.0   11140.0  TYPE=     1  TARGET=    1440.000
    0.68     1.04  1333.04     0.00     0.00  1333.05     0.01     0.00     0.00  1332.00
   1085.      48.      45.     992.      71.      52.    1155.      64.      84.   1332.00
    0.78     0.68     0.86     0.86    0.040    0.050    0.050    0.000  1332.00  9837.76
 0.000799      50.      50.      50.        2        0        0     0.00  1302.24 11140.00
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       QLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


*SECNO 0.785
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    9950.0   10600.0  TYPE=     1  TARGET=     650.000
     0.79     1.21  1334.21  1334.21     0.00  1334.46     0.25     1.29     0.07  1334.00
    1085.       1.    1025.      59.       0.     249.      28.      73.      96.   1334.00
     0.82     1.69     4.12     2.14    0.040    0.050    0.050    0.000  1333.00  9981.84
 0.041777     480.     500.     550.       19       11        0     0.00   582.37 10564.21


*SECNO 0.843

3470 ENCROACHMENT STATIONS=    9975.0   10600.0  TYPE=     1  TARGET=     625.000
     0.84     2.00  1336.00     0.00     0.00  1336.03     0.03     1.55     0.02  1335.00
    1085.       3.     912.     170.       3.     611.     170.      78.     101.   1335.00
     0.89     0.89     1.49     1.00    0.040    0.050    0.050    0.000  1334.00  9983.42
 0.001460     375.     370.     405.        6        0        0     0.00   616.58 10600.00


*SECNO 1.078

3470 ENCROACHMENT STATIONS=    9970.0   10600.0  TYPE=     1  TARGET=     630.000
     1.08     1.29  1339.29     0.00     0.00  1339.36     0.07     3.31     0.01  1339.00
    1085.       0.    1079.       6.       0.     504.       6.      96.     119.   1339.00
     1.05     0.81     2.14     1.00    0.040    0.050    0.050    0.000  1338.00  9987.13
 0.006400    1240.    1240.    1215.        8        0        0     0.00   612.87 10600.00


*SECNO 1.227

3470 ENCROACHMENT STATIONS=    9950.0   10600.0  TYPE=     1  TARGET=     650.000
     1.23     1.77  1342.27     0.00     0.00  1342.31     0.04     2.95     0.00  1341.50
    1085.       6.    1079.       0.       5.     687.       0.     107.     130. 100000.00
     1.19     1.15     1.57     0.00    0.040    0.050    0.000    0.000  1340.50  9968.11
 0.002442     790.     790.     850.        4        0        0     0.00   631.89 10600.00


*SECNO 1.419
3280 CROSS SECTION      1.42 EXTENDED      0.17 FEET


3470 ENCROACHMENT STATIONS=    9950.0   10600.0  TYPE=     1  TARGET=     650.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


     1.42      2.17   1346.17      0.00      0.00   1346.32      0.15      3.98      0.03   1345.00
    1085.       12.      814.      258.        6.      234.      174.      121.      146.    1345.00
     1.29      2.15      3.48      1.48     0.040     0.050     0.050     0.000   1344.00   9970.23
 0.006898     1010.     1010.     1230.         4         0         0      0.00    629.77  10600.00


*SECNO 1.561

3470 ENCROACHMENT STATIONS=    9960.0   10600.0  TYPE=     1  TARGET=     640.000
     1.56      2.69   1348.69      0.00      0.00   1348.73      0.04      2.40      0.01   1347.00
    1085.       16.      235.      833.       12.      110.      608.      130.      156.    1347.00
     1.43      1.42      2.15      1.37     0.040     0.050     0.050     0.000   1346.00   9976.28
 0.001836      750.      750.      750.         6         0         0      0.00    623.72  10600.00


*SECNO 1.712

3470 ENCROACHMENT STATIONS=    9980.0   10600.0  TYPE=     1  TARGET=     620.000
     1.71      1.13   1351.03      0.00      0.00   1351.09      0.06      2.36      0.01   1351.00
    1085.        0.      676.      409.        0.      374.      197.      143.      169.    1350.00
     1.55      0.02      1.81      2.08     0.040     0.050     0.050     0.000   1349.90   9994.73
 0.004384      790.      790.      930.         4         0         0      0.00    605.27  10600.00


*SECNO 1.860

3470 ENCROACHMENT STATIONS=    9940.0   10600.0  TYPE=     1  TARGET=     660.000
     1.86      1.81   1353.81      0.00      0.00   1353.87      0.06      2.78      0.00   1353.00
    1085.        7.     1034.       45.        6.      535.       50.      154.      179.    1353.00
     1.67      1.11      1.93      0.89     0.040     0.050     0.050     0.000   1352.00   9960.65
 0.002924      780.      780.      800.         4         0         0      0.00    542.34  10502.99


CCHV=   0.300 CEHV=   0.500
*SECNO 1.939
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     1.94      0.81   1357.21   1357.21      0.00   1357.44      0.23      1.24      0.09   1356.80
    1358.      269.     1089.        0.       82.      271.        0.      158.      184.    1357.40
     1.69      3.27      4.03      0.00     0.015     0.015     0.000     0.000   1356.40   9455.96
 0.004032      210.      370.      550.        20        18         0      0.00    762.43  10218.39
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


FLOW DISTRIBUTION FOR SECNO=      1.94         CWSEL=   1357.21

STA=    9456.    9580.    9690.   10270.
  PER Q=      5.9     13.9     80.2
   AREA=     31.6     50.5    270.6
    VEL=      2.5      3.7      4.0

CCHV=   0.100 CEHV=   0.300
$SECNO 2.053
3200 CROSS SECTION      2.05 EXTENDED      0.11 FEET


3470 ENCROACHMENT STATIONS=    9970.0   10545.0  TYPE=     1  TARGET=     575.000
     2.05     3.40  1358.10     0.00     0.00  1358.15     0.04     0.68     0.02  1356.00
    1358.      26.     357.     975.      22.     166.     644.     163.     191.   1356.00
     1.76     1.17     2.16     1.51    0.040    0.040    0.040    0.000  1354.70  9970.00
 0.000873     600.     450.     320.        3        0        0     0.00   575.00 10545.00


FLOW DISTRIBUTION FOR SECNO=      2.05         CWSEL=   1358.10

STA=    9970.    9990.   10050.   10220.   10470.   10545.
  PER Q=      1.9     26.3     47.7     24.0      0.2
   AREA=     22.2    165.5    358.5    277.2      8.2
    VEL=      1.2      2.2      1.8      1.2      0.2

$SECNO 2.218
     2.22     1.72  1359.72     0.00     0.00  1359.97     0.25     1.77     0.06  1359.00
    1172.       5.    1167.       0.       2.     288.       0.     174.     200.   1360.00
     1.82     2.25     4.06     0.00    0.040    0.040    0.000    0.000  1358.00  9983.75
 0.014278     850.     845.     880.        2        0        0     0.00   335.46 10319.21


FLOW DISTRIBUTION FOR SECNO=      2.22         CWSEL=   1359.72

STA=    9984.    9990.   10370.
  PER Q=      0.4     99.6
   AREA=      2.3    287.6
    VEL=      2.2      4.1

$SECNO 2.343
     2.34     1.21  1363.21     0.00     0.00  1363.26     0.05     3.26     0.02  1362.00
    1172.       7.      97.    1068.       5.      48.     606.     182.     209.   1362.00
     1.93     1.27     2.02     1.76    0.040    0.040    0.040    0.000  1362.00  9981.41
 0.002320     660.     660.     730.        6        0        0     0.00   816.42 10797.84
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


*SECNO 2.559
     2.56     3.05  1367.05     0.00     0.00  1367.23     0.18     3.94     0.04  1366.00
    1172.       8.     474.     691.       4.     103.     308.     196.     227.   1366.00
     2.03     1.85     4.60     2.24    0.040    0.040    0.040    0.000  1364.00  9972.15
 0.005878    1125.    1125.    1125.        7        0        0     0.00   539.29 10511.45


