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**FINAL REPORT  
FOR  
27 MME WASH  
FLOOD PLAIN DELINEATION STUDY**

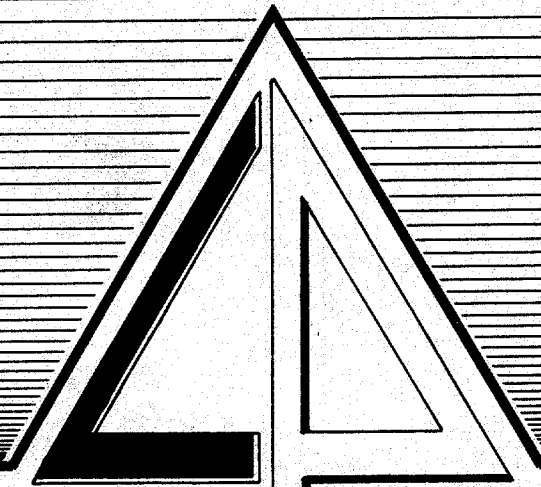
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INPUT  
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**PREPARED FOR  
PIMA COUNTY DEPARTMENT OF TRANSPORTATION &  
FLOOD CONTROL DISTRICT  
201 NORTH STONE AVENUE  
TUCSON, ARIZONA 85701**

**AUGUST 1992**

**VOLUME II**

*also Vol. I*



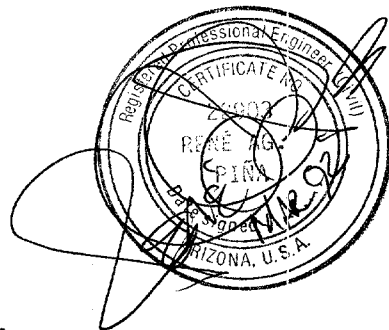
**Collins-Piña Consulting Engineers Inc.**  
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001

**APPENDIX A**

**HYDROLOGIC CALCULATIONS  
FOR  
27 MILE WASH  
FLOOD PLAIN DELINEATION STUDY**

**MARCH 1992**



**PREPARED BY:**

**COLLINS-PINA CONSULTING ENGINEERS, INC.  
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**CPE JOB NO. 3308**

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## 1. INTRODUCTION

This report describes the hydrologic analysis conducted as part of the 27 Mile Wash Floodplain Delineation Study. It will be incorporated into the final hydrology-hydraulics report for the study.

### 1.1 Purpose of Study

Development in the lower end of the watershed has occurred without the knowledge of the floodplain's characteristics. As a result, some structures are located within the 100-year and possibly the 10-year floodplain.

Pima County Flood Control District (PCFCD) wishes to have the 10- and 100-year floodplain delineated to manage future development within the basin. There is also the possibility that a Letter of Map Revision (LOMR) may be submitted to the Federal Emergency Management Agency (FEMA) for the 27 Mile Wash so that it may be included in revised FEMA maps.

### 1.2 Study Area

The 27 Mile Wash watershed is located in Township 10 South and 11 South, Range 14 East. The upper portion of the watershed (approximately 65% of the watershed area included in this study) is located in Pinal County and the lower portion is located in Pima County. The 27 Mile Wash flows through the town of Catalina and crosses under Highway 89 through a 6-10'x 6' reinforced concrete box culvert. The wash combines with Big Wash approximately 6500 feet downstream of Highway 89. The 27 Mile Wash watershed is 2614 acres in size at the Highway 89 crossing.

Presently, about two-thirds of the watershed area located within Pima County has

been developed. The majority of this development is zoned General Rural - 1. In contrast, almost the entire watershed area located within Pinal County is presently undeveloped. The watershed area within Pinal County lies within the Los Cordones Area Plan, the majority of which is zoned medium residential. The watershed type is foothills and suburban foothills, with a desert brush cover of 25%.

In the upper regions of the watershed where drainage basins A, B, D, and F begin at the tops of ridges, the slopes are steep. The slopes then decrease to the south and stabilize at approximately 1% throughout the lower half of the watershed.

### **1.3 Previous Studies**

A drainage study was conducted for the U.S. Route 89 from the Cañada del Oro Wash to the Pima County line roadway improvements project. The report was completed by Dooley-Jones and Associates, and published in August, 1987. The study analyzed the 27 Mile Wash watershed and used the SCS Method: Part 1, recommended by ADOT to compute the existing and future 50-year peak flow rates for 27 Mile Wash at the Highway 89 crossing.

A drainage analysis of the two main tributary channels for 27 Mile Wash was completed by the PCFCD for an "in-house" report, dated December 17, 1984. The analysis used the PCFCD Flood Peak Method to compute the existing 100-year peak flows for the two branches (concentration points 1 and 2 in Figure 1), and added the two peaks flows to estimate the peak at their confluence (concentration point 3).

## **2. METHODOLOGY**

### **2.1 Hydrology**

The 27 Mile Wash watershed was divided into 7 basins (A through G, Figure 1). Basins A and B are drained by the two main tributary channels that combine to form 27 Mile Wash. Basins D and F are drained by tributary channels that combine with 27 Mile Wash along its course. Basins C, E, and G lie along the main channel of 27 Mile Wash.

The peak flow rate and runoff hydrograph for the 10-year and 100-year storm events for both existing and future conditions were generated for each basin using the Pima County Flood Peak and Curvilinear Hydrograph Methodology. The runoff hydrographs for each basin were routed down the 27 Mile Wash channel and combined using the HEC-1 computer program. The Modified Puls Normal Depth routing method within HEC-1 was used.

The peak flow rates at concentration points 3, 5, 7, and 8 were calculated by hydrograph routing and combining. Peak flows at locations along the tributary channels in basins F and D upstream of their confluence with 27 Mile Wash (concentration points 4.1, 4.2, 4.3, 6.1, 6.2 and 6.3), and at the locations the two main channels in basins A and B cross the county line (concentration points 1.1 and 2.1) were calculated using the Pima County Flood Peak Method.

### **2.2 Geohydrologic Data**

The drainage basin boundaries within Pima County were delineated using 100 scale aerial photo, 2 foot contour interval maps. The drainage basin boundaries within Pinal County were delineated using a 500 scale aerial photo along with USGS Quad maps.

The soil types were taken from SCS soil survey maps for Pima and Pinal counties.

The water course lengths and slopes were measured from the 100 scale aerial photo contour maps and the USGS Quad maps. The vegetative cover density was estimated from aerial photos and site visits.

The percent impervious area values for the existing conditions were computed using aerial photos dated January, 1987. The values for future conditions were computed using zoning maps. All the parameter values used are included in the Appendix.

### 3. RESULTS

Table 3.1 shows the basin size and peak flow rates for each of the 7 basins. Table 3.2 shows the contributing drainage area and peak flow rates for each concentration point.

**TABLE 3.1**  
**DRAINAGE BASIN HYDROLOGY**

Drainage Basin	Area (acres)	10-Year Peak Flow Rates (cfs)		100-Year Peak Flow Rates (cfs)	
		Existing Conditions	Future Conditions	Existing Conditions	Future Conditions
A	865	781	1196	1736	2163
B	941	813	1170	1832	2212
C	130	133	182	306	373
D	207	226	299	519	610
E	39	56	82	130	159
F	300	293	402	679	812
G	132	162	234	370	459



TABLE 3.2

PEAK FLOW RATES AT CONCENTRATION POINTS

Concentration Point	Contributing Area (acres)	10-Year Peak Flow Rates (cfs)		100-Year Peak Flow Rates (cfs)	
		Existing Conditions	Future Conditions	Existing Conditions	Future Conditions
1	865	781	1196	1736	2163
1.1	619	781	1177	1614	2063
2	941	813	1170	1832	2212
2.1	852	878	1224	1873	2276
3	1806	1573	2322	3543	4325
4	207	226	299	519	610
4.1	122	195	258	425	497
4.2	72	115	158	257	309
4.3	34	72	109	159	194
5	2143	1701	2366	3547	4318
6	300	293	402	679	812
6.1	249	326	433	718	843
6.2	164	264	352	569	670
6.3	42	84	121	182	229
7	2482	1842	2488	3704	4532
8	2614	1849	2488	3690	4499

\* Pima County Regulatory Peak Discharge at concentration point 3 is 3796 cfs (from Ordinance No. 1988-FC2).

## REFERENCES

- 1) Hydrology Manual for Engineering Design and Flood Plain Management Within Pima County, Arizona, Pima County Department of Transportation and Flood Control District, September, 1979.
- 2) Flood Plain and Erosion Hazard Management Ordinance No. 1988-FC2 for Pima County, Arizona, Pima County Department of Transportation and Flood Control District, December 6, 1988.
- 3) Final Roadway Drainage Report for U.S. Route 89 - CDO Wash to Pinal County Line, Dooley-Jones and Associates, August 14, 1987.
- 4) 27 Mile Wash "In-House" Drainage Report, Pima County Flood Control District, December 17, 1984.
- 5) USGS 7.5 Minute Quadrangle Maps: Oro Valley, Arizona, 1981; and Oracle Junction, Arizona, 1988.
- 6) Soil Conservation Service Updated Pima County Soil Survey Maps on USGS Orthophotoquad Maps: Mount Lemmon NW, Arizona and Oracle SW, Arizona.
- 7) 100 Scale Aerial Photo With 2 Foot Contour Maps for Sections 3, 4, and 9, T-11-S, R-14-E, Photo Dates September and December, 1984.
- 8) Technical Release 55, Urban Hydrology for Small Watersheds, USDA Soil Conservation Service, Engineering Division, Revised June, 1986.

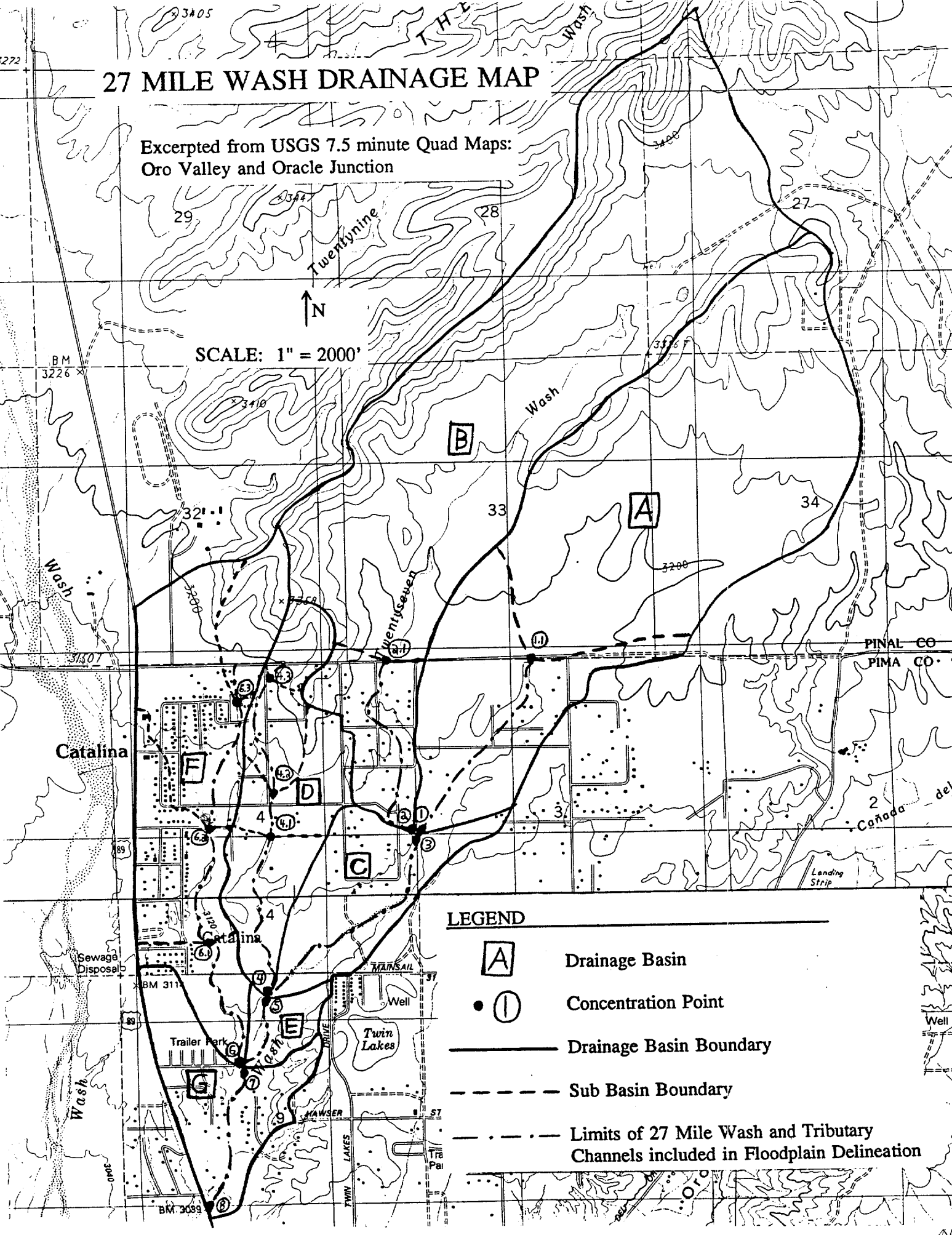
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# 27 MILE WASH DRAINAGE MAP

Excerpted from USGS 7.5 minute Quad Maps:  
Oro Valley and Oracle Junction



SCALE: 1" = 2000'



## LEGEND



Drainage Basin



Concentration Point

— Drainage Basin Boundary

- - - Sub Basin Boundary

- · - · - Limits of 27 Mile Wash and Tributary Channels included in Floodplain Delineation

PINAL CO  
PIMA CO

2  
Cofada del

Landing Strip

Well

Well

Well

Well

Well

Well

Well

**PIMA COUNTY  
FLOOD PEAK METHOD  
WORK SHEETS**

**TAB A**



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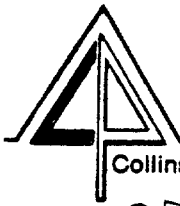
Project 27 Mile Wash Flood Plain Delin.  
Existing Detention Basin.

Job No. 3308  
Calc. J.A.D.  
Date \_\_\_\_\_

Sht. \_\_\_\_\_ of \_\_\_\_\_  
Chk. \_\_\_\_\_ B'chk. \_\_\_\_\_  
Date \_\_\_\_\_ Date \_\_\_\_\_

There is a small detention/retention basin in the SW $\frac{1}{4}$  of the SW $\frac{1}{4}$  of Section 4, that appears to be an old stock pond. This basin has an approximate storage capacity of 3 acre-feet before it begins to spill over an earthen weir and flow downstream. The drainage area that contributes runoff to the basin is approximately 40 acres in size.

Because the basins effect on the peak flows in 27 Mile Wash are negligible, and the chance that the basins storage capacity might be full from a previous storm event when the design storm occurs, the basins storage capacity was not included in the hydrology modeling.



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Project 27 Mile Wash Flood Plain Delin. Job No. 3308 Sht. 1 of 2  
Zoning Percent Impervious Values Calc. J.P.A. Chk. \_\_\_\_\_ B'chk. \_\_\_\_\_  
 Date \_\_\_\_\_ Date \_\_\_\_\_ Date \_\_\_\_\_

The percent impervious values for existing conditions were computed from aerial photographs flown in January 1987.

The percent impervious values for future conditions were computed using zoning maps. The percent impervious values used for zoning classes found in the Pinal County portion of the watershed are as follows:

<u>* Zoning Class</u>	<u>Percent Impervious</u>
Low Residential	5
Medium Low Residential	25
Medium Residential	50
Medium High Residential	70
Commercial	85

\* Zoning class descriptions from the Los Cordones Area Plan by Cella Barr Associates July, 1986.



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Project \_\_\_\_\_

Job No. 3308

Sht. 2 of 2

Calc. J.B.P.

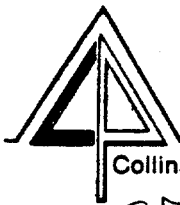
Chk. \_\_\_\_\_ B'chk. \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_ Date \_\_\_\_\_

The percent impervious values used for zoning classes found in the Pima County portion of the watershed are as follows:

<u>Zoning Class</u>	<u>Percent Impervious</u>
GR-1: General Rural	20
SH: Suburban Homeland	20
TH: Travel Trailer Court	25
CMH-1: Mobile Home	25
CR-3: Single Residence	50
CR-4: Single Residence	65
TR: Transitional	65
CB-1: Local Business	85
CB-2: General Business	85



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Project 27 Mile Wash Flood Plain Delin. Job No. 3308 Sht. \_\_\_\_\_ of \_\_\_\_\_  
CN's Used Calc. J.A.G. Chk. \_\_\_\_\_ B'chk. \_\_\_\_\_  
 Date \_\_\_\_\_ Date \_\_\_\_\_ Date \_\_\_\_\_

The SCS Soil Surveys for Pima and Pinal County indicate that the 27 Mile Wash Watershed contains A Soils. The Pima County Hydrology Manual does not recommend curve numbers for A soils.

Therefore a curve number of 63 was used for A soils based upon Table 2-2d in the TR-55 manual for desert shrub with poor ground cover.

The Curve numbers used for all 4 soils types are listed below based on a 25% cover density for desert brush.

<u>Soil Type</u>	<u>Curve Number</u>
A	63
B	81
C	87
D	91



Table 2-2d.—Runoff curve numbers for arid and semiarid rangelands<sup>1</sup>

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition <sup>2</sup>	A <sup>3</sup>	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

<sup>1</sup>Average runoff condition, and  $I_a = 0.2S$ . For range in humid regions, use table 2-2c.

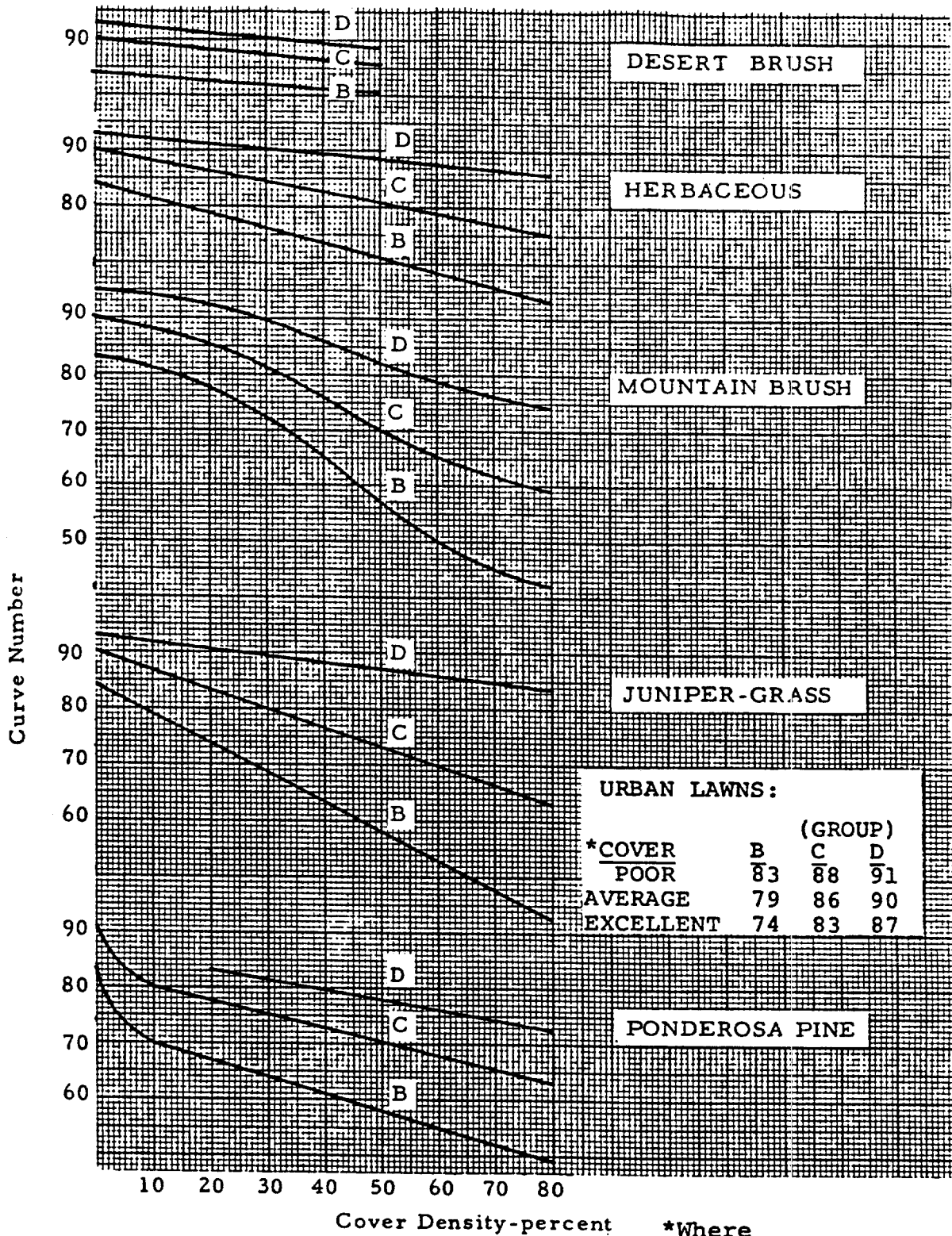
<sup>2</sup>Poor: <30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: >70% ground cover.

<sup>3</sup>Curve numbers for group A have been developed only for desert shrub.

From TR-55: Urban Hydrology for  
Small Watersheds



\*Where  
 Poor = Less than 1/3.  
 Average = 1/3 to 2/3.  
 Excellent = more than 2/3.

HYDROLOGIC SOIL - COVER COMPLEXES  
 AND ASSOCIATED CURVE NUMBERS

Source : Soil Conservation Service  
 (Except Urban Lawns)

**FLOOD PEAK DISCHARGE  
COMPUTATION SHEETS**

**TAB B**

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 1

Basin A

Watershed Area (A): 865.00 Acres  
Length of Watercourse (Lc): 15700. ft.  
Length to Center of Gravity (Lca): 8650. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

1450.00	100.00
1300.00	40.00
5500.00	80.00
3000.00	40.00
4450.00	48.00

Mean Slope(Sc): .015 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS                      (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 34. % B  
Soil Group(s): 35. % C  
Soil Group(s): 30. % D  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 25. %  
Impervious cover: 35. % (FUTURE )

CN(s): 82 (pervious areas)	CN*(s): 86.36
CN(s): 88 (pervious areas)	CN*(s): 90.85
CN(s): 91 (pervious areas)	CN*(s): 93.18
CN(s): 99 (impervious areas)	CN*(s): 99.00

Runoff to Rainfall Ratio(s),(C):	.525 (pervious areas)
	.956 (impervious areas)
Runoff to Rainfall Ratio(s),(C):	.655 (pervious areas)
	.956 (impervious areas)
Runoff to Rainfall Ratio(s),(C):	.731 (pervious areas)
	.956 (impervious areas)

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

PAGE 2

Runoff Supply Rate(q): .749 i in./hr. (function of i)  
Time of Concentration(Tc): 1.155 q-0.4 hrs. (function of q)  
Iterative Solution of Tc: 43.00 min.  
Rainfall Intensity (i) at Tc: 3.31 in./hr.  
Runoff Supply Rate (q) at Tc: 2.48 in./hr.  
Peak Discharge:  
1.008qA(acres): 2163. cfs.

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 1.1

Watershed Area (A): 619.00 Acres  
Length of Watercourse (Lc): 11250. ft.  
Length to Center of Gravity (Lca): 5750. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

1450.00	100.00
1300.00	40.00
5500.00	80.00
3000.00	40.00

Mean Slope(Sc): .018 Ft./Ft.

Watershed Type(s): FOOTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 27. % B  
Soil Group(s): 38. % C  
Soil Group(s): 35. % D  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 25. %  
Impervious cover: 42. % (FUTURE )

CN(s): 82 (pervious areas)	CN*(s): 86.36
CN(s): 88 (pervious areas)	CN*(s): 90.85
CN(s): 91 (pervious areas)	CN*(s): 93.18
CN(s): 99 (impervious areas)	CN*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .525 (pervious areas)  
.956 (impervious areas)  
Runoff to Rainfall Ratio(s),(C): .655 (pervious areas)  
.956 (impervious areas)  
Runoff to Rainfall Ratio(s),(C): .731 (pervious areas)  
.956 (impervious areas)

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

PAGE 2

Runoff Supply Rate(q): .775 i in./hr. (function of i)  
Time of Concentration(Tc): .858 q-0.4 hrs. (function of q)  
Iterative Solution of Tc: 29.00 min.  
Rainfall Intensity (i) at Tc: 4.27 in./hr.  
Runoff Supply Rate (q) at Tc: 3.31 in./hr.  
Peak Discharge:  
1.008qA(acres): 2063. cfs.

02

PIMA COUNTY METHODD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
 DATE PREPARED: 03/09/92  
 Prepared by: GERARDO

Name and Location: 27 MILE WASH  
 Drainage Concentration Point: 2

Basin B

Watershed Area (A): 941.00 Acres  
 Length of Watercourse (Lc): 18100. ft.  
 Length to Center of Gravity (Lca): 8750. ft.

Change in Length(L)-ft.	Change in Elevation(H)-ft.
1250.00	240.00
4250.00	120.00
9050.00	100.00
3550.00	70.00

Mean Slope(Sc): .017 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 2. % A  
 Soil Group(s): 28. % B  
 Soil Group(s): 24. % C  
 Soil Group(s): 46. % D  
 Cover type(s): DESERT BRUSH  
 Cover Density(pervious area): 30. %  
 Impervious cover: 29. % (FUTURE )

CN(s): \*\*\* (pervious areas) CN\*(s): 71.03  
 CN(s): 81 (pervious areas) CN\*(s): 85.52  
 CN(s): 87 (pervious areas) CN\*(s): 90.02  
 CN(s): 90 (pervious areas) CN\*(s): 92.35  
 CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .215 (pervious areas)  
 .956 (impervious areas)  
 Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
 .956 (impervious areas)  
 Runoff to Rainfall Ratio(s),(C): .529 (pervious areas)  
 .956 (impervious areas)  
 Runoff to Rainfall Ratio(s),(C): .703 (pervious areas)  
 .956 (impervious areas)

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

PAGE 2

Runoff Supply Rate(q): .716 i in./hr. (function of i)  
 Time of Concentration(Tc): 1.182 q-0.4 hrs. (function of q)  
 Iterative Solution of Tc: 44.00 min.  
 Rainfall Intensity (i) at Tc: 3.26 in./hr.  
 Runoff Supply Rate (q) at Tc: 2.33 in./hr.  
 Peak Discharge:  
 1.008qA(acres): 2212. cfs.

022

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 2.1

Watershed Area (A): 852.00 Acres  
Length of Watercourse (Lc): 14550. ft.  
Length to Center of Gravity (Lca): 6750. ft.

Change in Length(L)-ft.	Change in Elevation(H)-ft.
1250.00	240.00
4250.00	120.00
9050.00	100.00
Mean Slope(Sc): .016 Ft./Ft.	

Watershed Type(s): FODTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 2. % A  
 Soil Group(s): 24. % B  
 Soil Group(s): 23. % C  
 Soil Group(s): 51. % D  
 Cover type(s): DESERT BRUSH  
 Cover Density(pervious area): 30. %  
 Impervious cover: 29. % (FUTURE )

CN(s): *** (pervious areas)	CN*(s): 71.03
CN(s): 81 (pervious areas)	CN*(s): 85.52
CN(s): 87 (pervious areas)	CN*(s): 90.02
CN(s): 90 (pervious areas)	CN*(s): 92.35
CN(s): 99 (impervious areas)	CN*(s): 99.00

Runoff to Rainfall Ratio(s),(C):	.215 (pervious areas)
	.956 (impervious areas)
Runoff to Rainfall Ratio(s),(C):	.504 (pervious areas)
	.956 (impervious areas)
Runoff to Rainfall Ratio(s),(C):	.629 (pervious areas)
	.956 (impervious areas)
Runoff to Rainfall Ratio(s),(C):	.703 (pervious areas)
	.956 (impervious areas)

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

PAGE 2

Runoff Supply Rate(q): .725 i in./hr. (function of i)  
 Time of Concentration(Tc): 1.034 q-0.4 hrs. (function of q)  
 Iterative Solution of Tc: 37.00 min.  
 Rainfall Intensity (i) at Tc: 3.66 in./hr.  
 Runoff Supply Rate (q) at Tc: 2.65 in./hr.  
 Peak Discharge:  
 1.008qA(acres): 2276. cfs.

023

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308

DATE PREPARED: 03/09/92

Prepared by: GERARDO

Name and Location: 27 MILE WASH

Drainage Concentration Point: 5

Basin C

Watershed Area (A): 130.00 Acres

Length of Watercourse (Lc): 6000. ft.

Length to Center of Gravity (Lca): 3260. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

1675.00    54.00

4325.00    45.00

Mean Slope(Sc): .013 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS                      (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 2.236 in.	Areal Value:	in.

Soil Group(s): 11. % A

Soil Group(s): 61. % B

Soil Group(s): 28. % C

Cover type(s): DESERT BRUSH

Cover Density(pervious area): 30. %

Impervious cover: 20. % (FUTURE )

CN(s): 63 (pervious areas) CN\*(s): 71.03

CN(s): 81 (pervious areas) CN\*(s): 85.52

CN(s): 87 (pervious areas) CN\*(s): 90.02

CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .215 (pervious areas)  
.956 (impervious areas)

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)

Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
.956 (impervious areas)

Runoff Supply Rate(q): .597 i in./hr. (function of i)

Time of Concentration(Tc): .742 q-0.4 hrs. (function of q)

Iterative Solution of Tc: 24.00 min.

Rainfall Intensity (i) at Tc: 4.77 in./hr.

Runoff Supply Rate (q) at Tc: 2.85 in./hr.

Peak Discharge:

1.008qA(acres): 373. cfs.

024



PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 4

Basin D

Watershed Area (A): 207.00 Acres  
Length of Watercourse (Lc): 8600. ft.  
Length to Center of Gravity (Lca): 5020. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

625.00	118.00
975.00	40.00
325.00	10.00
1175.00	32.00
1200.00	22.00
1045.00	21.00
3255.00	41.00

Mean Slope(Sc): .020 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS                      (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 67. % B  
Soil Group(s): 33. % C  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 30. %  
Impervious cover: 21. % (FUTURE )

CN(s): 81 (pervious areas) CN\*(s): 85.52  
CN(s): 87 (pervious areas) CN\*(s): 90.02  
CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)  
Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
.956 (impervious areas)

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

PAGE 2

Runoff Supply Rate(q): .630 i in./hr. (function of i)  
Time of Concentration(Tc): .783 q-0.4 hrs. (function of q)  
Iterative Solution of Tc: 25.00 min.  
Rainfall Intensity (i) at Tc: 4.64 in./hr.  
Runoff Supply Rate (q) at Tc: 2.92 in./hr.  
Peak Discharge:  
1.008qA(acres): 610. cfs.

025

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDD

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 4.1

Watershed Area (A): 122.00 Acres  
Length of Watercourse (Lc): 5345. ft.  
Length to Center of Gravity (Lca): 2350. ft.

Change in Length(L)-ft. Change in Elevation(H)-ft.

625.00	118.00
975.00	40.00
325.00	10.00
1175.00	32.00
1200.00	22.00
1045.00	21.00

Mean Slope(Sc): .029 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 74. % B  
Soil Group(s): 26. % C  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 30. %  
Impervious cover: 21. % (FUTURE )

CN(s): 81 (pervious areas) CN\*(s): 85.52  
CN(s): 87 (pervious areas) CN\*(s): 90.02  
CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)  
Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
.956 (impervious areas)  
Runoff Supply Rate(q): .625 i in./hr. (function of i)  
Time of Concentration(Tc): .470 q-0.4 hrs. (function of q)  
Iterative Solution of Tc: 13.00 min.  
Rainfall Intensity (i) at Tc: 6.47 in./hr.  
Runoff Supply Rate (q) at Tc: 4.04 in./hr.  
Peak Discharge:  
1.008qA(acres): 497. cfs.

02/21

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308

DATE PREPARED: 03/09/92

Prepared by: GERARDO

Name and Location: 27 MILE WASH

Drainage Concentration Point: 4.2

Watershed Area (A): 72.00 Acres  
 Length of Watercourse (Lc): 4300. ft.  
 Length to Center of Gravity (Lca): 2100. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

625.00	118.00
975.00	40.00
325.00	10.00
1175.00	32.00
1200.00	22.00

Mean Slope(Sc): .032 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 88. % B

Soil Group(s): 12. % C

Cover type(s): DESERT BRUSH

Cover Density(pervious area): 30. %

Impervious cover: 22. % (FUTURE )

CN(s): 81 (pervious areas) CN\*(s): 85.52

CN(s): 87 (pervious areas) CN\*(s): 90.02

CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
 .956 (impervious areas)

Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
 .956 (impervious areas)

Runoff Supply Rate(q): .615 i in./hr. (function of i)

Time of Concentration(Tc): .412 q-0.4 hrs. (function of q)

Iterative Solution of Tc: 11.00 min.

Rainfall Intensity (i) at Tc: 6.92 in./hr.

Runoff Supply Rate (q) at Tc: 4.25 in./hr.

Peak Discharge:

1.008qA(acres): 309. cfs.

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 4.3

Watershed Area (A): 34.00 Acres  
Length of Watercourse (Lc): 1925. ft.  
Length to Center of Gravity (Lca): 950. ft.

Change in Length(L)-ft.            Change in Elevation(H)-ft.

625.00	118.00
975.00	40.00
325.00	10.00

Mean Slope(Sc): .056 Ft./Ft.

Watershed Type(s): Foothills (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 100. Z B  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 30. %  
Impervious cover: 24. % (FUTURE )

CN(s): B1 (pervious areas) CN\*(s): 85.52  
CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)

Runoff Supply Rate(q): .614 i in./hr. (function of i)

Time of Concentration(Tc): .203 q-0.4 hrs. (function of q)

Iterative Solution of Tc: 5.00 min.

Rainfall Intensity (i) at Tc: 9.22 in./hr.

Runoff Supply Rate (q) at Tc: 5.66 in./hr.

Peak Discharge:

1.00BqA(acres): 194. cfs.

028

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 7

Basin E

Watershed Area (A): 39.00 Acres  
Length of Watercourse (Lc): 2150. ft.  
Length to Center of Gravity (Lca): 1050. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

650.00    33.00  
1500.00     16.00

Mean Slope(Sc): .015 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS                      (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 15. % A  
Soil Group(s): 78. % B  
Soil Group(s): 7. % C  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 30. %  
Impervious cover: 20. % (FUTURE )

CN(s): 63 (pervious areas)	CN*(s): 71.03
CN(s): 81 (pervious areas)	CN*(s): 85.52
CN(s): 87 (pervious areas)	CN*(s): 90.02
CN(s): 99 (impervious areas)	CN*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .215 (pervious areas)  
.956 (impervious areas)

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)

Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
.956 (impervious areas)

Runoff Supply Rate(q): .566 i in./hr. (function of i)

Time of Concentration(Tc): .377 q-0.4 hrs. (function of q)

Iterative Solution of Tc: 10.00 min.

Rainfall Intensity (i) at Tc: 7.16 in./hr.

Runoff Supply Rate (q) at Tc: 4.05 in./hr.

Peak Discharge:

1.008qA(acres): 159. cfs.

020

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308

DATE PREPARED: 03/09/92

Prepared by: GERARDD

Name and Location: 27 MILE WASH

Drainage Concentration Point: 6

Basin F

Watershed Area (A): 300.00 Acres

Length of Watercourse (Lc): 10350. ft.

Length to Center of Gravity (Lca): 5420. ft.

Change in Length(L)-ft. Change in Elevation(H)-ft.

1250.00	120.00
875.00	40.00
630.00	30.00
2450.00	46.00
2050.00	25.00
3095.00	38.00

Mean Slope(Sc): .019 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 2. % A

Soil Group(s): 84. % B

Soil Group(s): 14. % C

Cover type(s): DESERT BRUSH

Cover Density(pervious area): 30. %

Impervious cover: 25. % (FUTURE )

CN(s): 63 (pervious areas)	CN*(s): 71.03
CN(s): 91 (pervious areas)	CN*(s): 85.52
CN(s): 87 (pervious areas)	CN*(s): 90.02
CN(s): 99 (impervious areas)	CN*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .215 (pervious areas)  
.956 (impervious areas)

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)

Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
.956 (impervious areas)

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

PAGE 2

Runoff Supply Rate(q): .629 i in./hr. (function of i)

Time of Concentration(Tc): .871 q-0.4 hrs. (function of q)

Iterative Solution of Tc: 29.00 min.

Rainfall Intensity (i) at Tc: 4.27 in./hr.

Runoff Supply Rate (q) at Tc: 2.69 in./hr.

Peak Discharge:

1.008qA(acres): 812. cfs.

030

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 6.1

Watershed Area (A): 249.00 Acres  
Length of Watercourse (Lc): 7255. ft.  
Length to Center of Gravity (Lca): 3925. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

1250.00	120.00
875.00	40.00
630.00	30.00
2450.00	46.00
2050.00	25.00

Mean Slope(Sc): .023 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS                      (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 88. % B  
Soil Group(s): 12. % C  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 30. %  
Impervious cover: 27. % (FUTURE )

CN(s): 81 (pervious areas) CN\*(s): 85.52  
CN(s): 87 (pervious areas) CN\*(s): 90.02  
CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)  
Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
.956 (impervious areas)

Runoff Supply Rate(q): .637 i in./hr. (function of i)  
Time of Concentration(Tc): .649 q<sup>-0.4</sup> hrs. (function of q)  
Iterative Solution of Tc: 20.00 min.  
Rainfall Intensity (i) at Tc: 5.27 in./hr.  
Runoff Supply Rate (q) at Tc: 3.36 in./hr.  
Peak Discharge:

1.008qA(acres): 843. cfs.

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308

DATE PREPARED: 03/09/92

Prepared by: GERARDO

Name and Location: 27 MILE WASH

Drainage Concentration Point: 6.2

Watershed Area (A): 164.00 Acres  
Length of Watercourse (Lc): 5205. ft.  
Length to Center of Gravity (Lca): 2775. ft.

Change in Length(L)-ft.	Change in Elevation(H)-ft.
1250.00	120.00
875.00	40.00
630.00	30.00
2450.00	46.00

Mean Slope(Sc): .032 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 97. % B  
Soil Group(s): 3. % C  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 30. %  
Impervious cover: 27. % (FUTURE )

CN(s): 81 (pervious areas) CN\*(s): 85.52  
CN(s): 87 (pervious areas) CN\*(s): 90.02  
CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)  
Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
.956 (impervious areas)

Runoff Supply Rate(q): .626 i in./hr. (function of i)  
Time of Concentration(Tc): .468 q-0.4 hrs. (function of q)  
Iterative Solution of Tc: 13.00 min.  
Rainfall Intensity (i) at Tc: 6.47 in./hr.  
Runoff Supply Rate (q) at Tc: 4.05 in./hr.  
Peak Discharge:

1.008qA(acres): 570. cfs.

03



PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308  
DATE PREPARED: 03/09/92  
Prepared by: GERARDO

Name and Location: 27 MILE WASH  
Drainage Concentration Point: 6.3

Watershed Area (A): 42.00 Acres  
Length of Watercourse (Lc): 2755. ft.  
Length to Center of Gravity (Lca): 1500. ft.

Change in Length(L)-ft.                      Change in Elevation(H)-ft.

1250.00	120.00
875.00	40.00
630.00	30.00

Mean Slope(Sc): .063 Ft./Ft.

Watershed Type(s): SUBURBAN FOOTHILLS                      (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 100. % B  
Cover type(s): DESERT BRUSH  
Cover Density(pervious area): 30. %  
Impervious cover: 25. % (FUTURE )

CN(s): 81 (pervious areas) CN\*(s): 85.52  
CN(s): 99 (impervious areas) CN\*(s): 99.00

Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
.956 (impervious areas)

Runoff Supply Rate(q): .615 i in./hr. (function of i)

Time of Concentration(Tc): .249 q-0.4 hrs. (function of q)

Iterative Solution of Tc: 6.00 min.

Rainfall Intensity (i) at Tc: 8.80 in./hr.

Runoff Supply Rate (q) at Tc: 5.41 in./hr.

Peak Discharge:

1.008qA(acres): 229. cfs.

PIMA COUNTY METHOD PEAK DISCHARGE COMPUTATION

JOB NO. 3308

DATE PREPARED: 03/09/92

Prepared by: GERARDO

Name and Location: 27 MILQE WASH

Drainage Concentration Point: 8

Basin G

Watershed Area (A): 132.00 Acres  
 Length of Watercourse (Lc): 4675. ft.  
 Length to Center of Gravity (Lca): 2490. ft.

Change in Length(L)-ft.	Change in Elevation(H)-ft.
2700.00	49.00
1975.00	21.00
Mean Slope(Sc): .014 Ft./Ft.	

Watershed Type(s): SUBURBAN FOOTHILLS (FUTURE )

Basin Factor(nb): .035 (FUTURE ) Flood Frequency: 100 yrs.

P24(24 hour): 4.750 in.	Areal Value:	in.
P6(6 hour): 3.680 in.	Areal Value:	in.
P1(1 hour): 2.650 in.	Areal Value:	in.
P2(2 hour): 3.001 in.	Areal Value:	in.
P3(3 hour): 3.236 in.	Areal Value:	in.

Soil Group(s): 8. % A  
 Soil Group(s): 77. % B  
 Soil Group(s): 15. % C  
 Cover type(s): DESERT BRUSH  
 Cover Density(pervious area): 30. %  
 Impervious cover: 26. % (FUTURE )

CN(s): 63 (pervious areas) CN\*(s): 71.03  
 CN(s): 81 (pervious areas) CN\*(s): 85.52  
 CN(s): 67 (pervious areas) CN\*(s): 90.02  
 CN(s): 99 (impervious areas) CN\*(s): 99.00

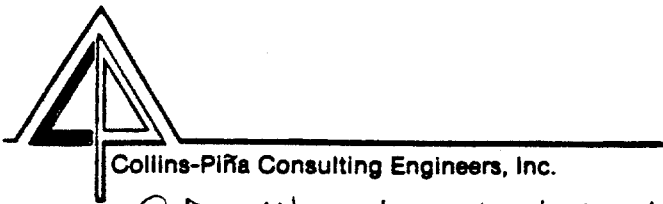
Runoff to Rainfall Ratio(s),(C): .215 (pervious areas)  
 .956 (impervious areas)  
 Runoff to Rainfall Ratio(s),(C): .504 (pervious areas)  
 .956 (impervious areas)  
 Runoff to Rainfall Ratio(s),(C): .629 (pervious areas)  
 .956 (impervious areas)

Runoff Supply Rate(q): .620 i in./hr. (function of i)  
 Time of Concentration(Tc): .612 q-0.4 hrs. (function of q)  
 Iterative Solution of Tc: 18.00 min.  
 Rainfall Intensity (i) at Tc: 5.57 in./hr.  
 Runoff Supply Rate (q) at Tc: 3.45 in./hr.  
 Peak Discharge:

1.008qA(acres): 459. cfs.

**HEC-1 ROUTING  
100-YEAR FLOOD PEAK**

**TAB C**



Project 27 Mile Wash Flood Plain Job No. 3308 Sht. 1 of 1  
Delineation Study Calc. J.A.A. Chk. \_\_\_\_\_ B'chk. \_\_\_\_\_  
 Date 3-11-92 Date \_\_\_\_\_ Date \_\_\_\_\_

Calculation of NSTPS to be used in HEC-1 Runs  
 From HEC-1 manual:  $NSTPS = L / V_{avg} * \Delta t$   
 $= \text{Travel Time} / \Delta t$

100 Yr Existing

CP3 to CP5:  $NSTPS = (0.93 - 0.65) 60 / 1 = 16.8$  say 12  
 CP5 to CP7:  $NSTPS = (1.02 - 0.92) 60 / 1 = 6$   
 CP7 to CP8: "  $= (1.12 - 1.02) 60 / 1 = 6$

100 Yr Future

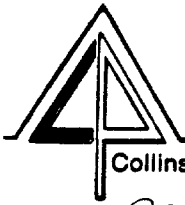
CP3 to CP5:  $NSTPS = (0.90 - 0.62) 60 / 1 = 16.8$  say 12  
 CP5 to CP7: "  $= (0.95 - 0.89) 60 / 1 = 4.2$  say 4  
 CP7 to CP8: "  $= (1.05 - 0.95) 60 / 1 = 6$

10 Yr Existing

CP3 to CP5:  $NSTPS = (0.95 - 0.83) 60 / 1 = 7.2$  say 7  
 CP5 to CP7: "  $= (1.02 - 0.93) 60 / 1 = 5.4$  say 5  
 CP7 to CP8: "  $= (1.12 - 1.02) 60 / 1 = 6$

10 Yr Future

CP3 to CP5:  $NSTPS = (1.02 - 0.75) 60 / 1 = 16.2$  say 16  
 CP5 to CP7: "  $= (1.10 - 1.00) 60 / 1 = 6$   
 CP7 to CP8: "  $= (1.20 - 1.10) 60 / 1 = 6$



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Project 27 Mile Wash Flood Plain Delin.  
Transmission Losses

Job No. 3308

Calc. J.D.D.

Date \_\_\_\_\_

Sht. \_\_\_\_\_ of \_\_\_\_\_

Chk. \_\_\_\_\_ B'chk. \_\_\_\_\_

Date \_\_\_\_\_ Date \_\_\_\_\_

Transmission losses along the routing reach were not modeled because: 1) The travel time through the entire routing reach is relatively short (20 to 30 minutes); 2) the peak flows occur from 40 to 60 minutes after the beginning of the storm and initial channel percolation will reduce the percolation capacity at the time of peak; and 3) this will allow the peak flow estimates used for the flood plain delineation to be on the conservative side.

\*\*\*\*  
 FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1,1985  
 U.S. ARMY CORPS OF ENGINEERS, THE HYDROLOGIC ENGINEERING CENTER, 609 SECOND STREET, DAVIS, CA. 95616  
 \*\*\*\*

THIS HEC-1 VERSION CONTAINS ALL OPTIONS EXCEPT ECONOMICS, AND THE NUMBER OF PLANS ARE REDUCED TO 3

HEC-1 INPUT

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LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10																			
1	ID	27 MILE WASH FLOODPLAIN DELINEATION STUDY																		
2	ID	PIMA COUNTY FLOOD CONTROL DISTRICT																		
3	ID	COLLINS-PINA JOB NUMBER 33308																		
4	ID	INPUT FILE 3308QIFI																		
5	ID	FUTURE CONDITIONS - 100 YEAR FLOWS																		
6	IT	1	0	0	300															
7	IN	1																		
8	IO	5																		
9	KK	HBA	HYDROGRAPH FOR BASIN A																	
10	QI	1.7	13.0	32.8	59.5	91.5	127.6	166.9	208.4	251.8	296.5									
11	QI	342.2	389.0	436.7	485.5	535.6	587.2	640.6	696.2	754.2	815.0									
12	QI	879.0	946.3	1017.0	1091.4	1169.3	1250.7	1335.2	1422.4	1511.7	1602.3									
13	QI	1693.0	1782.7	1869.9	1952.6	2028.8	2096.1	2151.8	2124.4	2079.1	2033.6									
14	QI	1988.0	1942.3	1896.5	1850.9	1805.3	1760.0	1714.9	1670.0	1625.6	1581.5									
15	QI	1537.8	1494.6	1451.9	1409.7	1368.2	1327.2	1286.9	1247.2	1208.2	1169.9									
16	QI	1132.4	1095.6	1059.5	1024.2	989.7	956.0	923.1	891.0	859.7	829.2									
17	QI	799.5	770.7	742.6	715.4	689.0	663.4	638.6	614.6	591.3	568.9									
18	QI	547.2	526.3	506.1	486.6	467.9	449.9	432.6	416.0	400.0	384.7									
19	QI	370.0	355.9	342.4	329.6	317.3	305.5	294.3	283.5	273.3	263.6									
20	QI	254.3	245.5	237.1	229.1	221.5	214.3	207.4	200.9	194.7	188.8									
21	QI	183.2	177.9	172.8	167.9	163.3	158.9	154.7	150.7	146.8	143.1									
22	QI	139.5	136.1	132.8	129.6	126.5	123.4	120.5	117.6	114.7	111.9									
23	QI	109.2	106.5	103.8	101.1	98.4	95.8	93.1	90.5	87.8	85.2									
24	QI	82.5	79.9	77.2	74.5	71.8	69.1	66.4	63.8	61.1	58.4									
25	QI	55.7	53.0	50.3	47.7	45.1	42.5	40.0	37.5	35.0	32.7									
26	QI	30.3	28.1	26.0	23.9	22.0	20.2	18.5	16.9	15.5	14.3									
27	QI	13.2																		
28	KK	HBB	HYDROGRAPH FOR BASIN B																	
29	QI	1.7	12.8	32.4	58.9	90.8	126.8	166.0	207.6	251.0	295.8									
30	QI	341.7	388.5	436.3	485.2	535.3	586.8	640.0	695.3	753.0	813.3									
31	QI	876.6	943.1	1013.0	1086.5	1163.5	1244.0	1327.8	1414.4	1503.4	1594.1									
32	QI	1685.5	1776.4	1865.7	1951.5	2032.1	2105.3	2168.5	2200.5	2155.1	2109.5									
33	QI	2063.6	2017.6	1971.6	1925.6	1879.7	1833.9	1788.3	1743.0	1698.0	1653.3									
34	QI	1609.0	1565.1	1521.7	1478.8	1436.5	1394.7	1353.6	1313.0	1273.1	1234.0									
35	QI	1195.5	1157.7	1120.6	1084.3	1048.8	1014.0	980.0	946.9	914.5	882.9									
36	QI	852.1	822.1	793.0	764.6	737.1	710.3	684.4	659.2	634.8	611.3									
37	QI	588.4	566.4	545.1	524.5	504.7	485.6	467.2	449.5	432.5	416.1									
38	QI	400.4	385.3	370.9	357.0	343.8	331.1	319.0	307.4	296.3	285.7									
39	QI	275.6	266.0	256.8	248.1	239.8	231.9	224.4	217.2	210.4	203.9									
40	QI	197.7	191.8	186.3	180.9	175.9	171.0	166.4	162.0	157.8	153.8									
41	QI	149.9	146.2	142.6	139.1	135.8	132.6	129.4	126.4	123.4	120.5									
42	QI	117.6	114.8	112.0	109.3	106.5	103.8	101.2	98.5	95.8	93.2									
43	QI	90.5	87.8	85.2	82.5	79.8	77.1	74.4	71.7	69.0	66.3									
44	QI	63.6	60.9	58.2	55.5	52.8	50.1	47.5	44.9	42.3	39.7									
45	QI	37.3	34.8	32.4	30.2	27.9	25.8	23.8	21.9	20.1	18.4									
46	QI	16.9	15.5	14.3	13.3															
47	KK	CP3	COMBINE HYDROGRAPHS AT CONCENTRATION POINT 3																	
48	HC	2																		

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LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

49	KK	3-5	ROUTE CP3 TO CP5							
50	RS	17	FLOW	-1						
51	RC	0.08	0.024	0.08	4310	0.0106				
52	RX	0	230	395	405	425	435	770	970	
53	RY	3120	3100	3098	3094	3094	3098	3098	3116	
54	KK	HBC	HYDROGRAPH FOR BASIN C							
55	QI	0.9	5.1	11.7	20.1	29.7	40.1	51.0	62.3	74.0
56	QI	98.5	111.6	125.5	140.3	156.1	173.2	191.5	211.1	231.8
57	QI	275.7	297.9	319.7	340.0	357.8	371.8	362.3	351.1	231.8
58	QI	317.4	306.2	295.1	284.1	273.2	262.5	252.0	241.6	231.4
59	QI	211.8	202.3	193.1	184.1	175.4	167.0	158.9	151.1	143.5
60	QI	129.2	122.5	116.1	110.0	104.1	98.5	93.2	88.2	83.4
61	QI	74.5	70.5	66.7	63.1	59.7	56.5	53.5	50.7	48.1
62	QI	43.4	41.3	39.3	37.5	35.8	34.2	32.7	31.3	30.1
63	QI	27.7	26.7	25.7	24.8	23.9	23.1	22.3	21.5	20.8
64	QI	19.4	18.7	18.0	17.4	16.7	16.1	15.4	14.8	14.1
65	QI	12.8	12.1	11.5	10.8	10.2	9.5	8.8	8.2	7.5
66	QI	6.3	5.7	5.2	4.6	4.1	3.6	3.2	2.8	2.5
67	KK	HBD	HYDROGRAPH FOR BASIN D							
68	QI	1.4	7.9	18.4	31.6	46.8	63.3	80.6	98.6	117.2
69	QI	156.1	176.7	198.6	221.8	246.6	273.2	301.8	332.4	364.8
70	QI	434.0	469.7	505.1	538.9	569.8	595.9	603.3	585.5	567.5
71	QI	531.6	513.6	495.7	478.0	460.5	443.1	426.0	409.2	392.6
72	QI	360.6	345.1	329.9	315.2	300.9	287.0	273.6	260.5	248.0
73	QI	224.1	212.9	202.1	191.8	181.9	172.4	163.3	154.7	146.5
74	QI	131.4	124.4	117.7	111.5	105.6	100.0	94.8	89.9	85.3
75	QI	76.9	73.1	69.6	66.3	63.2	60.3	57.7	55.2	52.9
76	QI	48.7	46.8	45.0	43.4	41.8	40.4	39.0	37.6	36.4
77	QI	34.0	32.9	31.7	30.7	29.6	28.5	27.5	26.5	25.4
78	QI	23.3	22.3	21.2	20.2	19.1	18.0	17.0	15.9	14.9
79	QI	12.8	11.8	10.8	9.8	8.9	8.0	7.2	6.4	5.7
80	QI	4.4	3.9	3.6						
81	KK	CP5	COMBINE HYDROGRAPHS AT CONCENTRATION POINT 5							
82	HC	3								
83	KK	5-7	ROUTE CP5 TO CP7							
84	RS	4	FLOW	-1						
85	RC	0.08	0.024	0.08	1560	0.0103				
86	RX	0	42	109	117	137	150	520	685	
87	RY	3082	3071	3068	3066	3066	3070	3070	3082	
88	KK	HBE	HYDROGRAPH FOR BASIN E							
89	QI	1.1	5.0	10.7	17.2	24.3	31.8	39.6	47.9	57.0
90	QI	78.3	90.8	104.3	118.5	132.7	145.9	156.5	153.8	146.6
91	QI	132.2	125.0	118.0	111.1	104.3	97.8	91.5	85.4	79.5
92	QI	68.6	63.6	58.8	54.3	50.1	46.2	42.5	39.1	35.9
93	QI	30.4	27.9	25.7	23.6	21.8	20.1	18.6	17.3	16.1
94	QI	14.0	13.1	12.3	11.6	11.0	10.4	9.9	9.4	8.9
95	QI	8.0	7.6	7.1	6.7	6.3	5.9	5.5	5.0	4.6
96	QI	3.8	3.3	2.9	2.5	2.2	1.8	1.5	1.3	1.1

HEC-1 INPUT

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

97	KK	HBF	HYDROGRAPH FOR BASIN F							
98	QI	1.5	8.8	20.7	36.1	53.9	73.5	94.3	115.9	138.1
99	QI	184.5	208.8	234.1	260.7	288.8	318.7	350.6	384.6	420.9
100	QI	499.8	541.9	585.2	629.0	672.2	713.8	752.1	785.5	811.8
101	QI	767.0	745.0	723.0	701.0	679.0	657.2	635.5	614.0	592.7
102	QI	551.0	530.6	510.6	491.0	471.8	452.9	434.6	416.6	399.2
103	QI	365.7	349.6	334.1	319.1	304.6	290.6	277.1	264.1	251.6
104	QI	228.1	217.1	206.5	196.4	186.8	177.6	168.9	160.6	152.7
105	QI	138.2	131.5	125.1	119.2	113.5	108.2	103.2	98.5	94.1
106	QI	86.1	82.5	79.1	75.9	72.9	70.1	67.4	64.9	62.6
107	QI	58.4	56.4	54.6	52.8	51.2	49.6	48.0	46.6	45.1

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108	QI	42.4	41.1	39.8	38.5	37.2	35.9	34.6	33.4	32.1	30.8
109	QI	29.5	28.2	26.9	25.6	24.3	23.0	21.7	20.4	19.2	17.9
110	QI	16.6	15.4	14.2	13.0	11.9	10.8	9.7	8.8	7.9	7.0
111	QI	6.3	5.6	5.0							
112	KK	CP7	COMBINE HYDROGRAPHS AT CONCENTRATION POINT 7								
113	HC	3									
114	KK	7-8	ROUTE CP7 TO CP8								
115	RS	6	FLOW	-1							
116	RC	0.08	0.024	0.08	2650	0.0115					
117	RX	0	322	460	470	492	505	765	845		
118	RY	3060	3046	3044	3042	3042	3044	3050	3060		
119	KK	HBG	HYDROGRAPH FOR BASIN G								
120	QI	1.7	8.6	19.1	32.1	46.6	62.1	78.3	95.0	112.3	130.5
121	QI	149.9	170.8	193.4	218.0	244.7	273.3	303.7	335.2	367.0	397.9
122	QI	426.0	449.4	450.6	434.7	418.7	402.7	386.7	370.8	355.0	339.4
123	QI	324.1	309.1	294.3	279.9	265.9	252.3	239.0	226.3	213.9	202.0
124	QI	190.6	179.7	169.2	159.2	149.7	140.6	132.0	123.8	116.1	108.9
125	QI	102.1	95.7	89.6	84.0	78.8	73.9	69.4	65.1	61.2	57.6
126	QI	54.3	51.2	48.4	45.8	43.4	41.2	39.2	37.3	35.6	34.0
127	QI	32.5	31.1	29.9	28.7	27.5	26.4	25.4	24.4	23.4	22.5
128	QI	21.5	20.6	19.7	18.7	17.8	16.9	15.9	15.0	14.0	13.1
129	QI	12.1	11.2	10.3	9.4	8.5	7.6	6.8	6.0	5.2	4.5
130	QI	3.9	3.4	3.0							
131	KK	CP8	COMBINE HYDROGRAPHS AT CONCENTRATION POINT 8								
132	HC	2									
133	ZZ										

1

\*\*\*\*  
FLOOD HYDROGRAPH PACKAGE HEC-1 (IBM XT 512K VERSION) -FEB 1,1985  
U.S. ARMY CORPS OF ENGINEERS, THE HYDROLOGIC ENGINEERING CENTER, 609 SECOND STREET, DAVIS, CA. 95616  
\*\*\*\*

27 MILE WASH FLOODPLAIN DELINEATION STUDY  
PIMA COUNTY FLOOD CONTROL DISTRICT  
COLLINS-PINA JOB NUMBER 33308  
INPUT FILE 3308QIFI  
FUTURE CONDITIONS - 100 YEAR FLOWS

8 IO OUTPUT CONTROL VARIABLES  
IPRNT 5 PRINT CONTROL  
IPLOT 0 PLOT CONTROL  
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA  
NMIN 1 MINUTES IN COMPUTATION INTERVAL  
IDATE 1 0 STARTING DATE  
ITIME 0000 STARTING TIME  
NQ 300 NUMBER OF HYDROGRAPH ORDINATES  
NDDATE 1 0 ENDING DATE  
NDTIME 0459 ENDING TIME

COMPUTATION INTERVAL .02 HOURS  
TOTAL TIME BASE 4.98 HOURS

ENGLISH UNITS

\*\*\* WARNING \*\*\* MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 228. TO 253454.  
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.  
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

\*\*\* WARNING \*\*\* MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 40789. TO 80935.  
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.  
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

\*\*\* WARNING \*\*\* MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 64848. TO 111099.  
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.

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THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

1  
 RUNOFF SUMMARY  
 FLOW IN CUBIC FEET PER SECOND  
 TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	HBA	2152.	.60	347.	347.	347.	.00		
HYDROGRAPH AT	HBB	2201.	.62	360.	360.	360.	.00		
2 COMBINED AT	CP3	4325.	.62	707.	707.	707.	.00		
ROUTED TO	3-5	4017.	.90	706.	706.	706.	.00	3099.28	.88
HYDROGRAPH AT	HBC	372.	.42	43.	43.	43.	.00		
HYDROGRAPH AT	HBD	603.	.43	71.	71.	71.	.00		
3 COMBINED AT	CP5	4318.	.88	820.	820.	820.	.00		
ROUTED TO	5-7	4259.	.95	820.	820.	820.	.00	3071.19	.95
HYDROGRAPH AT	HBE	157.	.27	12.	12.	12.	.00		
HYDROGRAPH AT	HBF	812.	.47	103.	103.	103.	.00		
3 COMBINED AT	CP7	4532.	.95	935.	935.	935.	.00		
ROUTED TO	7-8	4453.	1.05	934.	934.	934.	.00	3046.77	1.05
HYDROGRAPH AT	HBG	451.	.37	46.	46.	46.	.00		
2 COMBINED AT	CP8	4499.	1.05	980.	980.	980.	.00		

\*\*\* NORMAL END OF HEC-1 \*\*\*

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**APPENDIX B**

**HYDRAULIC CALCULATIONS  
FOR  
27 MILE WASH  
FLOODPLAIN DELINEATION STUDY**

**APRIL 1992**



**PREPARED BY:**

**COLLINS-PIÑA CONSULTING ENGINEERS, INC.  
630 EAST 9TH STREET  
TUCSON, ARIZONA 85705**

**CPE JOB NO. 3308**

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2.2 Parameters . . . . .	2
3. RESULTS . . . . .	4
3.1 Flow Regimes . . . . .	4
3.2 Floodplain . . . . .	4

TABS:

- A. HEC-2 SUB-CRITICAL FLOW MODEL
- B. HEC-2 FLOODWAY FLOW MODEL
- C. HEC-2 SUPER-CRITICAL FLOW MODEL

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## 1. INTRODUCTION

This report describes the hydraulic analysis conducted as part of the 27 Mile Wash Floodplain Delineation Study. It will be incorporated into the final hydrology/hydraulics report for the study. The hydrologic analysis was described in the Preliminary Hydrology Report for 27 Mile Wash Floodplain Delineation Study, which has been accepted by Pima County.

The hydraulic analysis consisted of determining the characteristics for both the 100-year and 10-year rainstorm event flows. It also entailed determining the 100-year floodway limits. The flow rates generated in the hydrology study were used for the modeling.

A total of approximately 30,000 feet of channel length was analyzed in this study. This included the two main tributaries of 27 Mile Wash as well as two minor tributaries to the wash (see map index).

## 2. METHODOLOGY

### 2.1 Hydraulics

The computer program HEC-2 (September, 1988 release) was used in the hydraulic modeling

Cross-sections were located along the channel reaches at distances of less than 500 feet apart. Cross-section locations were chosen to best represent the general characteristics of the channels within the stream reaches investigated. A total of 88 cross-sections were analyzed.

Portions of the channel reaches are braided, with up to 4 channel braids in any one section. Where channel braiding was encountered, cross-sections were placed in both the braided sections as well as just upstream and downstream of the braided sections.

The wash was modeled in a subcritical flow regime. In order to obtain the water surface elevation data for delineation of the regulatory event floodplain (see Tab A). In addition, a preliminary floodway hydraulic model was also developed (see Tab B). Finally, because certain cross-sections at various locations throughout the channel reaches went to critical depth in the subcritical profile, a supercritical flow regime profile was also run.

## 2.2 Parameters

Cross-section geometry was taken from the 1"=100' scale, 2' contour interval aerial photogrammetric quarter section maps supplied by Pima County for this project. The geohydraulic parameters chosen to represent the channel characteristics were also verified in the field.

Manning's n values were determined after several site visits. The majority of the cross-sections consist of a channel bottom that is sandy with very little or no vegetation - a Manning's n of 0.024 is used here. The channel banks and overbank areas are generally heavily vegetated with desert brush, cacti and trees - a Manning's n of 0.08 is used here. In the upper reaches of the two minor tributaries the channel bottoms and sides are lined with grasses - a Manning's n of 0.04 is used here.

Cross-section No. 1 is located just upstream of the 7 barrel 10' x 6' RCBC under Highway 89. The headwater elevations for the 10-year and 100-year flows at the culvert (Tab A) were used as the starting water surface elevations for the subcritical flow regime hydraulic modeling (see Tab A). For modelling of the floodway and for the super-critical HEC-2 model, water surface elevations for the first few cross-sections just upstream of the culvert were determined by assuming that the culvert has no backwater effect on cross-section No. 1.

### 3. RESULTS

#### 3.1 Flow Regimes

Analysis of both the subcritical and supercritical flow regime HEC-2 profiles indicate that for the 27 Mile Wash main channel reach (cross-sections 1 through 24) and two main tributary channels (cross-sections 25 through 37 and 79 through 86) flows generally remain in a subcritical regime. Flow becomes critical at a few locations and supercritical at four locations.

The two minor tributaries (cross-sections 38 through 58 and 59 through 78) flow at subcritical and critical regimes in the lower reaches, and supercritical in their upper reaches.

Because the majority of the wash is in a subcritical flow regime, almost any obstruction to the flow (which would naturally occur during flooding events) can cause the critical and supercritical cross-sections to jump to a subcritical regime, resulting in higher water surface elevations and wider floodplains. Therefore, the floodplains were delineated based on the results of the subcritical flow water surface profile HEC-2 model (see Tab A).

#### 3.2 Floodplain

The extent of the 100-year floodplain is shown on Exhibits 1 through 9. Along with the floodplain limits, the exhibits show cross-section locations, flow rates, and water surface elevations during the 100-year frequency event. At those cross-sections where

supercritical flow was anticipated, the related velocity has also been included.

The average floodplain widths and the average depths of flow for both the 10-year and 100-year frequency events are given below.

Average Floodplain Widths

	<u>10-Year</u>	<u>100-Year</u>
Downstream of main confluence (Cross-sections 1-24)	350' - 450'	400' - 500'
Upstream of main confluence (Cross-sections 25-37)	200' - 300'	200' - 300'
Lower reaches of tributaries (Cross-sections 38-53 and 59-73)	50' - 100'	50' - 150'
Upper reaches of tributaries (Cross-sections 54-58 and 74-78)	<20' <sup>1</sup>	<20' <sup>1</sup>

Average Depths of Flow

	<u>10-Year</u>	<u>100-Year</u>
Downstream of main confluence (Cross-sections 1-24)	4' - 5'	5' - 6'
Upstream of main confluence (Cross-sections 25-37)	3' - 5'	4' - 6'
Tributary Washes (Cross-sections 38-78)	2' - 4'	3' - 5'

Overall channel velocities average 8 to 10 feet per second (fps) for the 10-year flows and 10 to 12 fps for the 100-year flows. These average channel velocities are at cross-sections where there is only one channel in the

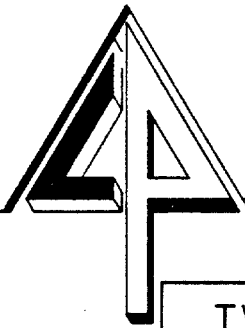
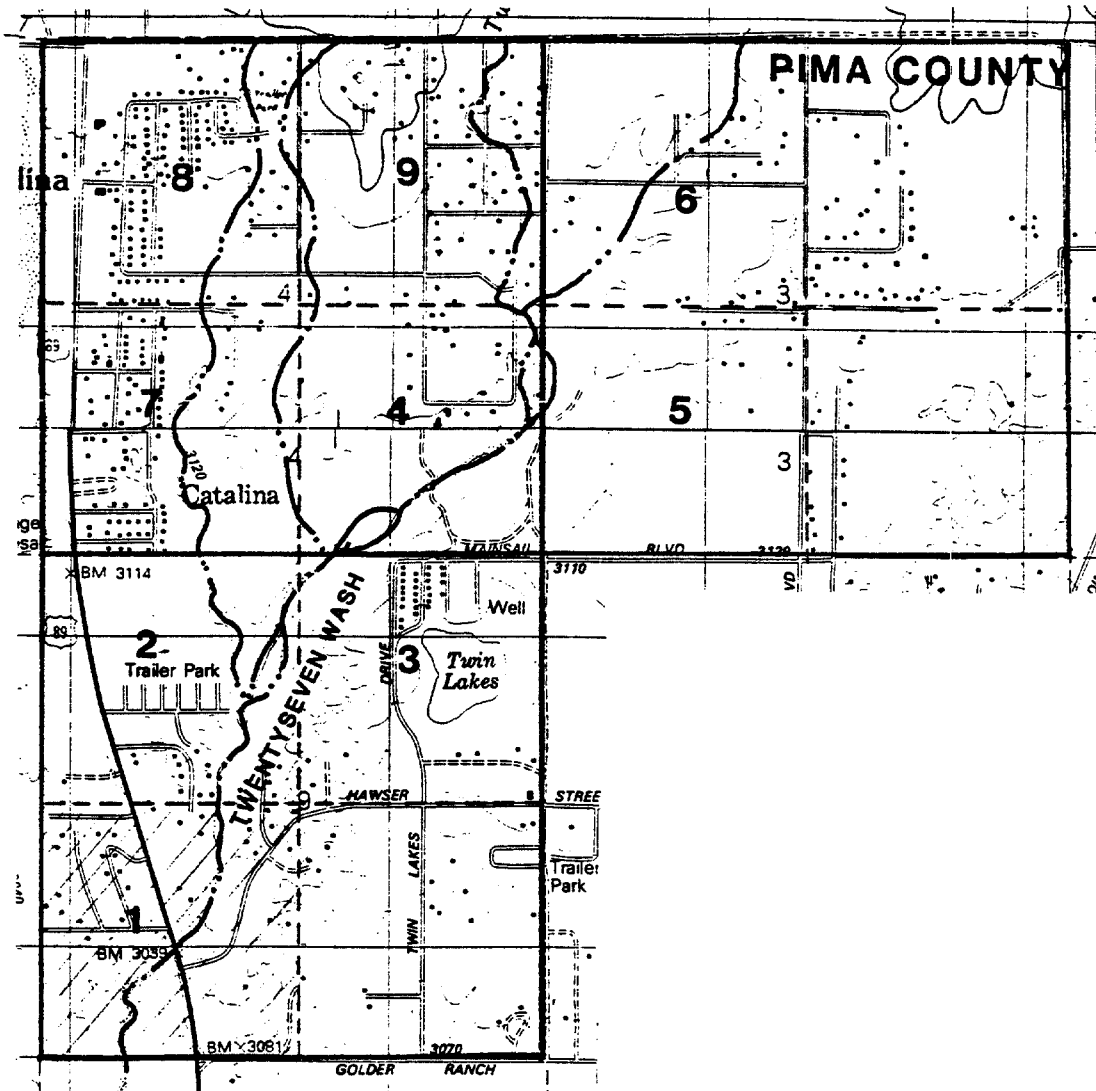
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<sup>1</sup>Flows remain within channel banks.



section. At cross-sections where the channel is braided the overall channel velocities are considerably lower, ranging from 3 to 8 fps. The overall overbank velocities average 1 to 3 fps for both the 10-year and 100-year flows.

**PINAL COUNTY**



*Collins-Piña Consulting Engineers Inc.*

630 East 9th Street - Tucson, Arizona 85705 - (602) 623-7980  
 FAX - (602) 884-5278

**TWENTY-SEVEN WASH  
 FLOODPLAIN DELINEATION STUDY**

PIMA COUNTY DEPT of TRANSPORTATION  
 & FLOOD CONTROL DISTRICT  
 PIMA COUNTY CONTRACT NO. 07 04 C 115614 1091

job no. 3308
date 22APR 92
design JB
draft RD
checked RAGP
scale 1"=100'
sheet index

**TAB A**  
**HEC-2 SUB-CRITICAL FLOW MODEL**

### CULVERT COMPUTATION RECORD

SHT.      OF     

PROJECT: 27 Mile Wash  
 JOB NO: 3308  
 STATION:                     

DESIGNER: J. J. J.  
 CK. BY:                       
 DATE: 3-31-92

#### HYDROLOGIC AND CHANNEL INFORMATION

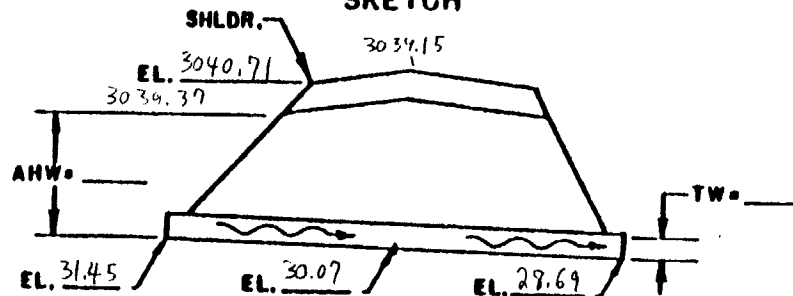
DRAINAGE AREA                     

100 yr  $Q_1 = 4532$   
 10 yr.  $Q_2 = 2488$

$TW_1 =$                
 $TW_2 =$              

(  $Q_1$  = DESIGN DISCHARGE, SAY  $Q_{25}$  )  
 (  $Q_2$  = CHECK DISCHARGE, SAY  $Q_{50}$  )

#### SKETCH



$S_0 = 1.8470$        $L = 150.25'$        $L/100 S_0 = 2.76'$

MEAN STREAM VELOCITY =             

CULVERT DESCRIPTION		Q	CAR CHART HW	HEADWATER COMPUTATION										CONTROL HW	OUTLET VELOCITY	COST	OHW. ELEV.	COMMENTS
				INLET CONT.		OUTLET CONTROL						HW = H + h <sub>o</sub> - L S <sub>o</sub>						
				HW/D	HW	K <sub>s</sub>	H	d <sub>c</sub>	$\frac{d_c + D}{2}$	TW	N <sub>o</sub>	L S <sub>o</sub>	HW					
7-10'x6'	Beveled	647		1.42	8.54	0.40	3.03	5.08	5.54	4.71	5.54	2.76	5.80	8.54	24.3		39.99	
7-10'x6'	Beveled	355		0.88	5.27	0.40	0.91	3.41	4.70	3.44	4.70	2.76	2.85	5.27	20.1		36.72	

