HYDRAULIC REPORT FOR SKUNK CREEK

UNION HILLS ROAD BRIDGE

&

SKUNK CREEK CHANNELIZATION

DESIGN

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ARROWHEAD RANCH INFRASTRUCTURE

SEGMENT 6

City of Glendale Project A834043

HOWARD NEEDLES TAMMEN & BERGENDOFF
2255-A W. Northern Ave.
Phoenix, AZ 85021

APRIL, 1984

06 11

RECEIVED
JOHN CAROLLO ENGINEERS
APR 16 1984

80.0-00-9-04/84

TABLE OF CONTENTS

Introduction		1
Project Location		1
Hydrology		1,2
Channelization		2
Hydraulics & Scour		2,3
Table A	Water Surface Elevations	4
Figure 1	Project Location	
Figure 2	Typical Sections	
Figure 3	Channel Alignment	
Figure 4	Skunk Creek Profile	
Appendix A	HEC-2 Printout 100 Year Existing Conditions	
Appendix B	HEC-2 Printout 100 Year Future Conditions	

INTRODUCTION

The City of Glendale contracted with Howard Needles Tammen & Bergendoff to design a six-lane, full median bridge across Skunk Creek on Union Hills Road as part of the Arrowhead Ranch Infrastructure Development Capital Improvements Program. The present alignment of Union Hills Road does not bridge Skunk Creek. The road jogs to the north and intersects with 59th Avenue. The future alignment will eliminate the jog and construct the bridge in the current floodplain.

Construction of a new waterway crossing on a previously unbridged alignment has a significant impact on the floodplain; downstream and upstream of the new bridge. This report addresses the design computation background and results of the new hydraulic design.

PROJECT LOCATION

Skunk Creek flows generally in a southwesterly direction from Adobe Dam to its confluence with New River. At 59th Avenue the natural alignment runs parallel to Union Hills Road. Approximately one-half mile downstream, Skunk Creek flows in a south-southwesterly direction.

Channelization of Skunk Creek upstream of the bridge is needed in order to control the overbank flow and the water surface elevation at the proposed Union Hills Road bridge location. Channelization downstream would improve the alignment in order to direct the flow in a south-southwesterly direction. Throughout the channelled area, the floodplain would be confined to the channel, therefore reducing the inundated area. Figure 1 is an aerial photograph of project location.

HYDROLOGY

Design discharge for the project is the 100-year occurrence interval. Since the completion of Adobe Dam, Skunk Creek's discharges have been significantly reduced. The major contributor to Skunk Creek below the Dam is Scatter Wash; the confluence being approximately one and one-half miles upstream of the project. The confluence of Skunk Creek and New River is approximately four miles downstream of the project.

Preliminary design discharges were supplied by the Maricopa County Flood Control District. The District provided information that was developed by the Los Angeles District of the Corps of Engineers for design of the flood control projects in the North Phoenix area. These design discharges were published October, 1973 in the "Hydrology Design Memorandum - New River and Phoenix City Streams". This study based the discharges on future urbanized watershed conditions. The interpolated 100-year discharge at the bridge site is 11,460 cubic feet per second (CFS).

The Corps of Engineers is currently analyzing Skunk Creek as part of a flood insurance study. The present interpolated 100-year discharge at Union Hills Road bridge site is 9,675 CFS. This study is scheduled to be reviewed by the County Flood Control District beginning this month. Final design for the hydraulic analyses is based on this discharge.

CHANNELIZATION

Channelization of Skunk Creek is needed to protect the bridge and approach roadways. Also, backwater behind the new bridge would increase the floodplain and inundate land that is currently not in the floodplain. As a result of channelization, the adjacent property will benefit from being removed from the floodplain, as well as protecting Union Hills Road and the new bridge.

Channelization and realignment of Skunk Creek considered the following design criteria: (1) reasonable channel velocities; (2) channel slope to match upstream and downstream natural slopes; (3) alignment to provide minimum scour, reduce flooding potential to adjacent areas and greatest hydraulic conductivity; (4) reduce the floodplain width; (5) channel freeboard; and (6) impact on the floodplain upstream and downstream.

The final typical section (see Figure 2) provides a channel bottom width of 110 feet with one and one-half to one side slopes. Though a larger section would reduce velocities, this would increase the bridge length of the crossing. A recommended three feet of freeboard above the 100-year water surface elevation was part of the design criteria. The height of the bank protection and channel dikes are varied in the final design in order to provide the three feet of freeboard and keep bridge length and bank protection to a minimum.

The final alignment for the channelization has been approved by the City of Glendale's Engineering Department. The bank protection and channel is extended downstream of the bridge site to tie into the natural section and the south-southwesterly direction of alignment. Upstream, the channel ties into the 59th Avenue bridge which will contain the 100-year discharge. Figure 3 delineates the proposed channel alignment and shows cross-section locations.

HYDRAULICS

The top of road and low chord elevations of the bridge depend on the computed water surface elevation for Skunk Creek at the bridge site. To determine the water surface elevation (WSEL) the HEC-2 computer program was used. Appendix A contains the HEC-2 printout for the existing conditions. Appendix B provides the printout for future conditions, including the Union Hills Road bridge, 59th Avenue bridge, and channelization of Skunk Creek. The cross section data used for the existing conditions hydraulic analysis was provided by the Maricopa County Flood Control District. This information was developed by and for the Corps of Engineers for their 1973 floodplain study and has been used for the current flood insurance study.

The impact of the bridges and channelization has been based on the Corps of Engineers' 1973 datum. Elevation difference is the City of Glendale's datum 0.58 feet lower than the Corps of Engineers.

The normal bridge routine was used for the existing conditions at 59th Avenue and the future conditions for Union Hills Road and 59th Avenue. The existing condition WSEL is based on the cross section and roughness coefficient data from the Corps of Engineers study. Table A lists the cross sections, the existing 100-year WSEL, the future 100-year WSEL, and the difference.

Figure 4 is a profile of the channel reach of Skunk Creek showing the existing and future WSEL's bank protection limits, dike toe and crest, and pier #2 of the Union Hills Road bridge.

The results of the hydraulic analysis show the rise in the WSEL to be below one foot upstream of the channelization limits. This is within the established design criteria accepted by FEMA. Every effort has been made to improve the floodplain and be compatible with all design considerations, without having a negative impact on adjacent property.

Finally, scour was analyzed for the bridge site to determine the depth of local scour, general scour and degradation. Local scour was analyzed using the Shen I, Shen II, Colorado State U., Inglis/Lacy, and Blench methods. The CSU equation is empirically based upon laboratory tests with cylindrical piers, and is the most appropriate equation for the design. The CSU result compares well with the range of other methods. Therefore, the CSU value of 7.6 feet for equilibrium depth of scour will be accepted. From this, the expected maximum depth of local scour is 9.9 feet.

The FHWA manual, Highways in the River Environment, states that general scour occurs at contractions. Because the proposed channelization will extend several hundred feet upstream and downstream of the bridge, and because the bridge abutments do not encroach the channel, the only contraction in the vicinity of the bridge results from the total of six feet of column thickness of the two rows of piers. This contraction is minor compared with the 110' bottom width of the channel.

Little data exists for an analysis of expected channel degradation. The existing Skunk Creek channel bed has experienced degradation since its construction. The Corps of Engineers 1973 elevations were compared to the HNTB survey of 1984. Invert elevations have degraded between 1 and 2 feet below 59th Avenue. The construction of Adobe Dam and urbanization of the watershed will reduce the sediment supply, which will increase degradation until Skunk Creek reaches its equilibrium. Without an in-depth study, it is difficult to quantify degradation. However, from observations of other constructed channels in similar soils, it would be prudent to expect at least 3 to 5 feet of degradation.

TABLE A

Section	Existing WSEL *	Future WSEL *	Difference
3.5	1238.62	1238.62	0.0
3.6	1242.12	1242.12	0.0
3.7	1246.41	1246.41	0.0
3.8	1249.03	1249.03	0.0
3.9 (Project Limits)	1250.79	1250.50	- 0.3
4.0	1252.01	1252.26	+ 0.3
4.1	1253.72	1254.90	+ 1.2
4.2	1256.27	1258.65	+ 2.4
4.3	1260.76	1260.47	- 0.3
4.4	1262.17	1263.16	+ 1.0
4.42	1264.01	1265.15	+ 1.1
4.43	1265.58	1265.69	+ 0.1
4.5 (Project Limits)	1266.85	1265.97	- 0.9
4.6	1270.58	1269.09	- 1.5
4.7	1273.77	1273.10	- 0.7
4.8	1274.92	1275.05	+ 0.1
4.9	1277.61	1277.53	- 0.1
5.0	1279.75	1279.72	0.0

* Corps of Engineers Datum

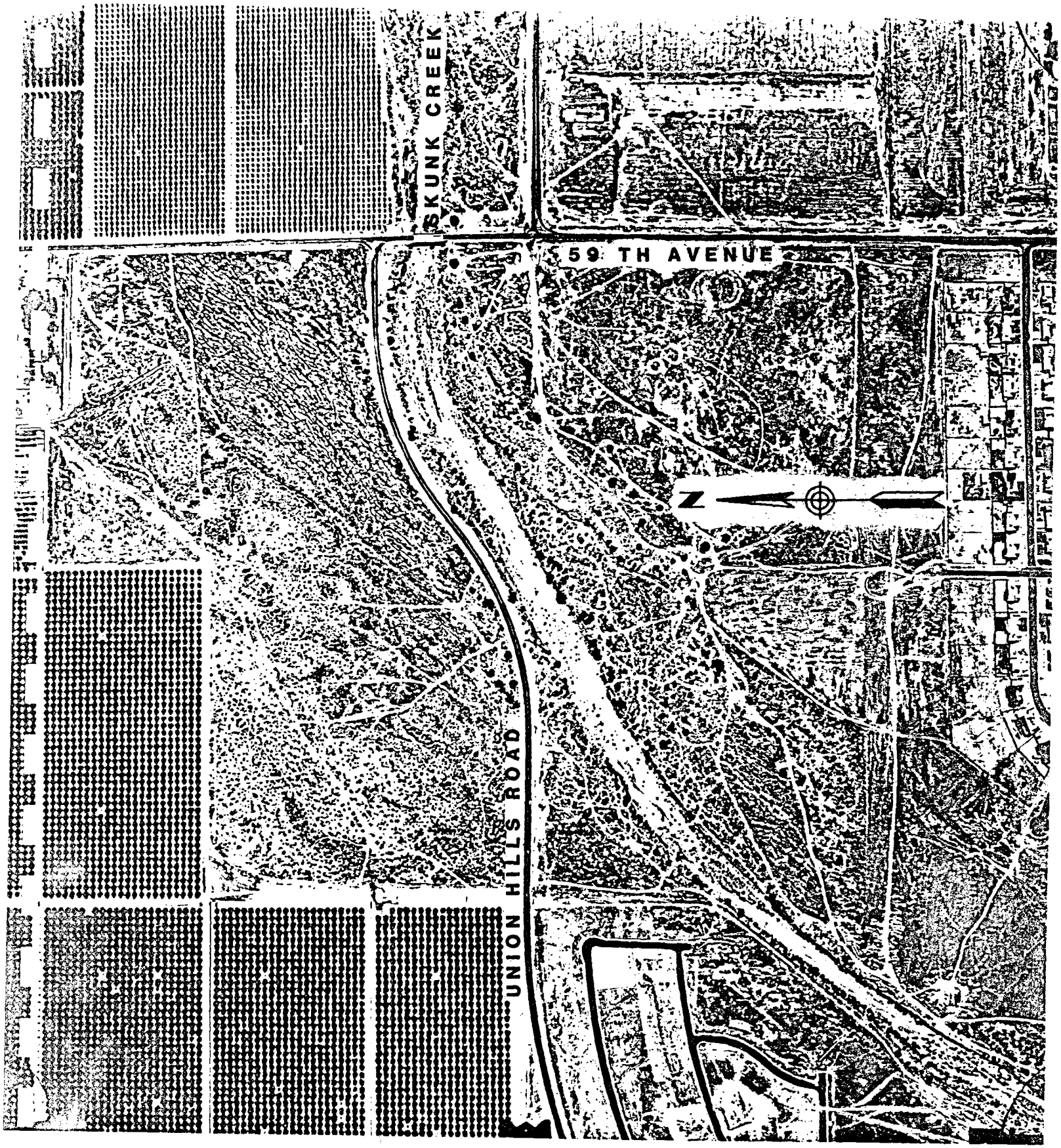
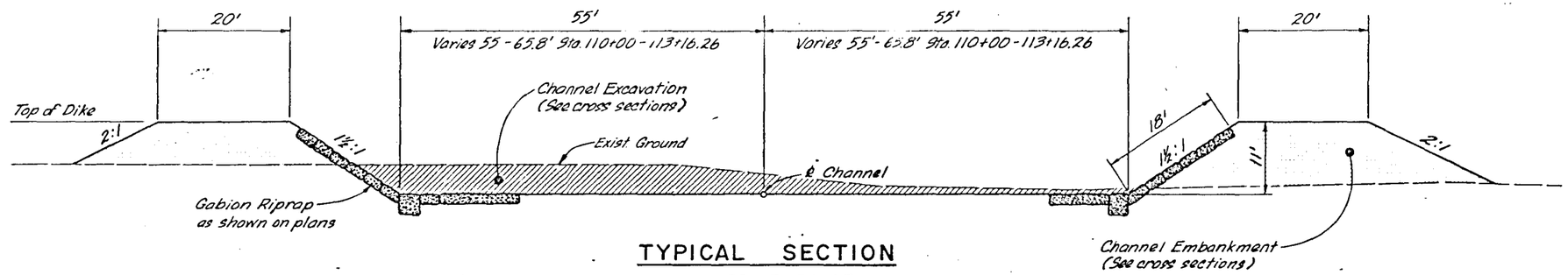
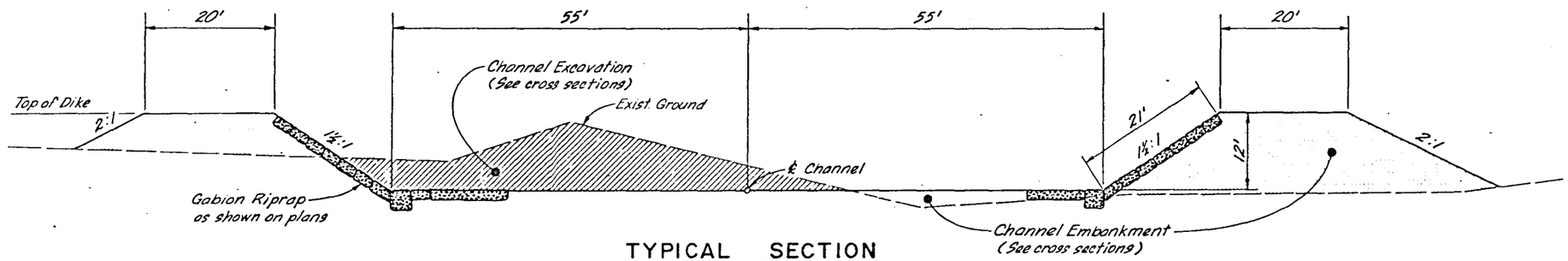