CCHV=   0.100 CEHV=   0.300
*SECNO 2.795
     2.80     4.43  1369.63     0.00     0.00  1369.67     0.04     2.42     0.01  1366.00
    1172.      62.     375.     735.      37.     161.     770.     216.     247.   1366.00
     2.27     1.69     2.32     0.95    0.040    0.050    0.050    0.000  1365.20  9949.81
 0.000953    1250.    1250.    1250.        4        0        0     0.00   860.50 10810.30


*SECNO 2.947
     2.95     4.88  1370.88     0.00     0.00  1371.06     0.18     1.35     0.04  1368.00
    1172.      80.     607.     484.      28.     136.     354.     229.     261.   1368.00
     2.34     2.88     4.48     1.37    0.040    0.050    0.050    0.000  1366.00  9965.64
 0.003759     800.     800.     800.        3        0        0     0.00   678.76 10644.40


*SECNO 3.136
     3.14     3.27  1374.27     0.00     0.00  1374.36     0.10     3.29     0.01  1371.00
    1172.      69.     434.     669.      25.     132.     388.     242.     275.   1372.00
     2.46     2.74     3.29     1.73    0.040    0.050    0.050    0.000  1371.00  9969.59
 0.002910    1000.    1000.    1000.        3        0        0     0.00   550.62 10520.20


*SECNO 3.305
     3.31     2.74  1377.74     0.00     0.00  1377.86     0.12     3.49     0.01  1376.00
    1172.       9.     426.     737.       4.     112.     398.     252.     289.   1376.00
     2.56     2.41     3.79     1.85    0.040    0.050    0.050    0.000  1375.00  9975.64
 0.005558     890.     890.     890.        4        0        0     0.00   749.44 10725.08


*SECNO 3.551
     3.55     4.71  1381.71     0.00     0.00  1381.77     0.06     3.91     0.01  1378.00
    1172.      97.     362.     713.      40.     122.     613.     272.     311.   1380.00
     2.76     2.41     2.96     1.16    0.040    0.050    0.050    0.000  1377.00  9968.34
 0.001880    1300.    1300.    1300.        6        0        0     0.00   772.15 10740.49
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


*SECNO 3.676
     3.68      4.30  1383.10      0.00      0.00  1383.19      0.09      1.41      0.01  1380.00
    1172.       28.      449.      695.       12.      130.      532.      283.      323.   1380.00
     2.84      2.31      3.46      1.31     0.040     0.050     0.050     0.000  1378.00  9972.11
 0.002376      670.      670.      670.         3         0         0      0.00   745.29 10717.40


*SECNO 3.892
     3.89      4.63  1386.63      0.00      0.00  1386.85      0.23      3.62      0.04  1384.00
     828.       48.      584.      196.       15.      133.      174.      296.      340.   1386.00
     2.93      3.16      4.39      1.12     0.040     0.050     0.050     0.000  1382.00  9973.31
 0.005227     1140.     1140.     1140.         3         0         0      0.00   551.23 10524.54


CCHV=   0.100 CEHV=   0.300
*SECNO 4.123

3470 ENCROACHMENT STATIONS=    9560.0   10960.0  TYPE=     1  TARGET=    1400.000
     4.12      1.23  1390.03      0.00      0.00  1390.04      0.02      3.17      0.02100000.00
     828.        0.      287.      541.        0.      334.      461.      311.      367.   1390.00
     3.25      0.00      0.86      1.17     0.000     0.050     0.035     0.000  1388.00  9560.00
 0.001551     1270.     1235.     1200.         4         0         0      0.00  1400.00 10960.00


*SECNO 4.230

3470 ENCROACHMENT STATIONS=    9300.0   10900.0  TYPE=     1  TARGET=    1600.000
     4.23      0.55  1391.55      0.00      0.00  1391.58      0.03      1.53      0.00  1391.00
     828.       139.      212.      478.      240.      204.      305.      324.      390.   1391.40
     3.40      0.58      1.04      1.57     0.100     0.050     0.035     0.000  1391.00  9300.00
 0.003385      800.      650.      700.         3         0         0      0.00  1509.18 10809.18


CCHV=   0.300 CEHV=   0.500
*SECNO 4.341
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     4.34      0.55  1394.55  1394.55      0.00  1394.70      0.15      2.05      0.06  1394.50
     828.        1.      827.        1.        1.      267.        1.      330.      405.   1394.50
     3.45      0.58      3.10      0.58     0.015     0.015     0.015     0.000  1394.00  9545.76
 0.004928      580.      490.      520.         3         5         0      0.00   982.09 10527.85
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XWL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


CCHV=   0.100 CEHV=   0.300
*SECNO 4.616

3470 ENCROACHMENT STATIONS=    9850.0   11250.0  TYPE=     1  TARGET=    1400.000
     4.62     1.55  1395.95     0.00     0.00  1395.96     0.01     1.25     0.01  1396.00
     828.      0.     654.     174.      0.     834.     538.     349.     432.   1395.00
     3.85     0.00     0.78     0.32    0.000    0.050    0.100    0.000  1394.40  9933.24
 0.000558    1000.    1000.    1000.        6        0        0     0.00  1316.76 11250.00


*SECNO 4.637
     4.64     1.19  1396.49     0.00     0.00  1396.57     0.08     0.59     0.02  1398.00
     828.      0.     118.     710.      0.      31.     372.     356.     440.   1395.50
     3.89     0.00     3.84     1.91    0.000    0.050    0.100    0.000  1395.30  9966.92
 0.026374      75.     110.     550.        2        0        0     0.00   608.82 10575.74


CCHV=   0.100 CEHV=   0.300
*SECNO 4.748
     4.75     1.55  1397.55     0.00     0.00  1397.58     0.03     1.00     0.01  1398.00
     828.      0.     205.     623.      0.     132.     463.     360.     444.   1396.00
     3.97     0.00     1.55     1.35    0.000    0.035    0.040    0.000  1396.00  9969.02
 0.000925     630.     600.     330.        7        0        0     0.00   489.09 10458.12


*SECNO 4.924
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     4.92     0.91  1400.91  1400.91     0.00  1401.14     0.24     2.51     0.06  1401.00
     828.      0.     828.      0.      0.     213.      0.     369.     455.   1401.00
     4.04     0.00     3.89     0.00    0.000    0.035    0.000    0.000  1400.00  9977.27
 0.024036     930.     930.    1040.       20       14        0     0.00   468.17 10445.44


*SECNO 5.038
     5.04     1.36  1403.36     0.00     0.00  1403.39     0.03     2.23     0.02  1403.00
     828.      0.     815.      13.      0.     561.      29.     375.     464.   1403.00
     4.16     0.44     1.45     0.45    0.040    0.035    0.040    0.000  1402.00  9982.77
 0.001439     600.     600.     630.        8        0        0     0.00   821.19 10803.96
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


*SECNO 5.170
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    9970.0   10500.0  TYPE=     1  TARGET=     530.000
     5.17     0.86  1406.86  1406.86     0.00  1407.08     0.22     2.43     0.06  1407.00
     828.      0.     386.     442.       0.      83.     163.     381.     475.   1406.70
     4.21     0.00     4.68     2.70    0.000    0.035    0.040    0.000  1406.00  9991.42
 0.017540     700.     700.     700.       20       14        0     0.00   508.58 10500.00


*SECNO 5.375

3470 ENCROACHMENT STATIONS=    9955.0   10800.0  TYPE=     1  TARGET=     845.000
     5.37     2.73  1410.73     0.00     0.00  1410.77     0.04     3.67     0.02  1409.00
     828.      22.     252.     554.      18.     101.     496.     393.     492.   1409.50
     4.41     1.23     2.48     1.12    0.040    0.035    0.040    0.000  1408.00  9969.13
 0.001331    1080.    1080.    1150.       11        0        0     0.00   830.86 10800.00