#### SUMMARY & RECOMMENDATIONS

```

*****
1 * WATER SURFACE PROFILES *
  * VERSION OF SEPTEMBER 1988 *
  * * *
  * * *
  * RUN DATE 1/ 1/80 TIME 2:15:41 *
*****

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

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X X XXXXXXX XXXX XXXX
X X X X X X X
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X X X X X
X X X X X
X X XXXXXXX XXXX XXXXXXX

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END OF BANNER

1  
1/ 1/80 2:15:41

PAGE 1

THIS RUN EXECUTED 1/ 1/80 2:15:41

\*\*\*\*\*  
HEC2 RELEASE DATED SEPT 88  
\*\*\*\*\*

T1 27 MILE WASH  
T2 10 YEAR FLOW - SUBCRITICAL RUN  
T3 FILE NAME: 3308HC2.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	0	0	0	0	0	3036.7	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	2488	4532							
NH	5	0.08	212	0.024	218	0.08	262	0.024	277	0.08
NH	590									
X1	1.0	22	209	280						
GR	3042	0	3040	3	3038	8	3036	12	3034	20
GR	3034	204	3032	209	3031	212	3031	218	3032	221
GR	3033.5	240	3032	258	3030.5	262	3030.5	277	3032	280
GR	3034	307	3033	342	3034	370	3036	443	3038	466
GR	3040	485	3042	590						
NH	5	0.08	272	0.024	285	0.08	341	0.024	354	0.08
NH	567									
X1	2.0	27	265	358	240	165	200			
GR	3046	0	3044	12	3042	25	3042	32	3052	33
GR	3053	50	3052	73	3043	74	3040	99	3038	130

053

GR	3036	265	3034	272	3034	285	3036	293	3036.5	315
GR	3036	335	3034	338	3033	341	3033	354	3034	358
GR	3036	363	3036	490	3038	525	3040	538	3042	558
GR	3044	562	3046	567						
NH	3	0.08	299	0.024	321	0.08	508			
X1	3.0	18	285	335	420	375	390			
GR	3045	0	3044	34	3043	83	3053	84	3053	148
GR	3042	149	3042	215	3040	285	3038	299	3038	321
GR	3040	335	3042	340	3042	346	3040.5	368	3040	427
GR	3042	473	3044	497	3046	508				
NH	3	0.08	324	0.024	350	0.08	673			
X1	4.0	13	324	358	315	270	300			
GR	3051	0	3050	45	3048	101	3046	160	3044	313
GR	3042	324	3042	350	3044	358	3046	390	3046	612
GR	3048	635	3048	658	3050	673				

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PAGE 2

NH	5	0.08	473	0.035	497	0.024	509	0.035	530	0.08
NH	567									
X1	5.0	20	473	530	240	300	250			
GR	3053	0	3052	32	3050	48	3049	73	3059	74
GR	3059	127	3048	128	3046	157	3046	173	3048	338
GR	3048	439	3047	473	3046	490	3044	497	3044	509
GR	3046	530	3048	542	3050	550	3052	557	3054	567
NH	5	0.08	538	0.024	553	0.08	615	0.024	624	0.08
NH	648									
X1	6.0	21	525	628	370	300	300			
X3				115	3054.2					
GR	3056	0	3054	11	3053	50	3054	88	3054	234
GR	3064	235	3064	269	3054	270	3052	425	3052	470
GR	3050	525	3048	538	3048	553	3050	565	3050	610
GR	3049	615	3049	624	3050	628	3052	635	3054	640
GR	3056	648								
NH	5	0.08	657	0.024	672	0.08	712	0.024	737	0.08
NH	765									
X1	7.0	25	608	750	350	380	350			
GR	3070	0	3060	130	3070	131	3070	146	3060	147
GR	3058	181	3056	340	3056	360	3057	419	3067	420
GR	3067	445	3057	446	3056	575	3054	608	3054	655
GR	3053.5	657	3053.5	672	3054	675	3054	705	3053	712
GR	3052	715	3052	718	3053	737	3060	750	3070	765
NH	3	0.08	340	0.024	372	0.08	475			
X1	8.0	23	245	395	350	385	400			
GR	3070	0	3066	20	3064	23	3062	27	3060	30
GR	3060	95	3060	119	3070	120	3070	170	3060	171
GR	3060	245	3058	250	3056.8	270	3058	290	3060	303
GR	3061	313	3060	323	3058	340	3058	372	3060	395
GR	3062	443	3063	455	3070	475				
NH	8	0.08	270	0.035	286	0.08	372	0.035	385	0.08
NH	473	0.035	518	0.024	548	0.08	610			
X1	9.0	29	260	553	280	245	275			

054

GR	3072	0	3068	75	3066	145	3064	177	3062.2	202
GR	3064	212	3064	260	3062	270	3061.3	277	3062	286
GR	3064	322	3062	370	3060	372	3060	385	3062	398
GR	3062	450	3062	473	3064	483	3065	490	3064	498
GR	3062	512	3059.4	518	3059.4	548	3062	553	3064	560
GR	3066	594	3068	599	3070	605	3072	610		
NH	3	0.08	410	0.024	439	0.08	685			
X1	10.0	18	408	440	180	290	285			
GR	3074	0	3070	58	3068	125	3066	362	3064	408
GR	3062.5	410	3062.5	439	3064	440	3065	470	3064	492
GR	3063	500	3064	506	3065	552	3066	620	3068	658
GR	3070	667	3072	678	3074	685				

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NH	5	0.08	114	0.024	133	0.08	355	0.024	363	0.08
NH	562									
X1	11.0	20	110	370	355	260	400			
GR	3080	0	3074	20	3072	29	3070	52	3068	108
GR	3067	110	3066	114	3066	133	3068	142	3070	148
GR	3071	175	3070	222	3070	280	3068	348	3065.7	355
GR	3066.7	363	3068	370	3070	532	3072	545	3074	562

NH	7	0.08	177	0.024	187	0.08	247	0.024	257	0.08
NH	381	0.024	386	0.08	798					
X1	12.0	24	171	391	340	300	300			
GR	3078	0	3076	14	3074	79	3072	171	3070.2	177
GR	3070.2	187	3072	193	3072	242	3070.3	247	3070.3	257
GR	3072	262	3074	270	3074	317	3072	347	3070	378
GR	3069.3	381	3069.3	386	3070	388	3072	391	3073	460
GR	3073	709	3074	743	3076	775	3078	798		

QT	2	2366	4325							
NH	3	0.08	472	0.024	487	0.08	617			
X1	13.0	17	453	504	390	440	415			
GR	3082	0	3080	8	3079	89	3089	90	3089	127
GR	3079	128	3078	260	3078	453	3076	468	3074.4	472
GR	3074.4	487	3076	492	3078	504	3078	567	3080	573
GR	3080	605	3082	617						

NH	5	0.08	322	0.024	364	0.08	481	0.024	486	0.08
NH	655									
X1	14.0	17	314	517	300	460	430			
GR	3086	0	3084	13	3082	42	3082	314	3080	319
GR	3078.2	322	3078.2	364	3080	366	3082	392	3082	446
GR	3080	478	3079	481	3079	486	3080	489	3082	517
GR	3084	605	3086	655						

QT	2	2322	4325							
NH	3	0.08	400	0.024	450	0.08	592			
X1	15.0	13	394	452	350	315	325			
GR	3090	0	3088	80	3086	157	3085.8	237	3085.8	373
GR	3084	394	3082.5	400	3082.5	450	3084	452	3086	505
GR	3086	557	3088	576	3090	592				

NH	9	0.08	18	0.024	28	0.08	255	0.024	265	0.08
NH	284	0.024	294	0.08	361	0.024	366	0.08	530	

055

X1	16.0	24	6	375	400	430	500			
GR	3096	0	3094	2	3092	4	3090	6	3088	12
GR	3087	18	3087	28	3088	34	3090	50	3092	55
GR	3092.5	120	3092	218	3091	255	3091	265	3090	281
GR	3088.3	284	3088.3	294	3090	296	3088	361	3088	366
GR	3090	375	3092	485	3094	513	3096	530		

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NH	3	0.08	120	0.024	145	0.08	558			
X1	17.0	18	115	155	425	480	430			
GR	3106	0	3102	12	3100	15	3098	20	3096	40
GR	3096	115	3094	120	3092.3	125	3092.3	140	3094	145
GR	3096	155	3097	205	3096	265	3094	285	3096	390
GR	3096	448	3098	495	3106	558				

NH	3	0.08	137	0.024	162	0.08	638			
X1	18.0	21	130	170	415	450	425			
GR	3112	0	3106	18	3104	22	3102	28	3100	48
GR	3100	85	3102	115	3102	125	3100	130	3098.3	137
GR	3098.3	162	3100	170	3102	195	3102	262	3102	415
GR	3100	429	3100	438	3102	482	3104	512	3106	590
GR	3112	638								

NH	5	0.08	25	0.024	55	0.08	142	0.024	147	0.08
NH	500									
X1	19.0	20	22	172	360	260	350			
GR	3116	0	3108	17	3106	19	3104	22	3102	25
GR	3101	28	3101	48	3102	49	3102.5	55	3104	70
GR	3104	125	3103	142	3103	147	3104	172	3105	280
GR	3106	355	3105	410	3106	475	3108	482	3116	500

NH	5	0.08	60	0.024	90	0.08	238	.024	243	0.08
NH	540									
X1	20.0	19	38	100	340	430	360			
GR	3120	0	3112	25	3110	33	3108	38	3106	58
GR	3104.5	60	3104.5	90	3106	92	3108	100	3109	118
GR	3108	135	3108	155	3109	195	3108	238	3108	243
GR	3108	270	3110	360	3112	500	3120	540		

NH	3	0.08	15	0.024	70	0.08	620			
X1	21.0	21	15	150	525	320	500			
GR	3125	0	3118	5	3116	8	3114	11	3112	15
GR	3110	18	3109.8	23	3110	32	3112	42	3112	70
GR	3112.3	150	3113	262	3113	299	3123	300	3123	344
GR	3113	345	3113	505	3114	545	3116	552	3118	557
GR	3124	620								

NH	7	0.08	211	0.024	215	0.08	260	0.024	255	0.08
NH	344	0.024	366	0.08	762					
X1	22.0	30	205	377	450	360	500			
GR	3126	0	3122	15	3120	35	3118	60	3116	118
GR	3118	150	3118	192	3116	205	3115	211	3115	215
GR	3116	220	3116	256	3115	260	3115	265	3116	270
GR	3116	335	3114	344	3113.4	347	3113.4	360	3114	366
GR	3116	372	3118	377	3118.9	465	3118	497	3116	539
GR	3116	618	3118	628	3120	665	3122	680	3126	762

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056



NH	3	0.08	297	0.024	324	0.08	867			
X1	23.0	26	260	345	290	285	287			
GR	3130	0	3124	30	3122	90	3120	150	3118.7	240
GR	3120	245	3120	255	3118.7	260	3118.2	290	3118	294
GR	3116	297	3116	324	3118	325	3118.5	330	3120	345
GR	3122	365	3122	410	3121.3	540	3122	693	3132	694
GR	3132	739	3122	740	3120	742	3120	750	3124	823
GR	3130	867								

NH	3	0.08	225	0.024	252	0.08	820			
X1	24.0	17	210	305	300	270	280			
GR	3130	0	3128	72	3126	130	3124	210	3122	220
GR	3120	225	3120	252	3122	260	3122.2	270	3124	305
GR	3124	365	3126	475	3126	555	3124	563	3124	606
GR	3126	780	3130	820						

QT	2	1196	2163							
NH	4	0.08	287	0.05	310	0.024	330	0.08	404	
X1	25.0	16	287	363	250	350	350			
GR	3132	0	3130	60	3128	93	3126	115	3126	165
GR	3127	227	3127	287	3126	308	3124.2	310	3124.2	330
GR	3124	332	3124	338	3126	363	3128	390	3130	396
GR	3124	404								

NH	3	0.08	75	0.024	90	0.08	400			
X1	26.0	12	70	97	380	440	400			
GR	3138	0	3134	32	3132	50	3130	61	3128	70
GR	3126.2	75	3126.2	90	3128	97	3130	320	3132	340
GR	3134	365	3138	400						

NH	3	0.08	197	0.024	217	0.08	308			
X1	27.0	12	190	227	500	420	500			
GR	3140	0	3138	5	3136	10	3134	20	3132	190
GR	3131	197	3131	217	3132	227	3134	234	3136	272
GR	3138	280	3140	308						

NH	3	0.08	171	0.024	184	0.08	300			
X1	28.0	13	158	198	125	120	125			
GR	3142	0	3140	11	3138	40	3136	76	3134	158
GR	3132.3	171	3132.3	184	3134	198	3134	250	3136	260
GR	3138	270	3140	282	3142	300				

NH	5	0.08	68	0.024	75	0.08	205	0.024	211	0.08
NH	242									
X1	29.0	14	62	228	350	430	400			
GR	3144	0	3142	18	3140	33	3138	62	3137.5	68
GR	3137.5	75	3138	81	3138	193	3136	205	3136	211
GR	3138	228	3140	234	3142	240	3144	242		

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QT	2	1177	2063							
NH	3	0.08	60	0.024	72	0.08	320			
X1	30.0	16	29	93	230	320	325			

05

GR	3148	0	3146	5	3144	10	3142	14	3141	29
GR	3140	57	3192.2	60	3192.2	72	3140	77	3142	93
GR	3140	170	3140	190	3142	222	3144	284	3146	291
GR	3148	320								
NH	3	0.08	147	0.024	159	0.08	408			
X1	30.5	17	140	166	400	250	340			
GR	3152	0	3150	27	3148	33	3146	75	3144	98
GR	3144	140	3142.6	147	3142.6	159	3144	166	3144.7	228
GR	3154.7	229	3154.5	284	3144.5	285	3146	307	3148	318
GR	3150	348	3152	408						
NH	3	0.08	142	0.024	155	0.08	300			
X1	31.0	11	70	263	70	50	60			
GR	3150	0	3148	31	3146	70	3144	140	3142.8	142
GR	3142.8	155	3144	160	3146	263	3146	287	3148	293
GR	3150	300								
NH	3	0.08	241	0.024	256	0.08	324			
X1	32.0	15	230	269	320	400	370			
GR	3156	0	3154	8	3152	30	3150	68	3150	98
GR	3148	101	3150	155	3148	230	3146.4	241	3146.4	256
GR	3148	269	3150	304	3152	310	3154	317	3156	324
NH	5	0.08	238	0.035	283	0.08	352	0.024	360	0.08
NH	428									
X1	33.0	17	238	370	250	250	250			
GR	3158	0	3156	6	3154	13	3152	24	3152	45
GR	3152	130	3152.5	238	3152	283	3151	295	3152	305
GR	3152	320	3151	352	3151	360	3152	370	3154	410
GR	3156	421	3158	428						
NH	3	0.08	260	0.024	267	0.08	360			
X1	34.0	17	250	287	290	270	250			
GR	3160	0	3158	6	3156	12	3156	122	3166	123
GR	3166	195	3156	196	3156	207	3156	250	3154	255
GR	3153.5	260	3153.5	267	3154	270	3156	287	3156	320
GR	3158	342	3160	360						
NH	3	0.08	231	0.024	238	0.08	400			
X1	35.0	16	222	248	390	310	350			
GR	3164	0	3162	30	3160	48	3160	90	3160.7	160
GR	3160	220	3158	222	3156	228	3155.5	231	3155.5	238
GR	3156	243	3158	248	3160	252	3160	310	3162	372
GR	3164	400								

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NH	3	0.08	135	0.024	150	0.08	340			
X1	36.0	16	126	156	210	200	200			
GR	3168	0	3166	40	3164	55	3162	82	3162	118
GR	3160	122	3158	126	3157.5	135	3157.5	150	3158	156
GR	3160	163	3162	166	3162.7	230	3164	324	3166	335
GR	3168	340								
NH	3	0.08	23	0.024	33	0.08	398			
X1	37.0	21	21	46	375	475	450			
X3						130	3167.1			

057

GR	3170	0	3168	12	3166	17	3164	21	3162	23
GR	3162	33	3164	46	3166	52	3167	130	3166	190
GR	3164	250	3164	278	3166	294	3164	301	3162	306
GR	3161	310	3162	316	3164	320	3166	333	3168	372
GR	3170	398								

QT	2	2488	4532							
NH	7	0.08	177	0.024	187	0.08	247	0.024	257	0.08
NH	381	0.024	386	0.08	798					
X1	-12.0	24	171	391	340	300	300			
GR	3078	0	3076	14	3074	79	3072	171	3070.2	177
GR	3070.2	187	3072	193	3072	242	3070.3	247	3070.3	257
GR	3072	262	3074	270	3074	317	3072	347	3070	378
GR	3069.3	381	3069.3	386	3070	388	3072	391	3073	460
GR	3073	709	3074	743	3076	775	3078	798		

QT	2	433	843							
NH	5	0.08	160	0.024	167	0.08	220	0.024	221	0.08
NH	350									
X1	38.0	16	160	221	250	130	210			
GR	3082	0	3080	32	3078	52	3076	101	3076	136
GR	3076	151	3074.2	160	3074.2	167	3076	172	3076	212
GR	3075	220	3075	221	3076	262	3078	302	3080	324
GR	3082	350								

NH	5	0.08	146	0.024	153	0.08	183	0.024	185	0.08
NH	258									
X1	39.0	16	146	185	190	90	140			
GR	3088	0	3082	20	3080	28	3080	42	3078	58
GR	3077	140	3076	146	3076	153	3077	156	3077	180
GR	3076.3	183	3076.3	185	3078	200	3080	210	3082	218
GR	3088	258								

NH	3	0.08	52	0.024	59	0.08	247			
X1	40.0	12	48	59	280	400	350			
GR	3092	0	3086	26	3084	34	3082	40	3080	48
GR	3078.2	52	3078.2	57	3080	59	3082	90	3084	218
GR	3086	230	3092	247						

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NH	3	0.08	230	0.024	238	0.08	290			
X1	41.0	12	230	238	300	330	375			
GR	3096	0	3092	20	3090	37	3088	50	3086	75
GR	3085	230	3085	238	3086	250	3088	261	3090	270
GR	3092	277	3096	290						

NH	3	0.08	62	0.024	74	0.08	220			
X1	42.0	12	62	74	210	220	220			
GR	3098	0	3094	18	3092	26	3090	32	3088	47
GR	3087	62	3087	74	3088	88	3090	149	3092	186
GR	3094	203	3098	220						

NH	3	0.08	78	0.024	88	0.08	230			
X1	42.5	10	72	93	210	320	300			
GR	3098	0	3096	25	3094	45	3092	72	3090.4	78
GR	3090.4	88	3092	93	3094	182	3096	196	3098	230

059

NH	7	0.08	24	0.024	31	0.08	73	0.024	77	0.08
NH	83	0.024	90	0.08	235					
X1	43.0	20	20	100	350	200	290			
GR	3106	0	3104	4	3102	10	3100	13	3098	20
GR	3096	24	3096	31	3097	37	3097	64	3096	70
GR	3095	73	3095	77	3095	83	3095	90	3096	100
GR	3098	125	3100	140	3102	203	3104	228	3106	235

NH	3	0.08	110	0.024	117	0.08	214			
X1	44.0	12	110	117	340	360	350			
GR	3108	0	3106	10	3104	15	3102	25	3100	98
GR	3098.3	110	3098.3	117	3100	125	3102	154	3104	183
GR	3106	207	3108	214						

QT	2	352	670							
NH	3	0.08	38	0.024	45	0.08	153			
X1	45.0	14	34	48	140	240	200			
GR	3110	0	3108	7	3106	23	3104	30	3102	32
GR	3100	34	3099.3	38	3099.3	45	3100	48	3102	50
GR	3104	88	3106	110	3108	115	3110	153		

NH	3	0.08	104	0.024	110	0.08	170			
X1	46.0	12	102	112	400	370	375			
GR	3116	0	3112	35	3110	42	3108	78	3106	102
GR	3105	104	3105	110	3106	112	3108	119	3110	148
GR	3112	154	3116	170						

NH	3	0.08	102	0.024	108	0.08	147			
X1	47.0	12	100	110	470	480	475			
GR	3120	0	3118	11	3116	45	3114	97	3112	100
GR	3110.7	102	3110.7	108	3112	110	3114	112	3116	130
GR	3118	140	3120	147						

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NH	3	0.08	76	0.024	80	0.08	150			
X1	48.0	12	72	84	320	360	340			
GR	3124	0	3122	40	3120	50	3118	70	3116	72
GR	3114.6	76	3114.6	80	3116	84	3118	90	3120	122
GR	3122	131	3124	150						

NH	3	0.08	57	0.024	63	0.08	201			
X1	49.0	10	49	72	500	470	470			
GR	3130	0	3128	25	3126	44	3124	49	3122	57
GR	3122	63	3124	72	3126	84	3128	112	3150	201

NH	3	0.08	155	0.024	161	0.08	276			
X1	50.0	17	130	187	270	310	300			
GR	3136	0	3134	37	3132.5	59	3142.5	60	3142.5	90
GR	3132.5	91	3132	115	3130	130	3128	148	3127.5	155
GR	3127.5	161	3128	168	3130	187	3132	214	3142	215
GR	3142	275	3136	276						

NH	3	0.08	162	0.024	169	0.08	357			
X1	51.0	10	160	190	420	340	375			
GR	3142	0	3140	70	3138	81	3136	160	3135	162
GR	3135	169	3136	190	3138	213	3140	260	3142	357

032

QT	2	121	229							
NH	3	0.07	171	0.024	176	0.07	310			
X1	52.0	13	170	180	260	350	300			
GR	3146	0	3144	23	3144	92	3142	118	3142	152
GR	3142	164	3140	170	3139	171	3139	176	3140	180
GR	3142	194	3144	220	3146	310				

NH	1	0.05	178							
X1	53.0	8	95	125	300	265	275			
GR	3150	0	3148	80	3148	95	3146	110	3146	115
GR	3148	125	3148	145	3150	178				

NH	3	0.06	5	0.04	21	0.06	30			
X1	54.0	8	10	18	340	335	325			
GR	3156	0	3154	5	3152	10	3150.2	12	3150.2	16
GR	3152	18	3154	21	3156	30				

NH	1	0.04	18							
X1	55.0	6	3	12	450	445	450			
GR	3164	0	3162	3	3160	6	3160	8	3162	12
GR	3164	18								

NH	1	0.04	28							
X1	56.0	10	8	12	470	460	465			
GR	3176	0	3174	2	3172	5	3170	8	3169.3	9
GR	3169.3	11	3170	12	3172	14	3174	20	3176	28

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NH	1	0.04	24							
X1	57.0	8	8	17	270	290	285			
GR	3182	0	3180	6	3178	8	3176	11	3176	12
GR	3178	17	3180	19	3182	24				

NH	1	0.04	22							
X1	58.0	6	8	15	300	310	305			
GR	3190	0	3188	8	3186	10	3186	11	3188	15
GR	3190	22								

QT	2	2366	4325							
NH	5	0.08	322	0.024	364	0.08	481	0.024	486	0.08
NH	655									
X1	-14.0	17	314	517	300	460	430			
GR	3086	0	3084	13	3082	42	3082	314	3080	319
GR	3078.2	322	3078.2	364	3080	366	3082	392	3082	446
GR	3080	478	3079	481	3079	486	3080	489	3082	517
GR	3084	605	3086	655						

QT	2	299	610							
NH	3	0.08	171	0.024	179	0.08	290			
X1	59.0	12	164	186	400	300	380			
GR	3100	0	3092	40	3090	50	3088	95	3036	164
GR	3085	171	3085	179	3086	186	3088	233	3090	252
GR	3092	262	3100	290						

NH	3	0.08	71	0.024	79	0.08	265			
X1	60.0	12	66	85	330	270	300			
GR	3098	0	3096	16	3094	23	3092	36	3090	66

061

GR	3088.2	71	3088.2	79	3090	85	3092	150	3094	230
GR	3096	250	3098	265						
NH	3	0.08	211	0.024	219	0.08	250			
X1	61.0	12	209	221	240	260	250			
GR	3100	0	3098	20	3096	50	3094	100	3092	209
GR	3091	211	3091	219	3092	221	3094	229	3096	233
GR	3098	240	3100	250						
QT	2	280	550							
NH	3	0.08	121	0.024	129	0.08	285			
X1	62.0	12	119	131	300	300	300			
GR	3104	0	3102	10	3100	20	3098	29	3096	119
GR	3095.3	121	3095.3	129	3096	131	3098	135	3100	204
GR	3102	266	3104	285						
NH	3	0.08	34	0.024	41	0.08	248			
X1	63.0	12	31	44	400	370	380			
GR	3110	0	3108	12	3106	16	3104	21	3102	31
GR	3101.5	34	3101.5	41	3102	44	3104	144	3106	200
GR	3108	220	3110	248						

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QT	2	258	497							
NH	3	0.08	282	0.024	288	0.08	344			
X1	64.0	13	270	295	400	400	400			
GR	3114	0	3112	118	3110	175	3109	232	3119	233
GR	3119	269	3108	270	3106.7	282	3106.7	288	3108	295
GR	3110	320	3112	337	3114	344				
NH	3	0.08	144	0.024	150	0.08	304			
X1	65.0	17	143	152	360	490	500			
GR	3120	0	3118	13	3116	19	3114	28	3113.5	70
GR	3114	110	3114	122	3112	143	3111.6	144	3111.6	150
GR	3112	152	3114	156	3114	180	3116	238	3118	252
GR	3118	293	3120	304						
NH	3	0.08	45	0.024	51	0.08	228			
X1	66.0	12	42	54	270	260	250			
GR	3122	0	3120	8	3118	13	3116	28	3114	42
GR	3113.5	45	3113.5	51	3114	54	3116	60	3118	140
GR	3120	190	3122	228						
NH	3	0.08	78	0.024	84	0.08	273			
X1	67.0	14	75	85	240	220	230			
GR	3126	0	3124	18	3122	39	3120	71	3118	75
GR	3116	78	3115.8	79	3115.8	80	3116	84	3118	85
GR	3120	90	3122	160	3124	232	3126	273		
QT	2	158	309							
NH	3	0.08	69	0.024	75	0.08	288			
X1	68.0	15	65	80	430	440	460			
X3						152	3128.5			
GR	3132	0	3130	50	3128	60	3126	65	3125	69
GR	3125	75	3126	80	3128	132	3128.5	152	3128	168
GR	3126.3	204	3126.3	208	3128	242	3130	260	3132	288

062

NH	3	0.08	62	0.024	68	0.08	144			
X1	69.0	10	58	72	240	220	235			
GR	3136	0	3134	20	3132	35	3130	58	3129.8	62
GR	3129.8	68	3130	72	3132	95	3134	120	3136	144
NH	3	0.08	82	0.024	88	0.08	210			
X1	70.0	8	80	90	370	350	370			
GR	3140	0	3138	22	3137	80	3136.3	82	3136.3	88
GR	3137	90	3138	110	3140	210				
NH	5	0.08	130	0.024	131	0.08	145	0.017	180	0.024
NH	185									
X1	71.0	13	120	145	455	450	475			
GR	3148	0	3146	45	3144.8	49	3146	58	3147	85
GR	3146	120	3144	128	3143.8	130	3143.8	131	3144	134
GR	3146	145	3146	180	3148	185				
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										PAGE 12
QT	2	135	250							
NH	3	0.07	36	0.05	132	0.07	348			
X1	72.0	12	90	100	345	240	295			
GR	3156	0	3154	36	3153	90	3152.3	91	3152.3	99
GR	3153	100	3153	132	3163	133	3163	184	3153	185
GR	3154	268	3156	348						
NH	3	0.07	107	0.05	159	0.07	167			
X1	73.0	8	123	130	120	140	130			
GR	3158	0	3156	49	3156	73	3156	107	3154	123
GR	3154	130	3156	159	3158	167				
NH	1	0.04	35							
X1	74.0	10	7	24	280	270	275			
GR	3164	0	3162	4	3160	7	3158	12	3157.6	14
GR	3157.6	17	3158	20	3160	24	3162	30	3164	35
NH	1	0.04	30							
X1	75.0	8	11	20	400	450	440			
GR	3174	0	3172	5	3170	11	3168	15	3168	18
GR	3170	20	3172	24	3174	30				
QT	2	109	194							
NH	1	0.04	33							
X1	76.0	10	8	20	350	340	350			
GR	3184	0	3182	5	3180	8	3178	12	3176.3	14
GR	3176.3	16	3178	18	3180	20	3182	26	3184	33
NH	1	0.04	26							
X1	77.0	8	7	22	180	170	170			
GR	3190	0	3188	7	3186	10	3184	13	3184	15
GR	3186	17	3188	22	3190	26				
NH	3	0.08	59	0.04	61	0.08	108			
X1	78.0	6	32	80	310	310	300			
GR	3200	0	3198	32	3196	59	3196	61	3198	80
GR	3200	108								
QT	2	2322	4325							

0163

NH	3	0.08	225	0.024	252	0.08	820			
X1	-24.0	17	210	305	300	270	280			
GR	3130	0	3128	72	3126	130	3124	210	3122	220
GR	3120	225	3120	252	3122	260	3122.2	270	3124	305
GR	3124	365	3126	475	3126	555	3124	563	3124	606
GR	3126	780	3130	820						

QT	2	1224	2276							
NH	5	0.08	197	0.024	217	0.08	398	0.024	417	0.08
NH	465									

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X1	79.0	23	190	425	550	490	650			
GR	3140	0	3138	27	3136	60	3134	70	3132	82
GR	3130	94	3130	190	3129.2	197	3129.2	217	3130	230
GR	3130	282	3131	310	3131	390	3130	398	3129	402
GR	3129	411	3130	417	3131	420	3132	425	3134	436
GR	3136	443	3138	450	3140	465				

NH	3	0.08	50	0.024	80	0.08	498			
X1	80.0	14	40	86	330	400	435			
GR	3142	0	3140	28	3138	33	3136	40	3135	50
GR	3135	80	3136	86	3136	128	3135	176	3135	400
GR	3136	420	3138	473	3140	487	3142	498		

NH	3	0.08	288	0.024	323	0.08	434			
X1	81.0	17	284	324	380	410	380			
GR	3148	0	3146	40	3144	72	3142	112	3140.5	147
GR	3140.5	190	3150.5	191	3150.5	205	3140.5	206	3140	284
GR	3139	288	3139	323	3140	324	3142	370	3144	402
GR	3146	417	3148	434						

NH	3	0.08	238	0.024	253	0.08	532			
X1	82.0	28	230	262	510	435	465			
GR	3156	0	3152	27	3150	58	3149	99	3159	100
GR	3159	149	3149	150	3148	158	3147	199	3157	200
GR	3157	212	3147	213	3146	230	3144	238	3144	253
GR	3146	262	3146	286	3146	359	3156	360	3156	372
GR	3146	373	3148	421	3150	462	3160	463	3160	488
GR	3150	489	3152	502	3156	532				

NH	5	0.08	127	0.024	147	0.08	257	0.024	265	0.08
NH	492									
X1	83.0	18	125	265	450	320	410			
GR	3160	0	3158	9	3156	11	3154	16	3152	53
GR	3150	125	3149.7	127	3149.7	147	3150	150	3152	158
GR	3152	162	3150	257	3150	265	3152	363	3154	398
GR	3156	420	3158	450	3160	492				

NH	9	0.08	150	0.024	151	0.08	220	0.024	221	0.08
NH	259	0.024	283	0.05	286	0.017	305	0.08	395	
X1	84.0	21	150	307	260	360	325			
GR	3160	0	3158	20	3156	70	3154.5	150	3154.5	151
GR	3155.5	180	3154	220	3154	221	3154.5	259	3154.1	260
GR	3154.1	282	3155	283	3155	286	3155	305	3156	307
GR	3158	310	3158	317	3156	320	3156	355	3158	375
GR	3160	395								

064



NH	5	0.08	65	0.024	80	0.08	165	0.017	185	0.08
NH	435									
X1	85.0	18	55	226	430	470	480			
GR	3168	0	3166	26	3164	48	3162	55	3161	65
GR	3161	80	3162	83	3162	155	3160	165	3160	185
GR	3162	226	3164	330	3166	365	3166.5	380	3176.5	381
GR	3176.5	422	3166.5	423	3168	435				

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NH	7	0.08	115	0.024	135	0.08	175	0.024	182	0.08
NH	215	0.024	220	0.08	405					
X1	86.0	19	115	252	410	500	450			
GR	3176	0	3174	5	3172	20	3170	40	3168	95
GR	3166	115	3166	135	3167	140	3167	175	3167	182
GR	3167.2	186	3167.2	210	3167	215	3167	220	3168	252
GR	3170	295	3172	310	3174	345	3176	405		

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SECNO	DEPTH	CWSEL	CRISW	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	

\*PROF 1  
0

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 1.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

1.00	6.20	3036.70	.00	3036.70	3036.77	.07	.00	.00	3032.00
2488.	837.	953.	698.	529.	343.	428.	0.	0.	3032.00
.00	1.58	2.78	1.63	.080	.066	.080	.000	3030.50	10.60
.001933	0.	0.	0.	0	0	0	.00	440.45	451.05

0

1490 NH CARD USED

\*SECNO 2.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

2.00	4.45	3037.45	.00	.00	3037.93	.48	.96	.21	3036.00
2488.	176.	1474.	838.	71.	224.	214.	4.	2.	3034.00
.01	2.49	6.57	3.91	.080	.067	.080	.000	3033.00	167.41
.027797	240.	200.	165.	3	0	0	.00	347.89	515.30

0

1490 NH CARD USED

\*SECNO 3.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3.00	4.40	3042.40	3042.40	.00	3043.31	.91	5.05	.21	3040.00
2488.	220.	1738.	530.	124.	192.	227.	9.	5.	3040.00
.03	1.77	9.06	2.34	.080	.035	.080	.000	3038.00	148.96
.007516	420.	390.	375.	4	5	0	.00	328.81	477.78

De

0  
 1490 NH CARD USED  
 \*SECNO 4.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED  
 7185 MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

4.00	4.69	3046.69	3046.69	.00	3047.41	.72	2.36	.06	3042.00
2488.	794.	1356.	338.	307.	152.	211.	13.	8.	3044.00
.04	2.59	8.95	1.60	.080	.041	.080	.000	3042.00	139.52
.008339	315.	300.	270.	6	8	0	.00	480.47	619.98

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SECNO	DEPTH	CWSEL	CRIS	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

1490 NH CARD USED  
 \*SECNO 5.000  
 7185 MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

5.00	4.62	3048.62	3048.62	.00	3049.36	.74	1.67	.01	3047.00
2488.	826.	1625.	37.	458.	193.	20.	17.	10.	3046.00
.05	1.80	8.42	1.83	.080	.029	.080	.000	3044.00	127.94
.005465	240.	250.	300.	3	6	0	.00	416.55	544.50

0

1490 NH CARD USED  
 \*SECNO 6.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED  
 3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=            115.0            648.0 TYPE=            1 TARGET=            -115.000  
 ELENCL= 3054.20 ELENCR= 100000.00

6.00	4.09	3052.09	3051.94	.00	3052.98	.89	3.54	.08	3050.00
2488.	224.	2236.	27.	64.	284.	8.	21.	13.	3050.00
.06	3.49	7.88	3.59	.080	.069	.080	.000	3048.00	418.02
.035213	370.	300.	300.	8	11	0	.00	217.21	635.23

0

1490 NH CARD USED  
 \*SECNO 7.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

7.00	5.27	3057.27	.00	.00	3057.49	.22	4.31	.20	3054.00
2488.	481.	2007.	0.	310.	490.	0.	25.	16.	3060.00
.09	1.55	4.09	.00	.080	.066	.000	.000	3052.00	238.86
.006202	350.	350.	380.	5	0	0	.00	479.13	744.93

*Dbb*

0  
1

1/ 1/80 2:15:41

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	XLN	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED  
\*SECNO 8.000

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

8.00	3.93	3060.73	3060.67	.00	3061.40	.67	3.68	.23	3060.00
2488.	227.	2253.	8.	120.	327.	6.	31.	19.	3060.00
.11	1.89	6.90	1.20	.080	.046	.080	.000	3056.80	28.90
.015801	350.	400.	385.	7	16	0	.00	326.51	412.60

0

1490 NH CARD USED  
\*SECNO 9.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

9.00	4.94	3064.34	.00	.00	3064.53	.19	2.98	.15	3064.00
2488.	96.	2373.	19.	61.	672.	10.	35.	21.	3062.00
.13	1.58	3.53	1.82	.080	.066	.080	.000	3059.40	171.56
.007885	280.	275.	245.	4	0	0	.00	384.31	565.78

0

1490 NH CARD USED  
\*SECNO 10.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

10.00	4.21	3066.71	3066.71	.00	3067.60	.89	2.25	.35	3064.00
2488.	214.	1333.	942.	108.	132.	348.	39.	23.	3064.00
.14	1.98	10.07	2.71	.080	.034	.080	.000	3062.50	278.33
.008239	180.	285.	290.	2	15	0	.00	355.08	633.42

0

1

1/ 1/80 2:15:41

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	XLN	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

067

1490 NH CARD USED

\*SECNO 11.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

11.00	4.86	3070.86	.00	.00	3070.99	.13	3.16	.23	3067.00
2488.	328.	1296.	863.	115.	442.	304.	44.	27.	3068.00
.17	2.85	2.93	2.84	.080	.075	.080	.000	3066.00	42.09
.010307	355.	400.	260.	3	0	0	.00	485.26	537.60

1490 NH CARD USED

\*SECNO 12.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

12.00	4.77	3074.07	.00	.00	3074.20	.12	3.21	.00	3072.00
2488.	202.	1426.	860.	100.	440.	398.	51.	31.	3072.00
.20	2.03	3.24	2.16	.080	.075	.080	.000	3069.30	76.33
.010770	340.	300.	300.	3	0	0	.00	667.98	744.31

1490 NH CARD USED

\*SECNO 13.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

13.00	4.95	3079.35	.00	.00	3079.71	.36	5.39	.12	3078.00
2366.	995.	1121.	251.	378.	175.	88.	58.	36.	3078.00
.23	2.63	6.40	2.85	.080	.067	.080	.000	3074.40	60.68
.016231	390.	415.	440.	5	0	0	.00	471.44	571.05

1490 NH CARD USED

\*SECNO 14.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

14.00	5.05	3083.25	.00	.00	3083.38	.13	3.60	.07	3082.00
2366.	579.	1751.	36.	352.	549.	34.	65.	40.	3082.00
.27	1.65	3.19	1.05	.080	.069	.080	.000	3078.20	23.86
.005975	300.	430.	460.	5	0	0	.00	548.17	572.03

1/ 1/80 2:15:41

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 15.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

567

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

15.00	4.07	3086.57	3086.57	.00	3087.41	.83	1.95	.35	3084.00
2322.	259.	1872.	191.	200.	230.	115.	71.	44.	3084.00
.28	1.29	8.13	1.66	.080	.035	.080	.000	3082.50	134.97
.005892	350.	325.	315.	3	15	0	.00	427.47	562.44

0

1490 NH CARD USED

\*SECNO 16.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

16.00	4.72	3091.72	3090.76	.00	3092.03	.31	4.47	.16	3090.00
2322.	2.	2148.	172.	1.	464.	81.	77.	48.	3090.00
.31	1.68	4.63	2.12	.080	.072	.080	.000	3087.00	4.28
.016024	400.	500.	430.	13	12	0	.00	290.86	469.37

0

1490 NH CARD USED

\*SECNO 17.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

17.00	4.87	3097.17	.00	.00	3097.56	.39	5.49	.04	3096.00
2322.	190.	1022.	1110.	95.	146.	431.	83.	51.	3096.00
.34	2.00	6.99	2.57	.080	.049	.080	.000	3092.30	28.23
.009855	425.	430.	480.	5	0	0	.00	447.44	475.67

0

1490 NH CARD USED

1

1/ 1/80 2:15:41

SECNO	DEPTH	CWSEL	CRISW	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 18.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

18.00	4.10	3102.40	3102.40	.00	3103.06	.66	4.93	.14	3100.00
2322.	552.	1273.	497.	170.	151.	226.	89.	56.	3100.00
.36	3.25	8.42	2.20	.080	.049	.080	.000	3098.30	26.81
.013391	415.	425.	450.	2	9	0	.00	461.16	487.97

0

1490 NH CARD USED

\*SECNO 19.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

19.00	5.21	3106.21	.00	.00	3106.39	.18	3.19	.14	3104.00
2322.	6.	1723.	593.	4.	452.	323.	94.	59.	3104.00
.39	1.58	3.81	1.84	.080	.069	.080	.000	3101.00	18.79
.007303	360.	350.	260.	4	0	0	.00	456.94	475.73

0

1490 NH CARD USED

\*SECNO 20.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

20.00	5.05	3109.55	.00	.00	3110.13	.58	3.54	.20	3108.00
2322.	5.	1687.	630.	3.	240.	258.	99.	63.	3108.00
.41	1.66	7.03	2.44	.080	.057	.074	.000	3104.50	34.13
.012400	340.	360.	430.	3	0	0	.00	305.49	339.62

0

1490 NH CARD USED

\*SECNO 21.000

3265 DIVIDED FLOW

21.00	4.09	3113.89	.00	.00	3114.37	.47	4.20	.03	3112.00
2322.	5.	1786.	531.	4.	287.	334.	105.	66.	3112.30
.43	1.41	6.22	1.59	.080	.033	.080	.000	3109.80	11.20
.007143	525.	500.	320.	2	0	0	.00	484.04	541.05

0

1490 NH CARD USED

\*SECNO 22.000

1

1/ 1/80      2:15:41

SECNO	DEPTH	CWSEL	CRISW	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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

22.00	4.63	3118.03	.00	.00	3118.20	.17	3.74	.09	3116.00
2322.	193.	1575.	554.	108.	433.	214.	112.	71.	3118.00
.47	1.79	3.64	2.58	.080	.072	.080	.000	3113.40	59.59
.009117	450.	500.	360.	2	0	0	.00	453.34	628.60

0

1490 NH CARD USED

\*SECNO 23.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

23.00	4.59	3120.59	3120.59	.00	3121.60	1.01	2.29	.42	3118.70
2322.	233.	2081.	9.	135.	244.	10.	115.	73.	3120.00
.48	1.72	8.52	.88	.080	.029	.080	.000	3116.00	132.28
.007031	290.	287.	285.	2	5	0	.00	238.01	760.78

0

1490 NH CARD USED

\*SECNO 24.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

570

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

24.00	4.74	3124.74	3124.74	.00	3125.50	.76	3.45	.08	3124.00
2322.	17.	2053.	252.	11.	278.	116.	118.	75.	3124.00
.49	1.57	7.39	2.17	.080	.067	.080	.000	3120.00	180.39
.026774	300.	280.	270.	4	8	0	.00	335.68	670.40

0

1490 NH CARD USED

\*SECNO 25.000

1

1/ 1/80 2:15:41

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

3265 DIVIDED FLOW

3280 CROSS SECTION 25.00 EXTENDED 4.08 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

25.00	4.08	3128.08	.00	.00	3128.23	.15	2.55	.18	3127.00
1196.	337.	824.	36.	291.	226.	40.	122.	77.	3126.00
.53	1.16	3.64	.88	.080	.038	.080	.000	3124.00	91.64
.002088	250.	350.	350.	6	0	0	.00	304.05	404.00

0

1490 NH CARD USED

\*SECNO 26.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

26.00	3.75	3129.95	3129.95	.00	3130.51	.57	1.82	.21	3128.00
1196.	19.	695.	482.	9.	90.	211.	126.	80.	3128.00
.55	2.25	7.69	2.28	.080	.053	.080	.000	3126.20	61.24
.015659	380.	400.	440.	5	12	0	.00	252.74	313.98

0

1490 NH CARD USED

\*SECNO 27.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

27.00	3.28	3134.28	.00	.00	3134.85	.57	4.34	.00	3132.00
1196.	365.	816.	15.	218.	113.	10.	129.	82.	3132.00
.57	1.67	7.23	1.53	.080	.033	.080	.000	3131.00	18.58
.005808	500.	500.	420.	4	0	0	.00	220.80	239.38

0

1490 NH CARD USED

\*SECNO 28.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

021

SECNO	DEPTH	CWSEL	CRISW	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	
28.00	3.22	3135.52	3135.52	.00	3136.34	.82	1.03	.12	3134.00	
1196.	84.	881.	231.	48.	106.	85.	130.	83.	3134.00	
.58	1.76	8.31	2.72	.080	.039	.080	.000	3132.30	95.48	
.012841	125.	125.	120.	3	5	0	.00	162.15	257.62	

0

1490 NH CARD USED  
\*SECNO 29.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

29.00	3.83	3139.83	.00	.00	3140.00	.16	3.46	.20	3138.00	
1196.	33.	1156.	7.	24.	351.	5.	133.	84.	3138.00	
.61	1.38	3.29	1.33	.080	.059	.080	.000	3136.00	35.45	
.006207	350.	400.	430.	4	0	0	.00	198.05	233.49	

0

1490 NH CARD USED  
\*SECNO 30.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

30.00	2.70	3142.70	.00	.00	3142.87	.17	2.87	.00	3141.00	
1177.	46.	304.	828.	19.	90.	247.	135.	86.	3142.00	
.64	2.46	3.39	3.34	.080	.078	.080	.000	3140.00	12.59	
.014228	230.	325.	320.	2	0	0	.00	211.64	243.82	

0

1490 NH CARD USED  
\*SECNO 30.500

3265 DIVIDED FLOW

30.50	3.33	3145.93	.00	.00	3146.60	.67	3.48	.25	3144.00	
1177.	262.	655.	259.	103.	77.	113.	138.	87.	3144.00	
.65	2.56	8.53	2.29	.080	.034	.080	.000	3142.60	75.80	
.009274	400.	340.	250.	3	0	0	.00	173.45	305.98	

0

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SECNO	DEPTH	CWSEL	CRISW	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	

012



1490 NH CARD USED  
 \*SECNO 31.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

31.00	4.17	3146.97	.00	.00	3147.08	.11	.32	.17	3146.00
1177.	6.	1145.	26.	9.	421.	25.	138.	87.	3146.00
.66	.67	2.72	1.04	.080	.053	.080	.000	3142.80	51.03
.003409	70.	60.	50.	2	0	0	.00	238.88	289.92

0  
 1490 NH CARD USED  
 \*SECNO 32.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

32.00	3.44	3149.84	3149.84	.00	3150.66	.82	1.96	.35	3148.00
1177.	192.	933.	51.	112.	115.	30.	141.	89.	3148.00
.67	1.72	8.11	1.72	.080	.037	.080	.000	3146.40	98.24
.009600	320.	370.	400.	20	12	0	.00	192.83	301.24

0  
 1490 NH CARD USED  
 \*SECNO 33.000

3301 HV CHANGED MORE THAN HVINS

33.00	2.20	3153.20	.00	.00	3153.35	.15	2.49	.20	3152.50
1177.	464.	694.	19.	234.	187.	14.	143.	91.	3152.00
.70	1.98	3.71	1.34	.080	.051	.080	.000	3151.00	17.40
.010335	250.	250.	250.	4	0	0	.00	376.60	394.00

0  
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 1/ 1/80      2:15:41

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

1490 NH CARD USED  
 \*SECNO 34.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

073

34.00	3.55	3157.05	.00	.00	3157.37	.32	3.94	.09	3156.00
1177.	501.	565.	111.	174.	96.	41.	145.	93.	3156.00
.71	2.87	5.86	2.73	.080	.071	.080	.000	3153.50	8.85
.022601	290.	250.	270.	4	0	0	.00	248.93	331.57

0

1490 NH CARD USED

\*SECNO 35.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

35.00	5.77	3161.27	.00	.00	3161.55	.28	4.16	.01	3158.00
1177.	292.	698.	186.	185.	132.	108.	149.	95.	3158.00
.74	1.58	5.31	1.73	.080	.068	.080	.000	3155.50	36.56
.007040	390.	350.	310.	5	0	0	.00	312.84	349.40

0

1490 NH CARD USED

\*SECNO 36.000

3301 HV CHANGED MORE THAN HVINS

36.00	4.64	3162.14	3161.14	.00	3163.03	.89	1.18	.31	3158.00
1177.	40.	1072.	64.	22.	135.	26.	150.	96.	3158.00
.75	1.82	7.92	2.45	.080	.036	.080	.000	3157.50	80.11
.004935	210.	200.	200.	6	14	0	.00	98.65	178.77

0

1490 NH CARD USED

\*SECNO 37.000

1

1/ 1/80 2:15:41

SECNO	DEPTH	CWSEL	CRISW	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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	.0	130.0	TYPE=	1	TARGET=	129.999			
37.00	5.46	3167.46	3167.46	.00	3168.06	.60	3.23	.09	3164.00
1177.	37.	870.	270.	12.	121.	165.	152.	98.	3164.00
.77	2.96	7.16	1.63	.080	.062	.080	.000	3162.00	13.35
.011338	375.	450.	475.	7	11	0	.00	335.21	348.56

0

1490 NH CARD USED

\*SECNO -12.000

START TRIB COMP

-12.000 12.000 3074.073

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

-12.00	4.77	3074.07	.00	.00	3074.20	.13	.00	.00	3072.00
2488.	201.	1429.	857.	99.	438.	395.	157.	102.	3072.00
.80	2.04	3.27	2.17	.080	.075	.080	.000	3069.30	76.62
.010980	340.	300.	300.	0	0	0	.00	667.55	744.17

0

1490 NH CARD USED

\*SECNO 38.000

072

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

38.00	2.28	3076.48	3076.48	.00	3076.78	.30	2.20	.09	3074.20
433.	69.	274.	90.	39.	51.	42.	159.	104.	3075.00
.81	1.75	5.34	2.12	.080	.030	.080	.000	3074.20	89.24
.014264	250.	210.	130.	20	13	0	.00	182.36	271.60

0

1490 NH CARD USED  
 \*SECNO 39.000

39.00	2.22	3078.22	.00	.00	3078.48	.26	1.68	.01	3076.00
433.	116.	286.	31.	70.	59.	16.	159.	104.	3076.30
.82	1.65	4.86	1.91	.080	.040	.080	.000	3076.00	56.18
.009788	190.	140.	90.	2	0	0	.00	144.96	201.14

0

1490 NH CARD USED  
 1

1/ 1/80 2:15:41

SECNO	DEPTH	CWSEL	CRISW	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 40.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED  
 7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

40.00	4.02	3082.22	3082.22	.00	3082.97	.75	4.07	.25	3080.00
433.	24.	312.	96.	10.	39.	39.	160.	105.	3080.00
.84	2.47	8.05	2.46	.080	.048	.080	.000	3078.20	39.35
.014412	280.	350.	400.	2	17	0	.00	64.49	103.84

0

1490 NH CARD USED  
 \*SECNO 41.000

41.00	1.59	3086.59	.00	.00	3086.85	.26	3.73	.15	3085.00
433.	309.	99.	24.	171.	13.	14.	161.	106.	3085.00
.87	1.81	7.83	1.75	.080	.024	.080	.000	3085.00	67.66
.008640	300.	375.	330.	4	0	0	.00	185.56	253.23

0

1490 NH CARD USED  
 \*SECNO 42.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

42.00	2.43	3089.43	3089.43	.00	3090.19	.76	1.58	.25	3087.00
433.	75.	259.	98.	37.	29.	58.	162.	107.	3087.00
.88	2.05	8.90	1.69	.080	.024	.080	.000	3087.00	36.28
.006324	210.	220.	220.	3	14	0	.00	95.31	131.59

0

1490 NH CARD USED  
 \*SECNO 42.500

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

42.50	2.83	3093.23	3093.23	.00	3093.82	.59	3.17	.05	3092.00
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02

433.	20.	346.	67.	10.	51.	33.	163.	107.	3092.00
.89	2.00	6.84	2.01	.080	.058	.080	.000	3090.40	55.46
.022433	210.	300.	320.	9	8	0	.00	92.06	147.52

0  
1

1/ 1/80      2:15:41

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	

1490 NH CARD USED

\*SECNO 43.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

43.00	2.27	3097.27	.00	.00	3097.61	.34	3.71	.08	3098.00
433.	0.	420.	13.	0.	89.	10.	164.	108.	3096.00
.91	.00	4.72	1.27	.000	.032	.080	.000	3095.00	21.45
.008599	350.	290.	200.	3	0	0	.00	94.47	115.92

0

1490 NH CARD USED

\*SECNO 44.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

44.00	3.38	3101.68	3101.68	.00	3102.48	.80	2.22	.23	3098.30
433.	132.	230.	71.	82.	24.	41.	165.	109.	3098.30
.92	1.61	9.73	1.76	.080	.024	.080	.000	3098.30	36.81
.004876	340.	350.	360.	4	14	0	.00	112.50	149.31

0

1490 NH CARD USED

\*SECNO 45.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

45.00	3.99	3103.29	.00	.00	3103.76	.47	1.18	.10	3100.00
352.	11.	310.	30.	5.	53.	20.	165.	109.	3100.00
.93	2.11	5.82	1.49	.080	.056	.080	.000	3099.30	30.71
.008198	140.	200.	240.	3	0	0	.00	43.71	74.42

0

1490 NH CARD USED

\*SECNO 46.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

46.00	3.21	3108.21	3108.21	.00	3108.94	.74	4.55	.13	3106.00
352.	85.	243.	24.	29.	30.	9.	166.	109.	3106.00
.95	2.89	8.06	2.77	.080	.052	.080	.000	3105.00	74.24
.019337	400.	375.	370.	10	15	0	.00	47.79	122.03

0

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1/ 1/80      2:15:41

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK	ELEV
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076

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

1490 NH CARD USED

\*SECNO 47.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

47.00	4.37	3115.07	3114.61	.00	3115.77	.70	6.82	.01	3112.00
352.	37.	298.	17.	21.	41.	9.	166.	110.	3112.00
.97	1.74	7.26	1.84	.080	.053	.080	.000	3110.70	69.18
.011105	470.	475.	480.	9	8	0	.00	52.44	121.63

1490 NH CARD USED

\*SECNO 48.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

48.00	4.51	3119.11	.00	.00	3119.55	.44	3.69	.08	3116.00
352.	18.	282.	51.	10.	49.	23.	167.	110.	3116.00
.99	1.78	5.82	2.27	.080	.065	.080	.000	3114.60	58.90
.010595	320.	340.	360.	3	0	0	.00	48.85	107.75

1490 NH CARD USED

\*SECNO 49.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

49.00	3.41	3125.41	.00	.00	3125.86	.45	6.31	.00	3124.00
352.	5.	336.	11.	2.	61.	6.	168.	111.	3124.00
1.01	1.85	5.47	1.93	.080	.068	.080	.000	3122.00	45.48
.017469	500.	470.	470.	3	0	0	.00	34.97	80.45

1490 NH CARD USED

\*SECNO 50.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

50.00	2.47	3129.97	.00	.00	3130.26	.29	4.35	.05	3130.00
352.	0.	352.	0.	0.	82.	0.	168.	111.	3130.00
1.03	.00	4.30	.00	.000	.049	.000	.000	3127.50	130.25
.012248	270.	300.	310.	4	0	0	.00	56.49	186.74

1490 NH CARD USED

\*SECNO 51.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

51.00	2.09	3137.09	3136.97	.00	3137.50	.40	7.18	.06	3136.00
352.	53.	284.	15.	23.	51.	7.	169.	112.	3136.00
1.06	2.26	5.56	2.26	.080	.069	.080	.000	3135.00	117.08
.033420	420.	375.	340.	11	15	0	.00	85.42	202.50

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SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	GLOSS	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

1490 NH CARD USED

\*SECNO 52.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

52.00	2.99	3141.99	.00	.00	3142.14	.15	4.57	.07	3140.00
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077

121.	8.	95.	18.	6.	27.	14.	170.	112.	3140.00
1.08	1.29	3.49	1.33	.070	.051	.070	.000	3139.00	164.06
.004013	260.	300.	350.	3	0	0	.00	29.80	193.86

0  
 1490 NH CARD USED  
 \*SECNO 53.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

53.00	1.53	3147.53	3147.53	.00	3147.99	.46	.02	.15	3148.00
121.	0.	121.	0.	0.	22.	0.	170.	112.	3148.00
1.10	.00	5.45	.00	.000	.001	.000	.000	3146.00	98.55
.000025	300.	275.	265.	20	8	0	.00	24.09	122.63

0  
 1490 NH CARD USED  
 \*SECNO 54.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

54.00	2.43	3152.63	3152.63	.00	3153.50	.87	.03	.20	3152.00
121.	1.	119.	1.	0.	16.	0.	170.	112.	3152.00
1.11	2.34	7.53	2.17	.040	.040	.040	.000	3150.20	8.43
.020462	340.	325.	335.	20	11	0	.00	10.51	18.94

0  
 1490 NH CARD USED  
 \*SECNO 55.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

55.00	2.55	3162.55	3162.55	.00	3163.44	.90	.06	.02	3162.00
121.	0.	121.	0.	0.	16.	0.	170.	113.	3162.00
1.13	.08	7.60	.09	.040	.002	.040	.000	3160.00	2.18
.000034	450.	450.	445.	20	8	0	.00	11.46	13.64

0  
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 1/ 1/80      2:15:41

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED  
 \*SECNO 56.000  
 3301 HV CHANGED MORE THAN HVINS

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

56.00	3.23	3172.53	3172.53	.00	3174.02	1.49	.01	.30	3170.00
121.	1.	120.	0.	5.	12.	3.	170.	113.	3170.00
1.14	.13	9.83	.11	.040	.001	.040	.000	3169.30	4.21
.000009	470.	465.	460.	20	11	0	.00	11.38	15.58

0  
 1490 NH CARD USED  
 \*SECNO 57.000

078

3301 HV CHANGED MORE THAN HVINS

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

57.00	2.65	3178.65	3178.65	.00	3179.55	.90	.00	.17	3178.00
121.	0.	121.	0.	0.	16.	0.	170.	113.	3178.00
1.15	.03	7.63	.03	.040	.000	.040	.000	3176.00	7.35
.000003	270.	285.	290.	20	15	0	.00	10.30	17.65

0

1490 NH CARD USED

\*SECNO 58.000

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

58.00	2.95	3188.95	3188.95	.00	3190.01	1.05	.00	.07	3188.00
121.	0.	121.	0.	2.	15.	2.	170.	113.	3188.00
1.16	.03	8.23	.03	.040	.000	.040	.000	3186.00	4.18
.000002	300.	305.	310.	20	8	0	.00	14.16	18.34

0

1490 NH CARD USED

\*SECNO -14.000

START TRIB COMP

1

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SECNO	DEPTH	CWSEL	CRISW	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

-14.000 14.000 3083.249

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

-14.00	5.05	3083.25	.00	.00	3083.38	.13	.00	.00	3082.00
2366.	578.	1752.	36.	351.	549.	34.	175.	115.	3082.00
1.20	1.65	3.19	1.05	.080	.069	.080	.000	3078.20	23.89
.005991	300.	430.	460.	0	0	0	.00	548.07	571.96

0

1490 NH CARD USED

\*SECNO 59.000

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

59.00	2.09	3087.09	3087.09	.00	3087.64	.55	2.44	.21	3086.00
299.	28.	251.	19.	20.	39.	14.	179.	118.	3086.00
1.22	1.38	6.45	1.38	.080	.038	.080	.000	3085.00	126.39
.012457	400.	380.	300.	20	18	0	.00	85.23	211.62

0

1490 NH CARD USED

\*SECNO 60.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

60.00	3.02	3091.22	.00	.00	3091.56	.34	3.86	.06	3090.00
299.	17.	244.	38.	11.	48.	24.	180.	118.	3090.00
1.24	1.55	5.13	1.55	.080	.061	.080	.000	3088.20	47.64
.013382	330.	300.	270.	4	0	0	.00	77.13	124.78

0

1490 NH CARD USED

\*SECNO 61.000

07

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

61.00	2.80	3093.80	.00	.00	3094.02	.22	2.42	.04	3092.00
299.	132.	157.	10.	89.	32.	7.	180.	119.	3092.00
1.26	1.49	4.97	1.46	.080	.048	.080	.000	3091.00	110.70
.007416	240.	250.	260.	4	0	0	.00	117.52	228.21

0

1490 NH CARD USED

\*SECNO 62.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

62.00	2.17	3097.47	3097.47	.00	3097.97	.50	3.36	.14	3096.00
280.	103.	173.	4.	49.	25.	2.	181.	120.	3096.00
1.28	2.12	7.03	1.97	.080	.047	.080	.000	3095.30	52.92
.019636	300.	300.	300.	3	15	0	.00	81.02	133.94

0

1

1/ 1/80      2:15:41

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 63.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

63.00	2.03	3103.53	3103.53	.00	3104.04	.51	5.46	.00	3102.00
280.	9.	177.	94.	6.	25.	58.	182.	120.	3102.00
1.30	1.59	7.10	1.62	.080	.033	.080	.000	3101.50	23.36
.010842	400.	380.	370.	5	11	0	.00	96.99	120.35

0

1490 NH CARD USED

\*SECNO 64.000

64.00	2.10	3108.80	3108.69	.00	3109.41	.60	5.32	.05	3108.00
258.	0.	253.	5.	0.	40.	4.	182.	121.	3108.00
1.31	.02	6.29	1.32	.080	.042	.080	.000	3106.70	269.93
.017077	400.	400.	400.	6	5	0	.00	35.09	305.02

0

1490 NH CARD USED

\*SECNO 65.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

65.00	2.75	3114.35	.00	.00	3114.57	.22	5.05	.11	3112.00
258.	115.	126.	17.	82.	24.	16.	183.	122.	3112.00
1.35	1.40	5.22	1.11	.080	.047	.080	.000	3111.60	26.43
.007420	360.	500.	490.	5	0	0	.00	163.72	190.15

0

1490 NH CARD USED

\*SECNO 66.000

66.00	2.65	3116.15	3115.94	.00	3116.81	.67	2.02	.22	3114.00
258.	30.	216.	13.	16.	30.	7.	184.	123.	3114.00
1.37	1.84	7.13	1.71	.080	.035	.080	.000	3113.50	26.90
.008390	270.	250.	260.	6	11	0	.00	38.97	65.87

0

080



1490 NH CARD USED  
\*SECNO 67.000

1

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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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

67.00	3.46	3119.26	3119.15	.00	3120.36	1.11	3.33	.22	3118.00
258.	3.	250.	4.	2.	29.	2.	184.	123.	3118.00
1.37	2.21	8.56	2.26	.080	.055	.080	.000	3115.80	72.50
.030583	240.	230.	220.	4	11	0	.00	15.63	88.13

0

1490 NH CARD USED

\*SECNO 68.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= .0 152.0 TYPE= 1 TARGET= 151.999

68.00	2.53	3127.53	.00	.00	3127.67	.14	7.02	.29	3126.00
158.	4.	115.	39.	3.	33.	30.	184.	123.	3126.00
1.42	1.24	3.44	1.30	.080	.061	.080	.000	3125.00	61.18
.007058	430.	460.	440.	5	0	0	.00	58.52	119.70

0

1490 NH CARD USED

\*SECNO 69.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

69.00	1.47	3131.27	3131.27	.00	3131.77	.50	2.44	.18	3130.00
158.	17.	125.	17.	9.	20.	9.	185.	123.	3130.00
1.43	1.79	6.33	1.79	.080	.039	.080	.000	3129.80	43.44
.017197	240.	235.	220.	3	11	0	.00	43.13	86.56

0

1490 NH CARD USED

\*SECNO 70.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

70.00	1.76	3138.06	.00	.00	3138.31	.25	6.47	.07	3137.00
158.	54.	85.	19.	32.	16.	11.	185.	124.	3137.00
1.46	1.68	5.29	1.67	.080	.051	.080	.000	3136.30	21.40
.017998	370.	370.	350.	3	0	0	.00	91.31	112.71

0

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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

081

1490 NH CARD USED

\*SECNO 71.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

71.00	2.39	3146.19	.00	.00	3146.33	.14	7.98	.03	3146.00
158.	21.	112.	24.	12.	36.	7.	186.	125.	3146.00
1.50	1.80	3.08	3.66	.080	.078	.017	.000	3143.80	40.73
.016273	455.	475.	450.	4	0	0	.00	89.52	180.47

0

1490 NH CARD USED

\*SECNO 72.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

72.00	1.22	3153.52	3153.52	.00	3153.72	.20	5.47	.03	3153.00
135.	14.	57.	65.	7.	11.	28.	186.	126.	3153.00
1.52	1.88	4.92	2.32	.050	.050	.055	.000	3152.30	61.92
.024092	345.	295.	240.	4	11	0	.00	113.35	228.16

0

1490 NH CARD USED

\*SECNO 73.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

73.00	1.65	3155.65	.00	.00	3155.83	.19	2.11	.01	3154.00
135.	30.	51.	54.	11.	12.	20.	186.	126.	3154.00
1.54	2.75	4.39	2.76	.050	.050	.050	.000	3154.00	109.82
.011227	120.	130.	140.	5	0	0	.00	44.08	153.90

0

1490 NH CARD USED

\*SECNO 74.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

74.00	1.97	3159.57	3159.57	.00	3160.26	.68	.03	.25	3160.00
135.	0.	135.	0.	0.	20.	0.	186.	126.	3160.00
1.55	.00	6.64	.00	.000	.001	.000	.000	3157.60	8.07
.000030	280.	275.	270.	20	11	0	.00	15.08	23.14

0

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1/ 1/80 2:15:41

SECNO	DEPTH	CWSEL	CRISW	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	

1490 NH CARD USED

\*SECNO 75.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

75.00	2.57	3170.57	3170.57	.00	3171.53	.96	.01	.14	3170.00
-------	------	---------	---------	-----	---------	-----	-----	-----	---------

082

135.	0.	135.	0.	0.	17.	0.	187.	126.	3170.00
1.56	.05	7.88	.05	.040	.001	.040	.000	3168.00	9.29
.000009	400.	440.	450.	20	11	0	.00	11.85	21.14

0

1490 NH CARD USED  
 \*SECNO 76.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

76.00	2.77	3179.07	3179.07	.00	3179.90	.83	.00	.04	3180.00
109.	0.	109.	0.	0.	15.	0.	187.	126.	3180.00
1.58	.00	7.29	.00	.000	.000	.000	.000	3176.30	9.86
.000003	350.	350.	340.	20	8	0	.00	9.21	19.07

0

1490 NH CARD USED  
 \*SECNO 77.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

77.00	2.75	3186.75	3186.75	.00	3187.53	.78	.00	.01	3188.00
109.	0.	109.	0.	0.	15.	0.	187.	126.	3188.00
1.58	.00	7.11	.00	.000	.000	.000	.000	3184.00	8.88
.000002	180.	170.	170.	20	5	0	.00	9.98	18.86

0

1490 NH CARD USED  
 \*SECNO 78.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

78.00	1.33	3197.33	3197.33	.00	3197.68	.35	.00	.13	3198.00
109.	0.	109.	0.	0.	23.	0.	187.	126.	3198.00
1.60	.00	4.76	.00	.000	.066	.000	.000	3196.00	41.08
.072518	310.	300.	310.	20	11	0	.00	32.53	73.61

0

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1/ 1/80      2:15:41

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

1490 NH CARD USED  
 \*SECNO -24.000  
 START TRIB COMP  
 -24.000    24.000    3124.740  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3720 CRITICAL DEPTH ASSUMED

-24.00	4.74	3124.74	3124.74	.00	3125.50	.76	7.73	-7.73	3124.00
2322.	17.	2052.	253.	11.	278.	117.	188.	128.	3124.00
1.61	1.57	7.38	2.17	.080	.067	.080	.000	3120.00	180.32
.026700	300.	280.	270.	0	30	0	.00	336.00	670.55

0

1490 NH CARD USED  
 \*SECNO 79.000

083

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

79.00	3.17	3132.17	.00	.00	3132.22	.05	6.51	.21	3130.00
1224.	404.	820.	0.	222.	441.	0.	196.	132.	3132.00
1.71	1.82	1.86	.01	.080	.072	.080	.000	3129.00	80.98
.003562	550.	650.	490.	7	0	0	.00	344.95	425.93

0

1490 NH CARD USED  
\*SECNO 80.000

7185 MINIMUM SPECIFIC ENERGY  
3720 CRITICAL DEPTH ASSUMED

80.00	1.10	3136.10	3136.10	.00	3136.53	.43	3.04	.19	3136.00
1224.	0.	364.	860.	0.	43.	292.	200.	135.	3136.00
1.73	.03	8.55	2.95	.080	.026	.080	.000	3135.00	39.65
.025001	330.	435.	400.	4	22	0	.00	383.01	422.66

0

1490 NH CARD USED  
\*SECNO 81.000

1

1/ 1/80            2:15:41

SECNO	DEPTH	CWSEL	CRISW	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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

81.00	2.64	3141.64	3141.61	.00	3142.31	.66	5.66	.12	3140.00
1224.	361.	814.	49.	173.	103.	31.	203.	138.	3140.00
1.75	2.08	7.89	1.58	.080	.034	.080	.000	3139.00	120.31
.009419	380.	380.	410.	9	17	0	.00	225.74	361.81

0

1490 NH CARD USED  
\*SECNO 82.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

82.00	3.55	3147.55	.00	.00	3147.98	.43	5.60	.07	3146.00
1224.	49.	647.	528.	24.	97.	179.	206.	141.	3146.00
1.77	2.05	6.71	2.94	.080	.058	.080	.000	3144.00	176.54
.015907	510.	465.	435.	5	0	0	.00	206.03	410.15

0

1490 NH CARD USED  
\*SECNO 83.000

83.00	2.42	3152.12	.00	.00	3152.37	.25	4.34	.05	3150.00
1224.	145.	880.	198.	80.	191.	109.	209.	143.	3150.00

084

1.80	1.82	4.60	1.82	.080	.036	.080	.000	3149.70	50.94
.008331	450.	410.	320.	4	0	0	.00	314.00	364.94

0

1490 NH CARD USED

\*SECNO 84.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

84.00	2.14	3156.14	.00	.00	3156.41	.27	4.03	.01	3154.50
1224.	178.	1042.	4.	71.	239.	5.	212.	145.	3156.00
1.82	2.50	4.37	.71	.080	.066	.080	.000	3154.00	66.54
.021347	260.	325.	360.	4	0	0	.00	277.26	356.38

0

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1/ 1/80      2:15:41

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

1490 NH CARD USED

\*SECNO 85.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

85.00	2.52	3162.52	3162.49	.00	3163.09	.57	6.53	.15	3162.00
1224.	0.	1219.	5.	0.	201.	7.	215.	148.	3162.00
1.85	.72	6.07	.73	.080	.027	.080	.000	3160.00	53.19
.009539	430.	480.	470.	8	11	0	.00	199.63	252.83

0

1490 NH CARD USED

\*SECNO 86.000

86.00	2.29	3168.29	3168.27	.00	3168.90	.61	5.80	.02	3166.00
1224.	78.	1146.	1.	27.	178.	1.	217.	150.	3168.00
1.87	2.88	6.45	.70	.080	.037	.080	.000	3166.00	87.01
.018456	410.	450.	500.	8	15	0	.00	171.24	258.25

0

1

PROFILE FOR STREAM FILE NAME: 3308HC2.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3031.	3051.	3071.	3091.	3111.	3131.	3151.	3171.	3191.	3211.
SECNO	CUMDIS									

1.00	0.	IL E M	.	.	.	.	.	.	.	.
50.	IL E M	.	.	.	.	.	.	.	.	.
100.	CILE M	.	.	.	.	.	.	.	.	.
150.	CILWE M	.	.	.	.	.	.	.	.	.

085

2.00	200.	CIRWE M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	250.	C ILE M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	300.	C ILE M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	350.	C IRWE M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	400.	C ILE M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	450.	C ILE M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	500.	C ILWEM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	550.	C IRLEM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3.00	600.	. ILEM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	650.	. ILWEM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	700.	. IL EM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	750.	. IRE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	800.	. IRWEM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	850.	. IL EM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4.00	900.	. IRE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	950.	. IRWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1000.	. ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1050.	. IL E.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1100.	. ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5.00	1150.	. ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1200.	. IRWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1250.	. IRLE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1300.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1350.	. ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1400.	. IRCE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6.00	1450.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1500.	C ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1550.	C ILRE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1600.	C ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1650.	C ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1700.	C IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1750.	C IL ER M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7.00	1800.	C .ILE R M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1850.	C .IL ER M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1900.	C .I LER M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1950.	C .ILER M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2000.	C .ILER M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2050.	C .I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2100.	C .ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2150.	C .ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8.00	2200.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2250.	C .I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2300.	C .ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2350.	C .IRE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2400.	C .IRWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2450.	C .I RE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9.00	2500.	C .I RE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2550.	C .IRE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2600.	C .IRWE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2650.	C .IRLE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2700.	C .ILE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10.00	2750.	. ILWE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2800.	C .ILWE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2850.	C .IL E. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2900.	C .IRE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2950.	C .ILE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3000.	C .ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3050.	C .IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3100.	C .IRE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11.00	3150.	C .IRE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	3200.	C	ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3250.	C	IL.EM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3300.	C	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3350.	C	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3400.	C	IL EM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12.00	3450.	C	I.LE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3500.	C	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3550.	C	ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3600.	C	I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3650.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3700.	C	.I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3750.	C	.I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3800.	C	.IEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3850.	C	.I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13.00	3900.	C	.I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3950.	C	.I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4000.	C	.I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4050.	C	.IEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4100.	C	.I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4150.	C	.I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4200.	C	.I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4250.	C	.I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14.00	4300.	C	.I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4350.	C	.I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4400.	C	.IEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4450.	C	.ILE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4500.	C	.ILWEM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4550.	C	.IEM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4600.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15.00	4650.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4700.	.	.ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4750.	.	.ILCEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4800.	.	.ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4850.	.	.ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4900.	.	.ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4950.	.	.I CE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5000.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5050.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5100.	.	.ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
16.00	5150.	.	.I CE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5200.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5250.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5300.	C	.I.LE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5350.	C	.I.LE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5400.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5450.	C	.I LE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5500.	C	.I LE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
17.00	5550.	C	.I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5600.	C	.I LE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5650.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5700.	C	.ILWE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5750.	C	.I LE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5800.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5850.	C	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5900.	C	.ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	5950.	C	.ILE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
18.00	6000.	.	.ILE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	6050.	C	.ILWE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	6100.	C	.ILWE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	6150.	C	.I LE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	6200.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6250.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6300.	C	.	.	.	IL E	.	M	.	.	.	.	.	.	.	.	.	.	.	.
19.00	6350.	C	.	.	.	I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6400.	C	.	.	.	I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6450.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6500.	C	.	.	.	I LE.	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6550.	C	.	.	.	I LE.	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6600.	C	.	.	.	I LE.	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6650.	C	.	.	.	ILWE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
20.00	6700.	C	.	.	.	I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6750.	C	.	.	.	I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6800.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6850.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6900.	C	.	.	.	I WE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	6950.	C	.	.	.	I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7000.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7050.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7100.	C	.	.	.	ILWE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7150.	C	.	.	.	I.WE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
21.00	7200.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7250.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7300.	C	.	.	.	ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7350.	C	.	.	.	ILWE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7400.	C	.	.	.	I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7450.	C	.	.	.	.ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7500.	C	.	.	.	.ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7550.	C	.	.	.	.ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7600.	C	.	.	.	.ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7650.	C	.	.	.	.I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
22.00	7700.	C	.	.	.	.I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7750.	C	.	.	.	. ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7800.	C	.	.	.	. ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	7850.	C	.	.	.	. ILWE	.	M.	.	.	.	.	.	.	.	.	.	.	.	.
	7900.	C	.	.	.	. I LE	.	M.	.	.	.	.	.	.	.	.	.	.	.	.
	7950.	C	.	.	.	. ILE	.	M.	.	.	.	.	.	.	.	.	.	.	.	.
23.00	8000.	.	.	.	.	. ILWE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	8050.	.	.	.	.	. I WE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	8100.	.	.	.	.	. I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	8150.	.	.	.	.	. I WE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	8200.	.	.	.	.	. I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	8250.	.	.	.	.	. ILE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
24.00	8300.	.	.	.	.	. I WE	.	M	.	.	.	.	.	.	.	.	.	.	.	.
	8350.	C	.	.	.	. I WEM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8400.	C	.	.	.	. I LEM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8450.	C	.	.	.	. ILE	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8500.	C	.	.	.	. IRE	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8550.	C	.	.	.	. IRE	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8600.	C	.	.	.	. IMLE.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
25.00	8650.	C	.	.	.	. ILE.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8700.	C	.	.	.	. ILE.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8750.	C	.	.	.	. ILE.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8800.	C	.	.	.	. ILE.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8850.	C	.	.	.	. IREM	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8900.	C	.	.	.	. IRWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8950.	C	.	.	.	. IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9000.	C	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
26.00	9050.	.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9100.	C	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9150.	C	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.



	9200.	C	.	.	.	.	IWE M	.	.	.	.	.	.
	9250.	C	.	.	.	.	ILE M	.	.	.	.	.	.
	9300.	C	.	.	.	.	ILE M	.	.	.	.	.	.
	9350.	C	.	.	.	.	ILE M	.	.	.	.	.	.
	9400.	C	.	.	.	.	IWE M	.	.	.	.	.	.
	9450.	C	.	.	.	.	IWE M	.	.	.	.	.	.
	9500.	C	.	.	.	.	ILE M	.	.	.	.	.	.
27.00	9550.	C	.	.	.	.	ILE M	.	.	.	.	.	.
	9600.	C	.	.	.	.	.IE M	.	.	.	.	.	.
28.00	9650.	.	.	.	.	.	.ILE M	.	.	.	.	.	.
	9700.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	9750.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	9800.	C	.	.	.	.	.IWE M	.	.	.	.	.	.
	9850.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	9900.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	9950.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10000.	C	.	.	.	.	.IWE M	.	.	.	.	.	.
29.00	10050.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10100.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10150.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10200.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	10250.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10300.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10350.	C	.	.	.	.	.IE M	.	.	.	.	.	.
30.00	10400.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	10450.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	10500.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10550.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	10600.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	10650.	C	.	.	.	.	.IWE M	.	.	.	.	.	.
30.50	10700.	C	.	.	.	.	.ILE .M	.	.	.	.	.	.
	10750.	C	.	.	.	.	.I E M	.	.	.	.	.	.
31.00	10800.	C	.	.	.	.	.I E M	.	.	.	.	.	.
	10850.	C	.	.	.	.	.I WEM	.	.	.	.	.	.
	10900.	C	.	.	.	.	.ILE.M	.	.	.	.	.	.
	10950.	C	.	.	.	.	.ILE.M	.	.	.	.	.	.
	11000.	C	.	.	.	.	.ILE.M	.	.	.	.	.	.
	11050.	C	.	.	.	.	.ILE. M	.	.	.	.	.	.
	11100.	C	.	.	.	.	.IWE M	.	.	.	.	.	.
32.00	11150.	.	.	.	.	.	.ILE M	.	.	.	.	.	.
	11200.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	11250.	C	.	.	.	.	.IWE M	.	.	.	.	.	.
	11300.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	11350.	C	.	.	.	.	.IE M	.	.	.	.	.	.
33.00	11400.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	11450.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	11500.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	11550.	C	.	.	.	.	.ILEM	.	.	.	.	.	.
	11600.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
34.00	11650.	C	.	.	.	.	.IE M	.	.	.	.	.	.
	11700.	C	.	.	.	.	.ILEM	.	.	.	.	.	.
	11750.	C	.	.	.	.	.ILEM	.	.	.	.	.	.
	11800.	C	.	.	.	.	.ILE M	.	.	.	.	.	.
	11850.	C	.	.	.	.	.ILWEM	.	.	.	.	.	.
	11900.	C	.	.	.	.	.IL EM	.	.	.	.	.	.
	11950.	C	.	.	.	.	.I LEM	.	.	.	.	.	.
35.00	12000.	C	.	.	.	.	.ILWEM	.	.	.	.	.	.
	12050.	C	.	.	.	.	.ILWEM	.	.	.	.	.	.
	12100.	C	.	.	.	.	.IL E M	.	.	.	.	.	.
	12150.	C	.	.	.	.	.IL E M	.	.	.	.	.	.

36.00	12200.	.	.	.	.	.	.	.	ICE M.	.	.	.	.	.	.	.	.	.	.	.
	12250.	.	.	.	.	.	.	.	I WE M.	.	.	.	.	.	.	.	.	.	.	.
	12300.	.	.	.	.	.	.	.	I WE M.	.	.	.	.	.	.	.	.	.	.	.
	12350.	.	.	.	.	.	.	.	ILCE M.	.	.	.	.	.	.	.	.	.	.	.
	12400.	.	.	.	.	.	.	.	I E M.	.	.	.	.	.	.	.	.	.	.	.
	12450.	.	.	.	.	.	.	.	I WEM.	.	.	.	.	.	.	.	.	.	.	.
	12500.	.	.	.	.	.	.	.	ILCEM.	.	.	.	.	.	.	.	.	.	.	.
	12550.	.	.	.	.	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.
	12600.	.	.	.	.	.	.	.	I WEM	.	.	.	.	.	.	.	.	.	.	.
37.00	12650.	.	.	.	.	.	.	.	ILWEM	.	.	.	.	.	.	.	.	.	.	.
	12700.	C	.	.	.	.	.	.	IL.EM	.	.	.	.	.	.	.	.	.	.	.
	12750.	C	.	.	.	.	.	.	IL EM	.	.	.	.	.	.	.	.	.	.	.
	12800.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.
	12850.	C	.	.	.	.	.	.	ILE M.	.	.	.	.	.	.	.	.	.	.	.
	12900.	C	.	.	.	.	.	.	IL EM	.	.	.	.	.	.	.	.	.	.	.
-12.00	12950.	C	.	.	.	.	.	.	I.LE M	.	.	.	.	.	.	.	.	.	.	.
	13000.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.
	13050.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.
	13100.	C	.	.	.	.	.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.
38.00	13150.	.	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.
	13200.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.
	13250.	C	.	.	.	.	.	.	.IRE M	.	.	.	.	.	.	.	.	.	.	.
39.00	13300.	C	.	.	.	.	.	.	.IE M.	.	.	.	.	.	.	.	.	.	.	.
	13350.	C	.	.	.	.	.	.	.IE M.	.	.	.	.	.	.	.	.	.	.	.
	13400.	C	.	.	.	.	.	.	IWE M.	.	.	.	.	.	.	.	.	.	.	.
	13450.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.
	13500.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.
	13550.	C	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.
	13600.	C	.	.	.	.	.	.	I E M	.	.	.	.	.	.	.	.	.	.	.
40.00	13650.	.	.	.	.	.	.	.	ILE .M	.	.	.	.	.	.	.	.	.	.	.
	13700.	C	.	.	.	.	.	.	ILE .M	.	.	.	.	.	.	.	.	.	.	.
	13750.	C	.	.	.	.	.	.	IWE .M	.	.	.	.	.	.	.	.	.	.	.
	13800.	C	.	.	.	.	.	.	ILE .M	.	.	.	.	.	.	.	.	.	.	.
	13850.	C	.	.	.	.	.	.	IE .M	.	.	.	.	.	.	.	.	.	.	.
	13900.	C	.	.	.	.	.	.	IWE .M	.	.	.	.	.	.	.	.	.	.	.
	13950.	C	.	.	.	.	.	.	IE .M	.	.	.	.	.	.	.	.	.	.	.
41.00	14000.	C	.	.	.	.	.	.	IE . M	.	.	.	.	.	.	.	.	.	.	.
	14050.	C	.	.	.	.	.	.	IWE. M	.	.	.	.	.	.	.	.	.	.	.
	14100.	C	.	.	.	.	.	.	IE. M	.	.	.	.	.	.	.	.	.	.	.
	14150.	C	.	.	.	.	.	.	IE. M	.	.	.	.	.	.	.	.	.	.	.
	14200.	C	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.
42.00	14250.	.	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.
	14300.	.	.	.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.	.	.
	14350.	.	.	.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.	.	.
	14400.	.	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.
	14450.	.	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.
	14500.	.	.	.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.	.	.
42.50	14550.	.	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.
	14600.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.
	14650.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.
	14700.	C	.	.	.	.	.	.	.IWE M	.	.	.	.	.	.	.	.	.	.	.
	14750.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.
	14800.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.
43.00	14850.	C	.	.	.	.	.	.	.IWE M	.	.	.	.	.	.	.	.	.	.	.
	14900.	C	.	.	.	.	.	.	.IRE M	.	.	.	.	.	.	.	.	.	.	.
	14950.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.
	15000.	C	.	.	.	.	.	.	.IWE M	.	.	.	.	.	.	.	.	.	.	.
	15050.	C	.	.	.	.	.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.
	15100.	C	.	.	.	.	.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.
	15150.	C	.	.	.	.	.	.	.IWE M.	.	.	.	.	.	.	.	.	.	.	.

44.00	15200.	.	.	.	.	I E M.	.	.	.	.	.	.	.
	15250.	C	.	.	.	I E M.	.	.	.	.	.	.	.
	15300.	C	.	.	.	I E M.	.	.	.	.	.	.	.
	15350.	C	.	.	.	ILE M	.	.	.	.	.	.	.
45.00	15400.	C	.	.	.	ILWE M	.	.	.	.	.	.	.
	15450.	C	.	.	.	I E M	.	.	.	.	.	.	.
	15500.	C	.	.	.	ILE .M	.	.	.	.	.	.	.
	15550.	C	.	.	.	IWE .M	.	.	.	.	.	.	.
	15600.	C	.	.	.	I E .M	.	.	.	.	.	.	.
	15650.	C	.	.	.	ILE . M	.	.	.	.	.	.	.
	15700.	C	.	.	.	IWE. M	.	.	.	.	.	.	.
46.00	15750.	.	.	.	.	ILE. M	.	.	.	.	.	.	.
	15800.	.	.	.	.	IWE M	.	.	.	.	.	.	.
	15850.	.	.	.	.	I E M	.	.	.	.	.	.	.
	15900.	.	.	.	.	ILE M	.	.	.	.	.	.	.
	15950.	.	.	.	.	ILWE M	.	.	.	.	.	.	.
	16000.	.	.	.	.	I.E M	.	.	.	.	.	.	.
	16050.	.	.	.	.	ILE M	.	.	.	.	.	.	.
	16100.	.	.	.	.	ILWE M	.	.	.	.	.	.	.
	16150.	.	.	.	.	I E M	.	.	.	.	.	.	.
	16200.	.	.	.	.	ILE M	.	.	.	.	.	.	.
47.00	16250.	.	.	.	.	ILWE M	.	.	.	.	.	.	.
	16300.	C	.	.	.	IL E M	.	.	.	.	.	.	.
	16350.	C	.	.	.	.I E M	.	.	.	.	.	.	.
	16400.	C	.	.	.	.ILE M	.	.	.	.	.	.	.
	16450.	C	.	.	.	.ILWE M	.	.	.	.	.	.	.
	16500.	C	.	.	.	. I E M	.	.	.	.	.	.	.
48.00	16550.	C	.	.	.	. ILWE M	.	.	.	.	.	.	.
	16600.	C	.	.	.	. IL E M	.	.	.	.	.	.	.
	16650.	C	.	.	.	. ILE M	.	.	.	.	.	.	.
	16700.	C	.	.	.	. ILWE M	.	.	.	.	.	.	.
	16750.	C	.	.	.	. I E M	.	.	.	.	.	.	.
	16800.	C	.	.	.	. ILE M	.	.	.	.	.	.	.
	16850.	C	.	.	.	. ILWE M.	.	.	.	.	.	.	.
	16900.	C	.	.	.	. ILE M.	.	.	.	.	.	.	.
	16950.	C	.	.	.	. ILE M.	.	.	.	.	.	.	.
	17000.	C	.	.	.	. IWE M	.	.	.	.	.	.	.
49.00	17050.	C	.	.	.	. IWE M	.	.	.	.	.	.	.
	17100.	C	.	.	.	. ILE M	.	.	.	.	.	.	.
	17150.	C	.	.	.	. IE .M	.	.	.	.	.	.	.
	17200.	C	.	.	.	. ILE.M	.	.	.	.	.	.	.
	17250.	C	.	.	.	. IE. M	.	.	.	.	.	.	.
	17300.	C	.	.	.	. IWE M	.	.	.	.	.	.	.
50.00	17350.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	17400.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	17450.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	17500.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	17550.	C	.	.	.	. .IE M	.	.	.	.	.	.	.
	17600.	C	.	.	.	. .IE M	.	.	.	.	.	.	.
	17650.	C	.	.	.	. IE M	.	.	.	.	.	.	.
51.00	17700.	.	.	.	.	. IWE M	.	.	.	.	.	.	.
	17750.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	17800.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	17850.	C	.	.	.	. ILE M	.	.	.	.	.	.	.
	17900.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	17950.	C	.	.	.	. IE M	.	.	.	.	.	.	.
52.00	18000.	C	.	.	.	. ILE M	.	.	.	.	.	.	.
	18050.	C	.	.	.	. IE M	.	.	.	.	.	.	.
	18100.	C	.	.	.	. IEM	.	.	.	.	.	.	.
	18150.	C	.	.	.	. IE M.	.	.	.	.	.	.	.

	18200.	C	.	.	.	.	.	.	IEM.	.	.	.	.
	18250.	C	.	.	.	.	.	.	IE M	.	.	.	.
53.00	18300.	.	.	.	.	.	.	.	IEM	.	.	.	.
	18350.	.	.	.	.	.	.	.	IEM	.	.	.	.
	18400.	.	.	.	.	.	.	.	IWEM	.	.	.	.
	18450.	.	.	.	.	.	.	.	IEM	.	.	.	.
	18500.	.	.	.	.	.	.	.	IE M	.	.	.	.
	18550.	.	.	.	.	.	.	.	IWEM	.	.	.	.
54.00	18600.	.	.	.	.	.	.	.	IWEM	.	.	.	.
	18650.	.	.	.	.	.	.	.	ILEM	.	.	.	.
	18700.	.	.	.	.	.	.	.	.IWEM	.	.	.	.
	18750.	.	.	.	.	.	.	.	.ILEM	.	.	.	.
	18800.	.	.	.	.	.	.	.	.IWEM	.	.	.	.
	18850.	.	.	.	.	.	.	.	.IEM	.	.	.	.
	18900.	.	.	.	.	.	.	.	.IWE	.	.	.	.
	18950.	.	.	.	.	.	.	.	.IEM	.	.	.	.
	19000.	.	.	.	.	.	.	.	.IWE	.	.	.	.
55.00	19050.	.	.	.	.	.	.	.	.IEM	.	.	.	.
	19100.	.	.	.	.	.	.	.	.ILE	.	.	.	.
	19150.	.	.	.	.	.	.	.	.IWE	.	.	.	.
	19200.	.	.	.	.	.	.	.	.ILEM.	.	.	.	.
	19250.	.	.	.	.	.	.	.	.IWE.	.	.	.	.
	19300.	.	.	.	.	.	.	.	.ILEM	.	.	.	.
	19350.	.	.	.	.	.	.	.	.IWEM	.	.	.	.
	19400.	.	.	.	.	.	.	.	.ILEM	.	.	.	.
	19450.	.	.	.	.	.	.	.	.IWEM	.	.	.	.
	19500.	.	.	.	.	.	.	.	.ILWEM	.	.	.	.
56.00	19550.	.	.	.	.	.	.	.	.ILWEM	.	.	.	.
	19600.	.	.	.	.	.	.	.	.I EM	.	.	.	.
	19650.	.	.	.	.	.	.	.	.IWEM	.	.	.	.
	19700.	.	.	.	.	.	.	.	.ILEM	.	.	.	.
	19750.	.	.	.	.	.	.	.	.IWEM	.	.	.	.
57.00	19800.	.	.	.	.	.	.	.	.IWEM	.	.	.	.
	19850.	.	.	.	.	.	.	.	.IEM	.	.	.	.
	19900.	.	.	.	.	.	.	.	.ILEM	.	.	.	.
	19950.	.	.	.	.	.	.	.	.ILEM	.	.	.	.
	20000.	.	.	.	.	.	.	.	.IWE	.	.	.	.
	20050.	.	.	.	.	.	.	.	.IWE.	.	.	.	.
58.00	20100.	.	.	.	.	.	.	.	.IWE	.	.	.	.
	20150.	C	.	.	.	.	.	.	.I WE	.	.	.	.
	20200.	C	.	.	.	.	.	.	.ILEM	.	.	.	.
	20250.	C	.	.	.	.	.	.	.ILEM	.	.	.	.
	20300.	C	.	.	.	.	.	.	.IEM	.	.	.	.
	20350.	C	.	.	.	.	.	.	.I WEM	.	.	.	.
	20400.	C	.	.	.	.	.	.	.I WE	.	.	.	.
	20450.	C	.	.	.	.	.	.	.I EM	.	.	.	.
	20500.	C	.	.	.	.	.	.	.ILEM	.	.	.	.
-14.00	20550.	C	.	.	.	.	.	.	.I E M .	.	.	.	.
	20600.	C	.	.	.	.	.	.	.I LE M.	.	.	.	.
	20650.	C	.	.	.	.	.	.	.ILE M	.	.	.	.
	20700.	C	.	.	.	.	.	.	.I E .M	.	.	.	.
	20750.	C	.	.	.	.	.	.	.IWE .M	.	.	.	.
	20800.	C	.	.	.	.	.	.	.ILE . M	.	.	.	.
	20850.	C	.	.	.	.	.	.	.IE . M	.	.	.	.
	20900.	C	.	.	.	.	.	.	.IE . M	.	.	.	.
59.00	20950.	.	.	.	.	.	.	.	.IWE. M	.	.	.	.
	21000.	C	.	.	.	.	.	.	.IE. M	.	.	.	.
	21050.	C	.	.	.	.	.	.	.IE. M	.	.	.	.
	21100.	C	.	.	.	.	.	.	.IWE M	.	.	.	.
	21150.	C	.	.	.	.	.	.	.ILE M	.	.	.	.

	21200.	C					IE M						
60.00	21250.	C					IWE M						
	21300.	C					ILE M						
	21350.	C					ILE M						
	21400.	C					IE M						
	21450.	C					IWE M						
61.00	21500.	C					ILE M						
	21550.	C					.IE M						
	21600.	C					.IE M						
	21650.	C					.ILE M						
	21700.	C					. IE M						
	21750.	C					. IE M						
62.00	21800.						. IWE M						
	21850.						. IE M						
	21900.						. IWE M						
	21950.						. IE M						
	22000.						. IE M						
	22050.						. IWE M.						
	22100.						. IE M.						
63.00	22150.						. IE M						
	22200.						. IE M						
	22250.						. IE M						
	22300.						. ICE .M						
	22350.						. IE .M						
	22400.						. IE .M						
	22450.						. IWE.M						
	22500.						. IE. M						
64.00	22550.						. IE. M						
	22600.	C					. IWE M						
	22650.	C					. IE M						
	22700.	C					. IE M						
	22750.	C					. IE M						
	22800.	C					. ILE M						
	22850.	C					. IE M						
	22900.	C					. IE M						
	22950.	C					. IWE M						
	23000.	C					. ILE M						
65.00	23050.	C					. .IE M						
	23100.	C					. .IE M						
	23150.	C					. .IE M						
	23200.	C					. .IWE M						
	23250.	C					. .ILE M						
66.00	23300.						. IE M						
	23350.						. IWE M						
	23400.						. IWE M						
	23450.						. ILE M						
	23500.						. IWE M						
67.00	23550.						. IWE M						
	23600.	C					. ILE M						
	23650.	C					. IWE M						
	23700.	C					. ILE M.						
	23750.	C					. IWE M.						
	23800.	C					. ILE M.						
	23850.	C					. IE M						
	23900.	C					. ILE M						
	23950.	C					. IE M						
68.00	24000.	C					. ILE.M						
	24050.	C					. IE.M						
	24100.	C					. IE. M						
	24150.	C					. IE M						

	24200.	C	.	.	.	.	IE M	.	.	.	.	.	.	.
69.00	24250.	.	.	.	.	.	WE M	.	.	.	.	.	.	.
	24300.	C	.	.	.	.	IE M	.	.	.	.	.	.	.
	24350.	C	.	.	.	.	.WEM	.	.	.	.	.	.	.
	24400.	C	.	.	.	.	.IE M	.	.	.	.	.	.	.
	24450.	C	.	.	.	.	.IE M	.	.	.	.	.	.	.
	24500.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	24550.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
70.00	24600.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	24650.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	24700.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	24750.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	24800.	C	.	.	.	.	. IWE	.	.	.	.	.	.	.
	24850.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	24900.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	24950.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25000.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25050.	C	.	.	.	.	. I EM.	.	.	.	.	.	.	.
71.00	25100.	C	.	.	.	.	. IEM.	.	.	.	.	.	.	.
	25150.	C	.	.	.	.	. IWE.	.	.	.	.	.	.	.
	25200.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25250.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25300.	C	.	.	.	.	. EM	.	.	.	.	.	.	.
	25350.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
72.00	25400.	.	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25450.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
73.00	25500.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25550.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25600.	C	.	.	.	.	. IE M	.	.	.	.	.	.	.
	25650.	C	.	.	.	.	. IEM	.	.	.	.	.	.	.
	25700.	C	.	.	.	.	. IE M	.	.	.	.	.	.	.
	25750.	C	.	.	.	.	. IWEM	.	.	.	.	.	.	.
74.00	25800.	.	.	.	.	.	. IE M	.	.	.	.	.	.	.
	25850.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	25900.	.	.	.	.	.	. IE M	.	.	.	.	.	.	.
	25950.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	26000.	.	.	.	.	.	. IE M.	.	.	.	.	.	.	.
	26050.	.	.	.	.	.	. IE M	.	.	.	.	.	.	.
	26100.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	26150.	.	.	.	.	.	. IE.M	.	.	.	.	.	.	.
75.00	26200.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	26250.	.	.	.	.	.	. ILEM	.	.	.	.	.	.	.
	26300.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	26350.	.	.	.	.	.	. IE M	.	.	.	.	.	.	.
	26400.	.	.	.	.	.	. IWE M	.	.	.	.	.	.	.
	26450.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	26500.	.	.	.	.	.	. I E M	.	.	.	.	.	.	.
76.00	26550.	.	.	.	.	.	. IWE M	.	.	.	.	.	.	.
	26600.	.	.	.	.	.	. IWE M	.	.	.	.	.	.	.
	26650.	.	.	.	.	.	. I E M.	.	.	.	.	.	.	.
	26700.	.	.	.	.	.	. I EM.	.	.	.	.	.	.	.
77.00	26750.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	26800.	.	.	.	.	.	. IELM	.	.	.	.	.	.	.
	26850.	.	.	.	.	.	. IEM	.	.	.	.	.	.	.
	26900.	.	.	.	.	.	. IEM	.	.	.	.	.	.	.
	26950.	.	.	.	.	.	. IEM	.	.	.	.	.	.	.
	27000.	.	.	.	.	.	. IEM	.	.	.	.	.	.	.
78.00	27050.	.	.	.	.	.	. WEM	.	.	.	.	.	.	.
	27100.	.	.	.	.	.	. IE M.	.	.	.	.	.	.	.
	27150.	.	.	.	.	.	. IWEM	.	.	.	.	.	.	.

	27200.	.	.	.	.	.	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.
	27250.	.	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.
-24.00	27300.	.	.	.	.	.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.
	27350.	C	.	.	.	.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.
	27400.	C	.	.	.	.	.	.	I LE .M	.	.	.	.	.	.	.	.	.	.	.	.
	27450.	C	.	.	.	.	.	.	ILE .M	.	.	.	.	.	.	.	.	.	.	.	.
	27500.	C	.	.	.	.	.	.	I WE.M	.	.	.	.	.	.	.	.	.	.	.	.
	27550.	C	.	.	.	.	.	.	I LE. M	.	.	.	.	.	.	.	.	.	.	.	.
	27600.	C	.	.	.	.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.
	27650.	C	.	.	.	.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.
	27700.	C	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.
	27750.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	27800.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	27850.	C	.	.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.	.	.	.
	27900.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
79.00	27950.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	28000.	C	.	.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.	.	.	.
	28050.	C	.	.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.	.	.	.
	28100.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	28150.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	28200.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	28250.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	28300.	C	.	.	.	.	.	.	.WE M	.	.	.	.	.	.	.	.	.	.	.	.
	28350.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
80.00	28400.	.	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
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	28550.	.	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
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	28750.	.	.	.	.	.	.	.	IWE M.	.	.	.	.	.	.	.	.	.	.	.	.
81.00	28800.	.	.	.	.	.	.	.	ILE M.	.	.	.	.	.	.	.	.	.	.	.	.
	28850.	C	.	.	.	.	.	.	.IE M.	.	.	.	.	.	.	.	.	.	.	.	.
	28900.	C	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.
	28950.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	29000.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	29050.	C	.	.	.	.	.	.	.IE .M	.	.	.	.	.	.	.	.	.	.	.	.
	29100.	C	.	.	.	.	.	.	IWE .M	.	.	.	.	.	.	.	.	.	.	.	.
	29150.	C	.	.	.	.	.	.	ILE . M	.	.	.	.	.	.	.	.	.	.	.	.
	29200.	C	.	.	.	.	.	.	ILE . M	.	.	.	.	.	.	.	.	.	.	.	.
82.00	29250.	C	.	.	.	.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.
	29300.	C	.	.	.	.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.
	29350.	C	.	.	.	.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.
	29400.	C	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.
	29450.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	29500.	C	.	.	.	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.
	29550.	C	.	.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.	.	.	.
	29600.	C	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.
83.00	29650.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	29700.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	29750.	C	.	.	.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.
	29800.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	29850.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	29900.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	29950.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
84.00	30000.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	30050.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.
	30100.	C	.	.	.	.	.	.	.IWE M	.	.	.	.	.	.	.	.	.	.	.	.
	30150.	C	.	.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.

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30200.	C	.	.	.	.	.	.	.	IE M	.	.	.	.
30250.	C	.	.	.	.	.	.	.	IWE M	.	.	.	.