FIGURE 1



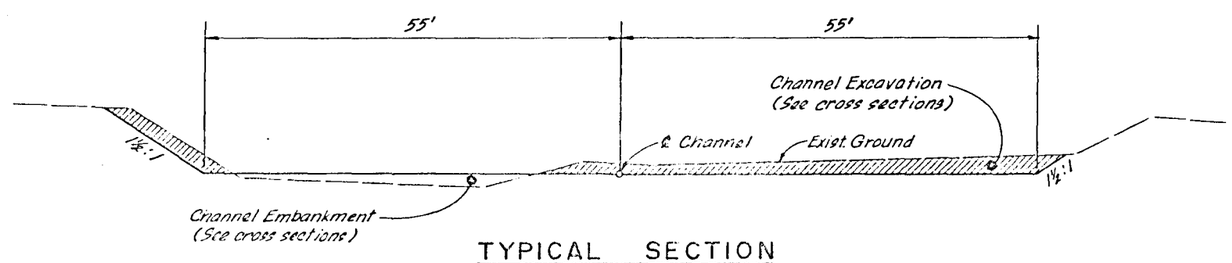
TYPICAL SECTION

Lt. Sta. 83+25 - 96+65
Lt. Sta. 101+00 - 113+16.26
Rt. Sta. 85+09.40 - 99+35
Rt. Sta. 101+00 - 113+16.26
(Looking Upstream)



TYPICAL SECTION

Lt. Sta. 96+65 - 101+00
Rt. Sta. 99+35 - 101+00
(Looking Upstream)



TYPICAL SECTION

Lt. Sta. 83+00 - 83+25
Rt. Sta. 83+00 - 85+09.40
(Looking Upstream)

FIGURE 2

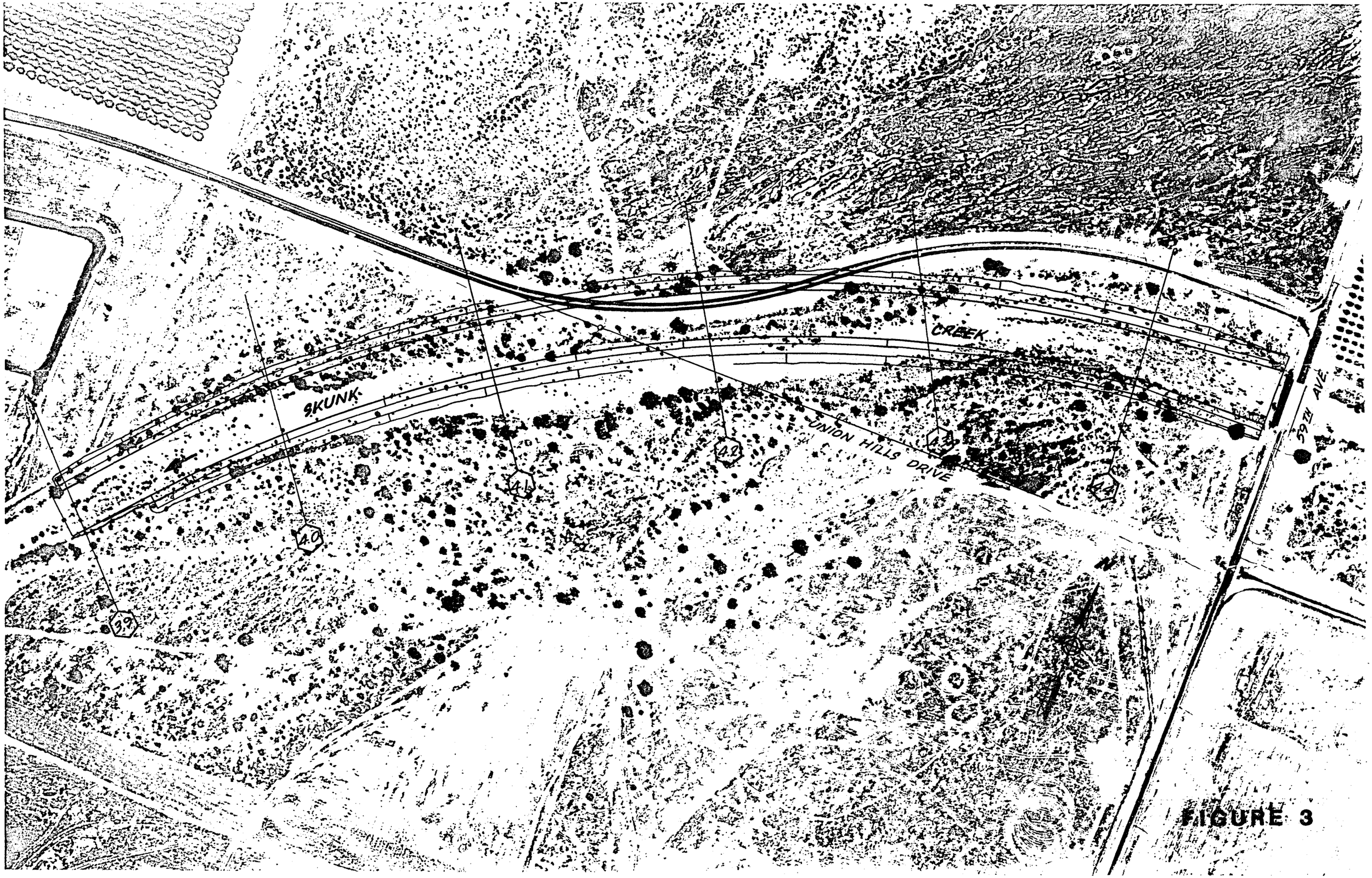


FIGURE 3

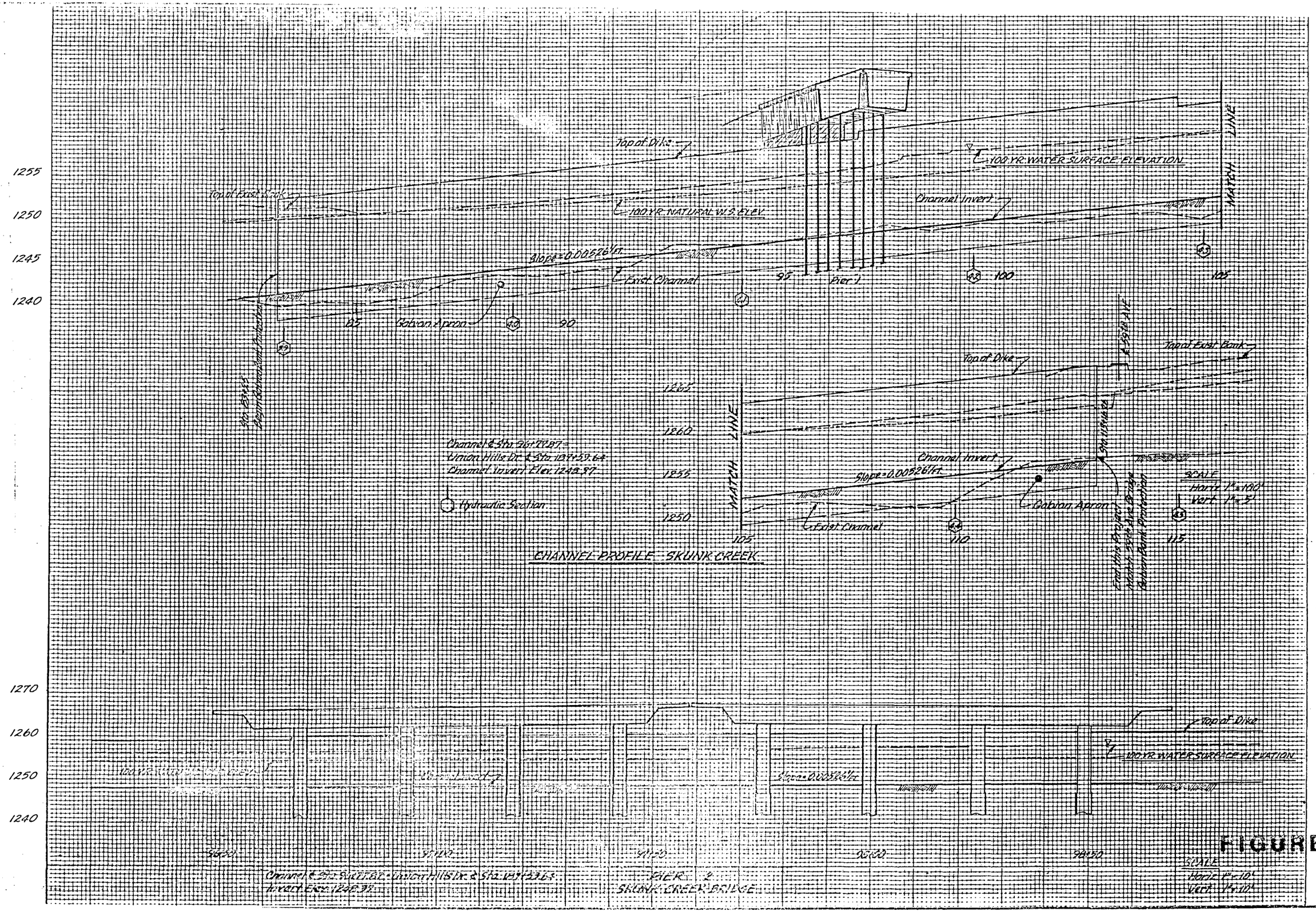

Top of Dike
Top of East Bank
100 YR. NATURAL W.S. ELEV.
100 YR. WATER SURFACE ELEVATION
Channel Invert
Slope = 0.00526 ft/ft
East Channel
Gabion Apron
Pier 1
MATCH LINE
Channel ℄ Sta. 96+70.87 =
Union Hills Dr. ℄ Sta. 103+59.68
Channel Invert Elev. 1248.87
Hydraulic Section
SCALE
Horiz. 1" = 100'
Vert. 1" = 5'
CHANNEL PROFILE SKUNK CREEK
Top of Dike
100 YR. WATER SURFACE ELEVATION
Channel ℄ Sta. 96+70.87 = Union Hills Dr. ℄ Sta. 103+59.68
Invert Elev. 1248.87
SHEET 2
SKUNK CREEK BRIDGE
SCALE
Horiz. 1" = 10'
Vert. 1" = 10'

FIGURE 4

APPENDIX A

THIS RUN EXECUTED 5-APR-94 19:31:00

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*****************************************************
 HEC2 RELEASE DATED NOV 74 UPDATED APR 1990
 ERROR CORR - 01,02,03,04
 MODIFICATION - 50,51,52,53,54
*****************************************************

T1      SKUNK CREEK
T2      UNION HILLS ROAD
T3      100 YEAR NATURAL CONDITIONS

J1  ICHECK    INQ      NINQ     IDIR     STRT     METRIC   HVINC    0        WSEL     FQ

       0.       4.       0.       0.  0.004500     0.00     0.0       0.  1240.450    0.000

J2  NPROF     IPLOT    PRFUS    XSECU    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

     -1.000    0.000   -1.000    0.000    0.000    0.000   -1.000    0.000    0.000   15.000

NC     0.045    0.045    0.075    0.100    0.700    0.000    0.000    0.000    0.000    0.000
QT     2.000 11990.000  9990.000 10042.000    0.000    0.000    0.000    0.000    0.000    0.000

X1     3.500   15.000  9900.000 10100.000    0.000    0.000    0.000    0.000    0.000    0.000
X3    10.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000
IGR  1242.000  9990.000  1240.000  9120.000  1240.000  9900.000  1234.000  9920.000  1232.000  9960.000
GR  1230.000  9990.000  1230.000  9991.000  1232.000 10030.000  1234.000 10075.000  1240.400 10100.000
GR  1240.000 10240.000  1241.000 10340.000  1242.000 10500.000  1244.000 10660.000  1244.000 10950.000
QT     3.000 11910.000  9210.000  9991.000    0.000    0.000    0.000    0.000    0.000    0.000