*SECNO 5.523
     5.52     1.61  1412.61     0.00     0.00  1412.82     0.20     2.00     0.05  1412.00
     828.       1.     753.      74.       1.     201.      53.     400.     503.   1412.00
     4.47     1.37     3.75     1.39    0.040    0.035    0.040    0.000  1411.00  9936.92
 0.006733     780.     780.     790.        4        0        0     0.00   355.55 10292.47


CCHV=   0.300 CEHV=   0.500
*SECNO 5.631
     5.63     2.63  1412.93     0.00     0.00  1412.94     0.01     0.06     0.06  1412.00
     828.      17.     797.      14.      53.    1014.      43.     410.     511.   1412.00
     4.69     0.32     0.79     0.32    0.015    0.015    0.015    0.000  1410.30  9616.70
 0.000029     340.     600.     800.        3        0        0     0.00   776.17 10392.87


CCHV=   0.100 CEHV=   0.300
*SECNO 5.864
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     5.86     1.54  1414.54  1414.54     0.00  1414.77     0.23     0.08     0.07  1414.00
     393.       3.     390.       0.       1.     101.       0.     427.     526.   1415.00
     4.78     2.53     3.84     0.00    0.040    0.035    0.000    0.000  1413.00  9970.25
 0.026663    1410.    1230.    1050.       20       14        0     0.00   250.60 10220.85
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


*SECNO 6.047
3280 CROSS SECTION      6.05 EXTENDED      0.83 FEET


3470 ENCROACHMENT STATIONS=    9960.0   10770.0  TYPE=     1  TARGET=     810.000
     6.05     2.83  1418.83     0.00     0.00  1418.91     0.08     4.12     0.01  1417.00
     393.      18.     211.     164.      13.      70.     157.     431.     533.   1417.00
     4.91     1.41     3.03     1.05    0.040    0.035    0.040    0.000  1416.00  9976.31
 0.001655     970.     970.     980.        8        0        0     0.00   368.09 10344.40


*SECNO 6.259
3280 CROSS SECTION      6.26 EXTENDED      0.00 FEET


3470 ENCROACHMENT STATIONS=    9965.0   10510.0  TYPE=     1  TARGET=     545.000
     6.26     2.08  1422.08     0.00     0.00  1422.31     0.24     3.36     0.05  1421.00
     393.       9.     228.     156.       5.      47.      73.     435.     540.   1421.00
     4.99     2.05     4.81     2.14    0.040    0.035    0.040    0.000  1420.00  9986.49
 0.007012    1120.    1120.    1120.        6        0        0     0.00   177.53 10164.02


*SECNO 6.472
     6.47     3.51  1425.51     0.00     0.00  1425.67     0.16     3.35     0.01  1423.00
     393.      57.     270.      66.      27.      75.      34.     439.     543.   1423.00
     5.10     2.10     3.59     1.92    0.040    0.035    0.040    0.000  1422.00  9970.74
 0.001646    1120.    1120.    1120.        5        0        0     0.00    73.17 10043.91


*SECNO 6.672
     6.67     2.59  1428.59     0.00     0.00  1429.14     0.55     3.35     0.12  1427.00
     393.      31.     332.      31.      11.      52.      11.     441.     544.   1427.00
     5.15     2.91     6.35     2.91    0.040    0.035    0.040    0.000  1426.00  9976.75
 0.008401    1060.    1060.    1060.        3        0        0     0.00    51.50 10028.25


*SECNO 6.811
     6.81     2.84  1431.84     0.00     0.00  1432.02     0.17     2.84     0.04  1430.00
     393.      19.     332.      42.      11.      94.      26.     443.     545.   1430.00
     5.21     1.65     3.54     1.66    0.040    0.035    0.040    0.000  1429.00  9967.70
 0.002233     730.     730.     730.        4        0        0     0.00    79.97 10047.67
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


$SECNO 7.019
    7.02     2.94  1434.94     0.00     0.00  1435.27     0.34     3.21     0.05  1433.00
    393.      27.     354.      12.      12.      73.       5.     446.     547.   1433.00
    5.28     2.27     4.84     2.21    0.040    0.035    0.040    0.000  1432.00  9977.71
 0.003972    1100.    1100.    1100.        3        0        0     0.00    47.83 10025.54


$SECNO 7.201
    7.20     1.55  1439.55     0.00     0.00  1439.70     0.15     4.41     0.02  1441.00
    393.       0.     214.     179.       0.      58.      78.     448.     549.   1438.00
    5.36     0.00     3.67     2.29    0.000    0.035    0.040    0.000  1438.00 10044.52
 0.005369     960.     960.     960.        3        0        0     0.00   146.07 10190.59


$SECNO 7.455
    7.45     1.61  1443.61     0.00     0.00  1443.68     0.07     3.97     0.01  1443.00
    393.       1.     382.      10.       1.     175.      14.     453.     554.   1443.00
    5.54     0.72     2.19     0.73    0.040    0.035    0.040    0.000  1442.00  9976.73
 0.001878    1340.    1340.    1340.        5        0        0     0.00   184.01 10160.74


$SECNO 7.519
3280 CROSS SECTION      7.52 EXTENDED      0.40 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=    9970.0   10050.0  TYPE=     1  TARGET=      80.000
    7.52     1.40  1446.40  1446.40     0.00  1446.86     0.46     1.48     0.12  1446.00
    393.       0.     393.       0.       0.      72.       0.     454.     555. 100000.00
    5.55     0.00     5.46     0.00    0.000    0.035    0.000    0.000  1445.00  9970.00
 0.019308     340.     340.     340.       20       15        0     0.00    80.00 10050.00
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THIS RUN EXECUTED: 06/08/1990 10:53:26.42

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*********************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
 ERROR CORR -  01,02,03,04,05,06
 MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR FLOODPLAIN DEL

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	CRIWS	VCH	XLCH	STCHL	STCHR	STENCL	STENCR	SSTA	ENDST
*	0.038	1085.00	1321.27	1321.27	4.01	0.00	9950.00	10062.00	9900.00	11100.00	9987.68	11100.00
	0.199	1085.00	1323.47	0.00	1.21	880.00	9990.00	10045.00	9960.00	11020.00	9980.87	11020.00
	0.407	1085.00	1326.71	0.00	2.40	1100.00	9980.00	10575.00	9960.00	11000.00	9985.85	11000.00
	0.646	1085.00	1331.15	0.00	0.89	1250.00	9970.00	10125.00	0.00	0.00	9754.18	11076.96
*	0.672	1085.00	1333.04	0.00	0.59	160.00	9984.20	10015.80	9725.00	11160.00	9725.00	11160.00
	0.681	1085.00	1333.04	0.00	0.86	50.00	9975.00	10025.00	9700.00	11140.00	9837.76	11140.00
*	0.785	1085.00	1334.21	1334.21	4.12	500.00	9985.00	10430.00	9950.00	10600.00	9981.84	10564.21
	0.843	1085.00	1336.00	0.00	1.49	370.00	9990.00	10395.00	9975.00	10600.00	9983.42	10600.00
	1.078	1085.00	1339.29	0.00	2.14	1240.00	9990.00	10580.00	9970.00	10600.00	9987.13	10600.00
	1.227	1085.00	1342.27	0.00	1.57	790.00	9980.00	10840.00	9950.00	10600.00	9968.11	10600.00
	1.419	1085.00	1346.17	0.00	3.48	1010.00	9980.00	10120.00	9950.00	10600.00	9970.23	10600.00
	1.561	1085.00	1348.69	0.00	2.15	750.00	9990.00	10040.00	9960.00	10600.00	9976.28	10600.00
	1.712	1085.00	1351.03	0.00	1.81	790.00	9995.00	10420.00	9980.00	10600.00	9994.73	10600.00
	1.860	1085.00	1353.81	0.00	1.93	780.00	9975.00	10380.00	9940.00	10600.00	9960.65	10502.99
*	1.939	1358.00	1357.21	1357.21	4.03	370.00	9690.00	10270.00	0.00	0.00	9455.96	10218.39
	2.053	1358.00	1358.10	0.00	2.16	450.00	9990.00	10050.00	9970.00	10545.00	9970.00	10545.00
	2.218	1172.00	1359.72	0.00	4.06	845.00	9990.00	10370.00	0.00	0.00	9983.75	10319.21