30300.	C	.	.	.	.	.	.	.	IE M	.	.	.	.
30350.	C	.	.	.	.	.	.	.	IE M	.	.	.	.
30400.	C	.	.	.	.	.	.	.	IWE M	.	.	.	.
85.00	30450.	.	.	.	.	.	.	.	IE M	.	.	.	.
	30500.	.	.	.	.	.	.	.	IWE M	.	.	.	.
	30550.	.	.	.	.	.	.	.	ILE M	.	.	.	.
	30600.	.	.	.	.	.	.	.	IE M	.	.	.	.
	30650.	.	.	.	.	.	.	.	IWE M	.	.	.	.
	30700.	.	.	.	.	.	.	.	ILE M	.	.	.	.
	30750.	.	.	.	.	.	.	.	IE M	.	.	.	.
	30800.	.	.	.	.	.	.	.	IWE M	.	.	.	.
	30850.	.	.	.	.	.	.	.	ILE M	.	.	.	.
86.00	30900.	.	.	.	.	.	.	.	IE. M	.	.	.	.

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1/ 1/80      2:15:41

T1 27 MILE WASH  
T2 SUBCRITICAL RUN  
T3 100 YEAR FLOW

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	0	3040	0
J2	NPROF	IPLT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15									15

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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	

\*PROF 2  
0

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 1.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

1.00	9.50	3040.00	.00	3040.00	3040.04	.04	.00	.00	3032.00
4532.	1765.	1256.	1511.	1196.	577.	1052.	0.	0.	3032.00
.00	1.48	2.18	1.44	.080	.066	.080	.000	3030.50	3.00
.000591	0.	0.	0.	0	0	0	.00	482.00	485.00

0  
FLOW DISTRIBUTION FOR SECNO= 1.00      CWSEL= 3040.00

096



1490 NH CARD USED

\*SECNO 4.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

4.00	5.41	3047.41	3047.41	.00	3048.32	.91	2.86	.08	3042.00
4532.	1551.	1951.	1030.	446.	176.	401.	28.	9.	3044.00
.05	3.48	11.09	2.57	.080	.041	.080	.000	3042.00	118.43
.010512	315.	300.	270.	4	8	0	.00	509.78	628.21

0

FLOW DISTRIBUTION FOR SECNO= 4.00 CWSSEL= 3047.41

STA=	118.	160.	313.	324.	358.	390.	612.	628.
PER Q=	1.0	27.8	5.4	43.1	5.8	16.5	.4	
AREA=	29.3	368.6	48.5	175.9	77.1	312.8	11.4	
VEL=	1.5	3.4	5.1	11.1	3.4	2.4	1.5	
DEPTH=	.7	2.4	4.4	5.2	2.4	1.4	.7	

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SECNO	DEPTH	CWSSEL	CRISWS	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

1490 NH CARD USED

\*SECNO 5.000

3265 DIVIDED FLOW

5.00	5.45	3049.45	.00	.00	3050.44	1.00	2.08	.04	3047.00
4532.	1928.	2519.	85.	744.	240.	34.	34.	11.	3046.00
.06	2.59	10.50	2.53	.080	.030	.080	.000	3044.00	61.86
.006643	240.	250.	300.	4	0	0	.00	431.10	547.78

0

FLOW DISTRIBUTION FOR SECNO= 5.00 CWSSEL= 3049.45

STA=	62.	157.	173.	338.	439.	473.	497.	509.	530.	548.
PER Q=	4.2	4.2	24.5	6.2	3.4	13.9	22.5	19.2	1.9	
AREA=	73.5	55.1	403.5	146.0	66.1	81.2	65.3	93.4	33.5	
VEL=	2.6	3.5	2.7	1.9	2.4	7.7	15.6	9.3	2.5	
DEPTH=	.8	3.4	2.4	1.4	1.9	3.4	5.4	4.4	1.9	

1490 NH CARD USED

\*SECNO 6.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS= 115.0 648.0 TYPE= 1 TARGET= -115.000

ELENCI= 3054.20 ELENCR= 100000.00

6.00	5.30	3053.30	.00	.00	3054.21	.91	3.74	.03	3050.00
4532.	991.	3457.	84.	249.	407.	18.	40.	14.	3050.00
.07	3.98	8.48	4.66	.080	.069	.080	.000	3048.00	324.93
.025186	370.	300.	300.	2	0	0	.00	313.30	638.23

0

097

FLOW DISTRIBUTION FOR SECNO= 6.00 CWSEL= 3053.30

STA=	325.	425.	470.	525.	628.	635.	638.
PER Q=	3.1	4.5	14.2	76.3	1.8		.1
AREA=	64.6	58.1	126.0	407.5	16.0		2.1
VEL=	2.2	3.5	5.1	8.5	5.0		2.1
DEPTH=	.6	1.3	2.3	4.0	2.3		.6

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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

1490 NH CARD USED

\*SECNO 7.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

7.00	6.21	3058.21	.00	.00	3058.49	.28	4.08	.19	3054.00
4532.	1493.	3039.	0.	664.	619.	0.	48.	18.	3060.00
.09	2.25	4.91	.00	.080	.067	.000	.000	3052.00	177.46
.006696	350.	350.	380.	4	0	0	.00	542.46	746.67

0

FLOW DISTRIBUTION FOR SECNO= 7.00 CWSEL= 3058.21

STA=	177.	340.	419.	575.	608.	750.
PER Q=	7.3	7.3	10.6	7.7	67.1	
AREA=	192.5	145.0	220.4	105.9	619.3	
VEL=	1.7	2.3	2.2	3.3	4.9	
DEPTH=	1.2	1.8	1.4	3.2	4.5	

1490 NH CARD USED

\*SECNO 8.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

8.00	4.83	3061.63	.00	.00	3062.43	.80	3.69	.26	3060.00
4532.	834.	3635.	63.	269.	461.	32.	57.	22.	3060.00
.11	3.10	7.88	1.96	.080	.048	.080	.000	3056.80	27.55
.014613	350.	400.	385.	3	0	0	.00	355.01	434.23

0

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092

SECNO	DEPTH	CWSEL	CRISW	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= 8.00 CWSEL= 3061.63

STA=	28.	95.	245.	340.	372.	395.	434.
PER Q=	7.4	11.0	29.1	45.4	5.7	1.4	
AREA=	108.3	160.5	284.3	116.3	60.6	32.1	
VEL=	3.1	3.1	4.6	17.7	4.3	2.0	
DEPTH=	1.6	1.1	3.0	3.6	2.6	.8	

1490 NH CARD USED

\*SECNO 9.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

9.00	5.84	3065.24	.00	.00	3065.53	.28	2.94	.16	3064.00
4532.	339.	4133.	60.	147.	934.	29.	63.	24.	3062.00
.13	2.30	4.43	2.08	.080	.065	.080	.000	3059.40	157.10
.008137	280.	275.	245.	4	0	0	.00	424.05	581.15

FLOW DISTRIBUTION FOR SECNO= 9.00 CWSEL= 3065.24

STA=	157.	202.	260.	553.	581.
PER Q=	3.6	3.9	91.2	1.3	
AREA=	66.0	81.1	933.9	28.9	
VEL=	2.5	2.2	4.4	2.1	
DEPTH=	1.5	1.4	3.2	1.0	

1490 NH CARD USED

\*SECNO 10.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

10.00	5.18	3067.68	3067.68	.00	3068.73	1.04	2.31	.38	3064.00
4532.	673.	1952.	1907.	291.	164.	546.	69.	27.	3064.00
.14	2.31	11.93	3.49	.080	.034	.080	.000	3062.50	162.58
.008721	180.	285.	290.	2	12	0	.00	489.39	651.97

0

1

SECNO	DEPTH	CWSEL	CRISW	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= 10.00 CWSEL= 3067.68

099

STA=	163.	362.	408.	440.	470.	492.	500.	506.	552.	620.	652.
PER Q=	5.7	9.1	43.1	7.9	5.8	3.3	2.5	12.1	9.6		.9
AREA=	167.8	123.4	163.6	95.5	70.0	33.5	25.1	146.4	148.4		26.9
VEL=	1.5	3.3	11.9	3.8	3.8	4.5	4.5	3.8	2.9		1.5
DEPTH=	.8	2.7	5.1	3.2	3.2	4.2	4.2	3.2	2.2		.8

1490 NH CARD USED

\*SECNO 11.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

11.00	5.78	3071.78	.00	.00	3071.96	.18	2.97	.26	3067.00
4532.	599.	2373.	1560.	182.	679.	460.	78.	31.	3068.00
.16	3.29	3.49	3.39	.080	.075	.080	.000	3066.00	31.57
.008754	355.	400.	260.	4	0	0	.00	511.97	543.54

0

FLOW DISTRIBUTION FOR SECNO= 11.00 CWSEL= 3071.78

STA=	32.	108.	110.	370.	532.	544.
PER Q=	12.4	.8	52.4	34.1	.4	
AREA=	173.6	8.6	679.3	449.7	10.3	
VEL=	3.2	4.3	3.5	3.4	1.6	
DEPTH=	2.3	4.3	2.6	2.8	.9	

1490 NH CARD USED

\*SECNO 12.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

12.00	5.43	3074.73	.00	.00	3074.91	.18	2.95	.00	3072.00
4532.	451.	2280.	1801.	168.	582.	631.	88.	35.	3072.00
.19	2.69	3.92	2.86	.080	.075	.080	.000	3069.30	55.28
.010795	340.	300.	300.	3	0	0	.00	699.39	754.68

0

FLOW DISTRIBUTION FOR SECNO= 12.00 CWSEL= 3074.73

STA=	55.	171.	391.	460.	709.	755.
PER Q=	10.0	50.3	11.2	26.4	2.1	
AREA=	167.8	582.1	153.9	430.7	46.1	
VEL=	2.7	3.9	3.3	2.8	2.1	
DEPTH=	1.5	2.6	2.2	1.7	1.0	

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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	

1490 NH CARD USED

\*SECNO 13.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

13.00	5.65	3080.05	.00	.00	3080.48	.42	5.44	.12	3078.00
4325.	2263.	1546.	516.	647.	211.	137.	99.	41.	3078.00

100

.21	3.50	7.33	3.75	.080	.067	.080	.000	3074.40	7.78
.016575	390.	415.	440.	4	0	0	.00	558.75	605.33

0  
FLOW DISTRIBUTION FOR SECNO= 13.00 CWSSEL= 3080.05

STA=	8.	260.	453.	504.	567.	605.
PER Q=	16.9	35.4	35.8	11.6	.4	
AREA=	250.2	396.5	211.0	129.4	8.1	
VEL=	2.9	3.9	7.3	3.9	1.9	
DEPTH=	1.0	2.1	4.1	2.1	.2	

1490 NH CARD USED

\*SECNO 14.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

14.00	5.85	3084.05	.00	.00	3084.24	.18	3.69	.07	3082.00
4325.	1386.	2797.	142.	588.	711.	92.	109.	45.	3082.00
.24	2.36	3.93	1.54	.080	.069	.080	.000	3078.20	12.68
.006437	300.	430.	460.	4	0	0	.00	593.54	606.22

0  
FLOW DISTRIBUTION FOR SECNO= 14.00 CWSSEL= 3084.05

STA=	13.	314.	517.	605.
PER Q=	32.1	64.7	3.3	
AREA=	587.7	711.0	92.3	
VEL=	2.4	3.9	1.5	
DEPTH=	2.0	3.5	1.0	

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SECNO	DEPTH	CWSSEL	CRISW	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

1490 NH CARD USED

\*SECNO 15.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

15.00	5.10	3087.60	3087.60	.00	3088.53	.93	2.05	.37	3084.00
4325.	1013.	2762.	551.	486.	290.	233.	118.	50.	3084.00
.26	2.08	9.54	2.36	.080	.035	.080	.000	3082.50	95.52
.005964	350.	325.	315.	20	10	0	.00	476.65	572.17

0  
FLOW DISTRIBUTION FOR SECNO= 15.00 CWSSEL= 3087.60

STA=	96.	157.	237.	373.	394.	452.	505.	557.	572.
PER Q=	1.4	6.4	12.0	3.6	63.9	8.6	3.8	.3	
AREA=	49.1	135.8	244.4	56.6	289.6	137.6	83.0	12.1	
VEL=	1.2	2.0	2.1	2.8	9.5	2.7	2.0	1.2	

DEPTH= .8 1.7 1.8 2.7 5.0 2.6 1.6 .8

1490 NH CARD USED

\*SECNO 16.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

16.00	5.92	3092.92	.00	.00	3093.19	.27	4.47	.20	3090.00
4325.	12.	3522.	791.	4.	819.	217.	129.	55.	3090.00
.29	2.77	4.30	3.65	.080	.076	.080	.000	3087.00	3.08
.016759	400.	500.	430.	5	0	0	.00	494.77	497.85

0 FLOW DISTRIBUTION FOR SECNO= 16.00 CWSSEL= 3092.92

STA=	3.	6.	375.	485.	498.
PER Q=	.3	81.4	18.1	.2	
AREA=	4.3	818.6	210.9	5.9	
VEL=	2.8	4.3	3.7	1.4	
DEPTH=	1.5	2.2	1.9	.5	

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SECNO	DEPTH	CWSSEL	CRISW	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

1490 NH CARD USED

\*SECNO 17.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

17.00	5.85	3098.15	.00	.00	3098.56	.41	5.30	.07	3096.00
4325.	512.	1431.	2381.	184.	185.	754.	140.	60.	3096.00
.32	2.78	7.74	3.16	.080	.049	.080	.000	3092.30	19.62
.008806	425.	430.	480.	3	0	0	.00	476.56	496.18

0 FLOW DISTRIBUTION FOR SECNO= 17.00 CWSSEL= 3098.15

STA=	20.	115.	155.	205.	265.	285.	390.	448.	496.
PER Q=	11.8	33.1	4.6	5.6	5.4	28.6	8.4	2.4	
AREA=	184.3	185.0	82.5	99.0	63.0	330.8	124.7	54.1	
VEL=	2.8	7.7	2.4	2.4	3.7	3.7	2.9	1.9	
DEPTH=	1.9	4.6	1.7	1.7	3.2	3.2	2.2	1.1	

1490 NH CARD USED

\*SECNO 18.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

18.00	4.88	3103.18	3103.18	.00	3103.93	.74	4.80	.17	3100.00
4325.	1045.	1802.	1478.	252.	183.	481.	151.	65.	3100.00
.34	4.15	9.87	3.07	.080	.049	.080	.000	3098.30	24.45
.014277	415.	425.	450.	3	10	0	.00	475.33	499.77

0

FLOW DISTRIBUTION FOR SECNO= 18.00 CWSSEL= 3103.18

STA=	24.	48.	85.	115.	130.	170.	195.	262.	415.	438.	482.	500.
PER Q=	3.8	13.1	5.7	1.6	41.7	4.7	4.6	10.4	5.8	8.3	.4	
AREA=	45.8	117.8	65.5	22.8	182.6	54.6	79.4	181.3	59.3	96.1	10.5	
VEL=	3.6	4.8	3.7	3.0	9.9	3.7	2.5	2.5	4.2	3.7	1.6	
DEPTH=	1.9	3.2	2.2	1.5	4.6	2.2	1.2	1.2	2.6	2.2	.6	

1490 NH CARD USED

\*SECNO 19.000

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SECNO	DEPTH	CWSSEL	CRISW	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	

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

19.00	6.10	3107.10	.00	.00	3107.36	.25	3.28	.15	3104.00
4325.	16.	2736.	1574.	7.	587.	597.	158.	68.	3104.00
.36	2.24	4.66	2.64	.080	.069	.080	.000	3101.00	17.89
.007733	360.	350.	260.	3	0	0	.00	460.97	478.87

0

FLOW DISTRIBUTION FOR SECNO= 19.00 CWSSEL= 3107.10

STA=	18.	22.	172.	280.	355.	410.	475.	479.
PER Q=	.4	63.3	20.1	6.2	4.6	5.4	.1	
AREA=	6.9	586.6	281.4	120.4	88.3	104.4	2.1	
VEL=	2.2	4.7	3.1	2.2	2.2	2.2	1.1	
DEPTH=	1.7	3.9	2.6	1.6	1.6	1.6	.6	

1490 NH CARD USED

\*SECNO 20.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

20.00	6.08	3110.58	.00	.00	3111.24	.66	3.68	.20	3108.00
4325.	21.	2459.	1845.	9.	304.	534.	167.	72.	3108.00
.38	2.49	8.08	3.45	.080	.057	.075	.000	3104.50	30.67
.011947	340.	360.	430.	3	0	0	.00	370.11	400.78

0

FLOW DISTRIBUTION FOR SECNO= 20.00 CWSSEL= 3110.58

STA=	31.	38.	100.	135.	155.	195.	238.	243.	270.	360.	401.
PER Q=	.5	56.8	5.6	4.6	6.4	6.9	3.8	6.2	9.1	.2	
AREA=	8.6	304.1	72.9	51.7	83.3	89.5	12.9	69.7	142.4	11.9	
VEL=	2.5	8.1	3.3	3.8	3.3	3.3	12.7	3.8	2.8	.9	
DEPTH=	1.2	4.9	2.1	2.6	2.1	2.1	2.6	2.6	1.6	.3	

1490 NH CARD USED

\*SECNO 21.000

3265 DIVIDED FLOW

21.00	4.88	3114.68	.00	.00	3115.27	.59	4.01	.02	3112.00
4325.	14.	2892.	1418.	7.	392.	607.	176.	75.	3112.30
.40	2.03	7.37	2.34	.080	.035	.080	.000	3109.80	9.98
.007413	525.	500.	320.	3	0	0	.00	491.75	547.39

0

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SECNO	DEPTH	CWSEL	CRISW	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= 21.00 CWSEL= 3114.68

STA=	10.	15.	70.	150.	262.	299.	505.	547.
PER Q=	.3	53.0	13.9	13.5	3.3	14.1	2.0	
AREA=	7.1	189.9	202.5	227.6	62.2	269.4	48.1	
VEL=	2.0	12.1	3.0	2.6	2.3	2.3	1.8	
DEPTH=	1.4	3.5	2.5	2.0	1.7	1.3	1.1	

1490 NH CARD USED

\*SECNO 22.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

22.00	5.49	3118.89	.00	.00	3119.12	.23	3.75	.11	3116.00
4325.	595.	2577.	1153.	237.	580.	386.	187.	80.	3118.00
.43	2.51	4.44	2.98	.080	.072	.080	.000	3113.40	48.90
.009199	450.	500.	360.	2	0	0	.00	593.97	644.43

0

FLOW DISTRIBUTION FOR SECNO= 22.00 CWSEL= 3118.89

STA=	49.	118.	150.	205.	377.	539.	618.	644.
PER Q=	7.0	3.8	3.0	59.6	6.2	19.1	1.3	
AREA=	114.4	60.4	61.9	580.3	131.9	228.2	26.2	
VEL=	2.6	2.7	2.1	4.4	2.0	3.6	2.2	
DEPTH=	1.7	1.9	1.1	3.4	.8	2.9	1.0	

1490 NH CARD USED

\*SECNO 23.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

23.00	5.90	3121.90	3121.90	.00	3122.95	1.05	2.25	.41	3118.70
4325.	850.	3312.	163.	329.	356.	141.	193.	84.	3120.00
.44	2.59	9.31	1.15	.080	.034	.080	.000	3116.00	92.93
.006742	290.	287.	285.	2	8	0	.00	559.23	784.72

0

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SECNO	DEPTH	CWSEL	CRISW	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

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FLOW DISTRIBUTION FOR SECNO= 23.00 CWSEL= 3121.90

STA=	93.	240.	260.	297.	324.	345.	785.
PER Q=	17.0	2.7	11.0	61.2	4.4	3.8	
AREA=	284.0	44.5	133.5	159.4	62.9	141.5	
VEL=	2.6	2.6	3.5	16.6	3.0	1.2	
DEPTH=	1.9	2.2	3.6	5.9	3.0	.3	

1490 NH CARD USED

\*SECNO 24.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

24.00	5.64	3125.64	3125.64	.00	3126.44	.80	3.23	.08	3124.00
4325.	135.	3026.	1165.	54.	363.	365.	198.	87.	3124.00
.45	2.51	8.33	3.19	.080	.067	.080	.000	3120.00	144.44
.023814	300.	280.	270.	5	8	0	.00	502.84	748.59

0

FLOW DISTRIBUTION FOR SECNO= 24.00 CWSEL= 3125.64

STA=	144.	210.	305.	365.	455.	563.	606.	749.
PER Q=	3.1	70.0	9.1	4.3	.3	6.5	6.8	
AREA=	53.7	363.2	98.3	73.9	5.4	70.5	116.8	
VEL=	2.5	8.3	4.0	2.5	2.5	4.0	2.5	
DEPTH=	.8	3.8	1.6	.8	.0	1.6	.8	

1490 NH CARD USED

\*SECNO 25.000

3265 DIVIDED FLOW

3280 CROSS SECTION 25.00 EXTENDED 5.01 FEET

3301 HV CHANGED MORE THAN HVINS

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SECNO	DEPTH	CWSEL	CRISW	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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

25.00	5.01	3129.01	.00	.00	3129.21	.19	2.59	.18	3127.00
2163.	772.	1297.	95.	480.	297.	73.	204.	91.	3126.00
.48	1.61	4.36	1.30	.080	.040	.080	.000	3124.00	76.29
.002276	250.	350.	350.	5	0	0	.00	323.44	404.00

0

FLOW DISTRIBUTION FOR SECNO= 25.00 CWSEL= 3129.01

STA=	76.	115.	165.	227.	287.	310.	330.	363.	390.	404.
PER Q=	3.1	12.9	11.8	7.9	7.4	37.5	15.0	3.5		.8
AREA=	52.7	150.6	155.8	120.8	60.6	96.3	140.2	54.3		18.3
VEL=	1.3	1.8	1.6	1.4	2.7	8.4	2.3	1.4		1.0
DEPTH=	1.4	3.0	2.5	2.0	2.6	4.8	4.2	2.0		1.3

1490 NH CARD USED

\*SECNO 26.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

26.00	4.52	3130.72	.00	.00	3131.25	.53	1.87	.17	3128.00
2163.	49.	918.	1196.	17.	111.	386.	211.	93.	3128.00
.50	2.90	8.25	3.10	.080	.053	.080	.000	3126.20	57.05
.013669	380.	400.	440.	4	0	0	.00	270.13	327.18

0

FLOW DISTRIBUTION FOR SECNO= 26.00 CWSSEL= 3130.72

STA=	57.	61.	70.	97.	320.	327.
PER Q=	.1	2.2	42.4	55.2	.1	
AREA=	1.4	15.5	111.2	383.1	2.6	
VEL=	1.1	3.1	8.3	3.1	1.1	
DEPTH=	.4	1.7	4.1	1.7	.4	

1490 NH CARD USED

\*SECNO 27.000

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SECNO	DEPTH	CWSSEL	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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

27.00	4.05	3135.05	.00	.00	3135.80	.76	4.44	.11	3132.00
2163.	859.	1259.	45.	351.	141.	25.	216.	96.	3132.00
.52	2.45	8.91	1.80	.080	.033	.080	.000	3131.00	14.76
.006742	500.	500.	420.	4	0	0	.00	239.17	253.92

0

FLOW DISTRIBUTION FOR SECNO= 27.00 CWSSEL= 3135.05

STA=	15.	20.	190.	197.	217.	227.	234.	254.
PER Q=	.1	39.6	4.0	48.3	5.8	1.6	.5	
AREA=	2.7	348.3	24.8	81.0	35.5	14.3	10.4	
VEL=	1.0	2.5	3.5	12.9	3.5	2.4	1.0	
DEPTH=	.5	2.0	3.5	4.0	3.5	2.0	.5	

1490 NH CARD USED

\*SECNO 28.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

28.00	4.10	3136.40	3136.40	.00	3137.36	.96	1.12	.10	3134.00
2163.	302.	1355.	506.	116.	141.	139.	218.	97.	3134.00

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.53	2.60	9.60	3.63	.080	.040	.080	.000	3132.30	68.77
.012708	125.	125.	120.	3	5	0	.00	193.24	262.01

0

FLOW DISTRIBUTION FOR SECNO= 28.00 CWSSEL= 3136.40

STA=	69.	76.	158.	171.	184.	198.	250.	260.	262.
PER Q=	.0	13.9	8.9	44.1	9.6	21.7	1.7	.0	
AREA=	1.5	114.9	42.3	53.3	45.5	124.9	14.0	.4	
VEL=	.7	2.6	4.6	17.9	4.6	3.8	2.6	.7	
DEPTH=	.2	1.4	3.3	4.1	3.3	2.4	1.4	.2	

1490 NH CARD USED  
\*SECNO 29.000

3301 HV CHANGED MORE THAN HVINS

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SECNO	DEPTH	CWSSEL	CRISW	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	

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

29.00	4.77	3140.77	.00	.00	3141.01	.24	3.43	.22	3138.00
2163.	112.	2029.	23.	54.	508.	12.	222.	98.	3138.00
.56	2.08	3.99	1.97	.080	.062	.080	.000	3136.00	27.20
.006197	350.	400.	430.	3	0	0	.00	209.12	236.32

0

FLOW DISTRIBUTION FOR SECNO= 29.00 CWSSEL= 3140.77

STA=	27.	33.	62.	68.	75.	205.	211.	228.	234.	236.
PER Q=	.1	5.1	2.6	11.4	51.1	18.3	10.5	1.0	.0	
AREA=	2.2	51.4	18.1	22.9	374.0	28.6	64.1	10.6	.9	
VEL=	.8	2.1	3.1	10.7	3.0	13.8	3.5	2.1	.7	
DEPTH=	.4	1.8	3.0	3.3	2.9	4.8	3.8	1.8	.4	

1490 NH CARD USED  
\*SECNO 30.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

30.00	3.51	3143.51	.00	.00	3143.74	.23	2.73	.00	3141.00
2063.	104.	498.	1461.	32.	125.	378.	226.	100.	3142.00
.58	3.23	3.98	3.87	.080	.077	.080	.000	3140.00	11.00
.012907	230.	325.	320.	1	0	0	.00	238.08	268.54

0

FLOW DISTRIBUTION FOR SECNO= 30.00 CWSSEL= 3143.51

STA=	11.	14.	29.	93.	170.	190.	222.	269.
PER Q=	.2	4.9	24.1	36.3	16.5	15.1	3.0	

107

AREA= 2.3 30.0 125.0 192.6 70.0 80.0 34.9  
 VEL= 1.6 3.3 4.0 3.9 4.9 3.9 1.7  
 DEPTH= .8 2.0 2.8 2.5 3.5 2.5 .8

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 30.500

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

30.50	4.09	3146.69	.00	.00	3147.55	.86	3.50	.31	3144.00
2063.	519.	986.	558.	157.	97.	179.	229.	101.	3144.00
.59	3.31	10.21	3.13	.080	.035	.080	.000	3142.60	60.51
.010253	400.	340.	250.	2	0	0	.00	193.70	310.79

0

FLOW DISTRIBUTION FOR SECNO= 30.50 CWSEL= 3146.69

STA=	61.	75.	98.	140.	147.	159.	166.	228.	307.	311.
PER Q=	.2	5.0	19.9	4.8	38.1	4.8	23.3	3.7	.1	
AREA=	5.0	38.9	113.0	23.7	49.1	23.7	145.1	32.1	1.3	
VEL=	.9	2.7	3.6	4.2	16.0	4.2	3.3	2.4	.9	
DEPTH=	.3	1.7	2.7	3.4	4.1	3.4	2.3	.4	.3	

1490 NH CARD USED

\*SECNO 31.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

31.00	5.14	3147.94	.00	.00	3148.09	.15	.33	.21	3146.00
2063.	39.	1940.	84.	37.	607.	52.	230.	102.	3146.00
.60	1.06	3.20	1.62	.080	.058	.080	.000	3142.80	32.19
.003421	70.	60.	50.	2	0	0	.00	260.63	292.82

0

FLOW DISTRIBUTION FOR SECNO= 31.00 CWSEL= 3147.94

STA=	32.	70.	142.	155.	263.	287.	293.
PER Q=	1.9	23.4	34.9	35.7	3.8	.3	
AREA=	36.7	214.8	66.8	325.4	46.5	5.6	
VEL=	1.1	2.2	10.8	2.3	1.7	1.0	
DEPTH=	1.0	3.0	5.1	3.0	1.9	1.0	

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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	

1490 NH CARD USED  
\*SECNO 32.000

3301 HV CHANGED MORE THAN HVINS

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

32.00	4.28	3150.68	3150.68	.00	3151.53	.85	1.91	.35	3148.00
2063.	583.	1334.	147.	246.	148.	59.	235.	104.	3148.00
.61	2.37	9.03	2.47	.080	.038	.080	.000	3146.40	55.14
.009068	320.	370.	400.	20	12	0	.00	250.89	306.03

0

FLOW DISTRIBUTION FOR SECNO= 32.00 CWSEL= 3150.68

STA=	55.	68.	98.	101.	155.	230.	241.	256.	269.	304.	305.
PER Q=	.2	1.3	.5	11.0	15.2	7.5	48.3	8.9	7.1	.0	
AREA=	4.4	20.3	5.0	90.6	125.8	38.2	64.2	45.2	58.7	.7	
VEL=	.9	1.4	2.2	2.5	2.5	4.0	15.5	4.0	2.5	.8	
DEPTH=	.3	.7	1.7	1.7	1.7	3.5	4.3	3.5	1.7	.3	

1490 NH CARD USED  
\*SECNO 33.000

3301 HV CHANGED MORE THAN HVINS

33.00	2.78	3153.78	.00	.00	3153.97	.20	2.25	.20	3152.50
2063.	882.	1130.	51.	362.	263.	32.	238.	106.	3152.00
.63	2.44	4.30	1.62	.080	.052	.080	.000	3151.00	14.24
.008944	250.	250.	250.	3	0	0	.00	391.27	405.50

0

FLOW DISTRIBUTION FOR SECNO= 33.00 CWSEL= 3153.78

STA=	14.	24.	45.	130.	238.	283.	352.	360.	370.	406.
PER Q=	.7	4.7	18.8	18.6	17.7	21.3	12.4	3.3	2.5	
AREA=	8.7	37.3	150.9	164.7	68.6	149.5	22.2	22.8	31.5	
VEL=	1.6	2.6	2.6	2.3	5.3	2.9	11.6	3.0	1.6	
DEPTH=	.9	1.8	1.8	1.5	1.5	2.2	2.8	2.3	.9	

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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	

1490 NH CARD USED  
\*SECNO 34.000  
1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

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3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

34.00	4.02	3157.52	3157.27	.00	3157.98	.46	3.88	.13	3156.00
2063.	1016.	812.	235.	254.	114.	63.	241.	108.	3156.00
.65	4.00	7.13	3.72	.080	.071	.080	.000	3153.50	7.43
.026803	290.	250.	270.	5	14	0	.00	255.65	336.77

0 FLOW DISTRIBUTION FOR SECNO= 34.00 CWSEL= 3157.52

STA=	7.	122.	207.	250.	287.	320.	337.
PER Q=	33.2	3.3	12.8	39.4	9.8	1.6	
AREA=	171.2	17.0	65.5	113.9	50.3	12.8	
VEL=	4.0	4.0	4.0	7.1	4.0	2.5	
DEPTH=	1.5	.2	1.5	3.1	1.5	.8	

1490 NH CARD USED

\*SECNO 35.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

35.00	6.58	3162.08	.00	.00	3162.33	.26	4.29	.06	3158.00
2063.	752.	870.	440.	337.	152.	199.	246.	110.	3158.00
.67	2.23	5.71	2.21	.080	.068	.080	.000	3155.50	28.87
.006688	390.	350.	310.	5	0	0	.00	344.19	373.06

0 FLOW DISTRIBUTION FOR SECNO= 35.00 CWSEL= 3162.08

STA=	29.	90.	160.	220.	222.	248.	310.	372.
PER Q=	11.9	12.8	11.0	.8	42.2	16.2	5.2	
AREA=	106.5	120.8	103.5	6.2	152.5	132.7	66.7	
VEL=	2.3	2.2	2.2	2.5	5.7	2.5	1.6	
DEPTH=	1.7	1.7	1.7	3.1	5.9	2.1	1.1	

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 36.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

36.00	5.70	3163.20	3163.20	.00	3164.54	1.34	1.30	.54	3158.00
2063.	161.	1702.	200.	78.	167.	99.	248.	112.	3158.00
.68	2.05	10.18	2.01	.080	.036	.080	.000	3157.50	65.81
.006214	210.	200.	200.	3	11	0	.00	200.31	266.12

0 FLOW DISTRIBUTION FOR SECNO= 36.00 CWSEL= 3163.20

STA=	66.	82.	118.	122.	126.	135.	150.	156.	163.	166.	230.	266.
PER Q=	.5	3.5	1.0	2.9	10.8	64.5	7.2	5.3	.7	3.5	.3	
AREA=	9.7	43.2	8.8	16.8	49.0	85.5	32.7	29.4	6.6	54.4	9.0	
VEL=	1.0	1.7	2.3	3.5	4.5	15.6	4.5	3.7	2.2	1.3	.6	
DEPTH=	.6	1.2	2.2	4.2	5.4	5.7	5.4	4.2	2.2	.8	.2	

1490 NH CARD USED

\*SECNO 37.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	.0	130.0	TYPE=	1	TARGET=	129.999
37.00	6.06	3168.06	3168.01	.00	3168.70	.64 3.96 .21 3164.00
2063.	62.	1141.	860.	18.	136.	355. 253. 115. 3164.00
.70	3.55	8.36	2.43	.080	.062	.080 .000 3162.00 11.65
.013217	375.	450.	475.	9	8	0 .00 361.12 372.77

0 FLOW DISTRIBUTION FOR SECNO= 37.00 CWSSEL= 3168.06

STA=	12.	21.	46.	52.	130.	190.	250.	294.	333.	373.
PER Q=	3.0	55.3	3.9	16.9	5.8	5.8	4.2	3.8	1.3	
AREA=	17.5	136.5	18.4	121.6	57.5	57.5	42.2	37.4	19.9	
VEL=	3.6	8.4	4.3	2.9	2.1	2.1	2.1	2.1	1.4	
DEPTH=	1.9	5.5	3.1	1.6	1.0	1.0	1.0	1.0	.5	

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SECNO	DEPTH	CWSSEL	CRISW	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	

1490 NH CARD USED

\*SECNO -12.000

START TRIB COMP

-12.000 12.000 3074.730

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

-12.00	5.43	3074.73	.00	.00	3074.91	.18	.00	.00	3072.00
4532.	451.	2279.	1802.	168.	582.	631.	260.	118.	3072.00
.73	2.69	3.91	2.86	.080	.075	.080	.000	3069.30	55.26
.010783	340.	300.	300.	0	0	0	.00	699.43	754.69

0 FLOW DISTRIBUTION FOR SECNO= -12.00 CWSSEL= 3074.73

STA=	55.	171.	391.	460.	709.	755.
PER Q=	10.0	50.3	11.2	26.4	2.1	
AREA=	167.9	582.3	153.9	430.9	46.1	
VEL=	2.7	3.9	3.3	2.8	2.1	
DEPTH=	1.5	2.6	2.2	1.7	1.0	

1490 NH CARD USED

\*SECNO 38.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

38.00	2.66	3076.86	.00	.00	3077.28	.42	2.25	.12	3074.20
843.	174.	480.	190.	67.	74.	63.	263.	120.	3075.00
.74	2.59	6.48	3.03	.080	.037	.080	.000	3074.20	80.15
.020230	250.	210.	130.	0	0	0	.00	198.86	279.02

0  
FLOW DISTRIBUTION FOR SECNO= 38.00 CWSSEL= 3076.86

STA=	80.	101.	136.	151.	160.	167.	220.	221.	262.	279.
PER Q=	1.6	8.4	3.6	7.1	37.1	16.8	2.9	21.2	1.3	
AREA=	8.9	29.8	12.8	15.8	18.6	53.6	1.9	55.4	7.2	
VEL=	1.5	2.4	2.4	3.8	16.9	2.6	13.3	3.2	1.5	
DEPTH=	.4	.9	.9	1.8	2.7	1.0	1.9	1.4	.4	

1490 NH CARD USED  
\*SECNO 39.000

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SECNO	DEPTH	CWSSEL	CRISW	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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

39.00	2.91	3078.91	.00	.00	3079.21	.29	1.89	.04	3076.00
843.	305.	468.	70.	134.	86.	29.	264.	121.	3076.30
.75	2.28	5.46	2.44	.080	.043	.080	.000	3076.00	50.68
.008916	190.	140.	90.	2	0	0	.00	153.90	204.58

0  
FLOW DISTRIBUTION FOR SECNO= 39.00 CWSSEL= 3078.91

STA=	51.	58.	140.	146.	153.	183.	185.	200.	205.
PER Q=	.4	30.4	5.4	28.9	19.7	6.9	8.0	.3	
AREA=	3.4	116.1	14.5	20.4	60.0	5.2	26.5	2.1	
VEL=	1.0	2.2	3.1	11.9	2.8	11.1	2.6	1.0	
DEPTH=	.5	1.4	2.4	2.9	2.0	2.6	1.8	.5	

1490 NH CARD USED  
\*SECNO 40.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

40.00	4.98	3083.18	3083.18	.00	3083.97	.80	3.81	.25	3080.00
843.	66.	460.	317.	19.	49.	112.	265.	122.	3080.00
.76	3.39	9.32	2.84	.080	.048	.080	.000	3078.20	36.47
.013980	280.	350.	400.	3	14	0	.00	128.89	165.36

0  
FLOW DISTRIBUTION FOR SECNO= 40.00 CWSSEL= 3083.18

STA=	36.	40.	48.	59.	90.	165.
------	-----	-----	-----	-----	-----	------



PER Q=	.4	7.5	54.5	29.5	8.1
AREA=	2.1	17.4	49.4	67.5	44.4
VEL=	1.5	3.6	9.3	3.7	1.5
DEPTH=	.6	2.2	4.5	2.2	.6

1490 NH CARD USED

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SECNO	DEPTH	CWSEL	CRISW	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 41.000

41.00	2.21	3087.21	.00	.00	3087.53	.32	3.41	.14	3085.00
843.	628.	163.	52.	273.	18.	24.	267.	123.	3085.00
.79	2.30	9.25	2.14	.080	.024	.080	.000	3085.00	59.96
.007784	300.	375.	330.	4	0	0	.00	196.66	256.62

0

FLOW DISTRIBUTION FOR SECNO= 41.00 CWSEL= 3087.21

STA=	60.	75.	230.	250.	257.
PER Q=	1.3	73.2	5.7	.5	
AREA=	9.1	264.0	20.4	4.0	
VEL=	1.2	2.3	2.3	1.2	
DEPTH=	.6	1.7	1.0	.6	

1490 NH CARD USED

\*SECNO 42.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

42.00	3.38	3090.38	3090.38	.00	3091.28	.90	1.42	.29	3087.00
843.	158.	425.	260.	64.	41.	126.	268.	124.	3087.00
.80	2.46	10.47	2.06	.080	.024	.080	.000	3087.00	30.85
.005629	210.	220.	220.	20	11	0	.00	125.24	156.09

0

FLOW DISTRIBUTION FOR SECNO= 42.00 CWSEL= 3090.38

STA=	31.	32.	47.	62.	88.	149.	156.
PER Q=	.0	4.2	14.5	13.5	17.3	.1	
AREA=	.2	20.7	43.2	40.4	84.4	1.4	
VEL=	.4	1.7	2.8	2.8	1.7	.5	
DEPTH=	.2	1.4	2.9	1.6	1.4	.2	

1490 NH CARD USED

\*SECNO 42.500

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SECNO	DEPTH	CWSEL	CRISW	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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

42.50	3.65	3094.05	3094.05	.00	3094.66	.61	2.78	.09	3092.00
843.	75.	522.	247.	28.	68.	93.	270.	125.	3092.00
.81	2.65	7.70	2.65	.080	.058	.080	.000	3090.40	44.54
.019190	210.	300.	320.	9	8	0	.00	137.78	182.32

0

FLOW DISTRIBUTION FOR SECNO= 42.50 CWSEL= 3094.05

STA= 45. 72. 93. 182.

PER Q=	8.9	61.9	29.3
AREA=	28.2	67.8	93.1
VEL=	2.6	7.7	2.7
DEPTH=	1.0	3.2	1.0

1490 NH CARD USED

\*SECNO 43.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

43.00	2.94	3097.94	.00	.00	3098.41	.47	3.71	.04	3098.00
843.	0.	800.	43.	0.	142.	24.	271.	125.	3096.00
.83	.00	5.63	1.81	.000	.038	.080	.000	3095.00	20.11
.009884	350.	290.	200.	3	0	0	.00	104.22	124.33

0

FLOW DISTRIBUTION FOR SECNO= 43.00 CWSEL= 3097.94

STA= 20. 24. 31. 73. 77. 83. 90. 100. 124.

PER Q=	.8	15.5	12.3	17.7	8.0	31.0	9.7	5.1
AREA=	3.8	13.6	50.3	11.8	17.7	20.6	24.5	23.7
VEL=	1.7	9.6	2.1	12.7	3.8	12.7	3.3	1.8
DEPTH=	1.0	1.9	1.2	2.9	2.9	2.9	2.4	1.0

1490 NH CARD USED

\*SECNO 44.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

44.00	4.31	3102.61	3102.61	.00	3103.48	.87	2.35	.20	3098.30
843.	332.	345.	166.	160.	30.	77.	273.	126.	3098.30
.84	2.08	11.44	2.15	.080	.024	.080	.000	3098.30	21.95
.004867	340.	350.	360.	4	14	0	.00	140.91	162.86

0

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SECNO	DEPTH	CWSEL	CRISW	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= 44.00 CWSEL= 3102.61

STA= 22. 25. 98. 110. 125. 154. 163.

PER Q=	.1	24.8	14.5	9.6	9.9	.2
AREA=	.9	117.6	41.5	27.7	46.7	2.7
VEL=	.6	1.8	2.9	2.9	1.8	.6

DEPTH= .3 1.6 3.5 1.8 1.6 .3

1490 NH CARD USED

\*SECNO 45.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

45.00	4.69	3103.99	.00	.00	3104.93	.93	1.41	.03	3100.00
670.	25.	540.	105.	8.	63.	44.	273.	127.	3100.00
.85	3.16	8.54	2.39	.080	.056	.080	.000	3099.30	30.01
.014065	140.	200.	240.	3	0	0	.00	57.87	87.88

0 FLOW DISTRIBUTION FOR SECNO= 45.00 CWSEL= 3103.99

STA=	30.	32.	34.	48.	50.	88.
PER Q=	.5	3.2	80.6	3.2	12.4	
AREA=	2.0	6.0	63.3	6.0	37.8	
VEL=	1.7	3.6	8.5	3.6	2.2	
DEPTH=	1.0	3.0	4.5	3.0	1.0	

1490 NH CARD USED

\*SECNO 46.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

46.00	4.43	3109.43	.00	.00	3110.01	.58	4.98	.10	3106.00
670.	245.	340.	85.	76.	42.	32.	275.	127.	3106.00
.87	3.21	8.05	2.70	.080	.052	.080	.000	3105.00	52.43
.012288	400.	375.	370.	3	0	0	.00	87.17	139.60

0 FLOW DISTRIBUTION FOR SECNO= 46.00 CWSEL= 3109.43

STA=	52.	78.	102.	112.	119.	140.
PER Q=	4.4	32.1	50.7	9.1	3.6	
AREA=	18.2	58.1	42.2	16.9	14.6	
VEL=	1.6	3.7	8.1	3.6	1.6	
DEPTH=	.7	2.4	4.2	2.4	.7	

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SECNO	DEPTH	CWSEL	CRWS	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

1490 NH CARD USED

\*SECNO 47.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

47.00	5.40	3116.10	3116.10	.00	3116.92	.82	5.73	.12	3112.00
670.	158.	448.	64.	66.	51.	26.	276.	128.	3112.00
.89	2.38	8.72	2.45	.080	.053	.080	.000	3110.70	43.34
.011901	470.	475.	480.	2	11	0	.00	87.15	130.49

0 FLOW DISTRIBUTION FOR SECNO= 47.00 CWSEL= 3116.10

STA=	43.	97.	100.	110.	112.	130.
------	-----	-----	------	------	------	------

PER Q= 18.4 5.3 66.9 3.2 6.3  
 AREA= 57.2 9.3 51.4 6.2 19.8  
 VEL= 2.2 3.8 8.7 3.4 2.1  
 DEPTH= 1.1 3.1 5.1 3.1 1.1

1490 NH CARD USED

\*SECNO 48.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

48.00 5.67 3120.27 .00 .00 3120.76 .49 3.75 .10 3116.00  
 670. 78. 424. 169. 32. 62. 61. 277. 129. 3116.00  
 .91 2.41 6.78 2.79 .080 .065 .080 .000 3114.60 48.63  
 .010253 320. 340. 360. 2 0 0 .00 74.60 123.23

0

FLOW DISTRIBUTION FOR SECNO= 48.00 CWSSEL= 3120.27

STA= 49. 50. 70. 72. 84. 90. 122. 123.  
 PER Q= .0 8.4 3.2 63.2 11.7 13.4 .0  
 AREA= .2 25.5 6.5 62.5 19.6 40.8 .2  
 VEL= .5 2.2 3.3 6.8 4.0 2.2 .5  
 DEPTH= .1 1.3 3.3 5.2 3.3 1.3 .1

1490 NH CARD USED

\*SECNO 49.000

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SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	GLOSS	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	

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

49.00 4.46 3126.46 .00 .00 3127.12 .67 6.27 .09 3124.00  
 670. 23. 590. 57. 8. 86. 19. 279. 130. 3124.00  
 .93 2.78 6.90 2.99 .080 .068 .080 .000 3122.00 39.66  
 .017873 500. 470. 470. 4 0 0 .00 50.74 90.40

0

FLOW DISTRIBUTION FOR SECNO= 49.00 CWSSEL= 3126.46

STA= 40. 44. 49. 72. 84. 90.  
 PER Q= .1 3.3 88.1 8.3 .2  
 AREA= 1.0 7.3 85.5 17.5 1.5  
 VEL= .9 3.0 6.9 3.2 .9  
 DEPTH= .2 1.5 3.7 1.5 .2

1490 NH CARD USED

\*SECNO 50.000

50.00 3.39 3130.89 .00 .00 3131.26 .37 4.05 .09 3130.00  
 670. 3. 661. 6. 3. 134. 5. 280. 130. 3130.00  
 .94 1.10 4.93 1.11 .080 .055 .080 .000 3127.50 123.36  
 .010573 270. 300. 310. 3 0 0 .00 75.60 198.96

0

FLOW DISTRIBUTION FOR SECNO= 50.00 CWSSEL= 3130.89

STA= 123. 130. 155. 161. 187. 199.  
 PER Q= .5 27.2 43.5 28.0 .9  
 AREA= 2.9 55.9 20.3 57.8 5.3  
 VEL= 1.1 3.3 14.4 3.2 1.1

DEPTH= .4 2.2 3.4 2.2 .4

1490 NH CARD USED

\*SECNO 51.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

51.00	2.61	3137.61	3137.57	.00	3138.18	.57	6.82	.10	3136.00
670.	158.	467.	46.	51.	67.	15.	281.	131.	3136.00
.96	3.09	6.99	3.08	.080	.069	.080	.000	3135.00	96.54
.037119	420.	375.	340.	5	16	0	.00	111.94	208.48

0  
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SECNO	DEPTH	CWSEL	CRWS	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= 51.00 CWSEL= 3137.61

STA=	97.	160.	190.	208.
PER Q=	23.5	69.6	6.8	
AREA=	51.0	66.7	14.8	
VEL=	3.1	7.0	3.1	
DEPTH=	.8	2.2	.8	

1490 NH CARD USED

\*SECNO 52.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

52.00	3.69	3142.69	.00	.00	3142.84	.15	4.53	.13	3140.00
229.	51.	133.	45.	45.	34.	27.	282.	132.	3140.00
.99	1.14	3.86	1.66	.070	.051	.070	.000	3139.00	109.01
.003618	260.	300.	350.	5	0	0	.00	93.98	202.99

0

FLOW DISTRIBUTION FOR SECNO= 52.00 CWSEL= 3142.69

STA=	109.	118.	152.	164.	170.	180.	194.	203.
PER Q=	.9	10.2	3.6	7.8	58.1	18.6	.9	
AREA=	3.1	23.5	8.3	10.1	34.4	23.7	3.1	
VEL=	.6	1.0	1.0	1.8	3.9	1.8	.6	
DEPTH=	.3	.7	.7	1.7	3.4	1.7	.3	

1490 NH CARD USED

\*SECNO 53.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

53.00	2.05	3148.05	3148.05	.00	3148.66	.61	.02	.23	3148.00
229.	0.	229.	0.	1.	36.	1.	282.	132.	3148.00
1.00	.02	6.29	.02	.050	.001	.050	.000	3146.00	78.11
.000022	300.	275.	265.	20	11	0	.00	67.68	145.78

0

FLOW DISTRIBUTION FOR SECNO= 53.00 CWSEL= 3148.05

STA=	78.	95.	125.	146.
------	-----	-----	------	------

PER Q= .0 2.5 .0  
 AREA= .7 36.4 1.0  
 VEL= .0 .2 .0  
 DEPTH= .0 1.2 .0

1

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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

1490 NH CARD USED

\*SECNO 54.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

54.00	3.44	3153.64	3153.64	.00	3154.74	1.10	.03	.24	3152.00
229.	13.	209.	7.	3.	24.	2.	282.	132.	3152.00
1.02	3.90	8.72	3.62	.040	.040	.040	.000	3150.20	5.90
.015825	340.	325.	335.	20	14	0	.00	14.56	20.46

0

FLOW DISTRIBUTION FOR SECNO= 54.00 CWSEL= 3153.64

STA=	6.	10.	18.	20.
PER Q=	5.7	91.1	3.2	
AREA=	3.4	23.9	2.0	
VEL=	3.9	8.7	3.6	
DEPTH=	.8	3.0	.8	

1490 NH CARD USED

\*SECNO 55.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

55.00	3.51	3163.51	3163.51	.00	3164.83	1.32	.14	.13	3162.00
229.	0.	228.	1.	2.	25.	3.	283.	133.	3162.00
1.03	.26	9.25	.28	.040	.003	.040	.000	3160.00	.73
.000088	450.	450.	445.	20	5	0	.00	15.80	16.53

0

FLOW DISTRIBUTION FOR SECNO= 55.00 CWSEL= 3163.51

STA=	1.	3.	12.	17.
PER Q=	.2	6.8	.4	
AREA=	1.7	24.6	3.4	
VEL=	.3	.6	.3	
DEPTH=	.8	2.7	.8	

1490 NH CARD USED

\*SECNO 56.000

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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

118

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

3301 HV CHANGED MORE THAN HVINS

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

56.00	4.88	3174.18	3174.18	.00	3176.36	2.18	.01	.43	3170.00
229.	2.	225.	2.	13.	19.	13.	283.	133.	3170.00
1.04	.16	11.96	.14	.040	.001	.040	.000	3169.30	1.82
.000007	470.	465.	460.	20	24	0	.00	18.90	20.72

0

FLOW DISTRIBUTION FOR SECNO= 56.00 CWSEL= 3174.18

STA=	2.	5.	8.	12.	14.	20.
PER Q=	.2	.8	2.1	.5	.3	
AREA=	3.5	9.5	18.8	6.4	7.1	
VEL=	.1	.2	.3	.2	.1	
DEPTH=	1.1	3.2	4.7	3.2	1.2	

1490 NH CARD USED  
 \*SECNO 57.000

3301 HV CHANGED MORE THAN HVINS

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

57.00	3.59	3179.59	3179.59	.00	3180.97	1.37	.00	.24	3178.00
229.	0.	229.	0.	1.	24.	1.	283.	133.	3178.00
1.05	.04	9.41	.04	.040	.000	.040	.000	3176.00	6.41
.000003	270.	285.	290.	20	19	0	.00	12.18	18.59

0

FLOW DISTRIBUTION FOR SECNO= 57.00 CWSEL= 3179.59

STA=	6.	8.	17.	19.
PER Q=	.0	1.2	.0	
AREA=	1.3	24.3	1.3	
VEL=	.0	.1	.0	
DEPTH=	.8	2.7	.8	

1

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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	

1490 NH CARD USED  
 \*SECNO 58.000

3280 CROSS SECTION 58.00 EXTENDED .08 FEET

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

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58.00	4.08	3190.08	3190.08	.00	3191.66	1.58	.00	.10	3188.00
229.	0.	228.	0.	9.	23.	8.	284.	133.	3188.00
1.06	.05	10.11	.05	.040	.000	.040	.000	3186.00	.00
.000002	300.	305.	310.	20	8	0	.00	22.00	22.00

0

FLOW DISTRIBUTION FOR SECNO= 58.00 CWSEL= 3190.08

STA=	0.	8.	15.	22.
PER Q=	.2	1.0	.2	
AREA=	8.7	22.6	7.6	
VEL=	.1	.1	.1	
DEPTH=	1.1	3.2	1.1	

1490 NH CARD USED

\*SECNO -14.000

START TRIB COMP

-14.000 14.000 3084.052

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

-14.00	5.85	3084.05	.00	.00	3084.24	.18	.00	.00	3082.00
4325.	1387.	2795.	142.	589.	712.	93.	290.	136.	3082.00
1.09	2.36	3.93	1.54	.080	.069	.080	.000	3078.20	12.66
.006409	300.	430.	460.	0	0	0	.00	593.65	606.31

0

FLOW DISTRIBUTION FOR SECNO= -14.00 CWSEL= 3084.05

STA=	13.	314.	517.	605.
PER Q=	32.1	64.6	3.3	
AREA=	588.7	711.7	92.6	
VEL=	2.4	3.9	1.5	
DEPTH=	2.0	3.5	1.1	

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 59.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

59.00	2.77	3087.77	3087.77	.00	3088.48	.72	2.62	.27	3086.00
610.	107.	430.	73.	54.	54.	37.	297.	139.	3086.00
1.11	1.98	7.98	1.98	.080	.039	.080	.000	3085.00	102.98
.013412	400.	380.	300.	20	11	0	.00	124.58	227.56

0

FLOW DISTRIBUTION FOR SECNO= 59.00 CWSEL= 3087.77

STA=	103.	164.	171.	179.	186.	228.
PER Q=	17.5	9.6	51.3	9.6	11.9	
AREA=	54.0	15.9	22.1	15.9	36.8	
VEL=	2.0	3.7	14.1	3.7	2.0	



DEPTH= .9 2.3 2.8 2.3 .9

1490 NH CARD USED

\*SECNO 60.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

60.00	3.87	3092.07	.00	.00	3092.46	.39	3.88	.10	3090.00
610.	71.	386.	154.	32.	64.	70.	298.	140.	3090.00
1.13	2.19	6.04	2.19	.080	.061	.080	.000	3088.20	35.49
.012555	330.	300.	270.	2	0	0	.00	117.68	153.16

0

FLOW DISTRIBUTION FOR SECNO= 60.00 CWSEL= 3092.07

STA= 35. 66. 85. 150. 153.

PER Q=	11.6	63.2	25.2	.0
AREA=	32.4	63.8	70.1	.1
VEL=	2.2	6.0	2.2	.2
DEPTH=	1.1	3.4	1.1	.0

1490 NH CARD USED

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SECNO	DEPTH	CWSEL	CRISW	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 61.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

61.00	3.55	3094.55	.00	.00	3094.78	.23	2.27	.05	3092.00
610.	354.	231.	25.	173.	41.	13.	299.	140.	3092.00
1.15	2.05	5.69	2.00	.080	.048	.080	.000	3091.00	86.25
.006980	240.	250.	260.	3	0	0	.00	143.85	230.10

0

FLOW DISTRIBUTION FOR SECNO= 61.00 CWSEL= 3094.55

STA= 86. 100. 209. 221. 229. 230.

PER Q=	.4	57.6	37.9	4.1	.0
AREA=	3.8	169.0	40.6	12.4	.3
VEL=	.7	2.1	5.7	2.0	.6
DEPTH=	.3	1.6	3.4	1.6	.3

1490 NH CARD USED

\*SECNO 62.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

62.00	2.88	3098.18	3098.18	.00	3098.68	.50	3.00	.14	3096.00
550.	280.	258.	12.	106.	33.	5.	300.	141.	3096.00
1.16	2.64	7.80	2.25	.080	.047	.080	.000	3095.30	28.21
.016313	300.	300.	300.	3	14	0	.00	112.87	141.08

0

FLOW DISTRIBUTION FOR SECNO= 62.00 CWSEL= 3098.18

STA= 28. 119. 131. 135. 141.

PER Q=	50.9	47.0	2.1	.0
AREA=	105.9	33.1	4.7	.5
VEL=	2.6	7.8	2.5	.5

DEPTH= 1.2 2.8 1.2 .1

1490 NH CARD USED

\*SECNO 63.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

63.00	2.71	3104.21	3104.21	.00	3104.75	.54	4.74	.02	3102.00
550.	25.	274.	251.	12.	34.	122.	301.	142.	3102.00
1.18	2.04	8.12	2.07	.080	.034	.080	.000	3101.50	20.48
.009719	400.	380.	370.	4	12	0	.00	129.37	149.85

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SECNO	DEPTH	CWSEL	CRISW	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= 63.00 CWSEL= 3104.21

STA=	20.	31.	34.	41.	44.	144.	150.
PER Q=	4.5	4.4	40.9	4.4	45.7	.0	
AREA=	12.1	7.4	19.0	7.4	120.9	.6	
VEL=	2.0	3.3	11.9	3.3	2.1	.4	
DEPTH=	1.2	2.5	2.7	2.5	1.2	.1	

1490 NH CARD USED

\*SECNO 64.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

64.00	2.92	3109.62	3109.62	.00	3110.41	.79	4.83	.12	3108.00
497.	12.	452.	33.	11.	61.	16.	303.	143.	3108.00
1.20	1.06	7.45	2.03	.080	.045	.080	.000	3106.70	196.60
.015814	400.	400.	400.	4	8	0	.00	80.88	315.26

0

FLOW DISTRIBUTION FOR SECNO= 64.00 CWSEL= 3109.62

STA=	197.	232.	270.	282.	288.	295.	315.
PER Q=	2.4	.0	22.0	56.1	12.8	6.7	
AREA=	11.0	.1	27.3	17.5	15.9	16.4	
VEL=	1.1	.4	4.0	15.9	4.0	2.0	
DEPTH=	.3	.0	2.3	2.9	2.3	.8	

1490 NH CARD USED

\*SECNO 65.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

65.00	3.31	3114.91	.00	.00	3115.11	.20	4.52	.18	3112.00
497.	273.	165.	59.	149.	29.	42.	304.	144.	3112.00

122

1.24	1.84	5.64	1.42	.080	.047	.080	.000	3111.60	23.88
.006725	360.	500.	490.	6	0	0	.00	182.66	206.54

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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= 65.00 CWSEL= 3114.91

STA=	24.	28.	70.	110.	122.	143.	152.	156.	180.	207.
PER Q=	.3	16.6	15.8	3.2	19.0	33.2	3.4	6.3	2.2	
AREA=	1.9	48.9	46.6	11.0	40.2	29.2	7.7	22.0	12.1	
VEL=	.9	1.7	1.7	1.4	2.3	5.6	2.2	1.4	.9	
DEPTH=	.5	1.2	1.2	.9	1.9	3.2	1.9	.9	.5	

1490 NH CARD USED

\*SECNO 66.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

66.00	3.53	3117.03	3117.03	.00	3117.91	.88	1.96	.34	3114.00
497.	83.	358.	56.	32.	41.	34.	305.	145.	3114.00
1.25	2.55	8.75	1.68	.080	.036	.080	.000	3113.50	20.26
.008661	270.	250.	260.	2	8	0	.00	81.04	101.30

0

FLOW DISTRIBUTION FOR SECNO= 66.00 CWSEL= 3117.03

STA=	20.	28.	42.	45.	51.	54.	60.	101.
PER Q=	.9	15.8	7.5	57.0	7.5	6.6	4.8	
AREA=	4.0	28.5	9.8	21.2	9.8	12.2	21.3	
VEL=	1.1	2.8	3.8	13.4	3.8	2.7	1.1	
DEPTH=	.5	2.0	3.3	3.5	3.3	2.0	.5	

1490 NH CARD USED

\*SECNO 67.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

67.00	5.21	3121.01	3121.01	.00	3121.91	.90	2.64	.01	3118.00
497.	40.	395.	62.	16.	47.	28.	306.	146.	3118.00
1.26	2.47	8.45	2.23	.080	.055	.080	.000	3115.80	54.88
.015915	240.	230.	220.	4	14	0	.00	70.37	125.26

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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

123

FLOW DISTRIBUTION FOR SECNO= 67.00 CWSSEL= 3121.01

STA=	55.	71.	75.	85.	90.	125.
PER Q=	2.4	5.6	79.5	7.2	5.3	
AREA=	8.1	8.0	46.8	10.0	17.8	
VEL=	1.5	3.5	8.4	3.5	1.5	
DEPTH=	.5	2.0	4.7	2.0	.5	

1490 NH CARD USED

\*SECNO 68.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	.0	152.0	TYPE=	1	TARGET=	151.999
68.00	3.01	3128.01	.00	.00	3128.27	.25 6.17 .19 3126.00
309.	9.	197.	102.	5.	41.	53. 307. 146. 3126.00
1.29	1.85	4.85	1.94	.080	.061	.080 .000 3125.00 59.94
.010788	430.	460.	440.	3	0	0 .00 72.55 132.49

0

FLOW DISTRIBUTION FOR SECNO= 68.00 CWSSEL= 3128.01

STA=	60.	65.	80.	132.
PER Q=	3.0	63.9	33.1	
AREA=	5.1	40.7	52.6	
VEL=	1.9	4.8	1.9	
DEPTH=	1.0	2.7	1.0	

1490 NH CARD USED

\*SECNO 69.000

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

69.00	2.09	3131.89	3131.89	.00	3132.55	.66	2.99	.20	3130.00
309.	46.	217.	46.	21.	28.	21.	307.	147.	3130.00
1.30	2.23	7.64	2.23	.080	.039	.080	.000	3129.80	36.27
.015681	240.	235.	220.	3	18	0	.00	57.45	93.73

0

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SECNO	DEPTH	CWSSEL	CRISW	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= 69.00 CWSSEL= 3131.89

STA=	36.	58.	62.	68.	72.	94.
PER Q=	14.8	9.5	51.4	9.5	14.8	
AREA=	20.5	8.0	12.5	8.0	20.5	
VEL=	2.2	3.7	12.7	3.7	2.2	
DEPTH=	.9	2.0	2.1	2.0	.9	

1490 NH CARD USED

\*SECNO 70.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

70.00	2.17	3138.47	.00	.00	3138.75	.28	6.08	.12	3137.00
309.	135.	123.	51.	57.	20.	25.	308.	147.	3137.00
1.33	2.37	6.07	2.08	.080	.051	.080	.000	3136.30	16.91
.017553	370.	370.	350.	2	0	0	.00	116.24	133.14

0  
FLOW DISTRIBUTION FOR SECNO= 70.00 CWSEL= 3138.47

STA=	17.	22.	80.	90.	110.	133.
PER Q=	.4	43.4	39.7	14.9	1.6	
AREA=	1.2	55.8	20.2	19.3	5.4	
VEL=	.9	2.4	6.1	2.4	.9	
DEPTH=	.2	1.0	2.0	1.0	.2	

1490 NH CARD USED

\*SECNO 71.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

71.00	2.66	3146.46	3146.19	.00	3146.83	.37	8.04	.04	3146.00
309.	43.	154.	112.	23.	43.	17.	309.	149.	3146.00
1.36	1.88	3.55	6.80	.080	.078	.017	.000	3143.80	34.56
.017194	455.	475.	450.	14	14	0	.00	113.36	181.16

0  
FLOW DISTRIBUTION FOR SECNO= 71.00 CWSEL= 3146.46

STA=	35.	45.	49.	58.	71.	120.	145.	180.	181.
PER Q=	.7	3.4	7.8	.9	1.1	49.7	36.1	.3	
AREA=	2.4	4.3	9.6	2.9	3.8	43.3	16.2	.3	
VEL=	.9	2.5	2.5	.9	.9	3.5	6.9	2.9	
DEPTH=	.2	1.1	1.1	.2	.1	1.7	.5	.2	

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SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	GLOSS	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

1490 NH CARD USED

\*SECNO 72.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

72.00	1.44	3153.74	3153.74	.00	3153.99	.25	5.76	.03	3153.00
250.	37.	80.	134.	15.	14.	46.	309.	150.	3153.00
1.38	2.50	5.84	2.91	.050	.050	.056	.000	3152.30	50.29
.026976	345.	295.	240.	2	11	0	.00	142.89	246.03

0  
FLOW DISTRIBUTION FOR SECNO= 72.00 CWSEL= 3153.74

STA=	50.	90.	100.	132.	246.
PER Q=	14.6	31.9	37.4	16.1	
AREA=	14.6	13.7	23.5	22.5	
VEL=	2.5	5.8	4.0	1.8	

12

DEPTH= .4 1.4 .7 .2

1490 NH CARD USED

\*SECNO 73.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

73.00	2.09	3156.09	.00	.00	3156.34	.26	2.35	.00	3154.00
250.	62.	79.	109.	22.	15.	31.	309.	150.	3154.00
1.39	2.83	5.41	3.49	.051	.050	.050	.000	3154.00	47.07
.012512	120.	130.	140.	4	0	0	.00	112.24	159.31

0

FLOW DISTRIBUTION FOR SECNO= 73.00 CWSEL= 3156.09

STA=	47.	73.	107.	123.	159.	159.
PER Q=	.3	.5	24.0	43.7	.0	
AREA=	2.0	2.7	17.3	31.3	.0	
VEL=	.4	.4	3.5	3.5	.0	
DEPTH=	.1	.1	1.1	.9	.0	

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 74.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

74.00	2.67	3160.27	3160.27	.00	3161.23	.96	.03	.35	3160.00
250.	0.	250.	0.	0.	32.	0.	310.	150.	3160.00
1.40	.00	7.86	.05	.040	.001	.040	.000	3157.60	6.59
.000029	280.	275.	270.	20	11	0	.00	18.22	24.81

0

FLOW DISTRIBUTION FOR SECNO= 74.00 CWSEL= 3160.27

STA=	7.	24.	25.
PER Q=	3.7	.0	
AREA=	31.8	.1	
VEL=	.3	.1	
DEPTH=	1.9	.1	

1490 NH CARD USED

\*SECNO 75.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

75.00	3.55	3171.55	3171.55	.00	3172.98	1.44	.01	.24	3170.00
250.	0.	249.	0.	4.	26.	2.	310.	150.	3170.00
1.41	.09	9.63	.09	.040	.001	.040	.000	3168.00	6.36
.000009	400.	440.	450.	20	11	0	.00	16.73	23.09

126

0  
 FLOW DISTRIBUTION FOR SECNO= 75.00 CWSEL= 3171.55

STA= 6. 11. 20. 23.  
 PER Q= .1 2.1 .1  
 AREA= 3.6 25.9 2.4  
 VEL= .1 .2 .1  
 DEPTH= .8 2.9 .8

1  
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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 76.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

76.00	3.63	3179.93	3179.93	.00	3180.95	1.02	.00	.13	3180.00
194.	0.	194.	0.	0.	24.	0.	310.	151.	3180.00
1.42	.00	8.09	.00	.000	.000	.000	.000	3176.30	8.14
.000003	350.	350.	340.	20	5	0	.00	11.79	19.93

0  
 FLOW DISTRIBUTION FOR SECNO= 76.00 CWSEL= 3179.93

STA= 8. 20.  
 PER Q= 1.2  
 AREA= 24.0  
 VEL= .1  
 DEPTH= 2.0

1490 NH CARD USED

\*SECNO 77.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

77.00	3.57	3187.57	3187.57	.00	3188.51	.94	.00	.02	3188.00
194.	0.	194.	0.	0.	25.	0.	310.	151.	3188.00
1.43	.00	7.80	.00	.000	.000	.000	.000	3184.00	7.65
.000002	180.	170.	170.	20	8	0	.00	13.27	20.92

0  
 FLOW DISTRIBUTION FOR SECNO= 77.00 CWSEL= 3187.57

STA= 8. 22.  
 PER Q= .9  
 AREA= 24.9  
 VEL= .1  
 DEPTH= 1.9

1490 NH CARD USED

\*SECNO 78.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

1  
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SECNO	DEPTH	CWSEL	CRISW	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

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

78.00	1.68	3197.68	3197.68	.00	3198.14	.45	.00	.15	3198.00
194.	0.	194.	0.	0.	36.	0.	311.	151.	3198.00
1.45	.00	5.40	.00	.000	.069	.000	.000	3196.00	36.28
.073732	310.	300.	310.	20	14	0	.00	40.70	76.98

0

FLOW DISTRIBUTION FOR SECNO= 78.00 CWSEL= 3197.68

STA=	36.	59.	61.	80.
PER Q=	44.2	24.8	31.0	
AREA=	19.1	3.4	13.4	
VEL=	4.5	14.3	4.5	
DEPTH=	.8	1.7	.8	

1490 NH CARD USED

\*SECNO -24.000

START TRIB COMP

-24.000 24.000 3125.639

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

-24.00	5.64	3125.64	3125.64	.00	3126.44	.80	6.90	-6.90	3124.00
4325.	135.	3026.	1165.	54.	363.	365.	313.	153.	3124.00
1.46	2.51	8.33	3.19	.080	.067	.080	.000	3120.00	144.44
.023814	300.	280.	270.	0	20	0	.00	502.84	748.59

0

FLOW DISTRIBUTION FOR SECNO= -24.00 CWSEL= 3125.64

STA=	144.	210.	305.	365.	455.	563.	606.	749.
PER Q=	3.1	70.0	9.1	4.3	.3	6.5	6.8	
AREA=	53.7	363.2	98.3	73.9	5.4	70.5	116.8	
VEL=	2.5	8.3	4.0	2.5	2.5	4.0	2.5	
DEPTH=	.8	3.8	1.6	.8	.0	1.6	.8	

1490 NH CARD USED

\*SECNO 79.000

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SECNO	DEPTH	CWSEL	CRISW	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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

128



79.00	3.97	3132.97	.00	.00	3133.06	.09	6.41	.21	3130.00
2276.	726.	1548.	2.	311.	628.	3.	325.	158.	3132.00
1.53	2.34	2.46	.71	.080	.072	.080	.000	3129.00	76.21
.003903	550.	650.	490.	6	0	0	.00	354.10	430.31

0

FLOW DISTRIBUTION FOR SECNO= 79.00 CWSEL= 3132.97

STA=	76.	190.	425.	430.
PER Q=	31.9	68.0	.1	
AREA=	311.1	627.9	2.6	
VEL=	2.3	2.5	.7	
DEPTH=	2.7	2.7	.5	

1490 NH CARD USED

\*SECNO 80.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

80.00	1.55	3136.55	3136.55	.00	3137.18	.63	3.24	.27	3136.00
2276.	1.	655.	1620.	1.	63.	445.	332.	162.	3136.00
1.55	1.20	10.36	3.64	.080	.028	.080	.000	3135.00	38.08
.024694	330.	435.	400.	4	18	0	.00	396.46	434.54

0

FLOW DISTRIBUTION FOR SECNO= 80.00 CWSEL= 3136.55

STA=	38.	40.	50.	80.	86.	128.	176.	400.	420.	435.
PER Q=	.0	1.4	26.6	.8	2.0	6.7	59.5	2.8	.2	
AREA=	.5	10.5	46.5	6.3	23.0	50.3	346.9	21.0	4.0	
VEL=	1.2	3.0	13.0	3.0	2.0	3.0	3.9	3.0	1.2	
DEPTH=	.3	1.0	1.5	1.0	.5	1.0	1.5	1.0	.3	

1490 NH CARD USED

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SECNO	DEPTH	CWSEL	CRISW	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 81.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

81.00	3.37	3142.37	3142.38	.00	3143.27	.89	5.96	.13	3140.00
2276.	833.	1294.	149.	288.	133.	65.	336.	165.	3140.00
1.56	2.89	9.75	2.31	.080	.034	.080	.000	3139.00	104.39
.010305	380.	380.	410.	7	17	0	.00	256.07	376.09

0

FLOW DISTRIBUTION FOR SECNO= 81.00 CWSEL= 3142.37

STA=	104.	112.	147.	190.	284.	324.	370.	376.
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PER Q=	.0	3.6	10.2	22.8	56.9	6.5	.0
AREA=	1.4	39.6	80.9	166.5	132.7	63.5	1.2
VEL=	.6	2.0	2.9	3.1	9.7	2.3	.6
DEPTH=	.2	1.1	1.9	1.8	3.3	1.4	.2

1490 NH CARD USED

\*SECNO 82.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

82.00	4.46	3148.46	.00	.00	3148.93	.47	5.53	.13	3146.00
2276.	197.	935.	1144.	73.	126.	311.	342.	167.	3146.00
1.59	2.68	7.44	3.68	.080	.058	.080	.000	3144.00	154.35
.013796	510.	465.	435.	4	0	0	.00	248.78	430.35

0

FLOW DISTRIBUTION FOR SECNO= 82.00 CWSEL= 3148.46

STA= 154. 199. 230. 262. 286. 359. 421. 430.

PER Q=	3.7	5.0	41.1	10.3	31.3	8.6	.1
AREA=	40.0	33.5	125.6	58.9	179.3	70.5	2.1
VEL=	2.1	3.4	7.4	4.0	4.0	2.8	.8
DEPTH=	.9	1.1	3.9	2.5	2.5	1.1	.2

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SECNO	DEPTH	CWSEL	CRISW	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	

1490 NH CARD USED

\*SECNO 83.000

83.00	3.07	3152.77	.00	.00	3153.09	.32	4.12	.04	3150.00
2276.	327.	1506.	443.	133.	284.	179.	346.	170.	3150.00
1.61	2.46	5.31	2.48	.080	.042	.080	.000	3149.70	38.73
.008615	450.	410.	320.	4	0	0	.00	337.76	376.50

0

FLOW DISTRIBUTION FOR SECNO= 83.00 CWSEL= 3152.77

STA= 39. 53. 125. 127. 147. 257. 265. 363. 376.

PER Q=	.2	14.1	.9	32.8	21.5	11.0	19.2	.2
AREA=	5.5	127.5	5.8	61.4	194.3	22.2	173.6	5.2
VEL=	.9	2.5	3.5	12.1	2.5	11.3	2.5	.9
DEPTH=	.4	1.8	2.9	3.1	1.8	2.8	1.8	.4

1490 NH CARD USED

\*SECNO 84.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

84.00	2.75	3156.75	.00	.00	3157.13	.38	4.01	.03	3154.50
2276.	427.	1787.	63.	127.	335.	30.	350.	172.	3156.00

1.63	3.35	5.33	2.08	.080	.066	.080	.000	3154.00	51.15
.020196	260.	325.	360.	4	0	0	.00	300.66	362.54

0 FLOW DISTRIBUTION FOR SECNO= 84.00 CWSEL= 3156.75

STA=	51.	150.	307.	363.
PER Q=	18.7	78.5	2.8	
AREA=	127.4	335.3	30.1	
VEL=	3.3	5.3	2.1	
DEPTH=	1.3	2.1	.5	

1490 NH CARD USED

1

1/ 1/80 2:15:41

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SECNO	DEPTH	CWSEL	CRISW	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 85.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

85.00	3.23	3163.23	.00	.00	3163.94	.71	6.64	.17	3162.00
2276.	4.	2219.	54.	3.	323.	40.	355.	175.	3162.00
1.65	1.33	6.86	1.36	.080	.033	.080	.000	3160.00	50.68
.010240	430.	480.	470.	3	0	0	.00	239.44	290.12

0

FLOW DISTRIBUTION FOR SECNO= 85.00 CWSEL= 3163.23

STA=	51.	55.	65.	80.	165.	185.	226.	290.
PER Q=	.2	2.1	15.8	11.8	55.0	12.9	2.4	
AREA=	2.7	17.3	33.5	116.3	64.7	91.6	39.5	
VEL=	1.3	2.7	10.7	2.3	19.3	3.2	1.4	
DEPTH=	.6	1.7	2.2	1.4	3.2	2.2	.6	

1490 NH CARD USED

\*SECNO 86.000

86.00	3.04	3169.04	3168.93	.00	3169.83	.79	5.85	.04	3166.00
2276.	182.	2075.	18.	56.	280.	12.	359.	177.	3168.00
1.67	3.28	7.40	1.57	.080	.042	.080	.000	3166.00	66.39
.017122	410.	450.	500.	8	11	0	.00	207.99	274.37

0

FLOW DISTRIBUTION FOR SECNO= 86.00 CWSEL= 3169.04

STA=	66.	95.	115.	135.	175.	182.	215.	220.	252.	274.
PER Q=	1.0	7.0	45.4	14.7	8.2	10.0	5.8	7.0	.8	
AREA=	14.9	40.8	60.8	84.1	14.3	61.6	10.2	49.3	11.6	
VEL=	1.6	3.9	17.0	4.0	13.0	3.7	13.0	3.2	1.6	
DEPTH=	.5	2.0	3.0	2.1	2.0	1.9	2.0	1.5	.5	

1

PROFILE FOR STREAM 100 YEAR FLOW

PLOTTED POINTS (BY PRIORITY) E-ENERGY, W-WATER SURFACE, I-INVERT, C-CRITICAL W.S., L-LEFT BANK, R-RIGHT BANK, M-LOWER END STA

131

ELEVATION	3031.	3051.	3071.	3091.	3111.	3131.	3151.	3171.	3191.	3211.
SECNO	CUMDIS									
1.00	0.	IL EM	.	.	.	.	.	.	.	.
	50.	IL EM	.	.	.	.	.	.	.	.
	100.	CIL E M	.	.	.	.	.	.	.	.
	150.	CIL E M	.	.	.	.	.	.	.	.
2.00	200.	CIRL E M	.	.	.	.	.	.	.	.
	250.	C IL E M	.	.	.	.	.	.	.	.
	300.	C IL E M	.	.	.	.	.	.	.	.
	350.	C IRLWE M	.	.	.	.	.	.	.	.
	400.	C IL EM	.	.	.	.	.	.	.	.
	450.	C IL EM	.	.	.	.	.	.	.	.
	500.	C IL WE	.	.	.	.	.	.	.	.
	550.	C IRLWE	.	.	.	.	.	.	.	.
3.00	600.	. ILWE	.	.	.	.	.	.	.	.
	650.	. IL EM	.	.	.	.	.	.	.	.
	700.	. IL WE	.	.	.	.	.	.	.	.
	750.	. IRWEM.	.	.	.	.	.	.	.	.
	800.	. IR EM.	.	.	.	.	.	.	.	.
	850.	. IL WE.	.	.	.	.	.	.	.	.
4.00	900.	. IRWEM	.	.	.	.	.	.	.	.
	950.	C IR EM	.	.	.	.	.	.	.	.
	1000.	C IL EM	.	.	.	.	.	.	.	.
	1050.	C IL WEM	.	.	.	.	.	.	.	.
	1100.	C ILWEM	.	.	.	.	.	.	.	.
5.00	1150.	C ILWEM	.	.	.	.	.	.	.	.
	1200.	C IRLE M	.	.	.	.	.	.	.	.
	1250.	C IRLWEM	.	.	.	.	.	.	.	.
	1300.	C ILWEM	.	.	.	.	.	.	.	.
	1350.	C IL.EM	.	.	.	.	.	.	.	.
	1400.	C IRLWEM	.	.	.	.	.	.	.	.
6.00	1450.	C ILWEM	.	.	.	.	.	.	.	.
	1500.	C IL E M	.	.	.	.	.	.	.	.
	1550.	C ILRE M	.	.	.	.	.	.	.	.
	1600.	C ILWE M	.	.	.	.	.	.	.	.
	1650.	C IL E M	.	.	.	.	.	.	.	.
	1700.	C IL E M	.	.	.	.	.	.	.	.
	1750.	C IL E M.	.	.	.	.	.	.	.	.
7.00	1800.	C .IL ER M	.	.	.	.	.	.	.	.
	1850.	C .IL ER M	.	.	.	.	.	.	.	.
	1900.	C .I LER M	.	.	.	.	.	.	.	.
	1950.	C . ILWE M	.	.	.	.	.	.	.	.
	2000.	C . IL E M	.	.	.	.	.	.	.	.
	2050.	C . I LE M	.	.	.	.	.	.	.	.
	2100.	C . ILE M	.	.	.	.	.	.	.	.
	2150.	C . ILWE M	.	.	.	.	.	.	.	.
8.00	2200.	C . I LE M	.	.	.	.	.	.	.	.
	2250.	C . I LE M	.	.	.	.	.	.	.	.
	2300.	C . ILWE M	.	.	.	.	.	.	.	.
	2350.	C . IRLE M	.	.	.	.	.	.	.	.
	2400.	C . IRLE M	.	.	.	.	.	.	.	.
	2450.	C . I RE .M	.	.	.	.	.	.	.	.
9.00	2500.	C . I RWE .M	.	.	.	.	.	.	.	.
	2550.	C . IRLE .M	.	.	.	.	.	.	.	.
	2600.	C . IRLE .M	.	.	.	.	.	.	.	.
	2650.	C . IRLE .M	.	.	.	.	.	.	.	.



	5700.	C	.	.	.	IL E M.	.	.	.	.	.	.	.	.	.	.	.
	5750.	C	.	.	.	I LE M.	.	.	.	.	.	.	.	.	.	.	.
	5800.	C	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.
	5850.	C	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.
	5900.	C	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.
	5950.	C	.	.	.	ILWE .M	.	.	.	.	.	.	.	.	.	.	.
18.00	6000.	.	.	.	.	ILWE .M	.	.	.	.	.	.	.	.	.	.	.
	6050.	C	.	.	.	IL E .M	.	.	.	.	.	.	.	.	.	.	.
	6100.	C	.	.	.	IL E .M	.	.	.	.	.	.	.	.	.	.	.
	6150.	C	.	.	.	I LE . M	.	.	.	.	.	.	.	.	.	.	.
	6200.	C	.	.	.	ILWE . M	.	.	.	.	.	.	.	.	.	.	.
	6250.	C	.	.	.	IL E . M	.	.	.	.	.	.	.	.	.	.	.
	6300.	C	.	.	.	IL E . M	.	.	.	.	.	.	.	.	.	.	.
19.00	6350.	C	.	.	.	I LE . M	.	.	.	.	.	.	.	.	.	.	.
	6400.	C	.	.	.	I L E. M	.	.	.	.	.	.	.	.	.	.	.
	6450.	C	.	.	.	IL E. M	.	.	.	.	.	.	.	.	.	.	.
	6500.	C	.	.	.	I LE. M	.	.	.	.	.	.	.	.	.	.	.
	6550.	C	.	.	.	I LWE M	.	.	.	.	.	.	.	.	.	.	.
	6600.	C	.	.	.	I L E M	.	.	.	.	.	.	.	.	.	.	.
	6650.	C	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.
20.00	6700.	C	.	.	.	I LE M	.	.	.	.	.	.	.	.	.	.	.
	6750.	C	.	.	.	I LWE M	.	.	.	.	.	.	.	.	.	.	.
	6800.	C	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.
	6850.	C	.	.	.	IL.E M	.	.	.	.	.	.	.	.	.	.	.
	6900.	C	.	.	.	I LE M	.	.	.	.	.	.	.	.	.	.	.
	6950.	C	.	.	.	I LE M	.	.	.	.	.	.	.	.	.	.	.
	7000.	C	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.
	7050.	C	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.
	7100.	C	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.
	7150.	C	.	.	.	I.LE M	.	.	.	.	.	.	.	.	.	.	.
21.00	7200.	C	.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.
	7250.	C	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.
	7300.	C	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.
	7350.	C	.	.	.	ILRE M	.	.	.	.	.	.	.	.	.	.	.
	7400.	C	.	.	.	I LE M	.	.	.	.	.	.	.	.	.	.	.
	7450.	C	.	.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.
	7500.	C	.	.	.	.ILWE M	.	.	.	.	.	.	.	.	.	.	.
	7550.	C	.	.	.	.ILRE M	.	.	.	.	.	.	.	.	.	.	.
	7600.	C	.	.	.	.ILRE M	.	.	.	.	.	.	.	.	.	.	.
	7650.	C	.	.	.	.I LE M	.	.	.	.	.	.	.	.	.	.	.
22.00	7700.	C	.	.	.	.I LE M	.	.	.	.	.	.	.	.	.	.	.
	7750.	C	.	.	.	.ILWE M	.	.	.	.	.	.	.	.	.	.	.
	7800.	C	.	.	.	.ILRE M	.	.	.	.	.	.	.	.	.	.	.
	7850.	C	.	.	.	.ILRE M.	.	.	.	.	.	.	.	.	.	.	.
	7900.	C	.	.	.	.I LWE M.	.	.	.	.	.	.	.	.	.	.	.
	7950.	C	.	.	.	.ILRE M.	.	.	.	.	.	.	.	.	.	.	.
23.00	8000.	.	.	.	.	.ILRE M	.	.	.	.	.	.	.	.	.	.	.
	8050.	.	.	.	.	.I LWE M	.	.	.	.	.	.	.	.	.	.	.
	8100.	.	.	.	.	.I LWE M	.	.	.	.	.	.	.	.	.	.	.
	8150.	.	.	.	.	.I LE M	.	.	.	.	.	.	.	.	.	.	.
	8200.	.	.	.	.	.I LE M	.	.	.	.	.	.	.	.	.	.	.
	8250.	.	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.
24.00	8300.	.	.	.	.	I LE M	.	.	.	.	.	.	.	.	.	.	.
	8350.	C	.	.	.	I LEM.	.	.	.	.	.	.	.	.	.	.	.
	8400.	C	.	.	.	I LEM.	.	.	.	.	.	.	.	.	.	.	.
	8450.	C	.	.	.	ILWE.	.	.	.	.	.	.	.	.	.	.	.
	8500.	C	.	.	.	IRLE.	.	.	.	.	.	.	.	.	.	.	.
	8550.	C	.	.	.	IRLE.	.	.	.	.	.	.	.	.	.	.	.
	8600.	C	.	.	.	IMLE.	.	.	.	.	.	.	.	.	.	.	.
25.00	8650.	C	.	.	.	ILE.	.	.	.	.	.	.	.	.	.	.	.

	8700.	C	.	.	.	.	ILE.	.	.	.	.	.	.	.
	8750.	C	.	.	.	.	ILWE	.	.	.	.	.	.	.
	8800.	C	.	.	.	.	ILME	.	.	.	.	.	.	.
	8850.	C	.	.	.	.	IRLE	.	.	.	.	.	.	.
	8900.	C	.	.	.	.	IRLEM	.	.	.	.	.	.	.
	8950.	C	.	.	.	.	ILE M	.	.	.	.	.	.	.
	9000.	C	.	.	.	.	ILE M	.	.	.	.	.	.	.
26.00	9050.	C	.	.	.	.	ILE M	.	.	.	.	.	.	.
	9100.	C	.	.	.	.	ILWE M	.	.	.	.	.	.	.
	9150.	C	.	.	.	.	IL.E M	.	.	.	.	.	.	.
	9200.	C	.	.	.	.	I.E M	.	.	.	.	.	.	.
	9250.	C	.	.	.	.	ILE M	.	.	.	.	.	.	.
	9300.	C	.	.	.	.	ILWE M	.	.	.	.	.	.	.
	9350.	C	.	.	.	.	ILWE M	.	.	.	.	.	.	.
	9400.	C	.	.	.	.	I E M	.	.	.	.	.	.	.
	9450.	C	.	.	.	.	I E M	.	.	.	.	.	.	.
	9500.	C	.	.	.	.	ILE M	.	.	.	.	.	.	.
27.00	9550.	C	.	.	.	.	ILWE M	.	.	.	.	.	.	.
	9600.	C	.	.	.	.	.I E M	.	.	.	.	.	.	.
28.00	9650.	.	.	.	.	.	.ILE M	.	.	.	.	.	.	.
	9700.	C	.	.	.	.	.ILWE M	.	.	.	.	.	.	.
	9750.	C	.	.	.	.	.ILWE M	.	.	.	.	.	.	.
	9800.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	9850.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	9900.	C	.	.	.	.	. ILWEM	.	.	.	.	.	.	.
	9950.	C	.	.	.	.	. IL E M	.	.	.	.	.	.	.
	10000.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
29.00	10050.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	10100.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	10150.	C	.	.	.	.	. IL EM	.	.	.	.	.	.	.
	10200.	C	.	.	.	.	. IRE M	.	.	.	.	.	.	.
	10250.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	10300.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	10350.	C	.	.	.	.	. IWE M.	.	.	.	.	.	.	.
30.00	10400.	C	.	.	.	.	. IRE M.	.	.	.	.	.	.	.
	10450.	C	.	.	.	.	. IRE M.	.	.	.	.	.	.	.
	10500.	C	.	.	.	.	. ILE M.	.	.	.	.	.	.	.
	10550.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	10600.	C	.	.	.	.	. IWE M	.	.	.	.	.	.	.
	10650.	C	.	.	.	.	. I E M	.	.	.	.	.	.	.
30.50	10700.	C	.	.	.	.	. ILWE.M	.	.	.	.	.	.	.
	10750.	C	.	.	.	.	. I LEM	.	.	.	.	.	.	.
31.00	10800.	C	.	.	.	.	. I LEM	.	.	.	.	.	.	.
	10850.	C	.	.	.	.	. I LEM	.	.	.	.	.	.	.
	10900.	C	.	.	.	.	. ILE.M	.	.	.	.	.	.	.
	10950.	C	.	.	.	.	. ILE.M	.	.	.	.	.	.	.
	11000.	C	.	.	.	.	. ILWEM	.	.	.	.	.	.	.
	11050.	C	.	.	.	.	. IL E M	.	.	.	.	.	.	.
	11100.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
32.00	11150.	.	.	.	.	.	. ILWE M	.	.	.	.	.	.	.
	11200.	C	.	.	.	.	. ILWE M	.	.	.	.	.	.	.
	11250.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	11300.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	11350.	C	.	.	.	.	. IE M	.	.	.	.	.	.	.
33.00	11400.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
	11450.	C	.	.	.	.	. IE M	.	.	.	.	.	.	.
	11500.	C	.	.	.	.	. IWEM	.	.	.	.	.	.	.
	11550.	C	.	.	.	.	. ILEM	.	.	.	.	.	.	.
	11600.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.
34.00	11650.	.	.	.	.	.	. ICEM	.	.	.	.	.	.	.

	11700.	C	.	.	.	.	.	I L E M	.	.	.	.
	11750.	C	.	.	.	.	.	I L E M	.	.	.	.
	11800.	C	.	.	.	.	.	I L W E M	.	.	.	.
	11850.	C	.	.	.	.	.	I L E M	.	.	.	.
	11900.	C	.	.	.	.	.	I L E M	.	.	.	.
	11950.	C	.	.	.	.	.	I L W E	.	.	.	.
35.00	12000.	C	.	.	.	.	.	I L E M	.	.	.	.
	12050.	C	.	.	.	.	.	I L E M	.	.	.	.
	12100.	C	.	.	.	.	.	I L E M	.	.	.	.
	12150.	C	.	.	.	.	.	I L W E M	.	.	.	.
36.00	12200.	.	.	.	.	.	.	I W E M.	.	.	.	.
	12250.	.	.	.	.	.	.	I E M.	.	.	.	.
	12300.	.	.	.	.	.	.	I E M.	.	.	.	.
	12350.	.	.	.	.	.	.	I L W E M.	.	.	.	.
	12400.	.	.	.	.	.	.	I W E M.	.	.	.	.
	12450.	.	.	.	.	.	.	I E M.	.	.	.	.
	12500.	.	.	.	.	.	.	I L E M.	.	.	.	.
	12550.	.	.	.	.	.	.	I L W E M	.	.	.	.
	12600.	.	.	.	.	.	.	I C E M	.	.	.	.
37.00	12650.	.	.	.	.	.	.	I L E M	.	.	.	.
	12700.	C	.	.	.	.	.	I L E M	.	.	.	.
	12750.	C	.	.	.	.	.	I L E M	.	.	.	.
	12800.	C	.	.	.	.	.	I L W E M	.	.	.	.
	12850.	C	.	.	.	.	.	I L E M.	.	.	.	.
	12900.	C	.	.	.	.	.	I L E M	.	.	.	.
-12.00	12950.	C	.	.	.	.	.	I L E M	.	.	.	.
	13000.	C	.	.	.	.	.	I L E M	.	.	.	.
	13050.	C	.	.	.	.	.	I E M	.	.	.	.
	13100.	C	.	.	.	.	.	I L E M	.	.	.	.
38.00	13150.	C	.	.	.	.	.	I E M	.	.	.	.
	13200.	C	.	.	.	.	.	I E M	.	.	.	.
	13250.	C	.	.	.	.	.	I R E M	.	.	.	.
39.00	13300.	C	.	.	.	.	.	I E M	.	.	.	.
	13350.	C	.	.	.	.	.	I E M	.	.	.	.
	13400.	C	.	.	.	.	.	I E M	.	.	.	.
	13450.	C	.	.	.	.	.	I L E M	.	.	.	.
	13500.	C	.	.	.	.	.	I L W E M	.	.	.	.
	13550.	C	.	.	.	.	.	I E M	.	.	.	.
	13600.	C	.	.	.	.	.	I E M	.	.	.	.
40.00	13650.	.	.	.	.	.	.	I L W E M	.	.	.	.
	13700.	C	.	.	.	.	.	I L E M	.	.	.	.
	13750.	C	.	.	.	.	.	I E M	.	.	.	.
	13800.	C	.	.	.	.	.	I L E M	.	.	.	.
	13850.	C	.	.	.	.	.	I W E M	.	.	.	.
	13900.	C	.	.	.	.	.	I E M	.	.	.	.
	13950.	C	.	.	.	.	.	I E M	.	.	.	.
41.00	14000.	C	.	.	.	.	.	I W E M	.	.	.	.
	14050.	C	.	.	.	.	.	I E M	.	.	.	.
	14100.	C	.	.	.	.	.	I E M	.	.	.	.
	14150.	C	.	.	.	.	.	I W E M	.	.	.	.
	14200.	C	.	.	.	.	.	I E M	.	.	.	.
42.00	14250.	.	.	.	.	.	.	I E M	.	.	.	.
	14300.	.	.	.	.	.	.	I W E M	.	.	.	.
	14350.	.	.	.	.	.	.	I E M	.	.	.	.
	14400.	.	.	.	.	.	.	I L E M	.	.	.	.
	14450.	.	.	.	.	.	.	I L W E M	.	.	.	.
	14500.	.	.	.	.	.	.	I W E M	.	.	.	.
42.50	14550.	.	.	.	.	.	.	I L E M	.	.	.	.
	14600.	C	.	.	.	.	.	I L E M	.	.	.	.
	14650.	C	.	.	.	.	.	I W E M	.	.	.	.





51.00	17700.	.	.	.	.	.	.	.	.	ILE M	.	.	.	.
	17750.	C	.	.	.	.	.	.	.	IE M	.	.	.	.
	17800.	C	.	.	.	.	.	.	.	IWEM	.	.	.	.
	17850.	C	.	.	.	.	.	.	.	ILE M	.	.	.	.
	17900.	C	.	.	.	.	.	.	.	IE M	.	.	.	.
	17950.	C	.	.	.	.	.	.	.	I EM	.	.	.	.
52.00	18000.	C	.	.	.	.	.	.	.	ILE M	.	.	.	.
	18050.	C	.	.	.	.	.	.	.	I EM	.	.	.	.
	18100.	C	.	.	.	.	.	.	.	IEM	.	.	.	.
	18150.	C	.	.	.	.	.	.	.	ILEM.	.	.	.	.
	18200.	C	.	.	.	.	.	.	.	IEM.	.	.	.	.
	18250.	C	.	.	.	.	.	.	.	ILEM	.	.	.	.
53.00	18300.	.	.	.	.	.	.	.	.	IEM	.	.	.	.
	18350.	.	.	.	.	.	.	.	.	IWE	.	.	.	.
	18400.	.	.	.	.	.	.	.	.	ILEM	.	.	.	.
	18450.	.	.	.	.	.	.	.	.	IEM	.	.	.	.
	18500.	.	.	.	.	.	.	.	.	IWEM	.	.	.	.
	18550.	.	.	.	.	.	.	.	.	ILEM	.	.	.	.
54.00	18600.	.	.	.	.	.	.	.	.	ILEM	.	.	.	.
	18650.	.	.	.	.	.	.	.	.	ILWE	.	.	.	.
	18700.	.	.	.	.	.	.	.	.	.IEM	.	.	.	.
	18750.	.	.	.	.	.	.	.	.	.ILWE	.	.	.	.
	18800.	.	.	.	.	.	.	.	.	.IEM	.	.	.	.
	18850.	.	.	.	.	.	.	.	.	IWE	.	.	.	.
	18900.	.	.	.	.	.	.	.	.	ILE	.	.	.	.
	18950.	.	.	.	.	.	.	.	.	IWE	.	.	.	.
	19000.	.	.	.	.	.	.	.	.	ILWE	.	.	.	.
55.00	19050.	.	.	.	.	.	.	.	.	ILE	.	.	.	.
	19100.	.	.	.	.	.	.	.	.	ILWE	.	.	.	.
	19150.	.	.	.	.	.	.	.	.	ILE	.	.	.	.
	19200.	.	.	.	.	.	.	.	.	ILWE.	.	.	.	.
	19250.	.	.	.	.	.	.	.	.	I WE	.	.	.	.
	19300.	.	.	.	.	.	.	.	.	ILWE	.	.	.	.
	19350.	.	.	.	.	.	.	.	.	I WE	.	.	.	.
	19400.	.	.	.	.	.	.	.	.	IL.WE	.	.	.	.
	19450.	.	.	.	.	.	.	.	.	I.WE	.	.	.	.
	19500.	.	.	.	.	.	.	.	.	IL WE	.	.	.	.
56.00	19550.	.	.	.	.	.	.	.	.	IL WE	.	.	.	.
	19600.	.	.	.	.	.	.	.	.	I WE	.	.	.	.
	19650.	.	.	.	.	.	.	.	.	.I WE	.	.	.	.
	19700.	.	.	.	.	.	.	.	.	.ILWE	.	.	.	.
	19750.	.	.	.	.	.	.	.	.	.ILWE	.	.	.	.
57.00	19800.	.	.	.	.	.	.	.	.	IEM	.	.	.	.
	19850.	.	.	.	.	.	.	.	.	IWE	.	.	.	.
	19900.	.	.	.	.	.	.	.	.	ILWE	.	.	.	.
	19950.	.	.	.	.	.	.	.	.	ILWE .	.	.	.	.
	20000.	.	.	.	.	.	.	.	.	ILWE.	.	.	.	.
	20050.	.	.	.	.	.	.	.	.	ILWE	.	.	.	.
58.00	20100.	.	.	.	.	.	.	.	.	ILWE	.	.	.	.
	20150.	C	.	.	.	.	.	.	.	.I LE	.	.	.	.
	20200.	C	.	.	.	.	.	.	.	ILWE	.	.	.	.
	20250.	C	.	.	.	.	.	.	.	ILWE	.	.	.	.
	20300.	C	.	.	.	.	.	.	.	ILWE	.	.	.	.
	20350.	C	.	.	.	.	.	.	.	I LEM	.	.	.	.
	20400.	C	.	.	.	.	.	.	.	I LE	.	.	.	.
	20450.	C	.	.	.	.	.	.	.	I LE	.	.	.	.
	20500.	C	.	.	.	.	.	.	.	ILWE	.	.	.	.
-14.00	20550.	C	.	.	.	.	.	.	.	I LEM .	.	.	.	.
	20600.	C	.	.	.	.	.	.	.	I LE M.	.	.	.	.
	20650.	C	.	.	.	.	.	.	.	ILE M	.	.	.	.

	20700.	C	.	.	I L E .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	20750.	C	.	.	ILE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	20800.	C	.	.	ILE . M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	20850.	C	.	.	IWE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	20900.	C	.	.	IWE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
59.00	20950.	.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21000.	C	.	.	IE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21050.	C	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21100.	C	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21150.	C	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21200.	C	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
60.00	21250.	C	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21300.	C	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21350.	C	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21400.	C	.	.	I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21450.	C	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
61.00	21500.	C	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21550.	C	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21600.	C	.	.	.I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21650.	C	.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21700.	C	.	.	. IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21750.	C	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
62.00	21800.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21850.	.	.	.	. IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21900.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	21950.	.	.	.	. IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22000.	.	.	.	. IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22050.	.	.	.	. ILE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22100.	.	.	.	. IE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
63.00	22150.	.	.	.	. IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22200.	.	.	.	. IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22250.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22300.	.	.	.	. ILE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22350.	.	.	.	. IWE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22400.	.	.	.	. ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22450.	.	.	.	. ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22500.	.	.	.	. IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
64.00	22550.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22600.	C	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22650.	C	.	.	. IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22700.	C	.	.	. IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22750.	C	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22800.	C	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22850.	C	.	.	. IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22900.	C	.	.	. IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	22950.	C	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23000.	C	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
65.00	23050.	C	.	.	.IE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23100.	C	.	.	.IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23150.	C	.	.	.I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23200.	C	.	.	.I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23250.	C	.	.	.ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
66.00	23300.	.	.	.	. IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23350.	.	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23400.	.	.	.	. ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23450.	.	.	.	. IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23500.	.	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
67.00	23550.	.	.	.	. ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23600.	C	.	.	. IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	23650.	C	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	23700.	C	.	.	.	ILWE M.	.	.	.	.	.	.	.	.	.
	23750.	C	.	.	.	I E M.	.	.	.	.	.	.	.	.	.
	23800.	C	.	.	.	ILE M.	.	.	.	.	.	.	.	.	.
	23850.	C	.	.	.	I E M	.	.	.	.	.	.	.	.	.
	23900.	C	.	.	.	ILE M	.	.	.	.	.	.	.	.	.
	23950.	C	.	.	.	IE M	.	.	.	.	.	.	.	.	.
68.00	24000.	C	.	.	.	ILE.M	.	.	.	.	.	.	.	.	.
	24050.	C	.	.	.	IE.M	.	.	.	.	.	.	.	.	.
	24100.	C	.	.	.	ILE M	.	.	.	.	.	.	.	.	.
	24150.	C	.	.	.	IE M	.	.	.	.	.	.	.	.	.
	24200.	C	.	.	.	IWEM	.	.	.	.	.	.	.	.	.
69.00	24250.	.	.	.	.	IE M	.	.	.	.	.	.	.	.	.
	24300.	C	.	.	.	IE M	.	.	.	.	.	.	.	.	.
	24350.	C	.	.	.	.IEM	.	.	.	.	.	.	.	.	.
	24400.	C	.	.	.	.IE M	.	.	.	.	.	.	.	.	.
	24450.	C	.	.	.	.IWEM	.	.	.	.	.	.	.	.	.
	24500.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	24550.	C	.	.	.	.IWE	.	.	.	.	.	.	.	.	.
70.00	24600.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	24650.	C	.	.	.	.IWE	.	.	.	.	.	.	.	.	.
	24700.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	24750.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	24800.	C	.	.	.	. ILE	.	.	.	.	.	.	.	.	.
	24850.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	24900.	C	.	.	.	. ILE	.	.	.	.	.	.	.	.	.
	24950.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	25000.	C	.	.	.	.IWE	.	.	.	.	.	.	.	.	.
	25050.	C	.	.	.	.I EM.	.	.	.	.	.	.	.	.	.
71.00	25100.	.	.	.	.	.IEM.	.	.	.	.	.	.	.	.	.
	25150.	.	.	.	.	.ICE.	.	.	.	.	.	.	.	.	.
	25200.	.	.	.	.	.IEM	.	.	.	.	.	.	.	.	.
	25250.	.	.	.	.	.IEM	.	.	.	.	.	.	.	.	.
	25300.	.	.	.	.	.WE	.	.	.	.	.	.	.	.	.
	25350.	.	.	.	.	.IEM	.	.	.	.	.	.	.	.	.
72.00	25400.	.	.	.	.	.IEM	.	.	.	.	.	.	.	.	.
	25450.	C	.	.	.	.IEM	.	.	.	.	.	.	.	.	.
73.00	25500.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	25550.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	25600.	C	.	.	.	.ILEM	.	.	.	.	.	.	.	.	.
	25650.	C	.	.	.	. IEM	.	.	.	.	.	.	.	.	.
	25700.	C	.	.	.	.IWEM	.	.	.	.	.	.	.	.	.
	25750.	C	.	.	.	.ILEM	.	.	.	.	.	.	.	.	.
74.00	25800.	.	.	.	.	.IE M	.	.	.	.	.	.	.	.	.
	25850.	.	.	.	.	.ILEM	.	.	.	.	.	.	.	.	.
	25900.	.	.	.	.	.IWEM	.	.	.	.	.	.	.	.	.
	25950.	.	.	.	.	.ILEM	.	.	.	.	.	.	.	.	.
	26000.	.	.	.	.	.IWEM.	.	.	.	.	.	.	.	.	.
	26050.	.	.	.	.	.IWEM	.	.	.	.	.	.	.	.	.
	26100.	.	.	.	.	.ILEM	.	.	.	.	.	.	.	.	.
	26150.	.	.	.	.	.IWEM	.	.	.	.	.	.	.	.	.
75.00	26200.	.	.	.	.	.ILEM	.	.	.	.	.	.	.	.	.
	26250.	.	.	.	.	.ILWE	.	.	.	.	.	.	.	.	.
	26300.	.	.	.	.	.IEM	.	.	.	.	.	.	.	.	.
	26350.	.	.	.	.	.IWEM	.	.	.	.	.	.	.	.	.
	26400.	.	.	.	.	.I WEM	.	.	.	.	.	.	.	.	.
	26450.	.	.	.	.	. ILEM	.	.	.	.	.	.	.	.	.
	26500.	.	.	.	.	. I WEM	.	.	.	.	.	.	.	.	.
76.00	26550.	.	.	.	.	. I E M	.	.	.	.	.	.	.	.	.
	26600.	.	.	.	.	. I E M .	.	.	.	.	.	.	.	.	.
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	26900.	.	.	.	.	.	.	.	IEM	.	.
	26950.	.	.	.	.	.	.	.	.IEM	.	.
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78.00	27050.	.	.	.	.	.	.	.	.IEM	.	.
	27100.	.	.	.	.	.	.	.	.IEM	.	.
	27150.	.	.	.	.	.	.	.	IE M.	.	.
	27200.	.	.	.	.	.	.	.	I.EM	.	.
	27250.	.	.	.	.	.	.	.	I WEM	.	.
-24.00	27300.	.	.	.	.	.	.	.	ILE M	.	.
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	27650.	C	.	.	.	.	.	.	ILE. M	.	.
	27700.	C	.	.	.	.	.	.	ILRE M	.	.
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	27800.	C	.	.	.	.	.	.	ILE M	.	.
	27850.	C	.	.	.	.	.	.	ILWE M	.	.
	27900.	C	.	.	.	.	.	.	IRE M	.	.
79.00	27950.	C	.	.	.	.	.	.	ILE M	.	.
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83.00	29650.	C	.	.	.	.	.	.	.IE M	.	.

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29850.	C	.	.	.	.	.	.	.IWE M	.	.	.	.
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84.00	30000.	C	.	.	.	.	.	.IE M	.	.	.	.
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	30100.	C	.	.	.	.	.	.ILE M	.	.	.	.
	30150.	C	.	.	.	.	.	.IE M	.	.	.	.
	30200.	C	.	.	.	.	.	.IWEM	.	.	.	.
	30250.	C	.	.	.	.	.	.ILE M	.	.	.	.
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85.00	30450.	C	.	.	.	.	.	.IWE M.	.	.	.	.
	30500.	C	.	.	.	.	.	.ILE M.	.	.	.	.
	30550.	C	.	.	.	.	.	.ILE M	.	.	.	.
	30600.	C	.	.	.	.	.	.IWE M	.	.	.	.
	30650.	C	.	.	.	.	.	.ILE .M	.	.	.	.
	30700.	C	.	.	.	.	.	.ILE .M	.	.	.	.
	30750.	C	.	.	.	.	.	.IWE.M	.	.	.	.
	30800.	C	.	.	.	.	.	.IRE. M	.	.	.	.
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86.00	30900.	.	.	.	.	.	.	.IWE M	.	.	.	.

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THIS RUN EXECUTED 1/ 1/80      2:20:13

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HEC2 RELEASE DATED SEPT 88  
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NOTE- ASTERISK (\*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

FILE NAME: 3308HC2.IN

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
1.000	.00	.00	.00	3030.50	2488.00	3036.70	.00	3036.77	19.33	2.78	1300.49	565.83
1.000	.00	.00	.00	3030.50	4532.00	3040.00	.00	3040.04	5.91	2.18	2824.50	1864.35
*	2.000	200.00	.00	3033.00	2488.00	3037.45	.00	3037.93	277.97	6.57	509.14	149.23
*	2.000	200.00	.00	3033.00	4532.00	3040.18	.00	3040.32	31.23	3.65	1629.69	810.92
*	3.000	390.00	.00	3038.00	2488.00	3042.40	3042.40	3043.31	75.16	9.06	542.72	286.98
*	3.000	390.00	.00	3038.00	4532.00	3043.33	3043.33	3044.51	88.75	11.10	857.15	481.06
*	4.000	300.00	.00	3042.00	2488.00	3046.69	3046.69	3047.41	83.39	8.95	669.72	272.45
*	4.000	300.00	.00	3042.00	4532.00	3047.41	3047.41	3048.32	105.12	11.09	1023.66	442.02

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*	5.000	250.00	.00	.00	3044.00	2488.00	3048.62	3048.62	3049.36	54.65	8.42	671.64	336.57
	5.000	250.00	.00	.00	3044.00	4532.00	3049.45	.00	3050.44	66.43	10.50	1017.73	556.05
*	6.000	300.00	.00	.00	3048.00	2488.00	3052.09	3051.94	3052.98	352.13	7.88	355.74	132.59
*	6.000	300.00	.00	.00	3048.00	4532.00	3053.30	.00	3054.21	251.86	8.48	674.36	285.57
*	7.000	350.00	.00	.00	3052.00	2488.00	3057.27	.00	3057.49	62.02	4.09	800.26	315.93
*	7.000	350.00	.00	.00	3052.00	4532.00	3058.21	.00	3058.49	66.96	4.91	1283.25	553.86
*	8.000	400.00	.00	.00	3056.80	2488.00	3060.73	3060.67	3061.40	158.01	6.90	453.10	197.93
*	8.000	400.00	.00	.00	3056.80	4532.00	3061.63	.00	3062.43	146.13	7.88	762.02	374.91
*	9.000	275.00	.00	.00	3059.40	2488.00	3064.34	.00	3064.53	78.85	3.53	743.24	28
	9.000	275.00	.00	.00	3059.40	4532.00	3065.24	.00	3065.53	81.37	4.43	1109.85	50
*	10.000	285.00	.00	.00	3062.50	2488.00	3066.71	3066.71	3067.60	82.39	10.07	588.18	21
*	10.000	285.00	.00	.00	3062.50	4532.00	3067.68	3067.68	3068.73	87.21	11.93	1000.63	41
	11.000	400.00	.00	.00	3066.00	2488.00	3070.86	.00	3070.99	103.07	2.93	861.45	21
	11.000	400.00	.00	.00	3066.00	4532.00	3071.78	.00	3071.96	87.54	3.49	1321.43	41

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10-year / 100 year

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
	12.000	300.00	.00	.00	3069.30	2488.00	3074.07	.00	3074.20	107.70	3.24	937.68	239.74
	12.000	300.00	.00	.00	3069.30	4532.00	3074.73	.00	3074.91	107.95	3.92	1380.51	436.19
	13.000	415.00	.00	.00	3074.40	2366.00	3079.35	.00	3079.71	162.31	6.40	640.38	185.71
	13.000	415.00	.00	.00	3074.40	4325.00	3080.05	.00	3080.48	165.75	7.33	995.07	335.93
*	14.000	430.00	.00	.00	3078.20	2366.00	3083.25	.00	3083.38	59.75	3.19	934.96	306.10
*	14.000	430.00	.00	.00	3078.20	4325.00	3084.05	.00	3084.24	64.37	3.93	1391.05	539.09
*	15.000	325.00	.00	.00	3082.50	2322.00	3086.57	3086.57	3087.41	58.92	8.13	545.06	302.49
*	15.000	325.00	.00	.00	3082.50	4325.00	3087.60	3087.60	3088.53	59.64	9.54	1008.26	560.04
*	16.000	500.00	.00	.00	3087.00	2322.00	3091.72	3090.76	3092.03	160.24	4.63	546.24	183.43
*	16.000	500.00	.00	.00	3087.00	4325.00	3092.92	.00	3093.19	167.59	4.30	1039.74	334.09
	17.000	430.00	.00	.00	3092.30	2322.00	3097.17	.00	3097.56	98.55	6.99	672.53	233.90
	17.000	430.00	.00	.00	3092.30	4325.00	3098.15	.00	3098.56	88.06	7.74	1123.44	460.89
*	18.000	425.00	.00	.00	3098.30	2322.00	3102.40	3102.40	3103.06	133.91	8.42	547.34	200.65
*	18.000	425.00	.00	.00	3098.30	4325.00	3103.18	3103.18	3103.93	142.77	9.87	915.79	361.97
	19.000	350.00	.00	.00	3101.00	2322.00	3106.21	.00	3106.39	73.03	3.81	778.76	271.72
	19.000	350.00	.00	.00	3101.00	4325.00	3107.10	.00	3107.36	77.33	4.66	1190.09	491.83
	20.000	360.00	.00	.00	3104.50	2322.00	3109.55	.00	3110.13	124.00	7.03	500.78	208.52
	20.000	360.00	.00	.00	3104.50	4325.00	3110.58	.00	3111.24	119.47	8.08	847.04	395.69
	21.000	500.00	.00	.00	3109.80	2322.00	3113.89	.00	3114.37	71.43	6.22	624.75	274.75
	21.000	500.00	.00	.00	3109.80	4325.00	3114.68	.00	3115.27	74.13	7.37	1006.80	502.33
	22.000	500.00	.00	.00	3113.40	2322.00	3118.03	.00	3118.20	91.17	3.64	755.14	243.19
	22.000	500.00	.00	.00	3113.40	4325.00	3118.89	.00	3119.12	91.99	4.44	1203.23	450.93

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*	23.000	287.00	.00	.00	3116.00	2322.00	3120.59	3120.59	3121.60	70.31	8.52	389.38	276.91
*	23.000	287.00	.00	.00	3116.00	4325.00	3121.90	3121.90	3122.95	67.42	9.31	825.82	526.72
*	24.000	280.00	.00	.00	3120.00	2322.00	3124.74	3124.74	3125.50	267.74	7.39	405.03	141.91
*	24.000	280.00	.00	.00	3120.00	4325.00	3125.64	3125.64	3126.44	238.14	8.33	781.81	280.26
*	25.000	350.00	.00	.00	3124.00	1196.00	3128.08	.00	3128.23	20.88	3.64	557.79	261.71
*	25.000	350.00	.00	.00	3124.00	2163.00	3129.01	.00	3129.21	22.76	4.36	849.70	453.35
*	26.000	400.00	.00	.00	3126.20	1196.00	3129.95	3129.95	3130.51	156.59	7.69	310.00	95.58
*	26.000	400.00	.00	.00	3126.20	2163.00	3130.72	.00	3131.25	136.69	8.25	513.76	185.01
*	27.000	500.00	.00	.00	3131.00	1196.00	3134.28	.00	3134.85	58.08	7.23	341.07	156.94
*	27.000	500.00	.00	.00	3131.00	2163.00	3135.05	.00	3135.80	67.42	8.91	517.09	263.42
*	28.000	125.00	.00	.00	3132.30	1196.00	3135.52	3135.52	3136.34	128.41	8.31	238.82	105.54
*	28.000	125.00	.00	.00	3132.30	2163.00	3136.40	3136.40	3137.36	127.08	9.60	396.80	191.87

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	29.000	400.00	.00	.00	3136.00	1196.00	3139.83	.00	3140.00	62.07	3.29	380.84	151.80
*	29.000	400.00	.00	.00	3136.00	2163.00	3140.77	.00	3141.01	61.97	3.99	573.00	274.76
*	30.000	325.00	.00	.00	3140.00	1177.00	3142.70	.00	3142.87	142.23	3.39	355.56	98.68
*	30.000	325.00	.00	.00	3140.00	2063.00	3143.51	.00	3143.74	129.07	3.98	534.85	181.59
	30.500	340.00	.00	.00	3142.60	1177.00	3145.93	.00	3146.60	92.74	8.53	292.51	122.22
	30.500	340.00	.00	.00	3142.60	2063.00	3146.69	.00	3147.55	102.53	10.21	431.88	203.74
*	31.000	60.00	.00	.00	3142.80	1177.00	3146.97	.00	3147.08	34.09	2.72	454.51	201.57
*	31.000	60.00	.00	.00	3142.80	2063.00	3147.94	.00	3148.09	34.21	3.20	695.91	352.71
*	32.000	370.00	.00	.00	3146.40	1177.00	3149.84	3149.84	3150.66	96.00	8.11	256.75	120.13
*	32.000	370.00	.00	.00	3146.40	2063.00	3150.68	3150.68	3151.53	90.68	9.03	453.02	216.64
	33.000	250.00	.00	.00	3151.00	1177.00	3153.20	.00	3153.35	103.35	3.71	435.38	115.77
	33.000	250.00	.00	.00	3151.00	2063.00	3153.78	.00	3153.97	89.44	4.30	656.13	218.14
*	34.000	250.00	.00	.00	3153.50	1177.00	3157.05	.00	3157.37	226.01	5.86	311.40	78.29
*	34.000	250.00	.00	.00	3153.50	2063.00	3157.52	3157.27	3157.98	268.03	7.13	430.71	126.01
*	35.000	350.00	.00	.00	3155.50	1177.00	3161.27	.00	3161.55	70.40	5.31	424.31	140.28
*	35.000	350.00	.00	.00	3155.50	2063.00	3162.08	.00	3162.33	66.88	5.71	688.89	252.26
	36.000	200.00	.00	.00	3157.50	1177.00	3162.14	3161.14	3163.03	49.35	7.92	184.00	167.54
*	36.000	200.00	.00	.00	3157.50	2063.00	3163.20	3163.20	3164.54	62.14	10.18	345.10	261.70
*	37.000	450.00	.00	.00	3162.00	1177.00	3167.46	3167.46	3168.06	113.38	7.16	299.25	110.54
*	37.000	450.00	.00	.00	3162.00	2063.00	3168.06	3168.01	3168.70	132.17	8.36	508.53	179.45
	-12.000	300.00	.00	.00	3069.30	2488.00	3074.07	.00	3074.20	109.80	3.27	931.81	237.43
	-12.000	300.00	.00	.00	3069.30	4532.00	3074.73	.00	3074.91	107.83	3.91	1381.02	436.44
*	38.000	210.00	.00	.00	3074.20	433.00	3076.48	3076.48	3076.78	142.64	5.34	133.10	36.26
*	38.000	210.00	.00	.00	3074.20	843.00	3076.86	.00	3077.28	202.30	6.48	203.79	59.27

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*	39.000	140.00	.00	.00	3076.00	433.00	3078.22	.00	3078.48	97.83	4.86	145.38	43.77
	39.000	140.00	.00	.00	3076.00	843.00	3078.91	.00	3079.21	89.15	5.46	248.15	89.28
*	40.000	350.00	.00	.00	3078.20	433.00	3082.22	3082.22	3082.97	144.12	8.05	87.78	36.07
*	40.000	350.00	.00	.00	3078.20	843.00	3083.18	3083.18	3083.97	139.80	9.32	180.72	71.30
	41.000	375.00	.00	.00	3085.00	433.00	3086.59	.00	3086.85	86.40	7.83	197.31	46.58
	41.000	375.00	.00	.00	3085.00	843.00	3087.21	.00	3087.53	77.84	9.25	315.12	95.55
*	42.000	220.00	.00	.00	3087.00	433.00	3089.43	3089.43	3090.19	63.24	8.90	123.91	54.45
*	42.000	220.00	.00	.00	3087.00	843.00	3090.38	3090.38	3091.28	56.29	10.47	230.90	112.36
*	42.500	300.00	.00	.00	3090.40	433.00	3093.23	3093.23	3093.82	224.33	6.84	94.05	28.91
*	42.500	300.00	.00	.00	3090.40	843.00	3094.05	3094.05	3094.66	191.90	7.70	189.11	60.85

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
*	43.000	290.00	.00	.00	3095.00	433.00	3097.27	.00	3097.61	85.99	4.72	99.06	46.70
	43.000	290.00	.00	.00	3095.00	843.00	3097.94	.00	3098.41	98.84	5.63	165.91	84.79
*	44.000	350.00	.00	.00	3098.30	433.00	3101.68	3101.68	3102.48	48.75	9.73	145.84	62.01
*	44.000	350.00	.00	.00	3098.30	843.00	3102.61	3102.61	3103.48	48.67	11.44	267.34	120.84
*	45.000	200.00	.00	.00	3099.30	352.00	3103.29	.00	3103.76	81.93	5.82	79.01	38.88
*	45.000	200.00	.00	.00	3099.30	670.00	3103.99	.00	3104.93	140.65	8.54	114.98	56.50
*	46.000	375.00	.00	.00	3105.00	352.00	3108.21	3108.21	3108.94	193.37	8.06	68.28	25.31
	46.000	375.00	.00	.00	3105.00	670.00	3109.43	.00	3110.01	122.83	8.05	150.04	60.44
	47.000	475.00	.00	.00	3110.70	352.00	3115.07	3114.61	3115.77	111.05	7.26	71.48	33.40
*	47.000	475.00	.00	.00	3110.70	670.00	3116.10	3116.10	3116.92	119.01	8.72	143.81	61.42
	48.000	340.00	.00	.00	3114.60	352.00	3119.11	.00	3119.55	105.95	5.82	81.40	34.20
	48.000	340.00	.00	.00	3114.60	670.00	3120.27	.00	3120.76	102.53	6.78	155.26	66.17
	49.000	470.00	.00	.00	3122.00	352.00	3125.41	.00	3125.86	174.69	5.47	69.83	26.63
	49.000	470.00	.00	.00	3122.00	670.00	3126.46	.00	3127.12	178.73	6.90	112.74	50.12
	50.000	300.00	.00	.00	3127.50	352.00	3129.97	.00	3130.26	122.43	4.30	81.92	31.81
	50.000	300.00	.00	.00	3127.50	670.00	3130.89	.00	3131.26	105.73	4.93	142.22	65.16
*	51.000	375.00	.00	.00	3135.00	352.00	3137.09	3136.97	3137.50	334.20	5.56	81.21	19.25
*	51.000	375.00	.00	.00	3135.00	670.00	3137.61	3137.57	3138.18	371.19	6.99	132.53	34.78
	52.000	300.00	.00	.00	3139.00	121.00	3141.99	.00	3142.14	40.13	3.49	46.92	19.10
	52.000	300.00	.00	.00	3139.00	229.00	3142.69	.00	3142.84	36.13	3.86	106.26	38.07
*	53.000	275.00	.00	.00	3146.00	121.00	3147.53	3147.53	3147.99	.25	5.45	22.20	241.96
*	53.000	275.00	.00	.00	3146.00	229.00	3148.05	3148.05	3148.66	.22	6.29	38.14	486.57
*	54.000	325.00	.00	.00	3150.20	121.00	3152.63	3152.63	3153.50	204.62	7.53	16.62	8.46
*	54.000	325.00	.00	.00	3150.20	229.00	3153.64	3153.64	3154.74	158.25	8.72	29.29	18.20
*	55.000	450.00	.00	.00	3160.00	121.00	3162.55	3162.55	3163.44	.34	7.60	16.59	207.78
*	55.000	450.00	.00	.00	3160.00	229.00	3163.51	3163.51	3164.83	.83	9.25	29.74	243.50

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*	56.000	465.00	.00	.00	3169.30	121.00	3172.53	3172.53	3174.02	.09	9.83	20.48	405.60
*	56.000	465.00	.00	.00	3169.30	229.00	3174.18	3174.18	3176.36	.07	11.96	45.41	860.89
*	57.000	285.00	.00	.00	3176.00	121.00	3178.65	3178.65	3179.55	.03	7.63	16.27	674.26
*	57.000	285.00	.00	.00	3176.00	229.00	3179.59	3179.59	3180.97	.03	9.41	26.87	1414.47
*	58.000	305.00	.00	.00	3186.00	121.00	3188.95	3188.95	3190.01	.02	8.23	18.10	846.64
*	58.000	305.00	.00	.00	3186.00	229.00	3190.08	3190.08	3191.66	.02	10.11	38.80	1718.64
	-14.000	430.00	.00	.00	3078.20	2366.00	3083.25	.00	3083.38	59.91	3.19	934.02	305.67
	-14.000	430.00	.00	.00	3078.20	4325.00	3084.05	.00	3084.24	64.09	3.93	1393.07	540.25

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	59.000	380.00	.00	.00	3085.00	299.00	3087.09	3087.09	3087.64	124.57	6.45	73.44	26.79
*	59.000	380.00	.00	.00	3085.00	610.00	3087.77	3087.77	3088.48	134.12	7.98	144.61	52.67
	60.000	300.00	.00	.00	3088.20	299.00	3091.22	.00	3091.56	133.82	5.13	83.13	25.85
	60.000	300.00	.00	.00	3088.20	610.00	3092.07	.00	3092.46	125.55	6.04	166.46	54.44
	61.000	250.00	.00	.00	3091.00	299.00	3093.80	.00	3094.02	74.16	4.97	126.81	34.72
	61.000	250.00	.00	.00	3091.00	610.00	3094.55	.00	3094.78	69.80	5.69	226.04	73.01
*	62.000	300.00	.00	.00	3095.30	280.00	3097.47	3097.47	3097.97	196.35	7.03	75.30	19.98