X1     3.600   17.000  9920.000 10090.000   545.000   500.000   525.000    0.000    0.000    0.000
X3    10.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000
GR  1244.900  9150.000  1244.000  9320.000  1244.000  9970.000  1242.000  9070.000  1241.500  9920.000
GR  1234.000  9940.000  1233.500  9945.000  1234.000  9975.000  1235.000 10045.000  1234.000 10055.000
GR  1241.900 10090.000  1242.000 10200.000  1244.000 10590.000  1244.900 11120.000  1244.300 11570.000
GR  1244.000 11910.000  1244.900 12110.000    0.000    0.000    0.000    0.000    0.000    0.000
QT     3.000 11740.000  9140.000  9920.000    0.000    0.000    0.000    0.000    0.000    0.000

X1     3.700   20.000  9925.000 10190.000   530.000   500.000   530.000    0.000    0.000    0.000
X3    10.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000    0.000
GR  1249.000  9049.000  1249.000  9914.000  1247.000  9925.000  1244.000  9200.000  1244.000  9900.000
GR  1244.000  9999.000  1244.000  9925.000  1239.000  9950.000  1240.000 10000.000  1240.000 10020.000
GR  1239.000 10050.000  1244.000 10040.000  1243.000 10110.000  1244.000 10150.000  1244.500 10190.000
GR  1244.000 10310.000  1244.900 10410.000  1249.000 11010.000  1249.000 11520.000  1249.000 11775.000
QT     3.000 11470.000  9070.000  9959.000    0.000    0.000    0.000    0.000    0.000    0.000
```

X1	3.000	10.000	9930.000	10075.000	570.000	490.000	530.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1252.000	9940.000	1250.000	9930.000	1249.000	9100.000	1247.500	9300.000	1247.000	9470.000
GR	1249.000	9900.000	1249.000	9930.000	1249.000	9955.000	1249.500	9990.000	1249.500	10050.000
GR	1249.000	10070.000	1250.500	10075.000	1249.000	10095.000	1247.000	10170.000	1249.000	10550.000
GR	1250.000	10930.000	1250.500	11270.000	1252.000	11420.000	1252.000	11450.000	0.000	0.000
DT	3.000	11400.000	9900.000	9789.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	3.000	17.000	9940.000	10072.000	430.000	440.000	530.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1255.000	9500.000	1252.000	9970.000	1252.000	9975.000	1250.000	9940.000	1249.900	9150.000
GR	1249.500	9940.000	1244.000	9990.000	1249.700	9915.000	1244.000	9930.000	1242.000	10040.000
GR	1252.000	10072.000	1256.000	10000.000	1249.700	10230.000	1250.000	10400.000	1252.000	10570.000
GR	1254.000	10540.000	1255.000	10900.000	0.000	0.000	0.000	0.000	0.000	0.000
DT	3.000	11520.000	7920.000	9734.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	4.000	24.000	9935.000	10090.000	400.000	470.000	530.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1254.000	9250.000	1255.700	9700.000	1254.000	9600.000	1254.000	9745.000	1252.000	9905.000
GR	1250.000	9740.000	1249.000	9795.000	1250.000	9920.000	1252.000	9900.000	1254.000	9925.000
GR	1245.000	9950.000	1245.000	10075.000	1250.000	10000.000	1249.000	10130.000	1249.000	10170.000
GR	1250.000	10215.000	1252.000	10250.000	1254.000	10400.000	1254.000	10420.000	1254.000	10450.000
GR	1254.000	10455.000	1257.000	10910.000	1257.500	11240.000	1250.000	11410.000	0.000	0.000
DT	3.000	11410.000	7910.000	9675.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	5.100	20.000	9920.000	10100.000	490.000	570.000	520.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1250.000	9290.000	1254.000	9400.000	1254.000	9930.000	1252.700	9170.000	1254.000	9545.000
GR	1252.000	9470.000	1252.000	9590.000	1250.500	9920.000	1248.000	9942.000	1247.500	10020.000
GR	1249.000	10070.000	1250.000	10100.000	1252.000	10210.000	1254.000	10235.000	1255.400	10240.000
GR	1254.500	10355.000	1254.000	10450.000	1250.000	10900.000	1248.000	11245.000	1241.000	11400.000
DT	3.000	11700.000	7790.000	9214.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	4.200	22.000	9920.000	10075.000	470.000	550.000	520.000	0.000	0.000	0.000
X2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1243.000	7450.000	1242.000	7520.000	1240.000	9300.000	1250.200	9470.000	1240.000	9545.000
GR	1252.000	9570.000	1250.000	9590.000	1250.000	9700.000	1254.000	9690.000	1254.000	9695.000
GR	1254.000	9900.000	1257.000	9920.000	1250.500	9945.000	1250.500	10040.000	1240.000	10075.000
GR	1254.000	10105.000	1254.000	10210.000	1254.000	10325.000	1250.000	10440.000	1240.000	10310.000
GR	1242.000	11020.000	1242.000	11075.000	0.000	0.000	0.000	0.000	0.000	0.000
DT	2.000	11720.000	7720.000	9557.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	4.700	20.000	9990.000	10120.000	430.000	510.000	520.000	0.000	0.000	0.000
GR	1244.400	9170.000	1244.000	9170.000	1244.000	9250.000	1244.000	9900.000	1244.000	9950.000
GR	1242.000	9955.000	1240.000	9970.000	1240.000	9710.000	1240.000	9740.000	1240.000	9920.000
GR	1240.000	9990.000	1250.000	9990.000	1254.000	9940.000	1254.000	9950.000	1252.400	9951.000
GR	1252.700	10050.000	1254.000	10040.000	1254.000	10075.000	1250.000	10005.000	1240.000	10120.000
GR	1240.000	10220.000	1242.000	10250.000	1240.000	10310.000	1240.000	10300.000	1240.000	10170.000

GR	1240.000	10540.000	1240.000	10450.000	1242.000	10470.000	1244.000	10485.000	1244.400	10300.000
MC	0.045	0.045	0.035	0.700	0.500	0.000	0.000	0.000	0.000	0.000
DT	2.000	11250.000	7550.000	9500.000	0.000	0.000	0.000	0.000	0.000	0.000
Y1	4.400	20.000	9880.000	10140.000	450.000	550.000	520.000	0.000	0.000	0.000
GR	1247.000	9450.000	1244.000	9390.000	1243.300	9450.000	1242.000	9880.000	1240.000	9825.000
GR	1258.000	9875.000	1254.000	9880.000	1254.000	10020.000	1254.000	10040.000	1254.000	10050.000
GR	1254.000	10130.000	1242.500	10140.000	1240.000	10130.000	1242.000	10130.000	1242.500	10000.000
GR	1242.000	10250.000	1242.000	10400.000	1244.000	10750.000	1244.000	11000.000	1240.000	11020.000
Y1	4.420	17.000	9830.000	10035.000	190.000	300.000	320.000	0.000	0.000	0.000
Y2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1240.000	7000.000	1240.000	7640.000	1240.000	7830.000	1242.000	8340.000	1244.000	8500.000
GR	1244.000	9870.000	1244.000	9820.000	1254.500	9820.100	1254.500	10000.000	1254.500	10074.000
GR	1244.000	10035.000	1244.000	10150.000	1244.000	10200.000	1242.000	10250.000	1244.000	10500.000
GR	1244.000	10550.000	1240.000	11200.000	0.000	0.000	0.000	0.000	0.000	0.000
MC	0.045	0.045	0.020	0.700	0.500	0.000	0.000	0.000	0.000	0.000
Y1	4.421	74.000	9830.000	10035.000	5.000	5.000	5.000	0.000	0.000	0.000
DT	14.000	9480.000	1247.500	1244.000	9450.000	1240.000	1245.000	9740.000	1240.000	1244.000
DT	9820.000	1240.000	1240.100	10035.000	1240.000	1240.100	10055.000	1240.000	1244.000	10170.000
DT	1240.000	1244.000	10145.000	1247.000	1244.000	10205.000	1244.000	1244.000	10255.000	1245.500
DT	1242.000	10355.000	1245.700	1244.000	10520.000	1244.000	1244.000	10600.000	1244.000	1245.700
DT	11235.000	1240.000	1240.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1240.000	7870.000	1247.000	8340.000	1244.000	8480.000	1245.000	8550.000	1244.000	8760.000
GR	1244.000	9830.000	1244.000	9820.000	1254.500	9820.010	1254.500	9830.700	1240.100	9830.710
GR	1240.100	9841.000	1254.500	9843.010	1254.500	9843.700	1240.100	9843.710	1240.100	9844.000
GR	1254.500	9844.010	1254.500	9900.700	1240.100	9900.710	1240.100	9901.000	1254.500	9901.010
GR	1254.500	10013.700	1240.100	10013.710	1240.100	10014.000	1254.500	10014.010	1254.500	10074.000
GR	1244.000	10035.000	1244.000	10055.000	1244.000	10130.000	1244.000	10145.000	1244.000	10205.000
GR	1242.000	10255.000	1242.700	10255.000	1244.000	10520.000	1245.700	10600.000	1244.000	10850.000
GR	1240.000	11235.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Y1	4.420	0.000	0.000	0.000	35.000	35.000	35.000	0.000	0.200	0.000
Y2	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
MC	0.045	0.045	0.035	0.700	0.500	0.000	0.000	0.000	0.000	0.000
Y1	4.430	12.000	9830.000	10035.000	5.000	5.000	5.000	0.000	0.000	0.000
Y2	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1240.000	9350.000	1240.000	9515.000	1247.400	9540.000	1242.000	9730.000	1242.000	9810.000
GR	1254.400	9820.000	1254.400	10035.000	1244.500	10050.000	1244.000	10310.000	1240.000	11400.000
GR	1230.000	11410.000	1232.000	11430.000	0.000	0.000	0.000	0.000	0.000	0.000
MC	0.045	0.045	0.035	0.100	0.700	0.000	0.000	0.000	0.000	0.000
DT	2.000	11100.000	7500.000	9430.000	0.000	0.000	0.000	0.000	0.000	0.000
MU	2.000	0.045	10070.000	0.055	11450.000	0.000	0.000	0.000	0.000	0.000

X1	4.500	17.000	9945.000	10070.000	500.000	470.000	550.000	0.000	0.000	0.000
XZ	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1272.000	8300.000	1270.000	9100.000	1260.000	9210.000	1266.000	9710.000	1264.000	9845.000
GR	1257.400	9875.000	1253.400	10032.000	1245.400	10070.000	1240.000	10015.000	1240.000	11410.000
GR	1270.000	11420.000	1272.000	11450.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	2.000	0.045	10200.000	0.055	11500.000	0.000	0.000	0.000	0.000	0.000
DT	2.000	11110.000	7510.000	8410.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	4.500	20.000	9920.000	10170.000	500.000	420.000	520.000	0.000	0.000	0.000
XZ	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1272.500	7900.000	1272.000	7901.000	1272.000	7902.000	1272.000	7903.000	1272.000	7904.000
GR	1271.000	9295.000	1271.000	9550.000	1270.100	9570.000	1270.000	9625.000	1269.500	9690.000
GR	1269.000	9935.000	1269.500	9930.000	1269.000	9945.000	1269.000	10030.000	1269.000	10040.000
GR	1269.000	10110.000	1271.000	10170.000	1268.000	10200.000	1268.000	10870.000	1270.000	11500.000
DT	2.000	13040.000	7440.000	9257.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	2.000	0.045	10290.000	0.055	11950.000	0.000	0.000	0.000	0.000	0.000

X1	4.700	19.000	9900.000	10140.000	500.000	490.000	530.000	0.000	0.000	0.000
XZ	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1274.000	9140.000	1274.000	9171.000	1274.000	9172.000	1274.000	9200.000	1274.000	9200.000
GR	1272.000	9595.000	1272.000	9650.000	1272.000	9900.000	1270.000	9940.000	1264.000	9980.000
GR	1264.000	10045.000	1274.000	10140.000	1272.000	10195.000	1270.000	10290.000	1260.400	10400.000
GR	1270.000	10900.000	1272.000	11250.000	1272.000	11730.000	1274.000	11950.000	0.000	0.000
NC	0.045	0.045	0.055	0.100	0.300	0.000	0.000	0.000	0.000	0.000
DT	3.000	10970.000	7270.000	9294.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	4.900	13.000	9920.000	10040.000	550.000	460.000	530.000	0.000	0.000	0.000
XZ	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1274.400	9290.000	1274.000	9570.000	1274.700	9920.000	1244.000	9942.000	1244.000	10000.000
GR	1274.000	10048.000	1270.000	10125.000	1272.000	10162.000	1274.000	10250.000	1274.000	10400.000
GR	1274.000	10900.000	1274.000	11230.000	1274.000	11700.000	0.000	0.000	0.000	0.000
DT	3.000	10900.000	7200.000	9275.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	4.900	19.000	9950.000	10050.000	550.000	750.000	520.000	0.000	0.000	0.000
XZ	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1280.000	9700.000	1278.000	9800.000	1276.600	9950.000	1270.000	9975.000	1268.000	9973.000
GR	1270.000	10025.000	1274.000	10050.000	1274.000	10152.000	1274.000	10175.000	1274.000	10185.000
GR	1274.000	10210.000	1276.000	10305.000	1277.000	10455.000	1277.000	10610.000	1277.000	10770.000
GR	1277.000	11200.000	1277.000	11350.000	1278.000	12000.000	1280.000	12200.000	0.000	0.000
DT	3.000	10930.000	7230.000	9174.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	5.000	18.000	9960.000	10030.000	530.000	510.000	520.000	0.000	0.000	0.000
XZ	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1280.000	9520.000	1278.000	9700.000	1278.000	9870.000	1278.500	9940.000	1278.000	9990.000
GR	1271.000	9930.000	1271.000	10010.000	1274.000	10022.000	1278.000	10030.000	1278.000	10100.000
GR	1278.500	10205.000	1278.000	10270.000	1278.000	10450.000	1278.000	11000.000	1278.500	11700.000
GR	1278.000	12105.000	1280.000	12170.000	1281.000	12700.0001	0.000	0.000	0.000	0.000

EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HU       HL       OLOSS   BANK ELEV
   Q        OLOB     OCH      OROB     ALOB     ACH      AROB     VOL      TWA     LEFT/RIGHT
   TIME     ULOB     UCH      UROB     XNL      XNCH     XNR      MIN      ELMIN     ESTA
   SLOPE    YLOBL    YLCH     YLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID    ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHU=   0.100 CEHU=   0.300
*SECNO 3.500

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1240.00 ELREA=     1240.60

     3.50     8.62  1238.62  1237.13  1240.45  1239.94     1.32     0.00     0.00  1240.00
   10042.       0.   10042.       0.       0.    1088.       0.       0.       0.   1240.60
     0.00     0.00     9.22     0.00    0.045    0.035    0.045    0.000  1230.00  9904.59
 0.004585       0.       0.       0.        0       14        3     0.00   187.92 10092.51

FLOW DISTRIBUTION FOR SECNO=      3.50        CWSEL=   1238.62

STA=    9905.   10100.
  PER Q=    100.0
   AREA=   1088.6
    VEL=      9.2

*SECNO 3.600
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     3.60     8.62  1242.12  1242.12     0.00  1242.36     1.24     2.17     0.01  1241.50
    9981.     330.    9631.      20.     316.    1061.      20.      15.       0.   1241.80
     0.02     1.04     9.08     0.72    0.045    0.035    0.045    0.035  1233.50  9057.85
 0.003737     545.     525.     500.        0        5        0     0.00  1165.83 10223.68

FLOW DISTRIBUTION FOR SECNO=      3.60        CWSEL=   1242.12

STA=    9058.    9920.   10080.   10200.   10224.
  PER Q=      3.7     96.5      0.2      0.0
   AREA=    316.5   1060.7     26.6      1.4
    VEL=      1.0      9.1      0.7      0.3

*SECNO 3.700

3201 HU CHANGED MORE THAN HUINC

7185 MINIMUM SPECIFIC ENERGY
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       WU       WL       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    XLOPL    XLCH     XLOPR    ITRIAL   IDC      ICONT    COPAR    TORWID    ENDST

3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1246.00 ELREA=     1245.50

     3.70     8.41  1246.41  1246.41     0.00  1246.86     0.45     1.74     0.08  1246.00
    9920.    2832.    7088.       0.    1293.    1146.       0.      38.      23.  1246.50
     0.05     2.19     6.19     0.00    0.045    0.035    0.045    0.035  1238.00  9978.65
 0.002890     530.     530.     500.        0        7        0     0.00  1200.22 10178.98

FLOW DISTRIBUTION FOR SECNO=      3.70          CWSEL=   1246.41

STA=    8979.    9200.    9800.    9899.    9925.   10180.
  PER Q=      5.4     19.1      3.1      0.9     71.5
   AREA=    267.2    848.8    139.6     38.2   1145.8
    VEL=      2.0      2.2      2.2      2.2      6.2

*SECNO 3.900
7195 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1249.00 ELREA=     1250.70

     3.90     8.53  1249.03  1249.03     0.00  1249.86     0.83     1.84     0.12  1249.00
    9959.    3111     6748.       0.    1144.     780.       0.      66.      37.  1250.70
     0.07     2.72     8.65     0.00    0.045    0.035    0.045    0.035  1240.50  9058.84
 0.004173     570.     520.     490.        0       14        0     0.00  1006.87 10065.72

FLOW DISTRIBUTION FOR SECNO=      3.90          CWSEL=   1249.03

STA=    9059.    9100.    9300.    9670.    9900.    9930.   10075.
  PER Q=      0.3      6.1     19.9      5.2      0.0     68.4
   AREA=     21.2    245.8    639.7    236.7      0.9    780.5
    VEL=      1.4      2.4      3.1      2.2      0.2      8.6

*SECNO 3.900

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1249.50 ELREA=     1252.00

     3.90     8.79  1250.79  1248.61     0.00  1251.41     0.62     1.52     0.02  1249.50
    9798.    1214.    8584.       0.     795.    1280.       0.      88.      47.  1252.00
     0.09     1.53     6.71     0.00    0.045    0.035    0.045    0.035  1242.00  9014.21
 0.002257     430.     530.     640.        2       12        0     0.00  1053.97 10068.14
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  SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       DLOSS   BANK ELEV
  Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
  TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN     SSTA
  SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID    GMDST

FLOW DISTRIBUTION FOR SECNO=      3.90          CWSEL=   1250.79

STA=    9014.    9040.    9450.    9840.   10072.
  PER Q=      0.1      8.1      4.2     87.6
   AREA=     10.2    545.0    240.1   1280.1
    VEL=      0.8      1.5      1.7      6.7

*SECNO 4.000

3495 OVERBANK AREA ASSUMED NON EFFECTIVE.ELLEA=     1256.00 ELREA=     1250.00

     4.00     7.01  1252.01  1250.54     0.00  1252.81     0.80     1.35     0.06  1256.00
    9736.       0    7823.    1913.       0.     999.     552.     110.      56.  1250.00
     0.11     0.00     7.83     3.46    0.045    0.035    0.045    0.035  1245.00  9934.07
 0.002910     400.     520.     670.        2       14        0     0.00   416.92 10351.00

FLOW DISTRIBUTION FOR SECNO=      4.00          CWSEL=   1252.01

STA=    9934.   10090.   10130.   10170.   10215.   10250.
  PER Q=     80.4      4.6      7.4      5.2      2.5
   AREA=    999.4    120.3    160.3    135.4    136.1
    VEL=      7.8      3.7      4.5      3.7      1.9

*SECNO 4.100

3495 OVERBANK AREA ASSUMED NON EFFECTIVE.ELLEA=     1258.50 ELREA=     1250.00

     4.10     5.92  1253.72  1252.89     0.00  1254.84     1.12     1.94     0.10  1258.50
    9675.       0.    8303.    1272.       0.     921.     318.     127.      60.  1250.00
     0.13     0.00     9.01     4.31    0.045    0.035    0.045    0.035  1247.80  9930.01
 0.004781     480.     520.     570.        2       19        0     0.00   301.54 10231.54

FLOW DISTRIBUTION FOR SECNO=      4.10          CWSEL=   1253.72

STA=    9930.   10100.   10210.   10232.
  PER Q=     85.8     13.8      0.4
   AREA=    921.4    299.6     18.6
    VEL=      9.0      4.5      2.1

*SECNO 4.200
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HU       HL       QLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WIN      ELMIN     SSTA
   SLOPE    XLOPL    XLCH     XLOPR    ITRIAL   IDC      ICONT    CORAR    TOPWID    ENDST


3301 HU CHANGED MORE THAN HUINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1257.00 ELREA=     1260.00

     4.20     5.77  1256.27  1256.23     0.00  1258.79     2.52     3.53     0.42  1257.00
    9614.       0.    9614.       0.       0.     755.       0.     139.      63.  1260.00
     0.14     0.00    12.73     0.00    0.045    0.025    0.045    0.025  1250.50  9922.77
 0.010307     470.     520.     550.        1       10        0     0.00   146.25 10069.12


FLOW DISTRIBUTION FOR SECNO=      4.20          CWSEL=   1256.27

STA=    9923.   10075.
  PER Q=    100.0
   AREA=    755.1
    VEL=     12.7

*SECNO 4.300

3301 HU CHANGED MORE THAN HUINS

     4.30     8.16  1260.76  1258.55     0.00  1261.38     0.67     2.40     0.19  1260.00
    9557.     274.    8751.     532.     222.    1322.     391.     155.      70.  1260.00
     0.14     1.22     6.62     1.36    0.045    0.025    0.045    0.025  1252.60  9515.28
 0.002533     430.     530.     560.        1        8        0     0.00  1142.18 10657.46


FLOW DISTRIBUTION FOR SECNO=      4.30          CWSEL=   1260.76

STA=    9515.    9990.   10130.   10470.   10657.
  PER Q=      2.9     91.6      3.6      1.9
   AREA=    221.7   1321.6    253.5    137.0
    VEL=      1.2      6.6      1.4      1.4

CCHV=   0.300 CEHV=   0.500
*SECNO 4.400

3265 DIVIDED FLOW

     4.40     8.17  1262.17  1260.04     0.00  1262.92     0.75     1.47     0.06  1262.00
    9500.       1.    9386.     113.       3.    1342.     102.     175.      91.  1262.50
     0.19     0.36     6.99     1.11    0.045    0.025    0.045    0.025  1254.00  9849.63
 0.003070     450.     530.     550.        3       19        0     0.00   696.91 10612.88
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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     ULOB     UCH      UROB     XNL      XNCH     XNR      WTN      ELMIN     SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAP    TOPWID    ENDST

FLOW DISTRIBUTION FOR SECNO=      4.40          CWSEL=   1262.17

STA=   9850.   9880.   10140.   10170.   10180.   10600.   10612.
  PER Q=      0.0     98.8      0.6      0.2      0.4      0.0
   AREA=      2.6   1342.2     28.7     11.7     60.8      1.1
    VEL=      0.4      7.0      1.9      2.0      0.6      0.4

*SECNO 4.420

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3185 MINIMUM SPECIFIC ENERGY
3320 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1266.00 ELREA=     1264.00

     4.42     7.51  1264.01  1264.01     0.00  1265.55     1.54     1.20     0.39  1266.00
    9500.       0.    8869.     632.       0.     867.     279.     195.      86.  1264.00
     0.20     0.00    10.28     2.27    0.045    0.035    0.045    0.035  1256.50  9920.02
 0.004689     180.     320.     300.        0       14        0     0.00   507.54 10502.20

FLOW DISTRIBUTION FOR SECNO=      4.42          CWSEL=   1264.01

STA=   9920.   10035.   10250.   10500.
  PER Q=     93.3      0.6      6.0
   AREA=    862.8     26.4    252.4
    VEL=     10.3      2.2      2.3

ECHV=   0.300 ECHV=   0.500
*SECNO 4.421

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 1265.30 MAX ELLC= 1268.10
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HU       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    CONAR    TOPWID    ENDST

     4.42     7.11  1263.61  1262.98     0.00  1265.99     2.37     0.02     0.42  1266.00
    9500.       0.    9367.     133.       0.     753.     119      195.      86.   1264.00
     0.20     0.00    12.45     1.13    0.045    0.020    0.045    0.025  1256.50  9920.00
 0.004071       5.       5.       5.        3       13        0   -81.46   349.11 10478.12

FLOW DISTRIBUTION FOR SECNO=      4.42          CWSEL=   1263.61

STA=    9920.   10035.   10355.   10470.
  PER Q=     98.6      0.7      0.7
   AREA=    752.5     41.3     56.3
    VEL=     12.4      1.0      1.3

*SECNO 4.429

3265 DIVIDED FLOW

3370 NORMAL BRIDGE,NRD= 14 MIN ELTRD= 1265.30 MAX ELLC= 1268.30

     4.43     7.02  1263.72  1263.14     0.00  1266.17     2.45     0.15     0.04  1266.20
    9500.       0.    9395.     115.       0.     743.     105.     186.      86.   1264.20
     0.20     0.00    12.64     1.10    0.045    0.020    0.045    0.035  1256.70  9920.00
 0.004242      35.      35.      35.        2       16        0   -72.23   335.24 10465.43

FLOW DISTRIBUTION FOR SECNO=      4.43          CWSEL=   1263.72

STA=    9920.   10035.   10355.   10465.
  PER Q=     92.8      0.6      0.6
   AREA=    742.6     59.2     45.3
    VEL=     12.6      1.0      1.2

CCHV=   0.300 CEHV=   0.500
*SECNO 4.430

3301 HV CHANGED MORE THAN HVINS

     4.43     8.90  1265.58  1262.47     0.00  1266.61     1.03     0.01     0.43  1256.60
    9500.     144.    9746.     610.      43.    1033.     371.     196.      86.   1256.60
     0.20     3.36     8.47     1.64    0.045    0.035    0.045    0.035  1256.60  9910.45
 0.002131       5.       5.       5.        4       11        0     0.00   687.07 10597.52
```