	SECNO	Q	CWSEL	CRIWS	VCH	XLCH	STCHL	STCHR	STENCL	STENCR	SSTA	ENDST
	2.343	1172.00	1363.21	0.00	2.02	660.00	9990.00	10030.00	0.00	0.00	9981.41	10797.84
	2.559	1172.00	1367.05	0.00	4.60	1125.00	9980.00	10030.00	0.00	0.00	9972.15	10511.45
	2.795	1172.00	1369.63	0.00	2.32	1250.00	9970.00	10010.00	0.00	0.00	9949.81	10810.30
	2.947	1172.00	1370.88	0.00	4.48	800.00	9985.00	10020.00	0.00	0.00	9965.64	10644.40
	3.136	1172.00	1374.27	0.00	3.29	1000.00	9985.00	10030.00	0.00	0.00	9969.59	10520.20
	3.305	1172.00	1377.74	0.00	3.79	890.00	9980.00	10030.00	0.00	0.00	9975.64	10725.08
	3.551	1172.00	1381.71	0.00	2.96	1300.00	9990.00	10025.00	0.00	0.00	9968.34	10740.49
	3.676	1172.00	1383.10	0.00	3.46	670.00	9980.00	10015.00	0.00	0.00	9972.11	10717.40
	3.892	828.00	1386.63	0.00	4.39	1140.00	9985.00	10030.00	0.00	0.00	9973.31	10524.54
	4.123	828.00	1390.03	0.00	0.86	1235.00	9440.00	10090.00	9560.00	10960.00	9560.00	10960.00
	4.230	828.00	1391.55	0.00	1.04	650.00	9740.00	10180.00	9300.00	10900.00	9300.00	10809.18
*	4.341	828.00	1394.55	1394.55	3.10	490.00	9585.00	10480.00	0.00	0.00	9545.76	10527.85
	4.616	828.00	1395.95	0.00	0.78	1000.00	9930.00	10640.00	9850.00	11250.00	9933.24	11250.00
	4.637	828.00	1396.49	0.00	3.84	110.00	9925.00	10010.00	0.00	0.00	9966.92	10575.74
	4.748	828.00	1397.55	0.00	1.55	600.00	9960.00	10070.00	0.00	0.00	9969.02	10458.12
*	4.924	828.00	1400.91	1400.91	3.89	930.00	9975.00	10490.00	0.00	0.00	9977.27	10445.44
	5.038	828.00	1403.36	0.00	1.45	600.00	9985.00	10640.00	0.00	0.00	9982.77	10803.96
*	5.170	828.00	1406.86	1406.86	4.68	700.00	9990.00	10100.00	9970.00	10500.00	9991.42	10500.00
	5.375	828.00	1410.73	0.00	2.48	1080.00	9990.00	10040.00	9955.00	10800.00	9969.13	10800.00
	5.523	828.00	1412.61	0.00	3.75	780.00	9940.00	10120.00	0.00	0.00	9936.92	10292.47
	5.631	828.00	1412.93	0.00	0.79	600.00	9730.00	10300.00	0.00	0.00	9616.70	10392.87
*	5.864	393.00	1414.54	1414.54	3.84	1230.00	9975.00	10390.00	0.00	0.00	9970.25	10220.85
	6.047	393.00	1418.83	0.00	3.03	970.00	9990.00	10020.00	9960.00	10770.00	9976.31	10344.40
	6.259	393.00	1422.08	0.00	4.81	1120.00	9995.00	10025.00	9965.00	10510.00	9986.49	10164.02
	6.472	393.00	1425.51	0.00	3.59	1120.00	9990.00	10015.00	0.00	0.00	9970.74	10043.91
	6.672	393.00	1428.59	0.00	6.35	1060.00	9990.00	10015.00	0.00	0.00	9976.75	10028.25

	SECNO	Q	CWSEL	CRIWS	VCH	XLCH	STCHL	STCHR	STENCL	STENCR	SSTA	ENDST
	6.811	393.00	1431.84	0.00	3.54	730.00	9980.00	10020.00	0.00	0.00	9967.70	10047.67
	7.019	393.00	1434.94	0.00	4.84	1100.00	9990.00	10020.00	0.00	0.00	9977.71	10025.54
	7.201	393.00	1439.55	0.00	3.67	960.00	9980.00	10090.00	0.00	0.00	10044.52	10190.59
	7.455	393.00	1443.61	0.00	2.19	1340.00	9980.00	10115.00	0.00	0.00	9976.73	10160.74
*	7.519	393.00	1446.40	1446.40	5.46	340.00	9970.00	10050.00	9970.00	10050.00	9970.00	10050.00

100-YEAR FLOODPLAIN DEL

SUMMARY PRINTOUT

	SECNO	QLOB	QCH	QROB	VLOB	VCH	VROB	TELMX	CWSEL	DIFWSX	TOPWID	ELMIN	ALPHA
*	0.038	23.86	704.39	356.75	1.75	4.01	1.25	1321.00	1321.27	0.00	1192.32	1319.20	2.10
	0.199	6.28	96.93	981.78	0.94	1.21	0.98	1322.70	1323.47	2.20	1039.13	1322.00	1.01
	0.407	0.00	357.19	727.81	0.00	2.40	3.31	1328.00	1326.71	3.24	815.26	1326.00	1.07
	0.646	221.15	106.29	757.56	1.32	0.89	1.02	1331.60	1331.15	4.45	1285.10	1330.00	1.04
*	0.672	0.10	61.67	1023.23	0.06	0.59	0.55	1330.40	1333.04	1.89	1210.26	1328.90	1.00
	0.681	48.12	44.53	992.35	0.68	0.86	0.86	1332.00	1333.04	0.00	1302.24	1332.00	1.01
*	0.785	0.56	1024.98	59.45	1.69	4.12	2.14	1336.00	1334.21	1.17	582.37	1333.00	1.06
	0.843	2.96	912.27	169.77	0.89	1.49	1.00	1338.00	1336.00	1.79	616.58	1334.00	1.06
	1.078	0.33	1079.12	5.54	0.81	2.14	1.00	1340.00	1339.29	3.28	612.87	1338.00	1.01
	1.227	6.19	1078.81	0.00	1.15	1.57	0.00	1344.00	1342.27	2.99	631.89	1340.50	1.00
	1.419	12.33	814.44	258.23	2.15	3.48	1.48	1346.00	1346.17	3.90	629.77	1344.00	1.40
	1.561	16.44	235.31	833.24	1.42	2.15	1.37	1350.00	1348.69	2.52	623.72	1346.00	1.12
	1.712	0.00	675.96	409.04	0.02	1.81	2.08	1352.00	1351.03	2.34	605.27	1349.90	1.01
	1.860	6.51	1033.77	44.72	1.11	1.93	0.89	1356.00	1353.81	2.78	542.34	1352.00	1.07
*	1.939	268.62	1089.38	0.00	3.27	4.03	0.00	1360.10	1357.21	3.39	762.43	1356.40	1.02
	2.053	25.90	357.01	975.09	1.17	2.16	1.51	1358.00	1358.10	0.89	575.00	1354.70	1.09
	2.218	5.10	1166.90	0.00	2.25	4.06	0.00	1360.00	1359.72	1.62	335.46	1358.00	1.00
	2.343	6.54	97.33	1068.12	1.27	2.02	1.76	1364.80	1363.21	3.49	816.42	1362.00	1.01
	2.559	7.71	473.77	690.52	1.85	4.60	2.24	1368.00	1367.05	3.85	539.29	1364.00	1.45
	2.795	62.03	375.08	734.89	1.69	2.32	0.95	1371.40	1369.63	2.58	860.50	1365.20	1.67
	2.947	80.21	607.33	484.46	2.08	4.48	1.37	1373.20	1370.88	1.25	678.76	1366.00	2.28
	3.136	68.97	433.72	669.31	2.74	3.29	1.73	1376.30	1374.27	3.39	550.62	1371.00	1.33
	3.305	9.13	425.63	737.24	2.41	3.79	1.85	1380.00	1377.74	3.47	749.44	1375.00	1.43
	3.551	96.96	362.26	712.78	2.41	2.96	1.16	1384.00	1381.71	3.97	772.15	1377.00	1.76