*	62.000	300.00	.00	.00	3095.30	550.00	3098.18	3098.18	3098.68	163.13	7.80	144.29	43.06
*	63.000	380.00	.00	.00	3101.50	280.00	3103.53	3103.53	3104.04	108.42	7.10	88.98	26.89
*	63.000	380.00	.00	.00	3101.50	550.00	3104.21	3104.21	3104.75	97.19	8.12	167.37	55.79
	64.000	400.00	.00	.00	3106.70	258.00	3108.80	3108.69	3109.41	170.77	6.29	44.24	19.74
*	64.000	400.00	.00	.00	3106.70	497.00	3109.62	3109.62	3110.41	158.14	7.45	88.24	39.52
*	65.000	500.00	.00	.00	3111.60	258.00	3114.35	.00	3114.57	74.20	5.22	121.73	29.95
*	65.000	500.00	.00	.00	3111.60	497.00	3114.91	.00	3115.11	67.25	5.64	219.65	60.61
	66.000	250.00	.00	.00	3113.50	258.00	3116.15	3115.94	3116.81	83.90	7.13	53.71	28.17
*	66.000	250.00	.00	.00	3113.50	497.00	3117.03	3117.03	3117.91	86.61	8.75	106.86	53.40
*	67.000	230.00	.00	.00	3115.80	258.00	3119.26	3119.15	3120.36	305.83	8.56	32.75	14.75
*	67.000	230.00	.00	.00	3115.80	497.00	3121.01	3121.01	3121.91	159.15	8.45	90.71	39.40
	68.000	460.00	.00	.00	3125.00	158.00	3127.53	.00	3127.67	70.53	3.44	66.62	18.81
	68.000	460.00	.00	.00	3125.00	309.00	3128.01	.00	3128.27	107.83	4.85	98.38	29.75
*	69.000	235.00	.00	.00	3129.80	158.00	3131.27	3131.27	3131.77	171.97	6.33	38.17	12.05
*	69.000	235.00	.00	.00	3129.80	309.00	3131.89	3131.89	3132.55	156.81	7.64	69.49	24.68
	70.000	370.00	.00	.00	3136.30	158.00	3138.06	.00	3138.31	179.93	5.29	59.46	11.78
	70.000	370.00	.00	.00	3136.30	309.00	3138.47	.00	3138.75	175.53	6.07	101.87	23.32
	71.000	475.00	.00	.00	3143.80	158.00	3146.19	.00	3146.33	162.73	3.08	54.93	12.39
	71.000	475.00	.00	.00	3143.80	309.00	3146.46	3146.19	3146.83	171.94	3.55	82.72	23.57
*	72.000	295.00	.00	.00	3152.30	135.00	3153.52	3153.52	3153.72	240.92	4.92	46.69	8.70
*	72.000	295.00	.00	.00	3152.30	250.00	3153.74	3153.74	3153.99	269.76	5.84	74.28	15.22

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*	73.000	130.00	.00	.00	3154.00	135.00	3155.65	.00	3155.83	112.27	4.39	42.09	12.74
*	73.000	130.00	.00	.00	3154.00	250.00	3156.09	.00	3156.34	125.12	5.41	67.74	22.35
*	74.000	275.00	.00	.00	3157.60	135.00	3159.57	3159.57	3160.26	.30	6.64	20.34	248.14
*	74.000	275.00	.00	.00	3157.60	250.00	3160.27	3160.27	3161.23	.29	7.86	31.98	465.45
*	75.000	440.00	.00	.00	3168.00	135.00	3170.57	3170.57	3171.53	.09	7.88	17.94	444.00
*	75.000	440.00	.00	.00	3168.00	250.00	3171.55	3171.55	3172.98	.09	9.63	31.88	832.61

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	76.000	350.00	.00	.00	3176.30	109.00	3179.07	3179.07	3179.90	.03	7.29	14.95	610.85
*	76.000	350.00	.00	.00	3176.30	194.00	3179.93	3179.93	3180.95	.03	8.09	23.99	1075.48
*	77.000	170.00	.00	.00	3184.00	109.00	3186.75	3186.75	3187.53	.02	7.11	15.33	754.13
*	77.000	170.00	.00	.00	3184.00	194.00	3187.57	3187.57	3188.51	.02	7.80	24.88	1368.15
*	78.000	300.00	.00	.00	3196.00	109.00	3197.33	3197.33	3197.68	725.13	4.76	22.92	4.05
*	78.000	300.00	.00	.00	3196.00	194.00	3197.68	3197.68	3198.14	737.32	5.40	35.92	7.14
*	-24.000	280.00	.00	.00	3120.00	2322.00	3124.74	3124.74	3125.50	267.00	7.38	405.60	142.10
	-24.000	280.00	.00	.00	3120.00	4325.00	3125.64	3125.64	3126.44	238.14	8.33	781.81	280.26
*	79.000	650.00	.00	.00	3129.00	1224.00	3132.17	.00	3132.22	35.62	1.86	663.28	205.08
	79.000	650.00	.00	.00	3129.00	2276.00	3132.97	.00	3133.06	39.03	2.46	941.55	364.32
*	80.000	435.00	.00	.00	3135.00	1224.00	3136.10	3136.10	3136.53	250.01	8.55	334.28	77.41
*	80.000	435.00	.00	.00	3135.00	2276.00	3136.55	3136.55	3137.18	246.94	10.36	508.98	144.83
*	81.000	380.00	.00	.00	3139.00	1224.00	3141.64	3141.61	3142.31	94.19	7.89	307.67	126.12
*	81.000	380.00	.00	.00	3139.00	2276.00	3142.37	3142.38	3143.27	103.05	9.75	485.76	224.21
	82.000	465.00	.00	.00	3144.00	1224.00	3147.55	.00	3147.98	159.07	6.71	299.66	97.05
	82.000	465.00	.00	.00	3144.00	2276.00	3148.46	.00	3148.93	137.96	7.44	509.95	193.78
	83.000	410.00	.00	.00	3149.70	1224.00	3152.12	.00	3152.37	83.31	4.60	380.41	134.10
	83.000	410.00	.00	.00	3149.70	2276.00	3152.77	.00	3153.09	86.15	5.31	595.54	245.21
*	84.000	325.00	.00	.00	3154.00	1224.00	3156.14	.00	3156.41	213.47	4.37	314.96	83.78
*	84.000	325.00	.00	.00	3154.00	2276.00	3156.75	.00	3157.13	201.96	5.33	492.88	160.16
*	85.000	480.00	.00	.00	3160.00	1224.00	3162.52	3162.49	3163.09	95.39	6.07	208.10	125.32
*	85.000	480.00	.00	.00	3160.00	2276.00	3163.23	.00	3163.94	102.40	6.86	365.57	224.92
	86.000	450.00	.00	.00	3166.00	1224.00	3168.29	3168.27	3168.90	184.56	6.45	205.48	90.10
	86.000	450.00	.00	.00	3166.00	2276.00	3169.04	3168.93	3169.83	171.22	7.40	347.69	173.94

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SUMMARY PRINTOUT TABLE 150

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
1.000	2488.00	3036.70	.00	.00	.00	440.45	.00
1.000	4532.00	3040.00	3.30	.00	.00	482.00	.00
*	2.000	2488.00	3037.45	.00	.75	.00	347.89 200.00
*	2.000	4532.00	3040.18	2.73	.18	.00	442.36 200.00
*	3.000	2488.00	3042.40	.00	4.95	.00	328.81 390.00
*	3.000	4532.00	3043.33	.93	3.15	.00	356.30 390.00
*	4.000	2488.00	3046.69	.00	4.30	.00	480.47 300.00
*	4.000	4532.00	3047.41	.71	4.08	.00	509.78 300.00
*	5.000	2488.00	3048.62	.00	1.93	.00	416.55 250.00
	5.000	4532.00	3049.45	.82	2.04	.00	431.10 250.00
*	6.000	2488.00	3052.09	.00	3.47	.00	217.21 300.00
*	6.000	4532.00	3053.30	1.21	3.85	.00	313.30 300.00
*	7.000	2488.00	3057.27	.00	5.18	.00	479.13 350.00
*	7.000	4532.00	3058.21	.94	4.91	.00	542.46 350.00
*	8.000	2488.00	3060.73	.00	3.46	.00	326.51 400.00
*	8.000	4532.00	3061.63	.91	3.42	.00	355.01 400.00
*	9.000	2488.00	3064.34	.00	3.61	.00	384.31 275.00
	9.000	4532.00	3065.24	.90	3.61	.00	424.05 275.00
*	10.000	2488.00	3066.71	.00	2.37	.00	355.08 285.00
*	10.000	4532.00	3067.68	.98	2.44	.00	489.39 285.00
	11.000	2488.00	3070.86	.00	4.15	.00	485.26 400.00
	11.000	4532.00	3071.78	.92	4.09	.00	511.97 400.00
	12.000	2488.00	3074.07	.00	3.21	.00	667.98 300.00
	12.000	4532.00	3074.73	.66	2.96	.00	699.39 300.00
	13.000	2366.00	3079.35	.00	5.28	.00	471.44 415.00
	13.000	4325.00	3080.05	.70	5.32	.00	558.75 415.00
*	14.000	2366.00	3083.25	.00	3.90	.00	548.17 430.00
*	14.000	4325.00	3084.05	.80	4.00	.00	593.54 430.00
*	15.000	2322.00	3086.57	.00	3.32	.00	427.47 325.00
*	15.000	4325.00	3087.60	1.02	3.54	.00	476.65 325.00
*	16.000	2322.00	3091.72	.00	5.14	.00	290.86 500.00
*	16.000	4325.00	3092.92	1.20	5.32	.00	494.77 500.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
17.000	2322.00	3097.17	.00	5.46	.00	447.44	430.00
17.000	4325.00	3098.15	.98	5.24	.00	476.56	430.00

*	18.000	2322.00	3102.40	.00	5.23	.00	461.16	425.00
*	18.000	4325.00	3103.18	.79	5.03	.00	475.33	425.00
	19.000	2322.00	3106.21	.00	3.81	.00	456.94	350.00
	19.000	4325.00	3107.10	.89	3.92	.00	460.97	350.00
	20.000	2322.00	3109.55	.00	3.34	.00	305.49	360.00
	20.000	4325.00	3110.58	1.04	3.48	.00	370.11	360.00
	21.000	2322.00	3113.89	.00	4.35	.00	484.04	500.00
	21.000	4325.00	3114.68	.78	4.09	.00	491.75	500.00
	22.000	2322.00	3118.03	.00	4.13	.00	453.34	500.00
	22.000	4325.00	3118.89	.86	4.21	.00	593.97	500.00
*	23.000	2322.00	3120.59	.00	2.56	.00	238.01	287.00
*	23.000	4325.00	3121.90	1.31	3.01	.00	559.23	287.00
*	24.000	2322.00	3124.74	.00	4.15	.00	335.68	280.00
*	24.000	4325.00	3125.64	.90	3.74	.00	502.84	280.00
*	25.000	1196.00	3128.08	.00	3.34	.00	304.05	350.00
*	25.000	2163.00	3129.01	.93	3.37	.00	323.44	350.00
*	26.000	1196.00	3129.95	.00	1.86	.00	252.74	400.00
*	26.000	2163.00	3130.72	.77	1.70	.00	270.13	400.00
*	27.000	1196.00	3134.28	.00	4.34	.00	220.80	500.00
*	27.000	2163.00	3135.05	.76	4.33	.00	239.17	500.00
*	28.000	1196.00	3135.52	.00	1.24	.00	162.15	125.00
*	28.000	2163.00	3136.40	.88	1.36	.00	193.24	125.00
*	29.000	1196.00	3139.83	.00	4.31	.00	198.05	400.00
*	29.000	2163.00	3140.77	.94	4.37	.00	209.12	400.00
*	30.000	1177.00	3142.70	.00	2.87	.00	211.64	325.00
*	30.000	2063.00	3143.51	.80	2.74	.00	238.08	325.00
	30.500	1177.00	3145.93	.00	3.23	.00	173.45	340.00
	30.500	2063.00	3146.69	.76	3.18	.00	193.70	340.00
*	31.000	1177.00	3146.97	.00	1.04	.00	238.88	60.00
*	31.000	2063.00	3147.94	.96	1.25	.00	260.63	60.00
*	32.000	1177.00	3149.84	.00	2.87	.00	192.83	370.00
*	32.000	2063.00	3150.68	.83	2.74	.00	250.89	370.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH	
33.000	1177.00	3153.20	.00	3.36	.00	376.60	250.00	
33.000	2063.00	3153.78	.57	3.10	.00	391.27	250.00	
*	34.000	1177.00	3157.05	.00	3.85	.00	248.93	250.00
*	34.000	2063.00	3157.52	.47	3.75	.00	255.65	250.00

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*	35.000	1177.00	3161.27	.00	4.22	.00	312.84	350.00
*	35.000	2063.00	3162.08	.81	4.55	.00	344.19	350.00
	36.000	1177.00	3162.14	.00	.87	.00	98.65	200.00
*	36.000	2063.00	3163.20	1.06	1.12	.00	200.31	200.00
*	37.000	1177.00	3167.46	.00	5.32	.00	335.21	450.00
*	37.000	2063.00	3168.06	.60	4.86	.00	361.12	450.00
	-12.000	2488.00	3074.07	.00	-93.39	.00	667.55	300.00
	-12.000	4532.00	3074.73	.66	-93.33	.00	699.43	300.00
*	38.000	433.00	3076.48	.00	2.41	.00	182.36	210.00
*	38.000	843.00	3076.86	.38	2.13	.00	198.86	210.00
	39.000	433.00	3078.22	.00	1.74	.00	144.96	140.00
*	39.000	843.00	3078.91	.69	2.06	.00	153.90	140.00
*	40.000	433.00	3082.22	.00	3.99	.00	64.49	350.00
*	40.000	843.00	3083.18	.96	4.26	.00	128.89	350.00
	41.000	433.00	3086.59	.00	4.37	.00	185.56	375.00
	41.000	843.00	3087.21	.62	4.03	.00	196.66	375.00
*	42.000	433.00	3089.43	.00	2.84	.00	95.31	220.00
*	42.000	843.00	3090.38	.95	3.18	.00	125.24	220.00
*	42.500	433.00	3093.23	.00	3.80	.00	92.06	300.00
*	42.500	843.00	3094.05	.82	3.66	.00	137.78	300.00
*	43.000	433.00	3097.27	.00	4.05	.00	94.47	290.00
	43.000	843.00	3097.94	.67	3.90	.00	104.22	290.00
*	44.000	433.00	3101.68	.00	4.40	.00	112.50	350.00
*	44.000	843.00	3102.61	.93	4.67	.00	140.91	350.00
*	45.000	352.00	3103.29	.00	1.61	.00	43.71	200.00
*	45.000	670.00	3103.99	.71	1.38	.00	57.87	200.00
*	46.000	352.00	3108.21	.00	4.92	.00	47.79	375.00
	46.000	670.00	3109.43	1.22	5.43	.00	87.17	375.00
	47.000	352.00	3115.07	.00	6.86	.00	52.44	475.00
*	47.000	670.00	3116.10	1.02	6.67	.00	87.15	475.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
48.000	352.00	3119.11	.00	4.04	.00	48.85	340.00
48.000	670.00	3120.27	1.16	4.18	.00	74.60	340.00
49.000	352.00	3125.41	.00	6.30	.00	34.97	470.00
49.000	670.00	3126.46	1.04	6.18	.00	50.74	470.00
50.000	352.00	3129.97	.00	4.56	.00	56.49	300.00
50.000	670.00	3130.89	.92	4.44	.00	75.60	300.00

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*	51.000	352.00	3137.09	.00	7.12	.00	85.42	375.00
*	51.000	670.00	3137.61	.51	6.71	.00	111.94	375.00
	52.000	121.00	3141.99	.00	4.89	.00	29.80	300.00
	52.000	229.00	3142.69	.70	5.08	.00	93.98	300.00
*	53.000	121.00	3147.53	.00	5.54	.00	24.09	275.00
*	53.000	229.00	3148.05	.52	5.36	.00	67.68	275.00
*	54.000	121.00	3152.63	.00	5.10	.00	10.51	325.00
*	54.000	229.00	3153.64	1.01	5.59	.00	14.56	325.00
*	55.000	121.00	3162.55	.00	9.92	.00	11.46	450.00
*	55.000	229.00	3163.51	.96	9.87	.00	15.80	450.00
*	56.000	121.00	3172.53	.00	9.98	.00	11.38	465.00
*	56.000	229.00	3174.18	1.65	10.67	.00	18.90	465.00
*	57.000	121.00	3178.65	.00	6.12	.00	10.30	285.00
*	57.000	229.00	3179.59	.94	5.41	.00	12.18	285.00
*	58.000	121.00	3188.95	.00	10.30	.00	14.16	305.00
*	58.000	229.00	3190.08	1.13	10.49	.00	22.00	305.00
	-14.000	2366.00	3083.25	.00	-105.71	.00	548.07	430.00
	-14.000	4325.00	3084.05	.80	-106.03	.00	593.65	430.00
*	59.000	299.00	3087.09	.00	3.84	.00	85.23	380.00
*	59.000	610.00	3087.77	.68	3.72	.00	124.58	380.00
	60.000	299.00	3091.22	.00	4.13	.00	77.13	300.00
	60.000	610.00	3092.07	.85	4.31	.00	117.68	300.00
	61.000	299.00	3093.80	.00	2.58	.00	117.52	250.00
	61.000	610.00	3094.55	.74	2.47	.00	143.85	250.00
*	62.000	280.00	3097.47	.00	3.66	.00	81.02	300.00
*	62.000	550.00	3098.18	.71	3.63	.00	112.87	300.00
*	63.000	280.00	3103.53	.00	6.06	.00	96.99	380.00
*	63.000	550.00	3104.21	.68	6.03	.00	129.37	380.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH	
	64.000	258.00	3108.80	.00	5.28	.00	35.09	400.00
*	64.000	497.00	3109.62	.82	5.41	.00	80.88	400.00
*	65.000	258.00	3114.35	.00	5.55	.00	163.72	500.00
*	65.000	497.00	3114.91	.56	5.29	.00	182.66	500.00
	66.000	258.00	3116.15	.00	1.80	.00	38.97	250.00
*	66.000	497.00	3117.03	.89	2.12	.00	81.04	250.00
*	67.000	258.00	3119.26	.00	3.11	.00	15.63	230.00
*	67.000	497.00	3121.01	1.75	3.97	.00	70.37	230.00

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68.000	158.00	3127.53	.00	8.27	.00	58.52	460.00
68.000	309.00	3128.01	.48	7.00	.00	72.55	460.00
* 69.000	158.00	3131.27	.00	3.74	.00	43.13	235.00
* 69.000	309.00	3131.89	.62	3.88	.00	57.45	235.00
70.000	158.00	3138.06	.00	6.79	.00	91.31	370.00
70.000	309.00	3138.47	.41	6.58	.00	116.24	370.00
71.000	158.00	3146.19	.00	8.13	.00	89.52	475.00
71.000	309.00	3146.46	.27	7.99	.00	113.36	475.00
* 72.000	135.00	3153.52	.00	7.33	.00	113.35	295.00
* 72.000	250.00	3153.74	.22	7.27	.00	142.89	295.00
* 73.000	135.00	3155.65	.00	2.13	.00	44.08	130.00
* 73.000	250.00	3156.09	.44	2.35	.00	112.24	130.00
* 74.000	135.00	3159.57	.00	3.92	.00	15.08	275.00
* 74.000	250.00	3160.27	.70	4.18	.00	18.22	275.00
* 75.000	135.00	3170.57	.00	11.00	.00	11.85	440.00
* 75.000	250.00	3171.55	.98	11.27	.00	16.73	440.00
* 76.000	109.00	3179.07	.00	8.50	.00	9.21	350.00
* 76.000	194.00	3179.93	.86	8.39	.00	11.79	350.00
* 77.000	109.00	3186.75	.00	7.67	.00	9.98	170.00
* 77.000	194.00	3187.57	.82	7.64	.00	13.27	170.00
* 78.000	109.00	3197.33	.00	10.58	.00	32.53	300.00
* 78.000	194.00	3197.68	.36	10.12	.00	40.70	300.00
* -24.000	2322.00	3124.74	.00	-72.59	.00	336.00	280.00
-24.000	4325.00	3125.64	.90	-72.04	.00	502.84	280.00
* 79.000	1224.00	3132.17	.00	7.43	.00	344.95	650.00
79.000	2276.00	3132.97	.80	7.33	.00	354.10	650.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
* 80.000	1224.00	3136.10	.00	3.93	.00	383.01	435.00
* 80.000	2276.00	3136.55	.45	3.58	.00	396.46	435.00
* 81.000	1224.00	3141.64	.00	5.54	.00	225.74	380.00
* 81.000	2276.00	3142.37	.73	5.83	.00	256.07	380.00
82.000	1224.00	3147.55	.00	5.90	.00	206.03	465.00
82.000	2276.00	3148.46	.91	6.08	.00	248.78	465.00
83.000	1224.00	3152.12	.00	4.57	.00	314.00	410.00
83.000	2276.00	3152.77	.66	4.31	.00	337.76	410.00
* 84.000	1224.00	3156.14	.00	4.02	.00	277.26	325.00
* 84.000	2276.00	3156.75	.61	3.98	.00	300.66	325.00



*	85.000	1224.00	3162.52	.00	6.38	.00	199.63	480.00
*	85.000	2276.00	3163.23	.71	6.47	.00	239.44	480.00
	86.000	1224.00	3168.29	.00	5.77	.00	171.24	450.00
	86.000	2276.00	3169.04	.75	5.81	.00	207.99	450.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO=	2.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	2.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	3.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	3.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	3.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	3.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	3.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	4.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	4.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	4.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	4.000	PROFILE=	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	5.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	5.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY
WARNING SECNO=	6.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	6.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	7.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	8.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	8.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	9.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	10.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	10.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	10.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	10.000	PROFILE=	2	MINIMUM SPECIFIC ENERGY
WARNING SECNO=	14.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	14.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	15.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	15.000	PROFILE=	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	15.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	15.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	15.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=	16.000	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=	16.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 18.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 18.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 18.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 18.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 23.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

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CAUTION SECNO= 23.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 23.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 23.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 24.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 24.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 24.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 24.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 25.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 25.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 26.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 26.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
WARNING SECNO= 26.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 27.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 27.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 28.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 28.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 28.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 28.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 29.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 29.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 30.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 30.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 31.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 31.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 32.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 32.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 32.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 32.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 32.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 32.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 34.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 34.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 35.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 35.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 36.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 36.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 37.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 37.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
WARNING SECNO= 37.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 38.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

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CAUTION SECNO= 38.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 38.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
WARNING SECNO= 38.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 39.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 40.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 40.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 40.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 40.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 42.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 42.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 42.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 42.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 42.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 42.500 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 42.500 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 42.500 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 42.500 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 43.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 44.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 44.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 44.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 44.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 45.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 45.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 46.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 46.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 47.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 47.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 51.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 51.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 53.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 53.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 53.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 53.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 53.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 53.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 54.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 54.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 54.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 54.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

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CAUTION SECNO= 54.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 54.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 55.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 55.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 55.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 55.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 55.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 55.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 56.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 56.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 56.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 56.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 56.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 56.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 57.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 57.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 57.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 57.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 57.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 57.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 58.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 58.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 58.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 58.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 58.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 58.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 59.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 59.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 59.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 59.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 59.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 59.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 62.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 62.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 62.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
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CAUTION SECNO= 63.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 63.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 64.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 64.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 65.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 65.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 66.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 66.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 67.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
CAUTION SECNO= 67.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 67.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 69.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 69.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 69.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 69.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 72.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 72.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 72.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 72.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 73.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 73.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 74.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 74.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 74.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 74.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 74.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 74.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 75.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 75.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 75.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 75.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 75.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 75.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 76.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 76.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 76.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 76.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 76.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 76.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 77.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 77.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 77.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 77.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 77.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 77.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 78.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 78.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 78.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 78.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 78.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 78.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= -24.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

WARNING SECNO= 79.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
CAUTION SECNO= 80.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 80.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 80.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 80.000 PROFILE= 2 MINIMUM SPECIFIC ENERGY  
WARNING SECNO= 81.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 81.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 84.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 84.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 85.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 85.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

**TAB C**  
**HEC-2 SUPER-CRITICAL FLOW MODEL**

\*\*\*\*\*  
 \* WATER SURFACE PROFILES \*  
 \* VERSION OF SEPTEMBER 1988 \*  
 \* \* \* \* \*  
 \* RUN DATE 1/ 1/80 TIME 2:58:22 \*  
 \*\*\*\*\*

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

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X   X  XXXXXXX  XXXXX          XXXXX
X   X  X      X   X          X   X
X   X  X      X           X
XXXXXXXX XXXX  X           XXXXX XXXXX
X   X  X      X           X
X   X  X      X   X          X
X   X  XXXXXXX  XXXXX          XXXXXXX
  
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END OF BANNER

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PAGE 1

THIS RUN EXECUTED 1/ 1/80 2:58:22

\*\*\*\*\*  
 HEC2 RELEASE DATED SEPT 88  
 \*\*\*\*\*

T1 27 MILE WASH FLOODWAY CALCULATIONS  
 T2 100 YEAR FLOW - SUBCRITICAL RUN  
 T3 FILE NAME: 27TRIB1.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	0	3040	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	2488	4532							
NH	5	0.08	212	0.024	218	0.08	262	0.024	277	0.08
NH	590									
ET			4.1	170	370					
X1	1.0	22	209	280						
GR	3042	0	3040	3	3038	8	3036	12	3034	20
GR	3034	204	3032	209	3031	212	3031	218	3032	221
GR	3033.5	240	3032	258	3030.5	262	3030.5	277	3032	280
GR	3034	307	3033	342	3034	370	3036	443	3038	466
GR	3040	485	3042	590						
NH	5	0.08	272	0.024	285	0.08	341	0.024	354	0.08
NH	567									
ET			4.1	265	385					
X1	2.0	27	265	358	240	165	200			

100



GR	3046	0	3044	12	3042	25	3042	32	3052	33
GR	3053	50	3052	73	3043	74	3040	99	3038	130
GR	3036	265	3034	272	3034	285	3036	293	3036.5	315
GR	3036	335	3034	338	3033	341	3033	354	3034	358
GR	3036	363	3036	490	3038	525	3040	538	3042	558
GR	3044	562	3046	567						

NH	3	0.08	299	0.024	321	0.08	508			
ET			4.1	215	368					
X1	3.0	18	285	335	420	375	390			
GR	3045	0	3044	34	3043	83	3053	84	3053	148
GR	3042	149	3042	215	3040	285	3038	299	3038	321
GR	3040	335	3042	340	3042	346	3040.5	368	3040	427
GR	3042	473	3044	497	3046	508				

NH	3	0.08	324	0.024	350	0.08	673			
ET			4.1	225	450					
X1	4.0	13	324	358	315	270	300			
GR	3051	0	3050	45	3048	101	3046	160	3044	313
GR	3042	324	3042	350	3044	358	3046	390	3046	612
GR	3048	635	3048	658	3050	673				

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PAGE 2

NH	5	0.08	473	0.035	497	0.024	509	0.035	530	0.08
NH	567									
ET			4.1	325	550					
X1	5.0	20	473	530	240	300	250			
GR	3053	0	3052	32	3050	48	3049	73	3059	74
GR	3059	127	3048	128	3046	157	3046	173	3048	338
GR	3048	439	3047	473	3046	490	3044	497	3044	509
GR	3046	530	3048	542	3050	550	3052	557	3054	567

NH	5	0.08	538	0.024	553	0.08	615	0.024	624	0.08
NH	648									
ET			4.1	470	635					
X1	6.0	21	525	628	370	300	300			
X3				115	3054.2					
GR	3056	0	3054	11	3053	50	3054	88	3054	234
GR	3064	235	3064	269	3054	270	3052	425	3052	470
GR	3050	525	3048	538	3048	553	3050	565	3050	610
GR	3049	615	3049	624	3050	628	3052	635	3054	640
GR	3056	648								

NH	5	0.08	657	0.024	672	0.08	712	0.024	737	0.08
NH	765									
ET			4.1	608	750					
X1	7.0	25	608	750	350	380	350			
GR	3070	0	3060	130	3070	131	3070	146	3060	147
GR	3058	181	3056	340	3056	360	3057	419	3067	420
GR	3067	445	3057	446	3056	575	3054	608	3054	655
GR	3053.5	657	3053.5	672	3054	675	3054	705	3053	712
GR	3052	715	3052	718	3053	737	3060	750	3070	765

NH	3	0.08	340	0.024	372	0.08	475			
ET			4.1	245	400					
X1	8.0	23	245	395	350	385	400			
GR	3070	0	3066	20	3064	23	3062	27	3050	30

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GR	3060	95	3060	119	3070	120	3070	170	3060	171
GR	3060	245	3058	250	3056.8	270	3058	290	3060	303
GR	3061	313	3060	323	3058	340	3058	372	3060	395
GR	3062	443	3063	455	3070	475				
NH	8	0.08	270	0.035	286	0.08	372	0.035	385	0.08
NH	473	0.035	518	0.024	548	0.08	610			
ET			4.1	370	553					
X1	9.0	29	260	553	280	245	275			
GR	3072	0	3068	75	3066	145	3064	177	3062.2	202
GR	3064	212	3064	260	3062	270	3061.3	277	3062	286
GR	3064	322	3062	370	3060	372	3060	385	3062	398
GR	3062	450	3062	473	3064	483	3065	490	3064	498
GR	3062	512	3059.4	518	3059.4	548	3062	553	3064	560
GR	3066	594	3068	599	3070	605	3072	610		

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PAGE 3

NH	3	0.08	410	0.024	439	0.08	685			
ET			4.1	390	620					
X1	10.0	18	408	440	180	290	285			
GR	3074	0	3070	58	3068	125	3066	362	3064	408
GR	3062.5	410	3062.5	439	3064	440	3065	470	3064	492
GR	3063	500	3064	506	3065	552	3066	620	3068	658
GR	3070	667	3072	678	3074	685				

NH	5	0.08	114	0.024	133	0.08	355	0.024	363	0.08
NH	562									
ET			4.1	110	500					
X1	11.0	20	110	370	355	260	400			
GR	3080	0	3074	20	3072	29	3070	52	3068	108
GR	3067	110	3066	114	3066	133	3068	142	3070	148
GR	3071	175	3070	222	3070	280	3068	348	3066.7	355
GR	3066.7	363	3068	370	3070	532	3072	545	3074	562

NH	7	0.08	177	0.024	187	0.08	247	0.024	257	0.08
NH	381	0.024	386	0.08	798					
ET			4.1	170	710					
X1	12.0	24	171	391	340	300	300			
GR	3078	0	3076	14	3074	79	3072	171	3070.2	177
GR	3070.2	187	3072	193	3072	242	3070.3	247	3070.3	257
GR	3072	262	3074	270	3074	317	3072	347	3070	378
GR	3069.3	381	3069.3	386	3070	388	3072	391	3073	460
GR	3073	709	3074	743	3076	775	3078	798		

QT	2	2366	4325							
NH	3	0.08	472	0.024	487	0.08	617			
ET			4.1	275	504					
X1	13.0	17	453	504	390	440	415			
GR	3082	0	3080	8	3079	89	3089	90	3089	127
GR	3079	128	3078	260	3078	453	3076	468	3074.4	472
GR	3074.4	487	3076	492	3078	504	3078	567	3080	573
GR	3080	605	3082	617						

NH	5	0.08	322	0.024	364	0.08	481	0.024	486	0.08
NH	655									
ET			4.1	270	517					
X1	14.0	17	314	517	300	460	430			

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GR	3086	0	3084	13	3082	42	3082	314	3080	319
GR	3078.2	322	3078.2	364	3080	366	3082	392	3082	446
GR	3080	478	3079	481	3079	486	3080	489	3032	517
GR	3084	605	3086	655						

QT	2	2322	4325							
NH	3	0.08	400	0.024	450	0.08	592			
ET			4.1	350	485					
X1	15.0	13	394	452	350	315	325			
GR	3090	0	3088	80	3086	157	3085.8	237	3085.8	373
GR	3084	394	3082.5	400	3082.5	450	3084	452	3086	505
GR	3086	557	3088	576	3090	592				

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NH	9	0.08	18	0.024	28	0.08	255	0.024	265	0.08
NH	284	0.024	294	0.08	361	0.024	366	0.08	530	
ET			4.1	6	395					
X1	16.0	24	6	375	400	430	500			
GR	3096	0	3094	2	3092	4	3090	6	3088	12
GR	3087	18	3087	28	3088	34	3090	50	3092	55
GR	3092.5	120	3092	218	3091	255	3091	265	3090	281
GR	3088.3	284	3088.3	294	3090	296	3088	361	3088	366
GR	3090	375	3092	485	3094	513	3096	530		

NH	3	0.08	120	0.024	145	0.08	558			
ET			4.1	100	400					
X1	17.0	18	115	155	425	480	430			
GR	3106	0	3102	12	3100	15	3098	20	3096	40
GR	3096	115	3094	120	3092.3	125	3092.3	140	3094	145
GR	3096	155	3097	205	3096	265	3094	285	3096	390
GR	3096	448	3098	495	3106	558				

NH	3	0.08	137	0.024	162	0.08	638			
ET			4.1	125	400					
X1	18.0	21	130	170	415	450	425			
GR	3112	0	3106	18	3104	22	3102	28	3100	48
GR	3100	85	3102	115	3102	125	3100	130	3098.3	137
GR	3098.3	162	3100	170	3102	195	3102	262	3102	415
GR	3100	429	3100	438	3102	482	3104	512	3106	590
GR	3112	638								

NH	5	0.08	25	0.024	55	0.08	142	0.024	147	0.08
NH	500									
ET			4.1	22	210					
X1	19.0	20	22	172	360	260	350			
GR	3116	0	3108	17	3106	19	3104	22	3102	25
GR	3101	28	3101	48	3102	49	3102.5	55	3104	70
GR	3104	125	3103	142	3103	147	3104	172	3105	280
GR	3106	355	3105	410	3106	475	3108	482	3116	500

NH	5	0.08	60	0.024	90	0.08	238	.024	243	0.08
NH	540									
ET			4.1	33	185					
X1	20.0	19	38	100	340	430	360			
GR	3120	0	3112	25	3110	33	3108	38	3106	58
GR	3104.5	60	3104.5	90	3106	92	3108	100	3109	118
GR	3108	135	3108	155	3109	195	3108	238	3108	243

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GR	3108	270	3110	360	3112	500	3120	540		
NH	3	0.08	15	0.024	70	0.08	620			
ET			4.1	15	185					
X1	21.0	21	15	150	525	320	500			
GR	3125	0	3118	5	3116	8	3114	11	3112	15
GR	3110	18	3109.8	23	3110	32	3112	42	3112	70
GR	3112.3	150	3113	262	3113	299	3123	300	3123	344
GR	3113	345	3113	505	3114	545	3116	552	3118	557
GR	3124	620								

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NH	7	0.08	211	0.024	215	0.08	260	0.024	265	0.08
NH	344	0.024	366	0.08	762					
ET			4.1	192	410					
X1	22.0	30	205	377	450	360	500			
GR	3126	0	3122	15	3120	35	3118	60	3116	118
GR	3118	150	3118	192	3116	205	3115	211	3115	215
GR	3116	220	3116	256	3115	260	3115	265	3116	270
GR	3116	335	3114	344	3113.4	347	3113.4	360	3114	366
GR	3116	372	3118	377	3118.9	465	3118	497	3116	539
GR	3116	618	3118	628	3120	665	3122	680	3126	762

NH	3	0.08	297	0.024	324	0.08	867			
ET			4.1	185	345					
X1	23.0	26	260	345	290	285	287			
GR	3130	0	3124	30	3122	90	3120	150	3118.7	240
GR	3120	245	3120	255	3118.7	260	3118.2	290	3118	294
GR	3116	297	3116	324	3118	325	3118.5	330	3120	345
GR	3122	365	3122	410	3121.3	540	3122	693	3132	694
GR	3132	739	3122	740	3120	742	3120	750	3124	823
GR	3130	867								

NH	3	0.08	225	0.024	252	0.08	820			
ET			4.1	190	350					
X1	24.0	17	210	305	300	270	280			
GR	3130	0	3128	72	3126	130	3124	210	3122	220
GR	3120	225	3120	252	3122	260	3122.2	270	3124	305
GR	3124	365	3126	475	3126	555	3124	563	3124	606
GR	3126	780	3130	820						

QT	2	1196	2163							
NH	4	0.08	287	0.05	310	0.024	330	0.08	404	
ET			4.1	170	363					
X1	25.0	16	287	363	250	350	350			
GR	3132	0	3130	60	3128	93	3126	115	3126	165
GR	3127	227	3127	287	3126	308	3124.2	310	3124.2	330
GR	3124	332	3124	338	3126	363	3128	390	3130	396
GR	3124	404								

NH	3	0.08	75	0.024	90	0.08	400			
ET			4.1	61	160					
X1	26.0	12	70	97	380	440	400			
GR	3138	0	3134	32	3132	50	3130	61	3128	70
GR	3126.2	75	3126.2	90	3128	97	3130	320	3132	340
GR	3134	365	3138	400						

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NH	3	0.08	197	0.024	217	0.08	308			
ET			4.1	175	235					
X1	27.0	12	190	227	500	420	500			
GR	3140	0	3138	5	3136	10	3134	20	3132	190
GR	3131	197	3131	217	3132	227	3134	234	3136	272
GR	3138	280	3140	308						

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NH	3	0.08	171	0.024	184	0.08	300			
ET			4.1	150	210					
X1	28.0	13	158	198	125	120	125			
GR	3142	0	3140	11	3138	40	3136	76	3134	158
GR	3132.3	171	3132.3	184	3134	198	3134	250	3136	260
GR	3138	270	3140	282	3142	300				

NH	5	0.08	68	0.024	75	0.08	205	0.024	211	0.08
NH	242									
ET			4.1	62	229					
X1	29.0	14	62	228	350	430	400			
GR	3144	0	3142	18	3140	33	3138	62	3137.5	68
GR	3137.5	75	3138	81	3138	193	3136	205	3136	211
GR	3138	228	3140	234	3142	240	3144	242		

QT	2	1177	2063							
NH	3	0.08	60	0.024	72	0.08	320			
ET			4.1	14	160					
X1	30.0	16	29	93	230	320	325			
GR	3148	0	3146	5	3144	10	3142	14	3141	29
GR	3140	57	3192.2	60	3192.2	72	3140	77	3142	93
GR	3140	170	3140	190	3142	222	3144	284	3146	291
GR	3148	320								

NH	3	0.08	147	0.024	159	0.08	408			
ET			4.1	107	205					
X1	30.5	17	140	166	400	250	340			
GR	3152	0	3150	27	3148	33	3146	75	3144	98
GR	3144	140	3142.6	147	3142.6	159	3144	166	3144.7	228
GR	3154.7	229	3154.5	284	3144.5	285	3146	307	3148	318
GR	3150	348	3152	408						

NH	3	0.08	142	0.024	155	0.08	300			
ET			4.1	107	205					
X1	31.0	11	70	263	70	50	60			
GR	3150	0	3148	31	3146	70	3144	140	3142.8	142
GR	3142.8	155	3144	160	3146	263	3146	287	3148	293
GR	3150	300								

NH	3	0.08	241	0.024	256	0.08	324			
ET			4.1	145	280					
X1	32.0	15	230	269	320	400	370			
GR	3156	0	3154	8	3152	30	3150	68	3150	98
GR	3148	101	3150	155	3148	230	3146.4	241	3146.4	256
GR	3148	269	3150	304	3152	310	3154	317	3156	324

NH	5	0.08	238	0.035	283	0.08	352	0.024	360	0.08
NH	428									
ET			4.1	235	375					

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X1	33.0	17	238	370	250	250	250			
GR	3158	0	3156	6	3154	13	3152	24	3152	45
GR	3152	130	3152.5	238	3152	283	3151	295	3152	305
GR	3152	320	3151	352	3151	360	3152	370	3154	410
GR	3156	421	3158	428						
NH	3	0.08	260	0.024	267	0.08	360			
ET			4.1	100	320					
X1	34.0	17	250	287	290	270	250			
GR	3160	0	3158	6	3156	12	3156	122	3166	123
GR	3166	195	3156	196	3156	207	3156	250	3154	255
GR	3153.5	260	3153.5	267	3154	270	3156	287	3156	320
GR	3158	342	3160	360						
NH	3	0.08	231	0.024	238	0.08	400			
ET			4.1	200	275					
X1	35.0	16	222	248	390	310	350			
GR	3164	0	3162	30	3160	48	3160	90	3160.7	160
GR	3160	220	3158	222	3156	228	3155.5	231	3155.5	238
GR	3156	243	3158	248	3160	252	3160	310	3162	372
GR	3164	400								
NH	3	0.08	135	0.024	150	0.08	340			
ET			4.1	100	175					
X1	36.0	16	126	156	210	200	200			
GR	3168	0	3166	40	3164	55	3162	82	3162	118
GR	3160	122	3158	126	3157.5	135	3157.5	150	3158	156
GR	3160	163	3162	166	3162.7	230	3164	324	3166	335
GR	3168	340								
NH	3	0.08	23	0.024	33	0.08	398			
ET			4.1	12	90					
X1	37.0	21	21	46	375	475	450			
X3						130	3167.1			
GR	3170	0	3168	12	3166	17	3164	21	3162	23
GR	3162	33	3164	46	3166	52	3167	130	3166	190
GR	3164	250	3164	278	3166	294	3164	301	3162	306
GR	3161	310	3162	316	3164	320	3166	333	3168	372
GR	3170	398								

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SECNO	DEPTH	CWSEL	CRISW	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	

\*PROF 1

0

CCHV= .300 CEHV= .500

1166

1490 NH CARD USED

\*SECNO 1.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	170.0	370.0	TYPE=	1	TARGET=	200.000				
1.00	9.50	3040.00	.00	.00	3040.18	.18	.00	.00	3032.00	
4532.	593.	2272.	1666.	239.	577.	598.	0.	0.	3032.00	
.00	2.48	3.94	2.78	.080	.066	.080	.000	3030.50	170.00	
.001935	0.	0.	0.	0	0	0	.00	200.00	370.00	

0

1490 NH CARD USED

\*SECNO 2.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	265.0	385.0	TYPE=	1	TARGET=	120.000				
2.00	7.46	3040.46	.00	.00	3041.30	.84	.79	.33	3036.00	
4532.	0.	3850.	682.	0.	505.	125.	5.	1.	3034.00	
.01	.00	7.63	5.44	.000	.067	.080	.000	3033.00	265.00	
.013538	240.	200.	165.	2	0	0	.00	120.00	385.00	

0

1490 NH CARD USED

\*SECNO 3.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	215.0	368.0	TYPE=	1	TARGET=	153.000				
3.00	6.19	3044.19	.00	.00	3045.94	1.75	4.19	.46	3040.00	
4532.	823.	3405.	303.	224.	282.	94.	10.	2.	3040.00	
.02	3.68	12.08	3.23	.080	.036	.080	.000	3038.00	215.00	
.008684	420.	390.	375.	2	0	0	.00	153.00	368.00	

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 4.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	225.0	450.0	TYPE=	1	TARGET=	225.000				
4.00	5.73	3047.73	.00	.00	3049.15	1.42	3.11	.10	3042.00	
4532.	1519.	2353.	660.	330.	187.	191.	15.	3.	3044.00	
.03	4.61	12.59	3.45	.080	.041	.080	.000	3042.00	225.00	
.012504	315.	300.	270.	3	0	0	.00	225.00	450.00	

0

1490 NH CARD USED

\*SECNO 5.000

16

7185 MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	325.0	550.0	TYPE=	1	TARGET=	225.000			
5.00	6.35	3050.35	3050.35	.00	3051.95	1.60	2.20	.09	3047.00
4532.	993.	3387.	152.	366.	292.	51.	19.	5.	3046.00
.04	2.71	11.62	2.98	.080	.030	.080	.000	3044.00	325.00
.006448	240.	250.	300.	2	8	0	.00	225.00	550.00

0  
 1490 NH CARD USED  
 \*SECNO 6.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	115.0	648.0	TYPE=	1	TARGET=	-115.000			
ELENC=	3054.20	ELENCR=	100000.00						
6.00	6.30	3054.30	.00	.00	3054.69	.38	2.38	.36	3050.00
4532.	1461.	2971.	100.	534.	512.	30.	26.	8.	3050.00
.05	2.74	5.81	3.34	.080	.069	.080	.000	3048.00	10.37
.008707	370.	300.	300.	4	0	0	.00	594.90	641.21

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 1490 NH CARD USED  
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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 7.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	608.0	750.0	TYPE=	1	TARGET=	142.000			
7.00	5.29	3057.29	.00	.00	3058.66	1.37	3.48	.49	3054.00
4532.	0.	4480.	52.	0.	475.	17.	32.	11.	3053.00
.06	.00	9.43	3.03	.000	.039	.080	.000	3052.00	608.00
.011419	350.	350.	380.	1	0	0	.00	136.96	744.96

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 1490 NH CARD USED  
 \*SECNO 8.000

3470 ENCROACHMENT STATIONS=	245.0	400.0	TYPE=	1	TARGET=	155.000			
8.00	5.60	3062.40	.00	.00	3063.35	.95	4.56	.13	3060.00
4532.	0.	4501.	31.	0.	574.	11.	37.	12.	3060.00
.08	.00	7.84	2.70	.000	.049	.080	.000	3056.80	245.00
.011400	350.	400.	385.	3	0	0	.00	155.00	400.00

0  
 1490 NH CARD USED  
 \*SECNO 9.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

168



3470 ENCROACHMENT STATIONS= 370.0 553.0 TYPE= 1 TARGET= 183.000  
 9.00 6.33 3065.73 .00 .00 3066.29 .56 2.83 .12100000.00  
 4532. 0. 4532. 0. 0. 755. 0. 41. 13. 100000.00  
 .09 .00 6.00 .00 .000 .059 .000 .000 3059.40 370.00  
 .009343 280. 275. 245. 2 0 0 .00 183.00 553.00

0

1490 NH CARD USED  
 \*SECNO 10.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 390.0 620.0 TYPE= 1 TARGET= 230.000  
 10.00 5.46 3067.96 .00 .00 3069.20 1.24 2.57 .34 3064.00  
 4532. 234. 2138. 2160. 64. 172. 568. 46. 15. 3064.00  
 .10 3.65 12.40 3.80 .080 .034 .080 .000 3062.50 390.00  
 .008788 180. 285. 290. 2 0 0 .00 230.00 620.00

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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	XCONT	CORAR	TOPWID	ENDST	

1490 NH CARD USED  
 \*SECNO 11.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS= 110.0 500.0 TYPE= 1 TARGET= 390.000  
 11.00 6.19 3072.19 .00 .00 3072.40 .21 2.88 .31 3067.00  
 4532. 0. 2887. 1645. 0. 786. 440. 54. 17. 3068.00  
 .13 .00 3.68 3.74 .000 .075 .080 .000 3066.00 110.00  
 .008193 355. 400. 260. 4 0 0 .00 390.00 500.00

0

1490 NH CARD USED  
 \*SECNO 12.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS= 170.0 710.0 TYPE= 1 TARGET= 540.000  
 12.00 5.64 3074.94 .00 .00 3075.14 .20 2.74 .00 3072.00  
 4532. 5. 2531. 1997. 3. 629. 654. 62. 20. 3072.00  
 .15 1.55 4.02 3.05 .080 .075 .080 .000 3069.30 170.00  
 .010272 340. 300. 300. 2 0 0 .00 540.00 710.00

0

1490 NH CARD USED  
 \*SECNO 13.000  
 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

16

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	275.0	504.0	TYPE=	1	TARGET=	229.000
13.00	6.15	3080.55	.00	.00	3081.30	.75 5.88 .27 3078.00
4325.	2287.	2038.	0.	455.	236.	0. 72. 24. 100000.00
.17	5.03	8.62	.00	.080	.067	.000 .000 3074.40 275.00
.021401	390.	415.	440.	3	0	0 .00 229.00 504.00

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1

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 14.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	270.0	517.0	TYPE=	1	TARGET=	247.000
14.00	6.84	3085.04	.00	.00	3085.31	.28 3.87 .14 3082.00
4325.	377.	3948.	0.	134.	912.	0. 80. 26. 3082.00
.19	2.82	4.33	.00	.080	.069	.000 .000 3078.20 270.00
.005704	300.	430.	460.	3	0	0 .00 247.00 517.00

0

1490 NH CARD USED

\*SECNO 15.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	350.0	485.0	TYPE=	1	TARGET=	135.000
15.00	5.22	3087.72	3087.72	.00	3089.69	1.97 2.36 .85 3084.00
4325.	330.	3622.	374.	103.	297.	102. 85. 27. 3084.00
.20	3.19	12.21	3.66	.080	.035	.080 .000 3082.50 350.00
.009468	350.	325.	315.	4	15	0 .00 135.00 485.00

0

1490 NH CARD USED

\*SECNO 16.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	6.0	395.0	TYPE=	1	TARGET=	389.000
16.00	6.92	3093.92	.00	.00	3094.10	.18 3.88 .54 3090.00
4325.	0.	4081.	244.	0.	1183.	74. 95. 30. 3090.00
.24	.00	3.45	3.27	.000	.076	.080 .000 3087.00 6.00
.006682	400.	500.	430.	3	0	0 .00 389.00 395.00

0

SECNO	DEPTH	CWSEL	CRISW	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	

1490 NH CARD USED

\*SECNO 17.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	100.0	400.0	TYPE=	1	TARGET=	300.000
17.00	5.69	3097.99	.00	.00	3098.83	.85 4.40 .33 3096.00
4325.	102.	1826.	2397.	30.	179.	557. 106. 34. 3096.00
.26	3.43	10.22	4.30	.080	.049	.080 .000 3092.30 100.00
.016113	425.	430.	480.	2	0	0 .00 300.00 400.00

0

1490 NH CARD USED

\*SECNO 18.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	125.0	400.0	TYPE=	1	TARGET=	275.000
18.00	5.85	3104.15	.00	.00	3105.21	1.06 6.27 .10 3100.00
4325.	55.	2362.	1908.	16.	222.	522. 113. 37. 3100.00
.28	3.45	10.65	3.65	.080	.049	.080 .000 3098.30 125.00
.012853	415.	425.	450.	4	0	0 .00 275.00 400.00

0

1490 NH CARD USED

\*SECNO 19.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	22.0	210.0	TYPE=	1	TARGET=	188.000
19.00	7.09	3108.09	.00	.00	3108.48	.39 3.07 .20 3104.00
4325.	0.	3777.	548.	0.	734.	149. 119. 38. 3104.00
.29	.00	5.15	3.69	.000	.069	.080 .000 3101.00 22.00
.007247	360.	350.	260.	2	0	0 .00 188.00 210.00

0

1

SECNO	DEPTH	CWSEL	CRISW	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	

1490 NH CARD USED

170

\*SECNO 20.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	33.0	185.0	TYPE=	1	TARGET=	152.000			
20.00	6.80	3111.30	.00	.00	3112.35	1.05	3.54	.33	3108.00
4325.	35.	3212.	1078.	11.	348.	252.	126.	40.	3108.00
.31	3.03	9.22	4.29	.080	.057	.080	.000	3104.50	33.00
.012953	340.	360.	430.	2	0	0	.00	152.00	185.00

0

1490 NH CARD USED

\*SECNO 21.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	15.0	185.0	TYPE=	1	TARGET=	170.000			
21.00	5.85	3115.65	.00	.00	3116.49	.84	4.07	.06	3112.00
4325.	0.	3981.	344.	0.	524.	114.	132.	41.	3112.30
.32	.00	7.60	3.03	.000	.037	.080	.000	3109.80	15.00
.006192	525.	500.	320.	2	0	0	.00	170.00	185.00

0

1490 NH CARD USED

\*SECNO 22.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	192.0	410.0	TYPE=	1	TARGET=	218.000			
22.00	6.50	3119.90	.00	.00	3120.33	.43	3.72	.12	3116.00
4325.	126.	4054.	145.	38.	756.	57.	140.	43.	3118.00
.35	3.33	5.37	2.53	.080	.072	.080	.000	3113.40	192.00
.009443	450.	500.	360.	1	0	0	.00	218.00	410.00

0

1490 NH CARD USED

\*SECNO 23.000

1

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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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	185.0	345.0	TYPE=	1	TARGET=	160.000			
23.00	6.84	3122.84	.00	.00	3123.49	.65	3.05	.11	3118.70
4325.	1246.	3079.	0.	269.	435.	0.	146.	45.	100000.00
.36	4.63	7.07	.00	.080	.066	.000	.000	3116.00	185.00
.012001	290.	287.	285.	2	0	0	.00	160.00	345.00

0

1490 NH CARD USED

\*SECNO 24.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	190.0	350.0	TYPE=	1	TARGET=	160.000			
24.00	6.62	3126.62	.00	.00	3127.49	.87	3.89	.11	3124.00

177

4325.	185.	3632.	508.	47.	457.	118.	150.	46.	3124.00
.37	3.91	7.95	4.30	.080	.067	.080	.000	3120.00	190.00
.015968	300.	280.	270.	3	0	0	.00	160.00	350.00

0

1490 NH CARD USED

\*SECNO 25.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3280 CROSS SECTION 25.00 EXTENDED 6.01 FEET

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=-	170.0	363.0	TYPE=-	1	TARGET=-	193.000
25.00	6.01	3130.01	.00	.00	3130.17	.16 2.46 .21 3127.00
2163.	799.	1364.	0.	379.	373.	0. 155. 47. 100000.00
.40	2.11	3.66	.00	.080	.060	.000 .000 3124.00 170.00
.002810	250.	350.	350.	3	0	0 .00 193.00 363.00

0

1490 NH CARD USED

\*SECNO 26.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

1

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SECNO	DEPTH	CWSEL	CRISW	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

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=-	61.0	160.0	TYPE=-	1	TARGET=-	99.000
26.00	5.52	3131.72	.00	.00	3132.44	.72 1.99 .28 3128.00
2163.	80.	1166.	916.	24.	138.	216. 160. 48. 3128.00
.42	3.29	8.44	4.23	.080	.053	.080 .000 3126.20 61.00
.010704	380.	400.	440.	3	0	0 .00 99.00 160.00

0

1490 NH CARD USED

\*SECNO 27.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=-	175.0	235.0	TYPE=-	1	TARGET=-	60.000
27.00	4.80	3135.80	.00	.00	3137.54	1.73 4.59 .51 3132.00
2163.	199.	1897.	68.	56.	169.	21. 163. 49. 3132.00
.43	3.57	11.21	3.16	.080	.034	.080 .000 3131.00 175.00
.008548	500.	500.	420.	3	0	0 .00 60.00 235.00

0

1490 NH CARD USED

\*SECNO 28.000

173

3470 ENCROACHMENT STATIONS=	150.0	210.0	TYPE=	1	TARGET=	60.000			
28.00	4.84	3137.14	.00	.00	3138.91	1.77	1.35	.02	3134.00
2163.	91.	1919.	153.	24.	171.	38.	164.	49.	3134.00
.44	3.76	11.25	4.05	.080	.041	.080	.000	3132.30	150.00
.014146	125.	125.	120.	2	0	0	.00	60.00	210.00

0

1490 NH CARD USED  
\*SECNO 29.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

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SECNO	DEPTH	CWSEL	CRISW	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	

3470 ENCROACHMENT STATIONS=	62.0	229.0	TYPE=	1	TARGET=	167.000			
29.00	5.62	3141.62	.00	.00	3141.79	.17	2.40	.48	3138.00
2163.	0.	2160.	3.	0.	649.	3.	168.	50.	3138.00
.47	.00	3.33	.92	.000	.063	.080	.000	3136.00	62.00
.003299	350.	400.	430.	1	0	0	.00	167.00	229.00

0

1490 NH CARD USED  
\*SECNO 30.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	14.0	160.0	TYPE=	1	TARGET=	146.000			
30.00	3.74	3143.74	.00	.00	3144.30	.56	2.32	.20	3141.00
2063.	171.	864.	1028.	34.	136.	175.	172.	52.	3142.00
.49	5.09	6.36	5.87	.080	.077	.080	.000	3140.00	14.00
.029760	230.	325.	320.	2	0	0	.00	126.57	160.00

0

1490 NH CARD USED  
\*SECNO 30.500

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	107.0	205.0	TYPE=	1	TARGET=	98.000			
30.50	5.05	3147.65	.00	.00	3148.58	.94	4.09	.19	3144.00
2063.	419.	1189.	455.	120.	121.	134.	174.	52.	3144.00
.50	3.48	9.79	3.40	.080	.036	.080	.000	3142.60	107.00
.007195	400.	340.	250.	3	0	0	.00	98.00	205.00

0

1490 NH CARD USED

174

\*SECNO 31.000

1

1/ 1/80 2:58:22

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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	107.0	205.0	TYPE=	1	TARGET=	98.000
31.00	6.09	3148.89	.00	.00	3149.19	.31 .43 .19100000.00
2063.	0.	2063.	0.	0.	463.	0. 175. 52. 100000.00
.50	.00	4.45	.00	.000	.074	.000 .000 3142.80 107.00
.006995	70.	60.	50.	2	0	0 .00 98.00 205.00

0

1490 NH CARD USED

\*SECNO 32.000

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	145.0	280.0	TYPE=	1	TARGET=	135.000
32.00	4.82	3151.22	.00	.00	3152.13	.91 2.63 .30 3148.00
2063.	480.	1492.	91.	181.	169.	32. 179. 53. 3148.00
.52	2.66	8.84	2.83	.080	.038	.080 .000 3146.40 145.00
.007459	320.	370.	400.	2	0	0 .00 135.00 280.00

0

1490 NH CARD USED

\*SECNO 33.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	235.0	375.0	TYPE=	1	TARGET=	140.000
33.00	3.19	3154.19	.00	.00	3154.80	.62 2.59 .09 3152.50
2063.	12.	2020.	31.	5.	317.	10. 181. 54. 3152.00
.53	2.42	6.37	2.99	.080	.052	.080 .000 3151.00 235.00
.015321	250.	250.	250.	3	0	0 .00 140.00 375.00

0

1490 NH CARD USED

\*SECNO 34.000

1

1/ 1/80 2:58:22

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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

179

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS=	100.0	320.0	TYPE=	1	TARGET=	220.000			
34.00	4.94	3158.44	.00	.00	3158.89	.45	4.04	.05	3156.00
2063.	772.	965.	326.	186.	148.	81.	183.	55.	3156.00
.54	4.14	6.52	4.04	.080	.071	.080	.000	3153.50	100.00
.015813	290.	250.	270.	4	0	0	.00	146.49	320.00

0

1490 NH CARD USED

\*SECNO 35.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	200.0	275.0	TYPE=	1	TARGET=	75.000			
35.00	7.52	3163.02	.00	.00	3163.85	.83	4.77	.19	3158.00
2063.	249.	1471.	343.	66.	177.	85.	186.	56.	3158.00
.55	3.77	8.32	4.01	.080	.068	.080	.000	3155.50	200.00
.011635	390.	350.	310.	3	0	0	.00	75.00	275.00

0

1490 NH CARD USED

\*SECNO 36.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	100.0	175.0	TYPE=	1	TARGET=	75.000			
36.00	6.66	3164.16	.00	.00	3165.18	1.03	1.24	.10	3158.00
2063.	163.	1728.	172.	72.	196.	65.	187.	56.	3158.00
.56	2.26	8.82	2.66	.080	.036	.080	.000	3157.50	100.00
.003800	210.	200.	200.	4	0	0	.00	75.00	175.00

0

1490 NH CARD USED

\*SECNO 37.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	.0	130.0	TYPE=	1	TARGET=	129.999			
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1

1/ 1/80 2:58:22

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
37.00	6.07	3168.07	3168.07	.00	3168.70	.64	2.90	.12	3164.00
2063.	62.	1138.	863.	18.	137.	357.	192.	59.	3164.00
.58	3.54	8.33	2.42	.080	.062	.080	.000	3162.00	11.61
.013092	375.	450.	475.	2	9	0	.00	361.24	372.85

0

1

PROFILE FOR STREAM FILE NAME: 27TRIB1.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

176



ELEVATION	3031.	3051.	3071.	3091.	3111.	3131.	3151.	3171.	3191.	3211.
SECNO	CUMDIS									
1.00	0.	IL EM	.	.	.	.	.	.	.	.
	50.	IL EM	.	.	.	.	.	.	.	.
	100.	CIL E M	.	.	.	.	.	.	.	.
	150.	CIL E M	.	.	.	.	.	.	.	.
2.00	200.	CIRL E M	.	.	.	.	.	.	.	.
	250.	C IL WE M	.	.	.	.	.	.	.	.
	300.	C IL WE M	.	.	.	.	.	.	.	.
	350.	C IRL E M	.	.	.	.	.	.	.	.
	400.	C IL WEM	.	.	.	.	.	.	.	.
	450.	C IL WEM	.	.	.	.	.	.	.	.
	500.	C IL WEM	.	.	.	.	.	.	.	.
	550.	C IRL EM	.	.	.	.	.	.	.	.
3.00	600.	C IL WE	.	.	.	.	.	.	.	.
	650.	C IL WE	.	.	.	.	.	.	.	.
	700.	C IL WE	.	.	.	.	.	.	.	.
	750.	C IR WE.	.	.	.	.	.	.	.	.
	800.	C IR WE.	.	.	.	.	.	.	.	.
	850.	C IL WE.	.	.	.	.	.	.	.	.
4.00	900.	C IR EM	.	.	.	.	.	.	.	.
	950.	C IR WE	.	.	.	.	.	.	.	.
	1000.	C IL WEM	.	.	.	.	.	.	.	.
	1050.	C IL WEM	.	.	.	.	.	.	.	.
	1100.	C IL EM	.	.	.	.	.	.	.	.
5.00	1150.	. IL WEM	.	.	.	.	.	.	.	.
	1200.	C IRLWEM	.	.	.	.	.	.	.	.
	1250.	C IRL EM	.	.	.	.	.	.	.	.
	1300.	C IL EM	.	.	.	.	.	.	.	.
	1350.	C IL WE	.	.	.	.	.	.	.	.
	1400.	C IRL EM	.	.	.	.	.	.	.	.
6.00	1450.	C IL EM	.	.	.	.	.	.	.	.
	1500.	C IL E M	.	.	.	.	.	.	.	.
	1550.	C IL WE M	.	.	.	.	.	.	.	.
	1600.	C IL E M	.	.	.	.	.	.	.	.
	1650.	C IL E M	.	.	.	.	.	.	.	.
	1700.	C IL WE M	.	.	.	.	.	.	.	.
	1750.	C IL WE M.	.	.	.	.	.	.	.	.
7.00	1800.	C .ILWE M	.	.	.	.	.	.	.	.
	1850.	C .IL E M	.	.	.	.	.	.	.	.
	1900.	C .IRLWE M	.	.	.	.	.	.	.	.
	1950.	C .ILWE M	.	.	.	.	.	.	.	.
	2000.	C .IL E M	.	.	.	.	.	.	.	.
	2050.	C .IRLWE M	.	.	.	.	.	.	.	.
	2100.	C .ILWE M	.	.	.	.	.	.	.	.
	2150.	C .IL E M	.	.	.	.	.	.	.	.
8.00	2200.	C .I LE M	.	.	.	.	.	.	.	.
	2250.	C .I WE M	.	.	.	.	.	.	.	L
	2300.	C .I E M	.	.	.	.	.	.	.	L
	2350.	C .I E M	.	.	.	.	.	.	.	L
	2400.	C .I E M	.	.	.	.	.	.	.	L
	2450.	C .I WE .M	.	.	.	.	.	.	.	.
9.00	2500.	C .I E .M	.	.	.	.	.	.	.	.
	2550.	C .I E .M	.	.	.	.	.	.	.	.
	2600.	C .I E .M	.	.	.	.	.	.	.	L
	2650.	C .I WE.M	.	.	.	.	.	.	.	L
	2700.	C .I WE.M	.	.	.	.	.	.	.	L

10.00	2750.	C	. IL E M	.	.	.	.	.	.	.	.
	2800.	C	. IL WE M	.	.	.	.	.	.	.	.
	2850.	C	. IL WE M	.	.	.	.	.	.	.	.
	2900.	C	. IR E M	.	.	.	.	.	.	.	.
	2950.	C	. IL E M	.	.	.	.	.	.	.	.
	3000.	C	. IL E M	.	.	.	.	.	.	.	.
	3050.	C	. IL WEM	.	.	.	.	.	.	.	.
	3100.	C	. IR.EM	.	.	.	.	.	.	.	.
11.00	3150.	C	. IR.EM	.	.	.	.	.	.	.	.
	3200.	C	. IL.EM	.	.	.	.	.	.	.	.
	3250.	C	. IL.EM	.	.	.	.	.	.	.	.
	3300.	C	. IL EM	.	.	.	.	.	.	.	.
	3350.	C	. IL EM	.	.	.	.	.	.	.	.
	3400.	C	. IL EM	.	.	.	.	.	.	.	.
12.00	3450.	C	. I.LE M	.	.	.	.	.	.	.	.
	3500.	C	. IL EM	.	.	.	.	.	.	.	R
	3550.	C	. IL EM	.	.	.	.	.	.	.	R
	3600.	C	. I LEM	.	.	.	.	.	.	.	R
	3650.	C	. IL EM	.	.	.	.	.	.	.	R
	3700.	C	. I LEM	.	.	.	.	.	.	.	R
	3750.	C	. I LWE	.	.	.	.	.	.	.	R
	3800.	C	. IL E	.	.	.	.	.	.	.	.
	3850.	C	. I LEM	.	.	.	.	.	.	.	.
13.00	3900.	C	. I LEM	.	.	.	.	.	.	.	.
	3950.	C	. I LWE	.	.	.	.	.	.	.	.
	4000.	C	. I L E	.	.	.	.	.	.	.	.
	4050.	C	. IL E	.	.	.	.	.	.	.	R
	4100.	C	. I LEM	.	.	.	.	.	.	.	R
	4150.	C	. I LWE	.	.	.	.	.	.	.	R
	4200.	C	. I L E	.	.	.	.	.	.	.	R
	4250.	C	. I L E	.	.	.	.	.	.	.	R
14.00	4300.	C	. I LEM	.	.	.	.	.	.	.	.
	4350.	C	. I LWE	.	.	.	.	.	.	.	.
	4400.	C	. IL E	.	.	.	.	.	.	.	.
	4450.	C	. IL EM.	.	.	.	.	.	.	.	.
	4500.	C	. IL WE.	.	.	.	.	.	.	.	.
	4550.	C	. ILWE.	.	.	.	.	.	.	.	.
	4600.	C	. IL EM	.	.	.	.	.	.	.	.
15.00	4650.	.	. IL WE	.	.	.	.	.	.	.	.
	4700.	C	. IL WE	.	.	.	.	.	.	.	.
	4750.	C	. IL WE	.	.	.	.	.	.	.	.
	4800.	C	. IL EM	.	.	.	.	.	.	.	.
	4850.	C	. IL EM	.	.	.	.	.	.	.	.
	4900.	C	. IL WE	.	.	.	.	.	.	.	.
	4950.	C	. I LWEM	.	.	.	.	.	.	.	.
	5000.	C	. IL.EM	.	.	.	.	.	.	.	.
	5050.	C	. IL.EM	.	.	.	.	.	.	.	.
	5100.	C	. IL.WE	.	.	.	.	.	.	.	.
16.00	5150.	C	. I L EM	.	.	.	.	.	.	.	.
	5200.	C	. IL EM	.	.	.	.	.	.	.	.
	5250.	C	. IL E M	.	.	.	.	.	.	.	.
	5300.	C	. I.LWEM	.	.	.	.	.	.	.	.
	5350.	C	. I.L E M	.	.	.	.	.	.	.	.
	5400.	C	. IL E M	.	.	.	.	.	.	.	.
	5450.	C	. I LE M	.	.	.	.	.	.	.	.
	5500.	C	. I LWE M	.	.	.	.	.	.	.	.
17.00	5550.	C	. I LE M	.	.	.	.	.	.	.	.
	5600.	C	. I LWE M	.	.	.	.	.	.	.	.
	5650.	C	. ILWE M	.	.	.	.	.	.	.	.
	5700.	C	. IL E M.	.	.	.	.	.	.	.	.



	8750.	C	.	.	.	.	ILME	.	.	.	.	.	.	.	.	.	.	.	.	.
	8800.	C	.	.	.	.	ILME	.	.	.	.	.	.	.	.	.	.	.	.	R
	8850.	C	.	.	.	.	I LE	.	.	.	.	.	.	.	.	.	.	.	.	R
	8900.	C	.	.	.	.	I LWE	.	.	.	.	.	.	.	.	.	.	.	.	R
	8950.	C	.	.	.	.	ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	R
	9000.	C	.	.	.	.	IL.E M	.	.	.	.	.	.	.	.	.	.	.	.	R
26.00	9050.	C	.	.	.	.	IL.E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9100.	C	.	.	.	.	IL.E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9150.	C	.	.	.	.	IL.E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9200.	C	.	.	.	.	I.WE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9250.	C	.	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9300.	C	.	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9350.	C	.	.	.	.	IL WEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	9400.	C	.	.	.	.	I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	9450.	C	.	.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9500.	C	.	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.
27.00	9550.	C	.	.	.	.	IL WEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	9600.	C	.	.	.	.	.I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.
28.00	9650.	C	.	.	.	.	.ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9700.	C	.	.	.	.	.IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	9750.	C	.	.	.	.	.IL WEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	9800.	C	.	.	.	.	. ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	9850.	C	.	.	.	.	. ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	9900.	C	.	.	.	.	. IL EM	.	.	.	.	.	.	.	.	.	.	.	.	.
	9950.	C	.	.	.	.	. IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	10000.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.
29.00	10050.	C	.	.	.	.	. IL EM	.	.	.	.	.	.	.	.	.	.	.	.	.
	10100.	C	.	.	.	.	. IL EM	.	.	.	.	.	.	.	.	.	.	.	.	.
	10150.	C	.	.	.	.	. IL EM	.	.	.	.	.	.	.	.	.	.	.	.	.
	10200.	C	.	.	.	.	. IRE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	10250.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	10300.	C	.	.	.	.	. ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	10350.	C	.	.	.	.	. IRE M.	.	.	.	.	.	.	.	.	.	.	.	.	.
30.00	10400.	C	.	.	.	.	. IRE M.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10450.	C	.	.	.	.	. IRE M.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10500.	C	.	.	.	.	. ILWEM.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10550.	C	.	.	.	.	. ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	10600.	C	.	.	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	10650.	C	.	.	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	.
30.50	10700.	C	.	.	.	.	. IL E.M	.	.	.	.	.	.	.	.	.	.	.	.	.
	10750.	C	.	.	.	.	. I EM	.	.	.	.	.	.	.	.	.	.	.	.	.
31.00	10800.	C	.	.	.	.	. I EM	.	.	.	.	.	.	.	.	.	.	.	.	.
	10850.	C	.	.	.	.	. I WE	.	.	.	.	.	.	.	.	.	.	.	.	.
	10900.	C	.	.	.	.	. I EM	.	.	.	.	.	.	.	.	.	.	.	.	.
	10950.	C	.	.	.	.	. I EM	.	.	.	.	.	.	.	.	.	.	.	.	L
	11000.	C	.	.	.	.	. I EM	.	.	.	.	.	.	.	.	.	.	.	.	L
	11050.	C	.	.	.	.	. I E M	.	.	.	.	.	.	.	.	.	.	.	.	L
	11100.	C	.	.	.	.	. I WEM	.	.	.	.	.	.	.	.	.	.	.	.	L
32.00	11150.	C	.	.	.	.	. ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	11200.	C	.	.	.	.	. IL.E M	.	.	.	.	.	.	.	.	.	.	.	.	.
	11250.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	11300.	C	.	.	.	.	. ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	11350.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.
33.00	11400.	C	.	.	.	.	. ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.
	11450.	C	.	.	.	.	. IWEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	11500.	C	.	.	.	.	. ILEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	11550.	C	.	.	.	.	. ILEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	11600.	C	.	.	.	.	. IL EM	.	.	.	.	.	.	.	.	.	.	.	.	.
34.00	11650.	C	.	.	.	.	. ILEM	.	.	.	.	.	.	.	.	.	.	.	.	.
	11700.	C	.	.	.	.	. ILWE	.	.	.	.	.	.	.	.	.	.	.	.	.

STA=	3.	204.	209.	280.	307.	342.	370.	443.	485.
PER Q=	37.7	1.2	27.7	6.9	7.9	6.3	10.6	1.6	
AREA=	1161.0	35.0	577.0	189.0	227.5	182.0	365.0	88.0	
VEL=	1.5	1.6	2.2	1.6	1.6	1.6	1.3	.8	
DEPTH=	5.8	7.0	8.1	7.0	6.5	6.5	5.0	2.1	

1490 NH CARD USED

\*SECNO 2.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

2.00	7.18	3040.18	.00	.00	3040.32	.14	.23	.05	3036.00
4532.	1008.	1748.	1776.	467.	479.	684.	10.	2.	3034.00
.02	2.16	3.65	2.60	.080	.067	.080	.000	3033.00	97.47
.003123	240.	200.	165.	2	0	0	.00	442.36	539.83

0

FLOW DISTRIBUTION FOR SECNO= 2.00 CWSEL= 3040.18

STA=	97.	265.	358.	490.	525.	540.
PER Q=	22.2	38.6	33.3	5.5	.4	
AREA=	466.5	479.0	557.2	111.4	15.5	
VEL=	2.2	3.6	2.7	2.2	1.1	
DEPTH=	2.8	5.2	4.2	3.2	1.0	

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PAGE 42

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

1490 NH CARD USED

\*SECNO 3.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3.00	5.33	3043.33	3043.33	.00	3044.51	1.18	1.92	.52	3040.00
4532.	686.	2647.	1198.	254.	239.	365.	21.	6.	3040.00
.03	2.71	11.10	3.28	.080	.036	.080	.000	3038.00	66.81
.008875	420.	390.	375.	20	19	0	.00	356.30	488.96

0

FLOW DISTRIBUTION FOR SECNO= 3.00 CWSEL= 3043.33

STA=	67.	215.	285.	299.	321.	335.	368.	427.	473.	489.
PER Q=	4.1	11.1	6.2	46.1	6.2	4.0	14.9	7.3	.3	
AREA=	90.6	163.1	60.6	117.3	60.6	65.4	181.7	107.2	10.6	
VEL=	2.0	3.1	4.6	17.8	4.6	2.8	3.7	3.1	1.3	
DEPTH=	.6	2.3	4.3	5.3	4.3	2.0	3.1	2.3	.7	

11750.	C	.	.	.	.	.	.	.	IL E	.	.	.	.
11800.	C	.	.	.	.	.	.	.	IL EM	.	.	.	.
11850.	C	.	.	.	.	.	.	.	IL WE	.	.	.	.
11900.	C	.	.	.	.	.	.	.	IL E	.	.	.	.
11950.	C	.	.	.	.	.	.	.	I L E	.	.	.	.
35.00	12000.	C	.	.	.	.	.	.	IL WE	.	.	.	.
	12050.	C	.	.	.	.	.	.	IL WE	.	.	.	.
	12100.	C	.	.	.	.	.	.	IL EM	.	.	.	.
	12150.	C	.	.	.	.	.	.	IL EM	.	.	.	.
36.00	12200.	C	.	.	.	.	.	.	I E M.	.	.	.	.
	12250.	C	.	.	.	.	.	.	I WEM.	.	.	.	.
	12300.	C	.	.	.	.	.	.	I WEM.	.	.	.	.
	12350.	C	.	.	.	.	.	.	IL WEM.	.	.	.	.
	12400.	C	.	.	.	.	.	.	I EM.	.	.	.	.
	12450.	C	.	.	.	.	.	.	I EM.	.	.	.	.
	12500.	C	.	.	.	.	.	.	IL WE.	.	.	.	.
	12550.	C	.	.	.	.	.	.	IL WEM	.	.	.	.
	12600.	C	.	.	.	.	.	.	I EM	.	.	.	.
37.00	12650.	.	.	.	.	.	.	.	IL EM	.	.	.	.

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THIS RUN EXECUTED 1/ 1/80 2:59:13

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 HEC2 RELEASE DATED SEPT 88

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

FILE NAME: 27TRIB1.IN

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
1.000	.00	.00	.00	3030.50	4532.00	3040.00	.00	3040.18	19.35	3.94	1414.49	1030.39
* 2.000	200.00	.00	.00	3033.00	4532.00	3040.46	.00	3041.30	135.38	7.63	630.13	389.50
3.000	390.00	.00	.00	3038.00	4532.00	3044.19	.00	3045.94	86.34	12.08	599.68	486.33
4.000	300.00	.00	.00	3042.00	4532.00	3047.73	.00	3049.15	125.04	12.59	707.96	405.28
* 5.000	250.00	.00	.00	3044.00	4532.00	3050.35	3050.35	3051.95	64.48	11.62	708.62	564.38
6.000	300.00	.00	.00	3048.00	4532.00	3054.30	.00	3054.69	87.07	5.81	1075.74	485.68
7.000	350.00	.00	.00	3052.00	4532.00	3057.29	.00	3058.66	114.19	9.43	491.98	424.12
8.000	400.00	.00	.00	3056.80	4532.00	3062.40	.00	3063.35	114.00	7.84	585.64	424.47
9.000	275.00	.00	.00	3059.40	4532.00	3065.73	.00	3066.29	93.43	6.00	754.79	468.85

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	10.000	285.00	.00	.00	3062.50	4532.00	3067.96	.00	3069.20	87.88	12.40	804.76	483.44
	11.000	400.00	.00	.00	3066.00	4532.00	3072.19	.00	3072.40	81.93	3.68	1225.44	500.68
	12.000	300.00	.00	.00	3069.30	4532.00	3074.94	.00	3075.14	102.72	4.02	1286.30	447.15
*	13.000	415.00	.00	.00	3074.40	4325.00	3080.55	.00	3081.30	214.01	8.62	691.17	295.64
*	14.000	430.00	.00	.00	3078.20	4325.00	3085.04	.00	3085.31	57.04	4.33	1045.87	572.67
*	15.000	325.00	.00	.00	3082.50	4325.00	3087.72	3087.72	3089.69	94.68	12.21	502.11	444.48
	16.000	500.00	.00	.00	3087.00	4325.00	3093.92	.00	3094.10	66.82	3.45	1257.89	529.11
*	17.000	430.00	.00	.00	3092.30	4325.00	3097.99	.00	3098.83	161.13	10.22	765.85	340.72

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
	18.000	425.00	.00	.00	3098.30	4325.00	3104.15	.00	3105.21	128.53	10.65	759.89	381.49
	19.000	350.00	.00	.00	3101.00	4325.00	3108.09	.00	3108.48	72.47	5.15	882.17	508.06
	20.000	360.00	.00	.00	3104.50	4325.00	3111.30	.00	3112.35	129.53	9.22	611.48	380.02
*	21.000	500.00	.00	.00	3109.80	4325.00	3115.65	.00	3116.49	61.92	7.60	637.46	549.64
	22.000	500.00	.00	.00	3113.40	4325.00	3119.90	.00	3120.33	94.43	5.37	850.71	445.07
	23.000	287.00	.00	.00	3116.00	4325.00	3122.84	.00	3123.49	120.01	7.07	704.51	394.80
	24.000	280.00	.00	.00	3120.00	4325.00	3126.62	.00	3127.49	159.68	7.95	622.46	342.26
	25.000	350.00	.00	.00	3124.00	2163.00	3130.01	.00	3130.17	28.10	3.66	751.70	408.07
*	26.000	400.00	.00	.00	3126.20	2163.00	3131.72	.00	3132.44	107.04	8.44	378.99	209.07
	27.000	500.00	.00	.00	3131.00	2163.00	3135.80	.00	3137.54	85.48	11.21	246.37	233.96
	28.000	125.00	.00	.00	3132.30	2163.00	3137.14	.00	3138.91	141.46	11.25	232.45	181.86
*	29.000	400.00	.00	.00	3136.00	2163.00	3141.62	.00	3141.79	32.99	3.33	652.13	376.56
*	30.000	325.00	.00	.00	3140.00	2063.00	3143.74	.00	3144.30	297.60	6.36	344.35	119.59
*	30.500	340.00	.00	.00	3142.60	2063.00	3147.65	.00	3148.58	71.95	9.79	375.65	243.21
	31.000	60.00	.00	.00	3142.80	2063.00	3148.89	.00	3149.19	69.95	4.45	463.50	246.66
	32.000	370.00	.00	.00	3146.40	2063.00	3151.22	.00	3152.13	74.59	8.84	381.29	238.86
*	33.000	250.00	.00	.00	3151.00	2063.00	3154.19	.00	3154.80	153.21	6.37	332.59	166.67
	34.000	250.00	.00	.00	3153.50	2063.00	3158.44	.00	3158.89	158.13	6.52	414.97	164.05
	35.000	350.00	.00	.00	3155.50	2063.00	3163.02	.00	3163.85	116.35	8.32	328.39	191.26

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*	36.000	200.00	.00	.00	3157.50	2063.00	3164.16	.00	3165.18	38.00	8.82	332.60	334.68
*	37.000	450.00	.00	.00	3162.00	2063.00	3168.07	3168.07	3168.70	130.92	8.33	510.73	180.30

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PAGE 23

FILE NAME: 27TRIB1.IN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	4532.00	3040.00	.00	.00	.00	200.00	.00
*	2.000	4532.00	3040.46	.00	.46	.00	120.00	200.00
	3.000	4532.00	3044.19	.00	3.73	.00	153.00	390.00
	4.000	4532.00	3047.73	.00	3.54	.00	225.00	300.00
*	5.000	4532.00	3050.35	.00	2.62	.00	225.00	250.00
	6.000	4532.00	3054.30	.00	3.95	.00	594.90	300.00
	7.000	4532.00	3057.29	.00	2.99	.00	136.96	350.00
	8.000	4532.00	3062.40	.00	5.11	.00	155.00	400.00
	9.000	4532.00	3065.73	.00	3.34	.00	183.00	275.00
	10.000	4532.00	3067.96	.00	2.23	.00	230.00	285.00
	11.000	4532.00	3072.19	.00	4.23	.00	390.00	400.00
	12.000	4532.00	3074.94	.00	2.75	.00	540.00	300.00
*	13.000	4325.00	3080.55	.00	5.61	.00	229.00	415.00
*	14.000	4325.00	3085.04	.00	4.49	.00	247.00	430.00
*	15.000	4325.00	3087.72	.00	2.68	.00	135.00	325.00
	16.000	4325.00	3093.92	.00	6.20	.00	389.00	500.00
*	17.000	4325.00	3097.99	.00	4.07	.00	300.00	430.00
	18.000	4325.00	3104.15	.00	6.17	.00	275.00	425.00
	19.000	4325.00	3108.09	.00	3.94	.00	188.00	350.00
	20.000	4325.00	3111.30	.00	3.21	.00	152.00	360.00
*	21.000	4325.00	3115.65	.00	4.35	.00	170.00	500.00
	22.000	4325.00	3119.90	.00	4.25	.00	218.00	500.00



23.000	4325.00	3122.84	.00	2.94	.00	160.00	287.00
24.000	4325.00	3126.62	.00	3.78	.00	160.00	280.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
25.000	2163.00	3130.01	.00	3.39	.00	193.00	350.00
* 26.000	2163.00	3131.72	.00	1.70	.00	99.00	400.00
27.000	2163.00	3135.80	.00	4.09	.00	60.00	500.00
28.000	2163.00	3137.14	.00	1.33	.00	60.00	125.00
* 29.000	2163.00	3141.62	.00	4.48	.00	167.00	400.00
* 30.000	2063.00	3143.74	.00	2.12	.00	126.57	325.00
* 30.500	2063.00	3147.65	.00	3.90	.00	98.00	340.00
31.000	2063.00	3148.89	.00	1.24	.00	98.00	60.00
32.000	2063.00	3151.22	.00	2.33	.00	135.00	370.00
* 33.000	2063.00	3154.19	.00	2.96	.00	140.00	250.00
34.000	2063.00	3158.44	.00	4.26	.00	146.49	250.00
35.000	2063.00	3163.02	.00	4.57	.00	75.00	350.00
* 36.000	2063.00	3164.16	.00	1.14	.00	75.00	200.00
* 37.000	2063.00	3168.07	.00	3.91	.00	361.24	450.00

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1/ 1/80 2:58:22

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 2.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 5.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
 CAUTION SECNO= 5.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 13.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 14.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 15.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
 CAUTION SECNO= 15.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 17.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO= 21.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 26.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 29.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 30.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 30.500 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 33.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 36.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
CAUTION SECNO= 37.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 37.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

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*****
* WATER SURFACE PROFILES *
* VERSION OF SEPTEMBER 1988 *
* *
* *
* RUN DATE 1/ 1/80 TIME 4:31:28 *
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*****
* U.S. ARMY CORPS OF ENGINEERS *
* THE HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET, SUITE D *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
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END OF BANNER

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1/ 1/80 4:31:28

PAGE 1

THIS RUN EXECUTED 1/ 1/80 4:31:28

\*\*\*\*\*  
HEC2 RELEASE DATED SEPT 88  
\*\*\*\*\*

T1 27 MILE WASH FLOODWAY CALCULATIONS  
T2 100 YEAR FLOW - SUBCRITICAL RUN  
T3 FILE NAME: 27TRIB4.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	0	3126.62	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	2322	4325							
NH	3	0.08	225	0.024	252	0.08	820			
ET			4.1	190	350					
X1	24	17	210	305	300	270	280			
GR	3130	0	3128	72	3126	130	3124	210	3122	220
GR	3120	225	3120	252	3122	260	3122.2	270	3124	305
GR	3124	365	3126	475	3126	555	3124	563	3124	606
GR	3126	780	3130	820						
QT	2	1224	2276							
NH	5	0.08	197	0.024	217	0.08	398	0.024	417	0.08
NH	465									
ET			4.1	220	425					
X1	79.0	23	190	425	550	490	650			
GR	3140	0	3138	27	3136	60	3134	70	3132	82

GR	3130	94	3130	190	3129.2	197	3129.2	217	3130	230
GR	3130	282	3131	310	3131	390	3130	398	3129	402
GR	3129	411	3130	417	3131	420	3132	425	3134	436
GR	3136	443	3138	450	3140	465				
NH	3	0.08	50	0.024	80	0.08	498			
ET			4.1	33	240					
X1	80.0	14	40	86	330	400	435			
GR	3142	0	3140	28	3138	33	3136	40	3135	50
GR	3135	80	3136	86	3136	128	3135	176	3135	400
GR	3136	420	3138	473	3140	487	3142	498		
NH	3	0.08	288	0.024	323	0.08	434			
ET			4.1	230	370					
X1	81.0	17	284	324	380	410	380			
GR	3148	0	3146	40	3144	72	3142	112	3140.5	147
GR	3140.5	190	3150.5	191	3150.5	205	3140.5	206	3140	284
GR	3139	288	3139	323	3140	324	3142	370	3144	402
GR	3146	417	3148	434						

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NH	3	0.08	238	0.024	253	0.08	532			
ET			4.1	175	315					
X1	82.0	28	230	262	510	435	465			
GR	3156	0	3152	27	3150	58	3149	99	3159	100
GR	3159	149	3149	150	3148	158	3147	199	3157	200
GR	3157	212	3147	213	3146	230	3144	238	3144	253
GR	3146	262	3146	286	3146	359	3156	360	3156	372
GR	3146	373	3148	421	3150	462	3160	463	3160	488
GR	3150	489	3152	502	3156	532				
NH	5	0.08	127	0.024	147	0.08	257	0.024	265	0.08
NH	492									
ET			4.1	120	270					
X1	83.0	18	125	265	450	320	410			
GR	3160	0	3158	9	3156	11	3154	16	3152	53
GR	3150	125	3149.7	127	3149.7	147	3150	150	3152	158
GR	3152	162	3150	257	3150	265	3152	363	3154	398
GR	3156	420	3158	450	3160	492				
NH	9	0.08	150	0.024	151	0.08	220	0.024	221	0.08
NH	259	0.024	283	0.05	286	0.017	305	0.08	395	
ET			4.1	145	305					
X1	84.0	21	150	307	260	360	325			
GR	3160	0	3158	20	3156	70	3154.5	150	3154.5	151
GR	3155.5	180	3154	220	3154	221	3154.5	259	3154.1	260
GR	3154.1	282	3155	283	3155	286	3155	305	3156	307
GR	3158	310	3158	317	3156	320	3156	355	3158	375
GR	3160	395								
NH	5	0.08	65	0.024	80	0.08	165	0.017	185	0.08
NH	435									
ET			4.1	55	226					
X1	85.0	18	55	226	430	470	480			
GR	3168	0	3166	26	3164	48	3162	55	3161	65
GR	3161	80	3162	83	3162	155	3160	165	3160	185
GR	3162	226	3164	330	3166	365	3166.5	380	3176.5	381

188

GR	3176.5	422	3166.5	423	3168	435				
NH	7	0.08	115	0.024	135	0.08	175	0.024	182	0.08
NH	215	0.024	220	0.08	405					
ET			4.1	95	252					
X1	86.0	19	115	252	410	500	450			
GR	3176	0	3174	5	3172	20	3170	40	3168	95
GR	3166	115	3166	135	3167	140	3167	175	3167	182
GR	3167.2	186	3167.2	210	3167	215	3167	220	3168	252
GR	3170	295	3172	310	3174	345	3176	405		

1

1/ 1/80 4:31:28

PAGE 3

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

\*PROF 1

0

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 24.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	190.0	350.0	TYPE=	1	TARGET=	160.000
24.00	6.62	3126.62	.00	.00	3127.49	.87 .00 .00 3124.00
4325.	185.	3632.	507.	47.	456.	118. 0. 0. 3124.00
.00	3.91	7.96	4.30	.080	.067	.080 .000 3120.00 190.00
.016027	300.	280.	270.	0	0	0 .00 160.00 350.00

0

1490 NH CARD USED

\*SECNO 79.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	220.0	425.0	TYPE=	1	TARGET=	205.000
79.00	4.93	3133.93	.00	.00	3134.09	.16 6.38 .21100000.00
2276.	0.	2276.	0.	0.	715.	0. 10. 3. 100000.00
.06	.00	3.19	.00	.000	.075	.000 .000 3129.00 220.00
.005106	550.	650.	490.	4	0	0 .00 205.00 425.00

0

1490 NH CARD USED

\*SECNO 80.000

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY  
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	33.0	240.0	TYPE=	1	TARGET=	207.000
80.00	2.45	3137.45	3137.45	.00	3138.44	.99 3.48 .42 3136.00

18

2276.	7.	1125.	1144.	4.	105.	311.	15.	5.	3136.00
.07	1.79	10.76	3.68	.080	.029	.080	.000	3135.00	34.93
.015095	330.	435.	400.	3	8	0	.00	205.07	240.00

0  
1

1/ 1/80 4:31:28

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 81.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

7185 MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	230.0	370.0	TYPE=	1	TARGET=	140.000
81.00	3.72	3142.72	3142.72	.00	3144.01	1.29 4.98 .15 3140.00
2276.	485.	1572.	219.	137.	146.	79. 19. 6. 3140.00
.08	3.53	10.75	2.77	.080	.034	.080 .000 3139.00 230.00
.011001	380.	380.	410.	4	14	0 .00 140.00 370.00

0

1490 NH CARD USED

\*SECNO 82.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=	175.0	315.0	TYPE=	1	TARGET=	140.000
82.00	5.16	3149.16	.00	.00	3149.83	.68 5.64 .18 3146.00
2276.	325.	1208.	743.	90.	148.	167. 23. 8. 3146.00
.11	3.60	8.16	4.45	.080	.058	.080 .000 3144.00 175.00
.013331	510.	465.	435.	4	0	0 .00 126.43 315.00

0

1490 NH CARD USED

\*SECNO 83.000

3470 ENCROACHMENT STATIONS=	120.0	270.0	TYPE=	1	TARGET=	150.000
83.00	3.74	3153.44	.00	.00	3153.94	.50 4.06 .05 3150.00
2276.	45.	2186.	45.	17.	377.	17. 27. 9. 3150.00
.13	2.67	5.79	2.68	.080	.045	.080 .000 3149.70 120.00
.008062	450.	410.	320.	3	0	0 .00 150.00 270.00

0

1490 NH CARD USED

\*SECNO 84.000

1

1/ 1/80 4:31:28

SECNO	DEPTH	CWSEL	CRISW	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

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3470 ENCROACHMENT STATIONS=	145.0	305.0	TYPE=	1	TARGET=	160.000				
84.00	3.17	3157.17	.00	.00	3157.65	.48	3.70	.01	3154.50	
2276.	46.	2230.	0.	13.	397.	0.	30.	10.	100000.00	
.14	3.54	5.61	.00	.080	.065	.000	.000	3154.00	145.00	
.017456	260.	325.	360.	3	0	0	.00	160.00	305.00	

0

1490 NH CARD USED

\*SECNO 85.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	55.0	226.0	TYPE=	1	TARGET=	171.000				
85.00	4.23	3164.23	.00	.00	3164.56	.33	6.86	.05	3162.00	
2276.	0.	2276.	0.	0.	495.	0.	35.	12.	100000.00	
.17	.00	4.60	.00	.000	.070	.000	.000	3160.00	55.00	
.011945	430.	480.	470.	4	0	0	.00	171.00	226.00	

0

1490 NH CARD USED

\*SECNO 86.000

1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED

3470 ENCROACHMENT STATIONS=	95.0	252.0	TYPE=	1	TARGET=	157.000				
86.00	3.92	3169.92	.00	.00	3170.31	.39	5.72	.03	3166.00	
2276.	243.	2033.	0.	58.	401.	0.	40.	14.	100000.00	
.20	4.16	5.07	.00	.080	.069	.000	.000	3166.00	95.00	
.013671	410.	450.	500.	4	0	0	.00	157.00	252.00	

0

1

PROFILE FOR STREAM FILE NAME: 27TRIB4.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3120.	3130.	3140.	3150.	3160.	3170.	3180.	3190.	3200.	3210.
SECNO	3120.	3130.	3140.	3150.	3160.	3170.	3180.	3190.	3200.	3210.
CUMDIS										
24.00	0.	I L E M	.	.	.	.	.	.	.	.
50.	CI	WE M	.	.	.	.	.	.	.	L
100.	CI	WE M	.	.	.	.	.	.	.	L
150.	C I	WE M	.	.	.	.	.	.	.	L
200.	C I	WE M	.	.	.	.	.	.	.	L
250.	C I	WE M	.	.	.	.	.	.	.	L
300.	C I	WE M	.	.	.	.	.	.	.	L
350.	C I	.E M	.	.	.	.	.	.	.	L
400.	C I	.WE M	.	.	.	.	.	.	.	L
450.	C I	.E M	.	.	.	.	.	.	.	L
500.	C I	.WE M	.	.	.	.	.	.	.	L
550.	C I	.E M	.	.	.	.	.	.	.	L
600.	C I	.WE M	.	.	.	.	.	.	.	L
79.00	650.	C I	.E M	.	.	.	.	.	.	L

	700.	C	I	WE	M	.	.	.	.	.	.	.	.	.	.	.	.	.	L
	750.	C	I	E	M	.	.	.	.	.	.	.	.	.	.	.	.	.	L
	800.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	850.	C	.I	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	900.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	950.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	L	
	1000.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	L	
	1050.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	L	
80.00	1100.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1150.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1200.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1250.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1300.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1350.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1400.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1450.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
81.00	1500.	.	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1550.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1600.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1650.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1700.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1750.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1800.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1850.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	1900.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
82.00	1950.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2000.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2050.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2100.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2150.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2200.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2250.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2300.	C	.I	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
83.00	2350.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2400.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2450.	C	.I	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2500.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2550.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	.	
	2600.	C	.I	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2650.	C	.I	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
84.00	2700.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2750.	C	.I	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2800.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2850.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2900.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	2950.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3000.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3050.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3100.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
85.00	3150.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3200.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3250.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3300.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3350.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3400.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3450.	C	.IL	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3500.	C	.I	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
	3550.	C	.IL	WE	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	
86.00	3600.	C	.I	E	.M	.	.	.	.	.	.	.	.	.	.	.	.	R	



THIS RUN EXECUTED 1/ 1/80 4:31:42

\*\*\*\*\*  
HEC2 RELEASE DATED SEPT 88  
\*\*\*\*\*

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

FILE NAME: 27TRIB4.IN

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
24.000	.00	.00	.00	3120.00	4325.00	3126.62	.00	3127.49	160.27	7.96	621.72	341.64
79.000	650.00	.00	.00	3129.00	2276.00	3133.93	.00	3134.09	51.06	3.19	714.51	318.53
* 80.000	435.00	.00	.00	3135.00	2276.00	3137.45	3137.45	3138.44	150.95	10.76	419.32	185.25
* 81.000	380.00	.00	.00	3139.00	2276.00	3142.72	3142.72	3144.01	110.01	10.75	362.81	216.99
82.000	465.00	.00	.00	3144.00	2276.00	3149.16	.00	3149.83	133.31	8.16	405.50	197.13
83.000	410.00	.00	.00	3149.70	2276.00	3153.44	.00	3153.94	80.62	5.79	411.14	253.49
* 84.000	325.00	.00	.00	3154.00	2276.00	3157.17	.00	3157.65	174.56	5.61	410.48	172.27
85.000	480.00	.00	.00	3160.00	2276.00	3164.23	.00	3164.56	119.45	4.60	494.62	208.24
86.000	450.00	.00	.00	3166.00	2276.00	3169.92	.00	3170.31	136.71	5.07	459.19	194.65

FILE NAME: 27TRIB4.IN

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
24.000	4325.00	3126.62	.00	.00	.00	160.00	.00
79.000	2276.00	3133.93	.00	7.31	.00	205.00	650.00
* 80.000	2276.00	3137.45	.00	3.52	.00	205.07	435.00
* 81.000	2276.00	3142.72	.00	5.27	.00	140.00	380.00

195

	82.000	2276.00	3149.16	.00	6.44	.00	126.43	465.00
	83.000	2276.00	3153.44	.00	4.28	.00	150.00	410.00
*	84.000	2276.00	3157.17	.00	3.73	.00	160.00	325.00
	85.000	2276.00	3164.23	.00	7.06	.00	171.00	480.00
	86.000	2276.00	3169.92	.00	5.69	.00	157.00	450.00

1

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PAGE 8

SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 80.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 80.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 81.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 81.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

WARNING SECNO= 84.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

192

**TAB B**  
**HEC-2 FLOODWAY FLOW MODEL**

1\*\*\*\*\*  
 \* WATER SURFACE PROFILES \*  
 \* VERSION OF SEPTEMBER 1988 \*  
 \* \*  
 \* \*  
 \* RUN DATE 1/ 1/80 TIME 1:22:27 \*  
 \*\*\*\*\*

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