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

FLOW DISTRIBUTION FOR SECNO=      4.43          CWSEL=   1265.59

STA=    9910.    9920.   10025.   10050.   10590.
  PER Q=      1.5     92.1      3.3      3.1
   AREA=     42.9   1032.8     75.5    295.8
    VEL=      3.4      8.5      4.1      1.0

CCHV=   0.100 CEHV=   0.200
1490 NH CARD USED
*SECNO 4.500
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     4.50     9.45  1266.95  1266.85     0.00  1268.10     1.25     0.50     0.07  1266.00
    9430.     486.    8434.     510.     217.     992.     300.     191.      88.   1265.40
     0.20     2.24     9.46     1.70    0.045    0.045    0.055    0.035  1257.40  9667.64
 0.006097     200.     150.     120.        0        9        0     0.00   817.02 10484.67

FLOW DISTRIBUTION FOR SECNO=      4.50          CWSEL=   1266.85

STA=    9660.    9710.    9945.   10070.   10485.
  PER Q=      0.3      4.9     89.4      5.4
   AREA=     17.9    199.1    891.9    300.0
    VEL=      1.5      2.2      9.5      1.7

1490 NH CARD USED
*SECNO 4.600
3280 CROSS SECTION      4.60 EXTENDED      0.58 FEET

3301 HV CHANGED MORE THAN HVING

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1269.50 ELREA=     1271.00

     4.60    10.58  1270.58  1270.58     0.00  1270.99     0.40     1.78     0.08  1269.50
    9418.     979.    8439.       0.     485.    1579.       0.     211.      96.   1271.00
     0.23     2.02     5.34     0.00    0.045    0.045    0.055    0.035  1260.00  9559.23
 0.002163     500.     530.     420.        0       21        0     0.00   602.46 10161.69
```