100-YEAR FLOODPLAIN DEL

SUMMARY PRINTOUT

	SECND	XLCH	K*CHSL	EG	HV	HL	OLOSS	10K*S	VOL	DEPTH	K*XNL	K*XNCH	K*XNR
*	0.038	0.00	0.00	1321.45	0.17	0.00	0.00	100.08	0.00	2.07	40.00	50.00	50.00
	0.199	880.00	3.18	1323.49	0.02	2.02	0.02	9.95	15.83	1.47	40.00	50.00	50.00
	0.407	1100.00	3.64	1326.85	0.14	3.33	0.04	260.34	35.99	0.71	0.00	50.00	50.00
	0.646	1250.00	3.20	1331.17	0.02	4.31	0.01	12.87	56.05	1.15	40.00	50.00	50.00
*	0.672	160.00	-6.87	1333.04	0.00	1.87	0.00	0.12	62.02	4.14	14.00	14.00	14.00
	0.681	50.00	62.00	1333.05	0.01	0.00	0.00	7.99	63.88	1.04	40.00	50.00	50.00
*	0.785	500.00	2.00	1334.46	0.25	1.29	0.07	417.77	73.46	1.21	40.00	50.00	50.00
	0.843	370.00	2.70	1336.03	0.03	1.55	0.02	14.60	78.05	2.00	40.00	50.00	50.00
	1.078	1240.00	3.23	1339.36	0.07	3.31	0.01	64.00	96.42	1.29	40.00	50.00	50.00
	1.227	790.00	3.16	1342.31	0.04	2.95	0.00	24.42	107.32	1.77	40.00	50.00	0.00
	1.419	1010.00	3.47	1346.32	0.15	3.98	0.03	68.98	120.58	2.17	40.00	50.00	50.00
	1.561	750.00	2.67	1348.73	0.04	2.40	0.01	18.36	130.42	2.69	40.00	50.00	50.00
	1.712	790.00	4.94	1351.09	0.06	2.36	0.01	43.84	143.49	1.13	40.00	50.00	50.00
	1.860	780.00	2.69	1353.87	0.06	2.78	0.00	29.24	153.95	1.81	40.00	50.00	50.00
*	1.939	370.00	11.89	1357.44	0.23	1.24	0.09	48.32	157.90	0.81	15.00	15.00	0.00
	2.053	450.00	-3.78	1358.15	0.04	0.68	0.02	8.73	163.24	3.40	40.00	40.00	40.00
	2.218	845.00	3.91	1359.97	0.25	1.77	0.06	142.78	174.37	1.72	40.00	40.00	0.00
	2.343	660.00	6.06	1363.26	0.05	3.26	0.02	23.20	182.05	1.21	40.00	40.00	40.00
	2.559	1125.00	1.78	1367.23	0.18	3.94	0.04	58.78	195.92	3.05	40.00	40.00	40.00
	2.795	1250.00	0.96	1369.67	0.04	2.42	0.01	9.53	215.77	4.43	40.00	50.00	50.00
	2.947	800.00	1.00	1371.06	0.18	1.35	0.04	37.59	229.41	4.88	40.00	50.00	50.00
	3.136	1000.00	5.00	1374.36	0.10	3.29	0.01	29.10	241.60	3.27	40.00	50.00	50.00
	3.305	890.00	4.49	1377.86	0.12	3.49	0.01	55.58	252.42	2.74	40.00	50.00	50.00
	3.551	1300.00	1.54	1381.77	0.06	3.91	0.01	18.80	271.66	4.71	40.00	50.00	50.00

	SECNO	QLOB	QCH	QROB	VLOB	VCH	VROB	TELMX	CWSEL	DIFWSX	TOPWID	ELMIN	ALPHA
	3.676	28.29	448.54	695.16	2.31	3.46	1.31	1385.90	1383.10	1.39	745.29	1378.80	1.89
	3.892	48.35	583.61	196.04	3.16	4.39	1.12	1389.00	1386.63	3.52	551.23	1382.00	2.20
	4.123	0.00	287.29	540.71	0.00	0.86	1.17	1391.00	1390.03	3.40	1400.00	1388.80	1.06
	4.230	138.60	211.64	477.76	0.58	1.04	1.57	1392.00	1391.55	1.52	1509.18	1391.00	1.43
*	4.341	0.54	826.80	0.66	0.58	3.10	0.58	1394.90	1394.55	3.00	982.09	1394.00	1.01
	4.616	0.00	654.14	173.86	0.00	0.78	0.32	1398.00	1395.95	1.41	1316.76	1394.40	1.39
	4.637	0.00	117.58	710.41	0.00	3.84	1.91	1399.50	1396.49	0.54	608.82	1395.30	1.23
	4.748	0.00	204.74	623.26	0.00	1.55	1.35	1400.60	1397.55	1.06	489.09	1396.00	1.01
*	4.924	0.00	828.00	0.00	0.00	3.89	0.00	1403.20	1400.91	3.36	468.17	1400.00	1.00
	5.038	0.18	814.78	13.04	0.44	1.45	0.45	1406.00	1403.36	2.45	821.19	1402.00	1.06
*	5.170	0.00	386.21	441.79	0.00	4.68	2.70	1408.00	1406.86	3.50	508.58	1406.00	1.25
	5.375	22.14	251.60	554.26	1.23	2.48	1.12	1412.00	1410.73	3.87	830.86	1408.00	1.52
	5.523	1.30	752.86	73.84	1.37	3.75	1.39	1413.00	1412.61	1.89	355.55	1411.00	1.23
	5.631	16.90	797.25	13.85	0.32	0.79	0.32	1414.50	1412.93	0.31	776.17	1410.30	1.08
*	5.864	3.26	389.73	0.00	2.53	3.84	0.00	1416.80	1414.54	1.62	250.60	1413.00	1.00
	6.047	17.68	211.25	164.07	1.41	3.03	1.05	1418.00	1418.83	4.28	368.09	1416.00	2.03
	6.259	9.40	227.50	156.10	2.05	4.81	2.14	1422.00	1422.08	3.25	177.53	1420.00	1.54
	6.472	56.89	270.04	66.07	2.10	3.59	1.92	1428.90	1425.51	3.43	73.17	1422.00	1.22
	6.672	30.65	331.71	30.65	2.91	6.35	2.91	1432.40	1428.59	3.08	51.50	1426.00	1.23
	6.811	18.73	331.87	42.40	1.65	3.54	1.66	1434.50	1431.84	3.25	79.97	1429.00	1.22
	7.019	27.09	354.07	11.85	2.27	4.84	2.21	1440.00	1434.94	3.09	47.83	1432.00	1.14
	7.201	0.00	214.43	178.57	0.00	3.67	2.29	1441.60	1439.55	4.61	146.07	1438.00	1.17
	7.455	0.72	382.11	10.17	0.72	2.19	0.73	1448.50	1443.61	4.06	184.01	1442.00	1.09
*	7.519	0.00	393.00	0.00	0.00	5.46	0.00	1446.00	1446.40	2.79	80.00	1445.00	1.00