```

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

END OF BANNER

1  
 1/ 1/80 1:22:27

PAGE 1

THIS RUN EXECUTED 1/ 1/80 1:22:27

\*\*\*\*\*  
 HEC2 RELEASE DATED SEPT 88  
 \*\*\*\*\*

T1 27 MILE WASH CROSS SECTIONS 1 THROUGH 37  
 T2 10 YEAR FLOW - SUPERCRITICAL RUN  
 T3 FILE NAME: 3308HCS1.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	1	0.0132	0	0	0	3167.5	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	1177	2063							
NH	3	0.08	23	0.024	33	0.08	398			
X1	37.0	21	21	46	375	475	450			
X3						130	3167.1			
GR	3170	0	3168	12	3166	17	3164	21	3162	23
GR	3162	33	3164	46	3166	52	3167	130	3166	190
GR	3164	250	3164	278	3166	294	3164	301	3162	306
GR	3161	310	3162	316	3164	320	3166	333	3168	372
GR	3170	398								
NH	3	0.08	135	0.024	150	0.08	340			
X1	36.0	16	126	156	210	200	200			
GR	3168	0	3166	40	3164	55	3162	82	3162	118
GR	3160	122	3158	126	3157.5	135	3157.5	150	3158	156
GR	3160	163	3162	166	3162.7	230	3164	324	3166	335

GR	3168	340									
NH	3	0.08	231	0.024	238	0.08	400				
X1	35.0	16	222	248	390	310	350				
GR	3164	0	3162	30	3160	48	3160	90	3160.7	160	
GR	3160	220	3158	222	3156	228	3155.5	231	3155.5	238	
GR	3156	243	3158	248	3160	252	3160	310	3162	372	
GR	3164	400									

NH	3	0.08	260	0.024	267	0.08	360				
X1	34.0	17	250	287	290	270	250				
GR	3160	0	3158	6	3156	12	3156	122	3166	123	
GR	3166	195	3156	196	3156	207	3156	250	3154	255	
GR	3153.5	260	3153.5	267	3154	270	3156	287	3156	320	
GR	3158	342	3160	360							

NH	5	0.08	238	0.035	283	0.08	352	0.024	360	0.08	
NH	428										

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PAGE 2

X1	33.0	17	238	370	250	250	250				
GR	3158	0	3156	6	3154	13	3152	24	3152	45	
GR	3152	130	3152.5	238	3152	283	3151	295	3152	305	
GR	3152	320	3151	352	3151	360	3152	370	3154	410	
GR	3156	421	3158	428							

NH	3	0.08	241	0.024	256	0.08	324				
X1	32.0	15	230	269	320	400	370				
GR	3156	0	3154	8	3152	30	3150	68	3150	98	
GR	3148	101	3150	155	3148	230	3146.4	241	3146.4	256	
GR	3148	269	3150	304	3152	310	3154	317	3156	324	

NH	3	0.08	142	0.024	155	0.08	300				
X1	31.0	11	70	263	70	50	60				
GR	3150	0	3148	31	3146	70	3144	140	3142.8	142	
GR	3142.8	155	3144	160	3146	263	3146	287	3148	293	
GR	3150	300									

NH	3	0.08	147	0.024	159	0.08	408				
X1	30.5	17	140	166	400	250	340				
GR	3152	0	3150	27	3148	33	3146	75	3144	98	
GR	3144	140	3142.6	147	3142.6	159	3144	166	3144.7	228	
GR	3154.7	229	3154.5	284	3144.5	285	3146	307	3148	318	
GR	3150	348	3152	408							

NH	3	0.08	60	0.024	72	0.08	320				
X1	30.0	16	29	93	230	320	325				
GR	3148	0	3146	5	3144	10	3142	14	3141	29	
GR	3140	57	3192.2	60	3192.2	72	3140	77	3142	93	
GR	3140	170	3140	190	3142	222	3144	284	3146	291	
GR	3148	320									

QT	2	1196	2163								
NH	5	0.08	68	0.024	75	0.08	205	0.024	211	0.08	
NH	242										
X1	29.0	14	62	228	350	430	400				
GR	3144	0	3142	18	3140	33	3138	62	3137.5	68	
GR	3137.5	75	3138	81	3138	193	3136	205	3136	211	

GR	3138	228	3140	234	3142	240	3144	242		
NH	3	0.08	171	0.024	184	0.08	300			
X1	28.0	13	158	198	125	120	125			
GR	3142	0	3140	11	3138	40	3136	76	3134	158
GR	3132.3	171	3132.3	184	3134	198	3134	250	3136	260
GR	3138	270	3140	282	3142	300				

NH	3	0.08	197	0.024	217	0.08	308			
X1	27.0	12	190	227	500	420	500			
GR	3140	0	3138	5	3136	10	3134	20	3132	190
GR	3131	197	3131	217	3132	227	3134	234	3136	272
GR	3138	280	3140	308						

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NH	3	0.08	75	0.024	90	0.08	400			
X1	26.0	12	70	97	380	440	400			
GR	3138	0	3134	32	3132	50	3130	61	3128	70
GR	3126.2	75	3126.2	90	3128	97	3130	320	3132	340
GR	3134	365	3138	400						

NH	4	0.08	287	0.05	310	0.024	330	0.08	404	
X1	25.0	16	287	363	250	350	350			
GR	3132	0	3130	60	3128	93	3126	115	3126	165
GR	3127	227	3127	287	3126	308	3124.2	310	3124.2	330
GR	3124	332	3124	338	3126	363	3128	390	3130	396
GR	3124	404								

QT	2	2322	4325							
NH	3	0.08	225	0.024	252	0.08	820			
X1	24.0	17	210	305	300	270	280			
GR	3130	0	3128	72	3126	130	3124	210	3122	220
GR	3120	225	3120	252	3122	260	3122.2	270	3124	305
GR	3124	365	3126	475	3126	555	3124	563	3124	606
GR	3126	780	3130	820						

NH	3	0.08	297	0.024	324	0.08	867			
X1	23.0	26	260	345	290	285	287			
GR	3130	0	3124	30	3122	90	3120	150	3118.7	240
GR	3120	245	3120	255	3118.7	260	3118.2	290	3118	294
GR	3116	297	3116	324	3118	325	3118.5	330	3120	345
GR	3122	365	3122	410	3121.3	540	3122	693	3132	694
GR	3132	739	3122	740	3120	742	3120	750	3124	823
GR	3130	867								

NH	7	0.08	211	0.024	215	0.08	260	0.024	265	0.08
NH	344	0.024	366	0.08	762					
X1	22.0	30	205	377	450	360	500			
GR	3126	0	3122	15	3120	35	3118	60	3116	118
GR	3118	150	3118	192	3116	205	3115	211	3115	215
GR	3116	220	3116	256	3115	260	3115	265	3116	270
GR	3116	335	3114	344	3113.4	347	3113.4	360	3114	366
GR	3116	372	3118	377	3118.9	465	3118	497	3116	539
GR	3116	618	3118	628	3120	665	3122	680	3126	762

NH	3	0.08	15	0.024	70	0.08	620			
X1	21.0	21	15	150	525	320	500			

GR	3125	0	3118	5	3116	8	3114	11	3112	15
GR	3110	18	3109.8	23	3110	32	3112	42	3112	70
GR	3112.3	150	3113	262	3113	299	3123	300	3123	344
GR	3113	345	3113	505	3114	545	3116	552	3118	557
GR	3124	620								

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NH	5	0.08	60	0.024	90	0.08	238	.024	243	0.08
NH	540									
X1	20.0	19	38	100	340	430	360			
GR	3120	0	3112	25	3110	33	3108	38	3106	58
GR	3104.5	60	3104.5	90	3106	92	3108	100	3109	118
GR	3108	135	3108	155	3109	195	3108	238	3108	243
GR	3108	270	3110	360	3112	500	3120	540		

NH	5	0.08	25	0.024	55	0.08	142	0.024	147	0.08
NH	500									
X1	19.0	20	22	172	360	260	350			
GR	3116	0	3108	17	3106	19	3104	22	3102	25
GR	3101	28	3101	48	3102	49	3102.5	55	3104	70
GR	3104	125	3103	142	3103	147	3104	172	3105	280
GR	3106	355	3105	410	3106	475	3108	482	3116	500

NH	3	0.08	137	0.024	162	0.08	638			
X1	18.0	21	130	170	415	450	425			
GR	3112	0	3106	18	3104	22	3102	28	3100	48
GR	3100	85	3102	115	3102	125	3100	130	3098.3	137
GR	3098.3	162	3100	170	3102	195	3102	262	3102	415
GR	3100	429	3100	438	3102	482	3104	512	3106	590
GR	3112	638								

NH	3	0.08	120	0.024	145	0.08	558			
X1	17.0	18	115	155	425	480	430			
GR	3106	0	3102	12	3100	15	3098	20	3096	40
GR	3096	115	3094	120	3092.3	125	3092.3	140	3094	145
GR	3096	155	3097	205	3096	265	3094	285	3096	390
GR	3096	448	3098	495	3106	558				

NH	9	0.08	18	0.024	28	0.08	255	0.024	265	0.08
NH	284	0.024	294	0.08	361	0.024	366	0.08	530	
X1	16.0	24	6	375	400	430	500			
GR	3096	0	3094	2	3092	4	3090	6	3088	12
GR	3087	18	3087	28	3088	34	3090	50	3092	55
GR	3092.5	120	3092	218	3091	255	3091	265	3090	281
GR	3088.3	284	3088.3	294	3090	296	3088	361	3088	366
GR	3090	375	3092	485	3094	513	3096	530		

NH	3	0.08	400	0.024	450	0.08	592			
X1	15.0	13	394	452	350	315	325			
GR	3090	0	3088	80	3086	157	3085.8	237	3085.8	373
GR	3084	394	3082.5	400	3082.5	450	3084	452	3086	505
GR	3086	557	3088	576	3090	592				

QT	2	2366	4325							
NH	5	0.08	322	0.024	364	0.08	481	0.024	486	0.08
NH	655									

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X1	14.0	17	314	517	300	460	430			
GR	3086	0	3084	13	3082	42	3082	314	3080	319
GR	3078.2	322	3078.2	364	3080	366	3082	392	3082	446
GR	3080	478	3079	481	3079	486	3080	489	3082	517
GR	3084	605	3086	655						
NH	3	0.08	472	0.024	487	0.08	617			
X1	13.0	17	453	504	390	440	415			
GR	3082	0	3080	8	3079	89	3089	90	3089	127
GR	3079	128	3078	260	3078	453	3076	468	3074.4	472
GR	3074.4	487	3076	492	3078	504	3078	567	3080	573
GR	3080	605	3082	617						
QT	2	2488	4532							
NH	7	0.08	177	0.024	187	0.08	247	0.024	257	0.08
NH	381	0.024	386	0.08	798					
X1	12.0	24	171	391	340	300	300			
GR	3078	0	3076	14	3074	79	3072	171	3070.2	177
GR	3070.2	187	3072	193	3072	242	3070.3	247	3070.3	257
GR	3072	262	3074	270	3074	317	3072	347	3070	378
GR	3069.3	381	3069.3	386	3070	388	3072	391	3073	460
GR	3073	709	3074	743	3076	775	3078	798		
NH	5	0.08	114	0.024	133	0.08	355	0.024	363	0.08
NH	562									
X1	11.0	20	110	370	355	260	400			
GR	3080	0	3074	20	3072	29	3070	52	3068	108
GR	3067	110	3066	114	3066	133	3068	142	3070	148
GR	3071	175	3070	222	3070	280	3068	348	3066.7	355
GR	3066.7	363	3068	370	3070	532	3072	545	3074	562
NH	3	0.08	410	0.024	439	0.08	685			
X1	10.0	18	408	440	180	290	285			
GR	3074	0	3070	58	3068	125	3066	362	3064	408
GR	3062.5	410	3062.5	439	3064	440	3065	470	3064	492
GR	3063	500	3064	506	3065	552	3066	620	3068	658
GR	3070	667	3072	678	3074	685				
NH	8	0.08	270	0.035	286	0.08	372	0.035	385	0.08
NH	473	0.035	518	0.024	548	0.08	610			
X1	9.0	29	260	553	280	245	275			
GR	3072	0	3068	75	3066	145	3064	177	3062.2	202
GR	3064	212	3064	260	3062	270	3061.3	277	3062	286
GR	3064	322	3062	370	3060	372	3060	385	3062	398
GR	3062	450	3062	473	3064	483	3065	490	3064	498
GR	3062	512	3059.4	518	3059.4	548	3062	553	3064	560
GR	3066	594	3068	599	3070	605	3072	610		
NH	3	0.08	340	0.024	372	0.08	475			
X1	8.0	23	245	395	350	385	400			
GR	3070	0	3066	20	3064	23	3062	27	3060	30
GR	3060	95	3060	119	3070	120	3070	170	3060	171
GR	3060	245	3058	250	3056.8	270	3058	290	3060	303
GR	3061	313	3060	323	3058	340	3058	372	3060	395

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GR	3062	443	3063	455	3070	475				
NH	5	0.08	657	0.024	672	0.08	712	0.024	737	0.08
NH	765									
X1	7.0	25	608	750	350	380	350			
GR	3070	0	3060	130	3070	131	3070	146	3060	147
GR	3058	181	3056	340	3056	360	3057	419	3067	420
GR	3067	445	3057	446	3056	575	3054	608	3054	655
GR	3053.5	657	3053.5	672	3054	675	3054	705	3053	712
GR	3052	715	3052	718	3053	737	3060	750	3070	765
NH	5	0.08	538	0.024	553	0.08	615	0.024	624	0.08
NH	648									
X1	6.0	21	525	628	370	300	300			
X3				115	3054.2					
GR	3056	0	3054	11	3053	50	3054	88	3054	234
GR	3064	235	3064	269	3054	270	3052	425	3052	470
GR	3050	525	3048	538	3048	553	3050	565	3050	610
GR	3049	615	3049	624	3050	628	3052	635	3054	640
GR	3056	648								
NH	5	0.08	473	0.035	497	0.024	509	0.035	530	0.08
NH	567									
X1	5.0	20	473	530	240	300	250			
GR	3053	0	3052	32	3050	48	3049	73	3059	74
GR	3059	127	3048	128	3046	157	3046	173	3048	338
GR	3048	439	3047	473	3046	490	3044	497	3044	509
GR	3046	530	3048	542	3050	550	3052	557	3054	567
NH	3	0.08	324	0.024	350	0.08	673			
X1	4.0	13	324	358	315	270	300			
GR	3051	0	3050	45	3048	101	3046	160	3044	313
GR	3042	324	3042	350	3044	358	3046	390	3046	612
GR	3048	635	3048	658	3050	673				
NH	3	0.08	299	0.024	321	0.08	508			
X1	3.0	18	285	335	420	375	390			
GR	3045	0	3044	34	3043	83	3053	84	3053	148
GR	3042	149	3042	215	3040	285	3038	299	3038	321
GR	3040	335	3042	340	3042	346	3040.5	368	3040	427
GR	3042	473	3044	497	3046	508				
NH	5	0.08	272	0.024	285	0.08	341	0.024	354	0.08
NH	567									
X1	2.0	27	265	358	240	165	200			
GR	3046	0	3044	12	3042	25	3042	32	3052	33
GR	3053	50	3052	73	3043	74	3040	99	3038	130
GR	3036	265	3034	272	3034	285	3036	293	3036.5	315
GR	3036	335	3034	338	3033	341	3033	354	3034	358
GR	3036	363	3036	490	3038	525	3040	538	3042	558
GR	3044	562	3046	567						

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NH	5	0.08	212	0.024	218	0.08	262	0.024	277	0.08
NH	590									
X1	1.0	22	209	280						

201

GR	3042	0	3040	3	3038	8	3036	12	3034	20
GR	3034	204	3032	209	3031	212	3031	218	3032	221
GR	3033.5	240	3032	258	3030.5	262	3030.5	277	3032	280
GR	3034	307	3033	342	3034	370	3036	443	3038	466
GR	3040	485	3042	590						

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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

\*PROF 1

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 37.000

3470 ENCROACHMENT STATIONS=	.0	130.0	TYPE=	1	TARGET=	129.999			
37.00	5.36	3167.36	3167.47	3167.50	3168.08	.71	.00	.00	3164.00
1177.	37.	910.	230.	12.	119.	137.	0.	0.	3164.00
.00	3.14	7.64	1.69	.080	.062	.080	.000	3162.00	13.59
.013243	0.	0.	0.	0	5	6	.00	330.83	344.42

0  
1490 NH CARD USED  
\*SECNO 36.000

3301 HV CHANGED MORE THAN HVINS

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

36.00	3.64	3161.14	3161.14	.00	3162.72	1.58	5.62	.43	3158.00
1177.	28.	1099.	50.	10.	106.	16.	2.	2.	3158.00
.01	2.86	10.41	3.13	.080	.036	.080	.000	3157.50	119.71
.011733	375.	450.	475.	20	14	0	.00	45.00	164.71

0  
1490 NH CARD USED  
\*SECNO 35.000

3301 HV CHANGED MORE THAN HVINS

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

35.00	5.36	3160.86	3160.86	.00	3161.45	.59	2.59	2.21	3158.00
1177.	179.	862.	137.	109.	121.	68.	3.	3.	3158.00
.02	1.64	7.14	2.00	.080	.068	.080	.000	3155.50	40.29
.014254	210.	200.	200.	20	15	0	.00	296.25	336.54

0  
1490 NH CARD USED

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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

201

TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

\*SECNO 34.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

34.00	3.34	3156.84	3156.84	.00	3157.34	.50	7.79	.19	3156.00
1177.	446.	634.	97.	139.	89.	32.	5.	5.	3156.00
.04	3.20	7.14	3.06	.080	.071	.080	.000	3153.50	9.47
.037546	390.	350.	310.	20	20	0	.00	245.97	329.27

0

1490 NH CARD USED

\*SECNO 33.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

33.00	1.79	3152.79	3152.79	.00	3153.17	.38	9.95	4.69	3152.50
1177.	399.	766.	12.	144.	133.	6.	7.	7.	3152.00
.06	2.78	5.77	1.93	.080	.050	.080	.000	3151.00	19.66
.037500	290.	250.	270.	20	11	0	.00	366.11	385.78

0

1490 NH CARD USED

\*SECNO 32.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

32.00	3.43	3149.83	3149.83	.00	3150.66	.83	4.28	4.27	3148.00
1177.	191.	935.	51.	111.	115.	29.	9.	9.	3148.00
.07	1.72	8.16	1.73	.080	.037	.080	.000	3146.40	98.25
.009754	250.	250.	250.	20	14	0	.00	191.89	301.04

0

1490 NH CARD USED

\*SECNO 31.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

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SECNO	DEPTH	CWSEL	CRISW	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

31.00	3.00	3145.80	3145.80	.00	3146.36	.56	5.18	.31	3146.00
1177.	0.	1177.	0.	0.	197.	0.	10.	10.	3146.00
.08	.00	5.99	.00	.000	.040	.000	.000	3142.80	76.86
.022256	320.	370.	400.	20	12	0	.00	176.04	252.90

0

1490 NH CARD USED

203

\*SECNO 30.500

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

30.50	3.22	3145.82	3145.82	.00	3146.60	.77	.91	.11	3144.00
1177.	257.	672.	249.	96.	74.	104.	11.	10.	3144.00
.09	2.68	9.07	2.38	.080	.034	.080	.000	3142.60	77.02
.010907	70.	60.	50.	20	8	0	.00	170.65	304.43

0

1490 NH CARD USED

\*SECNO 30.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

30.00	1.91	3141.91	3141.91	.00	3142.47	.56	7.20	1.74	3141.00
1177.	20.	327.	831.	6.	54.	137.	12.	12.	3142.00
.10	3.16	6.02	6.05	.080	.078	.080	.000	3140.00	15.38
.083456	400.	340.	250.	20	14	0	.00	181.16	220.53

0

1490 NH CARD USED

\*SECNO 29.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

29.00	2.88	3138.88	3138.88	.00	3139.45	.58	16.75	18.63	3138.00
1196.	11.	1183.	2.	6.	193.	1.	14.	13.	3138.00
.12	2.02	6.13	1.95	.080	.051	.080	.000	3136.00	49.31
.035710	230.	325.	320.	20	8	0	.00	181.32	230.63

0

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1/ 1/80 1:22:27

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 28.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

28.00	3.25	3135.55	3135.55	.00	3136.34	.79	7.85	6.18	3134.00
1196.	86.	877.	233.	49.	107.	87.	16.	14.	3134.00
.13	1.74	8.19	2.69	.080	.039	.080	.000	3132.30	94.42
.012350	350.	400.	430.	20	8	0	.00	163.34	257.75

0

1490 NH CARD USED

\*SECNO 27.000

27.00	2.93	3133.93	3134.12	.00	3134.88	.95	1.41	.05	3132.00
1196.	289.	895.	12.	157.	100.	6.	17.	15.	3132.00
.14	1.85	8.99	1.80	.080	.033	.080	.000	3131.00	26.77

204

.010436 125. 125. 120. 4 11 0 .00 206.96 233.72

0  
1490 NH CARD USED  
\*SECNO 26.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED  
26.00 3.74 3129.94 3129.94 .00 3130.51 .58 6.17 .23 3128.00  
1196. 19. 698. 479. 8. 90. 209. 20. 17. 3128.00  
.16 2.26 7.75 2.29 .080 .053 .080 .000 3126.20 61.29  
.015939 500. 500. 420. 20 11 0 .00 251.55 312.84

0  
1490 NH CARD USED  
\*SECNO 25.000

3265 DIVIDED FLOW

3280 CROSS SECTION 25.00 EXTENDED 3.08 FEET

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED  
25.00 3.08 3127.08 3127.08 .00 3127.69 .61 5.11 3.81 3127.00  
1196. 162. 1014. 20. 101. 150. 14. 22. 20. 3126.00  
.18 1.61 6.76 1.39 .080 .035 .080 .000 3124.00 103.14  
.010168 380. 400. 440. 20 12 0 .00 278.51 404.00

0  
1  
1/ 1/80 1:22:27

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

1490 NH CARD USED  
\*SECNO 24.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED  
24.00 4.77 3124.77 3124.77 .00 3125.50 .73 6.10 6.13 3124.00  
2322. 19. 2039. 265. 12. 280. 122. 25. 22. 3124.00  
.19 1.57 7.27 2.17 .080 .067 .080 .000 3120.00 179.27  
.025584 250. 350. 350. 20 18 0 .00 340.91 672.84

0  
1490 NH CARD USED  
\*SECNO 23.000

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

23.00	4.45	3120.45	3120.62	.00	3121.62	1.17	3.74	.13	3118.70
2322.	204.	2113.	5.	118.	233.	7.	28.	24.	3120.00

005

.20	1.73	9.08	.82	.080	.028	.080	.000	3116.00	136.41
.008171	300.	280.	270.	3	8	0	.00	229.83	758.27

0

1490 NH CARD USED  
\*SECNO 22.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

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

22.00	3.71	3117.11	3117.11	.00	3117.67	.56	4.81	2.48	3116.00
2322.	91.	1788.	444.	32.	276.	104.	30.	26.	3118.00
.22	2.85	6.49	4.27	.080	.072	.080	.000	3113.40	85.78
.051807	290.	287.	285.	20	10	0	.00	334.89	623.56

0

1

1/ 1/80      1:22:27

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

1490 NH CARD USED  
\*SECNO 21.000

3265 DIVIDED FLOW

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

21.00	3.92	3113.72	3113.72	.00	3114.36	.64	9.20	13.54	3112.00
2322.	5.	1864.	453.	3.	262.	270.	35.	30.	3112.30
.24	1.57	7.12	1.67	.080	.033	.080	.000	3109.80	11.57
.010134	450.	500.	360.	20	8	0	.00	476.18	533.60

0

1490 NH CARD USED  
\*SECNO 20.000

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

20.00	4.80	3109.30	3109.30	.00	3110.10	.81	6.09	5.05	3108.00
2322.	4.	1806.	512.	2.	224.	199.	39.	33.	3108.00
.26	1.76	8.05	2.57	.080	.057	.073	.000	3104.50	34.76
.017780	525.	500.	320.	20	11	0	.00	293.53	328.29

0

1490 NH CARD USED  
\*SECNO 19.000

3265 DIVIDED FLOW

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

19.00	4.21	3105.21	3105.21	.00	3105.89	.68	9.62	6.98	3104.00
2322.	3.	2087.	232.	1.	302.	81.	43.	36.	3104.00
.27	2.38	6.92	2.88	.080	.069	.080	.000	3101.00	20.19
.041263	340.	360.	430.	20	12	0	.00	300.13	423.44

0  
 1490 NH CARD USED  
 \*SECNO 18.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY

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 1/ 1/80 1:22:27

SECNO	DEPTH	CWSEL	CRISW	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

3720 CRITICAL DEPTH ASSUMED

18.00	4.16	3102.46	3102.46	.00	3103.06	.59	6.84	7.28	3100.00
2322.	554.	1242.	525.	176.	154.	247.	47.	38.	3100.00
.29	3.14	8.08	2.13	.080	.049	.080	.000	3098.30	26.61
.012051	360.	350.	260.	20	6	0	.00	462.31	488.93

0  
 1490 NH CARD USED  
 \*SECNO 17.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

17.00	4.57	3096.87	3096.87	.00	3097.50	.63	6.06	4.77	3096.00
2322.	148.	1145.	1029.	69.	134.	335.	52.	43.	3096.00
.31	2.14	8.55	3.07	.080	.049	.080	.000	3092.30	31.28
.016564	415.	425.	450.	20	8	0	.00	423.11	468.49

0  
 1490 NH CARD USED  
 \*SECNO 16.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

16.00	3.71	3090.71	3090.71	.00	3091.67	.95	12.36	6.09	3090.00
2322.	0.	2290.	31.	0.	290.	14.	56.	46.	3090.00
.33	1.77	7.89	2.23	.080	.069	.080	.000	3087.00	5.29
.057264	425.	430.	480.	20	12	0	.00	191.13	414.22

0  
 1490 NH CARD USED  
 \*SECNO 15.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

15.00	4.08	3086.58	3086.58	.00	3087.41	.83	6.60	7.59	3084.00
2322.	261.	1869.	192.	202.	231.	115.	61.	49.	3084.00
.35	1.29	8.11	1.66	.080	.035	.080	.000	3082.50	134.75
.005848	400.	500.	430.	20	8	0	.00	427.74	562.49

207

0  
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1/ 1/80 1:22:27

SECNO	DEPTH	CWSEL	CRISW	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	

1490 NH CARD USED  
\*SECNO 14.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

14.00	3.94	3082.14	3082.34	.00	3082.91	.77	4.47	.03	3082.00
2366.	52.	2313.	0.	41.	326.	0.	65.	53.	3082.00
.36	1.28	7.10	.81	.080	.069	.080	.000	3078.20	39.82
.059507	350.	325.	315.	2	5	0	.00	483.78	523.61

0

1490 NH CARD USED  
\*SECNO 13.000

3265 DIVIDED FLOW

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

13.00	4.70	3079.10	3079.10	.00	3079.68	.58	15.69	28.60	3078.00
2366.	862.	1276.	229.	291.	162.	71.	68.	56.	3078.00
.38	2.96	7.86	3.22	.080	.067	.080	.000	3074.40	81.01
.027072	300.	430.	460.	20	11	0	.00	450.30	570.30

0

1490 NH CARD USED  
\*SECNO 12.000

3265 DIVIDED FLOW

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

12.00	4.06	3073.36	3073.36	.00	3073.88	.52	13.59	11.97	3072.00
2488.	123.	1995.	371.	42.	315.	151.	73.	61.	3072.00
.40	2.88	6.34	2.46	.080	.073	.080	.000	3069.30	108.49
.040394	390.	415.	440.	20	16	0	.00	553.53	721.20

0

1490 NH CARD USED  
\*SECNO 11.000

1

1/ 1/80 1:22:27

SECNO	DEPTH	CWSEL	CRISW	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	

208



3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

11.00	4.03	3070.03	3070.03	.00	3070.45	.42	13.85	6.82	3067.00
2488.	286.	1482.	720.	63.	260.	167.	77.	65.	3068.00
.42	4.56	5.70	4.32	.080	.074	.080	.000	3066.00	51.67
.052075	340.	300.	300.	20	7	0	.00	408.65	532.19

0

1490 NH CARD USED

\*SECNO 10.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

10.00	4.21	3066.71	3066.71	.00	3067.60	.89	5.87	6.69	3064.00
2488.	214.	1332.	942.	108.	132.	348.	81.	67.	3064.00
.43	1.98	10.06	2.70	.080	.034	.080	.000	3062.50	278.07
.008216	355.	400.	260.	20	8	0	.00	355.38	633.46

0

1490 NH CARD USED

\*SECNO 9.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

9.00	3.68	3063.08	3063.08	.00	3063.86	.78	4.81	2.19	3064.00
2488.	19.	2463.	6.	8.	347.	2.	84.	69.	3062.00
.44	2.52	7.11	2.82	.080	.065	.080	.000	3059.40	189.74
.055114	180.	285.	290.	20	15	0	.00	244.82	556.79

0

1490 NH CARD USED

\*SECNO 8.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

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PAGE 17

SECNO	DEPTH	CWSEL	CRISW	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

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

8.00	3.84	3060.64	3060.64	.00	3061.40	.76	8.08	8.06	3060.00
2488.	197.	2285.	6.	105.	314.	5.	86.	71.	3060.00
.45	1.87	7.28	1.18	.080	.046	.080	.000	3056.80	29.03
.018195	280.	275.	245.	20	8	0	.00	322.47	410.47

0

1490 NH CARD USED

\*SECNO 7.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

20

3720 CRITICAL DEPTH ASSUMED

7.00	3.80	3055.80	3055.80	.00	3056.81	1.01	11.06	5.86	3054.00
2488.	102.	2386.	0.	27.	291.	0.	90.	73.	3060.00
.47	3.79	8.19	.00	.080	.066	.000	.000	3052.00	578.24
.047863	350.	400.	385.	20	6	0	.00	163.96	742.21

0

1490 NH CARD USED

\*SECNO 6.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 115.0 648.0 TYPE= 1 TARGET= -115.000

ELENC1= 3054.20 ELENCR= 100000.00

6.00	3.98	3051.98	3051.98	.00	3052.97	1.00	15.58	10.73	3050.00
2488.	201.	2262.	25.	54.	272.	7.	92.	75.	3050.00
.48	3.75	8.31	3.66	.080	.069	.080	.000	3048.00	470.66
.041478	350.	350.	380.	20	8	0	.00	164.25	634.92

0

1490 NH CARD USED

\*SECNO 5.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

5.00	4.57	3048.57	3048.57	.00	3049.36	.79	3.90	4.11	3047.00
2488.	807.	1645.	36.	440.	190.	20.	96.	77.	3046.00
.49	1.83	8.65	1.86	.080	.029	.080	.000	3044.00	127.95
.005877	370.	300.	300.	20	8	0	.00	416.34	544.29

0

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 4.000

4.00	4.57	3046.57	3046.69	.00	3047.44	.87	1.89	.03	3042.00
2488.	777.	1424.	288.	283.	147.	177.	100.	79.	3044.00
.50	2.74	9.67	1.62	.080	.041	.080	.000	3042.00	143.34
.010139	240.	250.	300.	3	8	0	.00	475.15	618.49

0

1490 NH CARD USED

\*SECNO 3.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3.00	3.86	3041.86	3042.43	.00	3043.56	1.70	3.63	.25	3040.00
2488.	131.	1942.	415.	61.	165.	153.	103.	82.	3040.00
.51	2.16	11.76	2.71	.080	.034	.080	.000	3038.00	219.79
.014844	315.	300.	270.	5	8	0	.00	241.70	469.85

0

1490 NH CARD USED

21

\*SECNO 2.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2.00	4.22	3037.22	3037.22	.00	3037.89	.68	9.16	.69	3036.00
2488.	139.	1560.	788.	50.	203.	179.	107.	84.	3034.00
.53	2.78	7.67	4.41	.080	.067	.080	.000	3033.00	182.72
.043289	420.	390.	375.	20	8	0	.00	328.61	511.33

0

1490 NH CARD USED

\*SECNO 1.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1.00	4.28	3034.78	3034.78	.00	3035.39	.60	6.63	7.91	3032.00
2488.	416.	1543.	529.	154.	207.	140.	109.	86.	3032.00
.54	2.70	7.47	3.77	.080	.066	.080	.000	3030.50	16.87
.027392	240.	200.	165.	20	5	0	.00	381.69	398.56

0

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PROFILE FOR STREAM FILE NAME: 3308HCS1.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3031.	3051.	3071.	3091.	3111.	3131.	3151.	3171.	3191.	3211.
SECNO	CUMDIS									
37.00	0.	.	.	.	.	.	.	ILWEM	.	.
	50.	.	.	.	.	.	.	I E M	.	.
	100.	.	.	.	.	.	.	IL E M	.	.
	150.	.	.	.	.	.	.	ILWEM.	.	.
	200.	.	.	.	.	.	.	I WEM.	.	.
	250.	.	.	.	.	.	.	I E M.	.	.
	300.	.	.	.	.	.	.	ILWE M.	.	.
	350.	.	.	.	.	.	.	I WE M.	.	.
	400.	.	.	.	.	.	.	I E M.	.	.
36.00	450.	.	.	.	.	.	.	IWE M.	.	.
	500.	.	.	.	.	.	.	ILWE M .	.	.
	550.	.	.	.	.	.	.	ILWE M .	.	.
	600.	.	.	.	.	.	.	ILWEM	.	.
35.00	650.	.	.	.	.	.	.	ILE M	.	.
	700.	.	.	.	.	.	.	I LEM	.	.
	750.	.	.	.	.	.	.	IL EM	.	.
	800.	.	.	.	.	.	.	ILWEM	.	.
	850.	.	.	.	.	.	.	ILE M	.	.
	900.	.	.	.	.	.	.	ILEM	.	.
	950.	.	.	.	.	.	.	IWEM	.	.
34.00	1000.	.	.	.	.	.	.	IE M	.	.
	1050.	.	.	.	.	.	.	ILE M	.	.
	1100.	.	.	.	.	.	.	IWEM	.	.
	1150.	.	.	.	.	.	.	IE M	.	.
	1200.	.	.	.	.	.	.	IE M	.	.
33.00	1250.	.	.	.	.	.	.	IE M	.	.