```
   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HU       HL       QLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     YNL      YNCH     YNR      WTN      ELMIN     SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID    ENDST

FLOW DISTRIBUTION FOR SECNO=      4.60          CWSEL=   1270.58

STA=    9550.    9570.    9635.    9690.    9825.    9920.   10170.
  PER Q=      0.0      0.4      1.5      6.1      2.5     89.6
   AREA=      2.6     34.7     77.4    247.7    126.8   1579.1
    VEL=      0.6      1.0      1.9      2.7      1.9      5.2

1400 NU CARD USED
*SECNO 4.700
7105 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1272.00 ELREA=     1274.80

     4.70     9.77  1273.77  1273.77     0.00  1274.13     0.36     1.14     0.00  1272.00
    9357.    1362.    7995.       0.     754.    1553.       0.     237.     106.   1274.80
     0.26     1.81     5.15     0.00    0.045    0.045    0.054    0.035  1264.00  9112.40
 0.002157     500.     530.     490.        0       11        0     0.00  1030.57 10150.97

FLOW DISTRIBUTION FOR SECNO=      4.70          CWSEL=   1273.77

STA=    9112.    9595.    9650.    9900.   10160.
  PER Q=      2.4      1.5     10.6     85.4
   AREA=    234.8     75.5    442.7   1552.7
    VEL=      0.9      1.9      2.2      5.1

CCHV=   0.100 CEHV=   0.300
*SECNO 4.800
     4.80     8.92  1274.92  1274.73     0.00  1275.54     0.62     1.22     0.08  1274.70
    9296.       3.    5923.    3370.       6.     767.    1412.     264.     120.   1274.00
     0.29     0.42     7.72     2.39    0.045    0.025    0.045    0.025  1266.00  9861.47
 0.003092     550.     530.     460.        2       13        0     0.00  1400.64 11262.11

FLOW DISTRIBUTION FOR SECNO=      4.80          CWSEL=   1274.92

STA=    9861.    9920.   10040.   10135.   10162.   10220.   10400.   10900.   11230.   11262.
  PER Q=      0.0     62.7     10.2      5.2      3.4      3.1      6.8      7.4      0.2
   AREA=      6.4    766.7    253.8    105.8    111.2    165.1    366.9    394.5     14.7
    VEL=      0.4      7.7      3.7      4.6      2.8      1.7      1.7      1.7      1.1
```

```
   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EC       HU       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     ULOB     UCH      UROB     XNL      XNCH     XNR      WTN      ELMIN     SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID    ENDST

*SECNO 4.900
7105 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     4.90     9.61  1277.61  1277.61     0.00  1278.22     0.71     1.25     0.02  1276.60
    9235.      61.    5956.    3219.      55.     722.    1483.     285.     134.   1274.00
     0.31     1.11     8.25     2.17    0.045    0.025    0.045    0.025  1268.00  9841.62
 0.002780     550.     520.     350.        0        9        0     0.00  2022.43 11864.05

FLOW DISTRIBUTION FOR SECNO=      4.90          CWSEL=   1277.61

STA=    9842.    9950    10050.   10152.   10175.   10395.   10770.   11200.   11450.   11864.
  PER Q=      0.7     64.5     16.2      3.7      3.7      3.2      3.6      3.7      0.6
   AREA=     54.8    721.7    368.4     83.1    188.7    239.0    263.0    275.2     65.5
    VEL=      1.1      8.2      4.1      4.1      1.8      1.2      1.2      1.2      0.8

*SECNO 5.000
7105 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     5.00     6.75  1279.75  1279.75     0.00  1280.72     0.57     1.56     0.01  1278.50
    9174.     547.    6182.    2445.     270.     848.    1435.     313.     162.   1278.00
     0.32     2.02     7.29     1.65    0.045    0.025    0.045    0.025  1272.00  9565.22
 0.003281     530.     520.     510.        0       15        0     0.00  2587.20 12152.42

FLOW DISTRIBUTION FOR SECNO=      5.00          CWSEL=   1279.75

STA=    9565.    9700.    9830.    9868.   10030.   10100.   10205.   10370.   10480.   11000.   11700.   12100.   12152.
  PER Q=      0.5      3.9      1.5     67.4      3.7      4.2      3.4      1.4      6.6      4.5      2.6      0.2
   AREA=     50.5    162.3     57.0    847.8    122.4    157.4    164.8     82.4    389.4    349.1    199.5     19.6
    VEL=      1.0      2.2      2.5      7.2      2.7      2.5      1.9      1.6      1.6      1.2      1.2      1.0
```

THIS RUN EXECUTED 5-APR-94 10:31:12

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*****************************************************
 HEC2 RELEASE DATED NOV 76 UPDATED APR 1990
 ERROR CODE - 01:02:03:04
 MODIFICATION - 50:51:52:57:54
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NOTE- ASTERICK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100 YEAR NATURAL CONDITI

SUMMARY PRINTOUT TABLE 150

	SECNO	YLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EC	10KPS	VCH	AREA	.01K
	3.500	0.00	0.00	0.00	1230.00	10042.00	1239.62	1237.13	1239.94	45.05	9.22	1088.63	1402.99
*	3.600	525.00	0.00	0.00	1233.50	9991.00	1242.12	1242.12	1247.76	37.77	9.08	1405.17	1632.76
*	3.700	530.00	0.00	0.00	1239.00	9920.00	1246.41	1246.41	1246.96	28.90	6.19	2438.65	1845.33
*	3.800	520.00	0.00	0.00	1240.50	9859.00	1248.02	1248.02	1249.86	41.72	8.65	1924.61	1526.25
	3.900	530.00	0.00	0.00	1242.00	9799.00	1250.79	1248.61	1251.41	22.57	6.71	2075.43	2062.47
	4.000	520.00	0.00	0.00	1245.00	9736.00	1252.01	1250.54	1252.01	29.10	7.82	1551.52	1806.70
	4.100	520.00	0.00	0.00	1247.00	9675.00	1253.72	1252.88	1254.04	47.01	9.01	1239.57	1399.27
	4.200	520.00	0.00	0.00	1250.50	9614.00	1256.27	1254.27	1258.79	103.07	12.72	755.12	946.97
	4.300	530.00	0.00	0.00	1252.60	9557.00	1260.76	1258.55	1261.38	25.33	6.62	1933.79	1899.01
	4.400	530.00	0.00	0.00	1254.00	9500.00	1262.17	1260.04	1262.92	30.70	6.99	1846.71	1714.67
*	4.420	320.00	0.00	0.00	1254.50	9500.00	1264.01	1264.01	1265.55	46.89	10.28	1141.62	1307.31
	4.421	5.00	1265.30	1268.10	1254.50	9500.00	1263.61	1262.98	1265.99	40.71	12.45	870.13	1488.98
	4.429	35.00	1265.30	1268.30	1252.70	9500.00	1263.72	1263.14	1266.17	42.42	12.84	847.11	1458.66
	4.430	5.00	0.00	0.00	1254.60	9500.00	1265.58	1262.47	1266.61	21.71	8.47	1446.92	2059.09
*	4.500	150.00	0.00	0.00	1257.40	9430.00	1266.05	1266.05	1269.10	40.97	9.46	1400.93	1207.68
*	4.600	530.00	0.00	0.00	1260.00	9415.00	1270.58	1270.58	1270.88	21.63	5.24	2064.74	2024.92
*	4.700	530.00	0.00	0.00	1264.00	9357.00	1273.77	1273.77	1274.13	21.57	5.15	2106.37	2014.63

	SECNO	XLCH	LLIPD	ELLC	ELMIN	Q	CPSLL	CPIPS	EG	10K*S	VCH	AREA	.01K
	4.900	520.00	0.00	0.00	1266.00	9296.00	1274.92	1274.72	1275.54	30.92	7.72	2185.12	1671.48
*	4.900	520.00	0.00	0.00	1269.00	9235.00	1277.41	1277.41	1278.32	27.00	8.25	2259.19	1751.64
*	5.000	520.00	0.00	0.00	1272.00	9174.00	1279.25	1279.75	1280.22	32.01	7.28	2402.15	1401.61

100 YEAR NATURAL CONDITI

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	3.500	10042.00	1238.62	0.00	0.00	-1.83	197.92	0.00
*	3.600	9981.00	1242.12	0.00	3.50	0.00	1165.83	525.00
*	3.700	9920.00	1246.41	0.00	4.29	0.00	1200.32	530.00
*	3.800	9859.00	1249.03	0.00	2.61	0.00	1006.87	520.00
	3.900	9798.00	1250.79	0.00	1.76	0.00	1053.93	530.00
	4.000	9736.00	1252.01	0.00	1.22	0.00	416.97	520.00
	4.100	9675.00	1253.72	0.00	1.71	0.00	301.54	520.00
	4.200	9614.00	1256.27	0.00	2.55	0.00	146.75	520.00
	4.300	9557.00	1260.76	0.00	4.49	0.00	1142.18	530.00
	4.400	9500.00	1262.17	0.00	1.41	0.00	696.81	530.00
*	4.420	9500.00	1264.01	0.00	1.84	0.00	507.54	320.00
	4.421	9500.00	1263.61	0.00	-0.40	0.00	349.11	5.00
	4.429	9500.00	1263.72	0.00	0.11	0.00	335.24	35.00
	4.430	9500.00	1265.58	0.00	1.86	0.00	687.07	5.00
*	4.500	9430.00	1266.85	0.00	1.27	0.00	817.02	150.00
*	4.600	9418.00	1270.58	0.00	3.74	0.00	602.46	530.00
*	4.700	9357.00	1273.77	0.00	3.19	0.00	1039.57	530.00
	4.800	9296.00	1274.92	0.00	1.14	0.00	1400.64	530.00
*	4.900	9235.00	1277.61	0.00	2.69	0.00	2022.43	520.00
*	5.000	9174.00	1279.75	0.00	2.14	0.00	2587.20	520.00

SUMMARY OF ERRORS

```
CAUTION  SECNO=   3.400  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   3.400  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   3.700  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   3.700  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   3.900  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   3.900  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   4.420  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   4.420  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   4.500  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   4.500  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   4.600  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   4.600  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   4.700  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   4.700  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   4.900  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   4.900  PROFILE= 1  MINIMUM SPECIFIC ENERGY

CAUTION  SECNO=   5.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=   5.000  PROFILE= 1  MINIMUM SPECIFIC ENERGY
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APPENDIX B

THIS RUN EXECUTED 21-MAR-84 12:01:20

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APR  1980
  ERROR CODE -  01:02:03:04
  MODIFICATION -  50:51:52:53:54
*****************************************************

T1       SKUNK CREEK
T2       UNION HILLS ROAD
T3       100 YEAR CHANNEL

J1  ICHECK    INQ      NINV     IDIM     SINT     METRIC   IOUTNO   0        HCEL     FQ

     0.       4.       0.       0.  0.004500     0.00     0.0      0.  1240.450    0.000

J2  NPROF    IPLOT    PRTVS    XSECV    XSECH    FN       ALTPF    IBW      CHNIM    ITRACE

    -1.000    0.000   -1.000    0.000    0.000    0.000   -1.000    0.000    0.000   15.000

NC     0.045     0.045     0.035     0.100     0.300     0.000     0.000     0.000     0.000     0.000
QT     2.000 11890.000  9200.000 10042.000     0.000     0.000     0.000     0.000     0.000     0.000

X1     3.500    15.000  9900.000 10100.000     0.000     0.000     0.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
GR  1242.000  9900.000  1240.000  9120.000  1240.000  9900.000  1234.000  9920.000  1232.000  9950.000
GR  1230.000  9920.000  1220.000  9981.000  1232.000 10020.000  1234.000 10075.000  1240.600 10100.000
GR  1240.000 10260.000  1241.000 10340.000  1242.000 10500.000  1244.000 10620.000  1244.000 10950.000
QT     2.000 11810.000  9211.000  9981.000     0.000     0.000     0.000     0.000     0.000     0.000

X1     3.600    17.000  9920.000 10090.000   545.000   500.000   525.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
GR  1244.900  9150.000  1244.000  9320.000  1244.000  9970.000  1242.000  9970.000  1241.500  9920.000
GR  1234.000  9940.000  1233.500  9965.000  1234.000  9925.000  1235.000 10045.000  1234.000 10055.000
GR  1241.000 10000.000  1242.000 10200.000  1244.000 10500.000  1244.000 11120.000  1244.300 11570.000
GR  1244.000 11940.000  1244.900 12110.000     0.000     0.000     0.000     0.000     0.000     0.000
QT     2.000 11740.000  9140.000  9920.000     0.000     0.000     0.000     0.000     0.000     0.000