	SECNO	XLCH	K*CHSL	EB	HV	HL	DLOSS	10K*S	VOL	DEPTH	K*XNL	K*XNCH	K*XNR
	3.676	670.00	2.69	1383.19	0.09	1.41	0.01	23.76	282.81	4.30	40.00	50.00	50.00
	3.892	1140.00	2.81	1386.85	0.23	3.62	0.04	52.27	295.84	4.63	40.00	50.00	50.00
	4.123	1235.00	5.51	1390.04	0.02	3.17	0.02	15.51	311.44	1.23	0.00	50.00	35.00
	4.230	650.00	3.38	1391.58	0.03	1.53	0.00	33.85	323.81	0.55	100.00	50.00	35.00
*	4.341	490.00	6.12	1394.70	0.15	2.05	0.06	49.28	329.89	0.55	15.00	15.00	15.00
	4.616	1000.00	0.40	1395.96	0.01	1.25	0.01	5.58	348.73	1.55	0.00	50.00	100.00
	4.637	110.00	8.18	1396.57	0.08	0.59	0.02	263.74	355.56	1.19	0.00	50.00	100.00
	4.748	600.00	1.17	1397.58	0.03	1.00	0.01	9.25	359.85	1.55	0.00	35.00	40.00
*	4.924	930.00	4.30	1401.14	0.24	2.51	0.06	240.36	369.06	0.91	0.00	35.00	0.00
	5.038	600.00	3.33	1403.39	0.03	2.23	0.02	14.39	374.60	1.36	40.00	35.00	40.00
*	5.170	700.00	5.71	1407.08	0.22	2.43	0.06	175.40	381.32	0.86	0.00	35.00	40.00
	5.375	1080.00	1.85	1410.77	0.04	3.67	0.02	13.31	392.54	2.73	40.00	35.00	40.00
	5.523	780.00	3.85	1412.82	0.20	2.00	0.05	67.33	400.40	1.61	40.00	35.00	40.00
	5.631	600.00	-1.17	1412.94	0.01	0.06	0.06	0.29	409.86	2.63	15.00	15.00	15.00
*	5.864	1230.00	2.20	1414.77	0.23	0.08	0.07	266.63	427.00	1.54	40.00	35.00	0.00
	6.047	970.00	3.09	1418.91	0.08	4.12	0.01	16.55	430.82	2.83	40.00	35.00	40.00
	6.259	1120.00	3.57	1422.31	0.24	3.36	0.05	70.12	435.50	2.08	40.00	35.00	40.00
	6.472	1120.00	1.79	1425.67	0.16	3.35	0.01	16.46	438.86	3.51	40.00	35.00	40.00
	6.672	1060.00	3.77	1429.14	0.55	3.35	0.12	84.01	441.42	2.59	40.00	35.00	40.00
	6.811	730.00	4.11	1432.02	0.17	2.84	0.04	22.33	443.13	2.84	40.00	35.00	40.00
	7.019	1100.00	2.73	1435.27	0.34	3.21	0.05	39.72	445.92	2.94	40.00	35.00	40.00
	7.201	960.00	6.25	1439.70	0.15	4.41	0.02	53.69	448.42	1.55	0.00	35.00	40.00
	7.455	1340.00	2.99	1443.68	0.07	3.97	0.01	18.78	453.43	1.61	40.00	35.00	40.00
*	7.519	340.00	8.82	1446.86	0.46	1.48	0.12	193.08	454.45	1.40	0.00	35.00	0.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION  SECNO=    0.038  PROFILE= 1  CRITICAL DEPTH ASSUMED

CAUTION  SECNO=    0.672  PROFILE= 1  HYDRAULIC JUMP D.S.

CAUTION  SECNO=    0.785  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    0.785  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=    1.939  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    1.939  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    1.939  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    4.341  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    4.341  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=    4.924  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    4.924  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    4.924  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    5.170  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    5.170  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    5.170  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    5.864  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    5.864  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    5.864  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=    7.519  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    7.519  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=    7.519  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
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THIS RUN EXECUTED: 06/08/1990 10:53:33.28

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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ATTACHMENT 3