211

	1300.	.	.	.	.	IE M	.	.	.
	1350.	.	.	.	.	ILE M	.	.	.
	1400.	.	.	.	.	IWE M	.	.	.
	1450.	.	.	.	.	ILE M	.	.	.
32.00	1500.	.	.	.	.	ILE M	.	.	.
	1550.	.	.	.	.	IWE M	.	.	.
	1600.	.	.	.	.	ILE. M	.	.	.
	1650.	.	.	.	.	ILE. M	.	.	.
	1700.	.	.	.	.	ILE.M	.	.	.
	1750.	.	.	.	.	IWE.M	.	.	.
	1800.	.	.	.	.	I E M	.	.	.
	1850.	.	.	.	.	I E M	.	.	.
31.00	1900.	.	.	.	.	I E M	.	.	.
30.50	1950.	.	.	.	.	ILE .M	.	.	.
	2000.	.	.	.	.	IWE M	.	.	.
	2050.	.	.	.	.	IE M	.	.	.
	2100.	.	.	.	.	ILE M	.	.	.
	2150.	.	.	.	.	ILE M	.	.	.
	2200.	.	.	.	.	IWE M.	.	.	.
	2250.	.	.	.	.	IE M.	.	.	.
30.00	2300.	.	.	.	.	IE M.	.	.	.
	2350.	.	.	.	.	IWE M .	.	.	.
	2400.	.	.	.	.	IWE M .	.	.	.
	2450.	.	.	.	.	IE M .	.	.	.
	2500.	.	.	.	.	IE M .	.	.	.
	2550.	.	.	.	.	ILE M .	.	.	.
29.00	2600.	.	.	.	.	IE M .	.	.	.
	2650.	.	.	.	.	IE M .	.	.	.
	2700.	.	.	.	.	ILE M .	.	.	.
	2750.	.	.	.	.	ILE M .	.	.	.
	2800.	.	.	.	.	IWE M .	.	.	.
	2850.	.	.	.	.	IWE M .	.	.	.
	2900.	.	.	.	.	ILE M .	.	.	.
	2950.	.	.	.	.	ILE M .	.	.	.
28.00	3000.	.	.	.	.	ILE M .	.	.	.
	3050.	.	.	.	.	IWE M .	.	.	.
	3100.	.	.	.	.	ILE M .	.	.	.
27.00	3150.	.	.	.	.	ILE M .	.	.	.
	3200.	.	.	.	.	ILE M .	.	.	.
	3250.	.	.	.	.	IWE M .	.	.	.
	3300.	.	.	.	.	IWE M .	.	.	.
	3350.	.	.	.	.	ILE M .	.	.	.
	3400.	.	.	.	.	ILE M .	.	.	.
	3450.	.	.	.	.	ILE M .	.	.	.
	3500.	.	.	.	.	IWE M .	.	.	.
	3550.	.	.	.	.	ILE M .	.	.	.
	3600.	.	.	.	.	ILE M .	.	.	.
26.00	3650.	.	.	.	.	ILE M .	.	.	.
	3700.	.	.	.	.	ILE M .	.	.	.
	3750.	.	.	.	.	IWE M .	.	.	.
	3800.	.	.	.	.	IRE.M .	.	.	.
	3850.	.	.	.	.	IREM .	.	.	.
	3900.	.	.	.	.	ILE. .	.	.	.
	3950.	.	.	.	.	ILE. .	.	.	.
	4000.	.	.	.	.	IWE. .	.	.	.
25.00	4050.	.	.	.	.	IWE. .	.	.	.
	4100.	.	.	.	.	IME .	.	.	.
	4150.	.	.	.	.	IRE .	.	.	.
	4200.	.	.	.	.	IRE .	.	.	.
	4250.	.	.	.	.	ILE .	.	.	.

	4300.	.	.	.	.	I WEM.	.	.	.	.	.
	4350.	.	.	.	.	I WEM.	.	.	.	.	.
24.00	4400.	.	.	.	.	I WE M	.	.	.	.	.
	4450.	.	.	.	.	I LE M	.	.	.	.	.
	4500.	.	.	.	.	I WE M	.	.	.	.	.
	4550.	.	.	.	.	ILE M	.	.	.	.	.
	4600.	.	.	.	.	I LE M	.	.	.	.	.
23.00	4650.	.	.	.	.	ILWE M	.	.	.	.	.
	4700.	.	.	.	.	ILE M.	.	.	.	.	.
	4750.	.	.	.	.	I WE M.	.	.	.	.	.
	4800.	.	.	.	.	ILWE M.	.	.	.	.	.
	4850.	.	.	.	.	ILE M .	.	.	.	.	.
	4900.	.	.	.	.	ILE M .	.	.	.	.	.
22.00	4950.	.	.	.	.	I WE M .	.	.	.	.	.
	5000.	.	.	.	.	I E M .	.	.	.	.	.
	5050.	.	.	.	.	ILE M .	.	.	.	.	.
	5100.	.	.	.	.	ILE M .	.	.	.	.	.
	5150.	.	.	.	.	ILE M .	.	.	.	.	.
	5200.	.	.	.	.	IWE M .	.	.	.	.	.
	5250.	.	.	.	.	I WE M .	.	.	.	.	.
	5300.	.	.	.	.	ILE M .	.	.	.	.	.
	5350.	.	.	.	.	ILE M .	.	.	.	.	.
	5400.	.	.	.	.	ILE M .	.	.	.	.	.
21.00	5450.	.	.	.	.	ILE M .	.	.	.	.	.
	5500.	.	.	.	.	I.WE M .	.	.	.	.	.
	5550.	.	.	.	.	ILWE M .	.	.	.	.	.
	5600.	.	.	.	.	ILE M .	.	.	.	.	.
	5650.	.	.	.	.	ILE M .	.	.	.	.	.
	5700.	.	.	.	.	I LE M .	.	.	.	.	.
	5750.	.	.	.	.	I WE M .	.	.	.	.	.
	5800.	.	.	.	.	ILE M .	.	.	.	.	.
	5850.	.	.	.	.	ILE M .	.	.	.	.	.
	5900.	.	.	.	.	I LE M .	.	.	.	.	.
20.00	5950.	.	.	.	.	I WE M .	.	.	.	.	.
	6000.	.	.	.	.	ILWE M .	.	.	.	.	.
	6050.	.	.	.	.	ILE. M .	.	.	.	.	.
	6100.	.	.	.	.	I LE. M .	.	.	.	.	.
	6150.	.	.	.	.	I WE. M .	.	.	.	.	.
	6200.	.	.	.	.	ILE . M .	.	.	.	.	.
	6250.	.	.	.	.	ILE . M .	.	.	.	.	.
19.00	6300.	.	.	.	.	I WE . M .	.	.	.	.	.
	6350.	.	.	.	.	ILE . M .	.	.	.	.	.
	6400.	.	.	.	.	ILE . M .	.	.	.	.	.
	6450.	.	.	.	.	ILE . M .	.	.	.	.	.
	6500.	.	.	.	.	I LE . M .	.	.	.	.	.
	6550.	.	.	.	.	ILWE .M .	.	.	.	.	.
	6600.	.	.	.	.	ILE .M .	.	.	.	.	.
18.00	6650.	.	.	.	.	ILE .M .	.	.	.	.	.
	6700.	.	.	.	.	ILE M .	.	.	.	.	.
	6750.	.	.	.	.	ILWE M .	.	.	.	.	.
	6800.	.	.	.	.	ILE M .	.	.	.	.	.
	6850.	.	.	.	.	I LE M.	.	.	.	.	.
	6900.	.	.	.	.	I WE M.	.	.	.	.	.
	6950.	.	.	.	.	ILE M.	.	.	.	.	.
	7000.	.	.	.	.	I LE M .	.	.	.	.	.
	7050.	.	.	.	.	I WE M .	.	.	.	.	.
17.00	7100.	.	.	.	.	I WE M .	.	.	.	.	.
	7150.	.	.	.	.	ILE M .	.	.	.	.	.
	7200.	.	.	.	.	I WE M .	.	.	.	.	.
	7250.	.	.	.	.	I E M .	.	.	.	.	.

	7300.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7350.	.	.	I.WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7400.	.	.	I.E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7450.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7500.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
16.00	7550.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7600.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7650.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7700.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7750.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7800.	.	.	ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7850.	.	.	ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7900.	.	.	ILE.M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	7950.	.	.	ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8000.	.	.	ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15.00	8050.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8100.	.	.	ILEM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8150.	.	.	ILWEM.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8200.	.	.	ILE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8250.	.	.	ILE M.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8300.	.	.	I WEM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14.00	8350.	.	.	I E M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8400.	.	.	I E M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8450.	.	.	I WEM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8500.	.	.	I WEM .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8550.	.	.	I E M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8600.	.	.	I E M .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8650.	.	.	ILEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8700.	.	.	I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8750.	.	.	I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13.00	8800.	.	.	I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8850.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8900.	.	.	I LEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	8950.	.	.	I WEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9000.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9050.	.	.	I LE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9100.	.	.	I E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9150.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
12.00	9200.	.	.	I.WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9250.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9300.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9350.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9400.	.	.	ILWEM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9450.	.	.	ILE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11.00	9500.	.	.	IRE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9550.	.	.	IRE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9600.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9650.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9700.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9750.	.	.	IRE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9800.	.	.	IL E. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9850.	.	.	ILWE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10.00	9900.	.	.	ILWE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9950.	.	.	ILE. M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10000.	.	.	IRWE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10050.	.	.	IRWE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10100.	.	.	IRE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10150.	.	.	IRE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9.00	10200.	.	.	I WE .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	10250.	.	.	I E .M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.



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1/ 1/80 1:22:27

SECNO	DEPTH	CWSEL	CRISW	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	

\*PROF 2

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 37.000

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	.0	130.0	TYPE=	1	TARGET=	129.999				
37.00	6.01	3168.01	3168.01	3168.10	3168.71	.70	.00	.00	3164.00	
2063.	62.	1167.	833.	17.	135.	339.	0.	0.	3164.00	
.00	3.65	8.63	2.46	.080	.062	.080	.000	3162.00	11.93	
.014248	0.	0.	0.	0	5	5	.00	360.21	372.14	

0

1490 NH CARD USED

\*SECNO 36.000

3301 HV CHANGED MORE THAN HVINS

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

36.00	5.70	3163.20	3163.20	.00	3164.54	1.34	4.08	.41	3158.00	
2063.	161.	1702.	200.	78.	167.	99.	4.	3.	3158.00	
.01	2.05	10.18	2.02	.080	.036	.080	.000	3157.50	65.83	
.006222	375.	450.	475.	20	11	0	.00	200.18	266.01	

0

1490 NH CARD USED

\*SECNO 35.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

35.00	5.73	3161.23	3161.45	.00	3162.15	.92	2.18	.21	3158.00	
2063.	494.	1251.	318.	177.	130.	103.	6.	4.	3158.00	
.02	2.79	9.59	3.08	.080	.068	.080	.000	3155.50	36.96	
.023265	210.	200.	200.	3	9	0	.00	311.05	348.02	

0

1490 NH CARD USED

\*SECNO 34.000

1

1/ 1/80 1:22:27

SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	OLOSS	BANK	ELEV
-------	-------	-------	-------	-------	----	----	----	-------	------	------

211



Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XLN	XLNCH	XLNR	WLN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

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

34.00	3.83	3157.33	3157.33	.00	3157.94	.61	10.59	7.83	3156.00
2063.	969.	874.	220.	221.	107.	54.	9.	7.	3156.00
.04	4.39	8.20	4.12	.080	.071	.080	.000	3153.50	8.01
.038634	390.	350.	310.	20	18	0	.00	252.87	334.61

0

1490 NH CARD USED  
 \*SECNO 33.000

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

33.00	2.13	3153.13	3153.13	.00	3153.66	.53	10.34	7.41	3152.50
2063.	799.	1232.	32.	218.	178.	13.	12.	9.	3152.00
.05	3.66	6.92	2.49	.080	.051	.080	.000	3151.00	17.79
.038425	290.	250.	270.	20	11	0	.00	374.81	392.60

0

1490 NH CARD USED  
 \*SECNO 32.000

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

32.00	4.28	3150.68	3150.68	.00	3151.53	.85	4.09	5.01	3148.00
2063.	584.	1332.	147.	247.	148.	60.	14.	10.	3148.00
.06	2.36	9.01	2.47	.080	.038	.080	.000	3146.40	55.03
.009005	250.	250.	250.	20	14	0	.00	251.01	306.05

0

1490 NH CARD USED  
 \*SECNO 31.000

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

31.00	3.58	3146.38	3146.38	.00	3147.07	.69	5.13	.30	3146.00
2063.	1.	2047.	14.	1.	307.	9.	18.	12.	3146.00
.08	.98	6.68	1.54	.080	.048	.080	.000	3142.80	62.54
.025139	320.	370.	400.	20	10	0	.00	225.60	288.15

0

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SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XLN	XLNCH	XLNR	WLN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

1490 NH CARD USED  
 \*SECNO 30.500

3265 DIVIDED FLOW

20

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

30.50	3.97	3146.57	3146.57	.00	3147.54	.97	1.00	1.35	3144.00
2063.	511.	1007.	545.	147.	93.	168.	18.	13.	3144.00
.08	3.47	10.79	3.25	.080	.035	.080	.000	3142.60	63.11
.011910	70.	60.	50.	20	8	0	.00	190.40	310.12

0  
 1490 NH CARD USED  
 \*SECNO 30.000

3265 DIVIDED FLOW

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

30.00	2.43	3142.43	3142.43	.00	3143.18	.75	7.41	2.20	3141.00
2063.	67.	546.	1450.	14.	77.	207.	21.	14.	3142.00
.09	4.77	7.06	6.99	.080	.078	.080	.000	3140.00	13.14
.074238	400.	340.	250.	20	14	0	.00	202.54	235.31

0  
 1490 NH CARD USED  
 \*SECNO 29.000

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

29.00	3.42	3139.42	3139.42	.00	3140.27	.84	16.69	15.65	3138.00
2163.	43.	2112.	9.	15.	284.	3.	23.	15.	3138.00
.10	2.92	7.44	2.82	.080	.056	.080	.000	3136.00	41.37
.038973	230.	325.	320.	20	14	0	.00	190.90	232.27

0  
 1490 NH CARD USED  
 \*SECNO 28.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY

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SECNO	DEPTH	CWSEL	CRISW	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

3720 CRITICAL DEPTH ASSUMED

28.00	4.08	3136.38	3136.38	.00	3137.36	.98	8.37	6.87	3134.00
2163.	299.	1360.	504.	114.	140.	138.	26.	17.	3134.00
.12	2.61	9.70	3.66	.080	.040	.080	.000	3132.30	69.16
.013049	350.	400.	430.	20	11	0	.00	192.74	261.90

0  
 1490 NH CARD USED  
 \*SECNO 27.000

27.00	3.66	3134.66	3134.83	.00	3135.82	1.16	1.49	.05	3132.00
2163.	772.	1356.	35.	283.	127.	16.	27.	18.	3132.00
.12	2.73	10.70	2.21	.080	.033	.080	.000	3131.00	16.72
.011085	125.	125.	120.	3	11	0	.00	229.76	246.47

0  
 1490 NH CARD USED

\*SECNO 26.000

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

26.00	4.31	3130.51	3130.51	.00	3131.22	.71	6.79	.33	3128.00
2163.	46.	988.	1130.	14.	106.	338.	32.	20.	3128.00
.15	3.19	9.36	3.34	.080	.053	.080	.000	3126.20	58.20
.018824	500.	500.	420.	20	8	0	.00	266.89	325.09

0

1490 NH CARD USED

\*SECNO 25.000

3265 DIVIDED FLOW

3280 CROSS SECTION 25.00 EXTENDED 3.69 FEET

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

25.00	3.69	3127.69	3127.69	.00	3128.48	.79	6.06	4.83	3127.00
2163.	506.	1605.	52.	215.	196.	28.	36.	23.	3126.00
.16	2.35	8.17	1.85	.080	.037	.080	.000	3124.00	96.43
.012003	380.	400.	440.	20	15	0	.00	294.29	404.00

0

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 24.000

3265 DIVIDED FLOW

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

24.00	5.53	3125.53	3125.53	.00	3126.45	.92	6.80	8.16	3124.00
4325.	121.	3115.	1089.	47.	353.	328.	40.	26.	3124.00
.18	2.59	8.83	3.32	.080	.067	.080	.000	3120.00	148.88
.027850	250.	350.	350.	20	14	0	.00	482.22	738.94

0

1490 NH CARD USED

\*SECNO 23.000

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

23.00	5.88	3121.88	3121.91	.00	3122.95	1.07	3.45	.05	3118.70
4325.	845.	3323.	157.	325.	354.	135.	45.	29.	3120.00
.19	2.60	9.39	1.17	.080	.033	.080	.000	3116.00	93.59
.006885	300.	280.	270.	2	8	0	.00	549.04	784.32

0

1490 NH CARD USED  
\*SECNO 22.000

3265 DIVIDED FLOW

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

22.00	4.25	3117.65	3117.65	.00	3118.56	.91	4.41	1.43	3116.00
4325.	279.	3080.	966.	70.	367.	165.	50.	32.	3118.00
.20	3.99	8.39	5.84	.080	.072	.080	.000	3113.40	70.24
.060019	290.	287.	285.	20	19	0	.00	377.76	626.23

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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

1490 NH CARD USED  
\*SECNO 21.000

3265 DIVIDED FLOW

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

21.00	4.56	3114.36	3114.36	.00	3115.22	.85	10.33	.35	3112.00
4325.	12.	3039.	1274.	6.	350.	496.	57.	36.	3112.30
.22	2.24	8.69	2.57	.080	.035	.080	.000	3109.80	10.45
.011574	450.	500.	360.	20	8	0	.00	490.10	546.28

0

1490 NH CARD USED  
\*SECNO 20.000

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

20.00	5.67	3110.17	3110.17	.00	3111.16	1.00	6.47	.49	3108.00
4325.	16.	2696.	1613.	6.	278.	416.	64.	40.	3108.00
.23	2.70	9.68	3.88	.080	.057	.075	.000	3104.50	32.32
.019269	525.	500.	320.	20	11	0	.00	339.52	371.84

0

1490 NH CARD USED  
\*SECNO 19.000

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

19.00	5.06	3106.06	3106.06	.00	3106.82	.76	9.32	7.16	3104.00
4325.	10.	3315.	1000.	3.	430.	278.	71.	43.	3104.00
.25	3.06	7.72	3.60	.080	.069	.080	.000	3101.00	18.94
.032041	340.	360.	430.	20	10	0	.00	456.27	475.21

0

1490 NH CARD USED  
\*SECNO 18.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY

220

3720 CRITICAL DEPTH ASSUMED

18.00	4.86	3103.16	3103.16	.00	3103.93	.77	6.83	7.59	3100.00
4325.	1045.	1817.	1463.	249.	182.	472.	76.	47.	3100.00
.26	4.20	10.01	3.10	.080	.049	.080	.000	3098.30	24.53
.014803	360.	350.	260.	20	10	0	.00	474.84	499.37

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 17.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

17.00	5.22	3097.52	3097.52	.00	3098.36	.84	7.46	6.70	3096.00
4325.	423.	1698.	2204.	125.	160.	542.	85.	51.	3096.00
.28	3.37	10.63	4.07	.080	.049	.080	.000	3092.30	24.82
.020235	415.	425.	450.	20	8	0	.00	458.85	483.67

0

1490 NH CARD USED

\*SECNO 16.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

16.00	5.04	3092.04	3092.04	.00	3092.81	.77	12.35	5.97	3090.00
4325.	6.	3878.	440.	2.	530.	115.	93.	55.	3090.00
.30	3.05	7.32	3.84	.080	.073	.080	.000	3087.00	3.96
.040405	425.	430.	480.	20	8	0	.00	332.57	485.60

0

1490 NH CARD USED

\*SECNO 15.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

15.00	4.97	3087.47	3087.47	.00	3088.52	1.05	6.61	7.62	3084.00
4325.	959.	2834.	532.	448.	282.	218.	101.	60.	3084.00
.32	2.14	10.04	2.45	.080	.035	.080	.000	3082.50	100.42
.006846	400.	500.	430.	20	5	0	.00	470.54	570.96

0

1490 NH CARD USED

\*SECNO 14.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

14.00	4.54	3082.74	3082.92	.00	3083.61	.87	4.82	.09	3082.00
4325.	699.	3600.	26.	206.	446.	12.	107.	63.	3082.00
.33	3.40	8.08	2.16	.080	.069	.080	.000	3078.20	31.25
.050600	350.	325.	315.	3	10	0	.00	518.39	549.63

0  
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221

SECNO	DEPTH	CWSEL	CRWS	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

1490 NH CARD USED  
\*SECNO 13.000

3265 DIVIDED FLOW

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

13.00	5.21	3079.61	3079.61	.00	3080.39	.79	16.03	22.01	3078.00
4325.	2012.	1827.	486.	471.	188.	105.	113.	67.	3078.00
.35	4.27	9.71	4.62	.080	.067	.080	.000	3074.40	39.84
.033878	300.	430.	460.	20	11	0	.00	493.10	571.82

0

1490 NH CARD USED  
\*SECNO 12.000

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

12.00	4.73	3074.03	3074.03	.00	3074.47	.45	15.32	14.11	3072.00
4532.	359.	2637.	1537.	94.	427.	379.	121.	73.	3072.00
.37	3.80	6.17	4.06	.080	.075	.080	.000	3069.30	78.14
.040450	390.	415.	440.	20	12	0	.00	665.28	743.42

0

1490 NH CARD USED  
\*SECNO 11.000

3265 DIVIDED FLOW

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

11.00	4.47	3070.47	3070.47	.00	3071.17	.70	15.62	8.75	3067.00
4532.	573.	2467.	1493.	90.	351.	240.	127.	77.	3068.00
.38	6.38	7.03	6.23	.080	.074	.080	.000	3066.00	46.55
.067370	340.	300.	300.	20	10	0	.00	449.62	535.08

0

1490 NH CARD USED  
\*SECNO 10.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY

1

SECNO	DEPTH	CWSEL	CRWS	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

3720 CRITICAL DEPTH ASSUMED

28

10.00	5.13	3067.63	3067.63	.00	3068.73	1.10	6.72	8.07	3064.00
4532.	656.	1975.	1902.	278.	162.	534.	133.	80.	3064.00
.39	2.36	12.20	3.56	.080	.034	.080	.000	3062.50	169.00
.009243	355.	400.	260.	20	11	0	.00	481.94	650.94

0  
1490 NH CARD USED  
\*SECNO 9.000

3265 DIVIDED FLOW

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

9.00	4.53	3063.93	3063.93	.00	3064.87	.94	4.98	2.36	3064.00
4532.	108.	4398.	25.	29.	558.	7.	138.	83.	3062.00
.40	3.71	7.89	3.91	.080	.066	.080	.000	3059.40	177.97
.048908	180.	285.	290.	20	12	0	.00	314.30	559.76

0  
1490 NH CARD USED  
\*SECNO 8.000

3265 DIVIDED FLOW

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

8.00	4.63	3061.43	3061.43	.00	3062.41	.98	7.90	8.04	3060.00
4532.	762.	3720.	50.	236.	431.	25.	142.	85.	3060.00
.41	3.23	8.63	2.04	.080	.048	.080	.000	3056.80	27.85
.018863	280.	275.	245.	20	5	0	.00	349.87	429.43

0  
1490 NH CARD USED  
\*SECNO 7.000

3265 DIVIDED FLOW

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

1  
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SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	GLOSS	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

7.00	5.08	3057.08	3057.08	.00	3057.98	.89	8.68	5.84	3054.00
4532.	734.	3798.	0.	247.	465.	0.	148.	88.	3060.00
.43	2.97	8.17	.00	.080	.066	.000	.000	3052.00	253.77
.026442	350.	400.	385.	20	8	0	.00	463.84	744.59

0  
1490 NH CARD USED  
\*SECNO 6.000

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

272

3470 ENCROACHMENT STATIONS= 115.0 648.0 TYPE= 1 TARGET= -115.000  
 ELENCL= 3054.20 ELENCR= 100000.00  
 6.00 5.06 3053.06 3053.06 .00 3054.18 1.12 10.28 6.81 3050.00  
 4532. 882. 3571. 80. 205. 384. 16. 153. 91. 3050.00  
 .44 4.30 9.30 5.02 .080 .069 .080 .000 3048.00 342.64  
 .032765 350. 350. 380. 20 5 0 .00 295.02 637.66

0

1490 NH CARD USED

\*SECNO 5.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

5.00 5.35 3049.35 3049.35 .00 3050.44 1.09 4.36 4.56 3047.00  
 4532. 1889. 2560. 83. 711. 235. 32. 159. 94. 3046.00  
 .45 2.66 10.91 2.61 .080 .030 .080 .000 3044.00 64.22  
 .007368 370. 300. 300. 20 8 0 .00 428.34 547.40

0

1490 NH CARD USED

\*SECNO 4.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

4.00 5.46 3047.46 3047.46 .00 3048.32 .86 2.14 .39 3042.00  
 4532. 1556. 1922. 1053. 457. 178. 415. 165. 97. 3044.00  
 .46 3.41 10.82 2.54 .080 .041 .080 .000 3042.00 116.92  
 .009876 240. 250. 300. 20 5 0 .00 511.88 628.80

0

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 3.000

3301 HV CHANGED MORE THAN HVINS

3.00 4.93 3042.93 3043.36 .00 3044.65 1.72 3.40 .26 3040.00  
 4532. 574. 2845. 1113. 196. 218. 303. 171. 100. 3040.00  
 .47 2.93 13.04 3.67 .080 .035 .080 .000 3038.00 148.92  
 .013524 315. 300. 270. 4 8 0 .00 335.18 484.09

0

1490 NH CARD USED

\*SECNO 2.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

2.00 4.94 3037.94 3037.94 .00 3038.80 .86 8.44 5.27 3036.00  
 4532. 462. 2417. 1652. 127. 270. 293. 178. 103. 3034.00

002



.49	3.65	8.95	5.63	.080	.067	.080	.000	3033.00	134.27
.040334	420.	390.	375.	20	5	0	.00	389.63	523.89

0

1490 NH CARD USED

\*SECNO 1.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

1.00	4.85	3035.35	3035.35	.00	3036.23	.88	7.33	7.08	3032.00
4532.	1122.	2332.	1079.	263.	247.	213.	181.	105.	3032.00
.49	4.26	9.46	5.07	.080	.066	.080	.000	3030.50	14.62
.034644	240.	200.	165.	20	5	0	.00	404.52	419.14

0

1

PROFILE FOR STREAM 100 YEAR FLOW

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3031.	3051.	3071.	3091.	3111.	3131.	3151.	3171.	3191.	3211.
SECNO	CUMDIS									
37.00	0.	.	.	.	.	.	.	IL EM	.	.
	50.	.	.	.	.	.	.	I WEM	.	.
	100.	.	.	.	.	.	.	IL WEM	.	.
	150.	.	.	.	.	.	.	IL EM.	.	.
	200.	.	.	.	.	.	.	I EM.	.	.
	250.	.	.	.	.	.	.	I WEM.	.	.
	300.	.	.	.	.	.	.	IL WEM.	.	.
	350.	.	.	.	.	.	.	I E M.	.	.
	400.	.	.	.	.	.	.	I E M.	.	.
36.00	450.	.	.	.	.	.	.	I WE M.	.	.
	500.	.	.	.	.	.	.	IL WEM .	.	.
	550.	.	.	.	.	.	.	IL E M .	.	.
	600.	.	.	.	.	.	.	IL EM .	.	.
35.00	650.	.	.	.	.	.	.	ILWEM .	.	.
	700.	.	.	.	.	.	.	I LWE .	.	.
	750.	.	.	.	.	.	.	IL EM .	.	.
	800.	.	.	.	.	.	.	IL EM .	.	.
	850.	.	.	.	.	.	.	ILWEM .	.	.
	900.	.	.	.	.	.	.	ILEM .	.	.
	950.	.	.	.	.	.	.	ILEM .	.	.
34.00	1000.	.	.	.	.	.	.	IWEM .	.	.
	1050.	.	.	.	.	.	.	ILE M .	.	.
	1100.	.	.	.	.	.	.	ILEM .	.	.
	1150.	.	.	.	.	.	.	IE M .	.	.
	1200.	.	.	.	.	.	.	IE M .	.	.
33.00	1250.	.	.	.	.	.	.	IWE M .	.	.
	1300.	.	.	.	.	.	.	IE M .	.	.
	1350.	.	.	.	.	.	.	ILE M .	.	.
	1400.	.	.	.	.	.	.	ILE M .	.	.
	1450.	.	.	.	.	.	.	ILWE M .	.	.
32.00	1500.	.	.	.	.	.	.	ILWE M .	.	.
	1550.	.	.	.	.	.	.	ILE M .	.	.
	1600.	.	.	.	.	.	.	IL E M .	.	.
	1650.	.	.	.	.	.	.	ILWE M .	.	.
	1700.	.	.	.	.	.	.	ILE.M .	.	.

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	1750.	.	.	.	.	ILE.M	.	.	.	.
	1800.	.	.	.	.	I WEM	.	.	.	.
	1850.	.	.	.	.	I E M	.	.	.	.
31.00	1900.	.	.	.	.	I E M	.	.	.	.
30.50	1950.	.	.	.	.	ILWE.M	.	.	.	.
	2000.	.	.	.	.	ILE M	.	.	.	.
	2050.	.	.	.	.	IWE M	.	.	.	.
	2100.	.	.	.	.	ILWE M	.	.	.	.
	2150.	.	.	.	.	ILE M	.	.	.	.
	2200.	.	.	.	.	ILE M.	.	.	.	.
	2250.	.	.	.	.	IWE M.	.	.	.	.
30.00	2300.	.	.	.	.	IE M.	.	.	.	.
	2350.	.	.	.	.	ILE M .	.	.	.	.
	2400.	.	.	.	.	ILE M .	.	.	.	.
	2450.	.	.	.	.	IWE M .	.	.	.	.
	2500.	.	.	.	.	IE M .	.	.	.	.
	2550.	.	.	.	.	ILE M .	.	.	.	.
29.00	2600.	.	.	.	.	IWE M .	.	.	.	.
	2650.	.	.	.	.	IWE M .	.	.	.	.
	2700.	.	.	.	.	ILWE M .	.	.	.	.
	2750.	.	.	.	.	ILE M .	.	.	.	.
	2800.	.	.	.	.	ILE M .	.	.	.	.
	2850.	.	.	.	.	ILE M .	.	.	.	.
	2900.	.	.	.	.	ILWE M .	.	.	.	.
	2950.	.	.	.	.	ILWE M .	.	.	.	.
28.00	3000.	.	.	.	.	ILE M .	.	.	.	.
	3050.	.	.	.	.	I E M .	.	.	.	.
	3100.	.	.	.	.	ILWE M .	.	.	.	.
27.00	3150.	.	.	.	.	ILWE M .	.	.	.	.
	3200.	.	.	.	.	ILE M .	.	.	.	.
	3250.	.	.	.	.	I E M .	.	.	.	.
	3300.	.	.	.	.	IWE M .	.	.	.	.
	3350.	.	.	.	.	ILWE M .	.	.	.	.
	3400.	.	.	.	.	ILWE M .	.	.	.	.
	3450.	.	.	.	.	ILE M .	.	.	.	.
	3500.	.	.	.	.	I.E M .	.	.	.	.
	3550.	.	.	.	.	ILWE M .	.	.	.	.
	3600.	.	.	.	.	ILWE M .	.	.	.	.
26.00	3650.	.	.	.	.	ILE M .	.	.	.	.
	3700.	.	.	.	.	ILE M .	.	.	.	.
	3750.	.	.	.	.	ILE M .	.	.	.	.
	3800.	.	.	.	.	IRWEM	.	.	.	.
	3850.	.	.	.	.	IRWE	.	.	.	.
	3900.	.	.	.	.	ILWE	.	.	.	.
	3950.	.	.	.	.	ILE.	.	.	.	.
	4000.	.	.	.	.	ILE.	.	.	.	.
25.00	4050.	.	.	.	.	ILE.	.	.	.	.
	4100.	.	.	.	.	IMWE.	.	.	.	.
	4150.	.	.	.	.	IRWE.	.	.	.	.
	4200.	.	.	.	.	IRWE.	.	.	.	.
	4250.	.	.	.	.	ILE .	.	.	.	.
	4300.	.	.	.	.	I LEM.	.	.	.	.
	4350.	.	.	.	.	I LEM.	.	.	.	.
24.00	4400.	.	.	.	.	I LE M	.	.	.	.
	4450.	.	.	.	.	I LWE M	.	.	.	.
	4500.	.	.	.	.	I LE M	.	.	.	.
	4550.	.	.	.	.	ILRE M	.	.	.	.
	4600.	.	.	.	.	I LWE M	.	.	.	.
23.00	4650.	.	.	.	.	ILRE M	.	.	.	.
	4700.	.	.	.	.	ILWE M.	.	.	.	.







SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISWS	EG	10*KS	VCH	AREA	.01K
37.000	.00	.00	.00	3162.00	1177.00	3167.36	3167.47	3168.08	132.43	7.64	267.38	102.28
* 37.000	.00	.00	.00	3162.00	2063.00	3168.01	3168.01	3168.71	142.48	8.63	491.18	172.83
* 36.000	450.00	.00	.00	3157.50	1177.00	3161.14	3161.14	3162.72	117.33	10.41	131.40	108.66
* 36.000	450.00	.00	.00	3157.50	2063.00	3163.20	3163.20	3164.54	62.22	10.18	344.81	261.54
* 35.000	200.00	.00	.00	3155.50	1177.00	3160.86	3160.86	3161.45	142.54	7.14	297.99	98.58
* 35.000	200.00	.00	.00	3155.50	2063.00	3161.23	3161.45	3162.15	232.65	9.59	410.38	135.25
* 34.000	350.00	.00	.00	3153.50	1177.00	3156.84	3156.84	3157.34	375.46	7.14	259.81	60.74
* 34.000	350.00	.00	.00	3153.50	2063.00	3157.33	3157.33	3157.94	386.34	8.20	380.93	104.96
* 33.000	250.00	.00	.00	3151.00	1177.00	3152.79	3152.79	3153.17	375.00	5.77	282.61	60.78
* 33.000	250.00	.00	.00	3151.00	2063.00	3153.13	3153.13	3153.66	384.25	6.92	408.97	105.24
* 32.000	250.00	.00	.00	3146.40	1177.00	3149.83	3149.83	3150.66	97.54	8.16	254.59	119.17
* 32.000	250.00	.00	.00	3146.40	2063.00	3150.68	3150.68	3151.53	90.05	9.01	454.36	217.39
* 31.000	370.00	.00	.00	3142.80	1177.00	3145.80	3145.80	3146.36	222.56	5.99	196.62	78.90
* 31.000	370.00	.00	.00	3142.80	2063.00	3146.38	3146.38	3147.07	251.39	6.68	317.41	130.11
* 30.500	60.00	.00	.00	3142.60	1177.00	3145.82	3145.82	3146.60	109.07	9.07	274.23	112.70
* 30.500	60.00	.00	.00	3142.60	2063.00	3146.57	3146.57	3147.54	119.10	10.79	408.16	189.04
* 30.000	340.00	.00	.00	3140.00	1177.00	3141.91	3141.91	3142.47	834.56	6.02	197.80	40.74
* 30.000	340.00	.00	.00	3140.00	2063.00	3142.43	3142.43	3143.18	742.38	7.06	298.73	75.72
* 29.000	325.00	.00	.00	3136.00	1196.00	3138.88	3138.88	3139.45	357.10	6.13	199.49	63.29
* 29.000	325.00	.00	.00	3136.00	2163.00	3139.42	3139.42	3140.27	389.73	7.44	301.41	109.57
* 28.000	400.00	.00	.00	3132.30	1196.00	3135.55	3135.55	3136.34	123.50	8.19	243.03	107.62
* 28.000	400.00	.00	.00	3132.30	2163.00	3136.38	3136.38	3137.36	130.49	9.70	392.65	189.35

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISWS	EG	10*KS	VCH	AREA	.01K
27.000	125.00	.00	.00	3131.00	1196.00	3133.93	3134.12	3134.88	104.36	8.99	262.75	117.08
27.000	125.00	.00	.00	3131.00	2163.00	3134.66	3134.83	3135.82	110.85	10.70	425.16	205.44
* 26.000	500.00	.00	.00	3126.20	1196.00	3129.94	3129.94	3130.51	159.39	7.75	307.41	94.73
* 26.000	500.00	.00	.00	3126.20	2163.00	3130.51	3130.51	3131.22	188.24	9.36	457.71	157.65
* 25.000	400.00	.00	.00	3124.00	1196.00	3127.08	3127.08	3127.69	101.63	6.76	264.96	118.61
* 25.000	400.00	.00	.00	3124.00	2163.00	3127.69	3127.69	3128.48	120.03	8.17	439.84	197.43
* 24.000	350.00	.00	.00	3120.00	2322.00	3124.77	3124.77	3125.50	255.84	7.27	414.52	145.17
* 24.000	350.00	.00	.00	3120.00	4325.00	3125.53	3125.53	3126.45	278.50	8.83	727.22	259.16
* 23.000	280.00	.00	.00	3116.00	2322.00	3120.45	3120.62	3121.62	81.71	9.08	357.11	256.88
* 23.000	280.00	.00	.00	3116.00	4325.00	3121.88	3121.91	3122.95	68.85	9.39	813.65	521.24
* 22.000	287.00	.00	.00	3113.40	2322.00	3117.11	3117.11	3117.67	518.07	6.49	411.21	102.02
* 22.000	287.00	.00	.00	3113.40	4325.00	3117.65	3117.65	3118.56	600.19	8.39	602.16	176.54

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*	21.000	500.00	.00	.00	3109.80	2322.00	3113.72	3113.72	3114.36	101.34	7.12	535.31	230.65
*	21.000	500.00	.00	.00	3109.80	4325.00	3114.36	3114.36	3115.22	115.74	8.69	851.11	402.02
*	20.000	500.00	.00	.00	3104.50	2322.00	3109.30	3109.30	3110.10	177.80	8.05	425.39	174.14
*	20.000	500.00	.00	.00	3104.50	4325.00	3110.17	3110.17	3111.16	192.69	9.68	700.38	311.57
*	19.000	360.00	.00	.00	3101.00	2322.00	3105.21	3105.21	3105.89	412.63	6.92	383.36	114.31
*	19.000	360.00	.00	.00	3101.00	4325.00	3106.06	3106.06	3106.82	320.41	7.72	710.53	241.62
*	18.000	350.00	.00	.00	3098.30	2322.00	3102.46	3102.46	3103.06	120.51	8.08	576.88	211.52
*	18.000	350.00	.00	.00	3098.30	4325.00	3103.16	3103.16	3103.93	148.03	10.01	902.91	355.47
*	17.000	425.00	.00	.00	3092.30	2322.00	3096.87	3096.87	3097.50	165.64	8.55	538.34	180.42
*	17.000	425.00	.00	.00	3092.30	4325.00	3097.52	3097.52	3098.36	202.35	10.63	826.86	304.05
*	16.000	430.00	.00	.00	3087.00	2322.00	3090.71	3090.71	3091.67	572.64	7.89	304.61	97.03
*	16.000	430.00	.00	.00	3087.00	4325.00	3092.04	3092.04	3092.81	404.05	7.32	646.65	215.16
*	15.000	500.00	.00	.00	3082.50	2322.00	3086.58	3086.58	3087.41	58.48	8.11	547.46	303.63
*	15.000	500.00	.00	.00	3082.50	4325.00	3087.47	3087.47	3088.52	68.46	10.04	947.91	522.71
*	14.000	325.00	.00	.00	3078.20	2366.00	3082.14	3082.34	3082.91	595.07	7.10	367.08	96.99
*	14.000	325.00	.00	.00	3078.20	4325.00	3082.74	3082.92	3083.61	506.00	8.08	663.50	192.27
*	13.000	430.00	.00	.00	3074.40	2366.00	3079.10	3079.10	3079.68	270.72	7.86	524.71	143.80
*	13.000	430.00	.00	.00	3074.40	4325.00	3079.61	3079.61	3080.39	338.78	9.71	764.47	234.98
*	12.000	415.00	.00	.00	3069.30	2488.00	3073.36	3073.36	3073.88	403.94	6.34	507.83	123.79
*	12.000	415.00	.00	.00	3069.30	4532.00	3074.03	3074.03	3074.47	404.50	6.17	900.57	225.34
*	11.000	300.00	.00	.00	3066.00	2488.00	3070.03	3070.03	3070.45	520.75	5.70	489.24	109.03
*	11.000	300.00	.00	.00	3066.00	4532.00	3070.47	3070.47	3071.17	673.70	7.03	680.33	174.60

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISWS	EG	10*K5	VCH	AREA	.01K
*	10.000	400.00	.00	.00	3062.50	2488.00	3066.71	3066.71	3067.60	82.16	10.06	588.97	274.48
*	10.000	400.00	.00	.00	3062.50	4532.00	3067.63	3067.63	3068.73	92.43	12.20	974.31	471.39
*	9.000	285.00	.00	.00	3059.40	2488.00	3063.08	3063.08	3063.86	551.14	7.11	356.30	105.98
*	9.000	285.00	.00	.00	3059.40	4532.00	3063.93	3063.93	3064.87	489.08	7.89	593.34	204.93
*	8.000	275.00	.00	.00	3056.80	2488.00	3060.64	3060.64	3061.40	181.95	7.28	424.42	184.45
*	8.000	275.00	.00	.00	3056.80	4532.00	3061.43	3061.43	3062.41	188.63	8.63	691.46	329.98
*	7.000	400.00	.00	.00	3052.00	2488.00	3055.80	3055.80	3056.81	478.63	8.19	318.03	113.72
*	7.000	400.00	.00	.00	3052.00	4532.00	3057.08	3057.08	3057.98	264.42	8.17	711.86	278.71
*	6.000	350.00	.00	.00	3048.00	2488.00	3051.98	3051.98	3052.97	414.78	8.31	332.52	122.16
*	6.000	350.00	.00	.00	3048.00	4532.00	3053.06	3053.06	3054.18	327.65	9.30	604.85	250.37
*	5.000	300.00	.00	.00	3044.00	2488.00	3048.57	3048.57	3049.36	58.77	8.65	649.88	324.55
*	5.000	300.00	.00	.00	3044.00	4532.00	3049.35	3049.35	3050.44	73.68	10.91	977.13	527.99
*	4.000	250.00	.00	.00	3042.00	2488.00	3046.57	3046.69	3047.44	101.39	9.67	607.78	247.09
*	4.000	250.00	.00	.00	3042.00	4532.00	3047.46	3047.46	3048.32	98.76	10.82	1049.85	456.04

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	3.000	300.00	.00	.00	3038.00	2488.00	3041.86	3042.43	3043.56	148.44	11.76	378.94	204.21
	3.000	300.00	.00	.00	3038.00	4532.00	3042.93	3043.36	3044.65	135.24	13.04	717.48	389.71
*	2.000	390.00	.00	.00	3033.00	2488.00	3037.22	3037.22	3037.89	432.89	7.67	432.43	119.58
*	2.000	390.00	.00	.00	3033.00	4532.00	3037.94	3037.94	3038.80	403.34	8.95	690.19	225.66
*	1.000	200.00	.00	.00	3030.50	2488.00	3034.78	3034.78	3035.39	273.92	7.47	500.76	150.33
*	1.000	200.00	.00	.00	3030.50	4532.00	3035.35	3035.35	3036.23	346.44	9.46	722.36	243.49

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FILE NAME: 3308HCS1.IN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	37.000	1177.00	3167.36	.00	.00	-.14	330.83	.00
*	37.000	2063.00	3168.01	.65	.00	-.09	360.21	.00
*	36.000	1177.00	3161.14	.00	-6.22	.00	45.00	450.00
*	36.000	2063.00	3163.20	2.05	-4.81	.00	200.18	450.00
*	35.000	1177.00	3160.86	.00	-.29	.00	296.25	200.00
*	35.000	2063.00	3161.23	.37	-1.97	.00	311.05	200.00
*	34.000	1177.00	3156.84	.00	-4.01	.00	245.97	350.00
*	34.000	2063.00	3157.33	.49	-3.90	.00	252.87	350.00
*	33.000	1177.00	3152.79	.00	-4.05	.00	366.11	250.00
*	33.000	2063.00	3153.13	.34	-4.20	.00	374.81	250.00
*	32.000	1177.00	3149.83	.00	-2.96	.00	191.89	250.00
*	32.000	2063.00	3150.68	.85	-2.45	.00	251.01	250.00
*	31.000	1177.00	3145.80	.00	-4.03	.00	176.04	370.00
*	31.000	2063.00	3146.38	.58	-4.30	.00	225.60	370.00
*	30.500	1177.00	3145.82	.00	.02	.00	170.65	60.00
*	30.500	2063.00	3146.57	.74	.18	.00	190.40	60.00
*	30.000	1177.00	3141.91	.00	-3.92	.00	181.16	340.00
*	30.000	2063.00	3142.43	.52	-4.14	.00	202.54	340.00
*	29.000	1196.00	3138.88	.00	-3.03	.00	181.32	325.00
*	29.000	2163.00	3139.42	.55	-3.01	.00	190.90	325.00
*	28.000	1196.00	3135.55	.00	-3.32	.00	163.34	400.00
*	28.000	2163.00	3136.38	.83	-3.04	.00	192.74	400.00
	27.000	1196.00	3133.93	.00	-1.62	.00	206.96	125.00
	27.000	2163.00	3134.66	.73	-1.72	.00	229.76	125.00
*	26.000	1196.00	3129.94	.00	-3.99	.00	251.55	500.00
*	26.000	2163.00	3130.51	.57	-4.15	.00	266.89	500.00
*	25.000	1196.00	3127.08	.00	-2.86	.00	278.51	400.00

*Handwritten mark*



*	25.000	2163.00	3127.69	.61	-2.82	.00	294.29	400.00
*	24.000	2322.00	3124.77	.00	-2.31	.00	340.91	350.00
*	24.000	4325.00	3125.53	.76	-2.16	.00	482.22	350.00
*	23.000	2322.00	3120.45	.00	-4.31	.00	229.83	280.00
*	23.000	4325.00	3121.88	1.42	-3.65	.00	549.04	280.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	22.000	2322.00	3117.11	.00	-3.34	.00	334.89	287.00
*	22.000	4325.00	3117.65	.54	-4.23	.00	377.76	287.00
*	21.000	2322.00	3113.72	.00	-3.40	.00	476.18	500.00
*	21.000	4325.00	3114.36	.65	-3.28	.00	490.10	500.00
*	20.000	2322.00	3109.30	.00	-4.42	.00	293.53	500.00
*	20.000	4325.00	3110.17	.87	-4.20	.00	339.52	500.00
*	19.000	2322.00	3105.21	.00	-4.09	.00	300.13	360.00
*	19.000	4325.00	3106.06	.85	-4.11	.00	456.27	360.00
*	18.000	2322.00	3102.46	.00	-2.74	.00	462.31	350.00
*	18.000	4325.00	3103.16	.70	-2.90	.00	474.84	350.00
*	17.000	2322.00	3096.87	.00	-5.59	.00	423.11	425.00
*	17.000	4325.00	3097.52	.65	-5.64	.00	458.85	425.00
*	16.000	2322.00	3090.71	.00	-6.16	.00	191.13	430.00
*	16.000	4325.00	3092.04	1.33	-5.48	.00	332.57	430.00
*	15.000	2322.00	3086.58	.00	-4.14	.00	427.74	500.00
*	15.000	4325.00	3087.47	.89	-4.57	.00	470.54	500.00
*	14.000	2366.00	3082.14	.00	-4.44	.00	483.78	325.00
*	14.000	4325.00	3082.74	.60	-4.73	.00	518.39	325.00
*	13.000	2366.00	3079.10	.00	-3.04	.00	450.30	430.00
*	13.000	4325.00	3079.61	.51	-3.14	.00	493.10	430.00
*	12.000	2488.00	3073.36	.00	-5.74	.00	553.53	415.00
*	12.000	4532.00	3074.03	.67	-5.58	.00	665.28	415.00
*	11.000	2488.00	3070.03	.00	-3.33	.00	408.65	300.00
*	11.000	4532.00	3070.47	.45	-3.55	.00	449.62	300.00
*	10.000	2488.00	3066.71	.00	-3.32	.00	355.38	400.00
*	10.000	4532.00	3067.63	.92	-2.85	.00	481.94	400.00
*	9.000	2488.00	3063.08	.00	-3.63	.00	244.82	285.00
*	9.000	4532.00	3063.93	.85	-3.70	.00	314.30	285.00
*	8.000	2488.00	3060.64	.00	-2.44	.00	322.47	275.00
*	8.000	4532.00	3061.43	.79	-2.50	.00	349.87	275.00
*	7.000	2488.00	3055.80	.00	-4.84	.00	163.96	400.00

23

*	7.000	4532.00	3057.08	1.28	-4.35	.00	463.84	400.00
*	6.000	2488.00	3051.98	.00	-3.83	.00	164.25	350.00
*	6.000	4532.00	3053.06	1.09	-4.02	.00	295.02	350.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	5.000	2488.00	3048.57	.00	-3.40	.00	416.34	300.00
*	5.000	4532.00	3049.35	.78	-3.71	.00	428.34	300.00
	4.000	2488.00	3046.57	.00	-2.01	.00	475.15	250.00
*	4.000	4532.00	3047.46	.90	-1.89	.00	511.88	250.00
	3.000	2488.00	3041.86	.00	-4.70	.00	241.70	300.00
	3.000	4532.00	3042.93	1.07	-4.53	.00	335.18	300.00
*	2.000	2488.00	3037.22	.00	-4.64	.00	328.61	390.00
*	2.000	4532.00	3037.94	.72	-4.99	.00	389.63	390.00
*	1.000	2488.00	3034.78	.00	-2.44	.00	381.69	200.00
*	1.000	4532.00	3035.35	.56	-2.59	.00	404.52	200.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 37.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 36.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 36.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 36.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 36.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 36.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 36.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 35.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 35.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 35.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 35.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 34.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 34.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 34.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 34.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 34.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 34.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 33.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 33.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 33.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 33.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

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CAUTION SECNO=	33.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	33.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO=	30.500	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=	30.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY

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WARNING SECNO=	23.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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CAUTION SECNO=	21.000	PROFILE=	2	CRITICAL DEPTH ASSUMED

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CAUTION SECNO=	15.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
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WARNING SECNO=	14.000	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=	13.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
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CAUTION SECNO=	13.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO=	12.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	12.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	12.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	12.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO=	11.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	11.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	11.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	11.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	11.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	10.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	10.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	10.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO=	10.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	10.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
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CAUTION SECNO=	8.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 8.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 7.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
 CAUTION SECNO= 7.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
 CAUTION SECNO= 7.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
 CAUTION SECNO= 7.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
 CAUTION SECNO= 7.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
 CAUTION SECNO= 7.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 6.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
 CAUTION SECNO= 6.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
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 CAUTION SECNO= 6.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 5.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
 CAUTION SECNO= 5.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
 CAUTION SECNO= 5.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
 CAUTION SECNO= 5.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

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CAUTION SECNO= 5.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
 CAUTION SECNO= 5.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 4.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
 CAUTION SECNO= 4.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
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 CAUTION SECNO= 1.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
 CAUTION SECNO= 1.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

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*****
* WATER SURFACE PROFILES *
* VERSION OF SEPTEMBER 1988 *
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* *
* RUN DATE 1/ 1/80 TIME 2:17:29 *
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*****
* U.S. ARMY CORPS OF ENGINEERS *
* THE HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET, SUITE D *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
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END OF BANNER  
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PAGE 1

THIS RUN EXECUTED 1/ 1/80 2:17:30

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*****
HEC2 RELEASE DATED SEPT 88
*****

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T1 27 MILE WASH CROSS SECTIONS 38 THROUGH 52  
T2 10 YEAR FLOW - SUPERCRITICAL RUN  
T3 FILE NAME: 3308HS2A.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	1	0.0255	0	0	0	3139.8	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	121	229							
NH	3	0.07	171	0.024	176	0.07	310			
X1	52.0	13	170	180	260	350	300			
GR	3146	0	3144	23	3144	92	3142	118	3142	152
GR	3142	164	3140	170	3139	171	3139	176	3140	180
GR	3142	194	3144	220	3146	310				
QT	2	352	670							
NH	3	0.08	162	0.024	169	0.08	357			
X1	51.0	10	160	190	420	340	375			
GR	3142	0	3140	70	3138	81	3136	160	3135	162
GR	3135	169	3136	190	3138	213	3140	260	3142	357
NH	3	0.08	155	0.024	161	0.08	276			
X1	50.0	17	130	187	270	310	300			

GR	3136	0	3134	37	3132.5	59	3142.5	60	3142.5	90
GR	3132.5	91	3132	115	3130	130	3128	148	3127.5	155
GR	3127.5	161	3128	168	3130	187	3132	214	3142	215
GR	3142	275	3136	276						
NH	3	0.08	57	0.024	63	0.08	201			
X1	49.0	10	49	72	500	470	470			
GR	3130	0	3128	25	3126	44	3124	49	3122	57
GR	3122	63	3124	72	3126	84	3128	112	3150	201
NH	3	0.08	76	0.024	80	0.08	150			
X1	48.0	12	72	84	320	360	340			
GR	3124	0	3122	40	3120	50	3118	70	3116	72
GR	3114.6	76	3114.6	80	3116	84	3118	90	3120	122
GR	3122	131	3124	150						
NH	3	0.08	102	0.024	108	0.08	147			
X1	47.0	12	100	110	470	480	475			
GR	3120	0	3118	11	3116	45	3114	97	3112	100
GR	3110.7	102	3110.7	108	3112	110	3114	112	3116	130
GR	3118	140	3120	147						

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PAGE 2

NH	3	0.08	104	0.024	110	0.08	170			
X1	46.0	12	102	112	400	370	375			
GR	3116	0	3112	35	3110	42	3108	78	3106	102
GR	3105	104	3105	110	3106	112	3108	119	3110	148
GR	3112	154	3116	170						
NH	3	0.08	38	0.024	45	0.08	153			
X1	45.0	14	34	48	140	240	200			
GR	3110	0	3108	7	3106	23	3104	30	3102	32
GR	3100	34	3099.3	38	3099.3	45	3100	48	3102	50
GR	3104	88	3106	110	3108	115	3110	153		
QT	2	433	843							
NH	3	0.08	110	0.024	117	0.08	214			
X1	44.0	12	110	117	340	360	350			
GR	3108	0	3106	10	3104	15	3102	25	3100	98
GR	3098.3	110	3098.3	117	3100	125	3102	154	3104	183
GR	3106	207	3108	214						
NH	7	0.08	24	0.024	31	0.08	73	0.024	77	0.08
NH	83	0.024	90	0.08	235					
X1	43.0	20	20	100	350	200	290			
GR	3106	0	3104	4	3102	10	3100	13	3098	20
GR	3096	24	3096	31	3097	37	3097	64	3096	70
GR	3095	73	3095	77	3095	83	3095	90	3096	100
GR	3098	125	3100	140	3102	203	3104	228	3106	235
NH	3	0.08	78	0.024	88	0.08	230			
X1	42.5	10	72	93	210	320	300			
GR	3098	0	3096	25	3094	45	3092	72	3090.4	78
GR	3090.4	88	3092	93	3094	182	3096	196	3098	230
NH	3	0.08	62	0.024	74	0.08	220			
X1	42.0	12	62	74	210	220	220			



GR	3098	0	3094	18	3092	26	3090	32	3088	47
GR	3087	62	3087	74	3088	88	3090	149	3092	186
GR	3094	203	3098	220						
NH	3	0.08	230	0.024	238	0.08	290			
X1	41.0	12	230	238	300	330	375			
GR	3096	0	3092	20	3090	37	3088	50	3086	75
GR	3085	230	3085	238	3086	250	3088	261	3090	270
GR	3092	277	3096	290						
NH	3	0.08	52	0.024	59	0.08	247			
X1	40.0	12	48	59	280	400	350			
GR	3092	0	3086	26	3084	34	3082	40	3080	48
GR	3078.2	52	3078.2	57	3080	59	3082	90	3084	218
GR	3086	230	3092	247						

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PAGE 3

NH	5	0.08	146	0.024	153	0.08	183	0.024	185	0.08
NH	258									
X1	39.0	16	146	185	190	90	140			
GR	3088	0	3082	20	3080	28	3080	42	3078	58
GR	3077	140	3076	146	3076	153	3077	156	3077	180
GR	3076.3	183	3076.3	185	3078	200	3080	210	3082	218
GR	3088	258								

NH	5	0.08	160	0.024	167	0.08	220	0.024	221	0.08
NH	350									
X1	38.0	16	160	221	250	130	210			
GR	3082	0	3080	32	3078	52	3076	101	3076	136
GR	3076	151	3074.2	160	3074.2	167	3076	172	3076	212
GR	3075	220	3075	221	3076	262	3078	302	3080	324
GR	3082	350								

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PAGE 4

SECNO	DEPTH	CWSEL	CRISW	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

\*PROF 1

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 52.000

3720 CRITICAL DEPTH ASSUMED

52.00	1.94	3140.94	3140.94	3139.80	3141.57	.64	.00	.00	3140.00
121.	3.	112.	6.	1.	17.	3.	0.	0.	3140.00
.00	2.05	6.63	2.11	.070	.051	.070	.000	3139.00	167.19
.027586	0.	0.	0.	0	17	6	.00	19.37	186.56

0

1490 NH CARD USED

\*SECNO 51.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

24

3720 CRITICAL DEPTH ASSUMED

51.00	1.98	3136.98	3136.98	.00	3137.48	.49	11.46	11.82	3136.00
352.	46.	292.	13.	19.	48.	6.	0.	0.	3136.00
.02	2.41	6.08	2.41	.080	.069	.080	.000	3135.00	121.10
.043486	260.	300.	350.	20	5	0	.00	80.23	201.33

0

1490 NH CARD USED

\*SECNO 50.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

50.00	1.98	3129.48	3129.48	.00	3130.09	.60	13.54	6.72	3130.00
352.	0.	352.	0.	0.	56.	0.	1.	1.	3130.00
.03	.00	6.24	.00	.000	.046	.000	.000	3127.50	134.66
.030121	420.	375.	340.	20	5	0	.00	47.42	182.08

0

1490 NH CARD USED

\*SECNO 49.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

49.00	2.71	3124.71	3124.71	.00	3125.61	.90	11.55	5.77	3124.00
352.	1.	348.	3.	1.	45.	2.	1.	1.	3124.00
.04	2.01	7.65	2.09	.080	.068	.080	.000	3122.00	47.21
.050984	270.	300.	310.	20	11	0	.00	29.07	76.29

0

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PAGE 5

SECNO	DEPTH	CWSEL	CRISW	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	

1490 NH CARD USED

\*SECNO 48.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

48.00	3.50	3118.10	3118.10	.00	3119.22	1.12	19.95	10.72	3116.00
352.	7.	322.	24.	2.	36.	7.	2.	1.	3116.00
.06	2.91	8.84	3.57	.080	.065	.080	.000	3114.60	69.01
.035840	500.	470.	470.	20	11	0	.00	22.58	91.59

0

1490 NH CARD USED

\*SECNO 47.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

47.00	3.91	3114.61	3114.61	.00	3115.71	1.09	8.66	4.94	3112.00
352.	21.	320.	11.	10.	37.	5.	2.	2.	3112.00
.07	2.14	8.77	2.23	.080	.053	.080	.000	3110.70	81.11
.019005	320.	340.	360.	20	8	0	.00	36.39	117.50

0

1490 NH CARD USED

\*SECNO 46.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

242

3720 CRITICAL DEPTH ASSUMED

46.00	3.21	3108.21	3108.21	.00	3108.94	.74	9.11	5.00	3106.00
352.	85.	243.	24.	29.	30.	9.	3.	2.	3106.00
.09	2.89	8.07	2.78	.080	.052	.080	.000	3105.00	74.26
.019376	470.	475.	480.	20	15	0	.00	47.75	122.01

0

1490 NH CARD USED

\*SECNO 45.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

45.00	2.88	3102.18	3102.18	.00	3103.37	1.19	9.05	3.45	3100.00
352.	7.	338.	7.	2.	38.	3.	3.	2.	3100.00
.10	2.85	8.92	2.61	.080	.056	.080	.000	3099.30	31.82
.030335	400.	375.	370.	20	11	0	.00	21.69	53.50

0

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 44.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

44.00	3.38	3101.68	3101.68	.00	3102.48	.80	1.77	1.98	3098.30
433.	132.	230.	71.	82.	24.	41.	4.	3.	3098.30
.11	1.61	9.73	1.76	.080	.024	.080	.000	3098.30	36.81
.004876	140.	200.	240.	20	11	0	.00	112.50	149.31

0

1490 NH CARD USED

\*SECNO 43.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

43.00	1.45	3096.45	3097.11	.00	3098.12	1.68	4.09	.26	3098.00
433.	0.	431.	2.	0.	41.	1.	4.	3.	3096.00
.12	.00	10.41	1.64	.000	.033	.080	.000	3095.00	23.11
.057769	340.	350.	360.	6	21	0	.00	48.81	105.57

0

1490 NH CARD USED

\*SECNO 42.500

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

24

42.50	2.82	3093.22	3093.22	.00	3093.82	.60	9.75	8.12	3092.00
433.	20.	346.	67.	10.	50.	33.	5.	4.	3092.00
.13	2.01	6.87	2.01	.080	.058	.080	.000	3090.40	55.54
.022695	350.	290.	200.	20	14	0	.00	91.72	147.26

0  
1

1/ 1/80      2:17:30

SECNO	DEPTH	CWSEL	CRISW	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	

1490 NH CARD USED

\*SECNO 42.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

42.00	2.34	3089.34	3089.43	.00	3090.20	.86	3.54	.08	3087.00
433.	74.	264.	95.	34.	28.	53.	6.	4.	3087.00
.15	2.17	9.41	1.80	.080	.024	.080	.000	3087.00	36.98
.007456	210.	300.	320.	3	9	0	.00	91.75	128.73

0

1490 NH CARD USED

\*SECNO 41.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

41.00	1.16	3086.16	3086.43	.00	3087.07	.91	3.12	.01	3085.00
433.	285.	125.	22.	103.	9.	8.	6.	5.	3085.00
.16	2.78	13.51	2.75	.080	.024	.080	.000	3085.00	72.98
.038975	210.	220.	220.	7	14	0	.00	177.90	250.89

0

1490 NH CARD USED

\*SECNO 40.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

40.00	4.02	3082.22	3082.22	.00	3082.97	.75	7.60	6.66	3080.00
433.	24.	312.	97.	10.	39.	39.	7.	6.	3080.00
.17	2.47	8.04	2.46	.080	.048	.080	.000	3078.20	39.34
.014339	300.	375.	330.	20	20	0	.00	64.72	104.06

0

1490 NH CARD USED

\*SECNO 39.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

39.00	2.05	3078.05	3078.05	.00	3078.44	.39	5.18	3.08	3076.00
433.	100.	304.	29.	55.	52.	14.	8.	7.	3076.30
.19	1.82	5.84	2.15	.080	.038	.080	.000	3076.00	57.57
.015512	280.	350.	400.	20	8	0	.00	142.70	200.27

0

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SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	OLOSS	BANK	ELEV
-------	-------	-------	-------	-------	----	----	----	-------	------	------

244

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

1490 NH CARD USED

\*SECNO 38.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

38.00	2.27	3076.47	3076.47	.00	3076.78	.32	2.16	1.93	3074.20
433.	68.	276.	90.	38.	51.	42.	8.	7.	3075.00
.20	1.77	5.45	2.14	.080	.029	.080	.000	3074.20	89.55
.014810	190.	140.	90.	20	8	0	.00	181.79	271.35

0

1

PROFILE FOR STREAM FILE NAME: 3308HS2A.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3074.	3084.	3094.	3104.	3114.	3124.	3134.	3144.	3154.	3164.
SECNO	CUMDIS									
52.00	0.	.	.	.	.	.	.	ILE	M	.
	50.	.	.	.	.	.	.	ILWE	M	.
	100.	.	.	.	.	.	.	ILWE	M	.
	150.	.	.	.	.	.	.	ILE	M	.
	200.	.	.	.	.	.	.	ILWE	M	.
	250.	.	.	.	.	.	.	ILWE	M	.
51.00	300.	.	.	.	.	.	.	ILE	M	.
	350.	.	.	.	.	.	.	ILE	M	.
	400.	.	.	.	.	.	.	ILE	M	.
	450.	.	.	.	.	.	.	ILE	M	.
	500.	.	.	.	.	.	.	I E	M	.
	550.	.	.	.	.	.	.	I E	M	.
	600.	.	.	.	.	.	.	I E	M	.
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50.00	700.	.	.	.	.	.	.	I WE	M	.
	750.	.	.	.	.	.	.	I WE	M	.
	800.	.	.	.	.	.	.	I E	M	.
	850.	.	.	.	.	.	.	I WE	M	.
	900.	.	.	.	.	.	.	I WE	M	.
	950.	.	.	.	.	.	.	I WE	M	.
49.00	1000.	.	.	.	.	.	.	I LE	M	.
	1050.	.	.	.	.	.	.	I WE	M	.
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	1150.	.	.	.	.	.	.	I WE	M	.
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	1400.	.	.	.	.	.	.	IL WE	M	.
48.00	1450.	.	.	.	.	.	.	I L WE	M	.
	1500.	.	.	.	.	.	.	IL WE	M	.
	1550.	.	.	.	.	.	.	I L WE	M	.
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47.00	1800.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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	1900.	.	.	.	I L WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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46.00	2300.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2350.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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45.00	2600.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2650.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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	3050.	.	.	.	IRWCE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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	3150.	.	.	.	IRWCE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
43.00	3200.	.	.	.	IRWCE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3250.	.	.	.	IRWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3300.	.	.	.	IRWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3350.	.	.	.	I RWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3400.	.	.	.	IRWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3450.	.	.	.	IRWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
42.50	3500.	.	.	.	I LWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3550.	.	.	.	ILWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3600.	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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	3700.	.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3750.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
42.00	3800.	.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	3850.	.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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41.00	4000.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4050.	.	.	.	IWE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4100.	.	.	.	I WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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	4200.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4250.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4300.	.	.	.	I L WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4350.	.	.	.	I L WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
40.00	4400.	.	.	.	I L WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4450.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4500.	.	.	.	I L E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4550.	.	.	.	IL WE M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	4600.	.	.	.	IL E M	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

	4650.	. IL WE	. M	.	.	.	.	.	.	.	.	.	.
	4700.	. IRWE	. M	.	.	.	.	.	.	.	.	.	.
39.00	4750.	. I E	. M	.	.	.	.	.	.	.	.	.	.
	4800.	.IRWE	. M	.	.	.	.	.	.	.	.	.	.
	4850.	.I E	M	.	.	.	.	.	.	.	.	.	.
38.00	4900.	IRWE	M .	.	.	.	.	.	.	.	.	.	.

1  
1/ 1/80      2:17:30

T1      27 MILE WASH      CROSS SECTIONS 38 THROUGH 52  
T2      SUPERCRITICAL RUN  
T3      100 YEAR FLOW

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	1	0.0255	0	0	0	3139.8	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
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15

1  
1/ 1/80      2:17:30

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

\*PROF 2

CCHV=      .300 CEHV=      .500  
1490 NH CARD USED  
\*SECNO 52.000  
52.00      2.62      3141.62      3141.68      3139.80      3142.48      .86      .00      .00      3140.00  
229.      11.      191.      27.      4.      24.      9.      0.      0.      3140.00  
.00      2.86      8.04      2.94      .070      .051      .070      .000      3139.00      165.13  
.025732      0.      0.      0.      0      20      4      .00      26.22      191.35

0  
1490 NH CARD USED  
\*SECNO 51.000  
3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY  
3720 CRITICAL DEPTH ASSUMED  
51.00      2.57      3137.57      3137.57      .00      3138.18      .61      10.55      10.47      3136.00  
670.      154.      471.      45.      49.      66.      14.      1.      0.      3136.00  
.01      3.16      7.17      3.15      .080      .069      .080      .000      3135.00      97.88  
.039813      260.      300.      350.      20      8      0      .00      110.21      208.09

0  
1490 NH CARD USED  
\*SECNO 50.000  
3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY  
3720 CRITICAL DEPTH ASSUMED

50.00	2.65	3130.15	3130.15	.00	3130.97	.83	13.59	6.97	3130.00
670.	0.	670.	0.	0.	92.	0.	2.	1.	3130.00
.03	.03	7.29	.59	.080	.050	.080	.000	3127.50	128.90
.032463	420.	375.	340.	20	8	0	.00	60.09	188.99

0

1490 NH CARD USED

\*SECNO 49.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

49.00	3.75	3125.75	3125.75	.00	3126.95	1.20	10.86	5.50	3124.00
670.	12.	626.	31.	4.	69.	9.	2.	2.	3124.00
.04	3.26	9.04	3.39	.080	.068	.080	.000	3122.00	44.63
.040646	270.	300.	310.	20	11	0	.00	37.88	82.50

0

1

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PAGE 11

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 48.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

48.00	4.92	3119.52	3119.52	.00	3120.58	1.06	14.46	10.15	3116.00
670.	49.	499.	122.	17.	53.	34.	3.	2.	3116.00
.05	2.95	9.34	3.63	.080	.065	.080	.000	3114.60	54.80
.023984	500.	470.	470.	20	11	0	.00	59.51	114.32

0

1490 NH CARD USED

\*SECNO 47.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

47.00	5.40	3116.10	3116.10	.00	3116.92	.82	5.56	.12	3112.00
670.	159.	448.	64.	67.	51.	26.	4.	3.	3112.00
.07	2.38	8.71	2.45	.080	.053	.080	.000	3110.70	43.29
.011861	320.	340.	360.	20	8	0	.00	87.21	130.50

0

1490 NH CARD USED

\*SECNO 46.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

46.00	4.08	3109.08	3109.08	.00	3109.95	.86	7.04	.03	3106.00
670.	227.	369.	74.	61.	39.	23.	6.	4.	3106.00
.09	3.75	9.50	3.21	.080	.052	.080	.000	3105.00	58.51
.019133	470.	475.	480.	20	19	0	.00	76.19	134.70

0

1490 NH CARD USED

\*SECNO 45.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

24



45.00	4.32	3103.62	3103.62	.00	3104.90	1.27	7.53	4.42	3100.00
670.	24.	567.	79.	7.	58.	30.	7.	4.	3100.00
.10	3.59	9.77	2.62	.080	.056	.080	.000	3099.30	30.38
.020641	400.	375.	370.	20	8	0	.00	50.46	80.83

0  
1

1/ 1/80      2:17:30

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	

1490 NH CARD USED

\*SECNO 44.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

44.00	4.32	3102.62	3102.62	.00	3103.48	.86	1.56	1.59	3098.30
843.	333.	344.	166.	161.	30.	78.	7.	5.	3098.30
.11	2.07	11.36	2.13	.080	.024	.080	.000	3098.30	21.88
.004781	140.	200.	240.	20	5	0	.00	141.18	163.06

0

1490 NH CARD USED

\*SECNO 43.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

43.00	2.03	3097.03	3097.63	.00	3099.13	2.10	3.98	.37	3098.00
843.	0.	824.	19.	0.	70.	7.	9.	5.	3096.00
.12	.00	11.76	2.79	.000	.027	.080	.000	3095.00	21.93
.054605	340.	350.	360.	6	14	0	.00	90.98	112.92

0

1490 NH CARD USED

\*SECNO 42.500

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

42.50	3.65	3094.05	3094.05	.00	3094.66	.61	8.37	8.14	3092.00
843.	75.	520.	248.	28.	68.	94.	9.	6.	3092.00
.13	2.64	7.67	2.65	.080	.058	.080	.000	3090.40	44.49
.019009	350.	290.	200.	20	14	0	.00	137.87	182.36

0

1490 NH CARD USED

\*SECNO 42.000

1

1/ 1/80      2:17:30

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	

24

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

42.00	3.22	3090.22	3090.36	.00	3091.30	1.09	3.21	.14	3087.00
843.	156.	439.	248.	59.	39.	113.	11.	7.	3087.00
.14	2.65	11.36	2.20	.080	.024	.080	.000	3087.00	31.35
.007089	210.	300.	320.	3	11	0	.00	121.67	153.02

0

1490 NH CARD USED

\*SECNO 41.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

41.00	1.43	3086.43	3086.87	.00	3087.89	1.47	3.30	.11	3085.00
843.	589.	208.	46.	144.	11.	12.	12.	8.	3085.00
.15	4.08	18.23	3.98	.080	.024	.080	.000	3085.00	69.70
.054110	210.	220.	220.	6	11	0	.00	182.64	252.33

0

1490 NH CARD USED

\*SECNO 40.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

40.00	4.97	3083.17	3083.17	.00	3083.97	.80	8.30	9.00	3080.00
843.	66.	460.	317.	19.	49.	111.	13.	9.	3080.00
.17	3.40	9.34	2.84	.080	.048	.080	.000	3078.20	36.48
.014068	300.	375.	330.	20	20	0	.00	128.58	165.06

0

1490 NH CARD USED

\*SECNO 39.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

39.00	2.50	3078.50	3078.50	.00	3079.07	.57	5.76	3.37	3076.00
843.	264.	514.	65.	95.	69.	21.	14.	10.	3076.30
.18	2.79	7.40	3.11	.080	.041	.080	.000	3076.00	54.01
.019810	280.	350.	400.	20	8	0	.00	148.49	202.50

0

1

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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

1490 NH CARD USED

\*SECNO 38.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

38.00	2.60	3076.80	3076.80	.00	3077.28	.47	3.08	2.52	3074.20
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28

843.	169.	485.	188.	63.	71.	60.	15.	11.	3075.00
.19	2.67	6.83	3.14	.080	.036	.080	.000	3074.20	81.33
.022705	190.	140.	90.	20	8	0	.00	196.73	278.06

0

1

PROFILE FOR STREAM 100 YEAR FLOW

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3074.	3084.	3094.	3104.	3114.	3124.	3134.	3144.	3154.	3164.
SECNO	CUMDIS									
52.00	0.	.	.	.	.	.	.	ILWE . M	.	.
	50.	.	.	.	.	.	.	IL WE .M	.	.
	100.	.	.	.	.	.	.	IL WE M	.	.
	150.	.	.	.	.	.	.	ILWE M	.	.
	200.	.	.	.	.	.	.	IL E M.	.	.
	250.	.	.	.	.	.	.	.IL WE M .	.	.
51.00	300.	.	.	.	.	.	.	.ILWE M .	.	.
	350.	.	.	.	.	.	.	ILWE M .	.	.
	400.	.	.	.	.	.	.	ILWE M .	.	.
	450.	.	.	.	.	.	.	ILWE M	.	.
	500.	.	.	.	.	.	.	I WE M	.	.
	550.	.	.	.	.	.	.	I WE. M	.	.
	600.	.	.	.	.	.	.	I WE . M	.	.
	650.	.	.	.	.	.	.	I WE . M	.	.
50.00	700.	.	.	.	.	.	.	I WE . M	.	.
	750.	.	.	.	.	.	.	.I WE .M	.	.
	800.	.	.	.	.	.	.	.I WE M	.	.
	850.	.	.	.	.	.	.	.I LWE M.	.	.
	900.	.	.	.	.	.	.	I LWE M .	.	.
	950.	.	.	.	.	.	.	I.LWE M .	.	.
49.00	1000.	.	.	.	.	.	.	I L WE M	.	.
	1050.	.	.	.	.	.	.	I L.WE M	.	.
	1100.	.	.	.	.	.	.	I L WE M	.	.
	1150.	.	.	.	.	.	.	I L WE M	.	.
	1200.	.	.	.	.	.	.	IL WE M	.	.
	1250.	.	.	.	.	.	.	I L WE. M	.	.
	1300.	.	.	.	.	.	.	I L WE. M	.	.
	1350.	.	.	.	.	.	.	.I L WE .M	.	.
	1400.	.	.	.	.	.	.	.IL WE .M	.	.
48.00	1450.	.	.	.	.	.	.	I L WE M	.	.
	1500.	.	.	.	.	.	.	IL WE M.	.	.
	1550.	.	.	.	.	.	.	I.L WE M.	.	.
	1600.	.	.	.	.	.	.	IL WE M .	.	.
	1650.	.	.	.	.	.	.	IL. WE M .	.	.
	1700.	.	.	.	.	.	.	IL. WE M .	.	.
	1750.	.	.	.	.	.	.	IL . WE M	.	.
47.00	1800.	.	.	.	.	.	.	IL . WE M	.	.
	1850.	.	.	.	.	.	.	IL .WE M	.	.
	1900.	.	.	.	.	.	.	I L WE M	.	.
	1950.	.	.	.	.	.	.	IL WE M	.	.
	2000.	.	.	.	.	.	.	IL WE M	.	.
	2050.	.	.	.	.	.	.	IL WE. M	.	.
	2100.	.	.	.	.	.	.	.IL WE . M	.	.
	2150.	.	.	.	.	.	.	.IL WE . M	.	.