X1     3.700    20.000  9925.000 10100.000   530.000   500.000   530.000     0.000     0.000     0.000
X3    10.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
GR  1248.000  9949.000  1248.000  9915.000  1247.000  9925.000  1244.000  9200.000  1244.000  9900.000
GR  1244.000  9898.000  1246.000  9925.000  1239.000  9950.000  1240.000 10000.000  1240.000 10020.000
GR  1239.000 10050.000  1244.000 10060.000  1243.000 10110.000  1244.000 10150.000  1246.500 10190.000
GR  1244.000 10310.000  1246.000 10410.000  1248.000 11010.000  1248.000 11520.000  1248.000 11775.000
QT     2.000 11770.000  9070.000  9858.000     0.000     0.000     0.000     0.000     0.000     0.000
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X1	3.500	19.000	9930.000	10075.000	570.000	480.000	520.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1252.000	9840.000	1250.000	9920.000	1248.000	9100.000	1247.400	9200.000	1247.000	9270.000
GR	1249.000	9900.000	1249.000	9970.000	1248.000	9955.000	1240.500	9980.000	1240.500	10050.000
GR	1249.000	10060.000	1250.700	10075.000	1248.000	10095.000	1247.000	10170.000	1249.000	10550.000
GR	1250.000	10970.000	1250.000	11270.000	1252.000	11420.000	1252.000	11450.000	0.000	0.000
QT	2.000	11400.000	9000.000	9798.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	3.500	4.000	10000.000	10110.000	570.000	540.000	570.000	0.000	-0.760	0.000
GR	1255.900	9980.500	1242.770	10000.000	1242.770	10110.000	1255.770	10129.500	0.000	0.000
QT	2.000	11520.000	7930.000	9724.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.000	0.000	0.000	0.000	520.000	540.000	530.000	0.000	2.790	0.000
QT	2.000	11460.000	7960.000	9675.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.100	0.000	0.000	0.000	520.000	540.000	530.000	0.000	2.790	0.000
MC	0.035	0.035	0.035	0.300	0.500	0.000	0.000	0.000	0.000	0.000
X1	4.110	0.000	0.000	0.000	159.000	161.000	160.000	0.000	0.240	0.000
X1	4.120	9.000	10000.000	10110.000	5.000	5.000	5.000	0.000	1.230	0.000
GR	1260.200	9980.500	1247.220	10000.000	1247.220	10075.000	1260.000	10075.100	1260.000	10079.000
GR	1247.300	10079.100	1247.220	10080.000	1247.230	10110.000	1260.220	10129.500	0.000	0.000
X1	4.130	0.000	0.000	0.000	101.000	102.000	102.000	0.000	0.540	0.000
X1	4.140	12.000	10000.000	10110.000	5.000	5.000	5.000	0.000	0.320	0.000
GR	1261.700	9980.500	1248.700	10000.000	1248.700	10013.000	1261.700	10013.100	1261.700	10017.000
GR	1248.700	10017.100	1248.700	10076.000	1261.700	10076.100	1261.700	10080.000	1248.700	10080.100
GR	1248.700	10110.000	1261.700	10129.500	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.150	0.000	0.000	0.000	91.000	93.000	92.000	0.000	0.480	0.000
X1	4.170	9.000	10000.000	10110.000	5.000	5.000	5.000	0.000	0.410	0.000
GR	1262.100	9980.500	1249.120	10000.000	1249.120	10015.000	1262.120	10015.100	1262.120	10019.000
GR	1249.200	10019.200	1249.120	10020.000	1249.120	10110.000	1262.120	10129.500	0.000	0.000
X1	4.180	0.000	0.000	0.000	105.000	107.000	106.000	0.000	0.560	0.000

X1	4.190	4.000	10000.000	10110.000	5.000	5.000	5.000	0.000	0.520	0.000
GR	1252.500	9980.500	1249.600	10000.000	1249.600	10110.000	1262.600	10129.500	0.000	0.000
QT	2.000	11390.000	7290.000	9414.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.075	0.025	0.035	0.100	0.200	0.000	0.000	0.000	0.000	0.000
X1	4.200	0.000	0.000	0.000	50.000	50.000	50.000	0.000	0.270	0.000
QT	2.000	11320.000	7220.000	9357.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.300	0.000	0.000	0.000	520.000	540.000	530.000	0.000	2.800	0.000
QT	2.000	11250.000	7650.000	9500.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.400	0.000	0.000	0.000	520.000	540.000	530.000	0.000	2.800	0.000
NC	0.030	0.030	0.030	0.200	0.500	0.000	0.000	0.000	0.000	0.000
X1	4.420	4.000	10000.000	10139.000	300.000	300.000	300.000	0.000	0.000	0.000
GR	1271.000	9979.970	1257.590	10000.000	1257.590	10139.000	1271.000	10157.130	0.000	0.000
X1	4.421	32.000	10000.000	10139.000	5.000	5.000	5.000	0.000	1.200	0.000
GR	1269.400	9990.500	1256.400	10000.000	1256.400	10025.000	1269.400	10025.100	1269.400	10029.000
GR	1256.400	10029.100	1256.400	10066.000	1269.400	10066.100	1269.400	10070.000	1256.400	10070.100
GR	1256.400	10139.000	1269.400	10157.500	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.429	0.000	0.000	0.000	100.000	100.000	100.000	0.000	0.450	0.000
X1	4.430	4.000	10000.000	10139.000	5.000	5.000	5.000	0.000	1.270	0.000
GR	1269.800	9980.500	1256.810	10000.000	1256.810	10139.000	1269.810	10157.500	0.000	0.000
NC	0.035	0.035	0.035	0.100	0.300	0.000	0.000	0.000	0.000	0.000
QT	2.000	11180.000	7500.000	9420.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.500	4.000	10000.000	10139.000	105.000	105.000	105.000	0.000	0.000	0.000
GR	1271.700	9980.500	1258.300	10000.000	1258.300	10139.000	1271.700	10157.500	0.000	0.000
NM	2.000	0.055	10200.000	0.055	11500.000	0.000	0.000	0.000	0.000	0.000
QT	2.000	11110.000	7510.000	9418.000	0.000	0.000	0.000	0.000	0.000	0.000
X1	4.400	20.000	9920.000	10170.000	500.000	420.000	530.000	0.000	0.000	0.000
XZ	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1272.500	7900.000	1272.000	7901.000	1272.000	7902.000	1272.000	7903.000	1272.000	7904.000
GR	1271.000	9295.000	1271.000	9550.000	1270.100	9570.000	1270.000	9625.000	1269.500	9690.000
GR	1269.000	9925.000	1269.500	9920.000	1262.000	9965.000	1260.000	10020.000	1260.000	10040.000
GR	1269.000	10110.000	1271.000	10170.000	1269.000	10200.000	1269.000	10870.000	1270.000	11500.000
QT	2.000	11040.000	7440.000	9357.000	0.000	0.000	0.000	0.000	0.000	0.000
NM	2.000	0.055	10290.000	0.055	11950.000	0.000	0.000	0.000	0.000	0.000

X1	4.700	19.000	9500.000	10160.000	500.000	490.000	520.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1274.000	9140.000	1274.000	9141.000	1274.000	9142.000	1276.000	9400.000	1274.000	9000.000
GR	1272.000	9595.000	1272.000	9650.000	1272.000	9900.000	1270.000	9940.000	1264.000	9990.000
GR	1264.000	10045.000	1274.000	10160.000	1272.000	10195.000	1270.000	10290.000	1268.400	10490.000
GR	1270.000	10900.000	1272.000	11450.000	1272.000	11730.000	1274.000	11950.000	0.000	0.000
MC	0.045	0.045	0.075	0.100	0.700	0.000	0.000	0.000	0.000	0.000
DT	3.000	10970.000	7370.000	9294.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	8.500	13.000	9520.000	10015.000	550.000	440.000	520.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1274.400	9290.000	1274.000	9570.000	1274.700	9920.000	1264.000	9912.000	1264.000	10000.000
GR	1274.000	10049.000	1270.000	10175.000	1272.000	10142.000	1274.000	10220.000	1274.000	10400.000
GR	1274.000	10900.000	1274.000	11230.000	1276.000	11300.000	0.000	0.000	0.000	0.000
DT	2.000	10900.000	7300.000	9275.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	4.900	19.000	9950.000	10050.000	550.000	350.000	520.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1280.000	9700.000	1279.000	9900.000	1276.400	9950.000	1270.000	9945.000	1268.000	9975.000
GR	1270.000	10025.000	1274.000	10050.000	1274.000	10152.000	1274.000	10175.000	1276.000	10185.000
GR	1276.000	10230.000	1272.000	10355.000	1277.000	10455.000	1272.000	10730.000	1277.000	10770.000
GR	1277.000	11200.000	1277.000	11450.000	1278.000	12000.000	1280.000	12200.000	0.000	0.000
DT	3.000	10930.000	7230.000	9174.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	5.000	19.000	9845.000	10030.000	570.000	510.000	520.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	1280.000	9520.000	1278.000	9700.000	1279.000	9830.000	1278.500	9849.000	1278.000	9890.000
GR	1277.000	9930.000	1277.000	10010.000	1274.000	10022.000	1278.000	10030.000	1278.000	10100.000
GR	1278.500	10205.000	1279.000	10370.000	1279.000	10490.000	1279.000	11000.000	1279.500	11700.000
GR	1279.000	12100.000	1280.000	12170.000	1281.000	12200.000	0.000	0.000	0.000	0.000
EJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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  SECNO    DEPTH    CHSEL    CRIWS    WSELX    EG       MU       HL       QLOSS   BANK SLEU
  Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
  TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
  SLOPE    XLOPL    XLCH     XLOPR    ITRIAL   IDC      ICONT    CORAR    TOPWID     SNDST

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHU=   0.100 CEHU=   0.300
*SECNO 3.500

3485 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=     1240.00 ELREA=     1240.60

     3.50     9.62  1238.42  1237.13  1240.45  1239.94     1.32     0.00     0.00  1240.00
   10042.       0.   10042.       0.       0.    1099.       0.       0.       0.   1240.60
     0.00     0.00     9.22     0.00    0.045    0.035    0.045    0.000  1230.00  9904.59
 0.004585       0.       0.       0.        0       14        3     0.00   187.92 10092.51

FLOW DISTRIBUTION FOR SECNO=      3.50          CHSEL:   1238.42

STA=    9905.   10100.
  PER Q=    100.0
   AREA=   1099.6
    VEL=      9.2

*SECNO 3.600
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     3.60     9.62  1242.12  1242.12     0.00  1243.36     1.24     2.17     0.01  1241.50
    9981.      330.    9631.      20.     316.    1061.       29      15.       8.   1241.80
     0.02     1.04     9.08     0.72    0.045    0.035    0.045    0.035  1233.50  9057.85
 0.003737     545.     525.     500.        0        5        0     0.00  1165.83 10223.68

FLOW DISTRIBUTION FOR SECNO=      3.60          CHSEL=   1242.12

STA=    9050.    9920.   10000.   10200.   10224.
  PER Q=      3.3     96.5      0.2      0.0
   AREA=    316.5   1060.7     26.6      1.4
    VEL=      1.0      9.1      0.7      0.3

*SECNO 3.700

3301 HU CHANGED MORE THAN HUINS

7185 MINIMUM SPECIFIC ENERGY
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  SECNO    DEPTH    CHSEL    CRINS    WSELK    EC       HU       HL       OLOSS   BANK ELEV
  Q        OLOB     OCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
  TIME     ULOB     UCH      UROB     YNL      YNCH     YNR      WTH      ELMIN     SSTA
  SLOPE    YLOBL    YLCH     YLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID    ENDST

3720 CRITICAL DEPTH ASSUMED

3485 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1246.00 ELREA=     1246.50

     3.70     8.41  1246.41  1246.41     0.00  1246.86     0.45     1.74     0.09  1246.00
    9920.    2832.    7098.       0.    1297.    1146.       0.      39.      23.   1246.50
     0.05     2.19     6.19     0.00    0.045    0.035    0.045    0.035  1239.00  9979.66
 0.002990     530.     530.     500.       0        7        0     0.00  1200.32 10178.98

FLOW DISTRIBUTION FOR SECNO=      3.70          CHSEL=   1246.41

STA=    9979.    9200.    9800.    9888.    9925.   10180.
  PER Q=      5.4     19.1      3.1      0.9     71.5
   AREA=    267.2    949.8    139.6     38.2   1145.8
    VEL=      2.0      2.2      2.2      2.2      6.2

*SECNO 3.900
7105 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3485 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=     1249.00 ELREA=     1250.70

     3.80     8.53  1249.03  1249.03     0.00  1249.86     0.83     1.84     0.12  1249.00
    9859.    3111.    6748.       0.    1144.     780.       0.      66.      37.   1250.70
     0.07     2.72     8.45     0.00    0.045    0.035    0.045    0.035  1240.50  9059.84
 0.004173     570.     520.     480.       0       14        0     0.00  1006.87 10065.72

FLOW DISTRIBUTION FOR SECNO=      3.80          CHSEL=   1249.03

STA=    9059.    9100.    9300.    9670.    9900.    9930.   10075.
  PER Q=      0.3      6.1     19.9      5.2      0.0     68.4
   AREA=     21.2    245.8    639.7    236.7      0.9    780.5
    VEL=      1.4      2.4      3.1      2.2      0.2      8.6

*SECNO 3.900

3301 HU CHANGED MORE THAN HUINS

     3.90     8.49  1250.50  1248.14     0.00  1251.99     1.49     1.93     0.20  1242.01
    9798.     233.    9331.     234.      54.     933.      54.      84.      44.   1242.01
     0.08     4.33    10.00     4.33    0.045    0.035    0.045    0.035  1242.01  9987.30
 0.003202     530.     530.     540.       2       15        0     0.00   135.43 10122.73
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   SECNO    DEPTH    CHSEL    CRIMS    MSELP    CS       MO       DL       DLOSS    BANK SLEP
   0        DLOP     QCH      QROP     ALOP     ACH      AROP     UOL      TWA    LLF/RIGHT
   TIME     ULOP     UCH      UROP     YNL      YNCH     YNR      WTH      ELKIN      SSTA
   SLOPE    YLOPL    YLCH     YLOPR    FRICAL   IDC      ICOND    COMAG    IOMMID     EMBST

FLOW DISTRIBUTION FOR SECNO=      3.90          CHSEL=   1256.50

STA=    9997    10000    10110    10121.
  PER Q=      2.8      95.2      2.8
   AREA=     53.9     933.4     54.0
    UEL=      4.2      10.0      4.2