HEC-2

ZONE A 100-YEAR SPLIT FLOW

EMF TO GERMANN ROAD

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T1      FLOOD INSURANCE STUDY FOR SOUTHERN PACIFIC RAILROAD
T2      QUEEN CREEK AREA-MARICOPA COUNTY, ARIZONA**89500L.DAT**
T3      100-YEAR FLOODPLAIN SPLIT FLOW AT GERMANN ROAD-FEBRUARY 1990
J1   -10       2       0          0.0020                          1321.0
J2    -1              -1
J3    38      43       1       2      26      39      21      22      27      28
J3    53      54               38      13      14      15      55      26      56
J3    63       1      51       4      42      57              38      39      33
J3     3      10      11      12       5       7       8      16      17      18
J5   -10     -10
NC 0.040   0.050   0.040     0.1     0.3
QT     1     273
ET           9.1                                                   9790.0  9925.0
X1 0.038      20  9990.0 10030.0
GR1323.3  9790.0  1322.0  9820.0  1320.0  9850.0  1320.0  9870.0  1320.0  9880.0
GR1322.0  9890.0  1324.0  9900.0  1325.5  9925.0  1324.0  9945.0  1322.0  9955.0
GR1320.0  9990.0  1320.0 10000.0  1320.0 10030.0  1320.5 10240.0  1320.0 10530.0
GR1319.5 10900.0  1319.9 11280.0  1319.5 11600.0  1320.0 11870.0  1321.5 12080.0
NC 0.040   0.050   0.050     0.1     0.3
ET           9.1                                                   9835.0  9960.0
X1 0.199      19  9995.0 10025.0     840     840     840
GR1325.2  9835.0  1324.0  9840.0  1322.0  9880.0  1321.0  9920.0  1322.0  9945.0
GR1324.0  9950.0  1326.8  9960.0  1326.0  9970.0  1321.0  9995.0  1320.0 10000.0
GR1321.0 10025.0  1322.0 10050.0  1323.0 10305.0  1322.5 10710.0  1322.0 10915.0
GR1322.0 11020.0  1322.0 11150.0  1322.3 11360.0  1322.7 11760.0
ET           9.1                                                   9750.0  9875.0
X1 0.407      12  9980.0 10575.0    1100    1100    1100
GR1328.5  9840.0  1326.7  9860.0  1326.0  9905.0  1325.6  9925.0  1326.0  9940.0
GR1328.0  9950.0  1329.6  9960.0  1327.0  9980.0  1326.0 10000.0  1327.0 10575.0
GR1328.0 11090.0  1328.0 12000.0
ET           9.1                                                   9750.0  9875.0
X1 0.646      21  9970.0 10300.0    1260    1260    1260
GR1331.6  9750.0  1329.3  9765.0  1330.0  9780.0  1330.8  9800.0  1330.0  9830.0
GR1329.6  9840.0  1330.0  9850.0  1332.0  9860.0  1333.5  9875.0  1332.0  9885.0
GR1330.0  9905.0  1329.7  9925.0  1330.0  9950.0  1330.2  9960.0  1330.0  9970.0
GR1328.5 10000.0  1330.0 10005.0  1331.0 10300.0  1330.0 10555.0  1330.0 10780.0
GR1332.4 11160.0
NC 0.015   0.015   0.015     0.3     0.5
ET           9.1                                                   9260.0  9910.0
X1 0.672       8  9910.0 10260.0     190     130     150
GR1333.5  9260.0  1333.0  9555.0  1334.0  9640.0  1335.5  9910.0  1335.1 10000.0
GR1334.0 10260.0  1333.0 10750.0  1332.4 11160.0
NC 0.040   0.050   0.050     0.1     0.3
ET           9.1                                                   9525.0  9700.0
X1 0.681      12  9975.0 10030.0      80     240     500
GR1333.2  9525.0  1332.0  9570.0  1334.0  9670.0  1335.2  9700.0  1334.0  9730.0
GR1332.0  9975.0  1330.0  9995.0  1328.8 10000.0  1330.0 10020.0  1332.0 10030.0
GR1332.0 10160.0  1332.0 10875.0
ET           9.1                                                   9810.0  9945.0
X1 0.785      13  9980.0 10430.0     560     450     500
GR1333.5  9580.0  1333.7  9810.0  1332.2  9830.0  1334.0  9930.0  1336.3  9945.0
GR1336.0  9950.0  1334.0  9980.0  1333.0 10000.0  1333.5 10080.0  1334.0 10430.0
GR1334.4 10470.0  1334.0 10500.0  1336.0 10600.0
ET           9.1                                                   9830.0  9975.0
X1 0.843      13  9990.0 10395.0     320     380     350
GR1335.3  9785.0  1333.9  9800.0  1335.3  9830.0  1334.0  9870.0  1334.0  9955.0
GR1336.0  9960.0  1336.6  9975.0  1335.0  9990.0  1334.0 10000.0  1335.0 10395.0
GR1335.5 10720.0  1336.0 10860.0  1338.0 10920.0
ET           9.1                                                   9830.0  9970.0
X1 1.078      14  9990.0 10680.0    1240    1240    1240
GR1339.9  9625.0  1338.0  9800.0  1340.0  9830.0  1338.0  9875.0  1337.4  9910.0
GR1338.0  9945.0  1340.0  9955.0  1341.0  9970.0  1339.0  9990.0  1338.0 10000.0
GR1338.0 10000.0  1339.0 10680.0  1340.0 11610.0  1340.0 11690.0
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ET          9.1                                                   9810.0  9950.0
X1 1.227      15  9980.0 10840.0     790     790     790
GR1343.0  9815.0  1342.0  9840.0  1340.0  9900.0  1339.5  9920.0  1340.0  9925.0
GR1342.0  9935.0  1344.0  9945.0  1344.0  9950.0  1342.0  9970.0  1341.5  9980.0
GR1340.5 10000.0  1341.0 10105.0  1341.5 10840.0  1342.0 11290.0  1344.0 12150.0
ET          9.1                                                   9810.0  9950.0
X1 1.419      16  9980.0 10120.0    1010    1010    1010
GR1346.3  9810.0  1345.0  9835.0  1345.3  9875.0  1344.0  9910.0  1344.0  9920.0
GR1346.0  9930.0  1348.0  9940.0  1348.6  9950.0  1345.0  9980.0  1344.0 10000.0
GR1345.0 10120.0  1346.0 10220.0  1346.1 10310.0  1346.0 10400.0  1345.0 10950.0
GR1346.0 11230.0
ET          9.1                                                   9820.0  9960.0
X1 1.561      14  9990.0 10040.0     750     750     750
GR1348.8  9820.0  1347.9  9840.0  1347.2  9870.0  1346.0  9920.0  1346.0  9935.0
GR1348.0  9940.0  1350.0  9950.0  1350.7  9960.0  1347.0  9990.0  1346.0 10000.0
GR1347.0 10040.0  1348.0 10480.0  1348.0 11050.0  1350.0 12620.0
NC 0.040   0.050   0.040     0.1     0.3
ET          9.1                                                   9840.0  9980.0
X1 1.712      14  9995.0 10450.0     800     800     800
GR1350.9  9840.0  1350.0  9860.0  1349.0  9870.0  1350.0  9925.0  1349.0  9945.0
GR1350.0  9955.0  1352.0  9970.0  1352.9  9980.0  1351.0  9995.0  1350.0 10000.0
GR1350.4 10200.0  1351.0 10450.0  1351.0 11200.0  1352.0 11630.0
ET          9.1                                                   9810.0  9940.0
X1 1.860      12  9975.0 10380.0     780     780     780
GR1353.5  9810.0  1351.0  9840.0  1352.0  9855.0  1354.0  9880.0  1354.0  9920.0
GR1355.0  9940.0  1353.0  9975.0  1352.0 10000.0  1353.0 10380.0  1354.0 10530.0
GR1355.0 10640.0  1356.0 11220.0
NC 0.015   0.015   0.015     0.3     0.5
QT     1    1358
ET          9.1                                                   8985.0 10925.0
X1 1.939      11  9690.0 10270.0     430     830     680
X2                                                                      15
GR1360.1  8780.0  1359.2  8985.0  1358.3  9190.0  1356.7  9580.0  1356.8  9690.0
GR1356.7  9800.0  1356.4 10000.0  1357.4 10270.0  1358.6 10595.0  1359.6 10925.0
GR1360.7 11260.0
NC 0.040   0.040   0.040     0.1     0.3
ET          9.1                                                   9970.0 10470.0
X1 2.053      17  9990.0 10050.0     600     320     450
X2                                                                      15
GR1356.0  9600.0  1355.0  9680.0  1354.0  9790.0  1354.0  9805.0  1356.0  9830.0
GR1354.0  9850.0  1352.0  9870.0  1352.0  9935.0  1354.0  9950.0  1356.0  9955.0
GR1358.0  9970.0  1356.0  9990.0  1354.7 10000.0  1356.0 10050.0  1356.0 10220.0
GR1358.0 10470.0  1358.0 10545.0
EJ


ER
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****************************************************
*  WATER SURFACE PROFILES                          *
*  VERSION OF NOVEMBER 1976                        *
*  UPDATED MAY 1984                                *
*                                                  *
*  RUN DATE: 06/08/1990       TIME: 07:18:47.87    *
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*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 551-1748 (FTS) 448-2105    *
*************************************
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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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:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION   :::
:::         by: HAESTAD METHODS           :::
:::                                       :::
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
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==========
H A E S T A D M E T H O D S
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS RUN EXECUTED: 06/08/1990 07:18:48.48

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*************************************************
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T1      FLOOD INSURANCE STUDY FOR SOUTHERN PACIFIC RAILROAD
T2      QUEEN CREEK AREA-MARICOPA COUNTY, ARIZONA**89500L.DAT**
T3      100-YEAR FLOODPLAIN SPLIT FLOW AT GERMANN ROAD-FEBRUARY 1990

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ

    -10.       2.       0.       0.  0.002000     0.00     0.0       0.  1321.000    0.000

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

    -1.000    0.000   -1.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    38.000   43.000    1.000    2.000   26.000   39.000   21.000   22.000   27.000   28.000

    53.000   54.000    0.000   38.000   13.000   14.000   15.000   55.000   26.000   56.000

    63.000    1.000   51.000    4.000   42.000   57.000    0.000   38.000   39.000   33.000

     3.000   10.000   11.000   12.000    5.000    7.000    8.000   16.000   17.000   18.000