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 HEC2 RELEASE DATED SEPT 88

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

FILE NAME: 3308HS2A.IN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
*	52.000	.00	.00	.00	3139.00	121.00	3140.94	3140.94	3141.57	275.86	6.63	21.25	7.29
	52.000	.00	.00	.00	3139.00	229.00	3141.62	3141.68	3142.48	257.32	8.04	36.87	14.28
*	51.000	300.00	.00	.00	3135.00	352.00	3136.98	3136.98	3137.48	434.86	6.08	72.78	16.88
*	51.000	300.00	.00	.00	3135.00	670.00	3137.57	3137.57	3138.18	398.13	7.17	128.76	33.58
*	50.000	375.00	.00	.00	3127.50	352.00	3129.48	3129.48	3130.09	301.21	6.24	56.45	20.28
*	50.000	375.00	.00	.00	3127.50	670.00	3130.15	3130.15	3130.97	324.63	7.29	92.12	37.19
*	49.000	300.00	.00	.00	3122.00	352.00	3124.71	3124.71	3125.61	509.84	7.65	47.61	15.59
*	49.000	300.00	.00	.00	3122.00	670.00	3125.75	3125.75	3126.95	406.46	9.04	82.27	33.23
*	48.000	470.00	.00	.00	3114.60	352.00	3118.10	3118.10	3119.22	358.40	8.84	45.31	18.59
*	48.000	470.00	.00	.00	3114.60	670.00	3119.52	3119.52	3120.58	239.84	9.34	103.62	43.26
*	47.000	340.00	.00	.00	3110.70	352.00	3114.61	3114.61	3115.71	190.05	8.77	51.10	25.53
*	47.000	340.00	.00	.00	3110.70	670.00	3116.10	3116.10	3116.92	118.61	8.71	144.04	61.52
*	46.000	475.00	.00	.00	3105.00	352.00	3108.21	3108.21	3108.94	193.76	8.07	68.22	25.29
*	46.000	475.00	.00	.00	3105.00	670.00	3109.08	3109.08	3109.95	191.33	9.50	122.44	48.44
*	45.000	375.00	.00	.00	3099.30	352.00	3102.18	3102.18	3103.37	303.35	8.92	43.01	20.21
*	45.000	375.00	.00	.00	3099.30	670.00	3103.62	3103.62	3104.90	206.41	9.77	94.89	46.63
*	44.000	200.00	.00	.00	3098.30	433.00	3101.68	3101.68	3102.48	48.76	9.73	145.84	62.01
*	44.000	200.00	.00	.00	3098.30	843.00	3102.62	3102.62	3103.48	47.81	11.36	269.30	121.92
*	43.000	350.00	.00	.00	3095.00	433.00	3096.45	3097.11	3098.12	577.69	10.41	42.63	18.02
*	43.000	350.00	.00	.00	3095.00	843.00	3097.03	3097.63	3099.13	546.05	11.76	76.76	36.08
*	42.500	290.00	.00	.00	3090.40	433.00	3093.22	3093.22	3093.82	226.95	6.87	93.52	28.74
*	42.500	290.00	.00	.00	3090.40	843.00	3094.05	3094.05	3094.66	190.09	7.67	189.81	61.14

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
*	42.000	300.00	.00	.00	3087.00	433.00	3089.34	3089.43	3090.20	74.56	9.41	115.14	50.15
*	42.000	300.00	.00	.00	3087.00	843.00	3090.22	3090.36	3091.30	70.89	11.36	210.40	100.12

253

*	41.000	220.00	.00	.00	3085.00	433.00	3086.16	3086.43	3087.07	389.75	13.51	119.98	21.93
*	41.000	220.00	.00	.00	3085.00	843.00	3086.43	3086.87	3087.89	541.10	18.23	167.38	36.24
*	40.000	375.00	.00	.00	3078.20	433.00	3082.22	3082.22	3082.97	143.39	8.04	88.00	36.16
*	40.000	375.00	.00	.00	3078.20	843.00	3083.17	3083.17	3083.97	140.68	9.34	180.12	71.07
*	39.000	350.00	.00	.00	3076.00	433.00	3078.05	3078.05	3078.44	155.12	5.84	120.38	34.77
*	39.000	350.00	.00	.00	3076.00	843.00	3078.50	3078.50	3079.07	198.10	7.40	185.22	59.89
*	38.000	140.00	.00	.00	3074.20	433.00	3076.47	3076.47	3076.78	148.10	5.45	130.79	35.58
*	38.000	140.00	.00	.00	3074.20	843.00	3076.80	3076.80	3077.28	227.05	6.83	194.33	55.95

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FILE NAME: 3308HS2A.IN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	52.000	121.00	3140.94	.00	.00	1.14	19.37	.00
	52.000	229.00	3141.62	.69	.00	1.82	26.22	.00
*	51.000	352.00	3136.98	.00	-3.95	.00	80.23	300.00
*	51.000	670.00	3137.57	.59	-4.05	.00	110.21	300.00
*	50.000	352.00	3129.48	.00	-7.50	.00	47.42	375.00
*	50.000	670.00	3130.15	.67	-7.43	.00	60.09	375.00
*	49.000	352.00	3124.71	.00	-4.77	.00	29.07	300.00
*	49.000	670.00	3125.75	1.04	-4.40	.00	37.88	300.00
*	48.000	352.00	3118.10	.00	-6.62	.00	22.58	470.00
*	48.000	670.00	3119.52	1.42	-6.23	.00	59.51	470.00
*	47.000	352.00	3114.61	.00	-3.49	.00	36.39	340.00
*	47.000	670.00	3116.10	1.49	-3.42	.00	87.21	340.00
*	46.000	352.00	3108.21	.00	-6.40	.00	47.75	475.00
*	46.000	670.00	3109.08	.88	-7.02	.00	76.19	475.00
*	45.000	352.00	3102.18	.00	-6.02	.00	21.69	375.00
*	45.000	670.00	3103.62	1.44	-5.46	.00	50.46	375.00
*	44.000	433.00	3101.68	.00	-.51	.00	112.50	200.00
*	44.000	843.00	3102.62	.95	-1.00	.00	141.18	200.00
*	43.000	433.00	3096.45	.00	-5.23	.00	48.81	350.00
*	43.000	843.00	3097.03	.58	-5.59	.00	90.98	350.00
*	42.500	433.00	3093.22	.00	-3.23	.00	91.72	290.00
*	42.500	843.00	3094.05	.83	-2.98	.00	137.87	290.00
*	42.000	433.00	3089.34	.00	-3.88	.00	91.75	300.00
*	42.000	843.00	3090.22	.88	-3.83	.00	121.67	300.00

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*	41.000	433.00	3086.16	.00	-3.17	.00	177.90	220.00
*	41.000	843.00	3086.43	.27	-3.79	.00	182.64	220.00
*	40.000	433.00	3082.22	.00	-3.94	.00	64.72	375.00
*	40.000	843.00	3083.17	.95	-3.25	.00	128.58	375.00
*	39.000	433.00	3078.05	.00	-4.17	.00	142.70	350.00
*	39.000	843.00	3078.50	.45	-4.67	.00	148.49	350.00
*	38.000	433.00	3076.47	.00	-1.59	.00	181.79	140.00
*	38.000	843.00	3076.80	.34	-1.70	.00	196.73	140.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 52.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 51.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 51.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 51.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 51.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 51.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 51.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 50.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 50.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 50.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 50.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 50.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 50.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 49.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 49.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 49.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 49.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 49.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 49.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 48.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 48.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 48.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 48.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 48.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 48.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 47.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 47.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 47.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 47.000 PROFILE= 2 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 47.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 47.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 46.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

CAUTION SECNO= 46.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 46.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 46.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 46.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 46.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 45.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 45.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 45.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 45.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 45.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 45.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

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CAUTION SECNO= 44.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 44.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 44.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 44.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 44.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 44.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 43.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 43.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 42.500 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 42.500 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 42.500 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 42.500 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 42.500 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 42.500 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 42.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 42.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 41.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 41.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 40.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 40.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 40.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 40.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 40.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 40.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 39.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 39.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 39.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 39.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 39.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 39.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 38.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 38.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 38.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 38.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 38.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 38.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL



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*****
1 WATER SURFACE PROFILES
* WATER SURFACE PROFILES
* VERSION OF SEPTEMBER 1988
*
*
* RUN DATE 1/ 1/80 TIME 2:39:39
*****

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

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END OF BANNER

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1/ 1/80 2:39:39

PAGE 1

THIS RUN EXECUTED 1/ 1/80 2:39:39

\*\*\*\*\*  
HEC2 RELEASE DATED SEPT 88  
\*\*\*\*\*

T1 27 MILE WASH CROSS SECTIONS 38 THROUGH 58  
T2 10 YEAR FLOW - SUPERCRITICAL RUN  
T3 FILE NAME: 3308HCS2.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ	
	0	2	0	1	-1	0	0	0	3189	0	
NC	0.08	0.08	0.024		.3	.5					
QT	2	121	229								
NH	1	0.04	22								
X1	58.0	6	8		15	300	310	305			
GR	3190	0	3188		8	3186	10	3186	11	3188	15
GR	3190	22									
NH	1	0.04	24								
X1	57.0	8	8		17	270	290	285			
GR	3182	0	3180		6	3178	8	3176	11	3176	12
GR	3178	17	3180		19	3182	24				
NH	1	0.04	28								
X1	56.0	10	8		12	470	460	465			
GR	3176	0	3174		2	3172	5	3170	8	3169.3	9
GR	3169.3	11	3170		12	3172	14	3174	20	3176	28

NH	1	0.04	18							
X1	55.0	6	3	12	450	445	450			
GR	3164	0	3162	3	3160	6	3160	8	3162	12
GR	3164	18								
NH	3	0.06	5	0.04	21	0.06	30			
X1	54.0	8	10	18	340	335	325			
GR	3156	0	3154	5	3152	10	3150.2	12	3150.2	16
GR	3152	18	3154	21	3156	30				
NH	1	0.05	178							
X1	53.0	8	95	125	300	265	275			
GR	3150	0	3148	80	3148	95	3146	110	3146	115
GR	3148	125	3148	145	3150	178				
NH	3	0.07	171	0.024	176	0.07	310			
X1	52.0	13	170	180	260	350	300			
GR	3146	0	3144	23	3144	92	3142	118	3142	152
GR	3142	164	3140	170	3139	171	3139	176	3140	180
GR	3142	194	3144	220	3146	310				

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PAGE 2

QT	2	352	670							
NH	3	0.08	162	0.024	169	0.08	357			
X1	51.0	10	160	190	420	340	375			
GR	3142	0	3140	70	3138	81	3136	160	3135	162
GR	3135	169	3136	190	3138	213	3140	260	3142	357
NH	3	0.08	155	0.024	161	0.08	276			
X1	50.0	17	130	187	270	310	300			
GR	3136	0	3134	37	3132.5	59	3142.5	60	3142.5	90
GR	3132.5	91	3132	115	3130	130	3128	148	3127.5	155
GR	3127.5	161	3128	168	3130	187	3132	214	3142	215
GR	3142	275	3136	276						
NH	3	0.08	57	0.024	63	0.08	201			
X1	49.0	10	49	72	500	470	470			
GR	3130	0	3128	25	3126	44	3124	49	3122	57
GR	3122	63	3124	72	3126	84	3128	112	3150	201
NH	3	0.08	76	0.024	80	0.08	150			
X1	48.0	12	72	84	320	360	340			
GR	3124	0	3122	40	3120	50	3118	70	3116	72
GR	3114.6	76	3114.6	80	3116	84	3118	90	3120	122
GR	3122	131	3124	150						
NH	3	0.08	102	0.024	108	0.08	147			
X1	47.0	12	100	110	470	480	475			
GR	3120	0	3118	11	3116	45	3114	97	3112	100
GR	3110.7	102	3110.7	108	3112	110	3114	112	3116	130
GR	3118	140	3120	147						
NH	3	0.08	104	0.024	110	0.08	170			
X1	46.0	12	102	112	400	370	375			
GR	3116	0	3112	35	3110	42	3108	78	3106	102
GR	3105	104	3105	110	3106	112	3108	119	3110	148

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GR	3112	154	3116	170						
NH	3	0.08	38	0.024	45	0.08	153			
X1	45.0	14	34	48	140	240	200			
GR	3110	0	3108	7	3106	23	3104	30	3102	32
GR	3100	34	3099.3	38	3099.3	45	3100	48	3102	50
GR	3104	88	3106	110	3108	115	3110	153		
QT	2	433	843							
NH	3	0.08	110	0.024	117	0.08	214			
X1	44.0	12	110	117	340	360	350			
GR	3108	0	3106	10	3104	15	3102	25	3100	98
GR	3098.3	110	3098.3	117	3100	125	3102	154	3104	183
GR	3106	207	3108	214						

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PAGE 3

NH	7	0.08	24	0.024	31	0.08	73	0.024	77	0.08
NH	83	0.024	90	0.08	235					
X1	43.0	20	20	100	350	200	290			
GR	3106	0	3104	4	3102	10	3100	13	3098	20
GR	3096	24	3096	31	3097	37	3097	64	3096	70
GR	3095	73	3095	77	3095	83	3095	90	3096	100
GR	3098	125	3100	140	3102	203	3104	228	3106	235
NH	3	0.08	78	0.024	88	0.08	230			
X1	42.5	10	72	93	210	320	300			
GR	3098	0	3096	25	3094	45	3092	72	3090.4	78
GR	3090.4	88	3092	93	3094	182	3096	196	3098	230
NH	3	0.08	62	0.024	74	0.08	220			
X1	42.0	12	62	74	210	220	220			
GR	3098	0	3094	18	3092	26	3090	32	3088	47
GR	3087	62	3087	74	3088	88	3090	149	3092	186
GR	3094	203	3098	220						
NH	3	0.08	230	0.024	238	0.08	290			
X1	41.0	12	230	238	300	330	375			
GR	3096	0	3092	20	3090	37	3088	50	3086	75
GR	3085	230	3085	238	3086	250	3088	261	3090	270
GR	3092	277	3096	290						
NH	3	0.08	52	0.024	59	0.08	247			
X1	40.0	12	48	59	280	400	350			
GR	3092	0	3086	26	3084	34	3082	40	3080	48
GR	3078.2	52	3078.2	57	3080	59	3082	90	3084	218
GR	3086	230	3092	247						
NH	5	0.08	146	0.024	153	0.08	183	0.024	185	0.08
NH	258									
X1	39.0	16	146	185	190	90	140			
GR	3088	0	3082	20	3080	28	3080	42	3078	58
GR	3077	140	3076	146	3076	153	3077	156	3077	180
GR	3076.3	183	3076.3	185	3078	200	3080	210	3082	218
GR	3088	258								
NH	5	0.08	160	0.024	167	0.08	220	0.024	221	0.08
NH	350									

25

X1	38.0	16	160	221	250	130	210			
GR	3082	0	3080	32	3078	52	3076	101	3076	136
GR	3076	151	3074.2	160	3074.2	167	3076	172	3076	212
GR	3075	220	3075	221	3076	262	3078	302	3080	324
GR	3082	350								

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PAGE 4

SECNO	DEPTH	CWSEL	CRISW	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	

\*PROF 1

0

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 58.000

3720 CRITICAL DEPTH ASSUMED

58.00	2.96	3188.96	3188.96	3189.00	3189.99	1.04	.00	.00	3188.00
121.	0.	120.	0.	2.	15.	2.	0.	0.	3188.00
.00	.19	8.19	.19	.040	.002	.040	.000	3186.00	4.17
.000070	0.	0.	0.	0	17	0	.00	14.17	18.35

0

1490 NH CARD USED

\*SECNO 57.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

57.00	1.32	3177.32	3178.65	.00	3187.30	9.99	.00	2.68	3178.00
121.	0.	121.	0.	0.	5.	0.	0.	0.	3178.00
.00	.00	25.36	.00	.000	.000	.000	.000	3176.00	9.03
.000005	300.	305.	310.	9	15	0	.00	6.26	15.29

0

1490 NH CARD USED

\*SECNO 56.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

56.00	3.20	3172.50	3172.53	.00	3174.03	1.54	.00	3.74	3170.00
121.	0.	121.	0.	5.	12.	3.	0.	0.	3170.00
.01	.06	9.96	.05	.040	.000	.040	.000	3169.30	4.25
.000002	270.	285.	290.	20	17	0	.00	11.25	15.50

0

1490 NH CARD USED

\*SECNO 55.000

1

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PAGE 5

SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	OLOSS	BANK	ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT	

24

TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

55.00	1.16	3161.16	3162.54	.00	3171.42	10.26	.00	2.62	3162.00
121.	0.	121.	0.	0.	5.	0.	0.	0.	3162.00
.02	.00	25.70	.00	.000	.000	.000	.000	3160.00	4.25
.000001	470.	465.	460.	20	15	0	.00	6.08	10.33

0

1490 NH CARD USED

\*SECNO 54.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

54.00	2.40	3152.60	3152.62	.00	3153.50	.90	.00	.44	3152.00
121.	1.	119.	1.	0.	16.	0.	0.	0.	3152.00
.03	2.32	7.65	2.16	.040	.040	.040	.000	3150.20	8.50
.021539	450.	450.	445.	20	17	0	.00	10.40	18.90

0

1490 NH CARD USED

\*SECNO 53.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

53.00	.70	3146.70	3147.52	.00	3152.13	5.43	.00	1.36	3148.00
121.	0.	121.	0.	0.	6.	0.	0.	0.	3148.00
.04	.00	18.71	.00	.000	.000	.000	.000	3146.00	104.80
.000002	340.	325.	335.	20	14	0	.00	13.66	118.47

0

1490 NH CARD USED

1

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PAGE 6

SECNO	DEPTH	CWSEL	CRISW	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 52.000

3235 SLOPE TOO STEEP, EXCEEDS .40

3301 HV CHANGED MORE THAN HVINS

26

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

52.00	.79	3139.79	3140.93	.00	3147.21	7.41	.00	2.95	3140.00
121.	0.	121.	0.	0.	6.	0.	1.	0.	3140.00
.04	.00	21.85	.00	.000	.048	.000	.000	3139.00	170.21
1.023470	300.	275.	265.	20	20	0	.00	8.96	179.17

0

1490 NH CARD USED

\*SECNO 51.000

3840 SECTION NOT HIGH ENOUGH	3450.214	3192.000	3135.000	3192.000	3139.396	2
3840 SECTION NOT HIGH ENOUGH	3450.214	3242.000	3135.000	3242.000	3139.396	2
3840 SECTION NOT HIGH ENOUGH	3450.214	3292.000	3135.000	3292.000	3139.396	2
3840 SECTION NOT HIGH ENOUGH	3450.214	3342.000	3135.000	3342.000	3139.396	2
3840 SECTION NOT HIGH ENOUGH	3450.214	3392.000	3135.000	3392.000	3139.396	2
3840 SECTION NOT HIGH ENOUGH	3450.214	3442.000	3135.000	3442.000	3139.396	2

3790, DATA ERROR, JOB DUMPED

ERROR STATEMENT APPLIES TO SECTION 51.000

1

PROFILE FOR STREAM FILE NAME: 3308HCS2.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3135.	3145.	3155.	3165.	3175.	3185.	3195.	3205.	3215.	3225.
SECNO	CUMDIS									
58.00	0.	.	.	.	.	.	.I	LWE	.	.
	50.	.	.	.	.	.	I.LW	ME	.	.
	100.	.	.	.	.	.	I WCM	E	.	.
	150.	.	.	.	.	.	I WC.M	E	.	.
	200.	.	.	.	.	.	I WC M	E	.	.
	250.	.	.	.	.	.	IWLC M	E	.	.
	300.	.	.	.	.	.	.I WC M	E	.	.
57.00	350.	.	.	.	.	.	.IWLC M	E	.	.
	400.	.	.	.	.	.	IWLC M	E	.	.
	450.	.	.	.	.	.	ILWC M	E	.	.
	500.	.	.	.	.	.	I LW	ME	.	.
	550.	.	.	.	.	.	IL W.	E	.	.
56.00	600.	.	.	.	.	.	IL WE.M		.	.
	650.	.	.	.	.	.	IL W EM		.	.
	700.	.	.	.	.	.	IL W E		.	.
	750.	.	.	.	.	.	IL W ME		.	.
	800.	.	.	.	.	.	I LW M E		.	.
	850.	.	.	.	.	.	I.WC M E		.	.
	900.	.	.	.	.	.	I WC M E		.	.
	950.	.	.	.	.	.	I WC M E		.	.
	1000.	.	.	.	.	.	I WC.M E		.	.
	1050.	.	.	.	.	.	I WCM E		.	.
55.00	1100.	.	.	.	.	.	IWLCM E		.	.
	1150.	.	.	.	.	.	IWC M E		.	.
	1200.	.	.	.	.	.	IWC M E		.	.
	1250.	.	.	.	.	.	IWC M E		.	.
	1300.	.	.	.	.	.	IWC M E		.	.
	1350.	.	.	.	.	.	IWC ME		.	.
	1400.	.	.	.	.	.	I WC E		.	.
	1450.	.	.	.	.	.	I LW EM		.	.
	1500.	.	.	.	.	.	I LWE M		.	.

2100



3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

57.00	1.84	3177.84	3179.59	.00	3188.80	10.95	.00	2.83	3178.00
229.	0.	229.	0.	0.	9.	0.	0.	0.	3178.00
.00	.00	26.56	.00	.000	.000	.000	.000	3176.00	8.24
.000004	300.	305.	310.	10	15	0	.00	8.37	16.60

0

1490 NH CARD USED

\*SECNO 56.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

56.00	4.83	3174.13	3174.17	.00	3176.42	2.29	.00	3.61	3170.00
229.	1.	227.	1.	13.	19.	13.	0.	0.	3170.00
.01	.08	12.21	.07	.040	.000	.040	.000	3169.30	1.87
.000002	270.	285.	290.	20	17	0	.00	18.63	20.50

0

1

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 55.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

55.00	1.80	3161.80	3163.48	.00	3171.29	9.49	.00	3.41	3162.00
229.	0.	229.	0.	0.	9.	0.	1.	0.	3162.00
.01	.00	24.72	.00	.000	.000	.000	.000	3160.00	3.30
.000001	470.	465.	460.	20	19	0	.00	8.30	11.60

0

1490 NH CARD USED

\*SECNO 54.000

3235 SLOPE TOO STEEP, EXCEEDS .40

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

54.00	1.42	3151.62	3153.66	.00	3164.66	13.04	.00	5.20	3152.00
229.	0.	229.	0.	0.	8.	0.	1.	0.	3152.00
.02	.00	28.98	.00	.000	.040	.000	.000	3150.20	10.43
.643501	450.	450.	445.	20	14	0	.00	7.15	17.57

0

1490 NH CARD USED

\*SECNO 53.000

260



3840 SECTION NOT HIGH ENOUGH 3366.096 3200.000 3146.000 3200.000 3150.909 2  
 3840 SECTION NOT HIGH ENOUGH 3366.096 3250.000 3146.000 3250.000 3150.909 2  
 3840 SECTION NOT HIGH ENOUGH 3366.096 3300.000 3146.000 3300.000 3150.909 2  
 3840 SECTION NOT HIGH ENOUGH 3366.096 3350.000 3146.000 3350.000 3150.909 2

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

53.00	.68	3146.68	3148.05	.00	3167.14	20.46	.00	1.31	3148.00
229.	0.	229.	0.	0.	6.	0.	1.	0.	3148.00
.02	.00	36.30	.00	.000	.000	.000	.000	3146.00	104.89
.000000	340.	325.	335.	20	11	0	.00	13.52	118.41

0

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SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 52.000

3235 SLOPE TOO STEEP, EXCEEDS .40

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

52.00	.83	3139.83	3141.67	.00	3163.26	23.42	.00	1.24	3140.00
229.	0.	229.	0.	0.	6.	0.	1.	1.	3140.00
.02	.00	38.84	.00	.000	.049	.000	.000	3139.00	170.17
3.136211	300.	275.	265.	20	23	0	.00	9.16	179.33

0

1490 NH CARD USED

\*SECNO 51.000

3840 SECTION NOT HIGH ENOUGH 4091.055 3192.000 3135.000 3192.000 3139.833 2  
 3840 SECTION NOT HIGH ENOUGH 4091.055 3242.000 3135.000 3242.000 3139.833 2  
 3840 SECTION NOT HIGH ENOUGH 4091.055 3292.000 3135.000 3292.000 3139.833 2  
 3840 SECTION NOT HIGH ENOUGH 4091.055 3342.000 3135.000 3342.000 3139.833 2  
 3840 SECTION NOT HIGH ENOUGH 4091.055 3392.000 3135.000 3392.000 3139.833 2  
 3840 SECTION NOT HIGH ENOUGH 4091.055 3442.000 3135.000 3442.000 3139.833 2

3790, DATA ERROR, JOB DUMPED

ERROR STATEMENT APPLIES TO SECTION 51.000

1

PROFILE FOR STREAM 100 YEAR FLOW

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3135.	3145.	3155.	3165.	3175.	3185.	3195.	3205.	3215.	3225.
SECNO	CUMDIS									

265



SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	58.000	.00	.00	.00	3186.00	121.00	3188.96	3188.96	3189.99	.70	8.19	18.13	144.35
*	58.000	.00	.00	.00	3186.00	229.00	3190.10	3190.10	3191.63	.18	9.99	39.09	545.96
*	57.000	305.00	.00	.00	3176.00	121.00	3177.32	3178.65	3187.30	.05	25.36	4.77	520.61
*	57.000	305.00	.00	.00	3176.00	229.00	3177.84	3179.59	3188.80	.04	26.56	8.62	1137.35
*	56.000	285.00	.00	.00	3169.30	121.00	3172.50	3172.53	3174.03	.02	9.96	20.15	822.06
*	56.000	285.00	.00	.00	3169.30	229.00	3174.13	3174.17	3176.42	.02	12.21	44.39	1714.79
*	55.000	465.00	.00	.00	3160.00	121.00	3161.16	3162.54	3171.42	.01	25.70	4.71	1252.52
*	55.000	465.00	.00	.00	3160.00	229.00	3161.80	3163.48	3171.29	.01	24.72	9.26	2560.16
*	54.000	450.00	.00	.00	3150.20	121.00	3152.60	3152.62	3153.50	215.39	7.65	16.32	8.24
*	54.000	450.00	.00	.00	3150.20	229.00	3151.62	3153.66	3164.66	6435.01	28.98	7.90	2.85
*	53.000	325.00	.00	.00	3146.00	121.00	3146.70	3147.52	3152.13	.02	18.71	6.47	847.64
*	53.000	325.00	.00	.00	3146.00	229.00	3146.68	3148.05	3167.14	.00	36.30	6.31	70851.05
*	52.000	275.00	.00	.00	3139.00	121.00	3139.79	3140.93	3147.21	10234.70	21.85	5.54	1.20
*	52.000	275.00	.00	.00	3139.00	229.00	3139.83	3141.67	3163.26	31362.11	38.84	5.90	1.29
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

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2:39:39

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

26

.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

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FILE NAME: 3308HCS2.IN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	58.000	121.00	3188.96	.00	.00	-.04	14.17	.00
*	58.000	229.00	3190.10	1.14	.00	.10	22.00	.00
*	57.000	121.00	3177.32	.00	-11.64	.00	6.26	305.00
*	57.000	229.00	3177.84	.52	-12.25	.00	8.37	305.00
*	56.000	121.00	3172.50	.00	-4.82	.00	11.25	285.00
*	56.000	229.00	3174.13	1.63	-3.72	.00	18.63	285.00
*	55.000	121.00	3161.16	.00	-11.34	.00	6.08	465.00
*	55.000	229.00	3161.80	.64	-12.33	.00	8.30	465.00
*	54.000	121.00	3152.60	.00	-8.56	.00	10.40	450.00
*	54.000	229.00	3151.62	-.98	-10.18	.00	7.15	450.00
*	53.000	121.00	3146.70	.00	-5.90	.00	13.66	325.00
*	53.000	229.00	3146.68	-.02	-4.94	.00	13.52	325.00
*	52.000	121.00	3139.79	.00	-6.91	.00	8.96	275.00
*	52.000	229.00	3139.83	.04	-6.85	.00	9.16	275.00
	.000	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00
	.000	.00	.00	.00	.00	.00	.00	.00

*Del*

.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00

1

1/ 1/80 2:39:39

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00
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1/ 1/80 2:39:39

SUMMARY OF ERRORS AND SPECIAL NOTES

- CAUTION SECNO= 58.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
- CAUTION SECNO= 58.000 PROFILE= 2 CRITICAL DEPTH ASSUMED
- WARNING SECNO= 57.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
- WARNING SECNO= 57.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
- CAUTION SECNO= 56.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF

267

CAUTION SECNO= 56.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 56.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 56.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
  
CAUTION SECNO= 55.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
WARNING SECNO= 55.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
CAUTION SECNO= 55.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 55.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
  
CAUTION SECNO= 54.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 54.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 54.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 54.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 54.000 PROFILE= 2 SLOPE TOO STEEP  
  
CAUTION SECNO= 53.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
WARNING SECNO= 53.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
CAUTION SECNO= 53.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 53.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
  
CAUTION SECNO= 52.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 52.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 52.000 PROFILE= 1 SLOPE TOO STEEP  
CAUTION SECNO= 52.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 52.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 52.000 PROFILE= 2 SLOPE TOO STEEP

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*****
1*****
* WATER SURFACE PROFILES *
* VERSION OF SEPTEMBER 1988 *
* *
* *
* RUN DATE 1/ 1/80 TIME 2: 4:41 *
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*****
* U.S. ARMY CORPS OF ENGINEERS *
* THE HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET, SUITE D *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*****

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END OF BANNER

1  
1/ 1/80 2: 4:41

PAGE 1

THIS RUN EXECUTED 1/ 1/80 2: 4:42

\*\*\*\*\*  
HEC2 RELEASE DATED SEPT 88  
\*\*\*\*\*

T1 27 MILE WASH CROSS SECTIONS 59 THROUGH 73  
T2 10 YEAR FLOW - SUPERCRITICAL RUN  
T3 FILE NAME: 3308HS3A.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	1	0.013	0	0	0	3154.4	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	135	250							
NH	3	0.07	107	0.05	159	0.07	167			
X1	73.0	8	123	130	120	140	130			
GR	3158	0	3156	49	3156	73	3156	107	3154	123
GR	3154	130	3156	159	3158	167				
NH	3	0.07	36	0.05	132	0.07	348			
X1	72.0	12	90	100	345	240	295			
GR	3156	0	3154	36	3153	90	3152.3	91	3152.3	99
GR	3153	100	3153	132	3163	133	3163	184	3153	185
GR	3154	268	3156	348						
QT	2	158	309							
NH	5	0.08	130	0.024	131	0.08	145	0.017	180	0.024
NH	185									

87

X1	71.0	13	120	145	455	450	475				
GR	3148	0	3146	45	3144.8	49	3146	58	3147	85	
GR	3146	120	3144	128	3143.8	130	3143.8	131	3144	134	
GR	3146	145	3146	180	3148	185					
NH	3	0.08	82	0.024	88	0.08	210				
X1	70.0	8	80	90	370	350	370				
GR	3140	0	3138	22	3137	80	3136.3	82	3136.3	88	
GR	3137	90	3138	110	3140	210					

NH	3	0.08	62	0.024	68	0.08	144				
X1	69.0	10	58	72	240	220	235				
GR	3136	0	3134	20	3132	35	3130	58	3129.8	62	
GR	3129.8	68	3130	72	3132	95	3134	120	3136	144	

NH	3	0.08	69	0.024	75	0.08	288				
X1	68.0	15	65	80	430	440	460				
X3						152	3128.5				
GR	3132	0	3130	50	3128	60	3126	65	3125	69	
GR	3125	75	3126	80	3128	132	3128.5	152	3128	168	
GR	3126.3	204	3126.3	208	3128	242	3130	260	3132	288	

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QT	2	258	497								
NH	3	0.08	78	0.024	84	0.08	273				
X1	67.0	14	75	85	240	220	230				
GR	3126	0	3124	18	3122	39	3120	71	3118	75	
GR	3116	78	3115.8	79	3115.8	80	3116	84	3118	85	
GR	3120	90	3122	160	3124	232	3126	273			

NH	3	0.08	45	0.024	51	0.08	228				
X1	66.0	12	42	54	270	260	250				
GR	3122	0	3120	8	3118	13	3116	28	3114	42	
GR	3113.5	45	3113.5	51	3114	54	3116	60	3118	140	
GR	3120	190	3122	228							

NH	3	0.08	144	0.024	150	0.08	304				
X1	65.0	17	143	152	360	490	500				
GR	3120	0	3118	13	3116	19	3114	28	3113.5	70	
GR	3114	110	3114	122	3112	143	3111.6	144	3111.6	150	
GR	3112	152	3114	156	3114	180	3116	238	3118	252	
GR	3118	293	3120	304							

NH	3	0.08	282	0.024	288	0.08	344				
X1	64.0	13	270	295	400	400	400				
GR	3114	0	3112	118	3110	175	3109	232	3119	233	
GR	3119	269	3108	270	3106.7	282	3106.7	288	3108	295	
GR	3110	320	3112	337	3114	344					

QT	2	280	550								
NH	3	0.08	34	0.024	41	0.08	248				
X1	63.0	12	31	44	400	370	380				
GR	3110	0	3108	12	3106	16	3104	21	3102	31	
GR	3101.5	34	3101.5	41	3102	44	3104	144	3106	200	
GR	3108	220	3110	248							

NH	3	0.08	121	0.024	129	0.08	285				
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X1	62.0	12	119	131	300	300	300			
GR	3104	0	3102	10	3100	20	3098	29	3096	119
GR	3095.3	121	3095.3	129	3096	131	3098	135	3100	204
GR	3102	266	3104	285						
QT	2	299	610							
NH	3	0.08	211	0.024	219	0.08	250			
X1	61.0	12	209	221	240	260	250			
GR	3100	0	3098	20	3096	50	3094	100	3092	209
GR	3091	211	3091	219	3092	221	3094	229	3096	233
GR	3098	240	3100	250						
NH	3	0.08	71	0.024	79	0.08	265			
X1	60.0	12	66	85	330	270	300			
GR	3098	0	3096	16	3094	23	3092	36	3090	66
GR	3088.2	71	3088.2	79	3090	85	3092	150	3094	230
GR	3096	250	3098	265						

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NH	3	0.08	171	0.024	179	0.08	290			
X1	59.0	12	164	186	400	300	380			
GR	3100	0	3092	40	3090	50	3088	95	3086	164
GR	3085	171	3085	179	3086	186	3088	233	3090	252
GR	3092	262	3100	290						

1

1/ 1/80      2: 4:41

SECNO	DEPTH	CWSEL	CRWS	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	

\*PROF 1

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 73.000

3720 CRITICAL DEPTH ASSUMED

73.00	1.32	3155.32	3155.32	3154.40	3155.72	.39	.00	.00	3154.00
135.	27.	58.	50.	7.	9.	13.	0.	0.	3154.00
.00	3.90	6.23	3.92	.050	.050	.050	.000	3154.00	112.40
.030189	0.	0.	0.	0	20	7	.00	36.81	149.21

0

1490 NH CARD USED

\*SECNO 72.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

72.00	1.24	3153.54	3153.54	.00	3153.72	.18	3.32	2.88	3153.00
135.	14.	55.	66.	8.	12.	30.	0.	0.	3153.00
.01	1.81	4.66	2.22	.050	.050	.055	.000	3152.30	60.65
.021084	120.	130.	140.	20	10	0	.00	116.56	230.11

0

1490 NH CARD USED

\*SECNO 71.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

71.00	1.93	3145.73	3145.73	.00	3146.20	.47	11.01	4.38	3146.00
158.	14.	144.	0.	5.	25.	0.	0.	1.	3146.00
.03	3.07	5.70	.00	.080	.078	.000	.000	3143.80	45.91
.078276	345.	295.	240.	20	14	0	.00	32.44	143.49

0

1490 NH CARD USED

\*SECNO 70.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

1

1/ 1/80      2: 4:41

SECNO	DEPTH	CWSEL	CRISW	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

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

70.00	1.75	3138.05	3138.05	.00	3138.31	.26	15.52	16.78	3137.00
158.	54.	86.	19.	32.	16.	11.	1.	1.	3137.00
.06	1.68	5.30	1.67	.080	.051	.080	.000	3136.30	21.43
.018153	455.	475.	450.	20	10	0	.00	91.17	112.60

0

1490 NH CARD USED

\*SECNO 69.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

69.00	1.46	3131.26	3131.26	.00	3131.77	.51	6.55	2.63	3130.00
158.	16.	125.	16.	9.	20.	9.	1.	2.	3130.00
.08	1.80	6.37	1.80	.080	.039	.080	.000	3129.80	43.50
.017461	370.	370.	350.	20	15	0	.00	43.00	86.50

0

1490 NH CARD USED

\*SECNO 68.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=	.0	152.0	TYPE=	1	TARGET=	151.999			
68.00	1.84	3126.84	3126.84	.00	3127.34	.50	5.64	2.63	3126.00
158.	2.	139.	18.	1.	23.	9.	1.	2.	3126.00
.09	1.86	6.02	1.95	.080	.061	.080	.000	3125.00	62.91
.035487	240.	235.	220.	20	11	0	.00	38.81	101.72

0

1490 NH CARD USED

\*SECNO 67.000

3301 HV CHANGED MORE THAN HVINS

274

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

67.00	3.35	3119.15	3119.15	.00	3120.35	1.20	16.03	10.43	3118.00
258.	3.	251.	4.	1.	28.	2.	2.	2.	3118.00
.11	2.22	8.90	2.28	.080	.055	.080	.000	3115.80	72.70
.034650	430.	460.	440.	20	14	0	.00	15.19	87.88

0  
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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

1490 NH CARD USED  
 \*SECNO 66.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

66.00	2.43	3115.93	3115.93	.00	3116.80	.86	4.34	2.71	3114.00
258.	26.	222.	11.	13.	28.	6.	2.	3.	3114.00
.12	1.96	8.01	1.91	.080	.035	.080	.000	3113.50	28.48
.011832	240.	230.	220.	20	15	0	.00	31.31	59.79

0

1490 NH CARD USED  
 \*SECNO 65.000

3301 HV CHANGED MORE THAN HVINS

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

65.00	2.62	3114.22	3114.22	.00	3114.55	.34	2.91	2.46	3112.00
258.	103.	141.	14.	67.	23.	11.	2.	3.	3112.00
.13	1.55	6.14	1.30	.080	.047	.080	.000	3111.60	27.03
.010990	270.	250.	260.	20	8	0	.00	159.25	186.28

0

1490 NH CARD USED  
 \*SECNO 64.000

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

64.00	2.00	3108.70	3108.70	.00	3109.40	.70	6.98	2.70	3108.00
258.	0.	254.	4.	0.	38.	3.	3.	4.	3108.00
.15	.03	6.75	1.33	.080	.042	.080	.000	3106.70	269.94
.020966	360.	500.	490.	20	19	0	.00	33.79	303.72

0

1490 NH CARD USED  
 \*SECNO 63.000

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

63.00	2.04	3103.54	3103.54	.00	3104.04	.50	5.71	.47	3102.00
280.	9.	176.	95.	6.	25.	59.	4.	5.	3102.00
.18	1.58	7.04	1.60	.080	.033	.080	.000	3101.50	23.32

275

.010596 400. 400. 400. 20 5 0 .00 97.53 120.84

0  
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1/ 1/80 2: 4:41

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

1490 NH CARD USED  
\*SECNO 62.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

62.00	2.06	3097.36	3097.47	.00	3097.99	.63	6.01	.04	3096.00
280.	96.	181.	4.	42.	23.	2.	4.	5.	3096.00
.19	2.30	7.75	2.14	.080	.047	.080	.000	3095.30	57.88
.025721	400.	380.	370.	3	8	0	.00	75.83	133.72

0

1490 NH CARD USED  
\*SECNO 61.000

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

61.00	2.40	3093.40	3093.40	.00	3093.89	.48	6.35	4.78	3092.00
299.	106.	186.	8.	54.	27.	4.	5.	6.	3092.00
.21	1.96	6.92	1.93	.080	.048	.080	.000	3091.00	132.44
.017912	300.	300.	300.	20	11	0	.00	94.18	226.62

0

1490 NH CARD USED  
\*SECNO 60.000

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

60.00	2.65	3090.85	3090.85	.00	3091.47	.62	5.50	2.88	3090.00
299.	9.	269.	20.	5.	40.	12.	5.	6.	3090.00
.22	1.75	6.66	1.75	.080	.061	.080	.000	3088.20	53.28
.028009	240.	250.	260.	20	8	0	.00	59.28	112.56

0

1490 NH CARD USED  
\*SECNO 59.000

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

59.00	2.09	3087.09	3087.09	.00	3087.64	.55	5.38	3.54	3086.00
299.	28.	251.	19.	20.	39.	14.	6.	7.	3086.00
.24	1.38	6.45	1.38	.080	.038	.080	.000	3085.00	126.39
.012457	330.	300.	270.	20	15	0	.00	85.23	211.62

0

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PROFILE FOR STREAM FILE NAME: 3308HS3A.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3085.	3095.	3105.	3115.	3125.	3135.	3145.	3155.	3165.	3175.
SECNO	CUMDIS									
73.00	0.	.	.	.	.	.	.	.	IWE M	.
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72.00	150.	.	.	.	.	.	.	.	ILE.M	.
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71.00	450.	.	.	.	.	.	.	.	I.E M	.
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	550.	.	.	.	.	.	.	.	I WEM	.
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	650.	.	.	.	.	.	.	.	IWE M	.
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	750.	.	.	.	.	.	.	.	ILE M .	.
	800.	.	.	.	.	.	.	.	ILE M .	.
	850.	.	.	.	.	.	.	.	ILWEM	.
70.00	900.	.	.	.	.	.	.	.	ILE M	.
	950.	.	.	.	.	.	.	.	ILE M	.
	1000.	.	.	.	.	.	.	.	IWE M	.
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	1100.	.	.	.	.	.	.	.	IWE M	.
	1150.	.	.	.	.	.	.	.	IWE. M	.
	1200.	.	.	.	.	.	.	.	I E . M	.
	1250.	.	.	.	.	.	.	.	I E .M	.
69.00	1300.	.	.	.	.	.	.	.	IWE .M	.
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	1400.	.	.	.	.	.	.	.	IWE M.	.
	1450.	.	.	.	.	.	.	.	IWE M .	.
	1500.	.	.	.	.	.	.	.	IWE M .	.
68.00	1550.	.	.	.	.	.	.	.	ILE M .	.
	1600.	.	.	.	.	.	.	.	ILWE M	.
	1650.	.	.	.	.	.	.	.	ILWE M	.
	1700.	.	.	.	.	.	.	.	ILWE M	.
	1750.	.	.	.	.	.	.	.	I WE. M	.
	1800.	.	.	.	.	.	.	.	I LWE. M	.
	1850.	.	.	.	.	.	.	.	I LWE . M	.
	1900.	.	.	.	.	.	.	.	I LWE . M	.
	1950.	.	.	.	.	.	.	.	I LWE . M	.
67.00	2000.	.	.	.	.	.	.	.	I LWE .M	.
	2050.	.	.	.	.	.	.	.	I LW E M	.
	2100.	.	.	.	.	.	.	.	IL WE M.	.
	2150.	.	.	.	.	.	.	.	IL WE M .	.
66.00	2200.	.	.	.	.	.	.	.	I.WE M	.
	2250.	.	.	.	.	.	.	.	IL.E M	.
	2300.	.	.	.	.	.	.	.	I WE M	.
	2350.	.	.	.	.	.	.	.	IL E M	.
	2400.	.	.	.	.	.	.	.	I E M	.
65.00	2450.	.	.	.	.	.	.	.	I WE M	.
	2500.	.	.	.	.	.	.	.	IL E. M	.
	2550.	.	.	.	.	.	.	.	I WE. M	.
	2600.	.	.	.	.	.	.	.	IL E . M	.
	2650.	.	.	.	.	.	.	.	I E . M	.
	2700.	.	.	.	.	.	.	.	ILWE . M	.
	2750.	.	.	.	.	.	.	.	ILE .M	.



SECNO	DEPTH	CWSEL	CRISW	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

\*PROF 2

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 73.000

3720 CRITICAL DEPTH ASSUMED

73.00	1.76	3155.76	3155.76	3154.50	3156.27	.51	.00	.00	3154.00
250.	57.	90.	103.	12.	12.	22.	0.	0.	3154.00
.00	4.60	7.33	4.61	.050	.050	.050	.000	3154.00	108.95
.028726	0.	0.	0.	0	23	7	.00	46.52	155.47

0

1490 NH CARD USED

\*SECNO 72.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

72.00	1.47	3153.77	3153.77	.00	3153.99	.22	3.44	2.71	3153.00
250.	38.	77.	135.	16.	14.	49.	0.	0.	3153.00
.01	2.40	5.53	2.76	.050	.050	.056	.000	3152.30	48.68
.023493	120.	130.	140.	20	10	0	.00	146.98	248.51

0

1490 NH CARD USED

\*SECNO 71.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

71.00	2.40	3146.20	3146.20	.00	3146.74	.54	10.61	7.90	3146.00
309.	42.	218.	50.	12.	37.	7.	1.	1.	3146.00
.02	3.48	5.96	7.19	.080	.078	.017	.000	3143.80	40.61
.060581	345.	295.	240.	20	15	0	.00	89.99	180.49

0

1490 NH CARD USED

\*SECNO 70.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

1

1/ 1/80 2: 4:41

PAGE 10

SECNO	DEPTH	CWSEL	CRISW	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

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

70.00	2.08	3138.38	3138.38	.00	3138.73	.34	16.13	17.02	3137.00
309.	131.	129.	48.	52.	19.	21.	1.	2.	3137.00

279

.05	2.53	6.67	2.27	.080	.051	.080	.000	3136.30	17.81
.022404	455.	475.	450.	20	10	0	.00	111.23	129.04

0

1490 NH CARD USED  
 \*SECNO 69.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

69.00	2.04	3131.84	3131.84	.00	3132.55	.71	7.16	4.20	3130.00
309.	45.	219.	45.	20.	28.	20.	2.	3.	3130.00
.07	2.30	7.88	2.30	.080	.039	.080	.000	3129.80	36.79
.017159	370.	370.	350.	20	6	0	.00	56.41	93.21

0

1490 NH CARD USED  
 \*SECNO 68.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=- .0 152.0 TYPE= 1 TARGET= 151.999

68.00	2.45	3127.45	3127.45	.00	3128.06	.61	5.27	.09	3126.00
309.	7.	229.	73.	3.	32.	28.	2.	3.	3126.00
.08	2.53	7.09	2.66	.080	.061	.080	.000	3125.00	61.36
.031332	240.	235.	220.	20	11	0	.00	56.46	117.83

0

1490 NH CARD USED  
 \*SECNO 67.000  
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

67.00	5.21	3121.01	3121.01	.00	3121.91	.90	9.14	9.74	3118.00
497.	40.	395.	62.	16.	47.	28.	3.	4.	3118.00
.10	2.47	8.45	2.23	.080	.055	.080	.000	3115.80	54.87
.015902	430.	460.	440.	20	17	0	.00	70.41	125.28

0

1

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SECNO	DEPTH	CWSEL	CRWS	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

1490 NH CARD USED  
 \*SECNO 66.000  
 3301 HV CHANGED MORE THAN HVINS

66.00	3.09	3116.59	3117.03	.00	3118.06	1.47	3.67	.17	3114.00
497.	72.	388.	37.	24.	36.	17.	4.	4.	3114.00
.11	3.06	10.90	2.23	.080	.035	.080	.000	3113.50	23.57
.016021	240.	230.	220.	4	14	0	.00	60.05	83.62

0

1490 NH CARD USED  
 \*SECNO 65.000  
 3301 HV CHANGED MORE THAN HVINS



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

65.00	3.04	3114.64	3114.64	.00	3115.01	.37	3.67	1.39	3112.00
497.	254.	196.	47.	116.	27.	28.	4.	5.	3112.00
.12	2.19	7.32	1.70	.080	.047	.080	.000	3111.60	25.13
.012752	270.	250.	260.	20	6	0	.00	173.38	198.51

0  
 1490 NH CARD USED  
 \*SECNO 64.000

3265 DIVIDED FLOW

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

64.00	2.92	3109.62	3109.62	.00	3110.41	.79	6.55	3.41	3108.00
497.	12.	452.	33.	11.	61.	16.	6.	6.	3108.00
.14	1.06	7.45	2.03	.080	.045	.080	.000	3106.70	196.68
.015851	360.	500.	490.	20	11	0	.00	80.77	315.25

0  
 1490 NH CARD USED  
 \*SECNO 63.000

63.00	2.59	3104.09	3104.19	.00	3104.77	.68	5.58	.05	3102.00
550.	24.	287.	239.	11.	32.	109.	7.	7.	3102.00
.16	2.17	8.94	2.20	.080	.034	.080	.000	3101.50	20.78
.012529	400.	400.	400.	3	15	0	.00	125.66	146.44

0  
 1  
 1/ 1/80      2: 4:41

SECNO	DEPTH	CWSEL	CRISW	WSELK	EG	HV	HL	GLOSS	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

1490 NH CARD USED  
 \*SECNO 62.000

62.00	2.77	3098.07	3098.19	.00	3098.69	.62	6.05	.03	3096.00
550.	268.	271.	11.	96.	32.	4.	8.	8.	3096.00
.18	2.78	8.53	2.54	.080	.047	.080	.000	3095.30	28.69
.020545	400.	380.	370.	3	9	0	.00	108.68	137.37

0  
 1490 NH CARD USED  
 \*SECNO 61.000

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

61.00	3.10	3094.10	3094.10	.00	3094.61	.51	5.49	4.75	3092.00
610.	307.	281.	22.	120.	35.	9.	9.	9.	3092.00
.20	2.55	7.97	2.50	.080	.048	.080	.000	3091.00	97.41
.016556	300.	300.	300.	20	8	0	.00	131.79	229.21

0  
 1490 NH CARD USED  
 \*SECNO 60.000

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

281

60.00	3.50	3091.70	3091.70	.00	3092.38	.68	4.89	3.31	3090.00
610.	55.	434.	120.	22.	57.	47.	10.	9.	3090.00
.21	2.56	7.68	2.57	.080	.061	.080	.000	3088.20	40.53
.023793	240.	250.	260.	20	8	0	.00	99.64	140.18

0  
1490 NH CARD USED  
\*SECNO 59.000  
3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3693 PROBABLE MINIMUM SPECIFIC ENERGY  
3720 CRITICAL DEPTH ASSUMED

59.00	2.82	3087.82	3087.82	.00	3088.48	.66	4.95	3.75	3086.00
610.	110.	424.	75.	57.	55.	39.	11.	10.	3086.00
.22	1.93	7.70	1.92	.080	.039	.080	.000	3085.00	101.07
.012156	330.	300.	270.	20	15	0	.00	127.79	228.86

0  
1  
PROFILE FOR STREAM 100 YEAR FLOW

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3085.	3095.	3105.	3115.	3125.	3135.	3145.	3155.	3165.	3175.
SECNO	CUMDIS									
73.00	0.	.	.	.	.	.	.	I E M	.	.
	50.	.	.	.	.	.	.	ILE M	.	.
	100.	.	.	.	.	.	.	IWEM	.	.
72.00	150.	.	.	.	.	.	.	ILE.M	.	.
	200.	.	.	.	.	.	.	IWE M	.	.
	250.	.	.	.	.	.	.	I WEM .	.	.
	300.	.	.	.	.	.	.	ILE M .	.	.
	350.	.	.	.	.	.	.	ILE M	.	.
	400.	.	.	.	.	.	.	I WEM	.	.
71.00	450.	.	.	.	.	.	.	I.WEM	.	.
	500.	.	.	.	.	.	.	I WEM	.	.
	550.	.	.	.	.	.	.	I LEM	.	.
	600.	.	.	.	.	.	.	I LEM	.	.
	650.	.	.	.	.	.	.	ILE M	.	.
	700.	.	.	.	.	.	.	ILWEM.	.	.
	750.	.	.	.	.	.	.	ILWEM .	.	.
	800.	.	.	.	.	.	.	ILWEM	.	.
	850.	.	.	.	.	.	.	IL EM	.	.
70.00	900.	.	.	.	.	.	.	ILWEM	.	.
	950.	.	.	.	.	.	.	ILWEM	.	.
	1000.	.	.	.	.	.	.	I E M	.	.
	1050.	.	.	.	.	.	.	I.E M	.	.
	1100.	.	.	.	.	.	.	I E M	.	.
	1150.	.	.	.	.	.	.	I WE M	.	.
	1200.	.	.	.	.	.	.	I WE . M	.	.
	1250.	.	.	.	.	.	.	I WE .M	.	.
69.00	1300.	.	.	.	.	.	.	I WE .M	.	.
	1350.	.	.	.	.	.	.	I WE M	.	.
	1400.	.	.	.	.	.	.	I WE M.	.	.
	1450.	.	.	.	.	.	.	I WE M .	.	.
	1500.	.	.	.	.	.	.	ILWE M .	.	.
68.00	1550.	.	.	.	.	.	.	ILWE M .	.	.
	1600.	.	.	.	.	.	.	IL E M .	.	.



THIS RUN EXECUTED 1/ 1/80 2: 5:40

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HEC2 RELEASE DATED SEPT 88

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

FILE NAME: 3308HS3A.IN

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
*	73.000	.00	.00	.00	3154.00	135.00	3155.32	3155.32	3155.72	301.89	6.23	29.01	7.77
*	73.000	.00	.00	.00	3154.00	250.00	3155.76	3155.76	3156.27	287.26	7.33	47.00	14.75
*	72.000	130.00	.00	.00	3152.30	135.00	3153.54	3153.54	3153.72	210.84	4.66	49.39	9.30
*	72.000	130.00	.00	.00	3152.30	250.00	3153.77	3153.77	3153.99	234.93	5.53	78.60	16.31
*	71.000	295.00	.00	.00	3143.80	158.00	3145.73	3145.73	3146.20	782.75	5.70	29.86	5.65
*	71.000	295.00	.00	.00	3143.80	309.00	3146.20	3146.20	3146.74	605.81	5.96	55.42	12.55
*	70.000	475.00	.00	.00	3136.30	158.00	3138.05	3138.05	3138.31	181.53	5.30	59.26	11.73
*	70.000	475.00	.00	.00	3136.30	309.00	3138.38	3138.38	3138.73	224.04	6.67	92.54	20.64
*	69.000	370.00	.00	.00	3129.80	158.00	3131.26	3131.26	3131.77	174.61	6.37	37.93	11.96
*	69.000	370.00	.00	.00	3129.80	309.00	3131.84	3131.84	3132.55	171.59	7.88	66.92	23.59
*	68.000	235.00	.00	.00	3125.00	158.00	3126.84	3126.84	3127.34	354.87	6.02	32.98	8.39
*	68.000	235.00	.00	.00	3125.00	309.00	3127.45	3127.45	3128.06	313.32	7.09	62.48	17.46
*	67.000	460.00	.00	.00	3115.80	258.00	3119.15	3119.15	3120.35	346.50	8.90	31.21	13.86
*	67.000	460.00	.00	.00	3115.80	497.00	3121.01	3121.01	3121.91	159.02	8.45	90.77	39.41
*	66.000	230.00	.00	.00	3113.50	258.00	3115.93	3115.93	3116.80	118.32	8.01	46.33	23.72
*	66.000	230.00	.00	.00	3113.50	497.00	3116.59	3117.03	3118.06	160.21	10.90	75.68	39.27
*	65.000	250.00	.00	.00	3111.60	258.00	3114.22	3114.22	3114.55	109.90	6.14	100.20	24.61
*	65.000	250.00	.00	.00	3111.60	497.00	3114.64	3114.64	3115.01	127.52	7.32	170.33	44.01
*	64.000	500.00	.00	.00	3106.70	258.00	3108.70	3108.70	3109.40	209.66	6.75	40.66	17.82
*	64.000	500.00	.00	.00	3106.70	497.00	3109.62	3109.62	3110.41	158.51	7.45	88.12	39.48
*	63.000	400.00	.00	.00	3101.50	280.00	3103.54	3103.54	3104.04	105.96	7.04	89.93	27.20
*	63.000	400.00	.00	.00	3101.50	550.00	3104.09	3104.19	3104.77	125.29	8.94	151.84	49.14

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	62.000	380.00	.00	.00	3095.30	280.00	3097.36	3097.47	3097.99	257.21	7.75	66.65	17.46
	62.000	380.00	.00	.00	3095.30	550.00	3098.07	3098.19	3098.69	205.45	8.53	132.36	38.37
*	61.000	300.00	.00	.00	3091.00	299.00	3093.40	3093.40	3093.89	179.12	6.92	84.58	22.34
*	61.000	300.00	.00	.00	3091.00	610.00	3094.10	3094.10	3094.61	165.55	7.97	164.50	47.41
*	60.000	250.00	.00	.00	3088.20	299.00	3090.85	3090.85	3091.47	280.09	6.66	57.49	17.87
*	60.000	250.00	.00	.00	3088.20	610.00	3091.70	3091.70	3092.38	237.93	7.68	125.01	39.55
*	59.000	300.00	.00	.00	3085.00	299.00	3087.09	3087.09	3087.64	124.57	6.45	73.44	26.79
*	59.000	300.00	.00	.00	3085.00	610.00	3087.82	3087.82	3088.48	121.55	7.70	151.61	55.33

1

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PAGE 15

FILE NAME: 3308HS3A.IN

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	73.000	135.00	3155.32	.00	.00	.92	36.81	.00
*	73.000	250.00	3155.76	.43	.00	1.26	46.52	.00
*	72.000	135.00	3153.54	.00	-1.78	.00	116.56	130.00
*	72.000	250.00	3153.77	.22	-1.99	.00	146.98	130.00
*	71.000	158.00	3145.73	.00	-7.82	.00	32.44	295.00
*	71.000	309.00	3146.20	.47	-7.57	.00	89.99	295.00
*	70.000	158.00	3138.05	.00	-7.67	.00	91.17	475.00
*	70.000	309.00	3138.38	.33	-7.81	.00	111.23	475.00
*	69.000	158.00	3131.26	.00	-6.79	.00	43.00	370.00
*	69.000	309.00	3131.84	.58	-6.54	.00	56.41	370.00
*	68.000	158.00	3126.84	.00	-4.43	.00	38.81	235.00
*	68.000	309.00	3127.45	.62	-4.39	.00	56.46	235.00
*	67.000	258.00	3119.15	.00	-7.68	.00	15.19	460.00
*	67.000	497.00	3121.01	1.86	-6.45	.00	70.41	460.00
*	66.000	258.00	3115.93	.00	-3.22	.00	31.31	230.00
	66.000	497.00	3116.59	.66	-4.41	.00	60.05	230.00
*	65.000	258.00	3114.22	.00	-1.71	.00	159.25	250.00
*	65.000	497.00	3114.64	.42	-1.96	.00	173.38	250.00
*	64.000	258.00	3108.70	.00	-5.52	.00	33.79	500.00
*	64.000	497.00	3109.62	.92	-5.02	.00	80.77	500.00
*	63.000	280.00	3103.54	.00	-5.16	.00	97.53	400.00
	63.000	550.00	3104.09	.55	-5.53	.00	125.66	400.00
*	62.000	280.00	3097.36	.00	-6.18	.00	75.83	380.00

285

	62.000	550.00	3098.07	.71	-6.02	.00	108.68	380.00
*	61.000	299.00	3093.40	.00	-3.95	.00	94.18	300.00
*	61.000	610.00	3094.10	.70	-3.97	.00	131.79	300.00
*	60.000	299.00	3090.85	.00	-2.56	.00	59.28	250.00
*	60.000	610.00	3091.70	.85	-2.41	.00	99.64	250.00
*	59.000	299.00	3087.09	.00	-3.76	.00	85.23	300.00
*	59.000	610.00	3087.82	.73	-3.87	.00	127.79	300.00

1

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=	73.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	73.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	72.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	72.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	72.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	72.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	72.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	72.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	71.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	71.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	71.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	71.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	71.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	71.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	70.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	70.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	70.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	70.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	70.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	70.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	69.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	69.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	69.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	69.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	69.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	69.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	68.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	68.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	68.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	68.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	68.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	68.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	67.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	67.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY

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CAUTION SECNO= 67.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 67.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 67.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 67.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 66.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 66.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 66.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 65.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 65.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY

1

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CAUTION SECNO= 65.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 65.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 65.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 65.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 64.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 64.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 64.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 64.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 64.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 64.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 63.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 63.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 63.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL

WARNING SECNO= 62.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 61.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 61.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 61.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 61.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 61.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 61.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 60.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 60.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 60.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 60.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 60.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 60.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO= 59.000 PROFILE= 1 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 59.000 PROFILE= 1 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 59.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 59.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 59.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY  
CAUTION SECNO= 59.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

28

1\*\*\*\*\*  
 \* WATER SURFACE PROFILES \*  
 \* VERSION OF SEPTEMBER 1988 \*  
 \* \* \*  
 \* \* \*  
 \* RUN DATE 1/ 1/80 TIME 3:39:28 \*  
 \*\*\*\*\*

\*\*\*\*\*  
 \* U.S. ARMY CORPS OF ENGINEERS \*  
 \* THE HYDROLOGIC ENGINEERING CENTER \*  
 \* 609 SECOND STREET, SUITE D \*  
 \* DAVIS, CALIFORNIA 95616 \*  
 \* (916) 756-1104 \*  
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X   X  XXXXXXX  XXXX          XXXXX
X   X X          X   X          X   X
X   X X          X           X
XXXXXXXX XXXX   X           XXXXX XXXXX
X   X X          X           X
X   X X          X   X          X
X   X XXXXXXX  XXXX          XXXXXXX

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END OF BANNER

1  
 1/ 1/80 3:39:28

PAGE 1

THIS RUN EXECUTED 1/ 1/80 3:39:28

\*\*\*\*\*

HEC2 RELEASE DATED SEPT 88

\*\*\*\*\*

T1 27 MILE WASH CROSS SECTIONS 59 THROUGH 78  
 T2 10 YEAR FLOW - SUPERCRITICAL RUN  
 T3 FILE NAME: 3308HCS3.IN

J1	ICHECK	INQ	MINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	1	0.0737	0	0	0	3197.3	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	109	194							
NH	3	0.08	59	0.04	61	0.08	108			
X1	78.0	6	32	80	310	310	300			
GR	3200	0	3198	32	3196	59	3196	61	3198	80
GR	3200	108								
NH	1	0.04	26							
X1	77.0	8	7	22	180	170	170			
GR	3190	0	3188	7	3186	10	3184	13	3184	15
GR	3186	17	3188	22	3190	26				
NH	1	0.04	33							
X1	76.0	10	8	20	350	340	350			
GR	3184	0	3182	5	3180	8	3178	12	3176.3	14
GR	3176.3	16	3178	18	3180	20	3182	26	3184	33

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QT	2	135	250							
NH	1	0.04	30							
X1	75.0	8	11	20	400	450	440			
GR	3174	0	3172	5	3170	11	3168	15	3168	18
GR	3170	20	3172	24	3174	30				
NH	1	0.04	35							
X1	74.0	10	7	24	280	270	275			
GR	3164	0	3162	4	3160	7	3158	12	3157.6	14
GR	3157.6	17	3158	20	3160	24	3162	30	3164	35
NH	3	0.07	107	0.05	159	0.07	167			
X1	73.0	8	123	130	120	140	130			
GR	3158	0	3156	49	3156	73	3156	107	3154	123
GR	3154	130	3156	159	3158	167				

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NH	3	0.07	36	0.05	132	0.07	348			
X1	72.0	12	90	100	345	240	295			
GR	3156	0	3154	36	3153	90	3152.3	91	3152.3	99
GR	3153	100	3153	132	3163	133	3163	184	3153	185
GR	3154	268	3156	348						

QT	2	158	309							
NH	5	0.08	130	0.024	131	0.08	145	0.017	180	0.024
NH	185									
X1	71.0	13	120	145	455	450	475			
GR	3148	0	3146	45	3144.8	49	3146	58	3147	85
GR	3146	120	3144	128	3143.8	130	3143.8	131	3144	134
GR	3146	145	3146	180	3148	185				

NH	3	0.08	82	0.024	88	0.08	210			
X1	70.0	8	80	90	370	350	370			
GR	3140	0	3138	22	3137	80	3136.3	82	3136.3	88
GR	3137	90	3138	110	3140	210				

NH	3	0.08	62	0.024	68	0.08	144			
X1	69.0	10	58	72	240	220	235			
GR	3136	0	3134	20	3132	35	3130	58	3129.8	62
GR	3129.8	68	3130	72	3132	95	3134	120	3136	144

NH	3	0.08	69	0.024	75	0.08	288			
X1	68.0	15	65	80	430	440	460			
X3						152	3128.5			
GR	3132	0	3130	50	3128	60	3126	65	3125	69
GR	3125	75	3126	80	3128	132	3128.5	152	3128	168
GR	3126.3	204	3126.3	208	3128	242	3130	260	3132	288

QT	2	258	497							
NH	3	0.08	78	0.024	84	0.08	273			
X1	67.0	14	75	85	240	220	230			
GR	3126	0	3124	18	3122	39	3120	71	3118	75
GR	3116	78	3115.8	79	3115.8	80	3116	84	3118	85
GR	3120	90	3122	160	3124	232	3126	273		

NH	3	0.08	45	0.024	51	0.08	228			
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28

X1	66.0	12	42	54	270	260	250			
GR	3122	0	3120	8	3118	13	3116	28	3114	42
GR	3113.5	45	3113.5	51	3114	54	3116	60	3118	140
GR	3120	190	3122	228						
NH	3	0.08	144	0.024	150	0.08	304			
X1	65.0	17	143	152	360	490	500			
GR	3120	0	3118	13	3116	19	3114	28	3113.5	70
GR	3114	110	3114	122	3112	143	3111.6	144	3111.6	150
GR	3112	152	3114	156	3114	180	3116	238	3118	252
GR	3118	293	3120	304						

1

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PAGE 3

NH	3	0.08	282	0.024	288	0.08	344			
X1	64.0	13	270	295	400	400	400			
GR	3114	0	3112	118	3110	175	3109	232	3119	233
GR	3119	269	3108	270	3106.7	282	3106.7	288	3108	295
GR	3110	320	3112	337	3114	344				

QT	2	280	550							
NH	3	0.08	34	0.024	41	0.08	248			
X1	63.0	12	31	44	400	370	380			
GR	3110	0	3108	12	3106	16	3104	21	3102	31
GR	3101.5	34	3101.5	41	3102	44	3104	144	3106	200
GR	3108	220	3110	248						

NH	3	0.08	121	0.024	129	0.08	285			
X1	62.0	12	119	131	300	300	300			
GR	3104	0	3102	10	3100	20	3098	29	3096	119
GR	3095.3	121	3095.3	129	3096	131	3098	135	3100	204
GR	3102	266	3104	285						

QT	2	299	610							
NH	3	0.08	211	0.024	219	0.08	250			
X1	61.0	12	209	221	240	260	250			
GR	3100	0	3098	20	3096	50	3094	100	3092	209
GR	3091	211	3091	219	3092	221	3094	229	3096	233
GR	3098	240	3100	250						

NH	3	0.08	71	0.024	79	0.08	265			
X1	60.0	12	66	85	330	270	300			
GR	3098	0	3096	16	3094	23	3092	36	3090	66
GR	3088.2	71	3088.2	79	3090	85	3092	150	3094	230
GR	3096	250	3098	265						

NH	3	0.08	171	0.024	179	0.08	290			
X1	59.0	12	164	186	400	300	380			
GR	3100	0	3092	40	3090	50	3088	95	3086	164
GR	3085	171	3085	179	3086	186	3088	233	3090	252
GR	3092	262	3100	290						

1

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PAGE 4

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	

290

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

\*PROF 1

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 78.000

78.00	1.32	3197.32	3197.33	3197.30	3197.68	.36	.00	.00	3198.00
109.	0.	109.	0.	0.	23.	0.	0.	0.	3198.00
.00	.00	4.79	.00	.000	.066	.000	.000	3196.00	41.14
.073668	0.	0.	0.	0	5	5	.00	32.43	73.57

0

1490 NH CARD USED

\*SECNO 77.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

77.00	1.24	3185.24	3186.75	.00	3194.89	9.65	.00	2.79	3188.00
109.	0.	109.	0.	0.	4.	0.	0.	0.	3188.00
.00	.00	24.93	.00	.000	.000	.000	.000	3184.00	11.15
.000000	310.	300.	310.	7	17	0	.00	5.09	16.23

0

1490 NH CARD USED

\*SECNO 76.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

76.00	1.16	3177.46	3179.07	.00	3189.47	12.01	.00	2.28	3180.00
109.	0.	109.	0.	0.	4.	0.	0.	0.	3180.00
.01	.00	27.81	.00	.000	.000	.000	.000	3176.30	12.63
.000000	180.	170.	170.	20	17	0	.00	4.74	17.37

0

1490 NH CARD USED

\*SECNO 75.000

3301 HV CHANGED MORE THAN HVINS

1

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PAGE 5

SECNO	DEPTH	CWSEL	CRISW	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

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

75.00	.85	3168.85	3170.57	.00	3190.59	21.75	.00	2.12	3170.00
135.	0.	135.	0.	0.	4.	0.	0.	0.	3170.00
.01	.00	37.42	.00	.000	.000	.000	.000	3168.00	13.31
.000000	350.	350.	340.	20	17	0	.00	5.54	18.85

0

*Handwritten mark*

1490 NH CARD USED  
 \*SECNO 74.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3710 WSEL ASSUMED BASED ON MIN DIFF

74.00	.81	3158.41	3159.57	.00	3166.69	8.28	.00	1.80	3160.00
135.	0.	135.	0.	0.	6.	0.	0.	0.	3160.00
.01	.00	23.10	.00	.000	.000	.000	.000	3157.60	10.98
.000000	400.	440.	450.	20	17	0	.00	9.84	20.82

0  
 1490 NH CARD USED  
 \*SECNO 73.000

3235 SLOPE TOO STEEP, EXCEEDS .40

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3710 WSEL ASSUMED BASED ON MIN DIFF

73.00	.43	3154.43	3155.32	.00	3166.99	12.56	.00	.95	3154.00
135.	14.	94.	26.	1.	3.	1.	0.	0.	3154.00
.02	19.72	31.46	19.79	.050	.050	.050	.000	3154.00	119.58
3.474979	280.	275.	270.	20	14	0	.00	16.63	136.21

0  
 1490 NH CARD USED  
 \*SECNO 72.000

3840 SECTION NOT HIGH ENOUGH	3606.130	3206.000	3152.300	3206.000	3154.428	2
3840 SECTION NOT HIGH ENOUGH	3606.130	3256.000	3152.300	3256.000	3154.428	2
3840 SECTION NOT HIGH ENOUGH	3606.130	3306.000	3152.300	3306.000	3154.428	2
3840 SECTION NOT HIGH ENOUGH	3606.130	3356.000	3152.300	3356.000	3154.428	2

1  
 1/ 1/80 3:39:28

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

3840 SECTION NOT HIGH ENOUGH	3606.130	3406.000	3152.300	3406.000	3154.428	2
3840 SECTION NOT HIGH ENOUGH	3606.130	3456.000	3152.300	3456.000	3154.428	2

3790, DATA ERROR, JOB DUMPED  
 ERROR STATEMENT APPLIES TO SECTION 72.000

1  
 PROFILE FOR STREAM FILE NAME: 3308HCS3.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3152.	3157.	3162.	3167.	3172.	3177.	3182.	3187.	3192.	3197.
SECNO	CUMDIS									

78.00

0.

I WE M

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      . I W C L E M
50. . . . . I. W C L E.
100. . . . . I W C L M E.
150. . . . . I W C L M E.
200. . . . . I W C L M E.
250. . . . . I W C L M E.
77.00 300. . . . . I W C L M E.
350. . . . . I W C L M E.
400. . . . . I W C L M E.
450. . . . . I W C L M E.
76.00 500. . . . . I W C L M E.
550. . . . . I W C L M E.
600. . . . . I W C L M E.
650. . . . . I W C L M E.
700. . . . . I W C L M E.
750. . . . . I W C L M E.
75.00 800. . . . . I W C L M E.
850. . . . . I W C L M E.
900. . . . . I W C L M E.
950. . . . . I W C L M E.
1000. . . . . I W C L M E.
1050. . . . . I W C L M E.
1100. . . . . I W C L M E.
1150. . . . . I W C L M E.
1200. . . . . I W C L M E.
1250. . . . . I W C L M E.
74.00 1300. . . . . I W C L M E.
1350. . . . . I W C L M E.
1400. . . . . I W C L M E.
1450. . . . . I W C L M E.
1500. . . . . I W C L M E.
73.00 1550. . . . . I W C L M E.