*SECNO 4.000
     4.00     7.46  1252.26  1250.92     0.00  1254.20     1.94     2.00     0.12  1244.00
    9736.      205.    9325.      206.      42.      921.      42.      96.      42.  1248.99
     0.10     4.92    11.36     4.92    0.045    0.025    0.045    0.025  1244.00  9999.97
 0.004909     520.     530.     540.        2       15        0     0.00   132.76 10121.19

FLOW DISTRIBUTION FOR SECNO=      4.00          CHSEL=   1252.26

STA=    9999.   10000.   10110.   10121.
  PER Q=      2.1      95.9      2.1
   AREA=     41.7     820.9     41.8
    UEL=      4.9      11.4      4.9

*SECNO 4.100
     4.10     7.21  1254.90  1253.68     0.00  1256.99     2.00     2.68     0.02  1247.59
    9675.      200.    9275.      200.      40.      904.      40.     107.      47.  1247.59
     0.11     5.00    11.54     5.00    0.045    0.025    0.045    0.025  1247.59  9999.04
 0.005205     520.     530.     540.        2       15        0     0.00   121.90 10120.94

FLOW DISTRIBUTION FOR SECNO=      4.10          CHSEL=   1254.90

STA=    9999.   10000.   10110.   10121.
  PER Q=      2.1      95.9      2.1
   AREA=     40.0     803.9     40.1
    UEL=      5.0      11.5      5.0

CCHU=   0.300 CEHV=   0.500
*SECNO 4.110
     4.11     7.42  1255.85  1254.49     0.00  1257.72     1.99     0.90     0.02  1249.43
    9675.      257.    9159.      258.      41.      916.      41.     110.      40.  1242.43
     0.11     5.25    11.27     5.26    0.025    0.025    0.025    0.025  1249.43  9999.90
 0.004937     159.     160.     161.        2       15        0     0.00   132.27 10121.13
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  SECNO    DEPTH    CHSEL    CRIWS    WSELX    EG       NU       NL       QLOSS    DAMN ELEV
  Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
  TIME     ULOB     UCH      UROB     YNL      YNCH     YNR      WTN      ELMIN      SSTA
  SLOPE    YLOBL    YLCH     YLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST

FLOW DISTRIBUTION FOR SECNO=      4.11          CHSEL=   1255.95

STA=    9999.    10000.    10110.    10121.
  PER Q=      2.7      94.7       2.7
   AREA=     41.2     915.9      41.3
    VEL=      6.3      11.2       6.3

*SECNO 4.120

3265 DIVIDED FLOW

     4.12     7.24  1255.79  1254.69     0.00  1257.84     2.04     0.07     0.09  1249.45
    9675.     299.    9100.     297       41.     779.      40.     110.      49   1249.45
     0.11     7.10    11.70     7.10    0.075    0.075    0.075    0.075  1249.45  9999.97
 0.006312       5.       5.       5        2       11        0     0.00   129.04 10121.01

FLOW DISTRIBUTION FOR SECNO=      4.12          CHSEL=   1255.79

STA=    9999.    10000.    10110.    10121.
  PER Q=      3.0      94.1       3.0
   AREA=     40.5     779.0      40.4
    VEL=      7.1      11.7       7.1

*SECNO 4.130

3265 DIVIDED FLOW

     4.13     7.61  1256.60  1255.21     0.00  1258.49     1.89     0.61     0.05  1249.99
    9675.     299.    9078.     298.      44.     807.      44.     112.      49   1249.99
     0.12     6.85    11.25     6.85    0.075    0.075    0.075    0.075  1249.99  9999.55
 0.005589      101.     102.     103.        2       11        0     0.00   129.99 10121.43

FLOW DISTRIBUTION FOR SECNO=      4.13          CHSEL=   1256.60

STA=    9999.    10000.    10110.    10121.
  PER Q=      3.1      93.8       3.1
   AREA=     43.6     807.3      43.5
    VEL=      6.9      11.2       6.8

*SECNO 4.140
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SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       NU       HL       OLOSS   DANR SLEW
Q        OLOB     OCH      OROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
TIME     VLOB     VCH      VROB     YNL      YNCH     YNR      WTN      CLMIN     SSTA
SLOPE    YLOBL    YLCH     YLOBR    ITRIAL   IDC      ICONT    COPAR    TOPWID    ENDST


3265 DIVIDED FLOW

    4.14     7.57  1256.55  1255.40     0.00  1259.61     2.06     0.07     0.09  1249.02
   9475.     330.    9014.     330.      42.     767.      42.     112.      49.   1249.02
    0.12     7.79    11.75     7.79    0.035    0.035    0.035    0.035  1249.02  9999.71
 0.007322      5.       5.       5.       2       11        0     0.00   124.61 10121.29


FLOW DISTRIBUTION FOR SECNO=      4.14          CWSEL=   1256.55

STA=    9999    10000.   10110.   10121.
  PER Q=      3.4     93.2      3.4
   AREA=     42.5    767.2     42.5
    VEL=      7.8     11.7      7.8

*SECNO 4.160

3265 DIVIDED FLOW

    4.16     7.99  1257.49  1255.99     0.00  1259.30     1.81     0.61     0.09  1249.50
   9475.     352.    9071.     352.      49.     814.      49.     114.      49.   1249.50
    0.12     7.36    11.03     7.36    0.035    0.035    0.035    0.035  1249.50  9999.03
 0.006070      91.      92.      93.       3       11        0     0.00   126.00 10121.97


FLOW DISTRIBUTION FOR SECNO=      4.16          CWSEL=   1257.49

STA=    9999.   10000.   10110.   10122.
  PER Q=      3.6     92.7      3.6
   AREA=     47.8    813.7     47.8
    VEL=      7.4     11.0      7.4

*SECNO 4.170

3265 DIVIDED FLOW

    4.17     8.30  1257.83  1255.74     0.00  1259.39     1.56     0.07     0.07  1249.53
   9475.     326.    9023.     326.      52.     990.      52.     114.      49.   1249.53
    0.12     6.29    10.25     6.29    0.035    0.035    0.035    0.035  1249.53  9997.52
 0.004201      5.       5.       5.       2       15        0     0.00   130.94 10122.46
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   SECNO    DEPTH    CHSEL    CRIWS    VCELK    EE       UU       UL       DLOSS    BANK ELEV
   0        0.00     0.CH     0.00     0.00     ACH      ABOB     UOL      THA      LEFT/RIGHT
   TIME     HLOB     UCH      HROB     YNL      YNCH     YNR      HTW      ELMIN       SSTA
   SLOPE    YLOBL    YLCH     YLOBR    INITIAL  INC      ICONT    [illegible]  [illegible]  ENDCT

FLOW DISTRIBUTION FOR SECNO=      A.17          CHSEL=   1257.97

STA=    9990.   10000.   10110.   10122
  PER Q=      3.4      93.2      3.4
  AREA=      51.9     979.0     51.9
  VEL=        4.7      10.2      4.7

*SECNO * 100

2015 DIVIDED FLOW

     A.10     8.17  1259.24  1254.70     0.00  1259.09     1.62     0.46     0.02  1250.09
    9475      721.    9038.     720.       50.     945.      50.     117.      49.  1250.09
     0.12     4.40    10.44     4.40    0.075    0.025    0.025    0.025  1250.09  9987.72
 0.004445     105.     106.     107.        2       15        0     0.00   130.51 10122.25

FLOW DISTRIBUTION FOR SECNO=      A.18          CHSEL=   1259.24

STA=    9990.   10000.   10110.   10122
  PER Q=      3.2      93.6      3.2
  AREA=      50.1     975.0     50.1
  VEL=        4.4      10.4      4.4

*SECNO A.100
     A.19     8.29  1259.51  1254.19     0.00  1259.95     1.44     0.02     0.05  1250.12
    9475      290.     9095.     290.       52.     923.      52.     117.      49.  1250.12
     0.12     5.49     9.95     5.49    0.075    0.025    0.025    0.025  1250.12  9987.41
 0.003152       5.       5.       5.        2       15        0     0.00   135.19 10122.59

FLOW DISTRIBUTION FOR SECNO=      A.19          CHSEL=   1259.51

STA=    9990.   10000.   10110.   10122
  PER Q=      3.0      94.0      3.0
  AREA=      52.9     923.5     52.9
  VEL=        5.5       9.8      5.5

COMM=   0.100 SEND=   0.300
*SECNO A.200
     A.20     8.26  1259.65  1254.44     0.00  1260.13     1.49     0.14     0.01  1250.29
    9414      294.     9044.     294.       51.     909.      51.     119.      49.  1250.29
     0.12     5.55     9.91     5.55    0.075    0.025    0.025    0.025  1250.29  9987.41
 0.003298       50.      50.      50.        2       15        0     0.00   134.79 10122.39
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   SECND    DEPTH    CWSEL    CRIWS    WSELK    EG       NU       NL       QLOSS   BANK ELEV
   D        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    SNDST

FLOW DISTRIBUTION FOR SECND:      4.20          CWSEL=   1259.65

STA=    9999.   10000.   10110.   10122.
  PER D=      3.0     94.1      3.0
   AREA=     51.2    909.5     51.2
    VEL=      5.5     10.0      5.5

*SECND 4.300
     4.30     7.29  1260.47  1259.22     0.00  1262.39     1.91     2.17     0.17  1257.19
    9557.      251     9056.     251.      40.     901.      40.     129.      50.  1253.19
     0.14     6.30     11.70     6.30    0.035    0.035    0.035    0.035  1253.19  9999.07
 0.005016     520.     530.     540.        2       15        0     0.00   131.95 10120.93

FLOW DISTRIBUTION FOR SECND:      4.30          CWSEL=   1260.47

STA=    9999.   10000.   10110.   10121.
  PER D=      2.6     94.8      2.6
   AREA=     39.8    901.3     39.8
    VEL=      6.3     11.3      6.3

*SECND 4.400
     4.40     7.17  1263.16  1261.99     0.00  1265.11     1.95     2.71     0.01  1255.99
    9500.      245     9009.     245      39.     789       39.     140.      52.  1255.99
     0.15     6.36     11.42     6.36    0.035    0.035    0.035    0.035  1255.99  9999.24
 0.005232     520      530.     540.        2       15        0     0.00   131.51 10120.76

FLOW DISTRIBUTION FOR SECND=      4.40          CWSEL=   1263.16

STA=    9999.   10000.   10110.   10121.
  PER D=      2.6     94.8      2.6
   AREA=     38.6    789.8     38.6
    VEL=      6.4     11.4      6.4

CCHU=   0.300 CCHU=   0.500
*SECND 4.420

3201 HU CHANGED MORE THAN HUINS

     4.42     7.57  1265.15  1262.78     0.00  1266.29     1.14     0.94     0.24  1257.58
    9500.      209.     9095      196.      43.     1046.      41.     147.      53.  1257.58
     0.16     4.54     8.49     4.79    0.030    0.030    0.030    0.034  1257.58  9999.43
 0.002068     300.     300.     300        2       15        0     0.00   160.19 10149.81
```

```
   SECNO    DEPTH    CWSEL    CRIWS    WSELK    CG       WU       WL       OLOSS    BANK ELEV
   Q        OLOB     OCH      OROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
   TIME     ULOB     UCH      UROB     YNL      YNCH     YNR      WIN      ELMIN      SSTA
   SLOPE    YLOBL    YLCH     YLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST

FLOW DISTRIBUTION FOR SECNO=      4.42          CWSEL=   1265.15

STA=    9999.   10000.   10138.   10149.
  PER Q=      2.2      95.7       2.1
   AREA=     43.1    1046.1      41.0
    VEL=      4.8       8.7       4.8

*SECNO 4.421

3265 DIVIDED FLOW

     4.42     7.49  1265.09  1267.01     0.00  1266.79     1.29     0.01     0.07  1257.60
    9500.     248.    9002.     249.      42.     973.      42.     147.      53.   1257.60
     0.16     5.92     9.25     5.92    0.030    0.030    0.030    0.034  1257.60  9999.74
 0.003132       5.       5.       5.        2       15        0     0.00   152.51 10149.24

FLOW DISTRIBUTION FOR SECNO=      4.42          CWSEL=   1265.09

STA=    9999.   10000.   10138.   10149.
  PER Q=      2.6      94.9       2.6
   AREA=     42.1     973.4      42.1
    VEL=      5.9       9.2       5.9

*SECNO 4.429

3265 DIVIDED FLOW

     4.42     7.34  1265.39  1267.45     0.00  1266.72     1.25     0.32     0.07  1258.05
    9500.     244.    9013.     244.      40.     957.      40.     149.      53.   1258.05
     0.16     6.03     9.46     6.03    0.030    0.030    0.030    0.034  1258.05  9999.00
 0.003350     100.     100.     100.        2       15        0     0.00   152.04 10149.00

FLOW DISTRIBUTION FOR SECNO=      4.43          CWSEL=   1265.39

STA=    9999.   10000.   10138.   10149.
  PER Q=      2.6      94.9       2.6
   AREA=     40.4     953.2      40.4
    VEL=      6.0       9.5       6.0