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

   -10.000  -10.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000
```

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

FLOW DISTRIBUTION FOR SECNO= 1.94 CWSEL= 1357.21

STA=	9456.	9580.	9690.	10270.
PER Q=	5.9	13.9	80.2	
AREA=	31.5	50.4	270.3	
VEL=	2.5	3.7	4.0	

FLOW DISTRIBUTION FOR SECNO= 2.05 CWSEL= 1358.10

STA=	9970.	9990.	10050.	10220.	10470.
PER Q=	1.9	26.3	47.7	24.0	
AREA=	22.2	165.6	358.7	277.5	
VEL=	1.2	2.2	1.8	1.2	

THIS RUN EXECUTED: 06/08/1990 07:19:04.40

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*****************************************
 HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
 ERROR CORR -  01,02,03,04,05,06
 MODIFICATION -  50,51,52,53,54,55,56
*****************************************
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR FLOODPLAIN SPLI

SUMMARY PRINTOUT

	SECNO	Q	CWSEL	CRIWS	VCH	XLCH	STCHL	STCHR	STENCL	STENCR	SSTA	ENDST
	0.038	273.00	1322.20	0.00	0.00	0.00	9990.00	10030.00	9790.00	9925.00	9815.41	9890.99
	0.199	273.00	1323.46	0.00	0.00	840.00	9995.00	10025.00	9835.00	9960.00	9850.73	9948.66
*	0.407	273.00	1328.38	1328.38	0.00	1100.00	9980.00	10575.00	9750.00	9875.00	9841.37	9875.00
	0.646	273.00	1331.90	0.00	0.00	1260.00	9970.00	10300.00	9750.00	9875.00	9750.00	9859.45
*	0.672	273.00	1333.52	1333.52	0.00	150.00	9910.00	10260.00	9260.00	9910.00	9260.00	9599.20
	0.681	273.00	1333.88	0.00	0.00	500.00	9975.00	10030.00	9525.00	9700.00	9525.00	9664.31
	0.785	273.00	1334.64	0.00	0.00	500.00	9980.00	10430.00	9810.00	9945.00	9810.00	9934.17
	0.843	273.00	1335.11	0.00	0.00	350.00	9990.00	10395.00	9830.00	9975.00	9835.79	9957.78
	1.078	273.00	1339.15	0.00	0.00	1240.00	9990.00	10680.00	9830.00	9970.00	9849.14	9950.75
	1.227	273.00	1341.66	0.00	0.00	790.00	9980.00	10840.00	9815.00	9950.00	9850.06	9933.32
	1.419	273.00	1345.86	0.00	0.00	1010.00	9980.00	10120.00	9810.00	9950.00	9818.32	9929.34
	1.561	273.00	1348.07	0.00	0.00	750.00	9990.00	10040.00	9820.00	9960.00	9836.29	9940.33
	1.712	273.00	1350.54	0.00	0.00	800.00	9995.00	10450.00	9840.00	9980.00	9848.02	9959.04
	1.860	273.00	1353.70	0.00	0.00	780.00	9975.00	10380.00	9810.00	9940.00	9810.00	9876.26
*	1.939	1358.00	1357.21	1357.21	4.03	680.00	9690.00	10270.00	8985.00	10925.00	9456.08	10218.25
	2.053	1358.00	1358.10	0.00	2.16	450.00	9990.00	10050.00	9970.00	10470.00	9970.00	10470.00

100-YEAR FLOODPLAIN SPLI

SUMMARY PRINTOUT

	SECNO	QLOB	QCH	QROB	VLOB	VCH	VROB	TELMX	CWSEL	DIFWSX	TOPWID	ELMIN	ALPHA
	0.038	273.00	0.00	0.00	2.38	0.00	0.00	1321.50	1322.20	0.00	75.58	1320.00	1.00
	0.199	273.00	0.00	0.00	1.80	0.00	0.00	1322.70	1323.46	1.27	97.93	1321.00	1.00
*	0.407	273.00	0.00	0.00	6.42	0.00	0.00	1328.00	1328.38	4.91	33.63	1326.47	1.00
	0.646	273.00	0.00	0.00	1.51	0.00	0.00	1332.40	1331.90	3.52	109.45	1329.30	1.00
*	0.672	273.00	0.00	0.00	3.00	0.00	0.00	1332.40	1333.52	1.62	339.20	1333.00	1.00
	0.681	273.00	0.00	0.00	1.86	0.00	0.00	1332.00	1333.88	0.36	139.31	1332.00	1.00
	0.785	273.00	0.00	0.00	1.44	0.00	0.00	1336.00	1334.64	0.76	124.17	1332.20	1.00
	0.843	273.00	0.00	0.00	2.37	0.00	0.00	1338.00	1335.11	0.47	121.99	1334.00	1.00
	1.078	273.00	0.00	0.00	2.28	0.00	0.00	1340.00	1339.15	4.04	101.61	1337.40	1.00
	1.227	273.00	0.00	0.00	2.83	0.00	0.00	1344.00	1341.66	2.51	83.26	1339.50	1.00
	1.419	273.00	0.00	0.00	2.58	0.00	0.00	1346.00	1345.86	4.19	111.01	1344.00	1.00
	1.561	273.00	0.00	0.00	2.18	0.00	0.00	1350.00	1348.07	2.21	104.04	1346.00	1.00
	1.712	273.00	0.00	0.00	2.65	0.00	0.00	1352.00	1350.54	2.47	111.03	1349.00	1.00
	1.860	273.00	0.00	0.00	2.88	0.00	0.00	1356.00	1353.70	3.16	66.26	1351.00	1.00
*	1.939	268.49	1089.51	0.00	3.28	4.03	0.00	1360.70	1357.21	3.51	762.17	1356.40	1.02
	2.053	25.95	357.45	974.60	1.17	2.16	1.53	1358.00	1358.10	0.89	500.00	1354.70	1.08

100-YEAR FLOODPLAIN SPLI

SUMMARY PRINTOUT

	SECNO	XLCH	K*CHSL	EG	HV	HL	OLOSS	10K*S	VOL	DEPTH	K*XNL	K*XNCH	K*XNR
	0.038	0.00	0.00	1322.29	0.09	0.00	0.00	19.71	0.00	2.20	40.00	0.00	0.00
	0.199	840.00	1.19	1323.51	0.05	1.22	0.00	11.20	2.57	2.46	40.00	0.00	0.00
*	0.407	1100.00	4.97	1329.02	0.64	3.26	0.18	211.77	5.02	1.91	40.00	0.00	0.00
	0.646	1260.00	2.25	1331.93	0.04	2.86	0.06	8.10	8.24	2.60	40.00	0.00	0.00
*	0.672	150.00	24.67	1333.66	0.14	0.32	0.05	52.71	8.83	0.52	15.00	0.00	0.00
	0.681	500.00	-2.00	1333.93	0.05	0.27	0.01	22.98	9.05	1.88	40.00	0.00	0.00
	0.785	500.00	0.40	1334.67	0.03	0.73	0.00	8.48	11.21	2.44	40.00	0.00	0.00
	0.843	350.00	5.14	1335.20	0.09	0.51	0.02	40.63	12.33	1.11	40.00	0.00	0.00
	1.078	1240.00	2.74	1339.23	0.08	4.03	0.00	26.61	15.67	1.75	40.00	0.00	0.00
	1.227	790.00	2.66	1341.79	0.12	2.54	0.01	39.76	17.63	2.16	40.00	0.00	0.00
	1.419	1010.00	4.46	1345.96	0.10	4.17	0.00	42.90	19.97	1.86	40.00	0.00	0.00
	1.561	750.00	2.67	1348.15	0.07	2.18	0.00	21.01	21.97	2.07	40.00	0.00	0.00
	1.712	800.00	3.75	1350.65	0.11	2.49	0.01	50.89	24.06	1.54	40.00	0.00	0.00
	1.860	780.00	2.56	1353.83	0.13	3.17	0.01	33.27	25.83	2.70	40.00	0.00	0.00
*	1.939	680.00	7.94	1357.44	0.24	2.07	0.05	40.45	28.82	0.81	15.00	15.00	0.00
	2.053	450.00	-3.78	1358.15	0.05	0.68	0.02	8.74	34.12	3.40	40.00	40.00	40.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION  SECNO=     0.407  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     0.407  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     0.407  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=     0.672  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     0.672  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     0.672  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION  SECNO=     1.939  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=     1.939  PROFILE= 1  PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION  SECNO=     1.939  PROFILE= 1  20 TRIALS ATTEMPTED TO BALANCE WSEL
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THIS RUN EXECUTED: 06/08/1990 07:19:07.20

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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