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1  
1/ 1/80 3:39:28

T1 27 MILE WASH CROSS SECTIONS 59 THROUGH 78  
T2 SUPERCRITICAL RUN  
T3 100 YEAR FLOW

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	1	0.0737	0	0	0	3197.7	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15									

1  
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SECNO	DEPTH	CWSEL	CRISW	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

29

\*PROF 2

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 78.000

78.00	1.68	3197.68	3197.68	3197.70	3198.14	.46	.00	.00	3198.00
194.	0.	194.	0.	0.	36.	0.	0.	0.	3198.00
.00	.00	5.44	.00	.000	.069	.000	.000	3196.00	36.37
.075093	0.	0.	0.	0	5	3	.00	40.55	76.92

0

1490 NH CARD USED

\*SECNO 77.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE

77.00	1.83	3185.83	3187.55	.00	3195.40	9.57	.00	2.73	3188.00
194.	0.	194.	0.	0.	8.	0.	0.	0.	3188.00
.00	.00	24.83	.00	.000	.000	.000	.000	3184.00	10.26
.000001	310.	300.	310.	6	17	0	.00	6.56	16.82

0

1490 NH CARD USED

\*SECNO 76.000

3301 HV CHANGED MORE THAN HVINS

76.00	1.58	3177.88	3179.92	.00	3193.57	15.68	.00	1.83	3180.00
194.	0.	194.	0.	0.	6.	0.	0.	0.	3180.00
.00	.00	31.78	.00	.000	.000	.000	.000	3176.30	12.14
.000001	180.	170.	170.	19	17	0	.00	5.72	17.86

0

1490 NH CARD USED

\*SECNO 75.000

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
3710 WSEL ASSUMED BASED ON MIN DIFF

1

1/ 1/80 3:39:28

SECNO	DEPTH	CWSEL	CRISW	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

75.00	1.45	3169.45	3171.54	.00	3186.63	17.18	.00	6.73	3170.00
250.	0.	250.	0.	0.	8.	0.	0.	0.	3170.00
.01	.00	33.26	.00	.000	.000	.000	.000	3168.00	12.10
.000001	350.	350.	340.	20	17	0	.00	7.35	19.45

0

1490 NH CARD USED

\*SECNO 74.000

3301 HV CHANGED MORE THAN HVINS

294

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

74.00	.84	3158.44	3160.28	.00	3183.84	25.40	.00	2.54	3160.00
250.	0.	250.	0.	0.	6.	0.	0.	0.	3160.00
.01	.00	40.44	.00	.000	.000	.000	.000	3157.60	10.89
.000000	400.	440.	450.	20	14	0	.00	9.99	20.89

0

1490 NH CARD USED

\*SECNO 73.000

3235 SLOPE TOO STEEP, EXCEEDS .40

3301 HV CHANGED MORE THAN HVINS

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3710 WSEL ASSUMED BASED ON MIN DIFF

73.00	.54	3154.54	3155.76	.00	3177.43	22.89	.00	.26	3154.00
250.	31.	162.	57.	1.	4.	2.	0.	0.	3154.00
.01	27.12	43.27	27.22	.050	.050	.050	.000	3154.00	118.71
4.873145	280.	275.	270.	20	17	0	.00	19.05	137.77

0

1490 NH CARD USED

\*SECNO 72.000

3840 SECTION NOT HIGH ENOUGH	3787.981	3206.000	3152.300	3206.000	3154.443	2
3840 SECTION NOT HIGH ENOUGH	3787.981	3256.000	3152.300	3256.000	3154.443	2
3840 SECTION NOT HIGH ENOUGH	3787.981	3306.000	3152.300	3306.000	3154.443	2
3840 SECTION NOT HIGH ENOUGH	3787.981	3356.000	3152.300	3356.000	3154.443	2
3840 SECTION NOT HIGH ENOUGH	3787.981	3406.000	3152.300	3406.000	3154.443	2
3840 SECTION NOT HIGH ENOUGH	3787.981	3456.000	3152.300	3456.000	3154.443	2

3790, DATA ERROR, JOB DUMPED

ERROR STATEMENT APPLIES TO SECTION 72.000

1

PROFILE FOR STREAM 100 YEAR FLOW

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3152.	3157.	3162.	3167.	3172.	3177.	3182.	3187.	3192.	3197.
78.00	0.	.	.	.	.	.	.	.	.	I .WE M .
	50.	.	.	.	.	.	.	.	.	. I WL .EM .
	100.	.	.	.	.	.	.	.	.	I. WCL ME .
	150.	.	.	.	.	.	.	.	.	I W.C M E. .
	200.	.	.	.	.	.	.	.	.	.I W CL . M E . .
	250.	.	.	.	.	.	.	.	.	I .W CL M. E . .
77.00	300.	.	.	.	.	.	.	.	.	. I W .C M . E . .
	350.	.	.	.	.	.	.	.	.	. I W CL . M . E . .
	400.	.	.	.	.	.	.	.	.	. I W . C M . . E . .
	450.	.	.	.	.	.	.	.	.	. I W C . M . . E . .
76.00	500.	.	.	.	.	.	.	.	.	. I .W C . M . . E . .
	550.	.	.	.	.	.	.	.	.	. I W . C .M . . E . .
	600.	.	.	.	.	.	.	.	.	. I W C M . . E . .
	650.	.	.	.	.	.	.	.	.	. I W LC . M . . E . .
	700.	.	.	.	.	.	.	.	.	. I W LC M . . E . .
	750.	.	.	.	.	.	.	.	.	. I W.L C M . . E . .

```

      800. . . . . I W L . C M . . . . . E . . . . .
75.00 850. . . . . . I W L C . M . . . . . E . . . . .
      900. . . . . I . W L C . M . . . . . E . . . . .
      950. . . . . I W . L C M . . . . . E . . . . .
     1000. . . . . I W L C M . . . . . E . . . . .
     1050. . . . . I W L C . M . . . . . E . . . . .
     1100. . . . . I W L C . M . . . . . E . . . . .
     1150. . . . . I W . L C M . . . . . E . . . . .
     1200. . . . . I W L C M . . . . . E . . . . .
     1250. . . . . I W L C . M . . . . . E . . . . .
74.00 1300. . . . . I W L C . M . . . . . E . . . . .
     1350. . . . . I . W L C . M . . . . . E . . . . .
     1400. . . . . I W . L C M . . . . . E . . . . .
     1450. . . . . I W L C M . . . . . E . . . . .
     1500. . . . . I W C . M . . . . . E . . . . .
73.00 1550. . . . . I W C . M . . . . . E . . . . .

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1/ 1/80 3:39:28

THIS RUN EXECUTED 1/ 1/80 3:39:51

\*\*\*\*\*  
 HEC2 RELEASE DATED SEPT 88  
 \*\*\*\*\*

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

FILE NAME: 3308HCS3.IN

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
78.000	.00	.00	.00	3196.00	109.00	3197.32	3197.33	3197.68	736.68	4.79	22.77	4.02
78.000	.00	.00	.00	3196.00	194.00	3197.68	3197.68	3198.14	750.93	5.44	35.67	7.08
* 77.000	300.00	.00	.00	3184.00	109.00	3185.24	3186.75	3194.89	.00	24.93	4.37	1900.66
* 77.000	300.00	.00	.00	3184.00	194.00	3185.83	3187.55	3195.40	.01	24.83	7.81	2052.57
* 76.000	170.00	.00	.00	3176.30	109.00	3177.46	3179.07	3189.47	.00	27.81	3.92	2374.24
76.000	170.00	.00	.00	3176.30	194.00	3177.88	3179.92	3193.57	.01	31.78	6.10	2699.55
* 75.000	350.00	.00	.00	3168.00	135.00	3168.85	3170.57	3190.59	.00	37.42	3.61	2707.18
* 75.000	350.00	.00	.00	3168.00	250.00	3169.45	3171.54	3186.63	.01	33.26	7.52	3275.49
* 74.000	440.00	.00	.00	3157.60	135.00	3158.41	3159.57	3166.69	.00	23.10	5.84	3240.90
* 74.000	440.00	.00	.00	3157.60	250.00	3158.44	3160.28	3183.84	.00	40.44	6.18	4008.98
* 73.000	275.00	.00	.00	3154.00	135.00	3154.43	3155.32	3166.99	34749.79	31.46	5.06	.72
* 73.000	275.00	.00	.00	3154.00	250.00	3154.54	3155.76	3177.43	48731.45	43.27	6.98	1.13
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

291



.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

1

1/ 1/80 3:39:28

PAGE 11

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

1

1/ 1/80 3:39:28

PAGE 12

FILE NAME: 3308HCS3.IN

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
78.000	109.00	3197.32	.00	.00	.02	32.43	.00
78.000	194.00	3197.68	.35	.00	-.02	40.55	.00

297



.000 .00 .00 .00 .00 .00 .00 .00  
.000 .00 .00 .00 .00 .00 .00 .00

1

1/ 1/80 3:39:28

PAGE 14

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 77.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
WARNING SECNO= 77.000 PROFILE= 2 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE  
  
CAUTION SECNO= 76.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 76.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
  
CAUTION SECNO= 75.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 75.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 75.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 75.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
  
CAUTION SECNO= 74.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 74.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 74.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 74.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
  
CAUTION SECNO= 73.000 PROFILE= 1 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 73.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 73.000 PROFILE= 1 SLOPE TOO STEEP  
CAUTION SECNO= 73.000 PROFILE= 2 WSEL ASSUMED BASED ON MIN DIFF  
CAUTION SECNO= 73.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 73.000 PROFILE= 2 SLOPE TOO STEEP

299

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*****
1*****
* WATER SURFACE PROFILES *
* VERSION OF SEPTEMBER 1988 *
* * *
* * *
* RUN DATE 1/ 1/80 TIME 3:22:46 *
*****

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

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X X XXXXXXX XXXXX XXXXX
X X X X X X X X
X X X X X X
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END OF BANNER

1  
1/ 1/80 3:22:46

PAGE 1

THIS RUN EXECUTED 1/ 1/80 3:22:46

\*\*\*\*\*  
HEC2 RELEASE DATED SEPT 88  
\*\*\*\*\*

T1 27 MILE WASH CROSS SECTIONS 79 THROUGH 86  
T2 10 YEAR FLOW - SUPERCRITICAL RUN  
T3 FILE NAME: 3308HCS4.IN

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	1	0.0171	0	0	0	3168.3	0
NC	0.08	0.08	0.024	.3	.5					
QT	2	1224	2276							
NH	7	0.08	115	0.024	135	0.08	175	0.024	182	0.08
NH	215	0.024	220	0.08	405					
X1	86.0	19	115	252	410	500	450			
GR	3176	0	3174	5	3172	20	3170	40	3168	95
GR	3166	115	3166	135	3167	140	3167	175	3167	182
GR	3167.2	186	3167.2	210	3167	215	3167	220	3168	252
GR	3170	295	3172	310	3174	345	3176	405		
NH	5	0.08	65	0.024	80	0.08	165	0.017	185	0.08
NH	435									
X1	85.0	18	55	226	430	470	480			
GR	3168	0	3166	26	3164	48	3162	55	3161	65
GR	3161	80	3162	83	3162	155	3160	165	3160	185
GR	3162	226	3164	330	3166	365	3166.5	380	3176.5	381

300

GR	3176.5	422	3166.5	423	3168	435				
NH	9	0.08	150	0.024	151	0.08	220	0.024	221	0.08
NH	259	0.024	283	0.05	286	0.017	305	0.08	395	
X1	84.0	21	150	307	260	360	325			
GR	3160	0	3158	20	3156	70	3154.5	150	3154.5	151
GR	3155.5	180	3154	220	3154	221	3154.5	259	3154.1	260
GR	3154.1	282	3155	283	3155	286	3155	305	3156	307
GR	3158	310	3158	317	3156	320	3156	355	3158	375
GR	3160	395								

NH	5	0.08	127	0.024	147	0.08	257	0.024	265	0.08
NH	492									
X1	83.0	18	125	265	450	320	410			
GR	3160	0	3158	9	3156	11	3154	16	3152	53
GR	3150	125	3149.7	127	3149.7	147	3150	150	3152	158
GR	3152	162	3150	257	3150	265	3152	363	3154	398
GR	3156	420	3158	450	3160	492				

1  
1/ 1/80      3:22:46      PAGE 2

NH	3	0.08	238	0.024	253	0.08	532			
X1	82.0	28	230	262	510	435	465			
GR	3156	0	3152	27	3150	58	3149	99	3159	100
GR	3159	149	3149	150	3148	158	3147	199	3157	200
GR	3157	212	3147	213	3146	230	3144	238	3144	253
GR	3146	262	3146	286	3146	359	3156	360	3156	372
GR	3146	373	3148	421	3150	462	3160	463	3160	488
GR	3150	489	3152	502	3156	532				

NH	3	0.08	288	0.024	323	0.08	434			
X1	81.0	17	284	324	380	410	380			
GR	3148	0	3146	40	3144	72	3142	112	3140.5	147
GR	3140.5	190	3150.5	191	3150.5	205	3140.5	206	3140	284
GR	3139	288	3139	323	3140	324	3142	370	3144	402
GR	3146	417	3148	434						

NH	3	0.08	50	0.024	80	0.08	498			
X1	80.0	14	40	86	330	400	435			
GR	3142	0	3140	28	3138	33	3136	40	3135	50
GR	3135	80	3136	86	3136	128	3135	176	3135	400
GR	3136	420	3138	473	3140	487	3142	498		

NH	5	0.08	197	0.024	217	0.08	398	0.024	417	0.08
NH	465									
X1	79.0	23	190	425	550	490	650			
GR	3140	0	3138	27	3136	60	3134	70	3132	82
GR	3130	94	3130	190	3129.2	197	3129.2	217	3130	230
GR	3130	282	3131	310	3131	390	3130	398	3129	402
GR	3129	411	3130	417	3131	420	3132	425	3134	436
GR	3136	443	3138	450	3140	465				

1  
1/ 1/80      3:22:46      PAGE 3

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	

301

SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

\*PROF 1

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 86.000

3720 CRITICAL DEPTH ASSUMED

86.00	2.27	3168.27	3168.27	3168.30	3168.90	.64	.00	.00	3166.00
1224.	77.	1146.	1.	26.	174.	1.	0.	0.	3168.00
.00	2.93	6.57	.68	.080	.037	.080	.000	3166.00	87.64
.019361	0.	0.	0.	0	5	3	.00	170.11	257.75

0

1490 NH CARD USED

\*SECNO 85.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

85.00	2.51	3162.51	3162.51	.00	3163.09	.58	5.96	3.20	3162.00
1224.	0.	1219.	5.	0.	200.	7.	2.	2.	3162.00
.02	.71	6.11	.73	.080	.026	.080	.000	3160.00	53.22
.009657	410.	450.	500.	20	8	0	.00	199.26	252.48

0

1490 NH CARD USED

\*SECNO 84.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

84.00	1.76	3155.76	3155.76	.00	3156.28	.52	9.34	2.89	3154.50
1224.	141.	1083.	0.	43.	180.	0.	4.	4.	3156.00
.04	3.32	6.03	.00	.080	.065	.000	.000	3154.00	82.67
.059003	430.	480.	470.	20	20	0	.00	223.86	306.52

0

1490 NH CARD USED

\*SECNO 83.000

3265 DIVIDED FLOW

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

83.00	2.06	3151.76	3151.76	.00	3152.26	.50	9.38	6.80	3150.00
1224.	126.	927.	171.	56.	145.	76.	6.	6.	3150.00
.06	2.25	6.40	2.25	.080	.034	.080	.000	3149.70	61.58
.017456	260.	325.	360.	20	11	0	.00	273.47	351.32

0

1

1/ 1/80 3:22:46

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 82.000

3265 DIVIDED FLOW

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

82.00	3.29	3147.29	3147.29	.00	3147.93	.65	8.14	5.69	3146.00
1224.	35.	706.	483.	15.	88.	145.	9.	8.	3146.00
.08	2.34	8.01	3.33	.080	.058	.080	.000	3144.00	187.28
.025629	450.	410.	320.	20	14	0	.00	188.90	403.86

0

1490 NH CARD USED  
 \*SECNO 81.000

3265 DIVIDED FLOW

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

81.00	2.63	3141.63	3141.63	.00	3142.31	.68	6.94	.30	3140.00
1224.	358.	818.	48.	171.	103.	30.	12.	10.	3140.00
.10	2.10	7.98	1.59	.080	.034	.080	.000	3139.00	120.73
.009731	510.	465.	435.	20	16	0	.00	224.88	361.39

0

1490 NH CARD USED  
 \*SECNO 80.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3710 WSEL ASSUMED BASED ON MIN DIFF  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY  
 3720 CRITICAL DEPTH ASSUMED

80.00	1.10	3136.10	3136.10	.00	3136.53	.43	5.77	.34	3136.00
1224.	0.	364.	860.	0.	43.	292.	14.	13.	3136.00
.12	.03	8.55	2.95	.080	.026	.080	.000	3135.00	39.65
.025001	380.	380.	410.	20	18	0	.00	383.01	422.66

0

1490 NH CARD USED  
 \*SECNO 79.000

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1/ 1/80 3:22:46

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

3265 DIVIDED FLOW

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

79.00	1.82	3130.82	3130.82	.00	3131.32	.50	16.51	7.87	3130.00
1224.	360.	864.	0.	81.	142.	0.	17.	16.	3132.00
.14	4.47	6.08	.00	.080	.067	.000	.000	3129.00	89.08
.076773	330.	435.	400.	20	19	0	.00	243.88	419.46

0

1

PROFILE FOR STREAM FILE NAME: 3308HCS4.IN

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3129.	3134.	3139.	3144.	3149.	3154.	3159.	3164.	3169.	3174.
SECNO	CUMDIS									
86.00	0.	.	.	.	.	.	.	.	I RWE	M
	50.	.	.	.	.	.	.	.	I WE.	M
	100.	.	.	.	.	.	.	.	IL RWE	M
	150.	.	.	.	.	.	.	.	IL RWE	M
	200.	.	.	.	.	.	.	.	IL WE	M
	250.	.	.	.	.	.	.	I LRWE	M	.
	300.	.	.	.	.	.	.	I LRWE	M	.
	350.	.	.	.	.	.	.	I LRWE	M	.
	400.	.	.	.	.	.	.	I LWE.	M	.
85.00	450.	.	.	.	.	.	.	I LWE.	M	.
	500.	.	.	.	.	.	.	I LRWE	M	.
	550.	.	.	.	.	.	.	I LWE	M	.
	600.	.	.	.	.	.	.	I LRWE	M	.
	650.	.	.	.	.	.	.	I LWE	M	.
	700.	.	.	.	.	.	.	I LWE	M	.
	750.	.	.	.	.	.	.	I LWE	M	.
	800.	.	.	.	.	.	.	I LWE	M	.
	850.	.	.	.	.	.	.	I LWE	M	.
	900.	.	.	.	.	.	.	IL WE	M	.
84.00	950.	.	.	.	.	.	.	IL WE	M	.
	1000.	.	.	.	.	.	.	IL WE	M	.
	1050.	.	.	.	.	.	.	IL RWE	M	.
	1100.	.	.	.	.	.	.	ILR WE	M	.
	1150.	.	.	.	.	.	.	I R WE	M	.
	1200.	.	.	.	.	.	.	ILR WE	M	.
	1250.	.	.	.	.	.	.	IL WE	M	.
83.00	1300.	.	.	.	.	.	.	IL WE	M	.
	1350.	.	.	.	.	.	.	IL WE	M	.
	1400.	.	.	.	.	.	.	IL WE	M	.
	1450.	.	.	.	.	.	.	I L WE	M	.
	1500.	.	.	.	.	.	.	I L WE	M	.
	1550.	.	.	.	.	.	.	I L WE	M	.
	1600.	.	.	.	.	.	.	I L WE	M	.
	1650.	.	.	.	.	.	.	I L WE.	M	.
82.00	1700.	.	.	.	.	.	.	I L WE	M	.
	1750.	.	.	.	.	.	.	I L WE	M	.
	1800.	.	.	.	.	.	.	I L WE	M	.
	1850.	.	.	.	.	.	.	I L WE	M	.
	1900.	.	.	.	.	.	.	I L WE	M	.
	1950.	.	.	.	.	.	.	I L WE	M	.
	2000.	.	.	.	.	.	.	I L WE	M	.
	2050.	.	.	.	.	.	.	I L WE.	M	.
	2100.	.	.	.	.	.	.	I L WE	M	.
81.00	2150.	.	.	.	.	.	.	I L WE	M	.
	2200.	.	.	.	.	.	.	I L WE	M	.
	2250.	.	.	.	.	.	.	I L WE	M	.
	2300.	.	.	.	.	.	.	I L WE	M	.
	2350.	.	.	.	.	.	.	I L WE	M	.
	2400.	.	.	.	.	.	.	I L WE.	M	.
	2450.	.	.	.	.	.	.	I LE	M	.
	2500.	.	.	.	.	.	.	I WE	M	.



80.00	2550.	.	.	I WE	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2600.	.	.	I WE	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2650.	.	.	I.LWE	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2700.	.	.	I LE	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2750.	.	.	I LWE	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2800.	.	.	I LWE.	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2850.	.	.	I LWE .	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2900.	.	.	I L WER .	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.
79.00	2950.	.	.	I L WER	.	M	.	.	.	.	.	.	.	.	.	.	.	.	.	.

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1/ 1/80 3:22:46

T1 27 MILE WASH CROSS SECTIONS 79 THROUGH 86  
T2 SUPERCRITICAL RUN  
T3 100 YEAR FLOW

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	1	0.0171	0	0	0	3169	0
J2	NPROF	IPLT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE

15

1

1/ 1/80 3:22:46

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	

\*PROF 2

CCHV= .300 CEHV= .500

1490 NH CARD USED

\*SECNO 86.000

3720 CRITICAL DEPTH ASSUMED

86.00	2.94	3168.94	3168.94	3169.00	3169.82	.88	.00	.00	3166.00	
2276.	177.	2084.	15.	51.	267.	10.	0.	0.	3168.00	
.00	3.47	7.81	1.59	.080	.042	.080	.000	3166.00	69.10	
.019911	0.	0.	0.	0	8	3	.00	203.14	272.25	

0

1490 NH CARD USED

\*SECNO 85.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL

3693 PROBABLE MINIMUM SPECIFIC ENERGY

3720 CRITICAL DEPTH ASSUMED

85.00	3.10	3163.10	3163.10	.00	3163.94	.84	6.97	4.41	3162.00	
2276.	3.	2229.	44.	2.	301.	31.	3.	2.	3162.00	
.02	1.35	7.42	1.39	.080	.032	.080	.000	3160.00	51.15	
.012441	410.	450.	500.	20	8	0	.00	232.06	283.21	

0

1490 NH CARD USED

300

\*SECNO 84.000

3265 DIVIDED FLOW

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

84.00	2.33	3156.33	3156.33	.00	3157.01	.67	10.30	3.76	3154.50
2276.	368.	1884.	23.	88.	269.	12.	7.	5.	3156.00
.04	4.19	7.00	1.87	.080	.066	.080	.000	3154.00	61.69
.046767	430.	480.	470.	20	19	0	.00	284.64	358.33

0

1490 NH CARD USED

\*SECNO 83.000

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

83.00	2.60	3152.30	3152.30	.00	3152.92	.62	9.20	6.74	3150.00
2276.	290.	1591.	395.	94.	218.	128.	10.	7.	3150.00
.05	3.07	7.31	3.08	.080	.038	.080	.000	3149.70	47.45
.019569	260.	325.	360.	20	8	0	.00	320.79	368.25

0

1

1/ 1/80 3:22:46

PAGE 8

SECNO	DEPTH	CWSEL	CRISW	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

1490 NH CARD USED

\*SECNO 82.000

3265 DIVIDED FLOW

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

82.00	4.02	3148.02	3148.02	.00	3148.81	.79	8.60	5.82	3146.00
2276.	143.	1051.	1082.	47.	112.	245.	14.	10.	3146.00
.07	3.02	9.41	4.41	.080	.058	.080	.000	3144.00	157.84
.025800	450.	410.	320.	20	14	0	.00	236.18	421.41

0

1490 NH CARD USED

\*SECNO 81.000

3265 DIVIDED FLOW

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

81.00	3.36	3142.36	3142.36	.00	3143.27	.91	7.34	5.64	3140.00
2276.	830.	1299.	147.	285.	132.	64.	19.	12.	3140.00
.09	2.91	9.84	2.32	.080	.034	.080	.000	3139.00	104.78
.010584	510.	465.	435.	20	15	0	.00	255.37	375.78

0

1490 NH CARD USED

\*SECNO 80.000

300

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

80.00	1.55	3136.55	3136.55	.00	3137.18	.63	6.07	.42	3136.00
2276.	1.	655.	1620.	1.	63.	444.	23.	15.	3136.00
.11	1.20	10.38	3.64	.080	.028	.080	.000	3135.00	38.09
.024823	380.	380.	410.	20	14	0	.00	396.39	434.48

0  
 1490 NH CARD USED  
 \*SECNO 79.000

3685 20 TRIALS ATTEMPTED WSEL,CWSEL  
 3693 PROBABLE MINIMUM SPECIFIC ENERGY

1  
 1/ 1/80 3:22:46

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

3720 CRITICAL DEPTH ASSUMED

79.00	2.31	3131.31	3131.31	.00	3131.90	.58	16.65	5.46	3130.00
2276.	824.	1452.	0.	131.	241.	0.	27.	19.	3132.00
.13	6.27	6.02	.00	.080	.072	.000	.000	3129.00	86.11
.081662	330.	435.	400.	20	21	0	.00	335.46	421.57

0  
 1  
 PROFILE FOR STREAM 100 YEAR FLOW

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

ELEVATION	3129.	3134.	3139.	3144.	3149.	3154.	3159.	3164.	3169.	3174.
SECNO	CUMDIS									
86.00	0.	.	.	.	.	.	.	.	I RWE	M
	50.	.	.	.	.	.	.	.	I RWE	M
	100.	.	.	.	.	.	.	.	IL RWE.	M
	150.	.	.	.	.	.	.	.	IL RWE.	M.
	200.	.	.	.	.	.	.	.	IL RWE	M
	250.	.	.	.	.	.	.	.	I LRWE	M
	300.	.	.	.	.	.	.	.	I LRWE	M
	350.	.	.	.	.	.	.	.	I LRWE	M
	400.	.	.	.	.	.	.	.	I LW.E	M
85.00	450.	.	.	.	.	.	.	.	I LWE	M
	500.	.	.	.	.	.	.	.	I LRWE	M
	550.	.	.	.	.	.	.	.	I LRWE	M
	600.	.	.	.	.	.	.	.	I LRWE	M
	650.	.	.	.	.	.	.	.	I LRWE	M
	700.	.	.	.	.	.	.	.	I LRWE	M
	750.	.	.	.	.	.	.	.	I LRWE	M
	800.	.	.	.	.	.	.	.	I LRWE	M
	850.	.	.	.	.	.	.	.	I LRWE	M
	900.	.	.	.	.	.	.	.	IL RWE	M
84.00	950.	.	.	.	.	.	.	.	IL RWE	M

	1000.	.	.	.	.	IL RW E	. M	.	.	.	.
	1050.	.	.	.	.	IL R W E	. M	.	.	.	.
	1100.	.	.	.	.	ILR .WE	. M	.	.	.	.
	1150.	.	.	.	.	I R WE	. M	.	.	.	.
	1200.	.	.	.	.	ILR W E	. M	.	.	.	.
	1250.	.	.	.	.	IL WE .	. M	.	.	.	.
83.00	1300.	.	.	.	.	IL WE .	. M	.	.	.	.
	1350.	.	.	.	.	IL WE .	.M	.	.	.	.
	1400.	.	.	.	.	IL WE .	. M	.	.	.	.
	1450.	.	.	.	.	I L . W E	. M.	.	.	.	.
	1500.	.	.	.	.	I L . W E	. M .	.	.	.	.
	1550.	.	.	.	.	I L . W E	. M .	.	.	.	.
	1600.	.	.	.	.	I L W E	. M .	.	.	.	.
	1650.	.	.	.	.	I L W.E	. M	.	.	.	.
82.00	1700.	.	.	.	.	I L W E	. M	.	.	.	.
	1750.	.	.	.	.	I. L W E .	. M	.	.	.	.
	1800.	.	.	.	.	I . L W E .	.M	.	.	.	.
	1850.	.	.	.	.	I L W E .	. M.	.	.	.	.
	1900.	.	.	.	.	I L . W E	. M .	.	.	.	.
	1950.	.	.	.	.	I L . W E	. M	.	.	.	.
	2000.	.	.	.	.	I L .WE	. M	.	.	.	.
	2050.	.	.	.	.	I L W E	. M	.	.	.	.
	2100.	.	.	.	.	I L W E	. M	.	.	.	.
81.00	2150.	.	.	.	.	I L W E .	. M .	.	.	.	.
	2200.	.	.	.	.	I.L W E .	. M	.	.	.	.
	2250.	.	.	.	.	I L W E	. M	.	.	.	.
	2300.	.	.	.	.	I L . W E	. M	.	.	.	.
	2350.	.	.	.	.	I L .WE	. M	.	.	.	.
	2400.	.	.	.	.	I L W.E	. M	.	.	.	.
	2450.	.	.	.	.	I L WE .	. M.	.	.	.	.
	2500.	.	.	.	.	I LW E .	. M .	.	.	.	.
80.00	2550.	.	.	.	.	I LW E .	. M .	.	.	.	.
	2600.	.	.	.	.	I LW E .	. M .	.	.	.	.
	2650.	.	.	.	.	I.LRWE	. M .	.	.	.	.
	2700.	.	.	.	.	I L W E	. M .	.	.	.	.
	2750.	.	.	.	.	I L W E	. M .	.	.	.	.
	2800.	.	.	.	.	I L WE	. M .	.	.	.	.
	2850.	.	.	.	.	I L WE .	. M	.	.	.	.
	2900.	.	.	.	.	I L WE .	. M	.	.	.	.
79.00	2950.	.	.	.	.	I L WE .	. M	.	.	.	.

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1/ 1/80 3:22:46

PAGE 10

THIS RUN EXECUTED 1/ 1/80 3:23:35

\*\*\*\*\*  
 HEC2 RELEASE DATED SEPT 88

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

FILE NAME: 3308HCS4.IN

SUMMARY PRINTOUT TABLE 150

30

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRISW	EG	10*KS	VCH	AREA	.01K
*	86.000	.00	.00	.00	3166.00	1224.00	3168.27	3168.27	3168.90	193.61	6.57	201.57	87.97
*	86.000	.00	.00	.00	3166.00	2276.00	3168.94	3168.94	3169.82	199.11	7.81	327.36	161.29
*	85.000	450.00	.00	.00	3160.00	1224.00	3162.51	3162.51	3163.09	96.57	6.11	206.78	124.55
*	85.000	450.00	.00	.00	3160.00	2276.00	3163.10	3163.10	3163.94	124.41	7.42	334.20	204.06
*	84.000	480.00	.00	.00	3154.00	1224.00	3155.76	3155.76	3156.28	590.03	6.03	222.21	50.39
*	84.000	480.00	.00	.00	3154.00	2276.00	3156.33	3156.33	3157.01	467.67	7.00	369.49	105.25
*	83.000	325.00	.00	.00	3149.70	1224.00	3151.76	3151.76	3152.26	174.56	6.40	276.71	92.64
*	83.000	325.00	.00	.00	3149.70	2276.00	3152.30	3152.30	3152.92	195.69	7.31	440.31	162.70
*	82.000	410.00	.00	.00	3144.00	1224.00	3147.29	3147.29	3147.93	256.29	8.01	247.93	76.46
*	82.000	410.00	.00	.00	3144.00	2276.00	3148.02	3148.02	3148.81	258.00	9.41	404.22	141.70
*	81.000	465.00	.00	.00	3139.00	1224.00	3141.63	3141.63	3142.31	97.31	7.98	303.55	124.08
*	81.000	465.00	.00	.00	3139.00	2276.00	3142.36	3142.36	3143.27	105.84	9.84	480.83	221.23
*	80.000	380.00	.00	.00	3135.00	1224.00	3136.10	3136.10	3136.53	250.01	8.55	334.28	77.41
*	80.000	380.00	.00	.00	3135.00	2276.00	3136.55	3136.55	3137.18	248.23	10.38	508.11	144.46
*	79.000	435.00	.00	.00	3129.00	1224.00	3130.82	3130.82	3131.32	767.73	6.08	222.77	44.18
*	79.000	435.00	.00	.00	3129.00	2276.00	3131.31	3131.31	3131.90	816.62	6.02	372.36	79.65

1

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SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	86.000	1224.00	3168.27	.00	.00	-.03	170.11	.00
*	86.000	2276.00	3168.94	.67	.00	-.06	203.14	.00
*	85.000	1224.00	3162.51	.00	-5.76	.00	199.26	450.00
*	85.000	2276.00	3163.10	.59	-5.84	.00	232.06	450.00
*	84.000	1224.00	3155.76	.00	-6.75	.00	223.86	480.00
*	84.000	2276.00	3156.33	.57	-6.77	.00	284.64	480.00
*	83.000	1224.00	3151.76	.00	-4.00	.00	273.47	325.00
*	83.000	2276.00	3152.30	.54	-4.03	.00	320.79	325.00
*	82.000	1224.00	3147.29	.00	-4.48	.00	188.90	410.00
*	82.000	2276.00	3148.02	.73	-4.28	.00	236.18	410.00
*	81.000	1224.00	3141.63	.00	-5.66	.00	224.88	465.00
*	81.000	2276.00	3142.36	.74	-5.66	.00	255.37	465.00
*	80.000	1224.00	3136.10	.00	-5.53	.00	383.01	380.00
*	80.000	2276.00	3136.55	.45	-5.81	.00	396.39	380.00

30

*	79.000	1224.00	3130.82	.00	-5.28	.00	243.88	435.00
*	79.000	2276.00	3131.31	.49	-5.23	.00	335.46	435.00

1

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO=	86.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	86.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	85.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	85.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	85.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	85.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	85.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	85.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	84.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	84.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	84.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	84.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	84.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	84.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	83.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	83.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	83.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	83.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	83.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=	81.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	81.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	81.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	81.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	81.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	81.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	80.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	80.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	80.000	PROFILE=	1	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO=	80.000	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	80.000	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	80.000	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO=	80.000	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO=	79.000	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO=	79.000	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO= 79.000 PROFILE= 1 20 TRIALS ATTEMPTED TO BALANCE WSEL  
CAUTION SECNO= 79.000 PROFILE= 2 CRITICAL DEPTH ASSUMED  
CAUTION SECNO= 79.000 PROFILE= 2 PROBABLE MINIMUM SPECIFIC ENERGY

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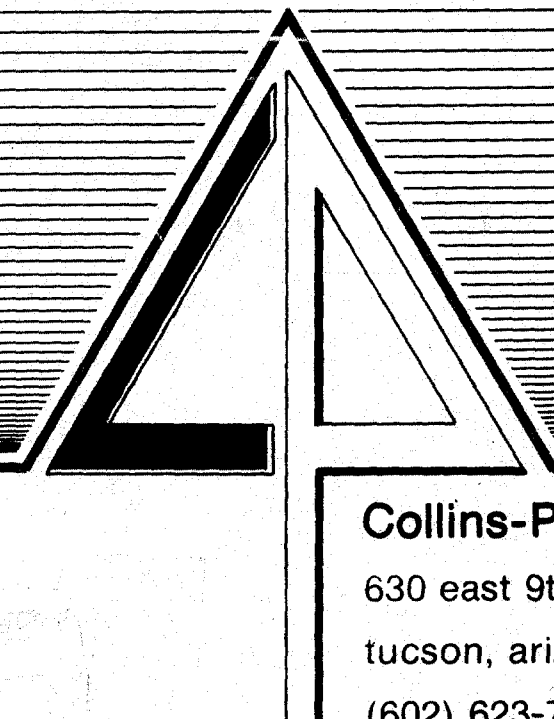
CAUTION SECNO= 79.000 PROFILE= 2 20 TRIALS ATTEMPTED TO BALANCE WSEL

**FINAL REPORT  
FOR  
27 MILE WASH  
FLOOD PLAIN DELINEATION STUDY**

**PREPARED FOR  
PIMA COUNTY DEPARTMENT OF TRANSPORTATION &  
FLOOD CONTROL DISTRICT  
201 NORTH STONE AVENUE  
TUCSON, ARIZONA 85701**

**AUGUST 1992**

**VOLUME I**

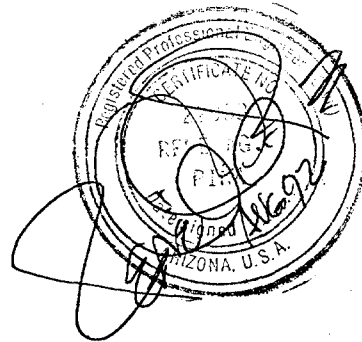


**Collins-Piña Consulting Engineers Inc.**  
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**FINAL REPORT  
FOR  
27 MILE WASH  
FLOOD PLAIN DELINEATION STUDY**

**AUGUST 1992**



**PREPARED BY:**

**COLLINS-PIÑA CONSULTING ENGINEERS, INC.  
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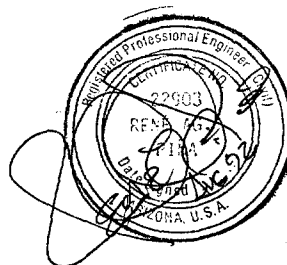
**FOR:**

**PIMA COUNTY DEPARTMENT OF TRANSPORTATION AND  
FLOOD CONTROL DISTRICT  
201 NORTH STONE AVENUE  
TUCSON, ARIZONA 85701**

**CPE JOB NO. 3308**

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## 1. INTRODUCTION

This report describes the hydrologic and hydraulic analysis as part of the 27 Mile Wash Floodplain Delineation Study.

### 1.1 Purpose of Study

Development in the lower end of the watershed has occurred without knowledge of the floodplain's characteristics. As a result, some structures are located within the 100-year and possibly the 10-year floodplain.

Pima County Flood Control District (PCFCD) wishes to have the 100-year floodplain delineated to manage future development within the basin. There is also the possibility that a Letter of Map Revision (LOMR) may be submitted to the Federal Emergency Management Agency (FEMA) for the 27 Mile Wash, so that it may be included in revised FEMA maps.

### 1.2 Study Area

The 27 Mile Wash watershed is located in Township 10 South and 11 South, Range 14 East (see Figure 1). The upper portion of the watershed (approximately 65% of the watershed area included in this study) is located in Pinal County and the lower portion is located in Pima County. The 27 Mile Wash flows through the town of Catalina and crosses under Highway 89 through a 6 barrel, 10' x 6' reinforced concrete box culvert. The wash joins Big Wash, approximately 6,500 feet downstream of Highway 89. The 27 Mile Wash watershed is 2,614 acres in size at the Highway 89 crossing.

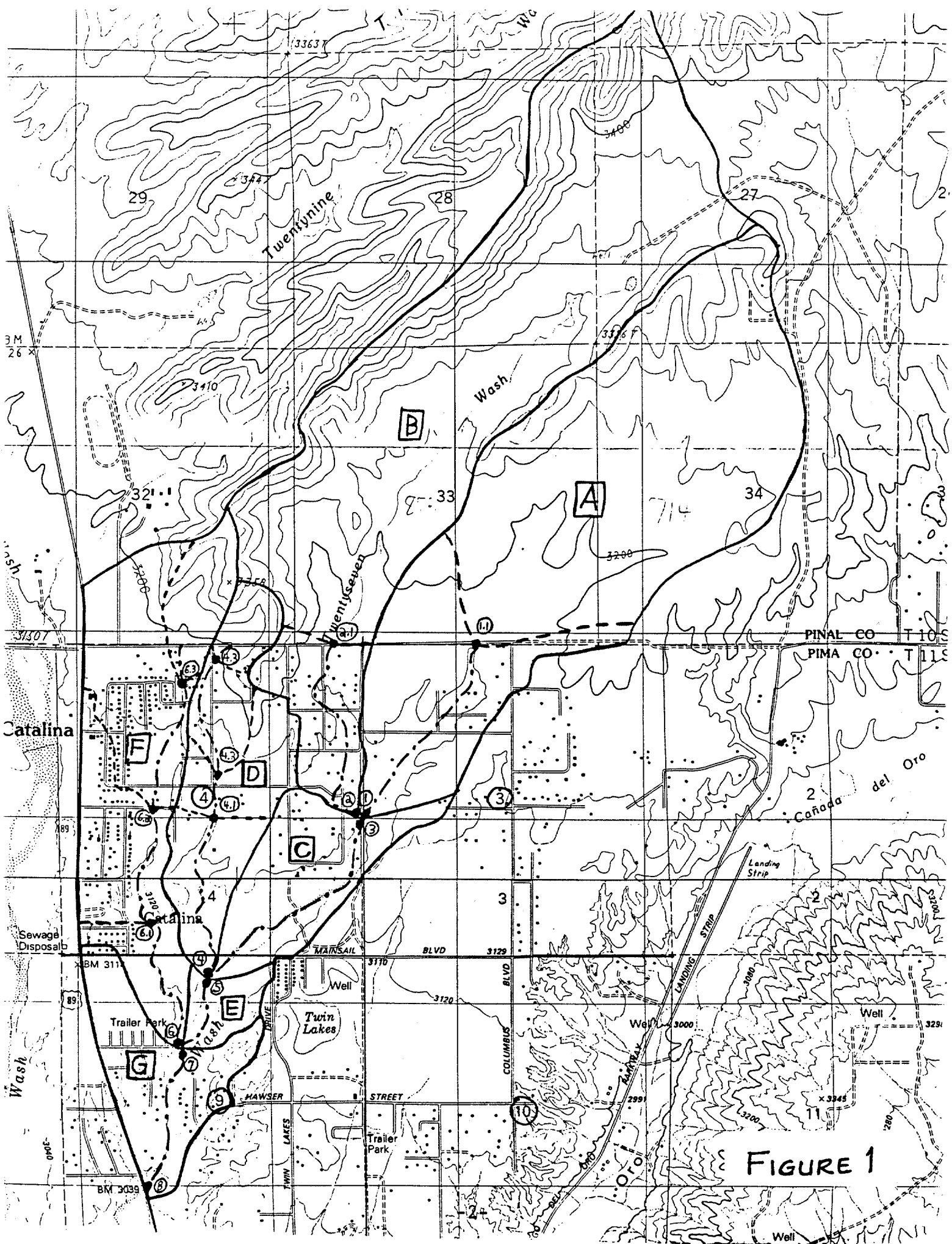


FIGURE 1

Presently, about two-thirds of the watershed area located within Pima County has been developed. The majority of this development is zoned General Rural 1. In contrast, almost the entire watershed area located within Pinal County is presently undeveloped. The watershed area within Pinal County lies within the Los Cordones Area Plan, the majority of which is zoned medium residential. The watershed type is foothills and suburban foothills, with a desert brush cover of 25%.

In the upper regions of the watershed where drainage basins A, B, D, and F begin at the tops of ridges, the slopes are steep. The slopes then decrease to the South and stabilize at approximately 1% throughout the lower half of the watershed.

### **1.3 Previous Studies**

A drainage study was conducted for the U.S. Route 89, from the Cañada del Oro Wash to the Pima County line roadway improvements project. The report was completed by Dooley-Jones and Associates, and published in August, 1987. The study analyzed the 27 Mile Wash watershed and used the SCS method: Part 1, recommended by ADOT to compute the existing and future 50-year peak flow rates for 27 Mile Wash at the Highway 89 crossing.

A drainage analysis of the two main tributary channels for 27 Mile Wash was completed by the PCFCD for an "in-house" report, dated December 17, 1984. The analysis used the PCFDC Flood Peak Method to compute the existing 100-year peak flows for the two branches (concentration points 1 and 2 in Figure 1), and added the two peak flows to estimate the peak at their confluence (concentration point 3).

## 2. OBJECTIVES

The objectives of this floodplain delineation study are to:

- Establish the 10-year and 100-year flood peaks at key locations along 27 Mile Wash and its major tributaries within Pima County upstream of the Highway 89 crossing.
- Establish the 10-year and 100-year floodplain limits along the wash and its major tributaries.
- Establish the 100-year floodway encroachment limits along the wash and its major tributaries.
- Prepare a floodplain delineation map, which identifies the 100-year floodway floodplain.

### 3. HYDROLOGIC ANALYSIS

#### 3.1 Procedures

The 27 Mile Wash watershed was divided into 7 basins (A through G, Figure 1). Basins A and B are drained by the two main tributary channels that combine to form 27 Mile Wash. Basins D and F are drained by tributary channels that combine with 27 Mile Wash along its course. Basins C, E, and G lie along the main channel of 27 Mile Wash.

The peak flow rate and runoff hydrograph for the 10-year and 100-year storm events for both existing and future conditions were generated for each basin using the Pima County Flood Peak and Curvilinear Hydrograph Methodology. The runoff hydrographs for each basin were routed down the 27 Mile Wash channel and combined using the HEC-1 computer program. The modified Puls Normal Depth routing method within HEC-1 was used.

The peak flow rates at concentration points 3, 5, 7, and 8 were calculated by hydrograph routing and combining. Peak flows at locations along the tributary channels in basins F and D upstream of their confluence with 27 Mile Wash (concentration points 4.1, 4.2, 4.3, 6.1, 6.2 and 6.3), and at the locations the two main channels in basins A and B cross the county line (concentration points 1.1 and 2.1) were calculated using the Pima County Flood Peak Method.

The drainage basin boundaries within Pima County were delineated using 100 scale aerial photo, 2 foot contour interval maps (see Exhibits 1 through 9). The drainage basin boundaries within Pinal County were delineated



using a 500 scale aerial photo, along with U.S.G.S. Quad maps.

The soil types were taken from SCS soil survey maps for Pima and Pinal counties.

The water course lengths and slopes were measured from the 100 scale aerial photo contour maps and the USGS Quad maps. The vegetative cover density was estimated from aerial photos and site visits.

The percent impervious area values for the existing conditions were computed using zoning maps. All the parameter values used and the figures are included in the Appendix A of this report, titled "Hydrology".

### **3.2 Results**

Table 1 shows the basin size and peak flow rates for each of the seven basins. Table 2 shows the contributing drainage area and peak flow rates for each concentration point.

**TABLE 1**

**DRAINAGE BASIN HYDROLOGY**

Drainage Basin	Area (Acres)	10-Year Peak Flow Rates (cfs)		100-Year Peak Flow Rates (cfs)	
		Existing Conditions	Future Conditions	Existing Conditions	Future Conditions
A	865	781	1,196	1,736	2,163
B	941	813	1,170	1,832	2,212
C	130	133	182	306	373
D	207	226	299	519	610
E	39	56	82	130	159
F	300	293	402	679	812
G	132	162	234	370	459

The supporting calculations and HEC-1 output are included in Appendix A.

Basin and concentration point locations are depicted in Figure 1.

**TABLE 2****PEAK FLOW RATES AT CONCENTRATION POINTS**

Concentration Point	Contributing Area (Acres)	10-Year Peak Flow Rates (cfs)		100-Year Peak Flow Rates (cfs)	
		Existing Conditions	Future Conditions	Existing Conditions	Future Conditions
1	865	781	1,196	1,736	2,163
1.1	619	781	1,177	1,614	2,063
2	941	813	1,170	1,832	2,212
2.1	852	878	1,224	1,873	2,276
3	1,806	1,573	2,322	3,543	4,325
4	207	226	299	519	610
4.1	122	195	258	425	497
4.2	72	115	158	257	309
4.3	34	72	109	159	194
5	2,143	1,701	2,366	3,547	4,318
6	300	293	402	679	812
6.1	249	326	433	718	843
6.2	164	264	352	569	670
6.3	42	84	121	182	229
7	2,482	1,842	2,488	3,706	4,532
8	2,614	1,849	2,488	3,690	4,499

## 4. HYDRAULIC ANALYSIS

### 4.1 Procedures

The hydraulic analysis consisted of determining the characteristics for both the 100-year and 10-year rainstorm event flows. It also entailed determining the 100-year floodway limits. The flow rates generated in the hydrology study were used for the modeling.

A total of approximately 30,000 feet of channel length was analyzed in this study. This included the two main tributaries of 27 Mile Wash as well as two minor tributaries to the wash (see Figure 2).

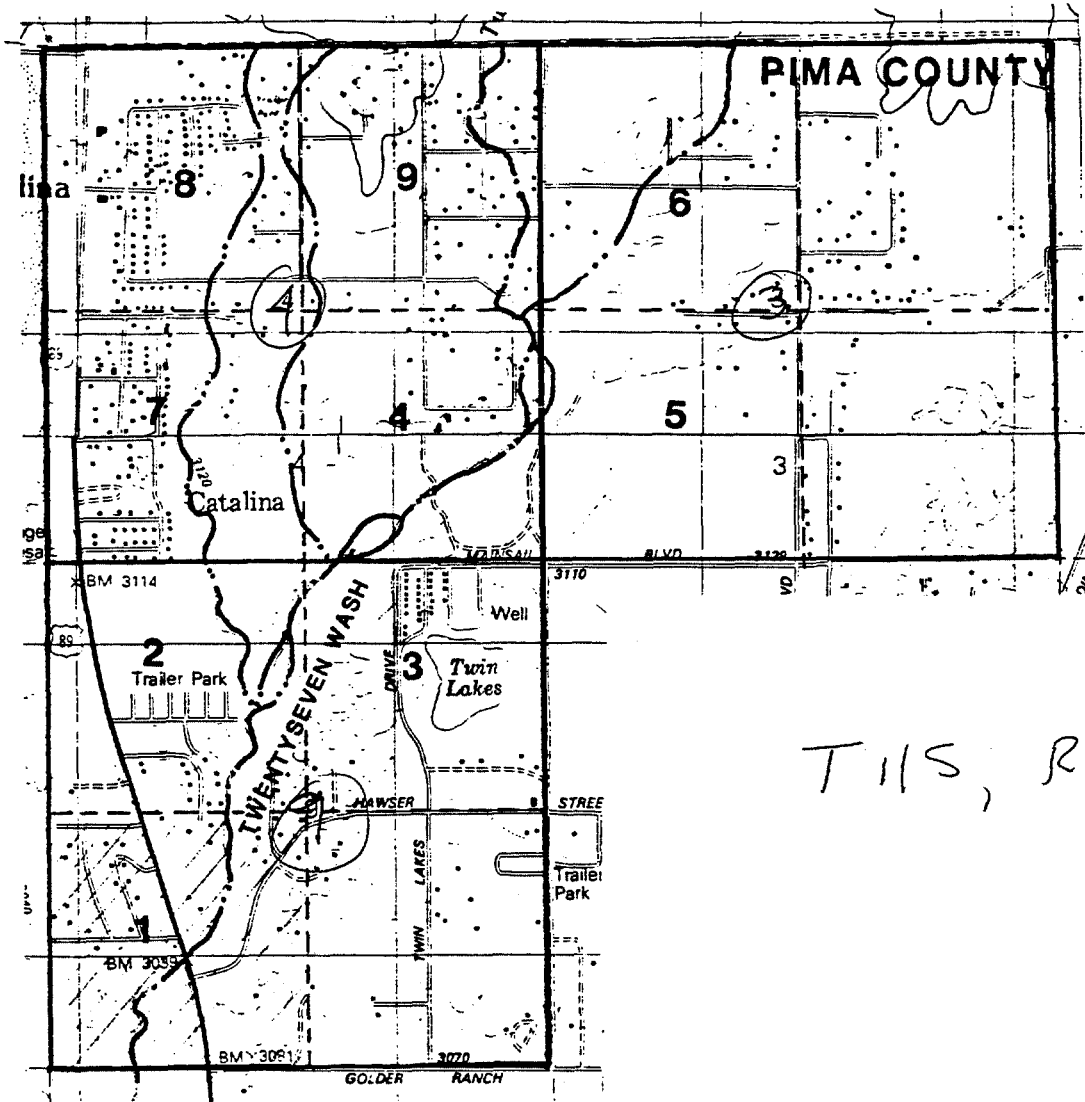
#### 4.1.1 Hydraulics

The computer program HEC-2 (September, 1988 release) was used in the hydraulic modeling.

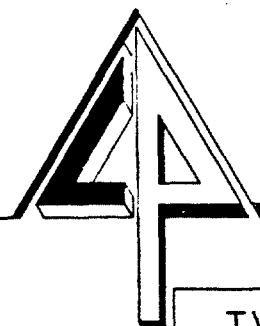
Cross-sections were located along the channel reaches at distances of less than 500 feet apart. Cross-section locations were chosen to best represent the general characteristics of the channels within the stream reaches investigated. A total of 88 cross-sections were analyzed.

Portions of the channel reaches are braided, with up to 4 channel braids in any one section. Where channel braiding was encountered, cross-sections were placed in the braided sections as well as just upstream and downstream of the braided sections.

PINAL COUNTY



T115, R14E



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TWENTY-SEVEN WASH  
 FLOODPLAIN DELINEATION STUDY

PIMA COUNTY DEPT of TRANSPORTATION  
 & FLOOD CONTROL DISTRICT  
 PIMA COUNTY CONTRACT NO. 07 04 C 115614 1091

job no. 3308
date 22APR 92
design JB
draft RD
checked RAGP
scale 1"=100'
sheet index

The wash was modeled in a subcritical flow regime in order to obtain the water surface elevation data for delineation of the regulatory event floodplain and, in addition, a preliminary floodway hydraulic model was also developed (see Appendix B). Finally, because certain cross-sections at various locations throughout the channel reaches went to critical depth in the subcritical profile, a supercritical flow regime profile was also run.

#### 4.1.2 Parameters

Cross-section geometry was taken from the 1"=100' scale, 2' contour interval aerial photogrammetric quarter section maps supplied by Pima County for this project. The geohydraulic parameters chosen to represent the channel characteristics were also verified in the field.

Manning's n values were determined after several site visits. The majority of the cross-sections consist of a channel bottom that is sandy with very little or no vegetation - a Manning's n of 0.024 is used here. The channel banks and overbank areas are generally heavily vegetated with desert brush, cacti and trees - a Manning's n of 0.08 is used here. In the upper reaches of the two minor tributaries the channel bottoms and sides are lined with grasses - a Manning's n of 0.04 is used here.

Cross-section No. 1 is located just upstream of the 7 barrel 10' x 6' RCBC under Highway 89. The headwater elevations for the 10-year and 100-year

flows at the culvert were used as the starting water surface elevations for the subcritical flow regime hydraulic modeling (see Appendix B). For modeling of the floodway and for the supercritical HEC-2 model, water surface elevations for the first few cross-sections just upstream of the culvert were determined by assuming that the culvert has no backwater effect on cross-section No. 1.

## 4.2 Results

### 4.2.1 Flow regimes

Analysis of both the subcritical and supercritical flow regime HEC-2 profiles indicate that for the 27 Mile Wash main channel reach (cross-sections 1 through 24) and two main tributary channels (cross-sections 25 through 37 and 79 through 86) flows generally remain in a subcritical regime. Flow becomes critical at a few locations and supercritical at four locations.

The two minor tributaries (cross-sections 38 through 58 and 59 through 78) flow at subcritical and critical regimes in the lower reaches, and supercritical in their upper reaches.

Because the majority of the wash is in a subcritical flow regime, almost any obstruction to the flow (which would naturally occur during flooding events) can cause the critical and supercritical cross-sections to jump to a subcritical regime, resulting in higher water

surface elevations and wider floodplains. Therefore, the floodplains were delineated based on the results of the subcritical flow water surface profile HEC-2 model (see Appendix B). A summary of these parameters for all 86 cross-sections is given in Table 3).

#### 4.2.2 Floodplain

The extent of the 100-year floodplain and floodway is shown on Exhibits 1 through 9. Figure 2 is a sheet index for the exhibits. Along with the floodplain and floodway limits, the exhibits show the cross-section locations. Water surface elevations and channel velocities during the 100-year frequency event are shown at each cross-section location. At those cross-sections where supercritical flow was anticipated, the related velocity has also been included. In addition, a table is included on every sheet that summarizes the relevant flow parameters for both the subcritical and supercritical flow regimes for every cross-section located on that sheet.

The average floodplain widths and the average depths of flow for both the 10-year and 100-year frequency events are given in Table 4.



**TABLE 3**

**FLOODPLAIN HYDRAULIC PROPERTIES**

SECNO	Q	SUBCRITICAL							SUPERCritical		
		DEPTH	TOPWID	VCH	VLOB	VROB	CWSEL	ELMIN	DEPTH	VCH	CWSEL
1.000	4532.00	9.50	482.00	2.18	1.48	1.44	3040.00	3030.50	4.85	9.46	3035.35
2.000	4532.00	7.18	442.36	3.65	2.16	2.60	3040.18	3033.00	4.94	8.95	3037.94
3.000	4532.00	5.33	356.30	11.10	2.71	3.28	3043.33	3038.00	4.93	13.04	3042.93
4.000	4532.00	5.41	509.78	11.09	3.48	2.57	3047.41	3042.00	5.46	10.82	3047.46
5.000	4532.00	5.45	431.10	10.50	2.59	2.53	3049.45	3044.00	5.35	10.91	3049.35
6.000	4532.00	5.30	313.30	8.48	3.98	4.66	3053.30	3048.00	5.06	9.30	3053.06
7.000	4532.00	6.21	542.46	4.91	2.25	.00	3058.21	3052.00	5.08	8.17	3057.08
8.000	4532.00	4.83	355.01	7.88	3.10	1.96	3061.63	3056.80	4.63	8.63	3061.43
9.000	4532.00	5.84	424.05	4.43	2.30	2.08	3065.24	3059.40	4.53	7.89	3063.93
10.000	4532.00	5.18	489.39	11.93	2.31	3.49	3067.68	3062.50	5.13	12.20	3067.63
11.000	4532.00	5.78	511.97	3.49	3.29	3.39	3071.78	3066.00	4.47	7.03	3070.47
12.000	4532.00	5.43	699.39	3.92	2.69	2.86	3074.73	3069.30	4.73	6.17	3074.03
13.000	4325.00	5.65	558.75	7.33	3.50	3.75	3080.05	3074.40	5.21	9.71	3079.61
14.000	4325.00	5.85	593.54	3.93	2.36	1.54	3084.05	3078.20	4.54	8.08	3082.74
15.000	4325.00	5.10	476.65	9.54	2.08	2.36	3087.60	3082.50	4.97	10.04	3087.47
16.000	4325.00	5.92	494.77	4.30	2.77	3.65	3092.92	3087.00	5.04	7.32	3092.04
17.000	4325.00	5.85	476.56	7.74	2.78	3.16	3098.15	3092.30	5.22	10.63	3097.52
18.000	4325.00	4.88	475.33	9.87	4.15	3.07	3103.18	3098.30	4.86	10.01	3103.16
19.000	4325.00	6.10	460.97	4.66	2.24	2.64	3107.10	3101.00	5.06	7.72	3106.06
20.000	4325.00	6.08	370.11	8.08	2.49	3.45	3110.58	3104.50	5.67	9.68	3110.17
21.000	4325.00	4.88	491.75	7.37	2.03	2.34	3114.68	3109.80	4.56	8.69	3114.36
22.000	4325.00	5.49	593.97	4.44	2.51	2.98	3118.89	3113.40	4.25	8.39	3117.65
23.000	4325.00	5.90	559.23	9.31	2.59	1.15	3121.90	3116.00	5.88	9.39	3121.88
24.000	4325.00	5.64	502.84	8.33	2.51	3.19	3125.64	3120.00	5.53	8.83	3125.53

14

49.000	670.00	4.46	50.74	6.90	2.78	2.99	3126.46	3122.00	3.75	9.04	3125.75
50.000	670.00	3.39	75.60	4.93	1.10	1.11	3130.89	3127.50	2.65	7.29	3130.15
51.000	670.00	2.61	111.94	6.99	3.09	3.08	3137.61	3135.00	2.57	7.17	3137.57
52.000	229.00	3.69	93.98	3.86	1.14	1.66	3142.69	3139.00	.83	38.84	3139.83
53.000	229.00	2.05	67.68	6.29	.02	.02	3148.05	3146.00	.68	36.30	3146.68
54.000	229.00	3.44	14.56	8.72	3.90	3.62	3153.64	3150.20	1.42	28.98	3151.62
55.000	229.00	3.51	15.80	9.25	.26	.28	3163.51	3160.00	1.80	24.72	3161.80
56.000	229.00	4.88	18.90	11.96	.16	.14	3174.18	3169.30	4.83	12.21	3174.13
57.000	229.00	3.59	12.18	9.41	.04	.04	3179.59	3176.00	1.84	26.56	3177.84
58.000	229.00	4.08	22.00	10.11	.05	.05	3190.08	3186.00	4.10	9.99	3190.10
59.000	610.00	2.77	124.58	7.98	1.98	1.98	3087.77	3085.00	2.82	7.70	3087.82
60.000	610.00	3.87	117.68	6.04	2.19	2.19	3092.07	3088.20	3.50	7.68	3091.70
61.000	610.00	3.55	143.85	5.69	2.05	2.00	3094.55	3091.00	3.10	7.97	3094.10
62.000	550.00	2.88	112.87	7.80	2.64	2.25	3098.18	3095.30	2.77	8.53	3098.07
63.000	550.00	2.71	129.37	8.12	2.04	2.07	3104.21	3101.50	2.59	8.94	3104.09
64.000	497.00	2.92	80.88	7.45	1.06	2.03	3109.62	3106.70	2.92	7.45	3109.62
65.000	497.00	3.31	182.66	5.64	1.84	1.42	3114.91	3111.60	3.04	7.32	3114.64
66.000	497.00	3.53	81.04	8.75	2.55	1.68	3117.03	3113.50	3.09	10.90	3116.59
67.000	497.00	5.21	70.37	8.45	2.47	2.23	3121.01	3115.80	5.21	8.44	3121.01
68.000	309.00	3.01	72.55	4.85	1.85	1.94	3128.01	3125.00	2.45	7.10	3127.45
69.000	309.00	2.09	57.45	7.64	2.23	2.23	3131.89	3129.80	2.05	7.83	3131.85
70.000	309.00	2.17	116.24	6.07	2.37	2.08	3138.47	3136.30	2.08	6.70	3138.38
71.000	309.00	2.66	113.36	3.55	1.88	6.80	3146.46	3143.80	2.40	5.96	3146.20
72.000	250.00	1.44	142.89	5.84	2.50	2.91	3153.74	3152.30	1.43	5.87	3153.73
73.000	250.00	2.09	112.24	5.41	2.83	3.49	3156.09	3154.00	.54	43.27	3154.54
74.000	250.00	2.67	18.22	7.86	.00	.05	3160.27	3157.60	.84	40.44	3158.44

25.000	2163.00	5.01	323.44	4.36	1.61	1.30	3129.01	3124.00	3.69	8.17	3127.69
26.000	2163.00	4.52	270.13	8.25	2.90	3.10	3130.72	3126.20	4.31	9.36	3130.51
27.000	2163.00	4.05	239.17	8.91	2.45	1.80	3135.05	3131.00	3.66	10.70	3134.66
28.000	2163.00	4.10	193.24	9.60	2.60	3.63	3136.40	3132.30	4.08	9.70	3136.38
29.000	2163.00	4.77	209.12	3.99	2.08	1.97	3140.77	3136.00	3.42	7.44	3139.42
30.000	2063.00	3.51	238.08	3.98	3.23	3.87	3143.51	3140.00	2.43	7.06	3142.43
30.500	2063.00	4.09	193.70	10.21	3.31	3.13	3146.69	3142.60	3.97	10.79	3146.57
31.000	2063.00	5.14	260.63	3.20	1.06	1.62	3147.94	3142.80	3.58	6.68	3146.38
32.000	2063.00	4.28	250.89	9.03	2.37	2.47	3150.68	3146.40	4.28	9.01	3150.68
33.000	2063.00	2.78	391.27	4.30	2.44	1.62	3153.78	3151.00	2.13	6.92	3153.13
34.000	2063.00	4.02	255.65	7.13	4.00	3.72	3157.52	3153.50	3.83	8.20	3157.33
35.000	2063.00	6.58	344.19	5.71	2.23	2.21	3162.08	3155.50	5.73	9.59	3161.23
36.000	2063.00	5.70	200.31	10.18	2.05	2.01	3163.20	3157.50	5.70	10.18	3163.20
37.000	2063.00	6.06	361.12	8.36	3.55	2.43	3168.06	3162.00	6.01	8.63	3168.01
38.000	843.00	2.66	198.86	6.48	2.59	3.03	3076.86	3074.20	2.60	6.83	3076.80
39.000	843.00	2.91	153.90	5.46	2.28	2.44	3078.91	3076.00	2.50	7.40	3078.50
40.000	843.00	4.98	128.89	9.32	3.39	2.84	3083.18	3078.20	4.97	9.34	3083.17
41.000	843.00	2.21	196.66	9.25	2.30	2.14	3087.21	3085.00	1.43	18.23	3086.43
42.000	843.00	3.38	125.24	10.47	2.46	2.06	3090.38	3087.00	3.22	11.36	3090.22
42.500	843.00	3.65	137.78	7.70	2.65	2.65	3094.05	3090.40	3.65	7.67	3094.05
43.000	843.00	2.94	104.22	5.63	.00	1.81	3097.94	3095.00	2.03	11.76	3097.03
44.000	843.00	4.31	140.91	11.44	2.08	2.15	3102.61	3098.30	4.32	11.36	3102.62
45.000	670.00	4.69	57.87	8.54	3.16	2.39	3103.99	3099.30	4.32	9.77	3103.62
46.000	670.00	4.43	87.17	8.05	3.21	2.70	3109.43	3105.00	4.08	9.50	3109.08
47.000	670.00	5.40	87.15	8.72	2.38	2.45	3116.10	3110.70	5.40	8.71	3116.10
48.000	670.00	5.67	74.60	6.78	2.41	2.79	3120.27	3114.60	4.92	9.34	3119.52

75.000	250.00	3.55	16.73	9.63	.09	.09	3171.55	3168.00	1.45	33.26	3169.45
76.000	194.00	3.63	11.79	8.09	.00	.00	3179.93	3176.30	1.58	31.78	3177.88
77.000	194.00	3.57	13.27	7.80	.00	.00	3187.57	3184.00	1.83	24.83	3185.83
78.000	194.00	1.68	40.70	5.40	.00	.00	3197.68	3196.00	1.68	5.44	3197.68
79.000	2276.00	3.97	354.10	2.46	2.34	.71	3132.97	3129.00	2.31	6.02	3131.31
80.000	2276.00	1.55	396.46	10.36	1.20	3.64	3136.55	3135.00	1.55	10.38	3136.55
81.000	2276.00	3.37	256.07	9.75	2.89	2.31	3142.37	3139.00	3.36	9.84	3142.36
82.000	2276.00	4.46	248.78	7.44	2.68	3.68	3148.46	3144.00	4.02	9.41	3148.02
83.000	2276.00	3.07	337.76	5.31	2.46	2.48	3152.77	3149.70	2.60	7.31	3152.30
84.000	2276.00	2.75	300.66	5.33	3.35	2.08	3156.75	3154.00	2.33	7.00	3156.33
85.000	2276.00	3.23	239.44	6.86	1.33	1.36	3163.23	3160.00	3.10	7.42	3163.10
86.000	2276.00	3.04	207.99	7.40	3.28	1.57	3169.04	3166.00	2.94	7.81	3168.94

**TABLE 4****SUMMARY OF FLOODPLAIN CHARACTERISTICS**

AVERAGE FLOODPLAIN WIDTHS	10-YEAR	100-YEAR
DOWNSTREAM OF MAIN CONFLUENCE (CROSS-SECTIONS 1-24)	350' - 450'	400' - 500'
UPSTREAM OF MAIN CONFLUENCE (CROSS-SECTIONS 25-37)	200' - 300'	200' - 300'
LOWER REACHES OF TRIBUTARIES (CROSS-SECTIONS 38-53 AND 59-73)	50' - 100'	50' - 150'
UPPER REACHES OF TRIBUTARIES (CROSS-SECTIONS 54-58 AND 74-78)	<20" <sup>1</sup>	<20" <sup>1</sup>
AVERAGE DEPTHS OF FLOW	10-YEAR	100-YEAR
DOWNSTREAM OF MAIN CONFLUENCE (CROSS-SECTIONS 1-24)	4' - 5'	5' - 6'
UPSTREAM OF MAIN CONFLUENCE (CROSS-SECTIONS 25-37)	3' - 5'	4' - 6'
TRIBUTARY WASHES (CROSS-SECTIONS 38-78)	2' - 4'	3' - 5'

Overall channel velocities average 8 to 10 feet per second (fps) for the 10-year flows and 10 to 12 fps for the 100-year flows. These average channel velocities are at cross-sections where there is only one channel in the section. At cross-sections where the channel is braided the overall channel velocities are considerably lower, ranging from 3 to 8 fps. The overall overbank velocities average 1 to 3 fps for both the 10-year and 100-year flows.

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<sup>1</sup>Flows remain within channel banks.

## 5. CONCLUSIONS

The 27-Mile Wash and its major tributaries located within Pima County upstream of the Highway 89 crossing were hydrologically and hydraulically analyzed. During the 100-year storm event, the channel generally flows in a subcritical regime, but flows at critical and supercritical depth at a few locations.

- The 100-year flow event overtops Highway 89 just South of the existing box culvert crossing.
- There are numerous temporary and permanent building structures located within the 100-year floodplain.
- There are about five temporary and five permanent building structures located within the 100-year floodway.
- The structures located within the floodway should be removed to alleviate flood hazards to the structures.
- The structures located outside of the floodway but within the floodplain can be protected by flood-proofing measures such as floodwalls, dikes, levees, etc.

6. REFERENCES

Hydrology Manual for Engineering Design and Floodplain Management within Pima County, Arizona, Pima County Department of Transportation and Flood Control District, September, 1979.

Floodplain and Erosion Hazard Management Ordinance No. 1988-FC2 for Pima County Department of Transportation and Flood Control District, December 6, 1988.

Final Roadway Drainage Report for U.S. Route 89 - CCDO Wash to Pinal County Line, Dooley-Jones and Associates, August 14, 1987.

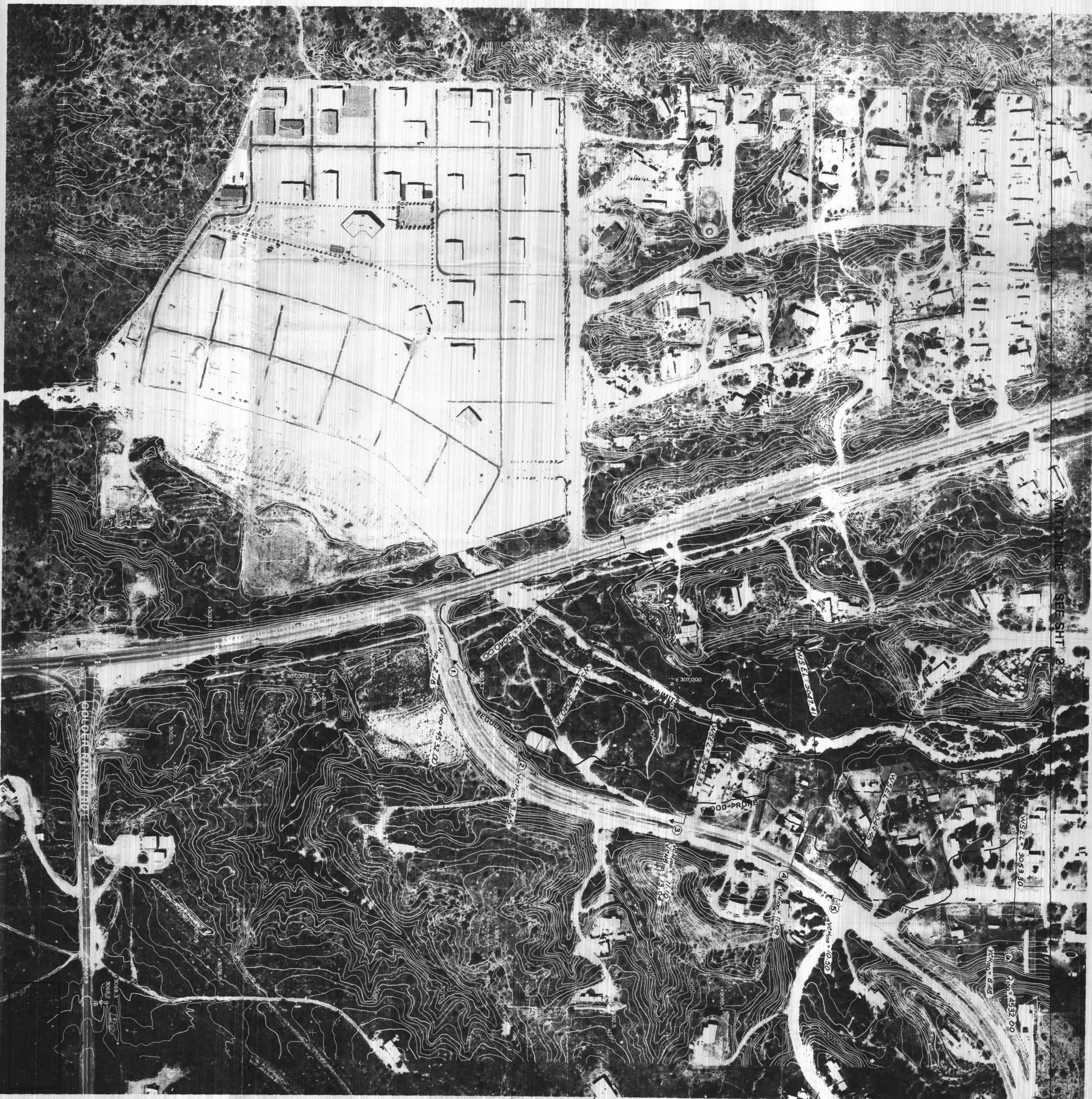
27 Mile Wash "In-House" Drainage Report, Pima County Flood Control District, December 17, 1984.

U.S.G.S. 7.5 Minutes Quadrangle Maps: Oro Valley, Arizona, 1981; and Oracle Junction, Arizona, 1988.

Soil Conservation Service Updated Pima County Soil Survey Maps on U.S.G.S. Orthophotoquad Maps: Mount Lemmon N.W., Arizona, and Oracle S.W., Arizona.

100-Scale Aerial Photo with 2' Contour Maps for Sections 3, 4, and 9, T-11-S, R-14-E, Photo Dated September and December, 1984.

Technical Release 55, Urban Hydrology for Small Watersheds, U.S.D.A. Soil Conservation Service, Engineering Division, Revised June, 1986.



SHT. NO. 1

SEE SHT. 2

**SW 1/4, SEC. 9 ,T.11S.,R14E.**  
**PIMA COUNTY, ARIZONA**

**QUARTER SECTION MAPS**

**McLAIN AERIAL MAPPING & SURVEYING, INC.**  
 1665 E. 18TH STREET TUCSON, ARIZONA

SCALE: 1" = 100'  
 CONTOUR INTERVAL = 2'  
 PHOTO DATE: SEP., 1984

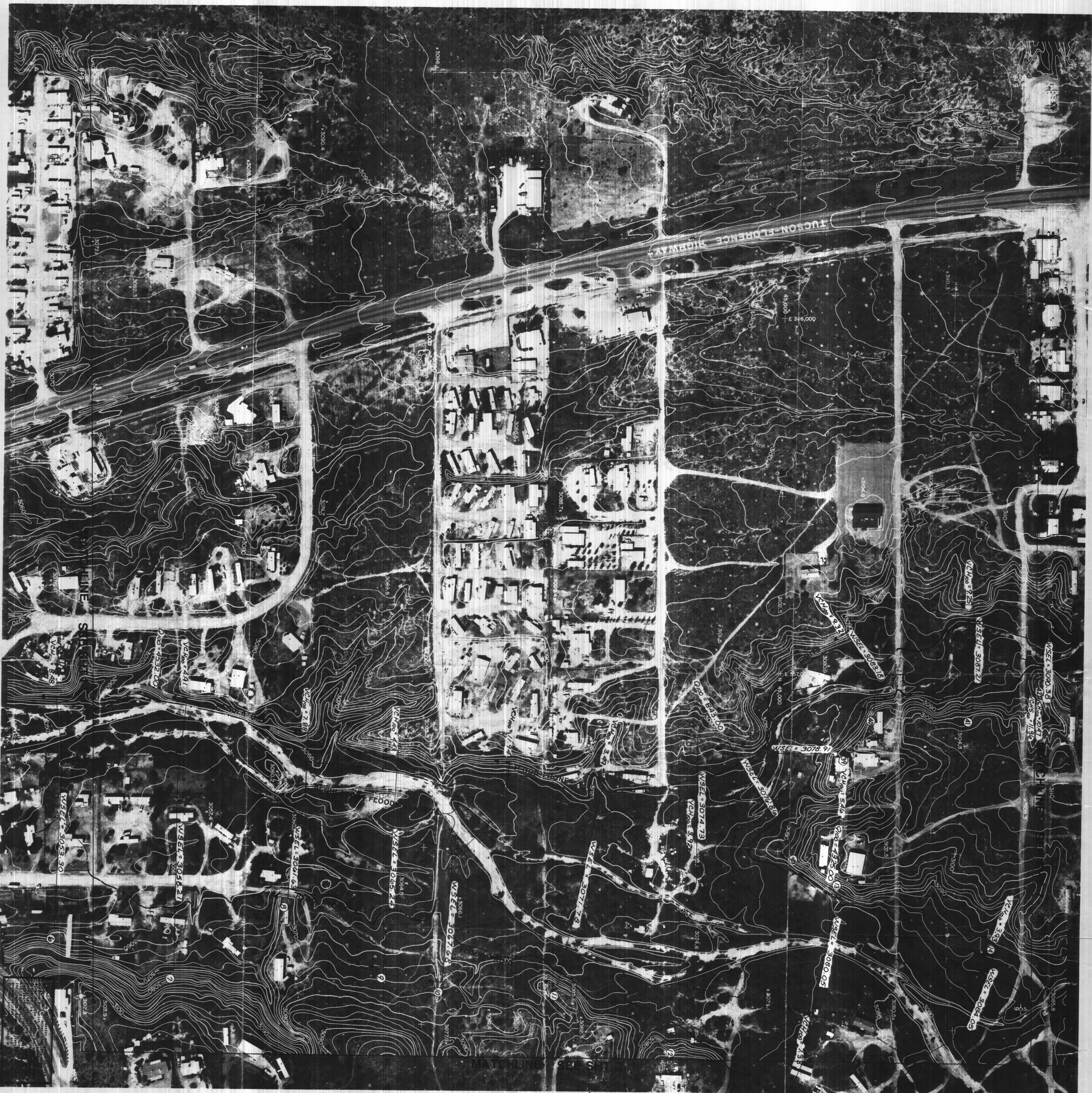
*Collins-Pina Consulting Engineers, Inc.*  
 830 East 9th Street - Tucson, Arizona 85705  
 TEL: (602) 883-3900 FAX: (602) 884-8278  
 JOB NO. 3308  
 DATE: 2/20/84 92  
 SHEET 38  
 DRAWN BY: [Signature]  
 CHECKED BY: [Signature]  
 SCALE: 1"=100'  
 SHEET 1 OF 3

**BENCH MARK**  
 (N.G.S. DATUM, 3059 NOGLS)  
 TOP 1/2 INCH BEAR, CENTER SEC. 9  
 ELEVATION = 3062.74  
 TOP STONE, S.E. COR., SEC. 9  
 ELEVATION = 3045.01

**SYMBOLS FOR SECTION & 1/4 SECTION CORNERS**

● BRASS CAP	■ STONE	⊕ ASSUMED CORNER
○ A.C.P.	■ REBAR	⊕ L.C.R.
□ IRON PIPE	○ REFERENCE MON'S	





SHT. NO.2

NW 1/4, SEC. 9, T.11S., R.14E.  
PIMA COUNTY, ARIZONA

**QUARTER SECTION MAPS**

MCLAIN AERIAL MAPPING & SURVEYING, INC.  
1665 E. 18TH STREET TUCSON, ARIZONA

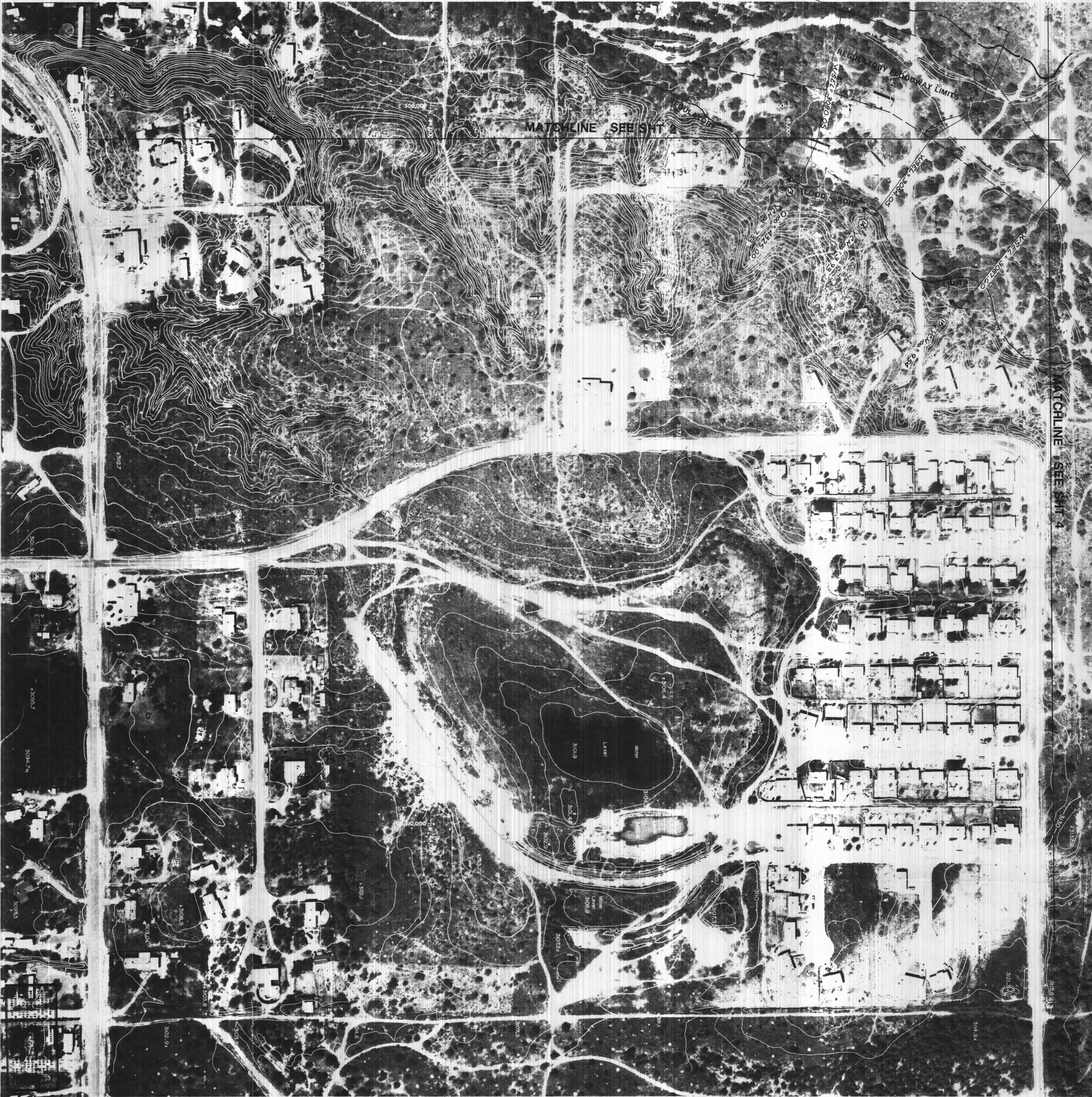
SCALE: 1" = 100'  
CONTOUR INTERVAL - 2'  
PHOTO DATE: SEP., 1984

**Collins-Pina Consulting Engineers, Inc.**  
830 East 9th Street - Tucson, Arizona 85705 - (602) 623-7980  
FAX - (602) 884-5278  
 PROJECT NO. 3308  
 SITE # 2849R 92  
 DRAWING NO. 100  
 DATE 11/84  
 CHECKED BY [Signature]  
 PIMA COUNTY DEPT. OF TRANSPORTATION & FLOOD CONTROL DISTRICT  
 PIMA COUNTY CONTRACT NO. 0704 C 05614 1001  
 SHEET 2 OF 5

**BENCH MARK**  
(N.G.S. DATUM 3088 NGGLS)  
TOP 1/2" INS. REBAR, CENTER SEC. 9  
ELEVATION = 3182.74  
TOP 3" INS. SOL. 15/16" PIN ADJACENT TO S.W. COR., SEC. 9  
ELEVATION = 3154.94

**SYMBOLS FOR SECTION & 1/4 SECTION CORNERS**

● BRASS CAP	○ STONE	⊕ ASSUMED CORNER
○ A.C.P.	■ REBAR	○ L.C.P.
○ IRON PIPE	○ REFERENCE MON'S	



SHT. NO. 3

NE 1/4, SEC. 9, T.11S., R14E.  
PIMA COUNTY, ARIZONA

**QUARTER SECTION MAPS**  
MCLAIN AERIAL MAPPING & SURVEYING, INC.  
1665 E. 18TH STREET TUCSON, ARIZONA

SCALE: 1" = 100'  
CONTOUR INTERVAL = 2'  
PHOTO DATE: SEP. 1984

**Collins-Pina Consulting Engineers Inc.**  
630 East 9th Street - Tucson, Arizona 85708 - (602) 623-7985  
FAX - (602) 684-3778

**TOP 1/2 INCH REBAR CENTER BEL. V**  
ELEVATION = 3100.74  
PCHD. B.C. 1/4 SEC. 10  
ELEVATION = 3100.58

**Job No. 2008**  
Date: 12/15/84  
Sheet: 22/27  
Scale: 1"=100'  
PCHD. B.C. 1/4 SEC. 10  
ELEVATION = 3100.58

**Twenty-Seven Wash  
FLOODPLAIN DELINEATION STUDY**  
PIMA COUNTY DEPT OF TRANSPORTATION  
& FLOOD CONTROL DISTRICT  
PIMA COUNTY CONTRACT NO. 07 04 C 105614 109

**BENCH MARK**  
(N.G.S. DATUM, 3089 NGDLS)  
TOP 1/2 INCH REBAR CENTER BEL. V  
ELEVATION = 3100.74  
PCHD. B.C. 1/4 SEC. 10  
ELEVATION = 3100.58

**SYMBOLS FOR SECTION & 1/4 SECTION CORNERS**

● BRASS CAP	○ STONE	† ASSUMED CORNER
○ A.C.P.	■ REBAR	○ L.C.P.
○ IRON PIPE	○ REFERENCE MON'S	



SHT. NO. 4

SE 1/4, SEC. 4, T.11S., R.14E.  
PIMA COUNTY, ARIZONA

QUARTER SECTION MAPS  
MCLAIN AERIAL MAPPING & SURVEYING, INC.  
1665 E. 18TH STREET TUCSON, ARIZONA

SCALE: 1" = 100'  
CONTOUR INTERVAL = 2'  
PHOTO DATE: SEP., 1984

**Collins-Piña Consulting Engineers, Inc.**  
830 East 9th Street - Tucson, Arizona 85705 - (602) 623-7980  
FAX: (602) 884-9278  
TWENTY-SEVEN WASH FLOODPLAIN DELINEATION STUDY  
PIMA COUNTY DEPT OF TRANSPORTATION  
A FLOOD CONTROL DISTRICT  
PIMA COUNTY CONTRACT NO. 07 04 C 105614 105

**BENCH MARK**  
(N.G.S. DATUM, 3069 NGLS)  
ELEVATION = 3124.4'  
ELEVATION = 3124.4'

**SYMBOLS FOR SECTION & 1/4 SECTION CORNERS**

• BRASS NAIL	• STONE	• ASSUMED CORNER
• IRON PIPE	• IRON PIPE	• I.R.P.
• IRON PIPE	• IRON PIPE	• REFERENCE MON.





NW 1/4, SEC. 3, T.11S., R14E.  
PIMA COUNTY, ARIZONA

**QUARTER SECTION MAPS**  
McLAIN AERIAL MAPPING & SURVEYING, INC.  
1665 E. 18th STREET TUCSON, ARIZONA

SCALE: 1" = 100'  
CONTOUR INTERVAL = 2'  
PHOTO DATE: DEC. 1984

*Collins-Piña Consulting Engineers, Inc.*  
630 East 9th Street - Tucson, Arizona 85710  
TEL: (520) 223-7888 FAX: (520) 244-5274  
JOB NO. 338  
DATE: 2/20/85  
DESIGNER: [unclear]  
CHECKED: [unclear]  
PIMA COUNTY DEPT OF TRANSPORTATION & FLOOD CONTROL DISTRICT  
PIMA COUNTY CONTRACT NO. 07 04 C 15614 109

**BENCH MARK**  
(N.G.S. DATUM, 3069 NOGLS)  
TOP 1/2 198. REBAR, 3/4 COR., SEC. 3  
ELEVATION = 3193.03  
TOP 1/2 198. REBAR, NW COR., SEC. 3  
ELEVATION = 3183.67

**SYMBOLS FOR SECTION & 1/4 SECTION CORNERS**

● BRASS CAP	○ STONE	+ ASSUMED CORNER
○ A.C.P.	■ REBAR	○ L.C.P.
○ IRON PIPE	○ REFERENCE MON'S	



SHT. NO7

SW 1/4, SEC. 4 ,T.11S.R14E.  
PIMA COUNTY, ARIZONA

**QUARTER SECTION MAPS**  
MCLAIN AERIAL MAPPING & SURVEYING, INC.  
1665 E. 18TH STREET TUCSON, ARIZONA

SCALE: 1" = 100'  
CONTOUR INTERVAL = 2'  
PHOTO DATE: SEP. 1984

Collins-Pita Consulting Engineers Inc.  
830 East 9th Street - Tucson, Arizona 85710  
TEL: (520) 884-7888 FAX: (520) 884-5218  
TOP: 31.2 INB. OPEN PIPE, CENTER SEC. - ELEVATION = 3129.67  
TOP: 3 INB. 5/8" IRON PIN ADJACENT TO 5/8" CORNER - ELEVATION = 3119.94  
PIMA COUNTY DEPT. OF TRANSPORTATION & FLOOD CONTROL DISTRICT  
PIMA COUNTY CONTRACT NO. 07-04 C 105614 1059

**BENCH MARK**  
(N.G.S. DATUM, 3069 NOGLS)  
TOP: 3 1/2 INB. OPEN PIPE, CENTER SEC. - ELEVATION = 3129.67  
TOP: 3 INB. 5/8" IRON PIN ADJACENT TO 5/8" CORNER - ELEVATION = 3119.94

**SYMBOLS FOR SECTION & 1/4 SECTION CORNERS**

● BRASS CAP	○ STONE	+ ASSUMED CORNER
○ A.C.P.	■ REBAR	+ L.C.P.
○ IRON PIPE	○ REFERENCE MON'S	



SHT. NO. 8

NW 1/4, SEC. 4, T.11S., R14E.  
PIMA COUNTY, ARIZONA

**QUARTER SECTION MAPS**  
MCLAIN AERIAL MAPPING & SURVEYING, INC.  
1665 E. 18TH STREET TUCSON, ARIZONA

SCALE: 1" = 100'  
CONTOUR INTERVAL = 2'  
PHOTO DATE: SEP. 1984

**Collins-Piha Consulting Engineers, Inc.**  
830 East 9th Street - Tucson, Arizona 85705 - (602) 623-7982  
FAX - (602) 884-5276  
job no. 3338  
date: 2/28/87  
design: JB  
check: RB  
checked: RAOP  
scale: 1"=100'  
sheet: 8 of 9

**BENCH MARK**  
(N.G.S. DATUM, 3069 NOGLS)  
TOP 3" I.D. 2" O.D. OPEN PIPE, CENTER SEC. =  
ELEVATION = 3129.87  
THIS L.C.P. HAS AN UNCORRECTED SEC. =  
ELEVATION 3151.04

**SYMBOLS FOR SECTION & 1/4 SECTION CORNERS**

● BRASS CAP	○ STONE	⊕ ASSUMED CORNER
○ A.C.P.	■ REBAR	⊙ L.C.P.
○ IRON PIPE	■ REFERENCE MON'S	