*SECNO 4.430
     4.42     7.41  1265.69  1267.29     0.00  1266.81     1.17     0.01     0.07  1258.08
    9500.     210.    9081.     209.      43.    1051.      43.     149.      53.   1258.08
     0.16     4.92     8.64     4.92    0.030    0.030    0.030    0.034  1258.08  9999.57
 0.002033       5.       5.       5.        2       15        0     0.00   160.95 10149.42
```

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   SECNO    DEPTH    CMSEL    CRIWS    DCELX    EG       NN       HL       QLOSS    BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LLEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XMCH     XNR      WTN      ELMIN       SSTA
   SLOPE    YLOBL    YLCH     YLOBR    STRICL   ISC      ICONT    CORAR    IOPWID      ENDST

FLOW DISTRIBUTION FOR SECNO=      8.47          CMSEL=   1265.29

STA=    9999    10000    10139.   10149.
  PER Q=      2.2      95.6      2.2
   AREA=     43.5   1050.5     43.5
    VEL=      4.9      9.4      4.9

SCHK=   0.100 SCHV=   0.200
*SECNO 8.500
     8.50     7.47  1265.97  1267.46     0.00  1267.04     1.09     0.28     0.00  1259.30
     9430.     200.     9011.     200.      44.     1050.      44.     152.      54.  1258.30
     0.17     4.74     8.51     4.74    0.035    0.025    0.025    0.074  1259.30  9999.50
 0.002659      105.      105.      105.        0       18        0     0.00   141.01 10149.50

FLOW DISTRIBUTION FOR SECNO=      8.50          CMSEL=   1265.97

STA=    9999    10000    10139.   10150.
  PER Q=      2.2      95.8      2.2
   AREA=     44.1   1059.4     44.1
    VEL=      4.7      9.5      4.7

1400 NO CROB USED
*SECNO 8.600
7155 MINIMUM SPECIFIC ENERGY
3226 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NOW EFFECTIVE.ELLEA=     1269.50 ELREA=     1271.00

     4.60     9.09  1269.09  1269.09     0.00  1269.99     0.89     2.20     0.02  1269.50
     9410.       0.     9410.       0.       0.     1241.       0.      167.      547.  1271.00
     0.19     0.00     7.59     0.00    0.055    0.055    0.055    0.074  1269.00  9921.74
 0.007474      500.      530.      420.        0       18        0     0.00   210.51 10131.87

FLOW DISTRIBUTION FOR SECNO=      8.60          CMSEL=   1269.09

STA=    9921    10170.
  PER Q=    100.0
   AREA=   1241.2
    VEL=      7.4
```

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   SECNO    DEPTH    TWOEL    DEPWS    VCELA    SS       TW       WL       QLOSS    BANK ELEV
   Q        QLOB     QCH      QROD     QLOB     ACH      AROW     VOL      TWA    LEFT/RIGHT
   TIME     VLOB     VCH      VROB     VWL      XWCH     XWS      MIN      CLMIN      SS16
   SLOPE    YLOBL    YLCH     YLOBR    INITIAL  IDC      ICONT    DORAD    TORWID     ENDST

1400 NO BAND USED
*SECNO 4.700
7195 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3405 OVERBANK AREA ASSUMED NON-EFFECTIVE.ELLEA=     1272.00 ELREA=     1274.00

     4.70     9.10  1273.10  1273.10     0.00  1273.67     0.58     3.75     0.02  1272.00
    9757.      451     9706.       0.      374.     1295.       0.      195.      41.  1274.00
     0.21     1.95     5.29     0.00    0.055    0.055    0.055    0.074  1264.00  9889.58
 0.000423      500.      530.      490.       0        9        0     0.00   696.42 10145.00

FLOW DISTRIBUTION FOR SECNO=      4.70          CHSEL=   1272.10

STA=    9449.    9595.    9650.    9900.   10140.
  PER Q=      0.1      0.6      6.2     93.0
   AREA=     21.4     39.2    273.0   1104.4
    VEL=      0.6      1.6      2.1      4.7

CONS=   0.100 CSAV=   0.300
*SECNO 4.800
     4.80     9.05  1275.05  1278.74     0.00  1275.58     0.53     1.91     0.00  1274.70
    9296.       0.     5487.     3601.      14      782.     1552.      209.      73.  1274.00
     0.26     0.52     7.27     2.21    0.045    0.025    0.045    0.025  1266.00  9828.77
 0.002554      550.      530.      450.       2       10        0     0.00  1439.09 11266.42

FLOW DISTRIBUTION FOR SECNO=      4.80          CHSEL=   1275.05

STA=    9828.    9920.   10040.   10135.   10142.   10220.   10400.   10800.   11270.   11266.
  PER Q=      0.1     41.2     10.2      5.1      3.5      3.5      7.9      8.4      0.2
   AREA=     15.6    702.5    264.5    109.1    118.3    107.3    416.2    447.4     10.9
    VEL=      0.5      7.7      3.6      4.3      2.7      1.9      1.9      3.0      1.1

*SECNO 4.900
7195 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     4.90     9.57  1277.53  1277.53     0.00  1278.22     0.00     1.72     0.00  1276.60
    9335.      51.     6156.     3020.      41.      713.     1332.      209.      99.  1274.00
     0.26     1.10     8.62     2.27    0.045    0.025    0.045    0.025  1269.00  9850.60
 0.003098      550.      530.      350.       0        8        0     0.00  1988.10 11234.70
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	WU	WL	QLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	YNL	YNCH	YNR	WTH	ELMIN	SSTA
SLOPE	YLOBL	YLCH	YLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	CMDST

FLOW DISTRIBUTION FOR SECNO= 4.90 CWSEL= 1277.53

STA=	9851.	9850.	10050.	10152.	10175.	10385.	11200.	11450.	11875.
PER Q=	0.5	11.7	11.6	3.7	3.3	5.7	3.1	0.4	
AREA=	46.1	713.3	259.8	81.1	171.1	433.6	237.5	48.7	
VEL=	1.1	8.6	4.3	4.3	1.9	1.2	1.2	0.8	

*SECNO 5.000
7195 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

5.00	6.72	1279.72	1279.72	0.00	1280.32	0.61	1.69	0.02	1278.50
9174	537.	6293.	2354.	261.	843.	1422.	256.	115.	1278.00
0.28	2.06	7.45	1.66	0.045	0.035	0.045	0.035	1273.00	9570.54
0.003453	530.	520.	510.	0	15	0	0.00	2579.81	12150.35

FLOW DISTRIBUTION FOR SECNO= 5.00 CWSEL= 1279.72

STA=	9571.	9700.	9830.	9949.	10030.	10100.	10205.	10370.	10480.	11000.	11700.	12100.	12150.
PER Q=	0.5	3.8	1.5	69.5	3.7	4.2	3.3	1.3	6.4	4.2	2.4	0.2	
AREA=	46.6	159.5	55.8	943.0	120.3	154.3	159.9	79.1	374.0	329.5	187.7	18.1	
VEL=	1.0	2.2	2.5	7.5	2.8	2.5	1.9	1.6	1.6	1.2	1.2	1.0	

THIS RUN EXECUTED 21-MAR-84 12:02:16

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED APR  1980
  ERROR CORR -  01,02,03,04
  MODIFICATION -  50,51,52,53,54
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100 YEAR CHANNEL

SUMMARY PRINTOUT TABLE 150

	SECNO	YLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	101K
	3.500	0.00	0.00	0.00	1230.00	10042.00	1239.62	1237.13	1239.94	45.95	9.22	1088.63	1492.99
*	3.600	525.00	0.00	0.00	1233.50	9991.00	1242.12	1242.12	1243.36	37.37	9.08	1405.17	1632.76
*	3.700	530.00	0.00	0.00	1238.00	9920.00	1246.41	1246.41	1246.96	28.90	6.19	2438.65	1845.33
*	3.800	520.00	0.00	0.00	1240.50	9859.00	1249.03	1249.03	1249.86	41.73	8.65	1924.61	1526.25
	3.900	530.00	0.00	0.00	1242.01	9798.00	1250.50	1248.16	1251.99	32.02	10.00	1041.29	1731.40
	4.000	530.00	0.00	0.00	1244.80	9736.00	1252.26	1250.93	1254.20	49.09	11.36	904.32	1389.65
	4.100	530.00	0.00	0.00	1247.59	9675.00	1254.90	1253.69	1256.89	52.05	11.54	883.96	1340.98
	4.110	160.00	0.00	0.00	1248.43	9675.00	1255.85	1254.49	1257.73	48.33	11.23	898.31	1391.70
	4.120	5.00	0.00	0.00	1248.45	9675.00	1255.79	1254.69	1257.84	63.12	11.70	858.99	1217.80
	4.130	102.00	0.00	0.00	1248.99	9675.00	1256.60	1255.21	1258.49	55.89	11.25	894.40	1294.16
	4.140	5.00	0.00	0.00	1249.02	9675.00	1256.55	1255.40	1258.61	73.22	11.75	852.16	1130.66
	4.160	92.00	0.00	0.00	1249.50	9675.00	1257.48	1255.88	1259.30	60.70	11.03	909.28	1241.80
	4.170	5.00	0.00	0.00	1249.53	9675.00	1257.83	1255.74	1259.39	42.01	10.25	983.54	1492.63
	4.180	106.00	0.00	0.00	1250.09	9675.00	1258.26	1256.30	1259.88	44.45	10.44	965.19	1451.23
	4.190	5.00	0.00	0.00	1250.12	9675.00	1258.51	1256.19	1259.95	31.53	9.85	1029.17	1722.95
	4.200	50.00	0.00	0.00	1250.39	9614.00	1258.65	1256.44	1260.13	32.94	9.96	1010.82	1675.07
	4.300	530.00	0.00	0.00	1253.19	9557.00	1260.47	1259.22	1262.39	50.16	11.30	880.92	1349.37

	VLCHO	VLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CWIWS	EG	10K*S	VCH	AREA	.01K
	4.400	530.00	0.00	0.00	1255.99	9500.00	1263.16	1261.98	1265.11	52.22	11.42	845.96	1313.40
	4.420	300.00	0.00	0.00	1257.58	9500.00	1265.15	1262.79	1266.29	20.69	8.69	1130.17	2093.82
	4.421	5.00	0.00	0.00	1257.60	9500.00	1265.09	1263.01	1266.39	31.32	9.25	1057.63	1497.51
	4.429	100.00	0.00	0.00	1258.05	9500.00	1265.39	1263.45	1266.73	33.50	9.44	1033.91	1441.32
	4.430	5.00	0.00	0.00	1258.08	9500.00	1265.69	1263.29	1266.81	20.33	8.64	1137.49	2106.73
	4.500	105.00	0.00	0.00	1258.30	9430.00	1265.97	1263.43	1267.01	25.58	8.51	1146.67	1829.03
*	4.600	530.00	0.00	0.00	1260.00	9418.00	1269.09	1269.09	1269.99	74.76	7.59	1241.25	1099.26
*	4.700	530.00	0.00	0.00	1264.00	9357.00	1273.10	1273.10	1273.67	54.23	6.29	1719.25	1270.67
	4.800	530.00	0.00	0.00	1266.00	9296.00	1275.05	1274.74	1275.59	26.64	7.27	2359.97	1901.11
*	4.900	520.00	0.00	0.00	1268.00	9235.00	1277.52	1277.52	1278.33	30.99	8.62	2091.17	1662.00
*	5.000	520.00	0.00	0.00	1273.00	9174.00	1279.72	1279.72	1280.32	34.53	7.45	2525.93	1561.14

100 YEAR CHANNEL

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSE	DIFWSY	DIFKWS	TOPWID	VLOW
	3.500	10042.00	1239.42	0.00	0.00	1.93	187.92	0.00
*	3.600	9921.00	1242.12	0.00	3.50	0.00	1165.87	520.00
*	3.700	9920.00	1244.41	0.00	4.29	0.00	1200.32	530.00
*	3.800	9909.00	1249.03	0.00	2.61	0.00	1006.87	520.00
	3.900	9790.00	1250.50	0.00	1.47	0.00	135.43	530.00
	4.000	9734.00	1252.24	0.00	1.77	0.00	132.26	530.00
	4.100	9675.00	1254.90	0.00	2.67	0.00	131.90	530.00
	4.110	9675.00	1255.85	0.00	0.95	0.00	132.23	160.00
	4.120	9675.00	1255.79	0.00	-0.05	0.00	129.04	5.00
	4.130	9675.00	1256.40	0.00	0.81	0.00	129.00	102.00
	4.140	9675.00	1256.55	0.00	0.04	0.00	124.41	5.00
	4.150	9675.00	1257.49	0.00	0.94	0.00	126.00	92.00
	4.170	9675.00	1257.93	0.00	0.15	0.00	130.94	5.00
	4.190	9675.00	1259.24	0.00	0.47	0.00	170.51	106.00
	4.190	9675.00	1259.51	0.00	0.25	0.00	175.19	5.00
	4.200	9614.00	1259.65	0.00	0.14	0.00	124.79	50.00
	4.300	9557.00	1260.47	0.00	1.03	0.00	131.05	530.00
	4.400	9500.00	1262.16	0.00	2.69	0.00	131.51	530.00
	4.420	9500.00	1265.15	0.00	1.99	0.00	160.10	300.00
	4.421	9500.00	1265.09	0.00	-0.06	0.00	152.51	5.00
	4.429	9500.00	1265.39	0.00	0.29	0.00	152.06	100.00
	4.470	9500.00	1265.69	0.00	0.30	0.00	160.05	5.00
	4.500	9430.00	1265.97	0.00	-0.29	0.00	161.01	105.00
*	4.600	9410.00	1269.09	0.00	3.13	0.00	210.51	530.00

	SECNO	Q	CHSEL	DISMSP	DIFMSX	DIFXMS	TOPWID	YLCH
*	4.700	9257.00	1273.10	0.00	4.00	0.00	696.42	530.00
	4.800	9296.00	1275.05	0.00	1.95	0.00	1438.09	530.00
*	4.900	9235.00	1277.53	0.00	2.48	0.00	1994.10	530.00
*	5.000	9174.00	1279.72	0.00	2.19	0.00	2579.81	530.00

SUMMARY OF ERRORS

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CAUTION  SECNO=    3.600  PROFILE= 1  CRITICAL DEPTH ASSUMED
CAUTION  SECNO=    3.600  PROFILE= 1  MINIMUM SPECIFIC ENERGY

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CAUTION  SECNO=    5.000  PROFILE= 1  CRITICAL DEPTH ASSUMED
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